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**USACE / NAVFAC / AFCEC** **UFGS-09 22 00 (August 2024)**

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**Preparing Activity: NAVFAC** **Superseding**
**UFGS-09 22 00 (February 2010)**

**UNIFIED FACILITIES GUIDE SPECIFICATIONS**

**References are in agreement with UMRL dated January 2025**
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SUPPORTS FOR PLASTER AND GYPSUM BOARD

**08/24**

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SECTION 09 22 00

SUPPORTS FOR PLASTER AND GYPSUM BOARD
**08/24**

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**NOTE: This guide specification covers the requirements for non-load bearing cold-formed metal framing, furring, and ceiling suspension systems for the attachment of lath, plaster, stucco, and wallboard. This Section should only be used when partition heights are less than or equal to 4.6 m 15 feet, when lateral partition loads are less than or equal to 24.41 kgf/m$^2$ 5 psf, and when lateral support at the top of the wall has been specifically detailed in the drawings.**

**Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable item(s) or insert appropriate information.**

**Remove information and requirements not required in respective project, whether or not brackets are present.**

**Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).**

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**NOTE: Load bearing cold-formed steel framing is included in Section 05 40 00 COLD-FORMED METAL FRAMING. Metal suspension systems for acoustical ceilings are included in Section 09 51 00 ACOUSTICAL CEILINGS.**

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**NOTE: On the drawings, show:**

**1. Locations of each type of metal framing, furring, or suspension system.**

**2. Spacing and gauge of members if other than those required by referenced publication.**

**3. Seismic restraint for projects located in seismic zone 2, 3, or 4, in accordance with AISC 341 and UFC 3-301-01, "Structural Engineering".**

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PART 1 GENERAL

1.1 REFERENCES

**********

**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 Reference Identifier (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.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

| | |
|---|---|
| AISC 341 | (2016) Seismic Provisions for Structural Steel Buildings |

AMERICAN IRON AND STEEL INSTITUTE (AISI)

| | |
|---|---|
| AISI S220 | (2020) North American Standard for Cold-Formed Steel Nonstructural Framing |

ASTM INTERNATIONAL (ASTM)

| | |
|---|---|
| ASTM A653/A653M | (2023) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process |
| ASTM C635/C635M | (2022) Standard Specification for |

| | |
|---|---|
| | Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings |
| ASTM C754 | (2020) Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products |
| ASTM C841 | (2023) Installation of Interior Lathing and Furring |
| ASTM C847 | (2018; R 2024) Standard Specification for Metal Lath |

ICC EVALUATION SERVICE, INC. (ICC-ES)

| | |
|---|---|
| ICC-ES AC98 | (2021) Accreditation Criteria for Inspection Agencies |

U.S. DEPARTMENT OF DEFENSE (DOD)

| | |
|---|---|
| UFC 3-301-01 | (2023; with Change 2, 2024) Structural Engineering |

UL SOLUTIONS (UL)

| | |
|---|---|
| UL Fire Resistance | (2014) Fire Resistance Directory |

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, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified those items that require Government approval, due to their complexity or criticality, with a "G." Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item if the submittal is sufficiently important or complex in context of the project.**

**For Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters 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 and Air Force projects.**

**The "S" classification indicates submittals required as proof of compliance for sustainability Guiding**

**Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.**

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Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval. Submittals not having a "G" or "S" classification are for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

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**NOTE: Require drawings only for projects where complexity or quantity make it feasible.**

**********

Metal Support Systems; G, [_____]

SD-03 Product Data

Metal Support Systems

Recycled Content for Metal Support Systems; S

1.2.1 Sustainable Design Submittals

a. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.

b. Environmental Product Declaration (EPD): For each product.

c. Construction and Demolition Waste Management: For each product.

d. Health Product Declaration (HPD): Provide documentation confirming product compliance with one of the following:

(1) Option 1: Material Ingredient Reporting: Use at least 20 different permanently installed products from at least five different manufacturers that use one of the qualifying programs to demonstrate the chemical inventory of the product to at least 0.1 percent (1000 ppm).

(2) Option 2: Material Ingredient Optimization: Use products that have a compliant material ingredient optimization report or action plan. Use at least five permanently installed products sourced from at least three different manufacturers.

SD-04 Evaluation Reports: Submit evaluation reports certified under an independent third-party inspection program administered by an agency accredited by IAS to ICC-ES AC98 accreditation criteria for inspection agencies.

1.3 DELIVERY, STORAGE, AND HANDLING

Deliver materials to the job site and store in ventilated dry locations

permitting easy access for inspection and handling. If materials are stored outdoors, stack materials off the ground, supported on a level platform, and fully protected from the weather. Handle materials carefully to prevent damage. Remove damaged items and provide new items.

## PART 2 PRODUCTS

### 2.1 MATERIALS

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**NOTE: The use of manufacturers standard EQ coating is acceptable. Provide G-90 galvanized coating, or equivalent, in high-humidity environments.**
**********

Provide steel materials for metal support systems with either a EQ (Equivalent Coating) coating or a galvanized coating AISI S220[ G-40] G-60[ G-90] or equivalent; aluminum coating T1-25; or a 55-percent aluminum-zinc coating AZ50.[ Provide support systems and attachments in accordance with[ AISC 341] [_____][ UFC 3-301-01, "Structural Engineering"] in seismic zones.]

**********
**NOTE: Use materials with recycled content where appropriate for use. Verify suitability, availability within the region, cost effectiveness and adequate competition before specifying product recycled content requirements.**
**********

Provide metal support systems containing a minimum of 20 percent recycled content. Provide data identifying percentage of recycled content for metal support systems.

#### 2.1.1 Materials for Attachment of Lath

##### 2.1.1.1 Suspended and Furred Ceiling Systems and Wall Furring

ASTM C841 and ASTM C847.

##### 2.1.1.2 Non-load Bearing Wall Framing

AISI S220.

#### 2.1.2 Materials for Attachment of Gypsum Wallboard

##### 2.1.2.1 Suspended and Furred Ceiling Systems

AISI S220.

##### 2.1.2.2 Non-load Bearing Wall Framing and Furring

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**NOTE: Minimum thickness of 0.45 mm 0.0179 inch (25 gauge) is standard for interior non-load bearing studs without supporting attached loads. Choose the second option of 0.85 mm 0.0329 inch (20 gauge) thickness for medical, dental, or other building types requiring large quantities of wall supported**

**cabinet work and equipment throughout the facility.**
**********

a. Framing Members, General: Comply with AISI S220 for conditions indicated.

   (1) Steel Sheet Components: Comply with AISI S220 requirements for metal unless otherwise indicated.

   (2) Protective Coating: AISI S220, provide EQ (Equivalent Coating) coating, galvanized coating G-60 or equivalent. G40 or coating with equivalent corrosion resistance of G40 [_____]. Provide G-90 coating in high-humidity environments.

b. Studs and Runners: AISI S220. Use either steel studs and runners or embossed steel studs and runners.

c. AISI S220, but not thinner than[ 0.45 mm 0.0179 inch thickness, with 0.85 mm 0.0329 inch minimum thickness supporting wall hung items such as cabinetwork, equipment and fixtures][ 0.85 mm 0.0329 inch thickness].

d. Slip-Type Head Joints: Where indicated, provide one of the following:

   (1) Slotted Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

   (2) Clip System: Clips designed for use in head-of-wall deflection conditions that provide a positive attachment of studs to tracks while allowing[ [40][50][60] mm [1-1/2][2][2-1/2] inch] [_____] minimum vertical movement.

   (3) Single Long-Leg Track System: Top track with 50 mm 2 inch deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top track and with continuous bridging and spacer bar located within 300 mm 12 inches of the top of studs to provide lateral bracing.

e. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.

f. Backing Plate: Fire-retardant-treated wood blocking used for fixture attachment.

g. Sound Isolation Clips: Used with 0457 mm 18 mil, (25 gauge), drywall furring channels to provide acoustical separation.

h. Framed Openings: Galvanized-steel, one-piece header and jamb studs in lieu of built-up members.

i. Partial Wall Framing Connection: Stud connector designed to support out-of-plane loading of cantilevered partial wall systems that are unsupported at the top track.

j. Drywall Penetration Barrier Mesh: Supply and install security mesh, as a penetration barrier behind gypsum wallboard walls and/or ceilings, where indicated on Drawings.

2.1.2.3 Furring Structural Steel Columns

AISI S220. Steel (furring) clips and support angles listed in UL Fire Resistance may be provided in lieu of steel studs for erection of gypsum wallboard around structural steel columns.

2.1.2.4 Z-Furring Channels with Wall Insulation

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**NOTE: The depth specified for Z-furring channels should be coordinated with the R-value specified for wall insulation thickness.**
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Not lighter than 0.45 mm thick 25 gauge galvanized steel, Z-shaped, with 30 mm and 20 mm 1-1/4 inch and 3/4 inch flanges and[ [25][40][50][75] mm [1][1-1/2][2][3] inch furring depth][ depth as required by the insulation thickness provided].

2.2 SUSPENSION SYSTEMS

2.2.1 Structural Classification

a. Main Beam/ Tee is to be Fire-Rated Heavy Duty classification in accordance with ASTM C635/C635M.

b. Classification can require wires to be closer together for additional loading when used to support double layer gypsum, verticals, slopes, circles, soffits, canopies, and step conditions which call for loading or unusual designs and shapes in drywall construction.

c. Deflection of fastening suspension system supporting light fixtures, ceiling grilles, access doors, verticals and horizontal loads are to have a maximum deflection of 1/360 of the span.

2.2.2 Components

a. Main Beam/ Tee: Is to be commercial quality, cold-rolled steel, double-web construction (minimum 0.45 mm 0.0179 inch prior to protective coating, AISI S220), hot dipped galvanized (per ASTM A653/A653M) and 40 mm 1-1/2 inch high minimum with knurled face.

b. Drywall Grid Cross Tees: Are to be commercial quality, cold-rolled steel, double-web steel construction (minimum 0.45 mm 0.0179 inch prior to protective coating, AISI S220), hot dipped galvanized (minimum G40 or G90 in accordance with ASTM A653/A653M) and 40 mm 1-1/2 inch high minimum with knurled face.

c. Wall Molding/ Channel:

(1) 50 mm by 50 mm 2 inch by 2 inch, knurled surface, pre-punched holes in top flange 100 mm 4 inch on center,[ 18 mil. (25 gauge)] 33 mil (20 gauge)

(2) Locking Angle Molding, 30 mm by 30 mm 1-1/4 inch by 1-1/4 inch with pre-engineered locking tabs punched 202 mm 8 inches on center, knurled surface, screw stop hem, pre-punched holes in top flange, 101 mm 4 inch on center, 18 mil. (25 gauge)

(3) Knurled Angle molding, 30 mm by 30 mm 1-1/4 inch by 1-1/4 inch, knurled surface, screw stop hem, pre-punched holes in top flange, 100 mm 4 inch on center, 18 mil. (25 gauge)

(4) Knurled Angle molding, 40 mm by 40 mm 1-1/2 inch by 1-1/2 inch, knurled surface, screw stop hem, pre-punched holes in top flange 100 mm 4 inch on center, 18 mil. (25 gauge)

(5) Simple Curve Knurled Angle Molding, 40 mm by 40 mm 1-1/2 inch by 1-1/2 inch, knurled face radius 940 mm 37 inch, screw stop hem, pre-punched holes in top flange, 100 4 inch on center, 28 mil. (22 gauge)

d. Support Hanger:

(1) Strong Back Support Hanger

(2) Channel beam splice [150][200][250][300] mm [6][8][10][12] inch used to suspend main beams to 40 mm 1-1/2 inch black iron carrying channels.

(3) Hanger Wire 12 gauge, galvanized or as noted on drawings.

e. Accessories

(1) Radius Clip

(2) 90 Degree Drywall Angle/ Transition Clip

(3) 45 Degree Drywall Angle/ Transition Clip

(4) 30 Degree Drywall Angle/ Transition Clip

(5) Double Drywall Clip

(6) Wall Attachment Clip

(7) Splice Plate

(8) Dome Hub

(9) Close Mount Attachment clip

## PART 3 EXECUTION

### 3.1 INSTALLATION

#### 3.1.1 Systems for Attachment of Lath

##### 3.1.1.1 Suspended and Furred Ceiling Systems and Wall Furring

ASTM C841, except as indicated otherwise.

3.1.1.2 Non-load Bearing Wall Framing

ASTM C754, Installation Standard.

3.1.1.2.1 Firestop Track

Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.

3.1.1.2.2 Sound-Rated Partitions

Install framing to comply with sound-rated assembly indicated.

3.1.2 Systems for Attachment of Gypsum Wallboard

3.1.2.1 Suspended and Furred Ceiling Systems

ASTM C754, except provide framing members 400 mm 16 inches on center unless indicated otherwise.

3.1.2.2 Non-load Bearing Wall Framing and Furring

ASTM C754, except as indicated otherwise. Provide a sealer gasket under bottom of track on concrete slab or foundation.

3.1.2.3 Furring Structural Steel Columns

Install studs or galvanized steel clips and support angles for erection of gypsum wallboard around structural steel columns in accordance with the UL Fire Resistance, design number(s)[ indicated][ of the fire resistance rating indicated].

3.1.2.4 Z-Furring Channels with Wall Insulation

Install Z-furring channels vertically spaced not more than 600 mm 24 inches on center. Locate Z-furring channels at interior and exterior corners in accordance with manufacturer's printed erection instructions. Fasten furring channels to[ masonry][ and][ concrete] walls with powder-driven fasteners or hardened concrete steel nails through narrow flange of channel. Space fasteners not more than 600 mm 24 inches on center.

3.1.2.5 Firestop Tracks

In accordance with manufacturer's installation instructions, applicable building code and UL assembly.

3.1.2.6 Backing Plates

In accordance with manufacturer's installation instructions.

3.1.2.7 Framed Openings

In accordance with manufacturer's installation instructions and approved design.

3.1.2.8 Partial Wall Framing Connection

In accordance with manufacturer's installation instructions. Anchor to floor as designed by Engineer of Record. Provide a sealer gasket under

bottom of track on concrete slab or foundation.

3.1.2.9 Drywall Penetration Barrier Mesh

Per manufacturer's instructions. Installation and layout of the panels to be approved by General Contractor prior to installation, with the intent to attached panels on vertical framing members. Panels may be installed in either direction. Attachment with approved clips and threaded fasteners.

3.1.2.10 Suspension Systems

a. Install suspension system and panels in accordance with the manufacturer's instructions, in compliance with ASTM C635/C635M installation standard, and with applicable codes as required by the authorities having jurisdiction.

b. Install according to approved Pre-construction drawings recommended for complex projects. Contact your local manufacturer representative for support.

c. Drywall Grid System can be installed in interior or exterior applications.

d. Install hanger wire as required with necessary on center spacing to support expected ceiling load requirements, following local practices, codes and regulations. Provide additional wires at light fixtures, grilles, and access doors where necessary. A pigtail knot is to be used with three tight wraps at top and bottom fastening locations.

e. Main tees/ beams are to be suspended from the overhead construction with hanger wire, spaced as required for expected ceiling loads, along the length of the main beams.

f. Install cross tees at on center spacing as specified by the drywall manufacturer. Typical drywall cross tee spacing:

(1) 400 mm 16 inches on center with 15 mm or 13 mm 5/8 or 1/2 inch gypsum board.

(2) 600 mm 24 inches on center with 15 mm 5/8 inch gypsum board.

g. Use channel molding or angle molding to interface with Drywall Grid System to provide perimeter attachment or to obtain drop soffits, verticals, slopes.

3.2 ERECTION TOLERANCES

Provide framing members which will be covered by finish materials such as wallboard, plaster, or ceramic tile set in a mortar setting bed, within the following limits:

a. Layout of walls and partitions: 6 mm 1/4 inch from intended position;

b. Plates and runners: 6 mm in 2.4 meters 1/4 inch in 8 feet from a straight line;

c. Studs: 6 mm in 2.4 meters 1/4 inch in 8 feet out of plumb, not cumulative; and

d. Face of framing members: 6 mm in 2.4 meters 1/4 inch in 8 feet from a true plane.

Provide framing members which will be covered by ceramic tile set in dry-set mortar, latex-portland cement mortar, or organic adhesive within the following limits:

a. Layout of walls and partitions: 6 mm 1/4 inch;

b. Plates and runners: 3 mm in 2.4 meters 1/8 inch in 8 feet from a straight line;

c. Studs: 3 mm in 2.4 meters 1/8 inch in 8 feet out of plumb, not cumulative and must not exceed minimum fastening requirements of sheathing or other finishing materials; and

d. Face of framing members: 3 mm in 2.4 meters 1/8 inch in 8 feet from a true plane.

-- End of Section --