

12-2004

# 2004 Supplement to the Standard for Cold-Formed Steel Framing – Prescriptive Method for One and Two Family Dwellings, 2001 Edition

American Iron and Steel Institute

Follow this and additional works at: <http://scholarsmine.mst.edu/ccfss-aisi-spec>



Part of the [Structural Engineering Commons](#)

---

## Recommended Citation

American Iron and Steel Institute, "2004 Supplement to the Standard for Cold-Formed Steel Framing – Prescriptive Method for One and Two Family Dwellings, 2001 Edition" (2004). *AISI-Specifications for the Design of Cold-Formed Steel Structural Members*. 124. <http://scholarsmine.mst.edu/ccfss-aisi-spec/124>

This Report - Technical is brought to you for free and open access by Scholars' Mine. It has been accepted for inclusion in AISI-Specifications for the Design of Cold-Formed Steel Structural Members by an authorized administrator of Scholars' Mine. This work is protected by U. S. Copyright Law. Unauthorized use including reproduction for redistribution requires the permission of the copyright holder. For more information, please contact [scholarsmine@mst.edu](mailto:scholarsmine@mst.edu).



AISI/COFS/PM SUPPLEMENT-2004



**American  
Iron and Steel  
Institute**

## **AISI STANDARD**

**2004 Supplement to the  
Standard for  
Cold-Formed Steel Framing –  
Prescriptive Method for  
One and Two Family Dwellings,  
2001 Edition**

Supplement to AISI/COFS/PM-2001

Endorsed by:



**Steel Framing Alliance™**

## **DISCLAIMER**

The material contained herein has been developed by the American Iron and Steel Institute Committee on Framing Standards. The Committee has made a diligent effort to present accurate, reliable, and useful information on cold-formed steel framing design and installation. The Committee acknowledges and is grateful for the contributions of the numerous researchers, engineers, and others who have contributed to the body of knowledge on the subject. Specific references are included in the *Commentary*.

With anticipated improvements in understanding of the behavior of cold-formed steel framing and the continuing development of new technology, this material may eventually become dated. It is anticipated that AISI will publish updates of this material as new information becomes available, but this cannot be guaranteed.

The materials set forth herein are for general purposes only. They are not a substitute for competent professional advice. Application of this information to a specific project should be reviewed by a design professional. Indeed, in many jurisdictions, such review is required by law. Anyone making use of the information set forth herein does so at their own risk and assumes any and all liability arising there from.

1st Printing - December 2004

Copyright American Iron and Steel Institute 2004

## PREFACE

The American Iron and Steel Institute (AISI) Committee on Framing Standards (COFS) has developed this *2004 Supplement to the Standard for Cold-Formed Steel Framing – Prescriptive Method for One and Two Family Dwellings, 2001 Edition [Supplement]* to provide revisions and updates to the *Standard for Cold-Formed Steel Framing – Prescriptive Method for One and Two Family Dwellings, 2001 Edition [Prescriptive Method]*.

Also included in this document, as User Notes, are the *Errata to the Standard for Cold-Formed Steel Framing – Prescriptive Method for One and Two Family Dwellings [Errata]*, dated September 29, 2004. User Notes are not part of the *Supplement*, but are provided as an aid to the reader. These *Errata* have also been incorporated in the 2<sup>nd</sup> Printing of the *Prescriptive Method*.

The Committee acknowledges and is grateful for the contributions of the numerous engineers, researchers, producers and others who have contributed to the body of knowledge on the subjects. The Committee wishes to also express their appreciation for the support and encouragement of the Steel Framing Alliance.

**AISI COMMITTEE ON FRAMING STANDARDS**

Richard Haws, <i>Chairman</i>	NUCONSTEEL
Steve Fox, <i>Vice Chairman</i>	Canadian Sheet Steel Building Institute
Jay Larson, <i>Secretary</i>	American Iron and Steel Institute
Don Allen	Steel Stud Manufacturers Association
John Butts	John F. Butts & Associates
Brad Cameron	Keymark Engineering
John Carpenter	Alpine Engineered Products
Nader Elhajj	NAHB Research Center
Jeff Ellis	Simpson Strong-Tie
Ray Frobosilo	Super Stud Building Products
Michael Gardner	Gypsum Association
Greg Greenlee	USP Structural Connectors
John Heydon	Heydon Building Systems
Jeff Klaiman	ADTEK Engineers
Roger LaBoube	University of Missouri-Rolla
John Matsen	Matsen Ford Design Associates
Michael Meek	Allied Studco
Kenneth Pagano	Scosta Corporation
Nabil Rahman	The Steel Network
Greg Ralph	Dietrich Industries
Gary Rolih	SENCO Fastening Systems
Reynaud Serrette	Santa Clara University
Fernando Sesma	California Expanded Metal Products
Marge Spencer	Compass International
Peter Tian	Berridge Manufacturing
Steven Walker	Steven H. Walker, P.Eng.
Lei Xu	University of Waterloo
Rahim Zadeh	Marino\Ware

**PRESCRIPTIVE METHODS SUBCOMMITTEE**

Steve Fox, <i>Chairman</i>	Canadian Sheet Steel Building Institute
Jay Larson, <i>Secretary</i>	American Iron and Steel Institute
Don Allen	Steel Stud Manufacturers Association
Nader Elhajj	NAHB Research Center
Michael Gardner	Gypsum Association
Greg Greenlee	USP Structural Connectors
Richard Layding	NUCONSTEEL
Hank Martin	American Iron and Steel Institute
John Matsen	Matsen Ford Design Associates
Dean Peyton	Anderson-Peyton Engineers
Greg Ralph	Dietrich Industries
Fernando Sesma	California Expanded Metal Products
Tim Waite	Simpson Strong-Tie
Lei Xu	University of Waterloo
Rahim Zadeh	Marino\Ware

**This Page Intentionally Left Blank**

**TABLE OF CONTENTS**

**2004 SUPPLEMENT TO THE**

**STANDARD FOR COLD-FORMED STEEL FRAMING –**

**PRESCRIPTIVE METHOD FOR ONE AND TWO FAMILY DWELLINGS, 2001 EDITION**

<b>DISCLAIMER .....</b>	<b>ii</b>
<b>PREFACE.....</b>	<b>iii</b>
<b>AIISI COMMITTEE ON FRAMING STANDARDS.....</b>	<b>iv</b>
<b>PRESCRIPTIVE METHODS SUBCOMMITTEE.....</b>	<b>v</b>
<b>A. GENERAL.....</b>	<b>1</b>
A4 Limitations on Framing Members.....	1
A4.5 Hole Patching .....	1
<b>E. WALL FRAMING.....</b>	<b>2</b>
E2 Wall to Foundation or Floor Connection .....	2
E3 Minimum Stud Sizes .....	3
E7 Headers .....	3
E7.3 Double L-Headers .....	3
E13 Braced Wall Design in High Wind Areas .....	4
E13.3 Connections of Walls in High Wind Areas .....	4
<b>F. ROOF FRAMING.....</b>	<b>5</b>
F2 Ceiling Joists.....	5
F2.4 Ceiling Joist Top Flange Bracing.....	5
F7 Roof Framing Connections in High Wind Areas.....	6
F7.2 Uplift Connection – Roof Rafter or Truss to Wall .....	6
F7.3 Ridge Strap Connection .....	7



**This Page Intentionally Left Blank**

**2004 SUPPLEMENT TO THE  
STANDARD FOR COLD-FORMED STEEL FRAMING –  
PRESCRIPTIVE METHOD FOR ONE AND TWO FAMILY  
DWELLINGS, 2001 EDITION**

**A. GENERAL**

**A4 Limitations on Framing Members**

*(User Note: Revise the text in Section A4.5 on Hole Patching, as shown below.)*

**A4.5 Hole Patching**

~~Web holes violating any of the requirements set forth in~~ of Section A4.4 shall be patched ~~with~~ if the depth of the hole does not exceed 70% of the flat width of the *web* and the length of the hole measured along the *web* does not exceed 10 inches (254 mm) or the depth of the *web*, whichever is greater. The patch shall be a solid steel plate, *stud* section, or *track* section in accordance with Figures A4-3 or A4-4. The steel patch shall be of a minimum thickness as the receiving member and shall extend at least 1 inch (25.4 mm) beyond all edges of the hole. The steel patch shall be fastened to the *web* of the receiving member with No.8 screws spaced no greater than 1 inch (25.4 mm) center-to-center along the edges of the patch with minimum edge distance of 1/2 inch (12.7 mm).

*Structural members* shall be replaced or designed in accordance with accepted engineering practices when *web* holes exceed the following size limits:

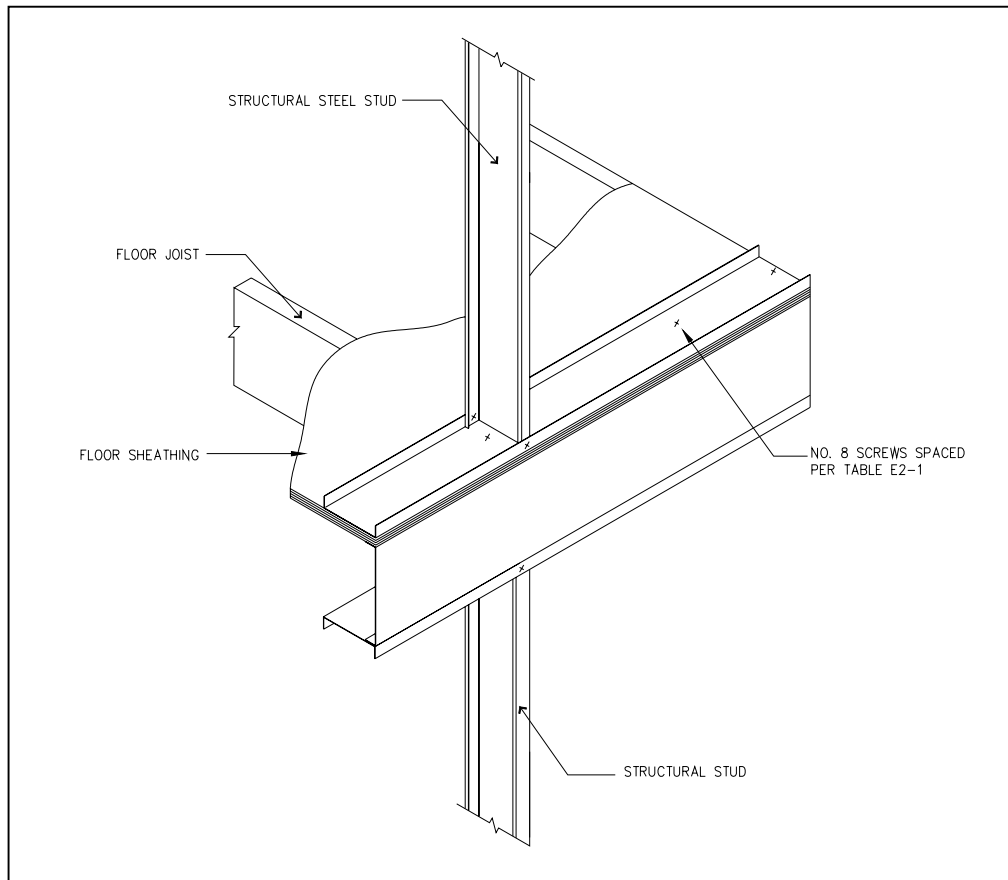
- (a) The depth of the hole, measured across the *web*, exceeds 70% of the ~~depth~~ flat width of the *web*; and/or,
- (b) The length of the hole measured along the *web*, exceeds 10 inches (254 mm) or the depth of the *web*, whichever is greater.

**E. WALL FRAMING**

**E2 Wall to Foundation or Floor Connection**

*(User Note: Revise the text in Section E2 on Wall to Foundation or Floor Connection, add Figure E2-4, and revise the first row in Table E2-1 on Wall to Foundation or Floor Connection Requirements, as shown below.)*

Structural walls shall be anchored to foundations or floors in accordance with Table E2-1 and Figures E2-1 through ~~E2-3~~ E2-4.



**Figure E2-4 Wall to Floor Connection**

**Table E2-1  
Wall to Foundation or Floor Connection Requirements<sup>1</sup>**

Framing Condition	Wind Speed (mph), Exposure, & Seismic Design Category <sup>2</sup>					
	85 A/B or SDC <sup>3</sup> A,B,C	90 A/B	100 A/B 85 C	110 A/B 90 C	100 C	< 110 C
Wall bottom track to floor joist or track	1-No.8 screw at 12" o.c.	1-No.8 screw at 12" o.c.	1-No.8 screw at 12" o.c.	1 - No.8 screw at 12" o.c.	2 - No.8 screw at 12" o.c.	2 - No.8 screw at 12" o.c.

*(User Note: Table E2-1 continues unchanged.)*

### E3 Minimum Stud Sizes

(*User Note - Errata:* In Tables E3-1a, E3-2a, E3-3a, E3-4a, E3-5a, E3-6a, E3-7a, E3-8a, E3-9a and E3-10a, for the case of wind exposure C, 350S162 member size, 24-inch spacing and 8-foot stud length, reverse the values for 120 mph and 130 mph wind speeds.)

(*User Note - Errata:* In Table E3-4b, for the case of 130 mph wind speed exposure C, 350S162 member size, 24-inch spacing, 8-foot stud and 20 psf snow load, change the value from "543" to "54".)

### E7 Headers

(*User Note:* Revise the text in Section E7.3 on Double L-Headers and replace Figure E7-3, as shown below.)

#### E7.3 Double L-Headers

Double L-headers shall be constructed in accordance with Figure E7-3 and Tables E7-10 through E7-23. An L-header consists of a cold-formed steel angle with one short leg lapping over the top track of the wall and one leg extending down the side of the wall above window or door openings as shown in Figure E7-3. Each angle is fastened to top track above an opening with No.8 screws spaced at 12 inches (305 mm) on center. The "L" angle is placed on both sides of the wall opening to form a double angle L-shaped header (double L-header). The long leg of the L-header angle shall be attached to each king and cripple stud(s) and a minimum of one king stud at each end with one No.8 screw at top and bottom.

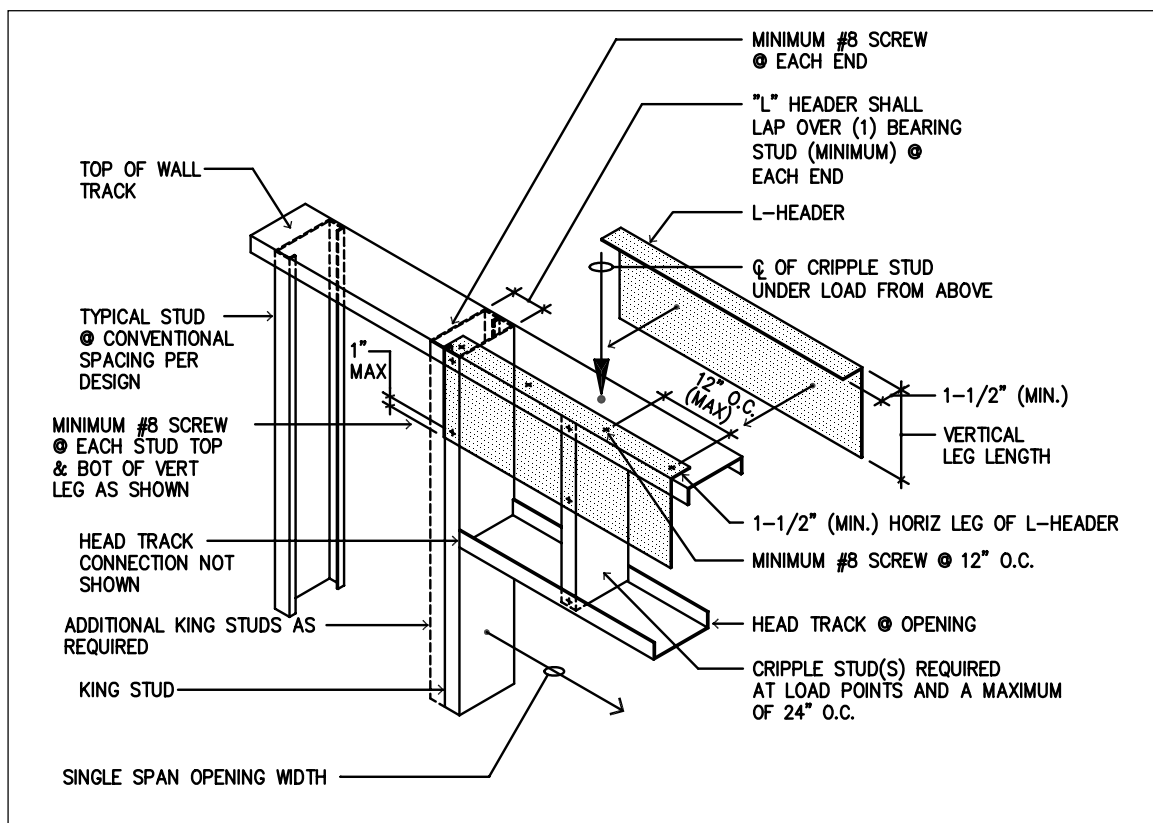


Figure E7-3 Double L-Header

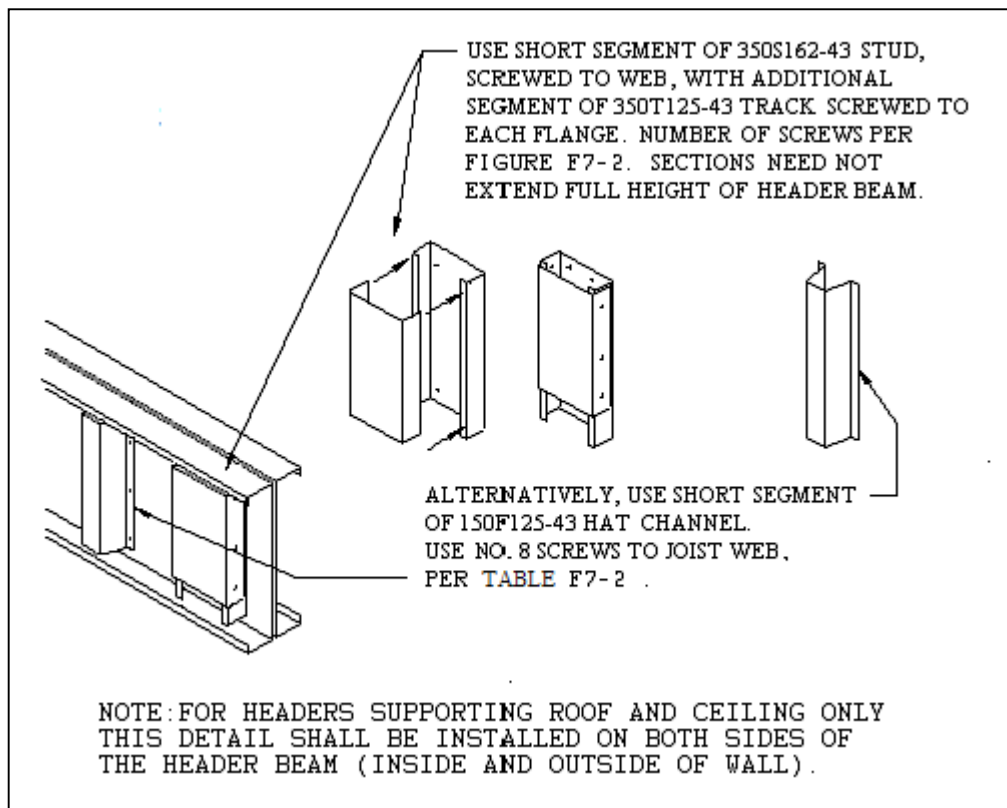
### E13 Braced Wall Design in High Wind Areas

(User Note: Add Section E13.3.3 on Header Uplift Connections and add Figure E13-1, as shown below.)

#### E13.3 Connections of Walls in High Wind Areas

##### E13.3.3 Header Uplift Connections

When it is necessary to make an uplift strap connection to a back-to-back header the header beam shall be reinforced as shown in Figure E13-1. Uplift straps shall be installed on both sides of a back-to-back header beam (inside and outside of the wall) when the header is supporting loads from the roof and ceiling only.



**Figure E13-1 Back-to-Back Header Beam Reinforcement for Uplift Strap Connection**

## F. ROOF FRAMING

### F2 Ceiling Joists

(*User Note: Revise Section F2.4 on Ceiling Joist Top Flange Bracing and add Figures F2-5 and F2-6, as shown below.*)

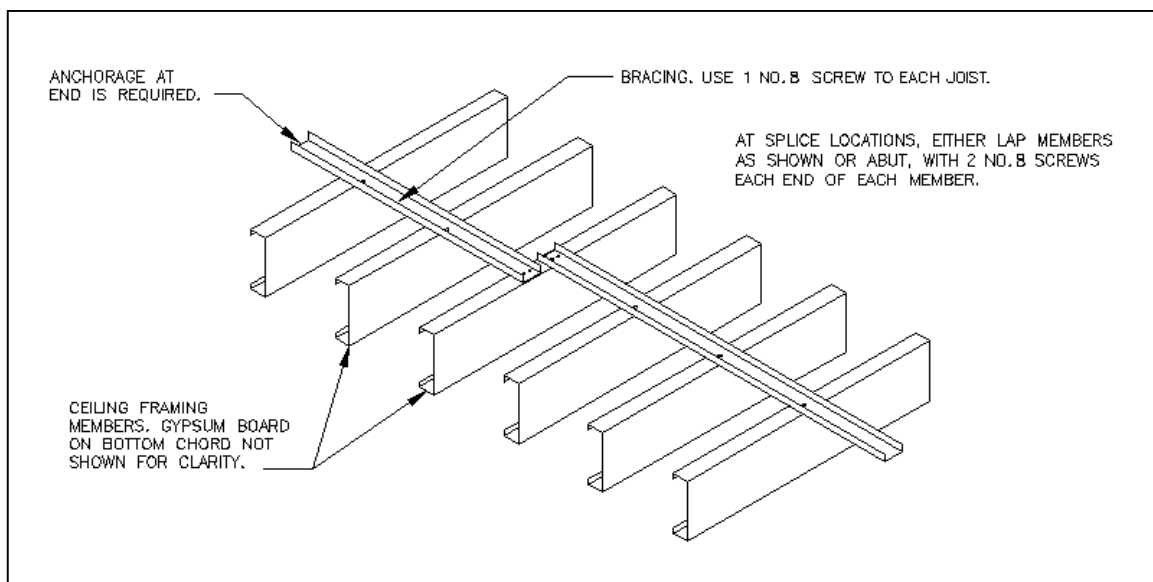
#### F2.4 Ceiling Joist Top Flange Bracing

The top *flanges* of *ceiling joists* shall be laterally braced as required by Tables F2-1 through F2-8, with a minimum:

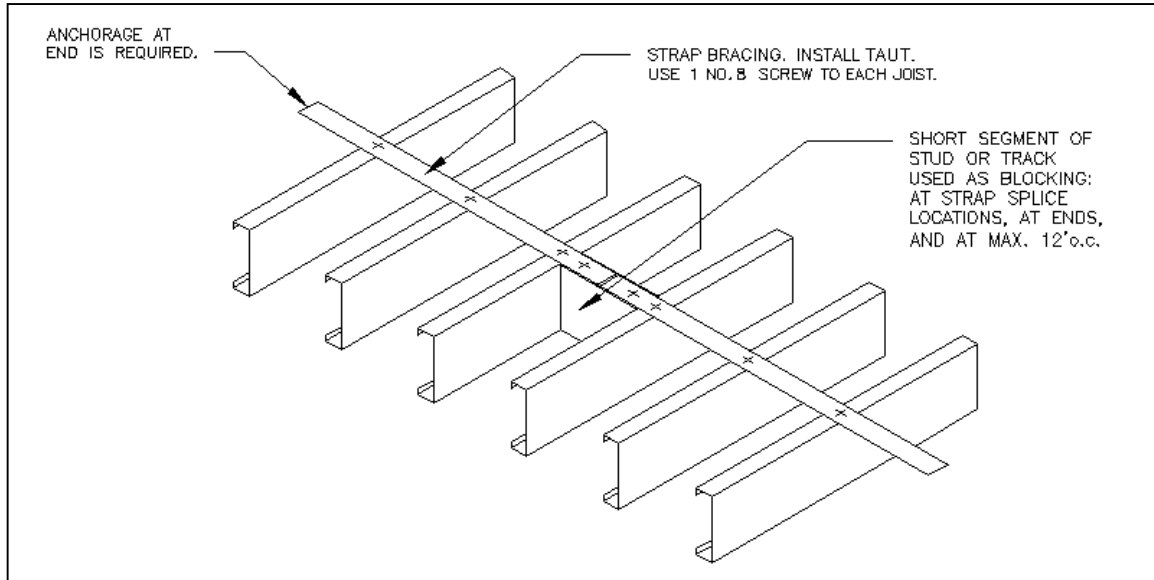
1. 33 mil (0.84 mm) *C-shaped* member in accordance with Figure F2-5, or
2. 33 mil (0.84 mm) *track* section in accordance with Figure F2-5, or
3. 33 mil (0.84 mm) *hat* section in accordance with Figure F2-5, or
4. 54 mil (1.37 mm) 1- 1/2" cold-rolled channel section in accordance with Figure F2-5, or
5. 1-1/2 inch x 33 mil (38 mm x 0.84 mm) continuous steel *strap* in accordance with Figure F2-6.

Lateral *bracing* shall be installed perpendicular to the *ceiling joists* and shall be fastened to the top *flange* of each joist with one No.8 screw. *Blocking* shall be installed between joists in line with *strap bracing* ~~at the termination of all straps and~~ at a maximum spacing of 12 feet (3.66 m) measured perpendicular to the joists. Lateral *bracing* shall be fastened to *blocking* with two No.8 screws. Ends of lateral bracing shall be attached to blocking or anchored to a stable building component with two No.8 screws.

**Exception:** When strap bracing and 3.5" (88.9 mm) ceiling joists are used, strap bracing shall be fastened to blocking with three No.8 screws and ends of the strap bracing shall be attached to blocking or anchored to a stable building component with three No.8 screws.



**Figure F2-5 Ceiling Joist Top Flange Bracing with C-Shape, Track or Cold-Rolled Channel Section**



**Figure F2-6 Ceiling Joist Top Flange Bracing with Continuous Steel Strap and Blocking**

**F7 Roof Framing Connections in High Wind Areas**

*(User Note - Errata: In Table F7-1, for the case of 130 mph basic wind speed, exposure C, 24-inch framing spacing and 28-foot roof span, change the value from “9130” to “913”.)*

*(User Note: Revise Section F7.3 on Ridge Strap Connection, as shown below.)*

**F7.2 Uplift Connection – Roof Rafter or Truss to Wall**

**Table F7-1  
Required Uplift Capacity  
Roof Truss or Rafter to Wall**

		Basic Wind Speed (mph)		
EXPOSURE A/B		130		
EXPOSURE C		110	120	130
Framing Spacing <sup>3</sup> (in.)	Roof Span (ft)	Required Connection Capacity <sup>1,2</sup> (lbs)		
	24	245	336	435

	40	643	881	1144
24	24	413	671	868
	28	557	763	9130
	32	624	855	1130
	36	691	947	1230
	40	804	1101	1430

← 913

### **F7.3 Ridge Strap Connection**

*Roof rafters* shall be provided with a connection at the *ridge* line to transfer tension loads. The *ridge* connection shall be capable of resisting the unit loads listed in Table F7-3 multiplied by the appropriate spacing multiplier. Alternatively, a ~~1-1/4 inch (32 mm) by 33 mil (0.84 mm)~~ steel *ridge strap* shall be provided with minimum No.8 screws on each end of the *strap* as required in Table F7-3. The number of screws shall be increased to account for the spacing multipliers shown in the table. The size of the *ridge strap* shall be in accordance with Table F7-4.