Proper Specification and Installation Recommendations for Structural Wall Framing

An AIA Continuing Education Program
Credit for this course is 1 AIA HSW CE Hour

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CONTINUING EDUCATION AIA

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Course Description

Review the IBC 2012 Code Compliance requirements for cold-formed structural studs and the minimum requirements per ASTM C955. The installation procedure for cold-formed structural studs per ASTM C1007 and fire-rated construction are described in this course.

Learning Objectives

Upon completion of this course, the design professional will be able to:

- List the IBC 2012 Code Compliance requirements for cold-formed structural studs
- Explain the minimum physical requirements for cold-formed structural studs per ASTM C955
- Describe the minimum installation requirements for cold-formed structural studs per ASTM C1007
- Explain fire-rated construction when using cold-formed structural studs

Code Requirements

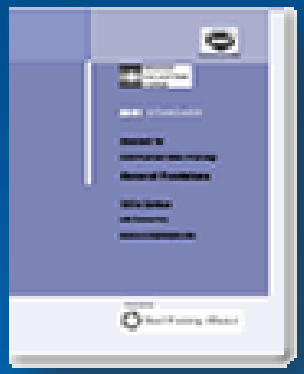
- Building codes are evolving and changing
- IBC 2012 has been adopted and is in use today in the majority of the states as well as many local jurisdictions
- This portion of the presentation reviews the current requirements for structural wall stud framing per IBC 2012

Code Requirements

General Code References for Cold-Formed Steel as a *System*

2210.1 General

The design, installation and construction of cold-formed carbon or low-alloy steel, structural and nonstructural steel framing shall be in accordance with AISI-General and AISI-NASPEC.



AISI General Provisions S200-07

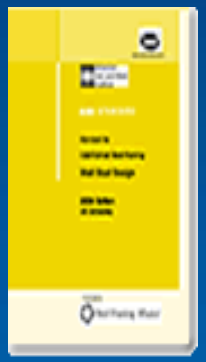
AISI NASPEC S100-07 including S1-10 Supplement

Code Requirements

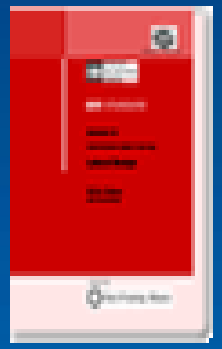
Other AISI documents mentioned in Chapter 22, (Sections 2210.2 – 2210.5) relate to cold-formed steel framing members and AISI documents pertaining to Headers, Trusses, Wall Studs and Lateral Designs:

AISI Header S212-07

AISI Truss S214-07



AISI Wall Stud Design S211-07



AISI Lateral S213-07 including Supplement S1-10

Code Requirements

General Code References for Cold-Formed Studs as a *Product*

Drilling down further into the code, cold-formed steel stud members are required to comply with the following standards:

Section 2500 – Gypsum Board and Plaster

- Gypsum Board Materials - Table 2506.2
- Installation of Gypsum & Accessories - Table 2508.1
- **Construction Structural Studs**
  - ASTM C 955
  - ASTM C1007

Section 2507 – Lathing and Plastering

- Lath, Plastering Materials - Table 2507.2
- Installation of Plaster & Accessories - Table 2511.1.1
- **Construction Structural Studs**
  - ASTM C 955
  - ASTM C1007

- Chapter 35 references the actual year dates for the referenced documents

Code Requirements

In cases of conflict between different sections of the code, provisions provided in Chapter 1 shall apply:

Applicability

102.1 General

Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.

Code Requirements

Overview

To be code compliant to IBC 2012 a structural stud must have all of the following to be in conformance with C955 – the code referenced for ASTM specification:

- The proper protective coating
- The proper thickness
- The proper stud configuration
- The proper marking & identification

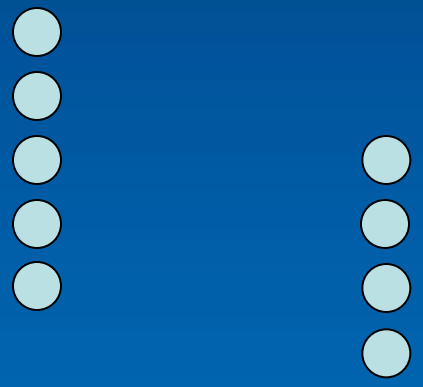
Structural Wall Framing

What is a "structural" stud per C955?

- A member in a steel framed system in which the loading exceeds any of the following conditions: a transverse load of 20 lbs/ft2 of member length, or an axial load, exclusive of sheathing, of 200 lbs per member.

How does it differ from a nonstructural stud?

- Sized to resist various loads combinations
- Transfer loads down to the foundations
- Meet a specified deflection criteria
- Be properly spaced
- Sized for the partition height
- Interior design pressure of 5 PSF



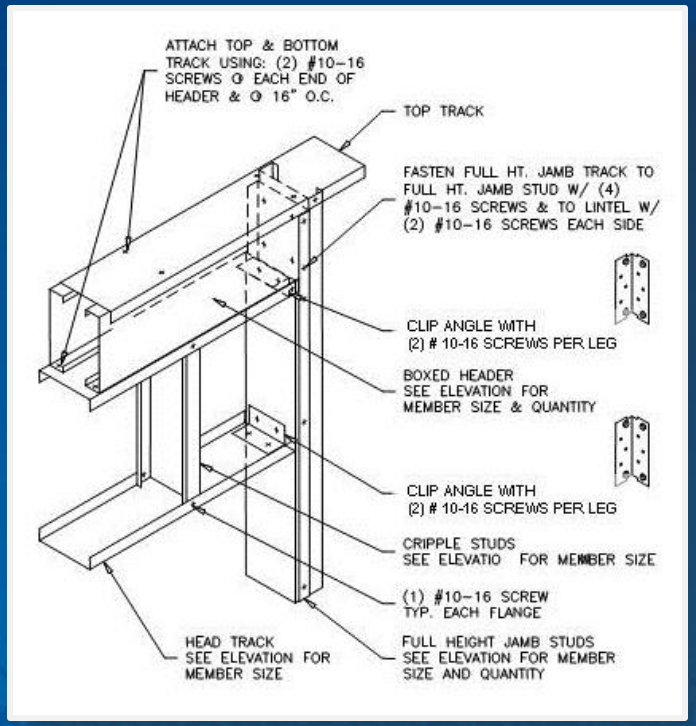
Structural Wall Framing

How are structural studs approved on a project?

- Structural wall framing is typically installed in accordance with the project specifications (Section 054000) and in accordance with approved engineered shop drawings

Product Approvals

- The contractor is typically required to submit a set of engineered shop drawings, engineering calculations and product submission cut sheets to the architect and engineer for approval prior to commencing framing



ASTM C955 - Standard Specification for Load-Bearing

(Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel

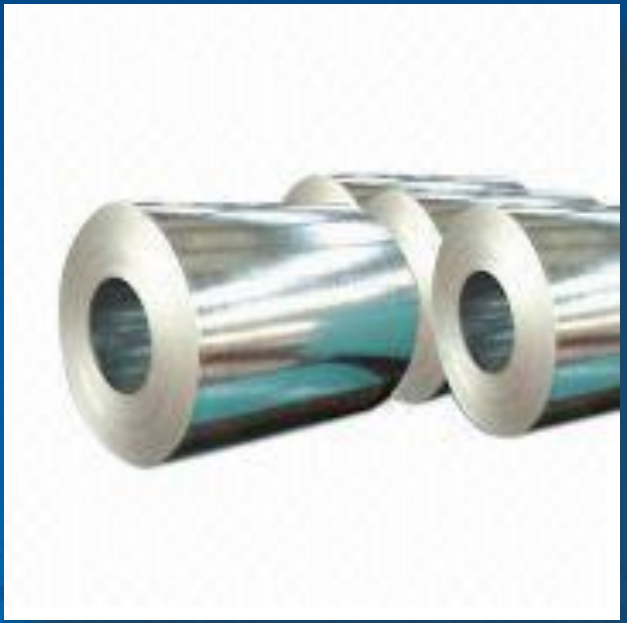
Products and Metal Plaster Bases

- This specification governs the manufacture of structural steel framing members – 0.0329” through 0.0966”

ASTM C955

C955 - What will be reviewed

- Sec. 4 - Materials: Material requirements of the steel coil, the protective coating, the minimum thickness requirements and the punch-out requirements for the studs
- Sec. 6 - Minimum dimensions & tolerances for the studs
- Sec. 12 - Stud marking and identification requirements



ASTM C645

Section 4 Materials and Manufacture

- C955 references ASTM A1003 for the material requirements of the steel sheet used to manufacture products in conformance to ASTM C 955
- A1003 was developed specifically for steel used for cold-formed steel products. It covers both nonstructural as well as structural products
- C955, Paragraph 4.1, states: “Members shall be manufactured from steel meeting the requirements of Specification A1003 - ”Standard Specification for Steel Sheet, Carbon, Metallic & Nonmetallic - Coated for Cold-Formed Framing Members”

ASTM C955

Section 4: Materials and Manufacture

- A1003 specifies physical properties of the steel sheet:
- Yield strength – 33 ksi minimum
- Ductility – 10% elongation in 2”
- Specifies various hot-dipped coatings for steel sheet
- Specifies 100 hours minimum requirement that coatings must survive in a B117 procedure
- Specifies B117 salt-spray test procedure and the pass/fail criteria for the test procedure
- C955 requirements are more strict and therefore take precedent over A1003 requirements

ASTM C955

Section 4: Materials and Manufacture

- Paragraph 4.4: “Members shall have a protective coating in accordance with Table 1, CP 60 minimum.”

TABLE 1 Coating Designations

Coating Classification	Coating Designator	Minimum Coating Requirements			
		Zinc-Coated [A]	Zinc Iron [B]	55 % Al-Zinc [C]	Zinc-5 % [D]
Metallic Coated	CP 60	G 60	A 60	AZ50	GF 30
	CP 90	G 90	Not Applicable	AZ 50	GF 45
Painted Metallic	PM	The metallic coated substrate shall meet the requirements of metallic coated. In addition, the paint film shall have a minimum thickness of 0.5 mil per side (primer plus topcoat) with a minimum primer thickness of 0.1 mil per side. [E]			

[A] Zinc-coated steel sheet as described in Specification A 653/A 653M.
[B] Zinc-iron alloy-coated steel sheet as described in Specification A 653/A 653M.
[C] 55 % Aluminum-zinc alloy-coated steel sheet as described in Specification A 792/A 792M.
[D] Zinc-5 % aluminum alloy-coated steel sheet as described in Specification A 875/A 875M.
[E] In accordance with the requirements of A 1003.
[F] ISO International Standard 9223

ASTM C955

Per Table 1, only four coatings are acceptable for use:

- G60 Hot-dipped Galvanized coated
- A60 Hot-dipped Galvannealed coated
- AZ50 55% Aluminum - zinc alloy coated
- GF30 Zinc - 5% Aluminum alloy coated

- If any other coating is used, the provisions of the specification are not met and the material is not compliant

- **NOTE:** C955 coating requirements take precedent over A1003 coating requirements since they are the more restrictive

Code Requirements

Summary
To Be Code Compliant to IBC 2012 for Structural Studs

Per C955, the provisions of paragraph 4.4 & Table 1: Coating protection level of CP 60 - One of the four permissible coatings of the proper coating weight specified in the table must be used

Material Thickness - Structural

Section 4: Materials and Manufacture: Thickness

- Paragraph 4.2 - The minimum steel thickness (base steel) shall not be less than 0.0329” (prior to application of coating)
- The minimum thickness of the delivered product to the field, including the thickness of a G60 coating is 0.034”

This is what the studs should measure in the field

- How is this derived?

1 ounce per sq. ft. of zinc coating = 0.0017”

G-60 coating requirement = 6/10ths of an ounce per sq. ft.

0.0017” x 0.6 requirement = 0.00102” coating thickness

0.0329” base metal + 0.00102” coating = 0.03392 ~ 0.034” total

Material Thickness - *Nonstructural*

- The base metal thickness of nonstructural members will range between 0.0179” (18 mil) to 0.0296” (30-mil).

- Any thickness greater than 0.0296” (30-mil) base metal thickness would then fall into the category of a structural member per the minimum thickness requirements of ASTM C955.

Material Thickness - *Nonstructural*

- Two thicknesses of 20-gauge products exist today
- This table shows the difference between the nonstructural and structural products

Thickness Property	Drywall 20-gauge	Structural 20-gauge
Mil Thickness	30-mil	33-mil
Design Thickness	0.0312”	0.0346”
Minimum Delivered Base Metal Thickness *	0.0296”	0.0329”
Minimum Delivered Coated Thickness	0.0302”	0.0339”
* Minimum base metal thickness represents 95% design thickness		

Table of Coated Thickness

Old Gauge Reference	Mils	Minimum Base Metal Thickness*	Minimum Coated Thickness (G60 Coating)	Design Thickness
20	33	0.0329”	0.0339”	0.0346”
18	43	0.0428”	0.0438”	0.0451”
16	54	0.0538”	0.0548”	0.0566”
14	68	0.0677”	0.0687”	0.0713”
12	97	0.0966”	0.0976”	0.1017”

* Minimum base metal thickness represents 95% design thickness

Code Requirements

Summary
To Be Code Compliant to IBC 2006 for Structural Studs

- Minimum structural thickness is 0.0329” uncoated base metal thickness and 0.034” coated (delivered) thickness
- See previous slide for minimum thickness requirements per mil thickness (gauge).

ASTM C955

Section 4: Materials and Manufacture: Punch-outs

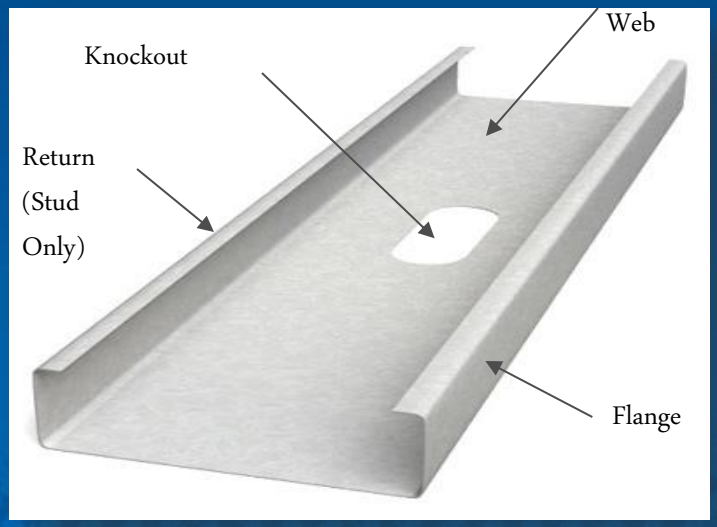
(Provided to allow the passage of utility services through the studs)

- Locate punch-outs along the centerline of the web
- Minimum 24” center-to-center spacing
- Maximum width: ½ the member depth, but not more than 2½”
- Maximum length: 4 ½”
- Minimum 10” from the end of the stud to edge of the punch-out

ASTM C955

Section 6: Dimensional Requirements

- Structural Stud
- Only the minimum flange width dimension (1 ¼”) is specified in C955-03.



Stud: 1¼”

Track: 3/4”

ASTM C955

Table 2
Manufacturing Tolerances

Dimension *	Item Checked	Structural Studs, in.	Structural Track, in.
A	length	+ 3/32	+ 1/2
		– 3/32	– 1/4
B **	web width	+ 1/32	+ 1/32
		– 1/32	+ 1/8
C	flare	+ 1/16	+ 0
	overbend	– 1/16	– 3/32
D	hole width center	+ 1/16	NA
		– 1/16	
E	hole center length	+ 1/4	NA
		– 1/4	
F	crown	+ 1/16	+ 1/16
		– 1/16	– 1/16
G	camber	1/8" max per 10 ft.	1/32 per ft
H	bow	1/8" max per 10 ft.	1/32 per ft
I	twist	1/32 per ft	1/32 per ft
		1/2 max	1/2 max

* All measurements shall be taken not less than 1 ft. from the end

** Outside dimension for stud; inside dimension for track

ASTM C955

Table 2 : Manufacturing Tolerances

Dimension *	Item Checked	Structural Studs, in.	Structural Track, in.
A	length	+ 3/32	+ 1/2
		– 3/32	– 1/4
B **	web width	+ 1/32	+ 1/32
		– 1/32	+ 1/8
C	flare	+ 1/16	+ 0
	overbend	– 1/16	– 3/32
D	hole width center	+ 1/16	NA
		– 1/16	
E	hole center length	+ 1/4	NA
		– 1/4	
F	crown	+ 1/16	+ 1/16
		– 1/16	– 1/16
G ***	camber	1/8" max per 10 ft.	1/32 per ft
H ***	bow	1/8" max per 10 ft.	1/32 per ft
I	twist	1/32 per ft	1/32 per ft
		1/2 max	1/2 max

* All measurements shall be taken not less than 1 ft. from the end

** Outside dimension for stud; inside dimension for track

*** 1⁄8 in. max per 10 ft represents L/960 maximum for overall camber and bow. Thus a 20 ft long member would have 1⁄4 in. permissible maximum; a 5 ft long member would have 1⁄16 in. permissible maximum.

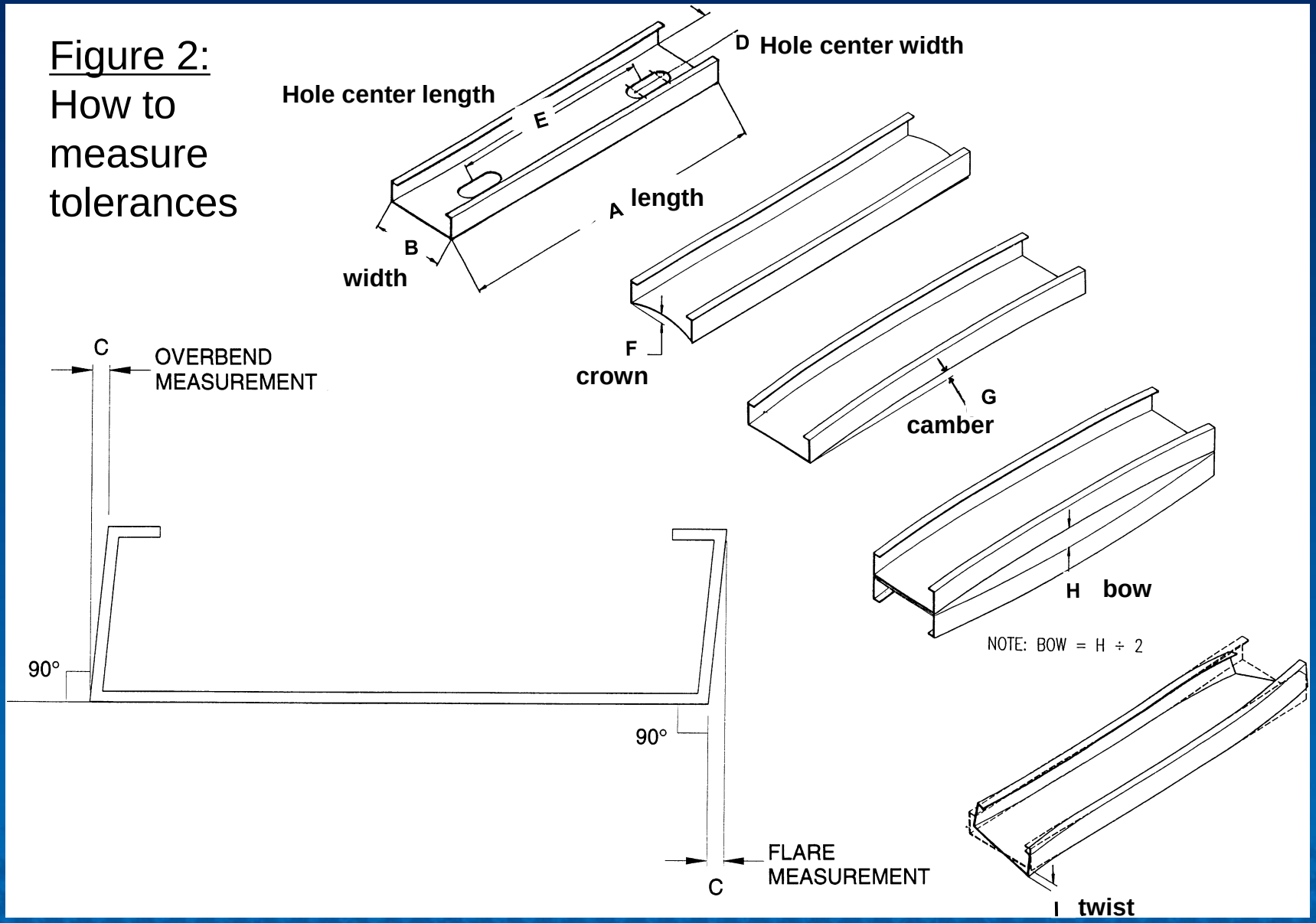
ASTM C955

What do these tolerances mean?

- A/B: Length and Width – the actual length or width measurement of the member
- C: Flare/Overbend – measures whether the flange “toes” out or in from 90 degrees
- D: Hole center width – this is a measurement from the intersection of the flange and the web to the centerline of the punch out
- E: Hole center length – this is a measurement from the center of one punch out to the center of the next punch out
- F: Crown – the measure of “sweep” in the web portion of the stud
- G: Camber – this is a measurement of how much a vertical stud sweeps” in a direction parallel to the web, i.e., in and out perpendicular to the plane of the wall
- H: Bow – this is a measurement of how much a vertical stud “sweeps” within the depth of the wall cavity when compared to a vertical plumb line
- I: Twist – this is a measurement of how much a vertical stud is rotated along its length within the depth of the wall cavity

ASTM C955

Figure 2:
How to measure tolerances



Code Requirements

Summary
To be code compliant to IBC 2012

For structural studs

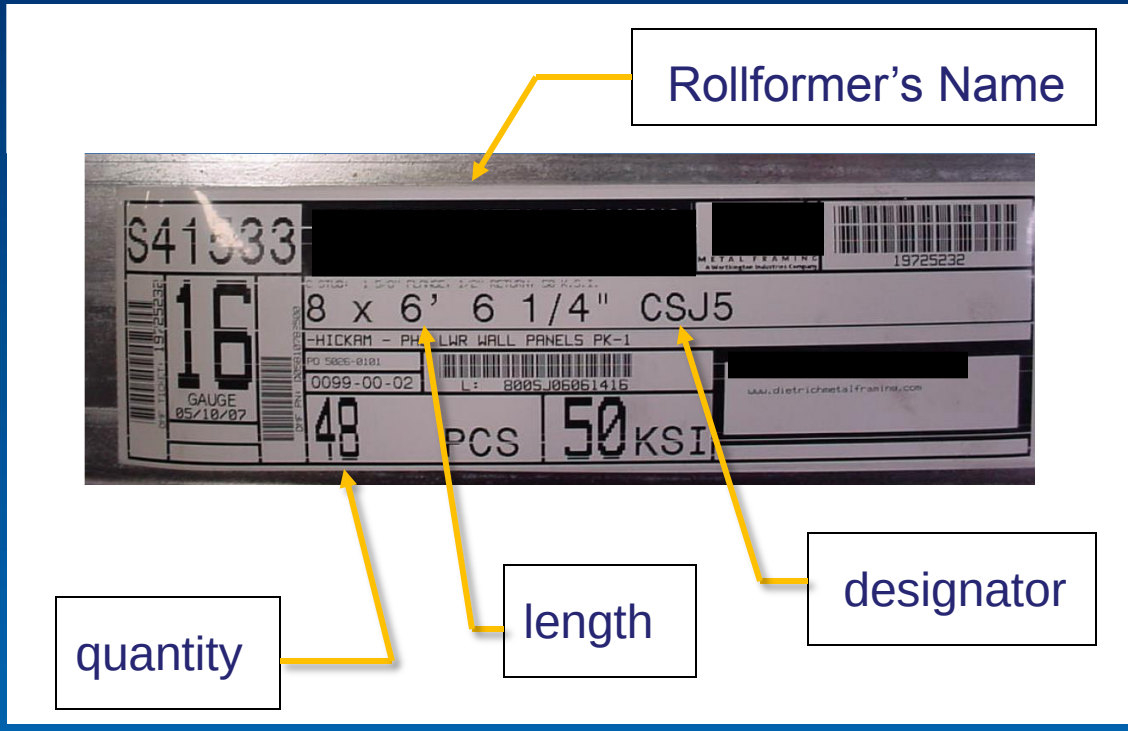
- Punch-outs must not exceed the given parameters
- The stud must have a minimum 1-1/4” flange

ASTM C955

Section 12: Marking and Identification: Skids & Bundles

- Skids or like bundles of members must have a label or tag:

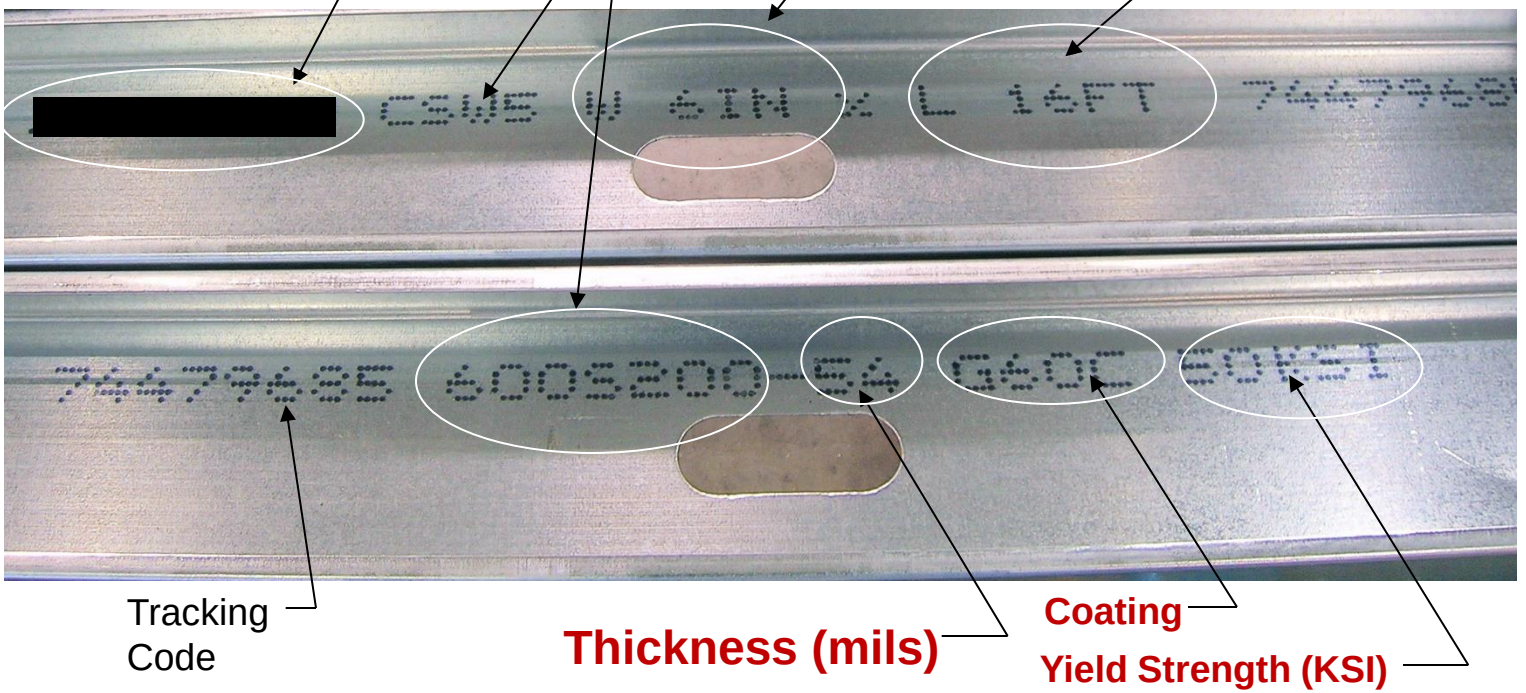
- Rollformer's name
- Length of member
- Quantity
- Member designator
- Depth
- Flange width
- Minimum steel thickness



Note: Bar code technology can be used to trace the steel from "cradle-to-grave"

ASTM C955

Section 12: Marking and Identification: Each Member



Markings required by ASTM (48" o.c. maximum) are shown in RED
Additional markings shown in **BLACK**

Code Requirements

Summary

To be code compliant to IBC 2012

For Structural Studs

- Bundles of like members need to be properly marked.
- Individual members need to be properly marked

ASTM C1007

- Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories
- This specification governs the minimum installation requirements for structural steel framing members made in accordance with ASTM C 955

ASTM C1007

- **Scope**
  Studs ranging in thickness from 0.0329” - 0.1120”
- **Materials**
  Manufactured per C955
- **Storage**
  Materials are to be protected from adverse weather and job conditions that will cause physical damage
- **Fastenings and Attachments**
  Tracks must be anchored to the structure. The size, penetration, type, and spacing of the fastener is determined by the designer.

ASTM C1007

- **Fastenings and Attachments: (continued)**

  Welds: Conform to AWS D1.3 & AISI manual.
  Type of weld (fillet, groove, bevel, etc.) is determined by designer. All welds must be touched up with zinc-rich paint.
  Screws to be minimum diameter indicated by design. Minimum 3 threads showing after penetration of joined materials is required. Wire tying of structural applications is not permitted

ASTM C1007

Stud Installation: Tolerances

- Vertical alignment (plumbness) is not permitted to exceed L/960 (1/8” in 10’-0”)
- Horizontal alignment (levelness) is not permitted to exceed L/960 (1/8” in 10’-0”)
- Spacing of framing members shall not be more than +/-1/8” from the designed spacing, provided the cumulative error does not exceed the spacing requirements of the finish materials
- Squareness of prefabricated panels shall not be more than 1/8” out of square within the length of the panel

ASTM C1007

Stud Installation: General Requirements

- Construction can be stick built or panelized
- Track-to-stud connections shall be designed to meet loads
- Allowance for vertical deflection of the structure as required by the designer
- Transversely (wind) loaded studs are not required to sit squarely in tracks, but must be connected to them
- Axially loaded studs must be seated squarely within 1/8” of the web of the track and must be connected to the track

ASTM C1007

Stud Installation: General Requirements (continued)

- Vertical alignment of floor and wall members (in-line framing) is required
- Provide bearing under tracks to provide load transfer to supporting structure
- All welds must be cleaned and touched-up with zinc rich paint (on galvanized members) or paint equal to that used (on painted members)

ASTM C1007

Stud Installation: Cutting and Splicing of Members

- Cutting must be done with a saw or shear – torch cutting of studs is not permitted
- Torch cutting removes the protective coating on the steel and it alters the metallurgical properties of the steel
- Splicing of axially loaded members is not permitted
- Cutting of flanges - stud or joist - is not permitted
- Cutting of additional holes other than those provide by the manufacturer is not permitted

ASTM C1007

Stud Installation: Bracing/Bridging

- Lateral bracing (bridging) must be in place before any load is applied to the wall
- Temporary bracing must be installed and left in place until the work is permanently stabilized

ASTM C1007

Stud Installation: Bracing/Bridging (Continued)

- Bridging shall be of the size and type shown on the shop drawings. Many ways exist to bridge/brace the studs.
- Three common methods of bridging include:

Proprietary Bridging System

Self-locking bar must is installed progressively. Tabs lock onto the stud.

U-Channel with Clip Angles

Clip angle must be attached to both the stud and the channel – minimum 2 screws each leg

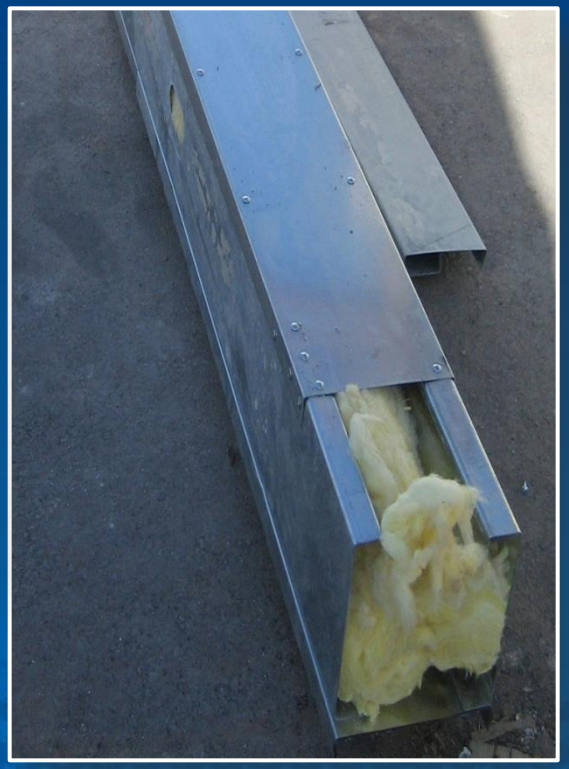
Strap and Solid Blocking

This method is labor intensive and requires more parts and pieces

ASTM C1007

Stud Installation: Header and Jack Stud Installation

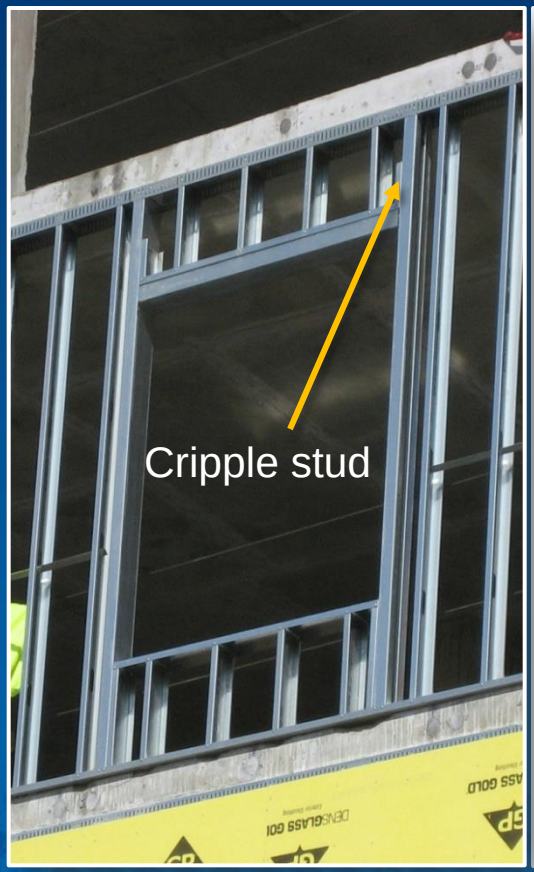
- Headers shall be installed in openings that are larger than the typical stud spacing
- Insulation shall be placed into built-up members prior to their installation when it will be impossible to do after installation of the header into the wall



ASTM C1007

Stud Installation: Header and Jack Stud Installation

- Jack studs shall be connected to the header
- & seat squarely in track
- If the header is installed immediately over the opening (low), then the cripple studs over the header must be designed to carry all imposed loads



ASTM C1007

Panelized Construction

- Panels must be designed to resist all construction and handling loads as well as all live loads
- Panel must be designed for handling and lifting without causing permanent distortion of members or collateral materials
- All track-to-stud connections, bridging and bracing, and handling components must be installed prior to hoisting

ASTM C1007

Panelized Construction

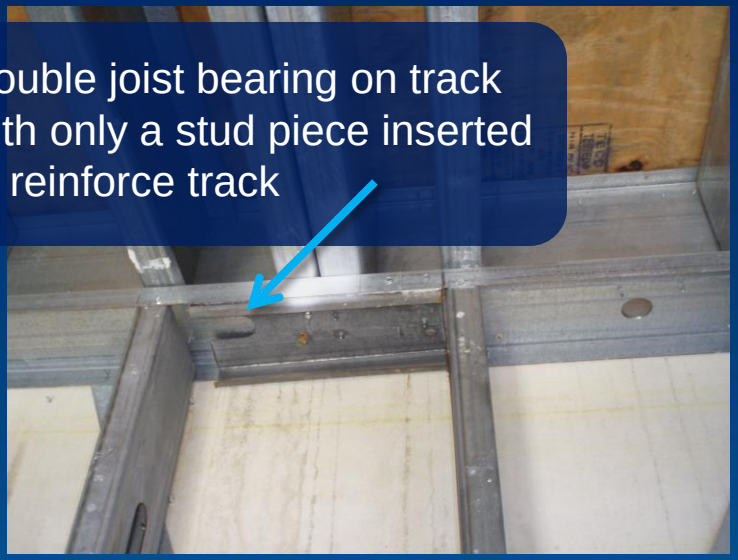
- Where track is spliced between studs, a piece of stud not less than 12” must be placed into the tracks and fastened with not less than 2 screws per flange to each piece of track, or welds be provided as required
- Panels must be attached to structure as shown on the design drawings
- All panels shall be designed to provide continuity of any wall/floor surface

ASTM C1007

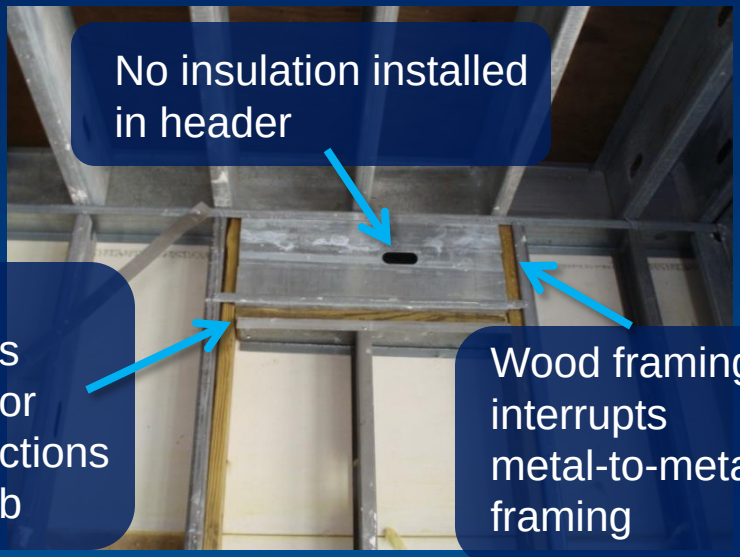
Stick Built Construction

- Tracks shall be aligned at supporting structure and be fastened to the structure
- Track intersections shall butt evenly
- Doors, windows, and other items installed in the wall shall be securely anchored to the wall by clips, angles, screws, bolts, etc.

Examples of Ways Not to Frame!



Double joist bearing on track with only a stud piece inserted to reinforce track



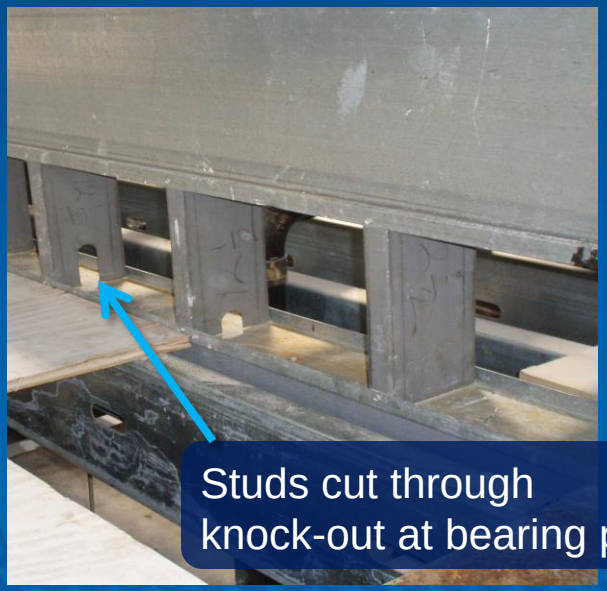
No insulation installed in header

Track flanges used for connections to jamb

Wood framing interrupts metal-to-metal framing

Joist “torch cut”

Minimal bearing in seat of joist hanger



Studs cut through knock-out at bearing point

Examples of Ways Not to Frame!

No bearing studs below double joists

Oversize hole in blocking

Strap bridging cut away

ASTM C1007 – Annexes

C1007 Has Three Annexes

- Annexes are used when the information to be presented does not “fit” into the standard sections used in ASTM specifications
- Annexes are mandatory information and must be followed just as if they were part of the main body of the specification

ASTM C1007 – Annexes

A1 - DESIGN REQUIREMENTS

- Physical properties and allowable load capabilities shall be in accordance with AISI Design Manual.
- Studs shall be spaced to suit the design requirements and limitations of collateral materials.
- All applicable loads shall be examined.
- All connections shall be examined.
- Selected walls shall be designed to provide frame stability and lateral load resistance. (Diagonal steel strapping or other engineered methods).
- Diagonal steel strapping shall be used to transfer lateral loads to the structure and foundation. Additional studs shall be provided to resist the vertical component of the loads from the diagonal bracing.
- Wall bridging shall be designed to provide resistance to minor axial bending and rotation of wall studs.

ASTM C1007 – Annexes

A2 - INSTALLATION REQUIREMENTS

- Gypsum board shall be attached to the steel studs in accordance with the appropriate specification.
- Metal plaster bases shall be attached in accordance with Specification C 841or Specification C 1063, except screw heads shall be of a size and type suitable for positive (no movement) attachment.
- When diaphragm rated components are substituted for bridging, they shall be installed prior to loading of the wall. If components are installed on one side of the wall only, then the other stud flanges shall be bridged with suitable bridging. Bridging is not required to be removed when diaphragm rated components are installed.
- Care shall be taken to allow for additional studs at panel intersections, corners, doors, window, control joints, etc.
- Provision for structure movement shall be provided as indicated and necessary by design or code requirements.

ASTM C1007 – Annexes

A2 - INSTALLATION REQUIREMENTS (continued)

- Properly designed splices, cutting of flanges, and holes other than those provided by the manufacturer shall be approved in writing by the engineer of record.
- Care shall be taken to properly distribute construction materials so that they do not exceed the project design loads.

A3 - SUBMITTALS

- The following items shall be considered for approval prior to delivery of materials to the site:
- Shop Drawings—Drawings shall illustrate materials; shop coatings; steel thickness; details of fabrication; details of attachment to adjoining work; size, location, spacing of fasteners for attaching framing to itself; details of attachment to the structure; accessories and their installation; and critical installation procedures. Drawings shall include plans, elevations, sections and details.

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A3 – SUBMITTALS (continued)

- Samples—Samples shall be representative pieces of all framing component parts and accessories.
- Certification—Certification shall be a statement from the manufacturer certifying that the materials conform to the appropriate requirements as outlined in the contract documents.
- Calculations—Engineering calculations shall be prepared verifying the assembly's ability to meet or exceed design requirements as required by local codes and authorities.
- Descriptive Literature—Manufacturer's literature shall contain product and installation specifications and details.

Fire-Rated Assemblies

What You Need to Know

- Some wall and floor assemblies may require a reduction in the load carrying capacity of the stud or joist members.
- Checking the actual tested assembly is the only way to know. The next slides illustrate this point.

Fire-Rated Assemblies

Example: Wall Stud Assembly

UL Design No. U425 - Interior Bearing Walls

Rating	Wallboard Protection Both Sides of Wall – No. of Layers and Thickness of Board Each Layer	% of Design Load
45 min	* 1 layer, ½" thick	100
1 hour	* 1 layer, 5/8" thick	100
1 ½ hour	* 2 layers, ½" thick	100
2 hour	* 2 layers, 5/8" thick	80
	* 3 layers, ½" thick	100
	* 2 layers, 3/4" thick	100

Note:

20% reduction of axial load capacity for the 2 hour rating with 2-layers of 5/8" board each side

* Ratings applicable to assemblies serving as exterior walls where Classified fire resistive gypsum sheathing type wallboard is substituted on the exterior face

Fire-Rated Assemblies

Example: Floor/Ceiling Assembly

UL Design No. L564 v UL Design L567 – Floor/Ceiling Assemblies

	UL L564	UL L567
Flooring	3/4 "	3/4" T&G Plywood
Load Restriction	**None (100%)**	**Reduce to 77% of allowable load**
Adhesive	45 Spray foam adhesive in T&G	Polyurethane Construction Adhesive to joists
Deck Fasteners	#8 by 1 5/16" spaced 12" o.c. field and perimeter	#10 x 1- 7/16" winged screws 6" o.c. perimeter and 12" field
Batts and Blankets	Glass Fiber Insulation 3 5/8" or Mineral Wool	Min. 4" of Mineral wool insulation with 4.5 #/ft3 density
Structural Members	9 1/4" 16ga.	10" 16ga. With 2" flange with Web Stiffeners
Joist Spacing	**24" max**	**16" max**
Blocking & Lateral Bridging	Solid joist 8' o.c. with "S' clip one end "E" clip the other (2) screws each leg of clip + 2 1/2" between joists with (1) screw to joists	Solid joist sections every 7' o.c. with 3"x3"x10" clips to each end of block with (4) screws each leg of each clip + U-Channel across joist bottom with (4) screws to each block
Resilient Channels	25 Ga. RC 12" o.c.	25 Ga. RC 16" o.c.
Gypsum Board	One layer of 5/8" Type C screw 8" o.c. field and perimeter	Two layers of 1/2" Type C screw each layer 6" o.c. perimeter, 16"o.c. field
Joint System	Paper tape in joint compound	Paper tape in joint compound

There are differences in assemblies. In the example above, one assembly requires a 23% reduction in allowable load capacity. (This is in *addition* to being framed at a tighter spacing and requiring an additional layer of gypsum board!)

Overview

Many factors go into the proper specification and installation recommendations for structural wall framing:

- Selection of the proper stud with the:
  - Proper coating per the code
  - Proper stud configuration per the code
  - Proper metal thickness per the code
  - Proper labeling on the stud per the code
- The proper installation of the metal stud framing
- Selecting the proper fire-rated assembly when load capacity is a consideration.

Course Summary

By now, the design professional should be able to:

- List the IBC 2012 Code Compliance requirements for cold-formed structural studs
- Explain the minimum physical requirements for cold-formed structural studs per ASTM C955
- Describe the minimum installation requirements for cold-formed structural studs per ASTM C1007
- Explain fire-rated construction when using cold-formed structural studs

Proper Specification and Installation Recommendations for Structural Wall Framing

An AIA Continuing Education Program
Credit for this course is 1 AIA HSW CE Hour

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