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USACE / NAVFAC / AFCEA / NASA UFGS-09 22 37.00 10 (April 2006)  
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Preparing Activity: USACE Replacing without change  
UFGS-09200A (December 2003)

## UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 18 July 2006

Latest change indicated by CHG tags

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LATHING AND PLASTERING

04/06

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SECTION 09 22 37.00 10

LATHING AND PLASTERING  
04/06

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NOTE: This guide specification covers the requirements for plasterwork for studs, furring and lathing, including steel framing.

Comments and suggestions on this guide specification are welcome and should be directed to the technical proponent of the specification. A listing of technical proponents, including their organization designation and telephone number, is on the Internet.

Recommended changes to a UFGS should be submitted as a Criteria Change Request (CCR).

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

This guide specification includes tailoring options for gypsum plaster, and cement plaster. Selection or deselection of a tailoring option will include or exclude that option in the section, but editing the resulting section to fit the project is still required.

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## PART 1 GENERAL

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NOTE: Locations and details of trim items for plasterwork will be indicated on the drawings. Trim items that may be required to complete the plasterwork in a workmanlike manner will be specified.

Plaster may be applied directly to masonry, but furring and lath are required for plaster finish on

interior of single wythe exterior walls. Metal and gypsum lath will be included as Contractor's options except that gypsum lath will be deleted where portland-cement plaster is specified exclusively.

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## 1.1 REFERENCES

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NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

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The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

### ASTM INTERNATIONAL (ASTM)

ASTM A 580/A 580M	(1998; R 2004) Stainless Steel Wire
ASTM A 853	(2004) Steel Wire, Carbon, for General Use
ASTM B 164	(2003) Nickel-Copper Alloy Rod, Bar, and Wire
ASTM C 1002	(2004) Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
ASTM C 1032	(2004) Woven Wire Plaster Base
ASTM C 150	(2005) Portland Cement
ASTM C 206	(2003) Finishing Hydrated Lime
ASTM C 28/C 28M	(2000e1) Gypsum Plasters
ASTM C 29/C 29M	(1997; R 2003) Bulk Density ("Unit Weight") and Voids in Aggregate
ASTM C 35	(2001) Inorganic Aggregates for Use in

	Gypsum Plaster
ASTM C 37/C 37M	(2001e1) Gypsum Lath
ASTM C 472	(1999; R 2004) Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete
ASTM C 587	(2002) Gypsum Veneer Plaster
ASTM C 588/C 588M	(2003e1) Gypsum Base for Veneer Plasters
ASTM C 61/C 61M	(2000) Gypsum Keene's Cement
ASTM C 645	(2004a) Nonstructural Steel Framing Members
ASTM C 754	(2004) Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products
ASTM C 841	(2003) Installation of Interior Lathing and Furring
ASTM C 842	(2005) Application of Interior Gypsum Plaster
ASTM C 843	(1999e1) Application of Gypsum Veneer Plaster
ASTM C 844	(2004) Application of Gypsum Base to Receive Gypsum Veneer Plaster
ASTM C 847	(2001; R 2004) Metal Lath
ASTM C 897	(2000) Aggregate for Job-Mixed Portland Cement-Based Plasters
ASTM C 926	(1998a) Application of Portland Cement-Based Plaster
ASTM C 933	(2004) Welded Wire Lath
ASTM C 955	(2003) Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases

## 1.2 SUBMITTALS

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NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only

delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.

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Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for [Contractor Quality Control approval.] [information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

#### SD-02 Shop Drawings

##### Approved Detail Drawings

Drawings including installation details, ceiling framing, and furring.

#### SD-03 Product Data

##### Lathing Installation

Manufacturer's pre-printed descriptive data, catalog cuts, and installation instructions for plastering materials and accessories.

#### SD-04 Samples

##### Gypsum Plaster

[One] [\_\_\_\_\_] 1 m 36 inch square sample panel of each specified finish.

#### SD-07 Certificates

##### Qualifications

Manufacturer's experience in specified work.

##### Gypsum Plaster

Certification indicating that factory-mixed plaster provides a minimum compressive strength of not less than 6.9 MPa 1000 psi when tested in accordance with ASTM C 472.

### 1.3 QUALIFICATIONS

Manufacturer shall specialize in manufacturing the types of material specified, and shall have a minimum of [5] [\_\_\_\_\_] years of documented successful experience. Applicator shall specialize in the type of lath and plaster work required to meet requirements, with a minimum of [3] [\_\_\_\_\_] years of documented experience.

### 1.4 DELIVERY, STORAGE AND HANDLING

Materials shall be delivered to project site in the original containers bearing the name of manufacturer, contents, and brand name. Plaster, cement, and lime shall be stored off the ground under weathertight cover and away from sweating walls and other damp surfaces until ready for use. Accessories shall be stored off the ground in a weathertight structure for protection. Damaged or deteriorated materials shall be removed from project site.

### 1.5 ENVIRONMENTAL CONDITIONS

A temperature between 4 and 27 degrees C 40 and 80 degrees F shall be evenly maintained in the building for a period of not less than 1 week prior to application of plaster, and for a period of at least 1 week after the gypsum plaster is set, in accordance with ASTM C 842. Interior spaces shall be ventilated in accordance with ASTM C 842 immediately after applying plaster.

## PART 2 PRODUCTS

### 2.1 NON-LOADBEARING WALLS

#### 2.1.1 Studs

Studs for non-loadbearing walls shall conform to ASTM C 645. Studs shall be C-shaped, roll-formed steel with minimum uncoated design thickness of [0.45 mm 0.0179 inch] [0.72 mm 0.0284 inch] [0.84 mm 0.0329 inch] [\_\_\_\_\_] made from G40 hot-dip galvanized coated sheet.

#### 2.1.2 Runner Tracks

Prefabricated floor and ceiling runner tracks shall conform to ASTM C 645. Tracks shall be prefabricated, U-shaped, unpunched web, thickness to match studs, made from G40 hot-dip galvanized coated sheet.

### 2.2 LOADBEARING STUD WALLS

#### 2.2.1 Studs

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NOTE: Coordinate to assure that stud sizes and thickness are noted on the drawings. Minimum base metal design thickness will be 0.84 mm (0.0329 in), 1.12 mm (0.0438 in), 1.40 mm (0.0548 in), 1.78 mm (0.0697 in), or 2.45 mm (0.0965 in).  
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Studs for loadbearing walls shall conform to ASTM C 955. Studs shall be C-shaped, roll-formed steel made from minimum G60 hot-dip galvanized coated sheet. Stud sizes and base metal design thickness shall be as shown.

#### 2.2.2 Runner Tracks

Floor and ceiling runner tracks shall conform to ASTM C 955. Tracks shall be prefabricated, U-shaped with minimum 19 mm 3/4 inch flanges, unpunched web, made from G60 hot-dip galvanized coated sheet.

#### 2.2.3 Bridging

Bridging in loadbearing walls shall conform to ASTM C 955. Bridging shall be minimum 19 mm 3/4 inch wide by 11 mm 7/16 inch deep cold-rolled steel channel with weld attachment clips at each stud location or V-bar type weld or screw attached to each stud flange. Bridging shall be adequate to provide lateral support for the stud.

#### 2.3 METAL WALL FURRING

Metal wall furring channels shall conform to ASTM C 645. Furring channels shall be formed from cold-rolled steel, 19 mm 3/4 inch wide by 11 mm 7/16 inch deep, made from G40 hot-dip galvanized coated sheet.

#### 2.4 SUSPENDED CEILING FRAMING

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**NOTE: Consult manufacturer's data for calculating design performance.**

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Suspended ceiling framing system shall have the capability to support the finished ceiling, light fixtures, air diffusers, and accessories, as shown.

The suspension system shall have a maximum deflection of L/240. Carrying channels shall be formed from minimum 1.40 mm 0.0548 inch thick cold-rolled steel, 38 mm 1-1/2 inch wide by 11 mm 7/16 inch deep. Cross furring members shall conform to ASTM C 645, and shall be formed from cold-rolled steel, 19 mm 3/4 inch wide by 11 mm 7/16 inch deep. Carrying channels and furring members shall be made from hot-dip galvanized coated sheet.

#### 2.5 TRIM, MOLDINGS, AND ACCESSORIES

##### 2.5.1 Hangers

Suspended ceiling runner channel hangers shall be [soft, annealed steel wire not less than No. 8 SWG nominal diameter, conforming to ASTM A 853] [or] [flat iron or steel straps, at least 2 x 22 mm 3/32 x 7/8 inch size, coated with zinc, cadmium, or rust-inhibiting paint].

##### 2.5.2 Fastenings

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**NOTE: In areas where adequate ventilation is provided to prevent extended moisture accumulation above supported lath and where dissimilar metals are not present in sufficient amounts to promote a galvanic chemical reaction, galvanized-steel tie**

wire, clips, rings and other fastenings will be specified exclusively for ceiling construction. When the above conditions are not satisfied, only corrosion-resistant steel or nickel-copper alloy will be used for ceiling construction. Edit accordingly.

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Tie wire, rings, and other fastenings shall be corrosion-resisting steel conforming to [ASTM A 580/A 580M](#), composition 302, 304, or 316, Condition A, or nickel-copper alloy conforming to [ASTM B 164](#), annealed condition. Walls, partitions, and other vertical surfaces not incorporated in ceiling construction may be erected with soft, annealed steel conforming to [ASTM A 853](#).

#### 2.5.2.1 Tie Wire

Tie wire for constructing partitions and vertical furring, for securing metal lath to supports, and for lacing shall be not less than No. 18 SWG diameter. Tie wire for all other applications shall be not less than No. 16 SWG diameter.

#### 2.5.2.2 Clips

Clips used in lieu of tie wire for securing furring channels to the runner channels in ceiling construction shall be made from strips not less than [3 mm 1/8 inch](#) thick or shall be hairpin clip formed of No. 8 SWG wire. Other clips and rings or fastenings of similar materials shall be equivalent in holding power to that provided by tie wire for the specific application.

#### 2.5.3 Arch, Flexible Corner Beads

Flexible corner beads shall be fabricated of [aluminum] [vinyl] [[0.50 mm 0.0210 inch](#) thick galvanized steel] [[0.76 mm 0.030 inch](#) thick zinc alloy], with minimum [32 mm 1-1/4 inch](#) wide flanges and [3 mm 1/8 inch](#) thick bead, designed to bend without buckles, kinks, or breaks in the nose.

#### 2.5.4 Expanded Flange Corner Beads

Expanded flange corner beads shall be fabricated of [vinyl] [or] [aluminum] [[0.50 mm 0.0210 in](#) thick galvanized steel] [[0.76 mm 0.030 inch](#) thick zinc alloy], with [64 mm 2-1/2 inch](#) wide flanges and [3 mm 1/8 inch](#) wide bead.

#### 2.5.5 Bullnose Corner Beads

Bullnose corner beads shall be fabricated of [vinyl] [or] [aluminum] [[0.50 mm 0.0210 inch](#) thick galvanized steel], with [64 mm 2-1/2 inch](#) wide flanges and [19 mm 3/4 inch](#) bead.

#### 2.5.6 Cornerites

Cornerites shall conform to [ASTM C 847](#). Cornerites shall be fabricated of galvanized expanded metal lath to form an angle of at least 100 degrees, with outstanding legs of not less than [50 mm 2 inches](#).

#### 2.5.7 Striplath

Striplath shall conform to [ASTM C 847](#). Striplath shall be fabricated of galvanized steel sheet, [1.4 kg/square meter 2.5 pounds/square yard](#).

#### 2.5.8 Base or Parting Screed

Base screeds shall be fabricated of 0.50 mm 0.0210 inch thick galvanized steel, 13 mm 1/2 inch depth, with not less than 50 mm 2 inch wide expansion flanges.

#### 2.5.9 Casing Beads

Casing beads shall be fabricated of [vinyl] [galvanized 0.70 mm 0.0276 inch thick steel] [13] [19] mm [1/2] [3/4] inch depth, [25] [50] mm [1] [2] inch wide expansion wings, front edge of face flange shaved for intended use, back slightly arched to provide a spring effect.

#### 2.5.10 Control Joints

Control joints shall be designed for expansion and contraction of plaster work due to thermal exposure. Control joints shall be fabricated of [vinyl] [0.55 mm 0.0217 inch thick galvanized steel for interior applications] [or] [0.76 mm 0.030 inch thick zinc alloy for exterior applications], with perforated or expanded-metal wings.

#### 2.5.11 Reveal Molding

Reveal moldings shall be fabricated of [aluminum] [vinyl] [galvanized steel] [or] [zinc]. Reveal molding shall be size and shape as shown.

#### 2.5.12 Raidused Column Trim

Raidused column moldings shall be fabricated of aluminum and shall be shape and sizes as shown.

#### 2.5.13 Screws

Self-drill steel screws shall conform to ASTM C 1002. Screws shall be [Type S for use with steel framing] [and] [Type W for use with wood members].

### 2.6 METAL LATH

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NOTE: Where lath is to be used over solid backing,  
self-furring crimps will provide 6 mm (1/4 in)  
projection from solid backing. Use lath with  
backing for stud construction.  
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#### 2.6.1 Expanded Metal Lath

Expanded metal lath shall conform to ASTM C 847. Lath shall be [flat base lath] [self-furring lath] [flat rib lath] [rib lath], expanded from cold-rolled carbon sheet steel of commercial quality, coated with rust-inhibitive paint after fabrication, 1.8 kg/square meter 3.4 pounds/square yard, [with backing] [without backing].

#### 2.6.2 Welded Wire Lath

Welded wire lath shall conform to ASTM C 933. Lath shall be [flat base] [self-furring] type, fabricated from not less than 1.6 mm 0.0625 inch

copper-bearing, cold-drawn, galvanized steel wire, [with backing] [without backing].

#### 2.6.3 Woven Wire Lath

Woven wire lath shall conform to **ASTM C 1032**. Lath shall be [flat base] [self-furring] type [with stiffeners] [without stiffeners], [with backing] [without backing] fabricated from copper-bearing, cold-drawn, galvanized steel wire not less than **1.40 mm 0.0548 inch** thick, with openings not to exceed **50 x 50 mm 2 x 2 inch** welded.

### 2.7 GYPSUM LATH AND VENEER PLASTER BASE

#### 2.7.1 Gypsum Lath

Gypsum lath shall conform to **ASTM C 37/C 37M**. Lath shall be [plain] [aluminum foil backed] [Type X] [lead-backed for control of X-ray transmission] designed to be used as a base for gypsum plaster.

#### 2.7.2 Veneer Plaster Base

Veneer plaster base shall conform to **ASTM C 588/C 588M**. Base shall be [aluminum foil backed] [Type X], and shall be designed to be used as a base for gypsum veneer plaster.

### 2.8 GYPSUM PLASTER

#### 2.8.1 Ready-Mixed Gypsum Plaster

[Ready-mixed plaster for use over gypsum or metal lath shall conform to **ASTM C 28/C 28M** for the following: ready-mixed plaster with vermiculite aggregate; ready-mixed plaster with perlite aggregates; ready-mixed plaster with sand aggregate.] [Ready-mixed gypsum plaster for use over masonry bases shall conform to **ASTM C 28/C 28M** for plaster with vermiculite aggregate.] [Ready-mixed plaster for use over veneer plaster bases shall conform to **ASTM C 587**.]

#### 2.8.2 Gypsum Neat Plaster

Gypsum neat plaster shall conform to **ASTM C 28/C 28M**.

#### 2.8.3 Gypsum Wood-Fibered Plaster

Gypsum wood-fibered plaster shall conform to **ASTM C 28/C 28M**.

#### 2.8.4 Gypsum Gauging Plaster for Finish Coats

Gypsum gauging plaster shall conform to **ASTM C 28/C 28M**. Keene's quick-set cement for finish coats shall conform to **ASTM C 61/C 61M**.

### 2.9 CEMENT PLASTER MATERIALS

#### 2.9.1 Portland Cement

Portland cement shall conform to **ASTM C 150**, [gray portland cement Type [I], [II], [III]] [white portland cement Type [I] [II]] with **13 mm 1/2 inch** chopped alkali-resistant fiberglass strands or polypropylene fibers, minimum **680 g 1-1/2 pounds** per sack of cement.

### 2.9.2 Aggregates

The unit weight of aggregates shall be determined in accordance with **ASTM C 29/C 29M**. Gypsum aggregates shall conform to **ASTM C 35**. Portland cement based plaster aggregates shall conform to **ASTM C 897**, except that the gradation of natural or manufactured sand for portland-cement plaster shall be as follows:

Sieve Size (mm)	Sand, Percentage by Weight Retained on Each Sieve	
	Maximum	Minimum
4.75	0	--
2.36	8	2
1.18	38	22
0.60	78	52
0.30	97	65
0.15	100	97

  

Sieve Size (inches)	Sand, Percentage by Weight Retained on Each Sieve	
	Maximum	Minimum
4	0	--
8	8	2
16	38	22
30	78	52
50	97	65
100	100	97

### 2.9.3 Water

Water shall be clean, fresh, potable, and free from injurious amounts of oils, acids, alkalis and organic matter injurious to the plaster and to any metal in the system.

### 2.9.4 Lime

Lime shall conform to **ASTM C 206**, [Type N-Normal hydrated finishing lime] [Type S-Special hydrated finishing lime] suitable for use in scratch brown and finish coats of portland-cement plaster.

### 2.10 WALL OPENING FRAMES

Steel frames for wall openings for doors, pass-through openings, and access

panels shall be as specified in Section 08 11 13 STEEL DOORS AND FRAMES or Section 05 50 00 METAL: MISCELLANEOUS AND FABRICATIONS. Wood frames, wood bucks, and blocking for wall openings for doors, pass-through openings, and access panels shall be as specified in Section 06 10 00 ROUGH CARPENTRY.

## PART 3 EXECUTION

### 3.1 PREPARATION

Project conditions shall be verified as ready to receive the work. Field measurements shall be verified for compliance with approved detail drawings and manufacturer's published recommendations. Beginning of installation means installer accepts existing conditions.

### 3.2 SUSPENDED CEILING FRAMING INSTALLATION

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NOTE: When the spacing of steel construction members, including bar joists, does not permit the use of the specified attached ceiling channel spacing or suspended ceiling hanger spacing, intermediate members and connections will be made a part of the structural design and shown on the drawings. An attached or suspended ceiling occurring under steel roof-deck construction will be supported from the structural members, and the intermediate members and connections will be made a part of the structural design and shown on drawings. Applicable subparagraphs will be deleted when suspended ceilings are not specified.

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Suspended system shall be installed in accordance with ASTM C 841. Where channels are spliced, the ends shall be overlapped not less than 300 mm 12 inches for 38 mm 1-1/2 inch channels and not less than 200 mm 8 inches for 19 mm 3/4 inch channels with flanges of channels interlocked and securely tied near each end of the splice with two loops of the tie wire. Splices shall be staggered.

#### 3.2.1 Hangers

Wire or strap hangers shall be attached to structural members in accordance with ASTM C 841, except hangers shall be spaced not more than 1220 mm 48 inches along runner channels and 900 mm 36 inches in the other direction or 1050 mm 42 inches in both directions unless otherwise indicated or approved. Locations of hangers shall be coordinated with other work. Hangers at ends of runner channels shall be located not more than 150 mm 6 inches from wall. Hanger wire shall be looped around bottom chord of open-web steel joist or secured to structural elements with suitable fasteners. Sags or twists in the suspended system shall be adjusted. Damaged or faulty parts shall be replaced.

#### 3.2.2 Main Runners

Main runner channels shall be installed in accordance with ASTM C 841. Hanger wire shall be saddle-tied to runner channels, and the end of hanger wires shall be twisted three times around itself. Main runners shall not come in contact with abutting masonry or concrete walls and partitions. Main runners shall be located within 150 mm 6 inches of the paralleling

wall to support the ends of cross furring.

### 3.2.3 Furring Channels

Furring channels shall be spaced in accordance with [ASTM C 841](#) for the type of lath used. Furring channels shall be securely saddle-tied to the runner channels and to structural supports at each crossing with tie wire, hairpin clips, or equivalent clips or fastenings. Furring channels shall be located within [50 mm 2 inches](#) of parallel walls and beams, and [13 mm 1/2 inch](#) from abutting walls. When gypsum lath is used on ceilings, hat-shaped sheetmetal furring channels may be used in lieu of [19 mm 3/4 inch](#) rolled steel furring channels. Gypsum lath shall be screw-applied at [200 mm 8 inches](#) on centers along supports and not less than [10 mm 3/8 inch](#) from edges of lath.

### 3.2.4 Light Fixtures and Air Diffusers

Light fixtures and air diffusers shall be supported directly from suspended ceiling runners. Wires shall be provided at appropriate locations to carry the weight of recessed or surface mounted light fixtures and air diffusers.

## 3.3 FURRED CEILING FRAMING INSTALLATION

Ceiling runners at continuous furred ceilings shall be applied directly to furring channels and secured thereto with tie wire, bolts, or screws at not more than [600 mm 24 inch](#) centers.

## 3.4 WALL FRAMING INSTALLATION

### 3.4.1 Loadbearing Wall Framing

Load-bearing steel studs shall be spaced for the type of lath used at external corners, partition ends, and approximately [50 mm 2 inches](#) each side of internal corners. Floor and ceiling runners shall be firmly secured to structural members with screws or bolts in expansion shields, hard-tempered stub nails, powder-actuated anchors, or by other approved methods at not more than [600 mm 24 inch](#) centers. Studs shall be attached to runner tracks with rivets or screws. Runner to tracks shall be aligned to partition layout at floor and ceiling, and shall be secured to concrete slabs with minimum [22 mm 7/8 inch](#) powder-driven pins or [19 mm 3/4 inch](#) concrete stub nails at no more than [1200 mm 48 inches](#) on centers. Each stud shall be aligned, plumb and true to top and bottom runner tracks.

### 3.4.2 Non-Loadbearing Wall Framing

Nonload-bearing steel studs shall be installed in accordance with [ASTM C 754](#) with spacings as indicated in [ASTM C 841](#) for the type of lath used. Studs shall be aligned and secure in top and bottom runners at spacings indicated on drawings. [One] [Two] beads of acoustic sealant shall be placed between runners and substrate to achieve the required air seal. Stud splicing is not acceptable. Corners shall be constructed with a minimum of three studs. Stud framing system shall be braced and made rigid.

### 3.4.3 Adjoining Walls and Columns

Studs which adjoin walls or columns shall be secured near the top and bottom, and at least one intermediate point, but not more than [1.5 m 5 feet](#) on centers, with wire inserts, dovetail anchors, toggle bolts, or bolts set in expansion shields.

#### 3.4.4 Wall Bracing

Partitions more than 3 m 10 feet long or 2.7 m 9 feet high shall be braced with 19 mm 3/4 inch steel channel stiffeners concealed horizontally. Stiffeners shall be spaced vertically not more than 2 m 6 feet and shall be secured to each stud. Unsupported partitions 6 m 20 feet or more in height shall be braced with 38 mm 1-1/2 inch channel type horizontal stiffeners.

#### 3.4.5 Corners and Intersection

Corners and intersections of partitions shall be formed of three studs. Studs at internal corners shall be placed not more than 50 mm 2 inches from partition intersection.

#### 3.4.6 Wall Openings

One loadbearing metal stud shall be installed at each jamb of door openings continuous from floor to ceiling, and shall be welded to jamb anchors and runner tracks. Jack studs shall be attached to runner track on interior of head of frame, and to runner track or 19 mm 3/4 inch channel at ceiling. A 19 mm 3/4 inch channel reinforcement shall be placed inside the partition 150 to 200 mm 6 to 8 inches above door openings continuously through two stud spaces on each side of jambs, and welded to the flange. Studs shall be doubled at wall openings, with not more than 50 mm 2 inches each side of openings. Stud placement shall be coordinated with supports and attachments. Intermediate studs above and below openings shall be secured at same spacing as wall studs. Stud framing shall extend to ceiling or through ceiling as indicated on drawings. Clearance shall be maintained between partition and structure to avoid deflection transfer to studs of partitions which extend through ceiling to structure. Placement of insulation in stud spaces shall be made inaccessible after studs are installed.

#### 3.4.7 Bucks, Anchors and Blocking

Installation of bucks, anchors, and blocking shall be coordinated with electrical and mechanical work to be placed in or behind stud framing, and shall be coordinated with blocking requirements for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware and similar items scheduled for installation.

### 3.5 WALL FURRING INSTALLATION

Metal furring shall be installed in accordance with ASTM C 754 and ASTM C 841.

### 3.6 SINGLE/DOUBLE CHANNEL, AND STUDLESS SOLID PARTITION INSTALLATION

Channel studs for single channel and double channel stud partitions shall be spaced 400 mm 16 inches on centers and shall be secured to ceiling runners and to floor runners or base clips with wire ties or sheet-metal screws. Studs on each side of door openings shall be doubled and stiffened with a 6 x 25 mm 1/4 x 1 inch flat steel strut, shop-coated with rust-inhibiting paint. Ends of struts shall be bent and punched for bolting to floor and ceiling construction. Where rib metal lath is the plaster base in continuous lengths from ceiling runners to floor runners for partitions less than 3 m 10 feet in height, steel channel studs may be excluded from the partition except at locations previously specified for

door openings. Rib lath shall be firmly attached to ceiling runner tracks or cornerite and to floor runner track or base by wire ties located not more than 200 mm 8 inches on centers. Studless rib lath partitions shall be limited to not less than 50 mm 2 inches thick. Partitions shall be as shown.

### 3.7 LATHING INSTALLATION

#### 3.7.1 Metal Lath on Vertical Surfaces

Metal lath shall be applied with the long dimension across the supports, with true even surfaces, and without sags or buckles in accordance with ASTM C 841. Metal lath on vertical surfaces shall be oriented to provide maximum mechanical bond with plaster and the upper sheet shall be attached to overlap the lower sheet. When paper-backed lath is used, the upper sheet shall be attached to overlap the lower sheet. The lath shall be secured to supports at intervals not exceeding 150 mm 6 inches. Nails or staples shall be used for securing lath to wood supports. Tie wires, rings, clips, or other approved fasteners having equivalent holding power of the tie wires shall be used for securing the plaster base to metal supports and to concrete or masonry. Side-laps or junction of sides of plaster base shall be tied or otherwise secured at intervals not exceeding 225 mm 9 inches between supports, in addition to being secured to supports.

#### 3.7.2 Metal Lath on Ceilings

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NOTE: Unrestrained ceilings and control joints will be shown on the drawings. Control joints in plasterwork will be indicated to continue control joints in structural frame and to divide plastered areas into not more than 13 square meters (144 square feet) for portland-cement plaster and 230 square meters (2500 square feet) for gypsum. Interval between joints shall be no more than 4 meters (12 feet) for portland-cement plaster and 15 meters (50 feet) for gypsum plaster. Unrestrained ceiling design will be mandatory when total ceiling area exceeds interval limitations outlined above. Information in brackets not applicable will be deleted and brackets removed from applicable information.

Provisions will be included for sealing edges of unrestrained ceilings in sanitary areas having medical, dental and food preparation facilities. Appropriate details from TM 5-805-6, will be shown on the drawings.

\*\*\*\*\*

Metal lath on ceilings shall be in accordance with ASTM C 841. [Lath on unrestrained ceilings shall not be turned down at junction with wall or tied to wall lath or furring.] [Lath on restrained ceilings shall be turned down at junction with wall, or shall be applied to cornerite or corner bead.]

#### 3.7.3 Side and End Laps

Side and end laps of metal plaster bases shall be performed in accordance

with ASTM C 841 for flat lath and ribbed lath.

#### 3.7.4 Chases and Recesses

Chases and recesses shall be lathed for plastering. Openings over 300 mm 12 inches wide shall be bridged with furring channels spaced 300 mm 12 inches on centers. Openings 300 mm 12 inches wide and less do not need to be bridged. Lath shall extend 75 mm 3 inches beyond the edges of opening. Lath shall be securely fastened by nailing or tying. Lath shall be securely fastened with nails, screws or wire ties.

#### 3.7.5 Installation of Gypsum Lath

Gypsum lath shall be installed in accordance with ASTM C 841. Spring clips or floating-wall-type attachment may be used in lieu of nails. Lath shall be cut and fitted to allow slight clearance around openings. Horizontal or vertical joints are not acceptable at corners of openings. End joints shall be made over supports. Where clip systems are approved, end joints shall be staggered in alternate courses. End joints shall not coincide with ceiling joints, and shall not occur in the same course on opposite side of support. Internal corners shall be reinforced with cornerites, and external corners shall be reinforced with corner beads. Internal corners of unrestrained ceilings shall not be reinforced with cornerites.

#### 3.8 INSTALLATION OF GYPSUM BASE TO RECEIVE VENEER PLASTER

Gypsum base shall be installed in accordance with ASTM C 844. Base shall be cut and fitted to allow slight clearance around openings. Horizontal or vertical joints are not acceptable at corners of openings. End joints shall be made over supports. Where clip systems are approved, end joints shall be staggered in alternate courses. End joints shall not coincide with ceiling joints, and shall not occur in the same course on opposite side of support. Internal corners shall be reinforced with cornerites, and external corners shall be reinforced with corner beads. Internal corners of unrestrained ceilings shall not be reinforced with cornerites.

#### 3.9 OPENINGS

Reinforcement shall be provided at corners of openings in plastered areas extending 300 mm 12 inches or more in any dimension by securing striplath diagonally at corners. Striplath shall be at least 150 mm 6 inches wide by 400 mm 16 inches long. Shorter lengths shall be used to preclude lapping striplath. Striplath shall be secured to lathing without extending fastenings into or around supporting members. Where plaster is applied directly to concrete or masonry surfaces, striplath shall be secured to the concrete or masonry.

##### 3.9.1 Steel Frames

Steel frames shall be securely attached through built-in anchors to the nearest stud on each side of opening with tie wire, bolts, screws, or welding or bracing where bracing is specified. Steel frames shall be grouted solid with plaster grout and a groove shall be formed within the frame returns to receive lath and plaster.

##### 3.9.2 Wood Frames

Wood frames shall be securely attached to the nearest stud in frame partitions and to wood bucks built into the solid partition. Sizes shall

be as indicated for each type and size of wall or partition.

#### 3.9.3 Ceiling Openings

Framing shall be provided for ceiling openings and supplemental supporting members for items mounted in ceiling or attached to ceiling suspension system. Frames for openings shall be secured to lath support members. Frames provided with expanded metal flanges shall be secured to lath. Intermediate structural members shall be provided for attachment or suspension of support members.

#### 3.9.4 Openings in Hollow Partitions

Hollow partition door openings shall be additionally braced by tying together each set of double-jamb studs with not less than four solid metal column clips evenly spaced along each jamb.

#### 3.9.5 Openings in Partitions Not To Structure

Partitions not extending to the structural ceiling or structural supports or frame shall be strengthened at openings with angle bracing from each jamb location anchored to the structural ceiling or supports.

#### 3.9.6 Cross Bracing

Cross bracing between partitions or similar bracing may be substituted for angle bracing as approved. Minor frames such as those required for access panels may be provided with expanded metal flanges which shall be attached to lath.

### 3.10 INSTALLATION OF TRIM, MOLDINGS, AND ACCESSORIES

Trim, moldings, and accessories shall be installed in standard lengths level and plumb to straight lines and as indicated on drawings. Fastenings shall be spaced not over 300 mm 12 inches on centers for single-flanged accessories and not over 600 mm 24 inches on centers on each flange of double-flanged accessories. Items shall be mitered or coped at corners, or prefabricated corners shall be used. Joints in straight runs shall be formed with splice or tie plates.

#### 3.10.1 Base Screeds

Base screeds shall be installed approximately 75 mm 3 inches above finished floor elevation unless indicated otherwise.

#### 3.10.2 Corner Beads

Corner beads shall be installed in standard lengths at external plastered corners, and shall be secured to furring members or supports.

#### 3.10.3 Cornerites

Cornerites shall be installed at internal angles formed by abutting surfaces of gypsum lath or metal lath not turned down at horizontal corners or returned around vertical corners. Cornerites shall be secured to lathed surfaces. Cornerites shall be secured to concrete or masonry where plaster is applied directly to concrete or masonry surfaces. Cornerites shall not be installed at unrestrained ceilings.

#### 3.10.4 Casing Beads

Casing beads shall be installed at the joints of dissimilar base materials in the same plane and at exposed edges of plaster including junctions of walls and ceilings except that beads shall not be installed at restrained ceilings abutting plastered surfaces. At the perimeter of unrestrained suspended ceilings, the casing bead shall be secured to the ceiling to provide a 10 mm 3/8 inch opening between the abutting surfaces. The opening shall be sealed prior to plastering with sealant as specified in Section 07 92 00 JOINT SEALANTS.

#### 3.10.5 Expansion and Control Joint Beads

Expansion joint beads shall be installed as control joints in plasterwork at the locations indicated. Plaster base shall not be run continuous through control joints. Additional supports shall be installed as required to support the beads.

#### 3.10.6 Trim

Trim shall be installed where indicated and as required to complete the plaster work.

### 3.11 PLASTER THICKNESS AND SURFACE EVENNESS

Plaster thickness and surface evenness shall be controlled by grounds or screeds of metal, wood, or plaster. Wood grounds are specified under Section 06 10 00 ROUGH CARPENTRY. Plaster thickness shall be as shown.

#### 3.11.1 Grounds and Screeds

Grounds shall be used for securing trim items, and for finished corners and terminations. Screeds shall be installed for base screeds when wood or metal grounds are not required. Temporary screeds shall be installed when permanent screeds or grounds cannot be used. On completion of approved base coats, temporary screeds shall be removed and voids immediately filled with plaster.

#### 3.11.2 Plaster Screeds

Plaster screeds shall be used within the plastered areas to supplement wood and metal grounds and screeds.

### 3.12 PLASTER GROUT

Plaster grout shall be scratch-coat material mixed to a non-fluid consistency. Plaster grout shall be used to fill steel door frames and partition bases. Grout shall be placed and grooved prior to gypsum lathing operations. Heads and jambs of frames shall be filled solid with grout, and 13 mm 1/2 inch deep grooves shall be formed in the grout, while plastic, to receive gypsum lath.

### 3.13 PROPORTIONS AND MIXING

#### 3.13.1 Portland Cement Plaster Base Coat

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NOTE: Select base coat L or C from table 2 of ASTM  
C 926. Specify base coat L for general use and for

aesthetic finish, and base coat C for optimum impact resistance.

\*\*\*\*\*

Base coat shall be proportioned and mixed in accordance with ASTM C 926 coat [L] [C].

### 3.13.2 Lime-Putty Finish

Lime-putty finish shall be mixed in the proportion of 1 part of gypsum gauging plaster, calcined gypsum, to 3 parts of lime putty by volume. The mix shall be approximately equivalent to one 45 kg 100 pound bag of gypsum plaster to four 23 kg 50 pound bags of hydrated lime or 0.13 cubic meters 4.5 cubic feet of lime putty or 0.13 cubic meters 35 gallons of lime putty.

Perlite or vermiculite aggregated base coats shall have 23 kg 50 pounds of fine white sand or 0.014 cubic meters 1/2 cubic foot of perlite fines added for each 45 kg 100 pounds of gauging plaster.

### 3.13.3 Prepared-Gypsum Finish

Prepared-gypsum finish shall be mixed with water to the proper consistency in accordance with manufacturer's published instructions. Prepared-gypsum finish shall have a minimum compressive strength of not less than 2 MPa 300 psi when tested in accordance with ASTM C 472. Prepared gypsum finish shall be used only over sanded base coats.

### 3.13.4 Keene's Cement Finish

Keene's cement finish shall be mixed in the proportions of 45 kg 100 pounds of Keene's cement to 11 kg 25 pounds, dry weight, of hydrated lime. The mix shall be approximately equivalent to one 45 kg 100 pound bag of Keene's cement to one-half 23 kg 50 pound bag of hydrated lime or 23 kg 50 pounds lime putty or 0.017 cubic meters 4-1/2 gallons lime putty. Subject to approval, 5 kg 10 pounds of fine white sand may be added to the above mix. When mixing mechanically, the water shall be put into the mixer first, then the lime, the white sand if used, and finally the Keene's cement.

### 3.13.5 High-Strength Gypsum Finish

High-strength gypsum finish shall be mixed by dry weights in proportions of 45 kg 100 pounds of high-strength gypsum gauging plaster to 45 kg 100 pounds of hydrated lime or 90 kg 200 pounds of lime putty. Gypsum gauging plaster for high-strength finish coat shall be mixed with lime putty in accordance with ASTM C 28/C 28M. Gauging plaster shall have a compressive strength not less than 21 MPa 3000 psi when tested in accordance with ASTM C 472. Factory-mixed gypsum finishing plasters shall equal or exceed the performance requirements of job-mixed finishing plasters.

### 3.13.6 Portland Cement-Plaster Finish

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NOTE: Select finish coat from table 3 of ASTM C 926. Use finish coat FL for general use, and finish coat F for abrasion resistance.

\*\*\*\*\*

The finish coat shall be proportioned and mixed in accordance with ASTM C 926, coat [FL] [F].

### 3.14 MACHINE APPLICATION

A plastering machine may be used for the application of scratch and brown coats. Plaster for machine application shall be a special plaster compounded and packaged by the manufacturer for this purpose. Slump cone equipment shall be present on the jobsite when base-coat plastering begins, and until completion. Testing of the mix shall be the responsibility of the Contractor, but equipment shall be available for use by the Government.

Additional water shall not be added to the mix to allow pumping through extended hose lines to the plastering nozzle. The amount of water added to each batch of plaster shall be that quantity which results in a plaster slump of not more than 75 mm 3 inches for gypsum and 65 mm 2-1/2 inches for portland cement using a standard plaster slump cone or 150 mm 6 inches for gypsum and 125 mm 5 inches for portland cement using a concrete slump cone.

Application of plaster shall conform to the provisions of ASTM C 842.

### 3.15 QUALITY CONTROL

Fluidity or stiffness of plaster shall be tested with a standard 50 x 100 x 150 mm 2 x 4 x 6 inch plaster slump testing cone or by a 100 x 200 x 300 mm 4 x 8 x 12 inch concrete slump testing cone. Method of making slump test shall be as follows:

- a. Place cone on center of dry base plate located on a level, firm surface. Hold cone tightly against plate.
- b. Fill the cone with plaster obtained from the hose or nozzle, without air on the nozzle, puddling with tamping rod during the operation to eliminate air bubbles or voids.
- c. Screed plaster level with top of cone.
- d. Lift cone straight up from base plate in a slow and uniform motion, and place it on the base plate next to plaster sample.
- e. Lay a straightedge across top of cone, being careful not to disturb or jostle the plate, and measure the slump in mm inches from the bottom of the straightedge to the top of the plaster sample.

### 3.16 APPLICATION OF FINISHES

The finish coat may be omitted back of projecting bases, wainscots, structural-glass wall finish, cabinets, chalkboards, tackboards, bulletin boards, acoustic treatments, fixed equipment, and other locations where indicated. Finish coats shall not be applied above wainscots until wainscots have been installed. Plaster shall have a [[smooth-trowel] [texture] finish] [finish as shown].

#### 3.16.1 Interior Gypsum Plaster

Application of interior gypsum plaster (full thick) shall be in accordance with ASTM C 842. Nominal plaster thickness shall be [as shown] [\_\_\_\_\_] mm inches].

#### 3.16.2 Gypsum Veneer Plaster

Application of gypsum veneer plaster shall be in accordance with ASTM C 843. Plaster shall be [[one-component system] [two-component system]] [system

as shown].

#### 3.16.3 Lime-Putty Finish

Lime-putty finish shall be applied over gypsum plaster base coats in accordance with ASTM C 842. The finish coat shall be 1.5 to 3 mm 1/16 to 1/8 inch thick and troweled smooth and free from blemishes.

#### 3.16.4 Prepared-Gypsum Finish

Prepared-gypsum finish may be used in lieu of lime-putty finish, and shall be applied in accordance with the manufacturer's printed directions.

#### 3.16.5 Keene's Cement Finish and High Strength Gypsum-Plaster Finish

Keene's cement finish and high-strength gypsum-plaster finish shall be applied in accordance with ASTM C 842. Where indicated on the finish schedule, either may be used at the Contractor's option. Neither finish shall be used over lightweight-aggregate-plaster or portland-cement-plaster base coats. The finish coat shall be 1.5 to 3 mm 1/16 to 1/8 inch thick, and troweled smooth and free from blemishes and irregularities.

#### 3.16.6 Portland Cement-Based Plaster

[Two-coat] [Three-coat] portland cement-based plaster shall be applied in accordance with ASTM C 926. The final coat shall be finished to a true and even surface free from rough areas, checks, or blemishes. Nominal plaster finish thickness shall be [as shown] [\_\_\_\_\_] mm inches].

#### 3.17 PATCHING

Plaster showing oversanding, cracks, blisters, pits, checks, discoloration or other defects is not acceptable. Defective plaster work shall be removed and replaced with new plaster at the expense of Contractor. Patching of defective work will be permitted only when approved by the Contracting Officer. Patching shall match existing work in texture and color.

#### 3.18 SAMPLES OF COMPLETED WORK

Samples of completed work may be taken by the Contracting Officer at any time for laboratory inspection and tests to determine conformance.

-- End of Section --