

The Steel Framing Industry Association (SFIA) is dedicated to expanding the market for cold-formed steel in construction through programs and initiatives that promote the use of cold formed steel framing as a sustainable and cost-effective solution, advocate the development and acceptance of favorable code provisions, educate members with reliable data and other critical information that is essential to effective business planning, and create a positive environment for innovation.

One of the critical aspects of obtaining quality installations is manufacturer certification and certification of installers. This guide specification provides significant quality assurance by requiring certification.

Much of the technical information in this specification maybe listed on the drawings by the SE. It is critical to coordinate this section with the structural drawings.

***Note to Specifier: The following is based on the 2018 International Building Code. Check commentary if another version of IBC governs.***

## **SECTION 092216 - NON-STRUCTURAL METAL FRAMING**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

A. Section Includes:

1. Non-Structural steel framing systems for interior partitions.
2. Suspension systems for interior ceilings and soffits.
3. Grid suspension systems for gypsum board ceilings.

B. Related Requirements:

1. Section 054000 "Cold-Formed Metal Framing" for exterior and interior structural steel framing members.
2. Section 055000 "Metal Fabrications" for miscellaneous steel shapes, masonry shelf angles, and connections used with cold-formed metal framing.

#### **1.2 PRECONSTRUCTION MEETINGS**

A. Preconstruction Conference: Conduct conference at Project site.

1. Prior to the start of the cold-formed steel framing work, and at the Contractor's direction, meet at the site and review the installation procedures and coordination with other work.
2. Include Contractor, Owner, Owners Testing and Inspection Agency, as well as any subcontractors or material technical service representatives whose work, or products, must be coordinated with the cold formed steel framing work.

#### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.

1. Manufacturers printed technical data including limiting height tables indicating products provided that comply with requirements of the drawings.
- B. Sustainable Design Submittals: Submit published documentation for each product.
  1. Provide documentation for recycled material content.
  2. Environmental Declaration (EPD): For each product.
  3. Construction and Demolition Waste Management: For each product.

**Note to Specifier: Add specific sustainability requirements as appropriate. Many attributes are manufacturer and product specific. See commentary Section 1.3 ACTION SUBMITTALS A.**

- C. Shop Drawings:
  1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
  2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

#### **1.4 INFORMATIONAL SUBMITTALS**

**Note to Specifier: These need to be coordinated with 054000.**

**Note to Specifier: See 1.5 (A&C) Quality Assurance for what is required**

- A. Product Certificates.
  1. Studs and Track.
  2. Anchor Clips.

**Note to Specifier: The following would include item 2.4 Suspension Systems H Grid Suspension System for Gypsum Board Ceilings.**

- B. Evaluation Reports: For cold-formed steel framing and accessories
  1. Products to be certified under a qualified third-party inspection program administered by an agency accredited by IAS to ICC-ES AC98 Accreditation Criteria for Inspection Agencies.
- C. Manufacturer's Certification: Submit manufacturer's certification of product compliance with codes and standards along with product literature and data sheets of specified products.
- D. Evaluation Reports: For cold-formed steel framing and accessories
  1. Products to be certified under an independent qualified third-party inspection program administered by an agency accredited by IAS to ICC-ES AC98 Accreditation Criteria for Inspection Agencies.

## 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Member in good standing of the Steel Framing Industry Association (SFIA).
- B. Provide framing members that are certified in accordance with the “Code Compliance Certification Program” implemented by the Steel Framing Industry Association (SFIA).
- C. Provide anchoring clips that are certified in accordance with the “Cold-Formed Connector Program” implemented by the Steel Framing Industry Association (SFIA).
- D. Installer Qualifications: Provide documentation that the installing contractor of the cold-formed framing system has 5 years of experience on similar work and a project specific manufacturer approval letter from steel stud manufacturer or installing contractor is recognized in Steel Framing Industry Associations (SFIA) “Contractor Certification Program”.

**Note to Specifier:** See commentary Section 1.5 Quality Assurance E. for clarification on mill certifications.

- E. Product Tests: Mill certificates or data from a qualified independent testing agency or in-house testing with calibrated test equipment, indicating steel sheet complies with requirements, including base-steel thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness. Manufacturer inclusion in the “SFIA Code Compliance Certification Program” meets this requirement.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect cold-formed steel framing from corrosion, moisture staining, deformation, and other damage during delivery, storage, and handling, as required in AISI S202 “Code of Standard Practice.”

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Provide products by Steel Framing Industry Association (SFIA) Members in good standing found at [http://www.archtest.com/certification/SFIA\\_SteelFraming\\_Intertek.aspx](http://www.archtest.com/certification/SFIA_SteelFraming_Intertek.aspx).

### 2.2 PERFORMANCE REQUIREMENTS

**Note to Specifier:** See commentary Section 2.2 PERFORMANCE REQUIREMENTS A for additional information on structural performance requirements.

- A. Structural Performance: Provide cold-formed steel framing for ceiling applications capable to withstand design loads within limits and under conditions indicated within the construction documents.
  - 1. Design Loads:

2. Horizontal Deflection: X/XXX.
- B. Fire-Resistant-rated assemblies: For fire-resistance-rated assemblies that incorporate non-structural steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 and displaying a classification label from an independent testing agency acceptable to the authority having jurisdiction.
1. Construct fire-resistance rated partitions in compliance with tested assembly requirements indicated on Drawings.
  2. Rated assemblies to be substantiated from applicable testing using proposed products, by Contractor.

### 2.3 COLD-FORMED STEEL FRAMING

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

***Note to Specifier: The above is based on the 2018 International Building Code. Check commentary if another version of IBC governs. See Commentary 2.3 COLD-FORMED STEEL FRAMING A for information.***

- B. Steel Sheet Components: Comply with AISI S220 requirements for steel unless otherwise indicated.
1. Protective Coating: Comply with AISI S220. Coatings shall have a protective coating meeting the requirements of ASTM A653/A653M, G40, or shall have a protective coating with an equivalent corrosion resistance. Galvanized products are unacceptable.
    - a. Coatings providing equivalent corrosion resistance to a G40 shall demonstrate equivalent corrosion resistance with an evaluation report acceptable to the authority having jurisdiction.
- C. Studs and Track: Comply with AISI S220. Provide manufacturers' steel studs and runners or steel studs and runners of equivalent gauge.
1. Minimum Base-Steel Thickness: As indicated in the physical properties table of the submitted manufacturers literature, and cross referenced with the appropriate height determination table to meet required performance.
  2. Depth: As Specified on the Architectural Drawings, and cross referenced with the appropriate height determination table to meet required performance.
- D. Slip-Type Head Joints: Where indicated, provide one of the following:
1. Single Long-Leg Track System: Top track with 2-inch-deep flanges (or as required) in thickness not less than indicated for studs, installed with the stud's friction fit into top track and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
  2. Double-Track System: Top track, inside track with flanges as required in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside track.

3. Slotted Deflection Track: Top track 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.
- E. Firestop Tracks: Top track 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. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
  1. Minimum Base-Steel Thickness: As indicated on Drawings.
- G. U-Channel Bridging: AISI S220 Cold-Formed Steel, 0.0538-inch minimum base-steel thickness, with minimum 1/2-inch-wide flanges.
  1. Depth: As indicated on Drawings.
  2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.0538-inch thick, galvanized steel.
- H. Furring Channels: AISI S220 Cold-Formed Steel Hat shaped channel for furring out walls.
  1. Minimum Base-Steel Thickness: [0.0179 inch] [0.0296 inch].
  2. Depth: [7/8 inch] [1-1/2 inches].
- I. Resilient Furring Channels: 1/2-inch deep, steel sheet members designed to reduce sound transmission.
- J. Z-Shaped Furring: With slotted or non-slotted web, face flange of 1-1/4 inches, wall attachment flange of 3/4 inch, minimum base-steel thickness of 0.0179 inch, and depth required to fit insulation thickness indicated.

## 2.4 SUSPENSION CEILING SYSTEMS

***Note to Specifier: Suspension systems are beyond the scope of SFIA, but are offered here as a service. Information here should be verified by manufacturer. See Commentary 2.4 for more information.***

- A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch diameter wire, or double strand of 0.048-inch diameter wire.
- B. Hanger Attachments to Concrete:
  1. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES [AC01] [AC193] [AC58] [or] [AC308] as appropriate for the substrate.
    - a. Uses: Securing hangers to structure.
    - b. Type: [Torque-controlled, expansion anchor] [torque-controlled, adhesive anchor] [or] [adhesive anchor].
    - c. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.

- d. Material for Exterior or Interior Locations and Where Stainless Steel Is Indicated: Alloy [Group 1] [Group 2] stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.
- 2. Power-Actuated Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, diameter thickness per ASTM C754 Section 6.1.1 or 6.1.2.
- D. Flat Hangers: Steel sheet, conforming to ASTM A653 per ASTM C754. Minimum width of 1.5 inch and minimum thickness of 0.048 inch.
- E. Main Carrying Channels: U-channels AISI S220 with a base-steel thickness of 0.0538 inch and minimum 1/2-inch- wide flanges.
  - 1. Depth: As Specified on the Architectural Drawings, and cross referenced with the appropriate span determination table to meet required performance.
- F. Furring Channels: AISI S220 Cold-Formed Steel Hat Shaped 7/8 inch deep.
  - 1. Minimum Base-Steel Thickness: [0.0179 inch] [0.0296 inch] [0.0329 inch].
- G. Steel Studs and Tracks: Comply with AISI S220. Provide manufacturers' steel studs and runner or steel studs and runners of equivalent gauge.
  - 1. Minimum Base-Steel Thickness: As indicated on Drawings.
  - 2. Depth: As Specified on the Architectural Drawings, and cross referenced with the appropriate span determination table to meet required performance.
- H. Grid Suspension System for Gypsum Board Ceilings: ASTM C645, direct-hung system composed of main beams and cross-furring members that interlock.

## **2.5 AUXILIARY MATERIALS**

- A. General: Provide auxiliary materials that comply with referenced installation standards.
  - 1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Isolation Strip at Exterior Walls: Provide the following:
  - 1. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8-inch thick, in width to suit steel stud size.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

**Note to Specifier:** *Delete following paragraph if SFRM is not specified.*

#### A. Coordination with Sprayed Fire-Resistive Materials:

1. Before sprayed fire-resistive materials are applied, attach offset anchor plates, z-furring members, or ceiling track to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches on center.
2. After sprayed fire-resistive materials are applied, remove them only to the extent necessary for installation of non-load-bearing steel framing. Do not reduce the thickness of fire-resistive materials below that required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage. Repair or replace any fire-resistive materials as required.

### **3.3 INSTALLATION, GENERAL**

- A. Installation Standard: ASTM C754.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- C. Install bracing at terminations in assemblies.
- D. Do not bridge building control and expansion joints with non-structural steel framing members. Frame both sides of joints independently.

### **3.4 INSTALLING FRAMED ASSEMBLIES**

- A. Install framing system components to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strips between studs and exterior wall.
- C. Install studs so flanges within the framing system point in the same direction.
- D. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at or above suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
2. Door Openings: Securely fasten vertical studs at jambs to jamb anchor clips on door frames; install track section (to receive bottom of cripple studs) at head and secure to jamb studs. Framing above door head shall be in compliance with AWTM C754. Fasteners shall not exceed height from the face of framing members more than specified in ASTM C840 Section 6.5.
  - a. Install two studs at each jamb unless a framing member has been specifically engineered for the jamb.
  - b. Extend jamb studs through suspended ceilings and attach to underside of overhead structure if the suspended ceiling system cannot withstand forces imposed by door swings.
  - c. If jamb studs cannot be attached to the overhead structure, the Design Professional should be consulted for bracing design.
3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to be in compliance with ASTM C754 section on above door heads.
4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
  - a. Head-of-Wall Design: Where indicated, install Third Party Recognized Design to maintain continuity of fire-resistance-rated assembly indicated.
5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
6. Curved Partitions:
  - a. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
  - b. Begin and end each arc with a stud, and space intermediate studs equally along arcs. On straight lengths of no fewer than two studs at ends of arcs, place studs 6 inches on center (or as required).

**Note to Specifier: Delete following if not required.**

- E. Direct Furring:
  1. Screw to wood framing.
  2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches on center.
- F. Z-Furring Members:
  1. Erect insulation, specified in Section 07210 "Building Insulation," vertically and hold in place with Z-furring members spaced 24 inches on center.
  2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches on center.
  3. At exterior corners, attach a wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring



channel to web of attached channel. At interior corners, space the second member no more than 12 inches from the corner and cut insulation to fit.

- G. Wall Installation Tolerance: Install framing members plumb within  $\frac{1}{4}$  inch in 10 ft-0 inches.
- H. In-line Stud Installation Tolerance: Install each framing member so fastening surfaces vary not more than  $\frac{1}{8}$  inch from the plane formed by faces of adjacent framing.
- I. Suspended Ceiling Tolerance: Install suspension systems that are level to within  $\frac{1}{8}$  inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

#### **END OF SECTION**

*Disclaimer: The SFIA Guide Specifications and specification review process are intended for use as product reference material by architects, engineers, other design professionals, contractors, building code officials, or other competent construction industry trade professionals having an interest in the selection, specification and use of Cold-Formed Steel Framing as manufactured by the members of the Steel Framing Industry Association. The specifications are intended solely as technical support incident to the sale and use of cold-formed steel framing and not intended to be a substitute for the design review and approval of the licensed design professionals for the project.*