

**SECTION 09 22 16
NON-STRUCTURAL METAL FRAMING**

SPEC WRITER NOTES:

1. Use this section only for NCA projects.
2. Delete between //----// if not applicable to project. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs.
3. Use this section for wall framing members of 0.9 mm (0.0359-inch) thick bare metal (20 gauge) material or lighter with the exception of rolled steel channels of 1.5 mm (0.0598-inch) thick material, 50 mm (2 inches) or smaller.
4. See Section 05 40 00, COLD-FORMED METAL FRAMING for framing members 1.3 mm (0.0516-inch) thick (18 gauge) or heavier material for use as backup for masonry veneer and load bearing construction.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies steel studs wall systems, ceiling or soffit suspended or furred framing, wall furring, fasteners, and accessories for the screw attachment of gypsum board, plaster bases or other building boards.

1.2 RELATED WORK

- A. Load bearing framing: Section 05 40 00, COLD-FORMED METAL FRAMING.
- B. Support for wall mounted items: Section 05 50 00, METAL FABRICATIONS.
- C. Pull down tabs in steel decking: Section 05 36 00, COMPOSITE METAL DECKING.
- D. Ceiling suspension systems for acoustical tile or panels and lay in gypsum board panels: Section 09 51 00, ACOUSTICAL CEILINGS, Section 09 29 00, GYPSUM BOARD.

1.3 TERMINOLOGY

- A. Description of terms to be in accordance with ASTM C754, ASTM C11, ASTM C841 and as specified.
- B. Underside of Structure Overhead: In spaces where steel trusses or bar joists are shown, the underside of structure overhead is defined as the underside of the floor or roof construction supported by beams, trusses, or bar joists.

C. Thickness of steel specified is the minimum bare (uncoated) steel thickness.

1.4 SUSTAINABILITY REQUIREMENTS

A. Materials in this section may contribute towards contract compliance with sustainability requirements. See Section 01 81 11, SUSTAINABLE DESIGN REQUIREMENTS, for project // local/regional materials, // low-emitting materials, // recycled content, // _____// requirements.

1.5 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturer's Literature and Data:

- 1. Studs, runners and accessories.
- 2. Hanger inserts.
- 3. Channels (Rolled steel).
- 4. Furring channels.
- 5. Screws, clips and other fasteners.

C. Shop Drawings:

- 1. Typical ceiling suspension system.
- 2. Typical metal stud and furring construction system including details around openings and corner details.

1.6 DELIVERY, IDENTIFICATION, HANDLING AND STORAGE

A. In accordance with the requirements of ASTM C754.

1.7 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

SPEC WRITER NOTES:

- 1. Remove reference citations that do not remain in Part 2 or Part 3 of edited specification.
- 2. Verify and make dates indicated for remaining citations the most current at date of submittal; determine changes from date indicated on the TIL download of the section and modify requirements impacted by the changes.

B. American Society For Testing And Materials (ASTM):

A123/A123M-17	Zinc (Hot-dip Galvanized) Coatings on Iron and Steel Products
A641/A641M-19	Zinc-Coated (Galvanized) Carbon Steel Wire

ASTM A653/A653M-22	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process
C11-23	Terminology Relating to Gypsum and Related Building Materials and Systems
C635/C635M-22	Manufacture, Performance, and Testing of Metal Suspension System for Acoustical Tile and Lay-in Panel Ceilings
C645-18	Non-Structural Steel Framing Members
C754-20	Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products
C841-03 (2018)	Installation of Interior Lathing and Furring
C954-22	Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness

PART 2 - PRODUCTS

SPEC WRITER NOTES:

1. Make material requirements agree with applicable requirements specified in the referenced Applicable Publications. Update and specify in both only that which applies to the project.
2. When unusual loading conditions or heights are considered creating a design problem, show spacing, size, configuration and thickness of metal on drawings to identify clearly the exception.
3. Coordinate with Section 05 40 00, COLD-FORMED METAL FRAMING, for unusual loading conditions. Consult manufacturers; literature and Structural Engineer.
4. Do not use only gauges in this specification; define in minimum metric (inch) thickness.
5. Do not combine this section with Section 05 40 00, COLD-FORMED METAL FRAMING.

2.1 STEEL STUDS AND RUNNERS (TRACK)

A. Framing Members, General: Comply with ASTM C754 for conditions indicated.

1. Deflection Limit:

- a. L/240 unless otherwise noted.

- b. L/360 where Level 5 gypsum board finish is indicated, at tile backing panels, where plaster veneer is indicated, and elsewhere as indicated.
- 2. Lateral Pressure: 5.0 psf (240 Pa) unless otherwise noted.
- B. Steel Sheet Components: Comply with ASTM C645 requirements for metal, unless otherwise indicated.
- C. Protective Coating: ASTM A653, // Z120 (G40) //Z180 (G60)//, hot-dip galvanized, unless otherwise indicated.
- D. Provide not less than two cutouts in web of each stud, approximately 300 mm (12 inches) from each end, and intermediate cutouts on approximately 600 mm (24 inch) centers.
- E. Doubled studs for openings and studs for supporting concrete backer-board.
- F. Provide studs 3600 mm (12 feet) or less in length in one piece.

2.2 FURRING CHANNELS

- A. Rigid furring channels (hat shape): ASTM C645.

SPEC WRITER NOTES:

1. "Z" furring channels are for insulated walls. Web depths 25 mm, 38 mm, 50 mm, 76 mm (1, 1-1/2, 2 and 3 inches). Coordinate with drawings to indicate depth for insulation specified in Section 07 21 13, THERMAL INSULATION.

- B. "Z" Furring Channels:
 1. Not less than 0.45 mm (0.0179-inch)-thick bare metal, with 32 mm (1-1/4 inch) and 19 mm (3/4-inch) flanges.
 2. Web furring depth to suit thickness of insulation with slotted perforations.
- C. Rolled Steel Channels: ASTM C754, cold rolled; or, ASTM C841, cold rolled.

2.3 FASTENERS, CLIPS, AND OTHER METAL ACCESSORIES

- A. Conform to ASTM C754, except as otherwise specified.
- B. For fire rated construction: Type and size same as used in fire rating test.
- C. Fasteners for steel studs thicker than 0.84 mm (0.033-inch) thick. Use ASTM C954 steel drill screws of size and type recommended by the manufacturer of the material being fastened.
- D. Clips: ASTM C841 (paragraph 6.11), manufacturer's standard items. Clips used instead of tie wire must have holding power equivalent to that provided by the tie wire for the specific application.

- E. Concrete ceiling hanger inserts (anchorage for hanger wire and hanger straps): Steel, zinc-coated (galvanized), manufacturers standard items, designed to support twice the hanger loads imposed and the type of hanger used.
- F. Tie Wire and Hanger Wire:
 - 1. ASTM A641, soft temper, Class 1 coating.
 - 2. Gage (diameter) as specified in ASTM C754 or ASTM C841.
- G. Attachments for Wall Furring:
 - 1. Manufacturers standard items fabricated from zinc-coated (galvanized) steel sheet.
 - 2. For concrete or masonry walls: Metal slots with adjustable inserts or adjustable wall furring brackets. Spacers may be fabricated from 1 mm (0.0396-inch) thick galvanized steel with corrugated edges.
- H. Power Actuated Fasteners: Type and size as recommended by the manufacturer of the material being fastened.

SPEC WRITER NOTES:

- 1. Suspended ceiling systems similar to acoustical panel lay-in grid system may be used to support gypsum board, screw attached, as an option to the rigid furring channels. Use only for gypsum board ceilings screw attached. See Par. 3.6.G.

2.4 SUSPENDED CEILING SYSTEM FOR GYPSUM BOARD

- A. Conform to ASTM C635 and C754 for materials and sizes.
 - 1. Grid Suspension System for Ceilings - Contractor Option: ASTM C645, direct-hung system composed of main beams and cross-furring members that interlock.
- B. Conform to ASTM A641 for wire hangers.

2.5 COMPONENT FINISH

- A. Provide framing components with Z180 (G60) minimum per ASTM A123.

PART 3 - EXECUTION

SPEC WRITER NOTES:

- 1. Read ASTM C754, coordinate with project specification and drawing requirements.
- 2. Extend studs to underside of structure overhead for fire partitions, smoke partitions, shafts, and sound rated partitions to allow wall finishes to be carried up to the same height. No exceptions.
- 3. At existing ceilings studs may terminate at ceiling under certain

- conditions. Modify specification requirements for anchorage of top runners to suit details shown.
4. Insure partitions are fully detailed for all requirements and types.

3.1 INSTALLATION CRITERIA

- A. Examine substrates to which gypsum board assemblies attach or abut, installed hollow metal frames, cast-in-anchors, and structural framing, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this section.

3.2 INSTALLING STUDS

- A. Install studs in accordance with ASTM C754, except as otherwise shown or specified.
- B. Install runners (tracks) at floors, ceilings, and structural walls and columns where gypsum board stud assemblies abut other construction.
 1. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where otherwise indicated. Continue framing over frames of doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.
- C. Install steel studs and furring in sizes and at spacing indicated.
- D. Install steel studs so flanges point in the same direction and leading edge or end of each gypsum board panel can be attached to open (unsupported) edges of stud flanges first.
- E. Frame door openings to comply with applicable published recommendations of gypsum board manufacturer, unless otherwise indicated. Attach vertical studs at jambs with screws directly to frames or to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 1. Install two (2) studs at each jamb, unless otherwise indicated.
- F. Frame openings other than door openings to comply with details indicated or, if none indicated, as required for door openings. Install framing below sills of openings to match framing required above door heads.

3.3 INSTALLING FURRED AND SUSPENDED CEILINGS OR SOFFITS

- A. Install furred and suspended ceilings or soffits in accordance with ASTM C754 or ASTM C841 except as otherwise specified or shown for screw attached gypsum board ceilings and for plaster ceilings or soffits.

- B. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, counter splaying, or other equally effective means.
- C. Where width of ducts and other construction within ceiling plenum produces hanger spacing that interfere with the location of hangers required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads, within performance limits established by referenced standards.
- D. Secure wire hangers by looping and wire-tying, directly to structures or to inserts, eyescrews, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause them to deteriorate or otherwise fail.
- E. Install suspended steel framing components in sizes and at spacing indicated, but not less than that required by the referenced steel framing installation standard.
 - 1. Wire Hangers: 1219 mm (48 inches) o.c.
 - 2. Carrying Channels (Main Runners): 1219 mm (48 inches) o.c.
 - 3. Furring Channels (Furring Members): 406 mm (16 inches) o.c.
- F. Installation Tolerances: Install steel framing components for suspended ceilings so that cross-furring or grid suspension members are level to within 3 mm (1/8 inch) in 3.66 meters (12 feet) as measured both lengthwise on each member and transversely between parallel members.
- G. Wire-tie or clip furring members to main runners and to other structural supports as indicated.
- H. Grid Suspension System: Attach perimeter wall track or angle where grid suspension system meets vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track

3.4 TOLERANCES

- A. Fastening surface for application of subsequent materials: Not varying more than 3 mm (1/8-inch) from the layout line.
- B. Plumb and align vertical members within 3 mm (1/8-inch).
- C. Level or align ceilings within 3 mm (1/8-inch).

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