

## **CSSBI S18-2007: Guide Specification for Non-loadbearing Steel Framing**



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*Specifier Notes: Non-loadbearing steel framing includes wall studs generally from C-shaped steel members. This specification is written on the assumption that the division of work between subcontractors is the responsibility of the Contractor alone, and done without reliance on the specifications.*

For use as a contract document:

- Delete Specifier Notes
- Choose appropriate selections in square brackets
- Delete selections in square brackets that do not apply
- Make any other project specific amendments that are appropriate

### Part 1 – General

#### 1.1 Description of System

Non-loadbearing steel framing includes non-loadbearing steel studs and framing members for interior framing systems (eg., partition walls, framed bulkheads, furring, etc.) as well as interior suspension systems (eg., supports for ceilings, suspended bulkheads, etc.).

#### 1.2 Related Work

**Specifier Note: In the applicable related sections, reference this section for the specification of Non-loadbearing Steel Framing.**

- .1 Section [ 01\_\_ ] Allowances for independent inspection or testing.

**Specifier Note: Reference the section(s) where insulation in the stud space and insulation at the exterior wall are specified.**

- .2 Section [ \_\_\_\_\_ ] [ \_\_\_\_\_ ]

**Specifier Note: List section(s) where other finishes attached to non-loadbearing studs are specified.**

- .3 Section [ 07\_\_ ] Air barriers and/or vapour retarders
- .4 Section [ 08\_\_ ] Doors and windows
- .5 Section [ 09\_\_ ] Gypsum board

- .6 Section [ 09\_\_ ] Portland Cement Plastering
- .7 Section [ 09\_\_ ] Metal Furring and Lathing
- .8 Section [ \_\_\_\_\_ ] [ \_\_\_\_\_ ]

#### 1.3 References

Where referenced standards conflict with this specification, this specification governs.

Referenced standards refer to the latest edition.

**Specifier Note: As an alternative to specifying the “latest edition”, add current dates to the standards listed below.**

- .1 [National Building Code of Canada]
- .2 [Ontario] [ \_\_\_\_\_ ] Building Code]
- .3 [CSA S136 North American Specification for the Design of Cold-Formed Steel Structural Members]
- .4 [AISI North American Standard for Cold-Formed Steel Framing – Product Data]
- .5 [ASTM A653/A653M Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process]
- .6 [ASTM A641/A641M Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire]
- .7 [ASTM A792/A792M Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process]
- .8 [ASTM A1003 Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-coated for Cold-Formed Framing Members]
- .9 [ASTM C645 Standard Specification for Nonstructural Steel Framing Members]
- .10 [ASTM C754 Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products]
- .11 [ASTM C840 Standard Specification for Application and Finishing of Gypsum Board]

- .12 [ASTM C841 Standard Specification for Installation of Interior Lathing and Furring]
- .13 [ASTM C844 Standard Specification for Application of Gypsum Base to Receive Gypsum Veneer Plaster]
- .14 [ASTM C1002 Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs]
- .15 [ASTM C1063 Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster]
- .16 [ASTM D226 Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing]
- .17 [ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements]
- .18 [ASTM E413 Classification for Rating Sound Insulation]
- .19 [ASTM E488 Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements]
- .20 [ASTM E1190 Standard Test Methods for Strength of Power-Actuated Fasteners Installed in Structural Members]
- .21 [CAN/ULC S101 Standard Methods of Fire Endurance Tests of Building Construction and Materials]
- .22 [CSSBI LSF Technical Bulletin Volume 7, Number 1 Maximum Height Tables for Interior Non-Loadbearing Partitions]
- .23 [\_\_\_\_\_]

**Specifier Note: List standards referenced elsewhere in this specification.**

- .1 Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-loadbearing interior steel framing, provide materials and construction identical to those tested in assembly indicated according to CAN/ULC-S101.
- .2 STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413.

**1.5 Design Criteria**

- .1 Conform to the requirements of fire-rated assemblies [specified] which have been tested in accordance with CAN/ULC-S101 and provide fire resistance rating of [\_\_\_\_\_].
- .2 For interior non-loadbearing studs, conform to the minimum design thickness outlined in Table 1.

TABLE 1 • Minimum Non-Loadbearing Stud Dimensions (mm)		
Web Depth	Flange Width	Base Steel Thickness
41.3	31.8	0.455

**Specifier Note: Select appropriate size of stud from the CSSBI Maximum Height Tables for Interior Non-Loadbearing Partitions.**

- .3 A non-loadbearing (non-structural) member is defined as a member in a steel-framed system which is limited to transverse (out-of-plane) load of not more than 480 Pa, a superimposed axial load, exclusive of sheathing materials, of not more than 1460 N/m, or a superimposed axial load of not more than 890 N.
- .4 A loadbearing (structural) stud may be used in a non-loadbearing application; however, non-loadbearing members (studs or track) may never be used in a loadbearing (axial and/or wind loading) applications.
- .5 Track for interior walls and non-loadbearing walls located at exterior walls shall have a thickness of not less than the thickness of the corresponding studs and shall have not less than 31.8 mm flanges.

**1.4 Quality Assurance**

- .6 Connections between light steel framing members shall be by sheet metal screws, welding or crimping.

## 1.6 Submittals

- .1 Make submittals in accordance with Section [01 \_\_\_\_\_] Submittals.
- .2 Product data: For each type of product indicated.

## Part 2 – Products

### 2.1 Acceptable Manufacturers

- .1 Provide non-loadbearing steel stud framing and accessories manufactured by any of the following:  
[ \_\_\_\_\_ ]

**Specifier Note: Provide a list of acceptable manufacturers.**

### 2.2 Materials

- .1 Non-loadbearing Steel Framing, General
  - .1 Steel sheet components shall comply with ASTM C645 requirements for metal, unless otherwise indicated.
  - .2 Steel for non-loadbearing members shall have metallic coatings that conform to ASTM A653M or ASTM A792M with minimum metallic coating weights (mass) of Z120 and AZM150 respectively. Alternative coatings shall be permitted to be used if proven to have equivalent corrosion protection.
  - .3 Framing members shall comply with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) for conditions indicated.

**Specifier Notes: The specifier is responsible for the compatibility of the coatings. Some materials may require separation.**

- .2 Suspension System Components
  - .1 Tie wire shall comply with ASTM A641/A641M zinc-coated, soft-annealed, 1.21 mm minimum diameter, or of a

material and size having equivalent corrosion resistance and strength.

**Specifier Note: Other wire-tying arrangements are applicable with wire diameters greater than the minimum specified.**

- .2 Hangar attachments to concrete:
  - .a Anchors shall be fabricated from corrosion-resistant materials with holes or loops for attaching wire hangars and capable of sustaining, without failure, a load equal to [\_\_\_\_\_] times that imposed by construction as determined by testing by an independent testing agency according to ASTM E488.
    - (i) Type: [cast-in-place anchor, designed for attachment to concrete forms][Post-installed, chemical anchor][Post-installed, expansion anchor]
  - .b Power-actuated fasteners, suitable for application indicated, shall be fabricated from corrosion-resistant materials with clips or other devices for attaching hangars of type indicated, and capable of sustaining, without failure, a load equal to [\_\_\_\_\_] times that imposed by construction as determined by testing by an independent testing agency according to ASTM E1190.
- .3 Hangar wire shall comply with ASTM A641/A641M zinc-coated, soft-annealed, 3.77 mm minimum diameter, or of a material and size having equivalent corrosion resistance and strength.

**Specifier Note: The applicability of ULC fire tests may require hangar wire with a diameter greater than the minimum specified.**

- .4 Carrying Channels
  - .a Channels shall conform to ASTM C754 and shall be cold-formed from steel with a minimum 228 MPa yield strength and 1.37 mm base steel thickness.

- .b Channels shall have a minimum coating of Z120 galvanizing in accordance with ASTM A653/A653M. Other coatings (eg. Aluminum-zinc alloy to ASTM A792/A792M) providing equal or better corrosion protection may also be used.
  - .c Carrying channels shall have minimum 12.7 mm wide flanges and a minimum depth of 38 mm.
- .5 Furring Members
- .a Furring channels shall comply with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) and shall have a minimum base steel thickness of 0.455 mm and with minimum 12.7 mm wide flanges and a depth of 19.1 mm.
  - .b Steel studs shall be manufactured from steel in accordance with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) and shall have a minimum base steel thickness of 0.455 mm and a depth of [41.3 mm] [63.5 mm] [92.1 mm] [As indicated on drawings].
  - .c Hat-shaped, rigid furring channels shall comply with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) and shall have a minimum base steel thickness of 0.455 mm and a minimum depth of 22.2 mm. The minimum width of furring attachment flanges shall be 12.7 mm.
  - .d Resilient furring channels are designed to reduce sound transmission and shall have a minimum depth of 12.7 mm.
- .3 Steel Framing for Framed Assemblies
- .1 Steel studs and track shall be in accordance with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) and shall have minimum base steel thickness of 0.455 mm and a depth of [41.3 mm] [63.5 mm] [92.1 mm] [As indicated on drawings].
  - .2 Slip-Type Head Joints: Where indicated, provide one of the following:
    - .a Deflection Track: steel sheet 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.
      - (i) Available products: subject to compliance with requirements, products that may be incorporated into the Work include [insert manufacturers name, product name or designation].
    - .b Single Long-Leg Track: track complying with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) with 50.8 mm deep flanges in thickness not less than indicated for studs, installed with studs friction-fit into top track and with continuous bridging located within 305 mm of the top of studs to provide lateral bracing.
    - .c Double-Track System: track complying with AISI North American Standard for Cold-Formed Steel Framing (Product Data), inside track with 50.8 mm deep flanges in thickness not less than indicated for studs and fastened to studs, and outer track sized to friction fit inside track.
  - .3 Flat Strap and Backing Plate
    - .1 Sheet steel for blocking and bracing in length and width indicated.
    - .2 Minimum base steel thickness is 0.455 mm.
  - .4 Channel bridging shall comply with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) and

- shall have a minimum base steel thickness of 0.455mm with minimum 12.7 mm wide flanges and a depth of 19.1 mm.
- .5 Hat-shaped, rigid furring channels shall comply with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) and shall have a minimum base steel thickness of 0.455 mm, a minimum depth of 22.2 mm. The minimum width of furring attachment flanges shall be 12.7 mm.
  - .6 Resilient furring channels are designed to reduce sound transmission and shall have a minimum depth of 12.7 mm.
  - .7 Furring channels shall comply with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) and shall have a minimum base steel thickness of 0.455 mm and with minimum 12.7 mm wide flanges and a depth of 19.1 mm.
    - a. Furring Brackets: adjustable, corrugated-edge type of steel sheet with minimum base steel thickness of 0.79 mm.
    - b. Tie wire shall comply with ASTM A641/A641M zinc-coated, soft-annealed, 1.21 mm minimum diameter, or of a material and size having equivalent corrosion resistance and strength.
  - .8 Z-shaped Furring: with slotted or non-slotted web, face flange of 31.8 mm, wall attachment flange of 22.2 mm, minimum base steel thickness of 0.455 mm, and depth required to fit insulation thickness indicated.
  - .4 Fasteners for Metal Framing: of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates in accordance with ASTM C1002.
  - .5 Isolation strip at exterior walls: provide [one of] the following:

**Specifier Note: Other wire-tying arrangements are applicable with wire diameters greater than the minimum specified.**

- .1 Asphalt-saturated organic felt: ASTM D226, Type 1 (no. 15 asphalt felt), perforated.
- .2 Foam gasket: adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 3.2 mm thick, in width to suit steel stud size.

## Part 3 – Execution

### 3.1 Examination

- .1 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.
  - .1 Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 Preparation

- .1 Suspended Assemblies: coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.
  - .1 Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.
- .2 Coordination with Sprayed Fire-Resistive Materials
  - .1 Before sprayed fire-resistive materials are applied, attach offset anchor plates 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 600 mm o.c.
  - .2 After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load-

bearing steel framing. Do not reduce thickness of fire-resistive materials below that required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage.

### 3.3 Installation, General

- .1 Installation Standard: ASTM C754, except comply with framing sizes and spacing indicated.
  - .1 Gypsum Plaster Assemblies: also comply with requirements in ASTM C841 that apply to framing installation.
  - .2 Portland Cement Plaster Assemblies: also comply with requirements in ASTM C1063 that apply to framing installation.
  - .3 Gypsum Veneer Plaster Assemblies: also comply with requirements in ASTM C844 that apply to framing installation.
  - .4 Gypsum Board Assemblies: also comply with requirements in ASTM C840 that apply to framing installation.
- .2 Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- .3 Install bracing at terminations in assemblies.
- .4 Do not bridge building control and expansion joints with non-loadbearing steel framing members. Frame both sides of joints independently.

### 3.4 Installing Suspension Systems

- .1 Install suspension system components in sizes and spacings indicated on drawings, but not less than those required by referenced installation standards for assembly types and other assembly components indicated.
- .2 Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- .3 Suspend hangers from building structure as follows:

- .1 Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
  - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, counter splaying, or other equally effective means.
- .2 Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
  - a. Size supplemental suspension members and hangers to support ceiling loads within [performance limits established by referenced installation standards] [Insert deflection limit].
- .3 Wire Hangers: secure by looping and wire tying, either directly to structure or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
- .4 Do not attach hangers to steel roof deck unless otherwise approved.
- .5 Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
- .6 Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
- .7 Do not connect or suspend steel framing from ducts, pipes, or conduit.
- .4 For fire-resistance-rated assemblies, wire tie furring channels to supports.
- .5 Installation Tolerances: install suspension systems that are level to within 3 mm in 3.6 m measured lengthwise on each member that will

receive finishes and transversely between parallel members that will receive finishes.

### 3.5 Installing Framed Assemblies

- .1 Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- .2 Install studs so flanges within framing system point in same direction.

- .1 Space studs as follows:

- a. Single-layer application: [406 mm] [610 mm] o.c., unless otherwise indicated.
- b. Multilayer application: [406 mm] [610 mm] o.c., unless otherwise indicated.
- c. Tile backing panels: 406 mm o.c., unless otherwise indicated.

- .3 Install track 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 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 due to deflection of structure.

- .2 Door Openings: screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.
  - a. Install two studs at each jamb, unless otherwise indicated.
  - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 12.7 mm clearance from jamb stud to allow for installation of control joint in finished assembly.

- .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 match framing required 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.

- .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 not less than 2 studs at ends of arcs, place studs 150 mm o.c.

- .4 Direct Furring

- .1 Screw to wood framing.
- .2 Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or power-driven fasteners spaced 610 mm o.c.

- .5 Z-Furring Members

- .1 Erect insulation (as specified in [section 07 "Thermal Insulation"]) vertically and hold in place with Z-furring members spaced 610 mm o.c.
- .2 Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or power-driven fasteners spaced 610 mm o.c.
- .3 At exterior corners, attach 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 second member no more than 305 mm from corner and cut insulation to fit.

- .6 Installation Tolerance: install each framing member so fastening surfaces vary not more than 3 mm from the plane formed by faces of adjacent framing.