



Design Guide

# SECONDARY FRAMING

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4/2026

The application and detail drawings in this manual are strictly for illustration purposes and may not be applicable to all building designs or product installations. All projects should conform to applicable building codes for that particular area. It is recommended to follow all building regulations and standard industry practices.

Metal Sales Manufacturing Corporation is not responsible for the performance of the framing system if it is not installed in accordance with the suggested instructions referenced in this manual. If there is a conflict between this manual and the Metal Sales approved erection drawings, the approved erection drawings are to take precedence.

Prior to ordering and installing materials, all dimensions should be verified by field measurements.

Metal Sales reserves the right to modify, without notice, any details, recommendations or suggestions. Any questions you may have regarding proper installation of Secondary Framing system should be directed to your Metal Sales representative, see page SF-3.

Oil canning is not a cause for rejection. Oil canning can be described as the amount of waviness found in the flat areas of metal panels. Oil canning is an inherent characteristic of light gauge cold formed metal products, particularly those with broad flat areas. There are many factors which may contribute to oil canning that Metal Sales is not able to control. These factors include: misalignment of the support system, over driving of fasteners used on the panels, stress (whether inherent in the panel or induced), thermal expansion and contraction of the panel, material handling, width, gauge, length, color of panels, and installation. (Reference Metal Construction Association "Oil Canning Position Paper" - Appendix A).

Consult Metal Sales for any additional information not outlined in this manual.

This manual is designed to be utilized as a guide when installing the Retro-Master framing system. It is the responsibility of the erector to ensure the safe installation of this product system.

## **SAFETY**

### **STUDY APPLICABLE OSHA AND OTHER SAFETY REQUIREMENTS BEFORE FOLLOWING THESE INSTRUCTIONS.**

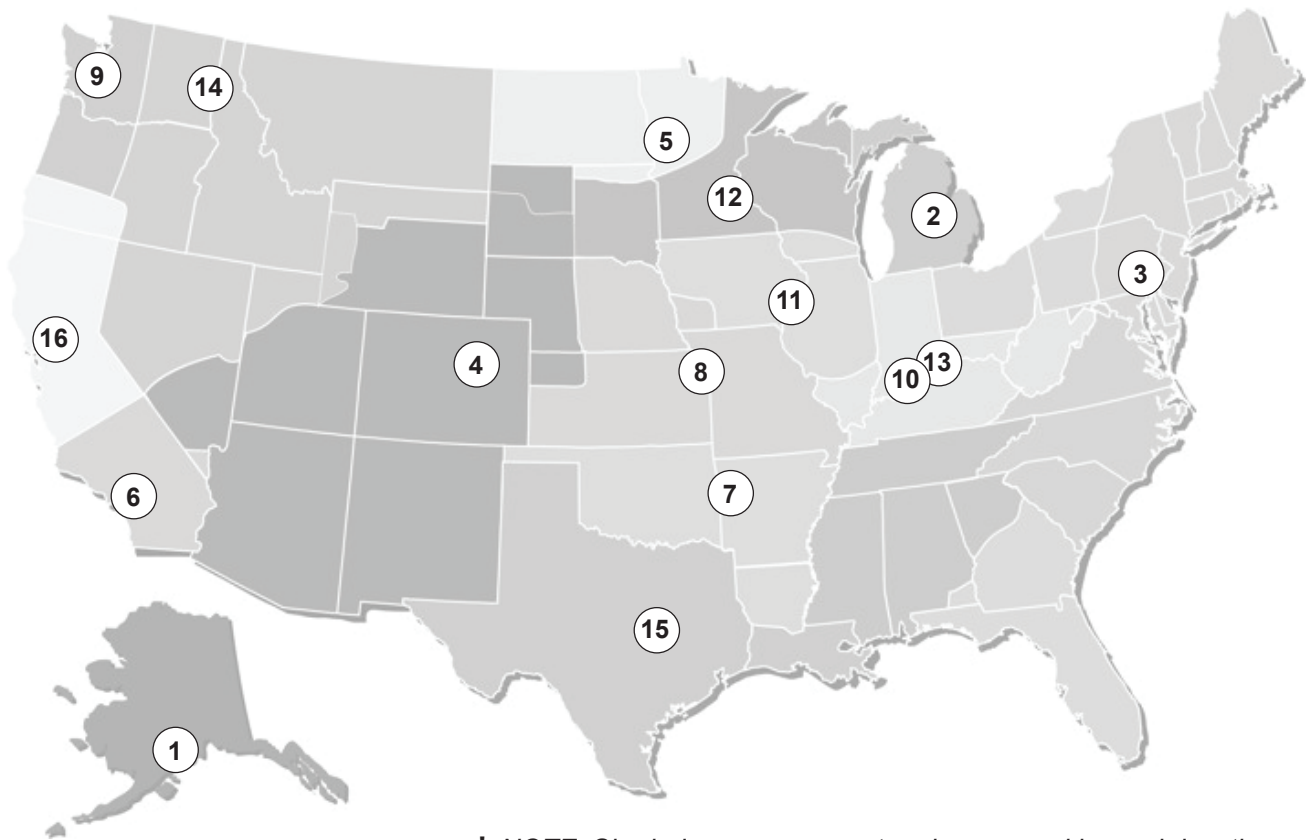
The installation of metal roof systems is a dangerous procedure and should be supervised by trained knowledgeable erectors. **USE EXTREME CARE DURING INSTALLATION.** It is not possible for Metal Sales to be aware of all the possible job site situations that could cause an unsafe condition to exist. The erector of the roof system is responsible for reading these instructions and determining the safest way to install the roof system.

These instructions are provided only as a guide to show a knowledgeable, trained erector the correct parts placement one to another. If following any of the installation steps would endanger a worker, the erector should stop work and decide upon a corrective action.

Provide required safety railing, netting, or safety lines for crew members working on the roof.

Do not use the roof panel as a walking platform. The roof panels will not withstand the weight of a person standing at the edge of the panel.

Do not stand on the roof panel at the ends until the panels have been attached.



\* NOTE: Shaded areas represent regions served by each location.

**SECONDARY FRAMING PRODUCING BRANCHES**

**4 DENVER**  
 7990 East I-25 Frontage Road  
 Longmont, CO 80504  
 303.702.5440  
 800.289.7663

**13 SELLERSBURG**  
 7800 Highway 60  
 Sellersburg, IN 47172  
 812.246.1866  
 800.999.7777

**15 TEMPLE**  
 3838 North General Bruce Drive  
 Temple, TX 76501  
 254.791.6650  
 800.543.4415

**16 WOODLAND**  
 1326 Paddock Place  
 Woodland, CA 95776  
 530.668.5690  
 800.759.6019

**1. ANCHORAGE**

4637 Old Seward Highway  
Anchorage, AK 99503  
907.646.7663  
866.640.7663  
907.646.7664 Fax

**2. BAY CITY**

5209 Mackinaw Road  
Bay City, MI 48706  
989.686.5879  
888.777.7640  
989.686.5870 Fax  
888.777.0112 Fax

**3. DEER LAKE**

29 Pinedale Industrial Road  
Orwigsburg, PA 17961  
570.366.2020  
800.544.2577  
570.366.1648 Fax  
800.544.2574 Fax

**4. DENVER**

7990 East I-25 Frontage Road  
Longmont, CO 80504  
303.702.5440  
800.289.7663  
800.289.1617 Fax

**5. DETROIT LAKES**

1435 Egret Avenue  
Detroit Lakes, MN 56501  
218.847.2988  
888.594.1394  
218.847.4835 Fax  
888.594.1454 Fax

**6. FONTANA**

14213 Whittram Avenue  
Fontana, CA 92335  
909.829.8618  
800.782.7953  
909.829.9083 Fax

**7. FORT SMITH**

7510 Ball Road  
Fort Smith, AR 72908  
479.646.1176  
877.452.3915  
479.646.5204 Fax

**8. INDEPENDENCE**

1306 South Powell Road  
Independence, MO 64057  
816.796.0900  
800.747.0012  
816.796.0906 Fax

**9. KELSO**

2680 Coweeman Park Drive  
Kelso, WA 98626  
253.872.5750  
800.431.3470  
253.872.2008 Fax

**10. NEW ALBANY**

999 Park Place  
New Albany, IN 47150  
812.944.2733  
812.944.1418 Fax

**11. ROCK ISLAND**

8111 West 29th Street  
Rock Island, IL 61201  
309.787.1200  
800.747.1206  
309.787.1833 Fax

**12. ROGERS**

22651 Industrial Boulevard  
Rogers, MN 55374  
763.428.8080  
800.328.9316  
763.428.8525 Fax  
800.938.9119 Fax

**13. SELLERSBURG**

7800 Highway 60  
Sellersburg, IN 47172  
812.246.1866  
800.999.7777  
812.246.0893 Fax  
800.477.9318 Fax

**14. SPOKANE**

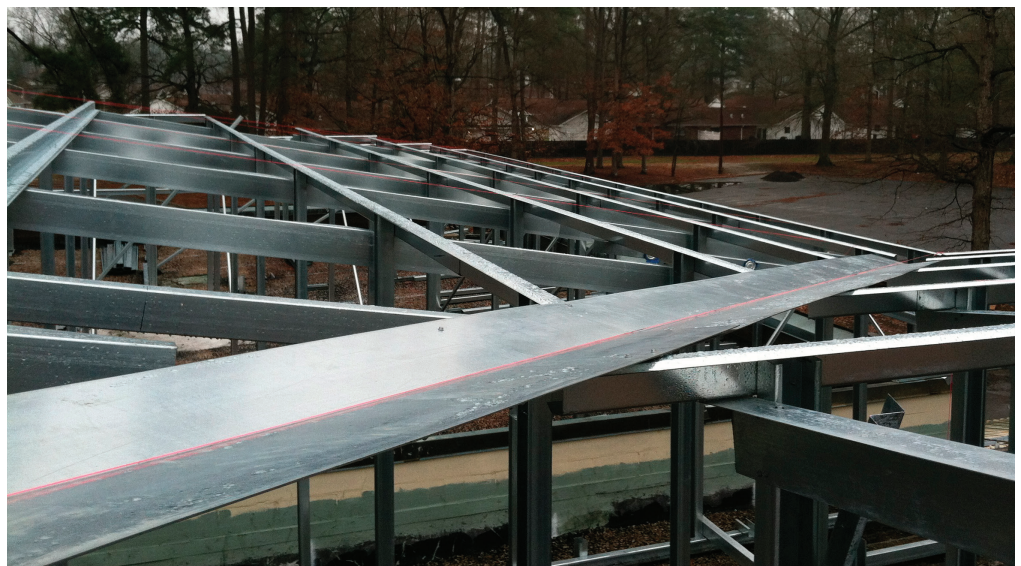
2727 East Trent Avenue  
Spokane, WA 99202  
509.536.6000  
800.572.6565  
509.534.4427 Fax

**15. TEMPLE**

3838 North General Bruce Drive  
Temple, TX 76501  
254.791.6650  
800.543.4415  
254.791.6655 Fax  
800.543.4473 Fax

**16. WOODLAND**

1326 Paddock Place  
Woodland, CA 95776  
530.668.5690  
800.759.6019  
530.668.0901 Fax



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**Material**

- Standard gauges: 12, 14, 16 and 10 gauge.
- Available in either Red Oxide or Galvanized. USA Grey is available on request with additional cost and lead time.
- Galvanized member-meets ASTM A653, G90, Grade 55 with minimum yield of 55 ksi and minimum tensile of 70 ksi.
- Galvanized miscellaneous member (hats and channels)-meets ASTM A653, G90, Grade 50 with minimum yield of 50 ksi.
- Red Oxide member-meets ASTM A1011, Grade 55 with minimum yield of 55 ksi and minimum tensile of 70 ksi.
- Red Oxide finish performance:
  - Pencil Hardness: HB - H
  - Impact Resistance: 160 in/lb
  - Dry Film Thickness: 0.45 to 0.55 mils
  - Lead Content (%): none

**Thicknesses**

- 22 ga = 0.0296" minimum coated thickness, 0.030" Design Thickness (Hat, Sub-Girt)
- 18 ga = 0.0466" minimum coated thickness, 0.0475" Design Thickness (Channel, Sub-Girt)
- 16 ga = 0.057" minimum coated thickness, 0.0584" Design Thickness
- 14 ga = 0.067" minimum coated thickness, 0.0689" Design Thickness
- 12 ga = 0.099" minimum coated thickness, 0.1030" Design Thickness
- 10 ga = 0.130" minimum coated thickness, 0.1350" Design Thickness (Denver only)
- Minimum coated thickness includes steel, zinc and paint.

**Length**

- Ceess, Zees and Eave Struts are ordered cut to length. They can be ordered cut to the 1/8" inch.
- Channels, Hip/Valley Plates and Angles available in standard 20'-0" lengths. Other lengths and profiles are possible and may be quoted by the branch if it can be made on our equipment and material is available.
- The tables on pages SF-6 and SF-7 show manufacturing limitations per manufacturing branch. Because not all limits are independent, they are not necessarily available on a particular profile. Consult with Metal Sales for non-standard profiles that do not have a listed Product Code.
- Hat Sections are available in standard 20'-0" lengths. These shapes are not manufactured inhouse and are not available in other thicknesses or profiles.

**SECONDARY FRAMING****Product Limitations Chart**

Cees & Channels		DENVER	SELLERSBURG	TEMPLE	WOODLAND	
Depth (inches)	min	4	4	4	4	
	max	24	12	12	14	
Flange (inches)	min	2	2.5	2.5	2.5	
	max	5	4	3.5	4	
Thickness (gauge)	min	16	16	16	16	
	max	10	12	12	12	
Length (feet)	min	1	6	1	1	
	max	40	45	45	45	

Equal Leg Zees		DENVER	SELLERSBURG	TEMPLE	WOODLAND	
Depth (inches)	min	4	4	4	4	
	max	24	12	12	12	
Flange (inches)	min	2	2.5	2.5	2.5	
	max	4	4	3.5	4	
Thickness (gauge)	min	16	16	16	16	
	max	10	12	12	12	
Length (feet)	min	1	7	1	1	
	max	40	45	45	45	

Lap Zees		DENVER	SELLERSBURG	TEMPLE	WOODLAND	
Depth (inches)	min	4	4	4	4	
	max	24	12	12	12	
Flange (inches)	min	2.125	2.125	2.125	2.125	
	max	3.875	3.875	3.375	3.375	
Thickness (gauge)	min	16	16	16	16	
	max	10	12	12	12	
Length (feet)	min	1	7	1	1	
	max	40	45	45	45	

# SECONDARY FRAMING

# Product Limitations Chart

Eave Struts - Single & Double		DENVER	SELLERSBURG	TEMPLE	WOODLAND	
Depth (inches)	min	4	4	6	4	
	max	24	12	12	12	
Flange (inches)	min	2.125	2.5	2.5	2.5	
	max	5	5	5	5	
Thickness (gauge)	min	16	16	16	16	
	max	10	12	12	12	
Length (feet)	min	1	6	1	1	
	max	40	30	30	30	
Slope	min	1:12	1:12	1:12	1:12	
	max	5:12	4:12	4:12	4:12	
Weight (lbs)	max	-	200	200	200	

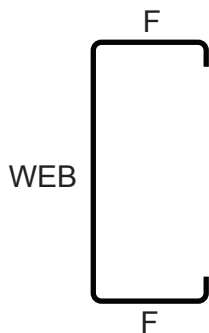
High Eave - Eave Struts and any Single Slope >2:12 not available in Mocksville

Hip / Valley Plate		DENVER	SELLERSBURG	TEMPLE	WOODLAND	
Size (inches)	min	-	7x7	7x7	7x7	
	max	-	10x10	10x10	10x10	
Thickness (gauge)	min	-	16	16	16	
	max	-	12	12	12	
Length (feet)	min	-	6	6	6	
	max	-	30	30	30	
Angle (degrees)	min	-	180	180	180	
	max	-	90	90	90	
Weight (lbs)	max	-	200	200	200	

Angle		DENVER	SELLERSBURG	TEMPLE	WOODLAND	
Size (inches)	min	2x4	2x2	2x2	2x2	
	max	6x4	6x4	6x4	6x4	
Thickness (gauge)	min	16	16	16	16	
	max	10	12	12	12	
Length (feet)	min	1	6	6	6	
	max	40	30	30	30	
Weight (lbs)	max	-	200	200	200	

# SECONDARY FRAMING

# Product Codes & Branch Availability



## Cee

See Pages SF-5 thru SF-7 for limitations and custom options.

Size Web x Flange	Ga.	Finish	Product Code	Denver	Sellersburg	Temple	Woodland			Finish	Product Code	Denver	Sellersburg	Temple	Woodland
										Galv.					
4" x 2-1/2"	16	Red Ox	3301640	•	•	•			Galv.	3301600	•	•	•	•	
4" x 2-1/2"	14	Red Ox	3301440	•	•	•			Galv.	3301400	•	•	•	•	
4" x 3-1/2"	16	Red Ox	3311640	•	•	•			Galv.	3311600	•	•	•	•	
4" x 3-1/2"	14	Red Ox	3301740	•	•	•			Galv.	3301700	•	•	•	•	
4" x 3-1/2"	12	Red Ox	3311240	•	•	•			Galv.	3311200	•	•	•	•	
6" x 2-1/2"	16	Red Ox	3331640	•	•	•			Galv.	3331600	•	•	•	•	
6" x 2-1/2"	14	Red Ox	3331440	•	•	•			Galv.	3331400	•	•	•	•	
6" x 2-1/2"	12	Red Ox	3331240	•	•	•			Galv.	3331200	•	•	•	•	
6" x 3-1/2"	16	Red Ox	3351640	•	•	•			Galv.	3351680	•	•	•	•	
6" x 3-1/2"	14	Red Ox	3351440	•	•	•			Galv.	3351400	•	•	•	•	
6" x 3-1/2"	12	Red Ox	3351240	•	•	•			Galv.	3351200	•	•	•	•	
6" x 4"	16	Red Ox	3351840	•	•				Galv.	3351800	•	•		•	
6" x 4"	14	Red Ox	3351740	•	•				Galv.	3351700	•	•		•	
6" x 4"	12	Red Ox	3351540	•	•				Galv.	3351500	•	•		•	
8" x 2-1/2"	16	Red Ox	3391640	•	•	•			Galv.	3391600	•	•	•	•	
8" x 2-1/2"	14	Red Ox	3391440	•	•	•			Galv.	3391400	•	•	•	•	
8" x 2-1/2"	12	Red Ox	3391240	•	•	•			Galv.	3391200	•	•	•	•	
8" x 3"	16	Red Ox	3401640	•	•				Galv.	3401600	•	•		•	
8" x 3"	14	Red Ox	3401540	•	•				Galv.	3401500	•	•		•	
8" x 3"	12	Red Ox	3401440	•	•				Galv.	3401400	•	•		•	
8" x 3-1/2"	16	Red Ox	3411640	•	•	•			Galv.	3411600	•	•	•	•	
8" x 3-1/2"	14	Red Ox	3411440	•	•	•			Galv.	3411400	•	•	•	•	
8" x 3-1/2"	12	Red Ox	3411240	•	•	•			Galv.	3411200	•	•	•	•	

# SECONDARY FRAMING

# Product Codes & Branch Availability



## Cee

See Pages SF-5 thru SF-7 for limitations and custom options.

Size Web x Flange	Ga.	Finish	Product Code	Denver	Sellersburg	Temple	Woodland		Finish	Product Code	Denver	Sellersburg	Temple	Woodland
8" x 4"	14	Red Ox	3411840	•	•				Galv.	3411800	•	•		•
8" x 4"	12	Red Ox	3411740	•	•				Galv.	3411700	•	•		•
8" x 5"	14	Red Ox	3414040	•					Galv.	3414000	•			
8" x 5"	12	Red Ox	3412040	•					Galv.	3412000	•			
9" x 3"	16	Red Ox	3431640	•	•				Galv.	3431600	•	•		•
9" x 3"	14	Red Ox	3431440	•	•				Galv.	3431400	•	•		•
9" x 3"	12	Red Ox	3431240	•	•				Galv.	3431200	•	•		•
9" x 3-1/2"	16	Red Ox	3441640	•	•				Galv.	3441600	•	•		•
9" x 3-1/2"	14	Red Ox	3441440	•	•				Galv.	3441400	•	•		•
9" x 3-1/2"	12	Red Ox	3441240	•	•				Galv.	3441200	•	•		•
9" x 4"	16	Red Ox	3431740	•	•				Galv.	3431700	•	•		•
9" x 4"	14	Red Ox	3431840	•	•				Galv.	3431800	•	•		•
9" x 4"	12	Red Ox	3431940	•	•				Galv.	3431900	•	•		•
9" x 4-1/2"	14	Red Ox	3436040	•					Galv.	3436000	•			
9" x 4-1/2"	12	Red Ox	3436140	•					Galv.	3436100	•			
9" x 5"	12	Red Ox	3436240	•					Galv.	3436200	•			
9" x 5"	14	Red Ox	3436340	•					Galv.	3436300	•			
10" x 2-1/2"	16	Red Ox	3451640	•	•	•			Galv.	3451600	•	•	•	•
10" x 2-1/2"	14	Red Ox	3451440	•	•	•			Galv.	3451400	•	•	•	•
10" x 2-1/2"	12	Red Ox	3451240	•	•	•			Galv.	3451200	•	•	•	•

# SECONDARY FRAMING

# Product Codes & Branch Availability



## Cee

See Pages SF-5 thru SF-7 for limitations and custom options.

Size Web x Flange	Ga.	Finish	Product Code	Denver	Sellersburg	Temple	Woodland			Finish	Product Code	Denver	Sellersburg	Temple	Woodland
										Galv.					
10" x 3"	16	Red Ox	3461640	•	•					Galv.	3461600	•	•		
10" x 3"	14	Red Ox	3461440	•	•					Galv.	3461400	•	•		
10" x 3"	12	Red Ox	3461240	•	•					Galv.	3461200	•	•		
10" x 3-1/2"	14	Red Ox	3471440	•	•	•				Galv.	3471400	•	•	•	
10" x 3-1/2"	12	Red Ox	3471240	•	•	•				Galv.	3471200	•	•	•	
10" x 4"	14	Red Ox	3481440	•	•					Galv.	3481400	•	•		
10" x 4"	12	Red Ox	3481240	•	•					Galv.	3481200	•	•		
10" x 5"	14	Red Ox	3436440	•						Galv.	3436400	•			
10" x 5"	12	Red Ox	3436540	•						Galv.	3436500	•			
12" x 2-1/2"	14	Red Ox	3511440	•	•	•				Galv.	3511400	•	•	•	•
12" x 2-1/2"	12	Red Ox	3511240	•	•	•				Galv.	3511200	•	•	•	•
12" x 3"	14	Red Ox	3521440	•	•					Galv.	3521400	•	•		•
12" x 3"	12	Red Ox	3521240	•	•					Galv.	3521200	•	•		•
12" x 3-1/2"	14	Red Ox	3531440	•	•	•				Galv.	3531400	•	•	•	•
12" x 3-1/2"	12	Red Ox	3531240	•	•	•				Galv.	3531200	•	•	•	•
12" x 4"	14	Red Ox	3541440	•	•					Galv.	3541400	•	•		•
12" x 4"	12	Red Ox	3541240	•	•					Galv.	3541200	•	•		•
12" x 5"	12	Red Ox	3436640	•						Galv.	3436600	•			
14" x 2-1/2"	12	Red Ox	3618240	•						Galv.	3618200	•			•
14" x 3"	12	Red Ox	3617240	•						Galv.	3617200	•			•
14" x 4"	12	Red Ox	3212140	•						Galv.	3212100	•			•
16" x 3"	12	Red Ox	3436740	•						Galv.	3436700	•			
16" x 5"	12	Red Ox	3436840	•						Galv.	3436800	•			
18" x 4"	12	Red Ox	3226140	•						Galv.	3226100	•			
20" x 3"	12	Red Ox	3436940	•						Galv.	3436900	•			
20" x 5"	10	Red Ox	3437040	•						Galv.	3437000	•			
22" x 4"	10	Red Ox	3437140	•						Galv.	3437100	•			
24" x 3"	10	Red Ox	3437240	•						Galv.	3437200	•			

# SECONDARY FRAMING

# Product Codes & Branch Availability



## Channel

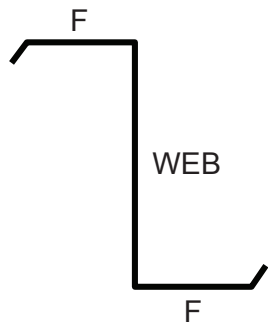
Standard Length is 20'-0".

See Pages SF-5 thru SF-7 for limitations and custom options.

Size Web x Flange	Ga.	Finish	Product Code	Denver	Sellersburg	Temple	Woodland		Finish	Product Code	Denver	Sellersburg	Temple	Woodland	
6.125" x 2"	16	Red Ox	3213040	•	•	•			Galv.	3213000	•	•	•	•	
6.125" x 3"	16	Red Ox	3208140	•	•	•			Galv.	3208100	•	•	•	•	
6.125" x 3"	14	Red Ox	3208240	•	•	•			Galv.	3208200	•	•	•	•	
8.125" x 2"	16	Red Ox	3213140	•	•	•			Galv.	3213100	•	•	•	•	
8.125" x 2"	14	Red Ox	3213240	•	•	•			Galv.	3213200	•	•	•	•	
8.125" x 3"	16	Red Ox	3208340	•	•	•			Galv.	3208300	•	•	•	•	
8.125" x 3"	14	Red Ox	3208440	•	•	•			Galv.	3208400	•	•	•	•	
8.125" x 3"	12	Red Ox	3208540	•	•	•			Galv.	3208500	•	•	•	•	
8.125" x 4"	14	Red Ox	3208640	•	•	•			Galv.	3208600	•	•	•	•	
8.125" x 4"	12	Red Ox	3208740	•	•	•			Galv.	3208700	•	•	•	•	
9.125" x 2-1/2"	16	Red Ox	3213340	•	•				Galv.	3213300	•	•		•	
9.125" x 2-1/2"	14	Red Ox	3213440	•	•				Galv.	3213400	•	•		•	
9.125" x 2-1/2"	12	Red Ox	3213540	•	•				Galv.	3213500	•	•		•	
9.125" x 3-1/2"	14	Red Ox	3208840	•	•				Galv.	3208800	•	•		•	
9.125" x 3-1/2"	12	Red Ox	3208940	•	•				Galv.	3218900	•	•		•	
9.125" x 4"	14	Red Ox	3209040	•	•				Galv.	3209000	•	•		•	
9.125" x 4"	12	Red Ox	3209140	•	•				Galv.	3209100	•	•		•	
10.125" x 2"	16	Red Ox	3213640	•	•	•			Galv.	3216300	•	•	•	•	
10.125" x 2"	14	Red Ox	3213740	•	•	•			Galv.	3213700	•	•	•	•	
10.125" x 3"	14	Red Ox	3209240	•	•	•			Galv.	3209200	•	•	•	•	
10.125" x 3"	12	Red Ox	3209340	•	•	•			Galv.	3209300	•	•	•	•	
10.125" x 3-1/2"	14	Red Ox	3209440	•	•				Galv.	3209400	•	•		•	
10.125" x 3-1/2"	12	Red Ox	3209540	•	•				Galv.	3209500	•	•		•	
10.125" x 4"	12	Red Ox	3209640	•	•	•			Galv.	3209600	•	•	•	•	
12.125" x 2"	14	Red Ox	3213940	•	•	•			Galv.	3213900	•	•	•	•	
12.125" x 2"	12	Red Ox	3214840	•	•	•			Galv.	3214800	•	•	•	•	
12.125" x 3-1/2"	14	Red Ox	3209740	•	•				Galv.	3209700	•	•		•	
12.125" x 3-1/2"	12	Red Ox	3209840	•	•				Galv.	3209800	•	•		•	
12.125" x 4"	12	Red Ox	3209940	•	•	•			Galv.	3209920	•	•	•	•	

# SECONDARY FRAMING

# Product Codes & Branch Availability



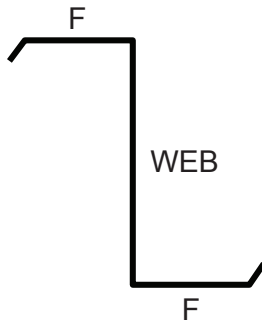
## Equal Leg Zee

See Pages SF-5 thru SF-7 for limitations and custom options.

Size Web x Flange	Ga.	Finish	Product Code	Branch Availability				Finish	Product Code	Branch Availability			
				Denver	Sellersburg	Temple	Woodland			Denver	Sellersburg	Temple	Woodland
4" x 2-1/2"	16	Red Ox	3741640	•	•	•		Galv.	3741600	•	•	•	•
4" x 2-1/2"	14	Red Ox	3741440	•	•	•		Galv.	3741400	•	•	•	•
4" x 3-1/2"	16	Red Ox	3771640	•		•		Galv.	3771600	•		•	•
4" x 3-1/2"	14	Red Ox	3771440	•		•		Galv.	3771400	•		•	•
4" x 3-1/2"	12	Red Ox	3771240	•		•		Galv.	3771200	•		•	•
6" x 2-1/2"	16	Red Ox	3811640	•	•	•		Galv.	3811600	•	•	•	•
6" x 2-1/2"	14	Red Ox	3811440	•	•	•		Galv.	3811400	•	•	•	•
6" x 2-1/2"	12	Red Ox	3811240	•	•	•		Galv.	3811200	•	•	•	•
6" x 3-1/2"	16	Red Ox	3220640	•	•	•		Galv.	3220600	•	•	•	•
6" x 3-1/2"	14	Red Ox	3620840	•	•	•		Galv.	3620800	•	•	•	•
6" x 3-1/2"	12	Red Ox	3621040	•	•	•		Galv.	3621000	•	•	•	•
8" x 2-1/2"	16	Red Ox	3871640	•	•	•		Galv.	3871600	•	•	•	•
8" x 2-1/2"	14	Red Ox	3871440	•	•	•		Galv.	3871400	•	•	•	•
8" x 2-1/2"	12	Red Ox	3871240	•	•	•		Galv.	3871200	•	•	•	•
8" x 3-1/2"	16	Red Ox	3891640	•	•	•		Galv.	3891600	•	•	•	•
8" x 3-1/2"	14	Red Ox	3891440	•	•	•		Galv.	3891400	•	•	•	•
8" x 3-1/2"	12	Red Ox	3891240	•	•	•		Galv.	3891200	•	•	•	•
9" x 3"	16	Red Ox	3911640	•	•			Galv.	3911600	•	•		•
9" x 3"	14	Red Ox	3911440	•	•			Galv.	3911400	•	•		•
9" x 3"	12	Red Ox	3911240	•	•			Galv.	3911200	•	•		•

# SECONDARY FRAMING

# Product Codes & Branch Availability



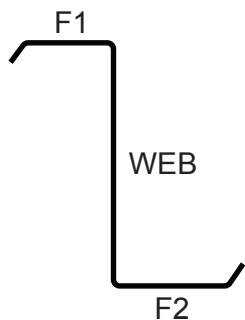
## Equal Leg Zee

See Pages SF-5 thru SF-7 for limitations and custom options.

Size Web x Flange	Ga.	Finish	Product Code	Denver	Sellersburg	Temple	Woodland			Finish	Product Code	Denver	Sellersburg	Temple	Woodland
										Galv.					
9" x 3-1/2"	16	Red Ox	3921640	•	•					Galv.	3921600	•	•		•
9" x 3-1/2"	14	Red Ox	3921440	•	•					Galv.	3921400	•	•		•
9" x 3-1/2"	12	Red Ox	3921240	•	•					Galv.	3921200	•	•		•
10" x 2-1/2"	16	Red Ox	3931640	•	•	•				Galv.	3931600	•	•	•	•
10" x 2-1/2"	14	Red Ox	3931440	•	•	•				Galv.	3931400	•	•	•	•
10" x 2-1/2"	12	Red Ox	3931240	•	•	•				Galv.	3931200	•	•	•	•
10" x 3"	16	Red Ox	3941640	•	•					Galv.	3941600	•	•		•
10" x 3"	14	Red Ox	3941440	•	•					Galv.	3941400	•	•		•
10" x 3"	12	Red Ox	3941240	•	•					Galv.	3941200	•	•		•
10" x 3-1/2"	14	Red Ox	3951440	•	•	•				Galv.	3951400	•	•	•	•
10" x 3-1/2"	12	Red Ox	3951240	•	•	•				Galv.	3951200	•	•	•	•
10" x 4"	14	Red Ox	3991440	•	•					Galv.	3991400	•	•		•
10" x 4"	12	Red Ox	3991240	•	•					Galv.	3991200	•	•		•
12" x 2-1/2"	14	Red Ox	3961440	•	•	•				Galv.	3961400	•	•	•	•
12" x 2-1/2"	12	Red Ox	3961240	•	•	•				Galv.	3961200	•	•	•	•
12" x 3"	14	Red Ox	3971440	•	•					Galv.	3971400	•	•		•
12" x 3"	12	Red Ox	3971240	•	•					Galv.	3971200	•	•		•
12" x 3-1/2"	14	Red Ox	3981440	•	•	•				Galv.	3981400	•	•	•	•
12" x 3-1/2"	12	Red Ox	3981240	•	•	•				Galv.	3981200	•	•	•	•

# SECONDARY FRAMING

# Product Codes & Branch Availability



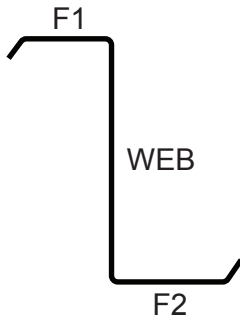
## Lap Zee

See Pages SF-5 thru SF-7 for limitations and custom options.

Size Web x Flange1 x Flange2	Ga.	Finish	Product Code	Branch Availability				Finish	Product Code	Branch Availability			
				Denver	Sellersburg	Temple	Woodland			Denver	Sellersburg	Temple	Woodland
4" x 2-1/8" x 2-3/8"	16	Red Ox	3205040	•	•	•		Galv.	3205000	•	•	•	•
4" x 2-1/8" x 2-3/8"	14	Red Ox	3204940	•	•	•		Galv.	3204900	•	•	•	•
6" x 2-1/8" x 2-3/8"	16	Red Ox	3205140	•	•	•		Galv.	3205100	•	•	•	•
6" x 2-1/8" x 2-3/8"	14	Red Ox	3205240	•	•	•		Galv.	3205200	•	•	•	•
6" x 2-1/8" x 2-3/8"	12	Red Ox	3204840	•	•	•		Galv.	3204800	•	•	•	•
8" x 2-1/8" x 2-3/8"	16	Red Ox	3205440	•	•	•		Galv.	3205400	•	•	•	•
8" x 2-1/8" x 2-3/8"	14	Red Ox	3205540	•	•	•		Galv.	3205500	•	•	•	•
8" x 2-1/8" x 2-3/8"	12	Red Ox	3205640	•	•	•		Galv.	3205600	•	•	•	•
8" x 3-1/8" x 3-3/8"	16	Red Ox	3200140	•	•	•		Galv.	3200100	•	•	•	•
8" x 3-1/8" x 3-3/8"	14	Red Ox	3205740	•	•	•		Galv.	3205700	•	•	•	•
8" x 3-1/8" x 3-3/8"	12	Red Ox	3205840	•	•	•		Galv.	3205800	•	•	•	•
9" x 2-5/8" x 2-7/8"	16	Red Ox	328540	•	•			Galv.	328500	•	•		•
9" x 2-5/8" x 2-7/8"	14	Red Ox	3205940	•	•			Galv.	3205900	•	•		•
9" x 2-5/8" x 2-7/8"	12	Red Ox	3206040	•	•			Galv.	3206000	•	•		•
9" x 3-1/8" x 3-3/8"	16	Red Ox	3205340	•	•			Galv.	3205300	•	•		•
9" x 3-1/8" x 3-3/8"	14	Red Ox	3206140	•	•			Galv.	3206100	•	•		•
9" x 3-1/8" x 3-3/8"	12	Red Ox	3206240	•	•			Galv.	3206200	•	•		•
10" x 2-1/8" x 2-3/8"	16	Red Ox	3207740	•	•	•		Galv.	3207800	•	•	•	•
10" x 2-1/8" x 2-3/8"	14	Red Ox	3206340	•	•	•		Galv.	3206300	•	•	•	•
10" x 2-1/8" x 2-3/8"	12	Red Ox	3206440	•	•	•		Galv.	3206400	•	•	•	•

# SECONDARY FRAMING

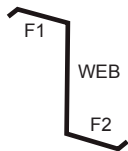
# Product Codes & Branch Availability



## Lap Zee

See Pages SF-5 thru SF-7 for limitations and custom options.

Size Web x Flange1 x Flange2	Ga.	Finish	Product Code	Denver	Sellersburg	Temple	Woodland	Finish	Product Code	Denver	Sellersburg	Temple	Woodland
10" x 2-5/8" x 2-7/8"	16	Red Ox	3228640	•	•			Galv.	3228600	•	•		•
10" x 2-5/8" x 2-7/8"	14	Red Ox	3210040	•	•			Galv.	3210000	•	•		•
10" x 2-5/8" x 2-7/8"	12	Red Ox	3210140	•	•			Galv.	3210100	•	•		•
10" x 3-1/8" x 3-3/8"	14	Red Ox	3222540	•	•	•		Galv.	3222500	•	•	•	•
10" x 3-1/8" x 3-3/8"	12	Red Ox	3206540	•	•	•		Galv.	3206500	•	•	•	•
10" x 3-5/8" x 3-7/8"	14	Red Ox	3206640	•	•			Galv.	3206600	•	•		•
10" x 3-5/8" x 3-7/8"	12	Red Ox	3206740	•	•			Galv.	3206700	•	•		•
12" x 2-1/8" x 2-3/8"	14	Red Ox	3207340	•	•	•		Galv.	3207300	•	•	•	•
12" x 2-1/8" x 2-3/8"	12	Red Ox	3206840	•	•	•		Galv.	3206800	•	•	•	•
12" x 2-5/8" x 2-7/8"	14	Red Ox	3206940	•	•			Galv.	3206900	•	•		•
12" x 2-5/8" x 2-7/8"	12	Red Ox	3207040	•	•			Galv.	3207000	•	•		•
12" x 3-1/8" x 3-3/8"	14	Red Ox	3207240	•	•	•		Galv.	3207210	•	•	•	•
12" x 3-1/8" x 3-3/8"	12	Red Ox	3207140	•	•	•		Galv.	3207100	•	•	•	•



## Slope Zee

See Pages SF-5 thru SF-7 for limitations and custom options.

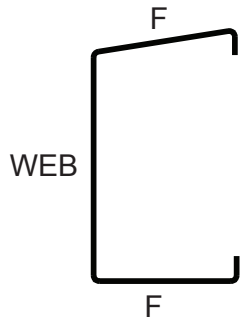
4" x 2-1/8" x 2-3/8"	16	Red Ox	3205040	•				Galv.	3205000	•			
4" x 2-1/8" x 2-3/8"	14	Red Ox	3204940	•				Galv.	3204900	•			
6" x 2-1/8" x 2-3/8"	16	Red Ox	3205140	•				Galv.	3205100	•			
6" x 2-1/8" x 2-3/8"	14	Red Ox	3205240	•				Galv.	3205200	•			
6" x 2-1/8" x 2-3/8"	12	Red Ox	3204840	•				Galv.	3204800	•			

# SECONDARY FRAMING

# Product Codes & Branch Availability

## Low Eave Strut – Single Slope

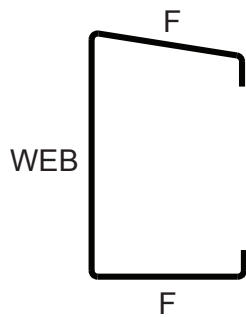
See Pages SF-5 thru SF-7 for limitations and custom options.



Size Web x Flange	Ga.	Finish	Product Code	Denver	Sellersburg	Temple	Woodland			Finish	Product Code	Denver	Sellersburg	Temple	Woodland
										Galv.					
4" x 3-1/2"	16	Red Ox	3252540	•		•				Galv.	3252500	•		•	•
4" x 3-1/2"	14	Red Ox	3252640	•		•				Galv.	3252600	•		•	•
4" x 3-1/2"	12	Red Ox	3252740	•		•				Galv.	3252700	•		•	•
6" x 3-1/2"	16	Red Ox	3211040	•		•				Galv.	3211000	•		•	•
6" x 3-1/2"	14	Red Ox	3201040	•		•				Galv.	3201000	•		•	•
6" x 3-1/2"	12	Red Ox	3226140	•		•				Galv.	3226100	•		•	•
8" x 2-1/2"	16	Red Ox	3228040	•		•				Galv.	3228000	•		•	•
8" x 2-1/2"	14	Red Ox	3201240	•		•				Galv.	3201200	•		•	•
8" x 2-1/2"	12	Red Ox	3228140	•		•				Galv.	3228100	•		•	•
8" x 3-1/2"	14	Red Ox	3201440	•		•				Galv.	3201400	•		•	•
8" x 3-1/2"	12	Red Ox	3201540	•		•				Galv.	3201500	•		•	•
8" x 5"	14	Red Ox	3202040	•		•				Galv.	3202000	•		•	•
8" x 5"	12	Red Ox	3202140	•		•				Galv.	3202100	•		•	•
9" x 3-1/2"	14	Red Ox	3202840	•						Galv.	3202800	•			•
9" x 3-1/2"	12	Red Ox	3202940	•						Galv.	3202900	•			•
9" x 4"	14	Red Ox	3200340	•						Galv.	3200300	•			•
9" x 4"	12	Red Ox	3203240	•						Galv.	3203200	•			•
10" x 4"	14	Red Ox	3203440	•		•				Galv.	3203400	•		•	•
10" x 4"	12	Red Ox	3203540	•		•				Galv.	3203500	•		•	•
12" x 3-1/2"	14	Red Ox	3200440	•		•				Galv.	3200400	•		•	•
12" x 3-1/2"	12	Red Ox	3203840	•		•				Galv.	3203800	•		•	•

# SECONDARY FRAMING

# Product Codes & Branch Availability



## High Eave Strut – Single Slope

See Pages SF-5 thru SF-7 for limitations and custom options.

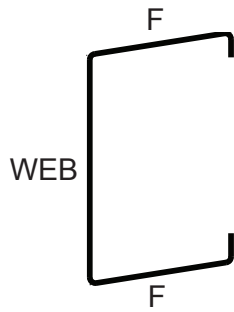
Size Web x Flange	Ga.	Finish	Product Code	Denver	Sellersburg	Temple	Woodland		Finish	Product Code	Denver	Sellersburg	Temple	Woodland
4" x 3-1/2"	14	Red Ox	3253640	•		•			Galv.	3253600	•		•	•
4" x 3-1/2"	12	Red Ox	3253740	•		•			Galv.	3253705	•		•	•
6" x 3-1/2"	14	Red Ox	3201045	•		•			Galv.	3201005	•		•	•
6" x 3-1/2"	12	Red Ox	3226145	•		•			Galv.	3226105	•		•	•
8" x 2-1/2"	16	Red Ox	3228045	•		•			Galv.	3228005	•		•	•
8" x 2-1/2"	14	Red Ox	3201245	•		•			Galv.	3201205	•		•	•
8" x 2-1/2"	12	Red Ox	3228145	•		•			Galv.	3228105	•		•	•
8" x 3-1/2"	14	Red Ox	3201445	•		•			Galv.	3201405	•		•	•
8" x 3-1/2"	12	Red Ox	3201545	•		•			Galv.	3201505	•		•	•
8" x 5"	14	Red Ox	3202045	•		•			Galv.	3202005	•		•	•
8" x 5"	12	Red Ox	3202145	•		•			Galv.	3202105	•		•	•
9" x 3-1/2"	14	Red Ox	3202845	•					Galv.	3202805	•			•
9" x 3-1/2"	12	Red Ox	3202945	•					Galv.	3202905	•			•
9" x 4"	14	Red Ox	3200345	•					Galv.	3200305	•			•
9" x 4"	12	Red Ox	3203245	•					Galv.	3203205	•			•
10" x 4"	14	Red Ox	3203445	•		•			Galv.	3203405	•		•	•
10" x 4"	12	Red Ox	3203545	•		•			Galv.	3203505	•		•	•
12" x 3-1/2"	14	Red Ox	3200545	•		•			Galv.	3200505	•		•	•
12" x 3-1/2"	12	Red Ox	3203845	•		•			Galv.	3203805	•		•	•

# SECONDARY FRAMING

# Product Codes & Branch Availability

## Low Eave Strut – Double Slope

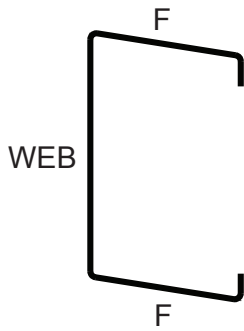
See Pages SF-5 thru SF-7 for limitations and custom options.



Size Web x Flange	Ga.	Finish	Product Code	Denver	Sellersburg	Temple	Woodland		Finish	Product Code	Denver	Sellersburg	Temple	Woodland
6" x 3-1/2"	14	Red Ox	3201140	•		•			Galv.	3201100	•		•	•
6" x 3-1/2"	12	Red Ox	3226240	•					Galv.	3226200	•			•
8" x 2-1/2"	16	Red Ox	3226340	•					Galv.	3226300	•			•
8" x 2-1/2"	14	Red Ox	3201340	•		•			Galv.	3201300	•		•	•
8" x 3-1/2"	16	Red Ox	3226440	•					Galv.	3226400	•			•
8" x 3-1/2"	14	Red Ox	3201640	•		•			Galv.	3201600	•		•	•
8" x 3-1/2"	12	Red Ox	3201740	•		•			Galv.	3201700	•		•	•
8" x 5"	14	Red Ox	3202240	•		•			Galv.	3202200	•		•	•
8" x 5"	12	Red Ox	3202340	•		•			Galv.	3202300	•		•	•
9" x 3-1/2"	14	Red Ox	3203040	•					Galv.	3203000	•			•
9" x 3-1/2"	12	Red Ox	3203140	•					Galv.	3203100	•			•
9" x 4"	14	Red Ox	3200640	•					Galv.	3200600	•			•
9" x 4"	12	Red Ox	3203340	•					Galv.	3203300	•			•
10" x 4"	14	Red Ox	3203640	•		•			Galv.	3203600	•		•	•
10" x 4"	12	Red Ox	3203740	•		•			Galv.	3203700	•		•	•
12" x 3-1/2"	14	Red Ox	3230740	•		•			Galv.	3230700	•		•	•
12" x 3-1/2"	12	Red Ox	3203940	•		•			Galv.	3203900	•		•	•

# SECONDARY FRAMING

# Product Codes & Branch Availability



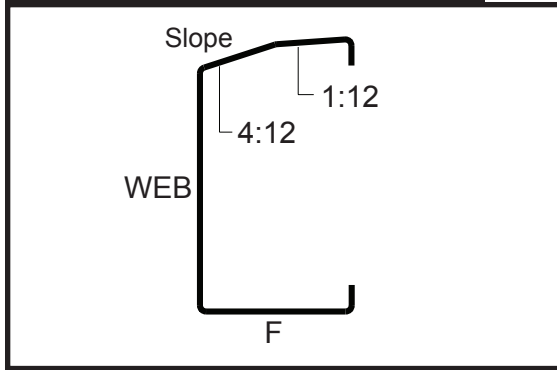
## High Eave Strut – Double Slope

See Pages SF-5 thru SF-7 for limitations and custom options.

Size Web x Flange	Ga.	Finish	Product Code	Denver	Sellersburg	Temple	Woodland			Finish	Product Code	Denver	Sellersburg	Temple	Woodland
6" x 3-1/2"	16	Red Ox	3200745	•						Galv.	3200705	•			•
6" x 3-1/2"	14	Red Ox	3201145	•		•				Galv.	3201105	•		•	•
6" x 3-1/2"	12	Red Ox	3226245	•						Galv.	3226205	•			•
8" x 2-1/2"	16	Red Ox	3226345	•						Galv.	3226305	•			•
8" x 2-1/2"	14	Red Ox	3201345	•		•				Galv.	3201305	•		•	•
8" x 3-1/2"	16	Red Ox	3226445	•						Galv.	3226405	•			•
8" x 3-1/2"	14	Red Ox	3201645	•		•				Galv.	3201605	•		•	•
8" x 3-1/2"	12	Red Ox	3201745	•		•				Galv.	3201705	•		•	•
8" x 5"	14	Red Ox	3202245	•		•				Galv.	3202205	•		•	•
8" x 5"	12	Red Ox	3202345	•		•				Galv.	3202305	•		•	•
9" x 3-1/2"	14	Red Ox	3203045	•						Galv.	3203005	•			•
9" x 3-1/2"	12	Red Ox	3203145	•						Galv.	3203105	•			•
9" x 4"	14	Red Ox	3200645	•						Galv.	3200605	•			•
9" x 4"	12	Red Ox	3203345	•						Galv.	3203305	•			•
10" x 4"	14	Red Ox	3203645	•		•				Galv.	3203605	•		•	•
10" x 4"	12	Red Ox	3203745	•		•				Galv.	3203705	•		•	•
12" x 3-1/2"	14	Red Ox	3230745	•		•				Galv.	3230705	•		•	•
12" x 3-1/2"	12	Red Ox	3203945	•		•				Galv.	3203905	•		•	•

# SECONDARY FRAMING

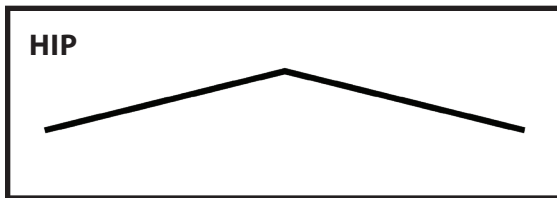
# Product Codes & Branch Availability



## Universal Eave Strut

See Pages SF-5 thru SF-7 for limitations and custom options.

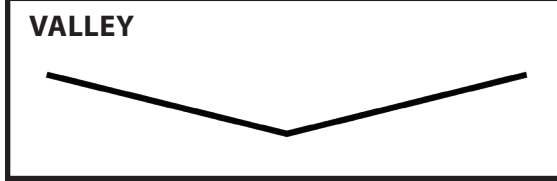
Size Web x Flange	Ga.	Finish	Product Code	Denver	Sellersburg	Temple	Woodland		Finish	Product Code	Denver	Sellersburg	Temple	Woodland
8" x 3-1/2"	12	Red Ox	3201940		•				Galv.	3201900		•		
8" x 5"	14	Red Ox	3202440		•				Galv.	3202400		•		
8" x 5"	12	Red Ox	3202540		•				Galv.	3202500		•		



## Hip and Valley Plates

Standard Length is 20'-0".

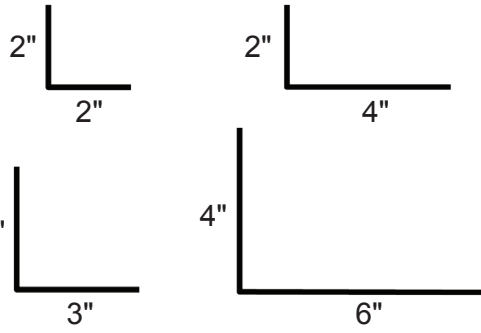
See Pages SF-5 thru SF-7 for limitations and custom options.



Size	Ga.	Finish	Product Code	Denver	Sellersburg	Temple	Woodland		Finish	Product Code	Denver	Sellersburg	Temple	Woodland
7" x 7"	14	Red Ox	3215140		•	•			Galv.	3215100			•	•
9-1/2" x 9-1/2"	14	Red Ox	3215340		•				Galv.	3215300				•
9-1/2" x 9-1/2"	12	Red Ox	3215440		•				Galv.	3215400				•
10" x 10"	12	Red Ox	3215540		•	•			Galv.	3215500			•	•

# SECONDARY FRAMING

# Product Codes & Branch Availability

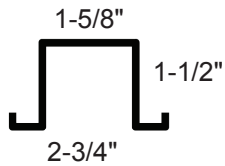


## Angles

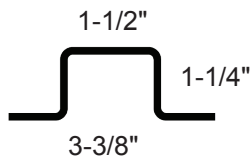
Standard Length is 20'-0".  
See Pages SF-5 thru SF-7 for limitations and custom options.

Size	Ga.	Finish	Product Code	Branch Availability				Finish	Product Code	Branch Availability			
				Denver	Sellersburg	Temple	Woodland			Denver	Sellersburg	Temple	Woodland
2" x 2"	14	Red Ox	3111440		•	•		Galv.	3111400			•	•
2" x 4"	14	Red Ox	3131440	•	•	•		Galv.	3131400	•		•	•
3" x 3"	16	Red Ox	3141640	•	•	•		Galv.	3141600	•		•	•
3" x 3"	14	Red Ox	3141440	•	•	•		Galv.	3141400	•		•	•
4" x 6"	14	Red Ox	3161140	•	•	•		Galv.	3161100	•		•	•

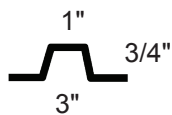
## 1.5" Hat



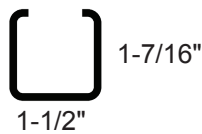
## 1.25" Hat



## 3/4" Sub Girt



## 1.5" Channel



## Hats and Channels




Hat Section secondary framing members are most commonly used for roof and wall support, but can also be used in retrofit applications when installing panels over existing metal roofs. Sub-Girts can be end-lapped and installation is quick using self drilling screws.

Standard Length is 20'-0".  
See Pages SF-5 thru SF-7 for limitations and custom options.

Size	Ga.	Finish	Product Code	Branch Availability			
				Denver	Sellersburg	Temple	Woodland
1.5" Hat	22	Galv.	3250510		•		
1.25" Hat	16	Galv.	3250500		•		
1.5" Channel	18	Galv.	3250900		•		
0.75" Sub-Girt	22	Galv.	3250910		•		
0.75" Sub-Girt	18	Galv.	3250920				

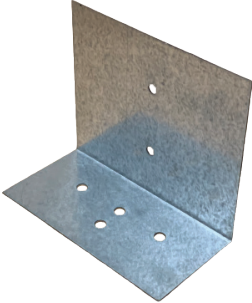
**SECONDARY FRAMING**

**Accessories**

			Denver	Sellersburg	Temple	Woodland
ACCESSORY	GAUGE	PRODUCT CODE				
<b>1-1/2" x 100' Strapping Galvanized</b>  	16 Ga.	3272600	•	•	•	
<b>2" x 100' Strapping Galvanized</b>  	16 Ga.	3272700	•	•	•	
	14 Ga.	3272500		•		
<b>1-1/4" x .031 Banding with Holes Black</b>  		3690200	•	•	•	





**SECONDARY FRAMING**

**Accessories**

		Denver	Sellersburg	Temple	Woodland
ACCESSORY	PRODUCT CODE				
<p><b>Base Clip</b></p> 	3640600	•	•	•	



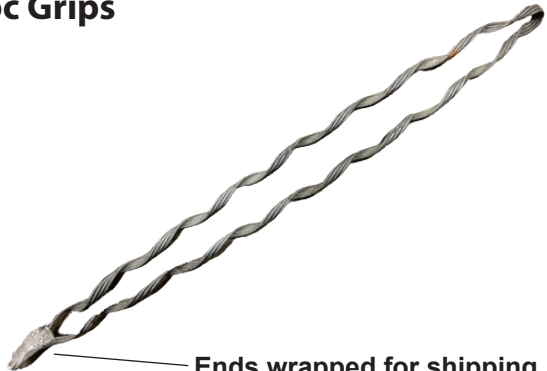
# SECONDARY FRAMING

## Accessories

		Denver	Sellersburg	Temple	Woodland
ACCESSORY	PRODUCT CODE				
<b>Fin Head Bolt Assembly</b> <b>1/2" x 1"</b> 	8292000	•	•	•	
<b>A307 Bolt &amp; Nut</b> <b>5/8"-11 x 1-1/4" Plated</b> 	8293500	•	•	•	
<b>A307 Bolt with Nut</b> <b>1/2" x 1-1/4" Plated</b> 	8290100	•	•	•	
<b>Eyebolt with Nut</b>  <p>Length 0'-9"</p>	1/2" Head	8289300			
	3/4" Head	8289320			

**SECONDARY FRAMING**



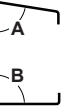
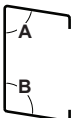
**Accessories**

		Denver	Sellersburg	Temple	Woodland
ACCESSORY	PRODUCT CODE				
<b>3/4" Flat Washer</b> 	3201145	•	•	•	
<b>Hillside Washer &amp; Flat Washer</b> 	<b>1/2"</b>	8289400	•		
	<b>3/4"</b>	8289410			
	<b>5/8"</b>	8289420			
<b>Flo-Loc Grips</b>  Ends wrapped for shipping	3202245	•	•	•	



# SECONDARY FRAMING Angle Charts

## EAVE STRUT ANGLE CHART


This chart should be used to determine the required specified angle when considering eave struts.

Single Slope	Angle	1:12	2:12	3:12	4:12	Double Slope	Angle	1:12	2:12	3:12	4:12
	A	95°	99°	104°	108°		A	95°	99°	104°	108°
	B	90°	90°	90°	90°		B	85°	81°	76°	72°
	A	85°	81°	76°	72°		A	85°	81°	76°	72°
	B	90°	90°	90°	90°		B	95°	99°	104°	108°

## HIP/VALLEY ANGLE CHART

PROFILE/FLASHING	1:12	2:12	3:12	4:12	5:12	6:12	7:12	8:12	9:12	10:12	11:12	12:12
HIP 	<b>173°</b>	<b>167°</b>	<b>160°</b>	<b>154°</b>	<b>148°</b>	<b>143°</b>	<b>138°</b>	<b>134°</b>	<b>130°</b>	<b>126°</b>	<b>123°</b>	<b>120°</b>
VALLEY 												

## SLOPE ZEE ANGLE CHART

PROFILE/FLASHING	1:12	2:12	3:12	4:12
	<b>95°</b>	<b>99°</b>	<b>104°</b>	<b>108°</b>

# SECONDARY FRAMING

# Dimensions and Section Properties

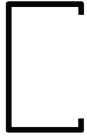


**Cee**

			FULL SECTION PROPERTIES									EFFECTIVE SECTION PROPERTIES (FULLY BRACED)					
Size Web x Flange	Thickness gauge in		Weight plf	A in <sup>2</sup>	Ix-x in <sup>4</sup>	Sx-x in <sup>3</sup>	rx in	Iy-y in <sup>4</sup>	ry in	Cw in <sup>6</sup>	J in <sup>4</sup>	Ae in <sup>2</sup>	Ixe in <sup>4</sup>	Sxe in <sup>3</sup>	Sye in <sup>3</sup>	Max k-in	Vay kips
4" x 2-1/2"	16	0.057	1.89	0.56	1.50	0.75	1.64	0.47	0.92	1.58	0.001	0.38	1.32	0.61	0.28	20.0	3.77
4" x 2-1/2"	14	0.067	2.25	0.66	1.77	0.88	1.64	0.57	0.92	1.99	0.001	0.50	1.62	0.76	0.35	25.0	4.96
4" x 3-1/2"	16	0.057	2.29	0.67	1.96	0.98	1.71	1.07	1.26	3.61	0.001	0.39	1.51	0.64	0.47	21.2	3.77
4" x 3-1/2"	14	0.067	2.72	0.80	2.30	1.15	1.70	1.29	1.27	4.50	0.001	0.51	1.87	0.82	0.58	26.9	4.96
4" x 3-1/2"	12	0.099	4.09	1.20	3.37	1.69	1.68	1.96	1.28	7.35	0.004	0.98	3.06	1.42	0.93	46.8	7.26
6" x 2-1/2"	16	0.057	2.29	0.67	3.80	1.27	2.38	0.54	0.89	3.73	0.001	0.39	3.38	1.05	0.28	34.5	3.22
6" x 2-1/2"	14	0.067	2.72	0.80	4.50	1.50	2.37	0.65	0.90	4.60	0.001	0.51	4.12	1.30	0.35	42.8	5.24
6" x 2-1/2"	12	0.099	4.09	1.20	6.66	2.22	2.35	1.00	0.91	7.33	0.004	1.00	6.59	2.18	0.58	71.7	11.5
6" x 3-1/2"	16	0.057	2.68	0.79	4.83	1.61	2.47	1.24	1.25	8.48	0.001	0.40	3.82	1.11	0.48	36.6	3.22
6" x 3-1/2"	14	0.067	3.18	0.94	5.70	1.90	2.47	1.49	1.26	10.4	0.002	0.53	4.71	1.40	0.59	46.1	5.24
6" x 3-1/2"	12	0.099	4.79	1.41	8.45	2.82	2.45	2.28	1.27	16.5	0.005	1.03	7.66	2.39	0.97	78.8	11.5
6" x 4"	16	0.057	2.88	0.85	5.35	1.78	2.51	1.73	1.43	11.8	0.001	0.40	4.01	1.13	0.59	31.1	3.22
6" x 4"	14	0.067	3.42	1.01	6.31	2.10	2.51	2.08	1.44	14.5	0.002	0.53	4.95	1.43	0.73	47.0	5.24
6" x 4"	12	0.099	5.14	1.51	9.34	3.11	2.49	3.16	1.45	22.9	0.005	1.04	8.09	2.46	1.19	80.9	11.5
8" x 2-1/2"	16	0.057	2.68	0.79	7.44	1.86	3.07	0.59	0.86	7.07	0.001	0.39	6.54	1.51	0.28	49.8	2.36
8" x 2-1/2"	14	0.067	3.18	0.94	8.81	2.20	3.07	0.71	0.87	8.66	0.002	0.52	8.13	1.94	0.36	63.8	3.89
8" x 2-1/2"	12	0.099	4.79	1.41	13.1	3.28	3.05	1.09	0.88	13.6	0.005	1.02	13.0	3.22	0.58	106.0	11.7
8" x 3"	16	0.057	2.88	0.85	8.36	2.09	3.14	0.93	1.05	11.0	0.001	0.40	6.87	1.53	0.38	50.2	2.36
8" x 3"	14	0.067	3.42	1.01	9.90	2.47	3.14	1.12	1.05	13.5	0.002	0.53	8.72	2.03	0.47	66.7	3.89
8" x 3"	12	0.099	5.14	1.51	14.7	3.68	3.12	1.71	1.06	21.1	0.005	1.05	14.1	3.43	0.77	113.0	11.7
8" x 3-1/2"	16	0.057	3.08	0.91	9.28	2.32	3.20	1.36	1.23	16.1	0.001	0.40	7.13	1.52	0.48	50.1	2.36
8" x 3-1/2"	14	0.067	3.65	1.07	11.0	2.75	3.20	1.64	1.24	19.6	0.002	0.54	9.21	2.08	0.60	68.5	3.89
8" x 3-1/2"	12	0.099	5.49	1.62	16.3	4.09	3.18	2.51	1.25	30.6	0.006	1.06	14.9	3.51	0.98	116.0	11.7
8" x 4"	16	0.057	3.28	0.97	10.2	2.55	3.25	1.90	1.41	22.3	0.001	0.40	7.35	1.52	0.59	41.7	2.36
8" x 4"	14	0.067	3.89	1.14	12.1	3.02	3.25	2.29	1.42	27.2	0.002	0.54	9.50	2.07	0.74	68.2	3.89
8" x 4"	12	0.099	5.84	1.72	17.9	4.49	3.23	3.50	1.43	42.4	0.006	1.07	15.7	3.60	1.21	119.0	11.7
8" x 5"	14	0.067	4.36	1.28	14.2	3.56	3.33	4.00	1.77	47.3	0.002	0.54	10.0	2.05	1.05	56.3	3.89
8" x 5"	12	0.099	6.54	1.92	21.2	5.29	3.32	6.10	1.78	73.7	0.007	1.08	17.1	3.75	1.72	123.0	11.7
9" x 3"	16	0.057	3.08	0.91	11.0	2.45	3.49	0.96	1.03	14.4	0.001	0.40	8.82	1.71	0.38	56.3	2.08
9" x 3"	14	0.067	3.65	1.07	13.0	2.90	3.48	1.16	1.04	17.5	0.002	0.53	11.4	2.33	0.47	76.8	3.43
9" x 3"	12	0.099	5.49	1.62	19.4	4.32	3.47	1.78	1.05	27.4	0.006	1.06	18.6	4.03	0.78	133.0	11.6
9" x 3-1/2"	16	0.057	3.28	0.97	12.2	2.71	3.55	1.41	1.21	20.9	0.001	0.40	9.15	1.71	0.48	56.4	2.08
9" x 3-1/2"	14	0.067	3.89	1.14	14.4	3.20	3.55	1.70	1.22	25.5	0.002	0.54	11.8	2.33	0.60	76.8	3.43
9" x 3-1/2"	12	0.099	5.84	1.72	21.5	4.77	3.54	2.60	1.23	39.7	0.006	1.06	19.6	4.12	0.98	136.0	11.6
9" x 4"	16	0.057	3.48	1.03	13.3	2.97	3.61	1.98	1.39	29.1	0.001	0.40	9.43	1.71	0.59	47.0	2.08
9" x 4"	14	0.067	4.12	1.21	15.8	3.51	3.61	2.38	1.40	35.4	0.002	0.54	12.2	2.33	0.74	76.6	3.43
9" x 4"	12	0.099	6.19	1.82	23.5	5.22	3.59	3.63	1.41	55.0	0.006	1.08	20.6	4.23	1.21	139.0	11.6
9" x 4-1/2"	14	0.067	4.36	1.28	17.2	3.81	3.66	3.19	1.58	47.3	0.002	0.54	12.5	2.32	0.89	76.3	3.43
9" x 4-1/2"	12	0.099	6.54	1.92	25.6	5.68	3.64	4.88	1.59	73.5	0.007	1.08	21.5	4.33	1.46	142.0	11.6

# SECONDARY FRAMING

# Dimensions and Section Properties



**Cee**

			FULL SECTION PROPERTIES									EFFECTIVE SECTION PROPERTIES (FULLY BRACED)					
Size Web x Flange	Thickness gauge	in	Weight plf	A in <sup>2</sup>	Ix-x in <sup>4</sup>	Sx-x in <sup>3</sup>	rx in	Iy-y in <sup>4</sup>	ry in	Cw in <sup>6</sup>	J in <sup>4</sup>	Ae in <sup>2</sup>	Ixe in <sup>4</sup>	Sxe in <sup>3</sup>	Sye in <sup>3</sup>	Max k-in	Vay kips
9" x 5"	14	0.067	4.59	1.35	18.5	4.12	3.71	4.17	1.76	61.6	0.002	0.54	12.8	2.31	1.05	63.4	3.43
9" x 5"	12	0.099	6.89	2.03	27.6	6.13	3.69	6.35	1.77	95.5	0.007	1.09	22.4	4.40	1.724	145	11.6
10" x 2-1/2"	16	0.057	3.08	0.91	12.7	2.53	3.74	0.62	0.83	11.7	0.001	0.39	10.5	1.87	0.29	61.5	1.86
10" x 2-1/2"	14	0.067	3.65	1.07	15.0	3.00	3.74	0.76	0.84	14.3	0.002	0.52	13.5	2.56	0.36	83.2	3.07
10" x 2-1/2"	12	0.099	5.49	1.62	22.4	4.48	3.73	1.16	0.85	22.3	0.006	1.03	22.2	4.40	0.59	145	10.3
10" x 3"	16	0.057	3.28	0.97	14.1	2.82	3.82	0.99	1.01	18.3	0.001	0.40	11.1	1.90	0.38	62.4	1.86
10" x 3"	14	0.067	3.89	1.14	16.7	3.34	3.82	1.19	1.02	22.2	0.002	0.54	14.2	2.57	0.47	84.8	3.07
10" x 3"	12	0.099	5.84	1.72	24.9	4.99	3.81	1.83	1.03	34.6	0.006	1.07	23.9	4.66	0.78	154	10.3
10" x 3-1/2"	16	0.057	3.48	1.02	15.6	3.11	3.90	1.46	1.19	26.6	0.001	0.40	11.4	1.90	0.48	62.6	1.86
10" x 3-1/2"	14	0.067	4.12	1.21	18.4	3.68	3.90	1.76	1.20	32.3	0.002	0.54	14.8	2.58	0.60	85.0	3.07
10" x 3-1/2"	12	0.099	6.19	1.82	27.5	5.49	3.88	2.69	1.22	50.3	0.006	1.07	25.1	4.77	0.99	157	10.3
10" x 4"	16	0.057	3.68	1.08	17.0	3.40	3.96	2.04	1.37	37.0	0.001	0.40	11.8	1.90	0.59	52.2	1.86
10" x 4"	14	0.067	4.36	1.28	20.1	4.02	3.96	2.46	1.38	44.9	0.002	0.54	15.2	2.58	0.74	85.0	3.07
10" x 4"	12	0.099	6.54	1.92	30.0	6.00	3.95	3.76	1.40	69.7	0.007	1.08	26.4	4.90	1.22	161	10.3
10" x 5"	14	0.067	4.82	1.42	23.5	4.70	4.07	4.31	1.74	78.1	0.002	0.54	16.0	2.57	1.05	70.6	3.07
10" x 5"	12	0.099	7.24	2.13	35.0	7.01	4.06	6.57	1.76	121	0.008	1.09	28.6	5.09	1.73	168	10.3
12" x 2-1/2"	14	0.067	4.12	1.21	23.4	3.89	4.39	0.79	0.81	21.7	0.002	0.53	19.3	2.80	0.36	92.2	2.53
12" x 2-1/2"	12	0.099	6.19	1.82	34.9	5.81	4.38	1.22	0.82	33.7	0.006	1.04	33.2	5.26	0.59	173	8.52
12" x 3"	14	0.067	4.36	1.28	25.8	4.30	4.49	1.25	0.99	33.7	0.002	0.54	21.0	3.06	0.47	101	2.53
12" x 3"	12	0.099	6.54	1.92	38.6	6.43	4.48	1.92	1.00	52.3	0.007	1.08	37.1	6.04	0.78	199	8.52
12" x 3-1/2"	14	0.067	4.59	1.35	28.3	4.71	4.58	1.85	1.17	49.0	0.002	0.54	21.8	3.08	0.60	102	2.53
12" x 3-1/2"	12	0.099	6.89	2.03	42.2	7.04	4.56	2.83	1.18	76.0	0.007	1.08	38.8	6.17	0.99	203	8.52
12" x 4"	14	0.067	4.82	1.42	30.7	5.12	4.65	2.59	1.35	68.0	0.002	0.54	22.4	3.09	0.74	102	2.53
12" x 4"	12	0.099	7.24	2.13	45.9	7.64	4.64	3.97	1.37	105	0.008	1.09	40.7	6.33	1.22	208	8.52
12" x 5"	12	0.099	7.94	2.34	53.2	8.86	4.77	6.96	1.73	182	0.008	1.10	43.5	6.47	1.74	213	8.52
14" x 2-1/2"	12	0.099	6.89	2.03	51.1	7.30	5.02	1.26	0.79	47.8	0.007	1.05	47.2	6.27	0.59	206	7.25
14" x 3"	12	0.099	7.24	2.13	56.1	8.01	5.13	2.00	0.97	74.2	0.008	1.08	50.4	6.58	0.78	217	7.25
14" x 4"	12	0.099	7.94	2.34	66.0	9.43	5.32	4.14	1.33	150	0.008	1.10	57.1	7.49	1.23	247	7.25
16" x 3"	12	0.099	79.4	2.34	77.8	9.73	5.77	2.06	0.94	101	0.008	1.09	68.1	7.63	0.79	251	6.31
16" x 5"	12	0.099	9.34	2.75	104	13.0	6.15	7.57	1.66	352	0.010	1.11	79.8	8.52	1.75	281	6.31
18" x 4"	12	0.099	9.34	2.75	121	13.4	6.63	4.41	1.27	267	0.010	1.10	94.8	8.91	1.23	294	5.58
20" x 3"	12	0.099	9.34	2.75	136	13.6	7.03	2.16	0.89	168	0.010	1.09	112	9.72	0.79	320	5.01
20" x 5"	10	0.130	14.2	4.19	235	23.5	7.48	11.3	1.64	838	0.025	1.87	200	18.1	2.61	597	11.3
22" x 4"	10	0.130	14.2	4.19	263	23.9	7.92	6.54	1.25	606	0.025	1.86	225	18.1	1.86	595	10.3
24" x 3"	10	0.130	14.2	4.19	288	24.0	8.29	3.21	0.88	369	0.025	1.79	252	18.7	1.20	616	9.37

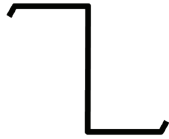
Notes: 1. Section Properties are based on AISI S100-16/S2-20 North American Specification for the Design of Cold-Formed Steel Structural Members.

2. 'Fully Braced' indicates the section is adequately braced for the full length of the member.

3. The effect of holes is not considered.

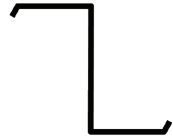
4. Decimal thickness listed is the 'minimum coated thickness'.

5. Lip Lengths are 9/16" for 16 ga, 5/8" for 14 ga, 3/4" for 12 ga and 1" for 10 ga.



**Equal Leg Zee**

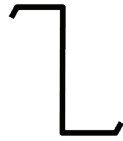
Size Web x Flange	Thickness		Weight plf	FULL SECTION PROPERTIES								EFFECTIVE SECTION PROPERTIES (FULLY BRACED)					
	gauge	in		A in <sup>2</sup>	I <sub>x-x</sub> in <sup>4</sup>	S <sub>x-x</sub> in <sup>3</sup>	r <sub>x</sub> in	I <sub>y-y</sub> in <sup>4</sup>	r <sub>y</sub> in	C <sub>w</sub> in <sup>6</sup>	J in <sup>4</sup>	A <sub>e</sub> in <sup>2</sup>	I <sub>xe</sub> in <sup>4</sup>	S <sub>xe</sub> in <sup>3</sup>	S <sub>ye</sub> in <sup>3</sup>	Max k-in	V <sub>ay</sub> kips
4" x 2-1/2"	16	0.057	1.91	0.56	1.55	0.78	1.66	0.97	1.31	2.19	0.001	0.36	1.31	0.59	0.23	19.4	3.77
4" x 2-1/2"	14	0.067	2.31	0.68	1.86	0.93	1.65	1.27	1.37	2.92	0.001	0.49	1.64	0.76	0.33	24.9	4.96
4" x 3-1/2"	16	0.057	2.31	0.68	2.00	1.00	1.72	2.35	1.86	4.79	0.001	0.37	1.48	0.62	0.31	20.4	3.77
4" x 3-1/2"	14	0.067	2.77	0.82	2.39	1.19	1.71	3.01	1.92	6.23	0.001	0.50	1.88	0.81	0.44	26.7	4.96
4" x 3-1/2"	12	0.099	4.02	1.18	3.41	1.71	1.70	4.02	1.84	7.97	0.004	0.89	2.88	1.29	0.67	42.4	7.26
6" x 2-1/2"	16	0.057	2.31	0.68	3.89	1.30	2.40	0.97	1.19	5.54	0.001	0.37	3.35	1.02	0.23	33.7	3.22
6" x 2-1/2"	14	0.067	2.77	0.82	4.68	1.56	2.39	1.27	1.25	7.31	0.001	0.50	4.18	1.30	0.33	42.7	5.24
6" x 2-1/2"	12	0.099	4.02	1.18	6.66	2.22	2.37	1.64	1.18	9.22	0.004	0.94	6.40	2.08	0.51	68.5	11.5
6" x 3-1/2"	16	0.057	2.71	0.80	4.93	1.64	2.49	1.35	1.72	12.2	0.001	0.38	3.76	1.07	0.32	35.4	3.22
6" x 3-1/2"	14	0.067	3.24	0.95	5.89	1.96	2.49	3.01	1.78	15.7	0.002	0.52	4.74	1.39	0.46	45.7	5.24
6" x 3-1/2"	12	0.099	4.72	1.39	8.46	2.82	2.47	4.02	1.70	20.5	0.005	0.94	7.22	2.19	0.68	72.0	11.5
8" x 2-1/2"	16	0.057	2.71	0.80	7.60	1.90	3.09	0.97	1.10	10.7	0.001	0.38	6.42	1.45	0.24	47.9	2.36
8" x 2-1/2"	14	0.067	3.24	0.95	9.13	2.28	3.09	1.27	1.15	14.0	0.002	0.51	8.22	1.93	0.34	63.7	3.89
8" x 2-1/2"	12	0.099	4.72	1.39	13.1	3.27	3.07	1.64	1.09	17.8	0.005	0.96	12.6	3.07	0.51	101	11.7
8" x 3"	16	0.057	2.91	0.85	8.52	2.13	3.16	1.56	1.35	16.4	0.001	0.38	6.70	1.45	0.28	47.9	2.36
8" x 3"	14	0.067	3.48	1.02	10.2	2.55	3.16	2.02	1.40	21.2	0.002	0.53	9.19	2.04	0.46	67.2	3.89
8" x 3"	12	0.099	5.42	1.60	16.3	4.07	3.20	4.02	1.59	40.0	0.006	0.97	14.1	3.23	0.70	106	11.7
8" x 3-1/2"	16	0.057	3.10	0.91	9.44	2.36	3.22	2.35	1.60	23.7	0.001	0.38	6.94	1.45	0.33	47.7	2.36
8" x 3-1/2"	14	0.067	3.71	1.09	11.3	2.82	3.22	3.01	1.66	30.3	0.002	0.53	9.19	2.04	0.46	67.2	3.89
8" x 3-1/2"	12	0.099	5.42	1.60	16.3	4.07	3.20	4.02	1.59	40.0	0.006	0.97	14.1	3.23	0.70	106	11.7
9" x 3"	16	0.057	3.10	0.91	11.2	2.49	3.50	1.56	1.31	21.4	0.001	0.38	8.60	1.63	0.28	53.7	2.08
9" x 3"	14	0.067	3.71	1.09	13.4	2.98	3.51	2.02	1.36	27.7	0.002	0.52	11.4	2.29	0.41	75.4	3.43
9" x 3"	12	0.099	5.42	1.60	19.3	4.29	3.48	2.65	1.29	36.0	0.006	0.97	17.6	3.72	0.63	123	11.6
9" x 3-1/2"	16	0.057	3.30	0.97	12.4	2.75	3.57	2.35	1.56	31.0	0.001	0.38	8.90	1.63	0.33	53.7	2.08
9" x 3-1/2"	14	0.067	3.95	1.16	14.8	3.29	3.57	3.01	1.61	39.7	0.002	0.53	11.8	2.29	0.47	75.3	3.43
9" x 3-1/2"	12	0.099	5.77	1.70	21.4	4.75	3.55	4.02	1.54	52.4	0.006	0.97	18.6	2.91	0.70	125	11.6



**Equal Leg Zee**

Size Web x Flange	Thickness		Weight plf	FULL SECTION PROPERTIES								EFFECTIVE SECTION PROPERTIES (FULLY BRACED)					
	gauge	in		A in <sup>2</sup>	I <sub>x-x</sub> in <sup>4</sup>	S <sub>x-x</sub> in <sup>3</sup>	r <sub>x</sub> in	I <sub>y-y</sub> in <sup>4</sup>	r <sub>y</sub> in	C <sub>w</sub> in <sup>6</sup>	J in <sup>4</sup>	A <sub>e</sub> in <sup>2</sup>	I <sub>xe</sub> in <sup>4</sup>	S <sub>xe</sub> in <sup>3</sup>	S <sub>ye</sub> in <sup>3</sup>	Max k-in	V <sub>ay</sub> kips
10" x 2-1/2"	16	0.057	3.10	0.91	12.9	2.58	3.76	0.97	1.03	17.6	0.001	0.38	10.3	1.80	0.34	59.2	1.86
10" x 2-1/2"	14	0.067	3.71	1.09	15.5	3.10	3.77	1.27	1.08	23.1	0.002	0.52	13.5	2.49	0.34	81.9	3.07
10" x 2-1/2"	12	0.099	5.42	1.59	22.2	4.45	3.73	1.64	1.01	29.5	0.006	0.97	21.5	4.21	0.51	139	10.3
10" x 3"	16	0.057	3.33	0.97	14.3	2.87	3.84	1.56	1.27	27.2	0.001	0.38	10.8	1.81	0.28	49.5	1.86
10" x 3"	14	0.067	3.95	1.16	17.2	3.44	3.85	2.02	1.32	35.1	0.002	0.53	14.2	2.53	0.41	83.3	3.07
10" x 3"	12	0.099	5.77	1.70	24.8	4.95	3.82	2.64	1.25	45.8	0.006	0.98	22.7	4.32	0.63	142	10.3
10" x 3-1/2"	14	0.067	4.18	1.23	18.9	3.78	3.92	3.01	1.56	50.4	0.002	0.53	14.7	2.53	0.47	83.4	3.07
10" x 3-1/2"	12	0.099	6.12	1.80	27.3	5.46	3.89	4.02	1.49	66.7	0.006	0.98	23.8	4.42	0.71	146	10.3
10" x 4"	14	0.067	4.41	1.30	20.6	4.12	3.98	4.28	1.81	69.2	0.002	0.53	15.2	2.53	0.53	83.3	3.07
10" x 4"	12	0.099	6.47	1.90	29.8	5.96	3.96	5.78	1.74	92.7	0.007	0.99	25.0	4.53	0.81	149	10.3
12" x 2-1/2"	14	0.067	4.18	1.23	24.0	4.01	4.42	1.27	1.02	34.6	0.002	0.52	19.4	2.77	0.34	91.3	2.53
12" x 2-1/2"	12	0.099	6.12	1.80	34.6	5.77	4.38	1.64	0.95	44.3	0.006	0.98	32.0	4.99	0.51	164	8.52
12" x 3"	14	0.067	4.41	1.30	26.5	4.41	4.52	2.02	1.25	52.8	0.002	0.53	20.9	3.01	0.41	99.2	2.53
12" x 3"	12	0.099	6.47	1.90	38.3	6.38	4.48	2.65	1.18	69.1	0.007	0.98	35.2	5.62	0.63	185	8.52
12" x 3-1/2"	14	0.067	4.65	1.37	28.9	4.82	4.60	3.01	1.48	76.1	0.002	0.53	21.7	3.03	0.47	99.6	2.53
12" x 3-1/2"	12	0.099	6.82	2.01	41.9	6.98	4.57	4.02	1.41	101	0.007	0.99	36.9	5.75	0.71	189	8.52

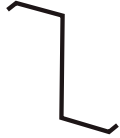
- Notes: 1. Section Properties are based on AISI S100-16/S2-20 North American Specification for the Design of Cold-Formed Steel Structural Members.  
 2. 'Fully Braced' indicates the section is adequately braced for the full length of the member.  
 3. The effect of holes is not considered.  
 4. Decimal thickness listed is the 'minimum coated thickness'.  
 5. Lip Lengths are 9/16" for 16 ga, 5/8" for 14 ga, 3/4" for 12 ga and 1" for 10 ga.



**Lap Zee**

			FULL SECTION PROPERTIES									EFFECTIVE SECTION PROPERTIES (FULLY BRACED)					
Size Web x Flange	Thickness gauge	Weight in plf	A in <sup>2</sup>	I <sub>x-x</sub> in <sup>4</sup>	S <sub>x-x</sub> in <sup>3</sup>	r <sub>x</sub> in	I <sub>y-y</sub> in <sup>4</sup>	r <sub>y</sub> in	C <sub>w</sub> in <sup>6</sup>	J in <sup>4</sup>	A <sub>e</sub> in <sup>2</sup>	I <sub>xe</sub> in <sup>4</sup>	S <sub>xe</sub> in <sup>3</sup>	S <sub>ye</sub> in <sup>3</sup>	Max k-in	Vay kips	
4" x 2-1/8" x 2-3/8"	16	0.057	1.86	0.55	1.46	0.75	1.64	0.83	1.23	1.97	0.001	0.38	1.30	0.61	0.23	20.1	3.77
4" x 2-1/8" x 2-3/8"	14	0.067	2.24	0.66	1.75	0.85	1.63	1.08	1.28	2.64	0.001	0.53	1.62	0.78	0.34	25.8	4.96
4" x 2-1/8" x 2-3/8"	12	0.099	3.49	1.03	2.62	1.28	1.60	1.95	1.38	4.92	0.004	1.01	2.62	1.28	0.67	42.1	7.26
6" x 2-1/8" x 2-3/8"	16	0.057	2.26	0.66	3.72	1.21	2.37	0.83	1.12	4.88	0.001	0.39	3.32	1.05	0.23	34.6	3.22
6" x 2-1/8" x 2-3/8"	14	0.067	2.71	0.80	4.46	1.45	2.36	1.08	1.17	6.45	0.001	0.54	4.13	1.34	0.34	44.0	5.24
6" x 2-1/8" x 2-3/8"	12	0.099	4.19	1.23	6.78	2.21	2.35	1.95	1.26	11.8	0.004	1.06	6.78	2.21	0.67	72.9	11.5
8" x 2-1/8" x 2-3/8"	16	0.057	2.65	0.78	7.30	1.79	3.06	0.83	1.03	9.28	0.001	0.40	6.52	1.51	0.23	49.8	2.36
8" x 2-1/8" x 2-3/8"	14	0.067	3.19	0.94	8.77	2.15	3.06	1.09	1.08	12.2	0.001	0.55	8.16	1.99	0.35	65.5	3.90
8" x 2-1/8" x 2-3/8"	12	0.099	4.89	1.44	13.4	3.29	3.05	1.95	1.16	22.1	0.005	1.08	13.4	3.29	0.67	108	11.7
8" x 3-1/8" x 3-3/8"	16	0.057	3.05	0.90	9.14	2.25	3.19	2.10	1.53	21.6	0.001	0.41	7.15	1.56	0.34	51.5	2.36
8" x 3-1/8" x 3-3/8"	14	0.067	3.65	1.07	10.9	2.69	3.19	2.69	1.58	27.8	0.002	0.56	9.31	2.15	0.48	70.8	3.89
8" x 3-1/8" x 3-3/8"	12	0.099	5.59	1.64	16.6	4.09	3.18	4.63	1.68	48.3	0.006	1.12	15.3	3.68	1.00	121	11.7
9" x 2-5/8" x 2-7/8"	16	0.057	3.05	0.90	10.8	2.37	3.47	1.37	1.23	19.1	0.001	0.41	8.84	1.74	0.29	57.2	2.08
9" x 2-5/8" x 2-7/8"	14	0.067	3.65	1.07	13.0	2.84	3.48	1.77	1.28	24.8	0.002	0.55	11.5	2.39	0.40	78.6	3.43
9" x 2-5/8" x 2-7/8"	12	0.099	5.59	1.64	19.8	4.33	3.47	3.10	1.37	43.8	0.006	1.16	19.5	4.31	0.91	142	11.6
9" x 3-1/8" x 3-3/8"	16	0.057	3.25	0.96	12.0	2.63	3.54	2.10	1.48	28.2	0.001	0.41	9.18	1.75	0.34	57.7	2.08
9" x 3-1/8" x 3-3/8"	14	0.067	3.88	1.14	14.3	3.14	3.54	2.69	1.53	36.2	0.002	0.56	12.1	2.43	0.48	79.9	3.43
9" x 3-1/8" x 3-3/8"	12	0.099	5.94	1.75	21.8	4.78	3.54	4.63	1.63	62.8	0.006	1.13	20.2	4.32	1.00	142	11.6
10" x 2-1/8" x 2-3/8"	16	0.057	3.05	0.90	12.4	2.45	3.72	0.83	0.96	15.2	0.001	0.40	10.2	1.76	0.23	58.0	1.86
10" x 2-1/8" x 2-3/8"	14	0.067	3.65	1.07	14.9	2.94	3.73	1.09	1.01	20.0	0.002	0.55	13.0	2.37	0.35	78.1	3.07
10" x 2-1/8" x 2-3/8"	12	0.099	5.59	1.64	22.9	4.51	3.73	1.95	1.09	36.1	0.006	1.09	22.5	4.35	0.67	143	10.3
10" x 2-5/8" x 2-7/8"	16	0.057	3.25	0.96	13.9	2.73	3.81	1.37	1.20	24.2	0.001	0.41	11.1	1.92	0.29	63.4	1.86
10" x 2-5/8" x 2-7/8"	14	0.067	3.88	1.14	16.6	3.28	3.82	1.77	1.24	31.3	0.002	0.55	14.4	2.63	0.41	86.7	3.07
10" x 2-5/8" x 2-7/8"	12	0.099	5.94	1.75	25.4	5.01	3.81	3.10	1.33	55.2	0.006	1.17	25.0	4.98	0.91	164	10.3
10" x 3-1/8" x 3-3/8"	14	0.067	4.12	1.21	18.3	3.62	3.89	2.69	1.49	45.9	0.002	0.56	15.1	2.68	0.48	88.4	3.07
10" x 3-1/8" x 3-3/8"	12	0.099	6.29	1.85	27.9	5.51	3.89	4.63	1.58	79.4	0.007	1.13	25.8	4.99	1.00	164	10.3
10" x 3-5/8" x 3-7/8"	14	0.067	4.35	1.28	20.0	3.95	3.96	3.87	1.74	63.9	0.002	0.56	15.6	2.70	0.55	88.9	3.07
10" x 3-5/8" x 3-7/8"	12	0.099	6.64	1.95	30.5	6.02	3.95	6.58	1.84	109	0.007	1.14	27.2	5.13	1.11	169	10.3
12" x 2-1/8" x 2-3/8"	14	0.067	4.12	1.21	23.3	3.82	4.38	1.09	0.95	29.9	0.002	0.55	19.6	2.89	0.35	95.3	2.53
12" x 2-1/8" x 2-3/8"	12	0.099	6.29	1.85	35.7	5.87	4.39	1.95	1.03	53.7	0.007	1.10	34.5	5.39	0.67	178	8.52
12" x 2-5/8" x 2-7/8"	14	0.067	4.35	1.28	25.7	4.23	4.48	1.77	1.18	47.0	0.002	0.55	20.7	2.97	0.41	97.7	2.53
12" x 2-5/8" x 2-7/8"	12	0.099	6.64	1.95	39.3	6.47	4.49	3.10	1.26	82.6	0.007	1.18	37.3	5.99	0.91	197	8.52
12" x 3-1/8" x 3-3/8"	14	0.067	4.59	1.35	28.2	4.64	4.57	2.69	1.41	69.0	0.002	0.56	22.3	3.20	0.48	105	2.53
12" x 3-1/8" x 3-3/8"	12	0.099	6.99	2.06	43.0	7.08	4.57	4.63	1.50	119	0.007	1.14	39.9	6.43	1.01	212	8.52

- Notes: 1. Section Properties are based on AISI S100-16/S2-20 North American Specification for the Design of Cold-Formed Steel Structural Members.  
 2. 'Fully Braced' indicates the section is adequately braced for the full length of the member.  
 3. The effect of holes is not considered.  
 4. Decimal thickness listed is the 'minimum coated thickness'.  
 5. Lip Lengths are 9/16" for 16 ga, 5/8" for 14 ga, 3/4" for 12 ga and 1" for 10 ga.

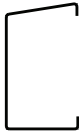


**Slope Zee**

**1:12 thru 4:12 Slope**

Size Web x Flange	Thickness		Weight plf	FULL SECTION PROPERTIES								EFFECTIVE SECTION PROPERTIES (FULLY BRACED)					
	gauge	in		A in <sup>2</sup>	I <sub>x-x</sub> in <sup>4</sup>	S <sub>x-x</sub> in <sup>3</sup>	r <sub>x</sub> in	I <sub>y-y</sub> in <sup>4</sup>	r <sub>y</sub> in	C <sub>w</sub> in <sup>6</sup>	J in <sup>4</sup>	A <sub>e</sub> in <sup>2</sup>	I <sub>xe</sub> in <sup>4</sup>	S <sub>xe</sub> in <sup>3</sup>	S <sub>ye</sub> in <sup>3</sup>	Max k-in	V <sub>ay</sub> kips
4" x 2-1/8" x 2-3/8"	16	0.057	1.86	0.55	1.62	0.73	1.72	0.78	1.18	1.92	0.001	0.38	1.42	0.61	0.22	20.1	4.15
4" x 2-1/8" x 2-3/8"	14	0.067	2.24	0.66	1.95	0.88	1.71	1.03	1.24	2.61	0.001	0.51	1.78	0.79	0.32	25.9	5.46
4" x 2-1/8" x 2-3/8"	12	0.099	3.51	1.03	2.95	1.32	1.69	1.90	1.35	5.05	0.004	1.01	2.95	1.33	0.64	43.8	8.01
6" x 2-1/8" x 2-3/8"	16	0.057	2.26	0.67	3.97	1.23	2.44	0.78	1.08	4.70	0.001	0.38	3.51	1.03	0.22	34.1	3.58
6" x 2-1/8" x 2-3/8"	14	0.067	2.71	0.80	4.77	1.47	2.44	1.03	1.13	6.32	0.001	0.53	4.38	1.33	0.32	43.7	5.69
6" x 2-1/8" x 2-3/8"	12	0.099	4.19	1.24	7.31	2.34	2.43	1.90	1.23	11.9	0.004	1.06	7.31	2.26	0.64	74.4	12.2

- Notes: 1. Section Properties are based on AISI S100-16/S2-20 North American Specification for the Design of Cold-Formed Steel Structural Members.  
 2. 'Fully Braced' indicates the section is adequately braced for the full length of the member.  
 3. The effect of holes is not considered.  
 4. Decimal thickness listed is the 'minimum coated thickness'.  
 5. Lip Lengths are 9/16" for 16 ga, 5/8" for 14 ga, 3/4" for 12 ga and 1" for 10 ga.



**Single Slope – Low Eave Strut**

**1:12 thru 4:12 Slope**

				FULL SECTION PROPERTIES								EFFECTIVE SECTION PROPERTIES (FULLY BRACED)					
Size Web x Flange	Thickness gauge	in	Weight plf	A in <sup>2</sup>	I <sub>x-x</sub> in <sup>4</sup>	S <sub>x-x</sub> in <sup>3</sup>	r <sub>x</sub> in	I <sub>y-y</sub> in <sup>4</sup>	r <sub>y</sub> in	C <sub>w</sub> in <sup>6</sup>	J in <sup>4</sup>	A <sub>e</sub> in <sup>2</sup>	I <sub>xe</sub> in <sup>4</sup>	S <sub>xe</sub> in <sup>3</sup>	S <sub>ye</sub> in <sup>3</sup>	Max k-in	V <sub>ay</sub> kips
4" x 3-1/2"	16	0.057	2.29	0.67	2.10	0.92	1.77	1.04	1.24	2.77	0.001	0.38	1.58	0.54	0.45	17.8	4.07
4" x 3-1/2"	14	0.067	2.73	0.80	2.48	1.09	1.76	1.25	1.25	3.48	0.001	0.51	1.96	0.69	0.55	22.9	5.34
4" x 3-1/2"	12	0.099	4.10	1.21	3.65	1.62	1.74	1.92	1.26	5.76	0.004	0.98	3.24	1.26	0.87	41.4	7.83
6" x 3-1/2"	16	0.057	2.69	0.79	5.06	1.50	2.52	1.20	1.23	7.07	0.001	0.39	3.92	0.95	0.45	31.4	3.51
6" x 3-1/2"	14	0.067	3.19	0.94	5.98	1.78	2.52	1.44	1.24	8.71	0.001	0.52	4.84	1.21	0.56	39.9	5.60
6" x 3-1/2"	12	0.099	4.80	1.41	8.87	2.66	2.51	2.22	1.25	13.9	0.005	1.03	7.96	2.13	0.91	70.2	12.1
6" x 4"	16	0.057	2.89	0.85	5.64	1.65	2.58	1.67	1.40	9.58	0.001	0.39	4.11	0.95	0.56	29.5	3.52
6" x 4"	14	0.067	3.42	1.01	6.66	1.95	2.57	2.08	1.44	13.8	0.002	0.53	5.09	1.21	0.69	39.8	5.66
6" x 4"	12	0.099	5.15	1.51	9.88	2.92	2.55	3.07	1.42	18.8	0.005	1.04	8.40	2.14	1.13	70.4	12.2
8" x 3-1/2"	16	0.067	3.66	1.08	11.3	2.57	3.25	1.59	1.21	17.1	0.002	0.53	9.38	1.83	0.57	60.4	4.23
8" x 3-1/2"	14	0.067	3.66	1.08	11.3	2.57	3.25	1.59	1.21	17.1	0.002	0.53	9.38	1.83	0.57	60.4	4.23
8" x 3-1/2"	12	0.099	5.50	1.62	16.9	3.75	3.23	2.44	1.23	26.9	0.006	1.05	15.3	3.16	0.92	104	12.2
8" x 4"	14	0.067	3.89	1.14	12.5	2.80	3.31	2.21	1.39	23.2	0.002	0.53	9.78	1.84	0.70	60.4	4.29
8" x 4"	12	0.099	5.85	1.72	18.7	4.20	3.24	3.39	1.40	36.5	0.006	1.06	16.1	3.18	1.14	105	12.3
8" x 5"	14	0.067	4.36	1.28	14.9	3.26	3.41	3.85	1.73	38.7	0.002	0.53	10.6	1.81	0.99	49.8	4.31
8" x 5"	12	0.099	6.55	1.93	22.2	4.89	3.40	5.89	1.75	60.6	0.007	1.07	17.5	3.18	1.64	105	12.5
9" x 3-1/2"	14	0.067	3.89	1.14	14.8	3.00	3.60	1.54	1.20	22.5	0.002	0.53	12.1	2.17	0.57	71.5	3.78
9" x 3-1/2"	12	0.099	5.85	1.72	22.1	4.50	3.59	2.53	1.21	35.4	0.006	1.06	20.0	3.73	0.93	123	12.0
9" x 4"	14	0.067	4.13	1.21	16.3	3.26	3.67	2.29	1.37	30.6	0.002	0.53	12.5	2.13	0.70	70.2	3.84
9" x 4"	12	0.099	6.20	1.82	24.3	4.89	3.65	3.52	1.39	48.0	0.006	1.07	21.1	3.76	1.15	124	12.1
9" x 5"	14	0.067	4.60	1.35	19.3	3.78	3.78	4.00	1.72	51.4	0.002	0.54	13.2	2.06	1.00	56.7	3.86
9" x 5"	12	0.099	6.90	2.03	28.8	5.67	3.77	6.12	1.73	80.1	0.007	1.08	22.9	3.77	1.64	124	12.3
10" x 4"	14	0.067	4.36	1.28	20.7	3.74	4.02	2.37	1.36	39.4	0.002	0.54	15.6	2.38	0.70	78.3	3.48
10" x 4"	12	0.099	6.55	1.93	30.9	5.62	4.01	3.64	1.37	61.5	0.007	1.07	26.9	4.37	1.15	144	10.9
10" x 5"	14	0.067	4.83	1.42	24.4	4.32	4.14	4.14	1.71	66.2	0.002	0.54	16.4	2.31	1.00	63.5	3.50
10" x 5"	12	0.099	7.25	2.13	36.4	6.48	4.13	6.34	1.72	103	0.008	1.09	29.2	4.40	1.65	145	11.1
12" x 3-1/2"	14	0.067	4.60	1.35	28.8	4.43	4.62	1.78	1.15	44.5	0.002	0.54	22.1	2.90	0.57	95.5	2.88
12" x 3-1/2"	12	0.099	6.90	2.03	43.1	6.66	4.61	2.75	1.16	69.5	0.007	1.07	39.4	5.66	0.94	186	9.02
12" x 4"	14	0.067	4.83	1.42	31.4	4.78	4.70	2.49	1.32	60.8	0.002	0.54	22.8	2.87	0.71	94.7	2.94
12" x 4"	12	0.099	7.25	2.13	47.0	7.18	4.69	3.84	1.34	94.7	0.008	1.08	41.3	5.71	1.16	188	9.11
12" x 5"	12	0.099	7.95	2.34	54.8	8.22	4.84	6.71	1.69	159	0.008	1.10	44.6	5.76	1.66	190	9.28

- Notes: 1. Section Properties are based on AISI S100-16/S2-20 North American Specification for the Design of Cold-Formed Steel Structural Members.  
 2. 'Fully Braced' indicates the section is adequately braced for the full length of the member.  
 3. The effect of holes is not considered.  
 4. Decimal thickness listed is the 'minimum coated thickness'.  
 5. Lip Lengths are 9/16" for 16 ga, 5/8" for 14 ga, 3/4" for 12 ga and 1" for 10 ga.

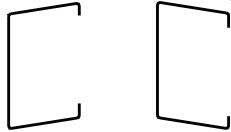


**Single Slope – High Eave Strut**

1:12 thru 4:12 Slope

			FULL SECTION PROPERTIES									EFFECTIVE SECTION PROPERTIES (FULLY BRACED)					
Size Web x Flange	Thickness gauge	in	Weight plf	A in <sup>2</sup>	I <sub>x-x</sub> in <sup>4</sup>	S <sub>x-x</sub> in <sup>3</sup>	r <sub>x</sub> in	I <sub>y-y</sub> in <sup>4</sup>	r <sub>y</sub> in	C <sub>w</sub> in <sup>6</sup>	J in <sup>4</sup>	A <sub>e</sub> in <sup>2</sup>	I <sub>xe</sub> in <sup>4</sup>	S <sub>xe</sub> in <sup>3</sup>	S <sub>ye</sub> in <sup>3</sup>	Max k-in	V <sub>ay</sub> kips
4" x 3-1/2"	16	0.057	2.26	0.67	1.48	0.69	1.49	1.00	1.26	3.80	0.001	0.39	1.13	0.54	0.43	17.9	4.06
4" x 3-1/2"	14	0.067	2.69	0.79	1.73	0.81	1.48	1.19	1.23	4.74	0.001	0.51	1.40	0.67	0.53	22.2	5.27
4" x 3-1/2"	12	0.099	4.04	1.19	2.51	1.18	1.45	1.80	1.23	7.72	0.004	0.98	2.30	1.10	0.84	36.1	7.72
6" x 3-1/2"	16	0.057	2.67	0.78	4.04	1.30	2.27	1.15	1.21	8.74	0.001	0.40	3.17	0.99	0.44	32.6	3.53
6" x 3-1/2"	14	0.067	3.15	0.93	4.76	1.53	2.26	1.39	1.22	10.7	0.001	0.53	3.90	1.24	0.54	41.0	5.59
6" x 3-1/2"	12	0.099	4.74	1.39	7.00	2.25	2.24	2.10	1.23	17.0	0.005	1.04	6.33	2.06	.088	67.7	12.0
6" x 4"	16	0.057	2.86	0.84	4.37	1.39	2.27	1.61	1.38	12.3	0.001	0.40	3.23	0.99	0.54	27.2	3.54
6" x 4"	14	0.067	3.39	1.00	5.14	1.64	2.27	1.93	1.39	15.0	0.002	0.53	3.99	1.25	0.67	41.2	5.7
6" x 4"	12	0.099	5.09	1.50	7.55	2.41	2.25	3.93	1.40	23.7	0.005	1.05	6.51	2.10	1.09	69.1	12.1
8" x 2-1/2"	16	0.057	2.66	0.78	6.77	1.67	2.94	0.54	0.83	6.94	0.001	0.39	6.04	1.42	0.26	46.8	2.57
8" x 2-1/2"	14	0.067	3.15	0.93	8.00	1.98	2.93	0.66	0.84	8.46	0.001	0.52	7.37	1.82	0.32	59.9	4.13
8" x 2-1/2"	12	0.099	4.74	1.39	12.8	2.94	2.92	1.00	0.84	13.1	0.005	1.02	11.7	2.93	0.52	96.6	12.0
8" x 3-1/2"	16	0.057	3.06	0.90	8.17	1.99	3.01	1.27	1.19	16.3	0.001	0.40	6.36	1.42	0.44	46.8	2.67
8" x 3-1/2"	14	0.067	3.62	1.07	9.64	2.36	3.01	1.53	1.20	19.9	0.002	0.54	8.04	1.90	0.55	62.7	4.25
8" x 3-1/2"	12	0.099	5.44	1.60	14.3	3.49	2.99	2.32	1.20	31.1	0.006	1.06	13.0	3.17	0.90	104	12.1
8" x 4"	14	0.067	3.86	1.13	10.4	2.53	3.03	2.14	1.37	27.8	0.002	0.54	8.25	1.91	0.68	62.8	4.25
8" x 4"	12	0.099	5.79	1.70	15.4	3.74	3.01	3.25	1.38	43.4	0.006	1.07	13.4	3.24	1.11	107	12.1
8" x 5"	14	0.067	4.33	1.27	11.9	2.84	3.05	3.75	1.72	49.0	0.002	0.54	8.51	1.87	0.97	51.5	4.25
8" x 5"	12	0.099	6.49	1.91	17.5	4.19	3.03	5.69	1.73	76.2	0.007	1.08	14.0	3.31	1.59	109	12.1
9" x 3-1/2"	14	0.067	3.86	1.13	12.9	2.81	3.37	1.59	1.18	25.8	0.002	0.54	10.7	2.18	0.55	71.8	3.79
9" x 3-1/2"	12	0.099	5.79	1.70	19.1	4.17	3.35	2.41	1.19	39.9	0.006	1.07	17.4	3.78	0.90	125	12.1
9" x 4"	14	0.067	4.09	1.20	13.9	3.01	3.40	2.22	1.36	36.1	0.002	0.54	10.9	2.17	0.68	71.4	3.79
9" x 4"	12	0.099	6.14	1.81	20.6	4.47	3.38	3.38	1.37	56.1	0.006	1.08	18.0	3.87	1.12	127	12.1
9" x 5"	14	0.067	4.56	1.34	15.8	3.38	3.43	3.91	1.71	63.4	0.002	0.54	11.1	2.14	0.97	58.8	3.79
9" x 5"	12	0.099	6.84	2.01	23.4	5.01	3.41	5.93	1.72	98.2	0.007	1.09	18.8	3.94	1.59	130	12.1
10" x 4"	14	0.067	4.33	1.27	17.9	3.52	3.76	2.30	1.34	45.6	0.002	0.54	13.8	2.43	0.68	80.0	3.48
10" x 4"	12	0.099	6.49	1.91	26.7	5.23	3.74	3.49	1.35	70.7	0.007	1.08	23.4	4.52	1.12	149	10.9
10" x 5"	14	0.067	4.79	1.41	20.4	3.96	3.80	4.05	1.69	80.1	0.002	0.54	14.1	2.40	0.97	66.1	3.48
10" x 5"	12	0.099	7.19	2.11	30.3	5.87	3.78	6.14	1.70	124	0.007	1.10	24.5	4.61	1.60	152	1.09
12" x 3-1/2"	14	0.067	4.56	1.34	26.1	4.30	4.41	1.72	1.13	48.3	0.002	0.54	20.2	2.95	0.55	97.2	2.89
12" x 3-1/2"	12	0.099	6.84	2.01	38.8	6.41	4.39	2.63	1.14	74.3	0.007	1.08	35.6	5.83	0.91	192	9.04
12" x 4"	14	0.067	4.79	1.41	28.0	4.60	4.46	2.42	1.31	68.1	0.002	0.54	20.6	2.95	0.68	97.2	2.89
12" x 4"	12	0.099	7.19	2.11	41.7	6.86	4.44	3.69	1.32	105	0.007	1.09	36.8	5.93	1.13	195	9.04
12" x 5"	12	0.099	7.89	2.32	47.3	7.70	4.51	6.51	1.68	187	0.008	1.11	38.8	6.05	1.61	199	9.04

- Notes: 1. Section Properties are based on AISI S100-16/S2-20 North American Specification for the Design of Cold-Formed Steel Structural Members.  
 2. 'Fully Braced' indicates the section is adequately braced for the full length of the member.  
 3. The effect of holes is not considered.  
 4. Decimal thickness listed is the 'minimum coated thickness'.  
 5. Lip Lengths are 9/16" for 16 ga, 5/8" for 14 ga, 3/4" for 12 ga and 1" for 10 ga.



**Double Slope – Eave Strut**

**1:12 thru 4:12 Slope**

				FULL SECTION PROPERTIES								EFFECTIVE SECTION PROPERTIES (FULLY BRACED)					
Size Web x Flange	Thickness gauge in		Weight plf	A in <sup>2</sup>	I <sub>x-x</sub> in <sup>4</sup>	S <sub>x-x</sub> in <sup>3</sup>	r <sub>x</sub> in	I <sub>y-y</sub> in <sup>4</sup>	r <sub>y</sub> in	C <sub>w</sub> in <sup>6</sup>	J in <sup>4</sup>	A <sub>e</sub> in <sup>2</sup>	I <sub>xe</sub> in <sup>4</sup>	S <sub>xe</sub> in <sup>3</sup>	S <sub>ye</sub> in <sup>3</sup>	Max k-in	V <sub>ay</sub> kips
4" x 3-1/2"	16	0.057	2.28	0.67	1.96	0.79	1.71	0.96	1.19	3.24	0.001	0.39	1.37	0.45	0.40	14.9	4.37
4" x 3-1/2"	14	0.067	2.70	0.79	2.31	0.93	1.70	1.15	1.20	4.05	0.001	0.51	1.72	0.58	0.50	19.2	5.66
4" x 3-1/2"	12	0.099	4.07	1.20	3.39	1.38	1.68	1.76	1.21	6.64	0.004	0.98	2.94	1.06	0.79	35.0	8.29
6" x 3-1/2"	16	0.057	2.67	0.79	4.84	1.35	2.48	1.11	1.19	7.61	0.001	0.40	3.53	0.84	0.41	27.8	3.82
6" x 3-1/2"	14	0.067	3.17	0.98	5.71	1.60	2.47	1.34	1.20	9.35	0.001	.053	4.39	1.08	0.51	35.4	5.95
6" x 3-1/2"	12	0.099	4.77	1.40	8.46	2.38	2.45	2.04	1.21	14.8	0.005	1.03	7.35	1.90	0.83	62.5	12.5
6" x 4"	16	0.057	2.87	0.84	5.35	1.46	2.51	1.55	1.35	10.6	0.001	0.40	3.62	0.82	0.52	22.7	3.84
6" x 4"	14	0.067	3.41	1.00	6.32	1.73	2.51	1.86	1.36	13.0	0.002	0.53	4.58	1.05	0.64	34.7	6.06
6" x 4"	12	0.099	5.12	1.51	9.36	2.59	2.49	2.84	1.37	20.6	0.005	1.04	7.64	1.87	1.03	61.6	12.7
8" x 2-1/2"	16	0.057	2.67	0.79	7.44	1.66	3.08	0.53	0.82	6.33	0.001	0.39	6.44	1.34	0.24	44.4	2.76
8" x 2-1/2"	14	0.067	3.17	0.93	8.18	1.97	3.07	0.64	0.83	7.76	0.001	0.52	7.86	1.67	0.30	55.1	4.36
8" x 2-1/2"	12	0.099	4.77	1.40	13.1	2.96	3.06	0.98	0.84	12.2	0.005	1.02	12.8	2.84	0.49	93.8	7.67
8" x 3-1/2"	16	0.057	3.07	0.90	9.29	2.00	3.22	1.22	1.16	14.4	0.001	0.40	7.01	1.33	0.42	43.8	2.96
8" x 3-1/2"	14	0.067	3.64	1.07	11.0	2.37	3.20	1.47	1.17	17.6	0.002	0.54	8.69	1.68	0.52	55.2	4.59
8" x 3-1/2"	12	0.099	5.47	1.61	16.3	3.54	3.18	2.25	1.18	27.5	0.006	1.06	14.3	2.90	0.84	95.3	12.7
8" x 4"	14	0.067	3.87	1.14	12.1	2.56	3.25	2.05	1.34	24.4	0.002	0.54	8.96	1.65	0.65	54.5	4.71
8" x 4"	12	0.099	5.82	1.71	18.2	3.83	3.23	3.14	1.35	38.1	0.006	1.07	14.9	2.88	1.05	94.7	12.9
8" x 5"	14	0.067	4.34	1.28	14.3	2.93	3.34	3.59	1.68	42.5	0.002	0.54	9.37	1.60	0.93	43.9	4.76
8" x 5"	12	0.099	6.52	1.92	21.2	4.38	3.32	5.47	1.69	66.1	0.007	1.08	15.7	2.80	1.51	92.3	13.3
9" x 3-1/2"	14	0.067	3.87	1.14	14.4	2.79	3.55	1.53	1.16	22.9	0.002	0.54	11.5	2.02	0.52	66.4	4.13
9" x 3-1/2"	12	0.099	5.82	1.71	21.5	4.18	3.54	2.34	1.17	35.6	0.006	1.06	18.9	3.45	0.85	114	12.6
9" x 4"	14	0.067	4.11	1.21	15.8	3.01	3.61	2.13	1.33	31.7	0.002	0.54	11.9	1.99	0.65	65.7	4.25
9" x 4"	12	0.099	6.17	1.81	23.5	4.51	3.59	3.26	1.34	49.4	0.006	1.07	19.6	3.44	1.05	114	12.8
9" x 5"	14	0.067	4.58	1.35	18.5	3.43	3.71	3.74	1.67	55.2	0.002	0.54	12.4	1.93	0.93	53.1	4.30
9" x 5"	12	0.099	6.87	2.02	27.6	5.14	3.69	5.70	1.68	85.7	0.007	1.09	20.8	3.37	1.52	111	13.1
10" x 4"	14	0.067	4.34	1.28	20.1	3.48	3.96	2.21	1.31	40.3	0.002	0.54	15.0	2.27	0.65	74.8	3.89
10" x 4"	12	0.099	6.52	1.92	30.0	5.22	3.95	3.37	1.33	62.5	0.007	1.08	25.2	4.04	1.06	133	11.5
10" x 5"	14	0.067	4.81	1.42	23.5	3.96	4.07	3.87	1.65	70.1	0.002	0.54	15.5	2.17	0.94	59.8	3.94
10" x 5"	12	0.099	7.22	2.12	35.1	5.91	4.06	5.90	1.67	108	0.008	1.09	26.7	3.97	1.53	131	11.9
12" x 3-1/2"	14	0.067	4.58	1.35	28.3	4.20	4.58	1.66	1.11	44.0	0.002	0.54	21.5	2.80	0.52	92.1	3.24
12" x 3-1/2"	12	0.099	6.87	2.02	42.2	6.31	4.54	2.55	1.12	68.1	0.007	1.08	37.7	5.34	0.86	176	9.55
12" x 4"	14	0.067	4.81	1.42	30.7	4.51	4.65	2.38	1.28	61.0	0.002	0.54	22.0	2.76	0.65	90.8	3.36
12" x 4"	12	0.099	7.22	2.12	45.9	6.76	4.64	3.56	1.30	94.3	0.008	1.09	39.1	5.35	1.07	176	9.72
12" x 5"	12	0.099	7.92	2.33	53.2	7.64	4.77	6.25	1.64	163	0.008	1.10	41.4	5.30	1.54	174	10.1

- Notes: 1. Section Properties are based on AISI S100-16/S2-20 North American Specification for the Design of Cold-Formed Steel Structural Members.  
 2. 'Fully Braced' indicates the section is adequately braced for the full length of the member.  
 3. The effect of holes is not considered.  
 4. Decimal thickness listed is the 'minimum coated thickness'.  
 5. Lip Lengths are 9/16" for 16 ga, 5/8" for 14 ga, 3/4" for 12 ga and 1" for 10 ga.

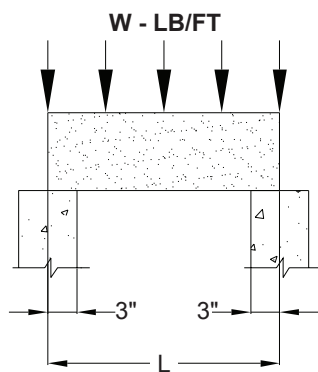


**Universal Eave Strut**

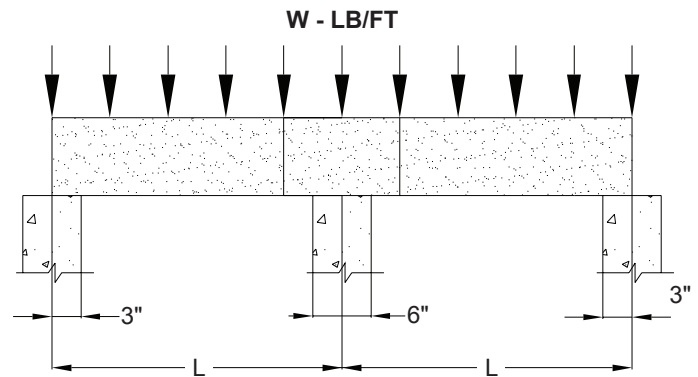
Size Web x Flange	Thickness		Weight plf	FULL SECTION PROPERTIES								EFFECTIVE SECTION PROPERTIES (FULLY BRACED)					
	gauge	in		A in <sup>2</sup>	I <sub>x-x</sub> in <sup>4</sup>	S <sub>x-x</sub> in <sup>3</sup>	r <sub>x</sub> in	I <sub>y-y</sub> in <sup>4</sup>	r <sub>y</sub> in	C <sub>w</sub> in <sup>6</sup>	J in <sup>4</sup>	A <sub>e</sub> in <sup>2</sup>	I <sub>xe</sub> in <sup>4</sup>	S <sub>xe</sub> in <sup>3</sup>	S <sub>ye</sub> in <sup>3</sup>	Max k-in	V <sub>ay</sub> kips
8" x 3-1/2"	14	0.067	3.67	1.08	12.1	2.67	3.35	1.60	1.22	18.8	0.002	0.63	10.1	2.17	0.58	71.6	5.23
8" x 3-1/2"	12	0.099	5.52	1.62	18.1	3.99	3.34	2.45	1.23	29.5	0.006	1.16	16.5	3.77	0.95	124	13.0
8" x 5"	14	0.067	4.37	1.29	16.4	3.45	3.58	3.90	1.74	44.7	0.002	0.68	11.5	2.19	0.92	60.3	5.14
8" x 5"	12	0.099	6.57	1.93	24.5	5.15	3.56	5.95	1.75	69.8	0.007	1.29	19.9	4.16	1.66	137	15.6

- Notes: 1. Section Properties are based on AISI S100-16/S2-20 North American Specification for the Design of Cold-Formed Steel Structural Members.  
 2. 'Fully Braced' indicates the section is adequately braced for the full length of the member.  
 3. The effect of holes is not considered.  
 4. Decimal thickness listed is the 'minimum coated thickness'.  
 5. Lip Lengths are 9/16" for 16 ga, 5/8" for 14 ga, 3/4" for 12 ga and 1" for 10 ga.

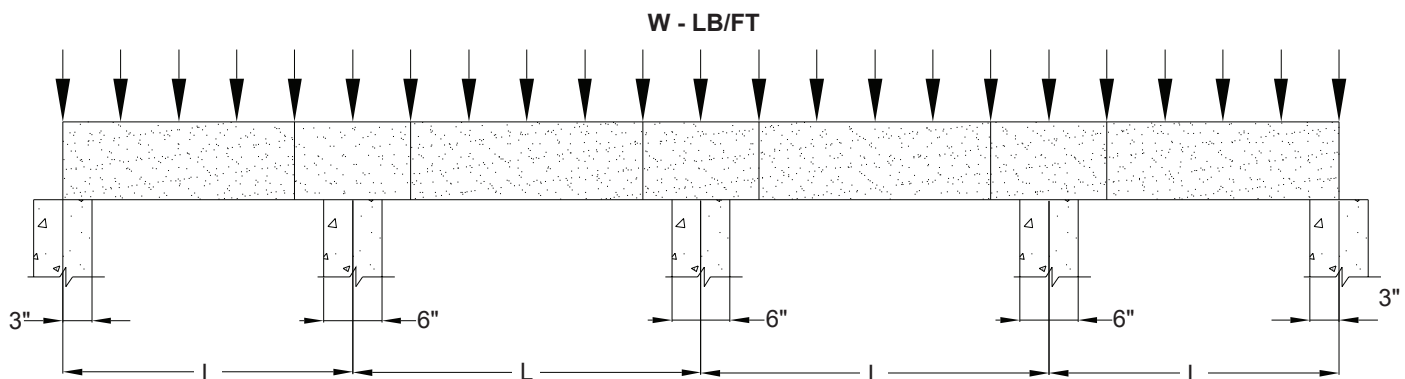
1. Tabulated values are allowable capacities (PLF) on normal 1/2:12 to 4:12 roof slope. Member weights are not considered. The tabulated value is the minimum of inward or outward load unless specially provided for each direction. The tabulated values are intended to be compared to the appropriate load combination, such as Dead + Live or Dead + 0.6 Wind.
2. Member weight, weight of roof material and other dead loads must be considered in an analysis using the tabulated values for roof members.
3. The deflection value is a fictitious load that will cause an L/180 deflection. The deflection value does not indicate a load-carrying capacity of the member. In fact, the load-carrying capacity is usually much less than the deflection value. Deflection values for deflection limits other than L/180 can be calculated using the values tabulated as follows:  
 Deflection value for L/120 (PLF) = (180/120) x (Tabulated Value).  
 Deflection value for L/240 (PLF) = (180/240) x (Tabulated Value).
4. Allowable loads have been calculated in accordance with AISI S100-16/S2-20 North American Specification for the Design of Cold-Formed Steel Structural Members. 'Un-Braced' indicates the member is braced against rotation at all support locations only. 'Mid-Braced' indicates the member is braced against rotation at support locations and mid-span location(s) only. 'Fully-Braced' indicates the member is braced against rotation for the full length of the assembly.
5. Tabulated values do not consider the effect of bolt holes, strut loads, connection design, member roll or bracing design. Consult with your engineer or architect to address these and unusual slope (1/4:12 and > 4:12) applications.
6. End bearing capacity must be checked using actual load, bearing lengths, and the web crippling table on page SF-84.
7. ASTM A 325 bolts, 1/2" diameter with washers are the recommended minimum for all lap connections.
8. Web stiffeners can be provided by welding or bolting a clip plate to the support rafters and connecting the purlins through the web holes to the clip.
9. Tabulated values are based on a 6" bearing at interior supports. Reaction (R) at end supports can be approximated by the following equations:  
 One Span,  $R = 0.50WL$                       Two Spans,  $R = 0.375WL$                       Three or more Spans,  $R = 0.40WL$
10. A hyphen in the Load Tables indicates that section is not available in that thickness or the capacity < 10 PLF.



**SIMPLE SPAN**



**TWO SPAN**



**THREE OR MORE SPANS**

# SECONDARY FRAMING

# Cee - Load Tables, One Span

## Values (PLF) – Cee 4" x 2-1/2"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	251	158	197	197	295	207	253	253	—	—	—	—
10	129	80.6	126	126	151	105	161	162	—	—	—	—
12	74.5	42.0	84.6	87.5	87.5	54.6	107	112	—	—	—	—
14	46.9	24.2	58.5	64.3	55.1	31.0	74.7	82.6	—	—	—	—
16	31.4	14.8	41.6	49.2	36.9	19.2	53.9	63.3	—	—	—	—
18	22.1	—	30.1	38.9	25.9	12.6	39.6	50.0	—	—	—	—

## Values (PLF) – Cee 4" x 3-1/2"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	326	196	211	211	382	251	273	273	553	442	469	469
10	167	112	136	136	196	145	175	175	283	262	299	299
12	96.7	66.8	94.1	94.1	113	87.6	121	121	164	166	208	208
14	60.9	40.1	68.3	69.1	71.3	53.4	86.8	89.1	103	106	151	153
16	40.8	25.6	50.4	52.9	47.8	34.6	64.2	68.3	69.2	67.1	112	117
18	28.6	17.4	38.1	41.8	33.6	23.8	48.7	53.9	48.6	45.2	86.2	92.5

## Values (PLF) – Cee 6" x 2-1/2"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	325	129	195	195	382	162	254	254	559	273	448	448
12	188	65.2	136	136	221	82.3	176	176	323	139	300	312
14	118	36.6	98.8	100	139	45.9	125	129	204	79.2	207	229
16	79.3	22.0	69.5	76.3	93.3	27.8	89.0	99.0	136	49.1	147	175
18	55.7	14.2	49.7	60.3	65.5	18.0	64.4	78.2	95.8	32.5	105	139
20	40.6	—	35.5	48.8	47.8	12.3	45.6	63.4	69.9	22.6	76.0	112

## Values (PLF) – Cee 6" x 3-1/2"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	411	190	205	205	483	242	270	270	705	426	493	493
12	238	110	143	143	280	142	187	187	408	261	341	341
14	150	64.7	105	105	176	84.1	138	138	257	155	251	251
16	100	40.6	80.2	80.2	118	53.8	105	105	172	96.6	186	192
18	70.5	27.2	63.4	63.4	82.8	36.1	82.0	83.2	121	63.5	141	152
20	51.4	19.2	49.7	51.3	60.4	24.5	63.0	67.4	88.1	43.4	110	123

## Values (PLF) – Cee 6" x 4"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	455	173	202	202	533	263	275	275	777	455	508	508
12	263	106	140	140	309	163	191	191	449	287	352	352
14	166	65.5	102	103	194	102	140	140	283	187	258	258
16	111	41.1	75.6	78.8	130	64.3	107	107	190	123	195	198
18	78.0	27.4	57.7	62.2	91.4	42.9	84.7	84.7	133	81.2	149	156
20	56.9	19.0	44.8	50.4	66.7	30.1	67.9	68.6	97.1	55.8	117	127

# SECONDARY FRAMING

# Cee - Load Tables, One Span

## Values (PLF) – Cee 8" x 2-1/2"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	324	78.6	169	169	382	96.9	222	222	561	159	397	400
15	188	38.7	118	118	221	48.0	153	154	325	80.5	250	278
17.5	118	21.4	78.4	86.5	139	26.7	100	113	204	45.9	162	204
20	79.2	13.2	50.7	66.3	93.3	16.2	64.1	86.6	137	28.4	105	156
22.5	55.6	—	32.9	52.4	65.5	10.5	41.6	68.4	96.2	18.8	67.5	123
25	40.5	—	22.1	42.4	47.8	—	27.7	55.4	70.1	13.0	45.4	100

## Values (PLF) – Cee 8" x 3"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	364	109	174	174	428	142	229	229	627	238	418	418
15	211	57.7	121	121	248	71.8	159	159	363	119	291	291
17.5	133	32.2	88.9	88.9	156	40.2	117	117	229	66.9	198	213
20	88.8	19.4	64.3	68.0	105	24.2	81.0	89.4	153	41.0	137	163
22.5	62.4	12.4	44.2	53.8	73.5	15.5	56.5	70.6	108	26.8	96.5	129
25	45.5	—	30.3	43.6	53.6	10.5	39.5	57.2	78.4	18.4	67.8	104

## Values (PLF) – Cee 8" x 3-1/2"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	405	140	177	177	474	179	233	233	693	218	431	431
15	234	72.7	123	123	274	94.2	162	162	401	164	299	299
17.5	148	42.3	90.3	90.3	173	55.3	119	119	253	93.3	218	220
20	98.9	26.8	69.1	69.1	116	33.6	91.2	91.2	169	56.7	158	168
22.5	69.4	17.3	53.1	54.6	81.3	21.8	67.0	67.0	119	36.8	116	133
25	50.6	11.7	38.5	44.2	59.3	14.6	48.9	58.3	86.6	25.1	86.9	108

## Values (PLF) – Cee 8" x 4"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	442	138	172	172	520	211	236	236	759	365	441	441
15	256	74.9	118	120	301	115	164	164	439	209	306	306
17.5	161	43.3	83.8	87.9	189	66.8	121	121	277	121	225	225
20	108	27.0	61.9	67.3	127	42.2	92.3	92.3	185	74.3	169	172
22.5	75.8	18.0	46.8	53.2	89.1	27.4	72.9	72.9	130	48.8	126	136
25	55.3	12.6	36.0	43.1	65.0	19.3	56.0	59.1	94.8	33.1	96.2	110

## Values (PLF) – Cee 8" x 5"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	—	—	—	—	615	206	230	230	889	429	452	452
15	—	—	—	—	356	127	160	160	514	265	314	314
17.5	—	—	—	—	224	77.6	116	117	324	166	231	231
20	—	—	—	—	150	48.6	87.1	89.8	217	105	177	177
22.5	—	—	—	—	105	32.3	67.1	71.0	152	71.5	140	140
25	—	—	—	—	76.8	22.4	52.8	57.5	111	50.7	111	113

# SECONDARY FRAMING

# Cee - Load Tables, One Span

## Values (PLF) – Cee 9" x 3"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	277	66.1	137	137	326	82.5	180	180	477	134	330	330
17.5	174	36.9	100	100	205	45.9	132	132	301	75.2	230	243
20	117	22.2	74.2	76.8	137	27.5	94.5	101	201	45.9	159	186
22.5	82.0	14.1	51.6	60.7	96.5	17.5	65.7	79.9	141	29.8	111	147
25	59.7	—	35.3	49.2	70.3	11.8	45.7	64.7	103	20.4	77.1	119
27.5	44.9	—	25.2	40.6	52.8	—	32.3	53.5	77.5	14.5	53.5	98.3

## Values (PLF) – Cee 9" x 3-1/2"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	305	84.6	139	139	359	109	183	183	525	187	340	340
17.5	192	49.0	102	102	226	63.5	135	135	331	106	250	250
20	129	30.9	78.0	78.0	152	38.4	103	103	222	63.8	183	191
22.5	90.5	19.8	59.3	61.7	106	24.9	78.4	81.4	156	41.2	135	151
25	66.0	13.4	44.7	49.9	77.6	16.6	57.0	66.0	113	27.9	100	122
27.5	49.5	—	32.3	41.3	58.3	11.6	41.2	54.5	85.3	19.8	72.7	101

## Values (PLF) – Cee 9" x 4"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	334	87.6	132	134	392	134	186	186	573	240	347	347
17.5	210	50.5	94.2	98.8	247	77.3	136	136	361	138	255	255
20	141	31.4	69.4	75.6	166	48.7	104	104	242	84.4	195	195
22.5	99.0	20.8	52.5	59.8	116	32.6	82.4	82.4	170	55.0	147	154
25	72.1	14.5	40.3	48.4	84.8	22.0	65.6	66.8	124	37.1	112	125
27.5	54.2	10.3	31.3	40.0	63.7	15.5	49.6	55.2	93.0	26.1	85.7	103

## Values (PLF) – Cee 9" x 4-1/2"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	—	—	—	—	426	159	187	187	621	277	352	352
17.5	—	—	—	—	268	92.9	137	137	391	166	258	258
20	—	—	—	—	180	58.0	105	105	262	106	198	198
22.5	—	—	—	—	126	38.3	83.1	83.1	184	69.1	156	156
25	—	—	—	—	92.0	26.7	67.2	67.2	134	47.0	122	127
27.5	—	—	—	—	69.1	19.4	54.8	55.6	101	33.6	94.7	105

## Values (PLF) – Cee 9" x 5"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	—	—	—	—	459	147	180	180	669	309	356	356
17.5	—	—	—	—	289	90.8	131	132	421	192	261	261
20	—	—	—	—	194	56.7	98.0	101	282	121	200	200
22.5	—	—	—	—	136	37.5	75.5	79.9	198	81.8	158	158
25	—	—	—	—	99.1	26.0	59.3	64.7	144	57.7	128	128
27.5	—	—	—	—	74.5	18.6	47.4	53.4	109	41.0	102	106

# SECONDARY FRAMING

# Cee - Load Tables, One Span

## Values (PLF) – Cee 10" x 2-1/2"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	200	27.5	103	108	236	34.0	134	142	347	56.7	213	261
20	134	16.5	67.1	82.9	158	20.5	83.8	109	232	34.7	135	200
22.5	94.3	—	43.1	65.5	111	13.1	54.1	86.1	163	22.7	85.9	158
25	68.7	—	29.0	53.1	81.0	—	35.8	69.7	119	15.6	57.3	128
27.5	51.6	—	20.1	43.8	60.8	—	24.7	57.6	89.3	11.2	39.9	106
30	39.8	—	14.3	36.8	46.9	—	17.6	48.4	68.8	—	28.8	88.9

## Values (PLF) – Cee 10" x 3"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	223	41.9	112	112	262	51.7	147	147	384	83.9	263	272
20	149	25.1	81.4	85.4	176	30.9	109	113	257	50.9	181	208
22.5	105	15.9	58.6	67.5	123	19.7	75.2	89.0	181	32.9	126	165
25	76.4	10.6	40.4	54.7	89.9	13.2	52.1	72.1	132	22.4	86.7	133
27.5	57.4	—	28.8	45.2	67.6	—	36.6	59.6	99.0	15.9	60.1	110
30	44.2	—	21.2	38.0	52.1	—	26.4	50.1	76.3	11.7	43.0	92.7

## Values (PLF) – Cee 10" x 3-1/2"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	288	71.9	150	150	422	118	280	280
20	—	—	—	—	193	43.4	115	115	283	71.2	211	214
22.5	—	—	—	—	136	28.0	90.1	90.7	198	45.7	154	169
25	—	—	—	—	98.9	18.7	65.5	73.5	145	31.0	114	137
27.5	—	—	—	—	74.3	13.0	47.1	60.8	109	21.8	82.2	113
30	—	—	—	—	57.2	—	34.5	51.0	83.7	15.9	59.4	95.2

## Values (PLF) – Cee 10" x 4"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	314	88.3	152	152	459	155	285	285
20	—	—	—	—	210	55.4	116	116	307	94.8	218	218
22.5	—	—	—	—	148	37.0	91.8	91.8	216	61.4	169	172
25	—	—	—	—	108	24.8	73.3	74.4	157	41.3	128	140
27.5	—	—	—	—	81.0	17.4	57.1	61.5	118	28.9	97.8	115
30	—	—	—	—	62.4	12.6	42.8	51.7	91.1	21.0	74.9	97.0

## Values (PLF) – Cee 10" x 5"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	366	105	145	147	533	219	292	292
20	—	—	—	—	245	65.1	109	112	357	138	223	223
22.5	—	—	—	—	172	43.0	83.8	88.7	251	92.4	176	176
25	—	—	—	—	125	29.6	65.8	71.8	183	65.0	143	143
27.5	—	—	—	—	94.2	21.2	52.5	59.3	137	45.9	117	118
30	—	—	—	—	72.6	15.7	42.4	49.9	106	33.3	93.2	99.1

# SECONDARY FRAMING

# Cee - Load Tables, One Span

## Values (PLF) – Cee 12" x 2-1/2"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	366	41.7	147	169	537	68.0	257	315
20	—	—	—	—	245	24.9	94.2	130	359	41.3	163	242
22.5	—	—	—	—	172	15.9	62.3	102	252	26.8	105	191
25	—	—	—	—	125	10.7	42.1	82.9	184	18.3	69.9	155
27.5	—	—	—	—	94.2	—	29.5	68.5	138	13.0	48.5	128
30	—	—	—	—	72.6	—	21.3	57.6	106	—	34.8	107

## Values (PLF) – Cee 12" x 3"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	403	63.9	176	176	591	102	330	330
20	—	—	—	—	270	38.0	130	135	396	61.3	228	253
22.5	—	—	—	—	190	24.1	95.0	106	278	39.4	157	199
25	—	—	—	—	138	16.1	65.4	86.3	203	26.7	107	162
27.5	—	—	—	—	104	11.2	45.7	71.3	152	18.8	73.6	134
30	—	—	—	—	80.0	—	32.8	59.9	117	13.7	52.5	112

## Values (PLF) – Cee 12" x 3-1/2"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	458	90.0	180	180	644	145	339	339
20	—	—	—	—	307	53.9	138	138	432	86.6	260	260
22.5	—	—	—	—	215	34.5	106	109	303	55.3	195	205
25	—	—	—	—	157	22.9	79.4	88.3	221	37.2	143	166
27.5	—	—	—	—	118	15.9	59.6	72.9	166	26.0	102	137
30	—	—	—	—	90.9	11.4	43.5	61.3	128	18.9	73.4	115

## Values (PLF) – Cee 12" x 4"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	478	111	182	182	698	191	345	345
20	—	—	—	—	320	69.5	140	140	467	117	265	265
22.5	—	—	—	—	225	46.0	110	110	328	74.7	209	209
25	—	—	—	—	164	30.8	86.5	89.4	239	50.0	162	169
27.5	—	—	—	—	123	21.5	67.2	73.9	180	34.9	123	140
30	—	—	—	—	94.8	15.5	52.3	62.1	138	25.2	93.9	118

## Values (PLF) – Cee 12" x 5"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	698	191	345	345	803	276	352	352
20	—	—	—	—	467	117	265	265	538	172	270	270
22.5	—	—	—	—	328	74.7	209	209	378	115	213	213
25	—	—	—	—	239	50.0	162	169	276	80.3	172	172
27.5	—	—	—	—	180	34.9	123	140	207	56.1	142	142
30	—	—	—	—	138	25.2	93.9	118	159	40.6	119	120

# SECONDARY FRAMING

# Cee - Load Tables, One Span

## Values (PLF) – Cee 14" x 2-1/2"

Span (feet)	12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced
20	522	48.1	188	280
22.5	367	31.0	122	221
25	267	21.1	82.4	179
27.5	201	14.9	57.3	148
30	155	10.9	41.0	124
32.5	122	—	30.2	106

## Values (PLF) – Cee 14" x 3"

Span (feet)	12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced
20	571	72.1	256	294
22.5	401	46.1	179	232
25	292	31.0	123	188
27.5	220	21.8	85.9	155
30	169	15.8	62.2	131
32.5	133	11.8	45.8	111

## Values (PLF) – Cee 14" x 4"

Span (feet)	12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced
20	668	139	309	309
22.5	469	88.7	244	244
25	342	59.1	198	198
27.5	257	41.1	151	163
30	198	29.5	114	137
32.5	156	21.8	86.0	117

## Values (PLF) – Cee 16" x 3"

Span (feet)	12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced
22.5	553	53.0	203	262
25	403	35.5	138	212
27.5	303	24.8	97.2	175
30	233	18.0	70.4	147
32.5	184	13.4	52.4	126
35	147	10.2	39.8	108

## Values (PLF) – Cee 16" x 5"

Span (feet)	12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced
22.5	729	163	285	285
25	531	112	230	230
27.5	399	78.0	190	190
30	307	56.2	160	160
32.5	242	41.8	133	136
35	194	31.5	109	118

## Values (PLF) – Cee 18" x 4"

Span (feet)	12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced
22.5	847	116	304	310
25	618	78.1	231	251
27.5	464	54.0	178	207
30	357	38.6	136	174
32.5	281	27.4	1.5	149
35	225	21.4	80.4	128

## Values (PLF) – Cee 20" x 3"

Span (feet)	12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced
25	694	44.8	167	254
27.5	522	31.1	118	210
30	402	21.3	85.6	176
32.5	316	16.6	63.8	150
35	253	12.6	48.6	130
37.5	206	—	37.8	113

## Values (PLF) – Cee 20" x 5"

Span (feet)	10 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced
30	665	103	321	321
32.5	523	75.9	273	273
35	418	57.1	220	235
37.5	340	43.9	175	205
40	280	34.4	139	180
42.5	234	27.3	110	160

## Values (PLF) – Cee 22" x 4"

Span (feet)	10 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced
32.5	602	50.6	195	284
35	482	38.2	148	245
37.5	392	29.5	115	214
40	323	23.2	90.4	188
42.5	269	18.5	72.3	166
45	227	15.0	58.5	148

## Values (PLF) – Cee 24" x 3"

Span (feet)	10 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced
32.5	641	29.4	113	277
35	513	22.4	86.3	239
37.5	417	17.4	67.1	208
40	344	13.7	52.9	183
42.5	287	11.0	42.0	162
45	242	—	33.7	144

# SECONDARY FRAMING

# Equal Leg Zee - 4" x 2-1/2" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	260	139	171	171	310	195	230	230	—	—	—	—
10	133	66.8	109	109	158	92.9	147	147	—	—	—	—
12	76.9	34.5	75.9	75.9	91.7	47.4	102	102	—	—	—	—
14	48.5	19.6	53.8	55.8	57.8	26.6	71.7	75.1	—	—	—	—
16	32.5	11.9	37.2	42.7	38.7	16.3	51.1	57.5	—	—	—	—
18	22.8	—	26.1	33.7	27.2	10.6	37.0	45.4	—	—	—	—

## Values (PLF) – Two Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	703	302	302	302	841	408	408	408	—	—	—	—
10	360	157	170	170	431	213	230	230	—	—	—	—
12	208	84.5	109	109	249	121	147	147	—	—	—	—
14	131	48.4	75.6	75.6	157	68.2	102	102	—	—	—	—
16	87.8	28.8	55.6	55.6	105	41.1	75.1	75.1	—	—	—	—
18	61.7	18.6	42.6	42.6	73.8	25.9	57.6	57.6	—	—	—	—

## Values (PLF) – Two Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	738	289	289	289	883	391	391	391	—	—	—	—
10	378	176	189	189	452	238	255	255	—	—	—	—
12	219	105	134	134	262	150	180	180	—	—	—	—
14	138	61.8	94.8	94.8	165	87.5	128	128	—	—	—	—
16	92.2	35.6	67.1	67.1	110	50.9	90.7	90.7	—	—	—	—
18	64.8	22.3	47.1	50.1	77.5	31.1	67.0	67.6	—	—	—	—

## Values (PLF) – Three Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	526	283	288	288	629	377	389	389	—	—	—	—
10	269	149	183	183	322	210	247	247	—	—	—	—
12	156	81.9	126	126	186	115	170	170	—	—	—	—
14	98.1	46.6	86.1	92.2	117	65.8	116	125	—	—	—	—
16	65.7	28.9	58.4	70.3	78.6	39.6	81.5	95.0	—	—	—	—
18	46.1	18.5	40.2	53.9	55.2	25.6	57.2	72.8	—	—	—	—

## Values (PLF) – Three Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	537	293	294	294	633	389	398	398	—	—	—	—
10	275	156	187	187	324	218	253	253	—	—	—	—
12	159	86.2	129	129	188	122	173	127	—	—	—	—
14	100	49.3	87.6	93.9	118	70.0	118	127	—	—	—	—
16	67.2	30.6	59.4	71.5	79.2	42.0	82.9	96.6	—	—	—	—
18	47.2	19.5	40.7	56.2	55.6	27.0	58.0	76.0	—	—	—	—

# SECONDARY FRAMING

# Equal Leg Zee - 4" x 3-1/2" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	334	181	181	181	397	242	248	248	560	377	407	407
10	171	100	116	116	203	136	159	159	287	215	260	260
12	99.1	56.3	80.4	80.4	118	78.9	110	110	166	128	181	181
14	62.4	33.4	59.0	59.0	74.0	46.9	81.0	81.0	104	77.1	132	133
16	41.8	21.3	45.2	45.2	49.6	30.7	62.0	62.1	70.0	48.1	96.8	101
18	29.4	14.6	35.0	35.0	34.8	20.6	46.7	49.0	49.1	32.3	73.0	80.3

## Values (PLF) – Two Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	908	322	322	322	1082	444	444	444	1546	709	709	709
10	465	181	181	181	554	250	250	250	791	405	412	412
12	269	113	116	116	321	152	159	159	458	243	265	265
14	169	70.7	80.3	80.3	202	96.5	111	111	288	156	183	183
16	114	45.4	59.1	59.1	135	63.5	81.5	81.5	193	106	135	135
18	79.7	29.7	45.3	45.3	95.0	42.3	62.5	62.5	136	73.2	104	104

## Values (PLF) – Two Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	954	307	307	307	1136	424	424	424	1623	699	699	699
10	488	200	200	200	582	277	277	277	831	450	459	459
12	283	140	142	142	337	187	196	196	481	299	324	324
14	178	89.7	101	101	212	122	139	139	303	198	230	230
16	119	55.7	71.3	71.3	142	77.6	98.3	98.3	203	129	163	163
18	83.7	35.5	53.2	53.2	100	50.5	73.4	73.4	143	87.3	122	122

## Values (PLF) – Three Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	679	307	307	307	809	424	424	424	1156	699	699	699
10	348	195	195	195	414	261	265	265	592	415	444	444
12	201	120	134	134	240	163	185	185	343	261	307	307
14	127	74.5	100	100	151	104	135	135	216	171	219	224
16	84.9	47.0	74.7	74.7	101	66.6	101	103	145	114	160	171
18	59.6	31.4	56.1	57.3	71.1	44.9	75.4	79.0	102	76.9	115	136

## Values (PLF) – Three Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	695	313	313	313	828	431	431	431	1182	714	714	714
10	356	198	198	198	424	269	274	274	605	427	452	452
12	206	124	137	137	245	169	189	189	350	270	313	313
14	130	78.1	100	100	154	108	138	138	221	178	223	228
16	86.8	49.3	76.0	76.0	103	69.9	103	105	148	119	162	174
18	61.0	32.9	56.9	59.8	72.7	46.8	76.5	82.4	104	81.1	121	137

# SECONDARY FRAMING

# Equal Leg Zee - 6" x 2-1/2" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	333	103	169	169	398	142	228	228	560	192	380	380
12	193	52.8	117	117	230	70.0	159	159	324	96.4	262	265
14	121	29.0	86.1	86.1	145	38.8	117	117	204	54.5	175	194
16	81.2	17.3	60.9	65.9	97.1	23.2	83.1	89.3	137	36.0	118	149
18	57.0	11.1	41.6	52.1	68.2	14.9	57.9	70.5	96.0	22.0	81.4	118
20	41.6	—	29.0	42.2	49.7	—	39.7	57.1	70.0	15.2	54.8	95.2

## Values (PLF) – Two Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	896	259	264	264	1075	350	360	360	1533	518	606	606
12	518	133	169	169	622	187	229	229	887	273	388	388
14	326	73.2	117	117	392	102	159	159	558	147	269	269
16	219	43.0	86.1	86.1	263	58.9	117	117	374	86.2	198	198
18	154	27.0	66.1	66.1	184	36.5	89.9	89.9	263	54.6	142	152
20	112	17.6	49.9	52.2	134	23.9	69.3	71.1	192	36.6	94.6	120

## Values (PLF) – Two Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	938	291	292	292	1126	392	398	398	1605	581	671	671
12	543	167	207	207	652	235	282	282	929	341	474	474
14	342	94.1	147	147	410	131	200	200	585	189	337	338
16	229	53.0	104	104	275	72.9	141	141	392	107	222	239
18	161	32.5	75.0	77.5	193	43.8	104	105	275	65.7	145	178
20	117	20.7	51.0	60.1	141	28.1	71.0	81.8	201	43.1	96.7	138

## Values (PLF) – Three Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	673	241	283	283	808	338	386	386	1153	483	649	649
12	390	126	195	195	468	175	266	266	667	247	433	448
14	245	70.5	143	143	295	96.0	192	195	420	137	282	328
16	164	42.3	95.4	109	197	56.8	132	148	282	83.1	188	250
18	115	26.6	64.0	83.5	139	36.0	88.8	114	198	53.9	125	192
20	84.1	17.7	43.9	66.0	101	24.0	60.8	89.8	144	36.8	83.4	152

## Values (PLF) – Three Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	688	254	289	289	826	352	394	394	1176	508	662	662
12	398	134	199	199	478	185	271	271	681	358	441	457
14	251	74.5	146	146	301	102	196	198	429	146	287	334
16	168	44.8	96.9	111	202	60.2	134	158	287	88.0	191	254
18	118	28.1	64.9	87.1	142	38.0	90.0	119	202	56.9	127	200
20	85.9	18.6	44.4	70.3	103	25.3	61.6	95.7	147	38.7	84.5	161

# SECONDARY FRAMING

# Equal Leg Zee - 6" x 3-1/2" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	419	167	175	175	499	223	242	242	706	344	402	402
12	243	90.8	122	122	288	124	168	168	408	194	279	279
14	153	52.9	89.3	89.3	182	73.0	123	123	257	111	205	205
16	102	33.3	68.4	68.4	122	47.0	94.3	94.3	172	68.2	157	157
18	71.9	22.5	54.0	54.0	85.5	30.5	74.5	74.5	121	45.3	120	124
20	52.4	15.5	43.7	43.7	62.3	21.0	59.0	60.3	88.2	30.8	90.7	100

## Values (PLF) – Two Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	1133	275	275	275	1354	382	382	382	1944	641	641	641
12	655	175	175	175	784	243	243	243	1125	397	412	412
14	413	117	122	122	494	158	169	169	709	249	286	286
16	277	72.8	89.7	89.7	331	101	124	124	475	162	210	210
18	194	46.7	68.8	68.8	232	64.8	95.3	95.3	333	107	161	161
20	142	31.6	54.4	54.4	169	44.3	75.4	75.4	243	71.2	127	127

## Values (PLF) – Two Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	1186	305	305	305	1418	422	422	422	2036	714	714	714
12	686	215	215	215	821	299	299	299	1178	490	503	503
14	432	149	153	153	517	200	212	212	742	316	358	358
16	290	89.5	108	108	346	123	150	150	497	198	253	253
18	203	55.9	80.7	80.7	243	77.5	112	112	349	128	189	189
20	148	37.0	62.6	62.6	177	51.2	86.7	86.7	254	83.7	146	146

## Values (PLF) – Three Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	851	295	295	295	1462	685	690	690	1462	685	690	690
12	493	200	204	204	846	420	476	476	846	420	476	476
14	310	120	149	149	533	263	348	348	533	263	348	348
16	208	74.5	113	113	357	166	265	265	257	166	265	265
18	146	49.0	86.9	86.9	251	107	196	203	251	107	196	203
20	106	34.0	68.7	68.7	183	73.0	147	161	183	73.0	147	161

## Values (PLF) – Three Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	869	301	301	301	1041	418	418	418	1493	704	704	704
12	503	207	207	207	602	279	287	287	864	437	485	485
14	317	127	152	152	379	174	210	210	544	276	355	355
16	212	78.2	115	115	254	108	160	160	364	176	270	270
18	149	51.3	90.7	90.7	178	71.9	126	126	256	113	199	212
20	109	35.4	71.3	73.2	130	50.5	95.6	102	187	76.5	149	171

# SECONDARY FRAMING

# Equal Leg Zee - 8" x 2-1/2" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	331	60.8	147	147	396	80.2	200	200	558	108	339	339
15	192	29.8	102	102	229	39.4	139	139	323	54.2	2.2	235
17.5	121	16.4	64.2	74.9	144	21.7	88.5	102	203	30.6	122	173
20	80.8	—	39.9	57.3	96.6	13.0	54.5	78.0	136	18.8	72.5	132
22.5	56.8	—	25.6	45.3	67.9	—	34.6	61.7	95.7	12.3	46.1	104
25	41.4	—	17.4	36.7	49.5	—	22.9	49.9	69.8	—	30.8	84.7

## Values (PLF) – Two Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	880	159	209	209	1066	217	286	286	1513	306	490	490
15	509	75.4	136	136	617	103	187	187	876	143	321	321
17.5	321	40.4	96.0	96.0	388	53.9	131	131	551	77.0	213	226
20	215	23.3	68.7	71.3	260	31.2	94.6	97.6	369	56.6	126	168
22.5	151	14.4	44.2	55.0	183	19.4	59.1	75.3	259	29.1	79.8	130
25	110	—	29.4	43.8	133	12.8	39.0	59.9	189	19.6	53.2	103

## Values (PLF) – Two Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	915	203	260	260	1100	279	357	357	1576	394	613	613
15	530	94.7	167	167	637	130	229	229	912	181	383	394
17.5	334	48.9	113	113	401	65.2	155	155	574	93.1	218	267
20	223	27.4	70.3	82.0	269	36.7	96.5	112	385	53.6	129	193
22.5	157	16.6	45.2	62.1	189	22.4	60.4	85.0	270	33.5	81.4	146
25	114	10.7	30.0	48.7	138	14.5	39.7	66.6	197	22.2	54.2	115

## Values (PLF) – Three Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	667	148	246	246	802	203	336	336	1147	276	559	578
15	386	73.3	168	169	464	97.6	228	232	664	136	324	398
17.5	243	39.7	99.0	121	292	52.9	136	166	418	75.6	187	286
20	163	23.4	60.5	90.1	196	31.4	83.3	123	280	45.9	111	212
22.5	114	14.6	38.9	69.5	137	19.7	52.2	95.1	197	29.4	70.5	163
25	83.4	—	26.0	55.2	100	12.8	34.5	75.6	143	19.6	47.0	130

## Values (PLF) – Three Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	680	157	250	250	817	216	342	342	1169	295	568	588
15	393	77.9	170	172	473	104	232	236	676	144	329	407
17.5	248	41.9	100	126	298	55.9	138	172	426	79.8	190	297
20	166	24.6	61.2	96.0	199	33.0	84.2	131	285	48.2	113	226
22.5	117	15.5	39.4	75.5	140	20.8	52.8	103	200	31.2	71.3	178
25	84.9	10.3	26.3	60.9	102	13.8	34.8	83.4	146	21.2	47.5	143

# SECONDARY FRAMING

# Equal Leg Zee - 8" x 3-1/2" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	410	111	151	151	487	151	209	209	691	228	352	352
15	237	58.0	105	105	282	80.4	145	145	400	114	244	244
17.5	149	34.2	77.0	77.0	178	45.8	106	106	252	65.5	180	180
20	100	21.0	59.0	59.0	119	28.0	81.5	81.5	169	39.5	129	138
22.5	70.2	13.6	44.9	46.6	83.6	17.8	60.0	64.4	118	25.4	90.8	109
25	51.2	—	31.0	37.8	60.9	11.8	41.9	52.2	86.4	17.2	63.9	88.0

## Values (PLF) – Two Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	1093	216	216	216	1308	299	299	299	1885	505	513	513
15	633	132	141	141	757	179	196	196	1091	279	336	336
17.5	398	73.1	99.2	99.2	477	100	138	138	687	158	236	236
20	267	44.0	73.6	73.6	319	61.0	102	102	460	92.8	175	175
22.5	187	28.5	56.9	56.9	224	39.7	79.1	79.1	323	59.1	136	136
25	137	19.6	45.2	45.2	164	26.4	62.9	62.9	236	40.1	108	108

## Values (PLF) – Two Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	1137	260	260	260	1361	375	375	375	1961	637	641	641
15	658	166	173	173	788	223	240	240	1135	347	412	412
17.5	414	88.0	117	117	496	120	163	163	715	191	279	279
20	278	51.5	84.7	84.7	332	71.3	118	118	479	109	202	202
22.5	195	32.6	64.1	64.1	233	45.7	89.2	89.2	336	67.9	153	153
25	142	22.1	50.3	50.3	170	29.9	69.9	69.9	245	45.5	115	120

## Values (PLF) – Three Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	829	254	254	254	992	341	352	352	1429	526	606	606
15	480	133	175	175	574	181	243	243	827	284	417	417
17.5	302	75.7	125	125	362	105	174	174	521	157	299	299
20	202	47.2	93.0	93.0	242	65.0	129	129	349	95.9	210	222
22.5	142	31.0	69.3	71.8	170	41.4	93.9	100	245	61.2	144	171
25	104	20.2	47.4	57.1	124	27.1	64.6	79.4	179	40.2	99.9	136

## Values (PLF) – Three Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	844	258	258	258	1011	356	360	360	1456	549	617	617
15	489	140	178	178	585	191	248	248	843	299	426	426
17.5	308	79.4	130	130	368	110	181	181	531	165	310	311
20	206	49.2	99.1	99.1	247	68.2	138	138	355	100	212	236
22.5	145	32.7	70.1	78.0	173	43.7	95.1	108	250	64.9	146	186
25	106	21.8	47.9	63.0	126	29.4	65.2	87.6	182	43.5	101	150

# SECONDARY FRAMING

# Equal Leg Zee - 9" x 3" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	281	50.9	117	117	335	67.8	161	161	475	91.9	275	275
17.5	177	28.5	86.3	86.3	211	27.0	118	118	299	51.0	190	202
20	119	16.9	61.7	66.1	141	22.0	82.9	90.7	200	30.9	121	155
22.5	83.3	10.7	40.2	52.2	99.4	14.0	55.3	71.7	141	19.9	77.2	122
25	60.8	—	27.7	42.3	72.4	—	37.9	58.1	103	13.5	52.7	98.9
27.5	56.6	—	19.9	34.9	54.4	—	26.6	48.0	77.0	—	36.7	81.8

## Values (PLF) – Two Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	746	118	158	158	941	164	218	218	1287	236	377	377
17.5	470	65.9	111	111	593	89.4	153	153	810	129	266	266
20	315	39.0	82.5	82.5	397	53.0	114	114	543	75.5	197	197
22.5	221	24.6	63.7	63.7	279	32.7	88.0	88.0	381	47.4	136	152
25	161	16.2	48.4	50.7	203	21.4	65.6	70.0	278	31.5	92.2	123
27.5	121	11.0	34.2	41.3	153	14.6	46.2	57.0	209	21.9	63.6	98.7

## Values (PLF) – Two Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	774	148	193	193	928	206	267	267	1335	298	463	463
17.5	487	79.2	131	131	585	108	181	181	841	156	313	313
20	327	45.8	94.9	94.9	392	62.3	131	131	563	88.8	217	227
22.5	229	28.2	71.7	71.8	275	37.7	99.3	99.3	396	54.6	139	172
25	167	18.4	49.3	56.3	200	24.2	66.8	77.8	288	35.7	93.9	135
27.5	126	12.3	34.8	45.4	151	16.4	47.0	62.7	217	24.5	64.7	108

## Values (PLF) – Three Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	567	119	220	220	680	163	271	271	981	232	469	469
17.5	357	67.1	140	140	429	90.7	194	194	618	127	306	336
20	239	40.5	94.7	104	287	53.3	129	144	414	75.9	187	249
22.5	168	25.1	61.7	80.4	202	33.1	86.1	111	291	47.9	120	192
25	123	16.2	42.6	63.9	147	21.4	57.9	88.3	212	31.5	81.6	153
27.5	92.1	11.0	30.3	52.6	110	14.5	40.7	71.9	159	21.8	56.3	124

## Values (PLF) – Three Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	577	125	200	200	692	172	275	275	996	246	476	476
17.5	364	70.6	146	146	436	95.8	201	201	627	134	310	348
20	244	42.4	95.9	111	292	56.1	131	153	420	79.8	189	265
22.5	171	26.7	62.4	87.3	205	35.1	86.9	121	295	50.8	122	209
25	125	17.5	43.0	70.5	150	23.1	58.5	97.5	215	34.1	82.4	169
27.5	93.7	12.0	30.6	57.3	112	15.9	41.2	79.2	162	23.9	56.9	137

# SECONDARY FRAMING

# Equal Leg Zee - 9" x 3-1/2" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	310	66.7	119	119	369	92.0	164	164	523	129	279	279
17.5	195	39.2	87.1	87.1	232	52.1	120	120	329	73.4	204	204
20	131	23.9	66.7	66.7	156	31.6	92.3	92.3	221	44.1	149	156
22.5	91.8	15.4	51.7	52.7	109	20.0	69.5	72.9	155	28.2	104	124
25	67.0	10.3	35.8	42.7	79.7	13.3	48.2	59.0	113	19.1	72.8	100
27.5	50.3	—	25.4	35.3	59.9	—	34.2	48.8	84.9	13.4	50.9	82.9

## Values (PLF) – Two Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	824	154	159	159	986	207	222	222	1423	319	383	383
17.5	519	84.3	112	112	621	115	156	156	896	178	270	270
20	347	50.5	83.5	83.5	416	69.8	116	116	600	104	200	200
22.5	244	32.6	64.4	64.4	292	45.0	89.7	89.7	422	66.3	155	155
25	178	22.3	51.3	51.3	213	29.9	71.3	71.3	307	44.5	123	123
27.5	134	15.4	41.7	41.7	160	20.8	58.1	58.1	231	30.8	88.9	100

## Values (PLF) – Two Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	855	191	196	196	1023	258	272	272	1476	398	472	472
17.5	538	102	133	133	644	138	185	185	930	215	318	318
20	361	59.1	96.0	96.0	432	81.6	134	134	600	122	231	231
22.5	253	37.4	72.7	72.7	303	51.7	101	101	437	76.2	175	175
25	185	25.2	57.0	57.0	221	33.8	79.3	79.3	319	50.5	131	137
27.5	139	17.2	44.8	45.9	166	23.3	61.2	63.9	240	34.4	90.4	110

## Values (PLF) – Three Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	627	153	192	192	750	208	276	276	1082	322	129	146
17.5	395	87.0	142	142	472	120	198	198	682	177	77.8	114
20	264	54.1	105	105	316	73.9	147	147	457	108	50.1	87.7
22.5	186	35.2	80.3	81.4	222	47.0	109	113	321	68.2	33.1	69.7
25	135	22.9	54.8	64.6	162	30.6	74.3	90.0	234	44.6	22.7	56.8
27.5	102	15.8	38.9	52.6	122	20.6	53.0	73.3	176	30.5	16.1	47.1

## Values (PLF) – Three Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	638	162	202	202	763	219	281	281	1101	341	485	485
17.5	401	91.3	147	147	481	126	205	205	693	186	355	355
20	269	56.4	112	112	322	77.4	156	156	465	113	246	270
22.5	189	37.2	81.3	88.3	226	49.6	110	123	326	72.3	168	212
25	138	24.7	55.4	71.3	165	33.0	75.1	99.3	238	48.2	115	175
27.5	103	17.3	39.2	58.0	124	22.7	53.5	80.7	179	33.6	79.4	139

# SECONDARY FRAMING

# Equal Leg Zee - 10" x 2-1/2" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	204	20.5	82.5	94.2	244	27.1	114	129	344	37.1	153	222
20	137	12.2	51.2	72.1	163	16.1	69.7	98.5	231	22.6	90.7	170
22.5	95.9	—	32.8	57.0	115	10.3	43.8	77.9	162	14.6	57.4	134
25	69.9	—	22.0	46.1	83.6	—	28.9	63.1	118	—	38.2	109
27.5	52.5	—	15.1	38.1	62.8	—	19.9	52.1	88.7	—	26.5	89.8
30	40.5	—	10.7	32.0	48.4	—	14.1	43.8	68.3	—	19.0	75.5

## Values (PLF) – Two Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	538	50.9	121	121	647	67.6	167	167	928	94.1	270	292
20	360	29.2	88.4	90.0	433	38.9	120	124	622	55.2	159	217
22.5	253	18.0	56.9	69.5	304	24.1	75.1	95.5	437	34.8	100	167
25	185	11.7	37.4	55.3	222	15.8	49.4	76.0	318	23.3	66.4	133
27.5	139	—	25.6	45.0	167	10.8	33.9	61.9	239	16.3	45.9	108
30	107	—	18.1	37.4	128	—	24.0	51.4	184	11.8	32.8	90.0

## Values (PLF) – Two Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	557	61.5	136	136	669	81.7	197	197	961	114	276	345
20	373	34.3	90.4	104	448	45.7	123	142	644	64.9	163	249
22.5	262	20.7	58.1	78.4	315	27.7	76.6	108	452	40.1	102	189
25	191	13.3	39.1	61.5	230	17.9	50.3	84.5	330	26.4	67.6	148
27.5	143	—	26.0	49.5	172	12.1	34.4	68.0	248	18.2	46.7	119
30	111	—	18.4	40.7	133	—	24.4	56.0	191	13.0	33.3	98.0

## Values (PLF) – Three Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	410	50.0	129	146	493	66.3	175	211	708	92.3	237	369
20	275	29.3	77.8	114	330	39.1	106	156	474	55.5	140	274
22.5	193	18.2	50.1	87.7	232	24.3	66.3	121	333	35.2	88.4	211
25	141	11.2	33.1	69.7	169	15.8	43.7	95.9	243	23.3	58.7	168
27.5	106	—	22.7	56.8	127	10.7	30.0	78.1	182	16.1	40.6	137
30	81.4	—	16.1	47.1	97.9	—	21.3	64.8	141	11.6	29.1	113

## Values (PLF) – Three Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	417	52.7	131	159	501	70.0	178	218	720	97.6	240	383
20	279	30.8	78.8	121	336	41.1	107	167	482	58.3	142	292
22.5	196	19.3	50.7	95.3	236	25.8	67.1	131	339	37.3	89.4	229
25	143	12.7	33.4	77.0	172	17.1	44.2	106	247	25.2	59.3	185
27.5	107	—	22.9	62.6	129	11.8	30.3	86.1	185	17.7	41.0	151
30	82.8	—	16.2	51.5	99.5	—	21.5	70.8	143	12.9	29.4	124

# SECONDARY FRAMING

# Equal Leg Zee - 10" x 3" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	226	31.8	96.2	96.2	270	41.3	132	132	382	56.4	216	227
20	152	18.9	69.5	73.6	181	24.5	94.2	101	256	33.9	135	174
22.5	106	11.9	45.6	58.2	127	15.5	62.5	80.1	180	21.8	86.4	137
25	77.6	—	31.4	47.1	92.5	10.3	42.6	64.8	131	14.8	59.0	111
27.5	58.3	—	22.5	39.0	69.5	—	29.9	53.6	98.4	10.4	40.7	91.8
30	44.9	—	16.1	32.7	53.5	—	21.6	45.0	75.8	—	29.1	77.2

## Values (PLF) – Two Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	636	74.4	124	124	717	100	172	172	1033	143	299	299
20	426	43.8	92.1	92.1	481	59.1	128	128	692	83.3	222	222
22.5	299	27.6	71.1	71.1	338	36.4	98.4	98.4	486	52.1	153	172
25	218	18.0	54.8	56.6	246	23.7	73.9	78.3	354	34.5	103	137
27.5	164	12.3	38.5	46.1	185	16.2	52.1	63.8	266	24.1	70.1	113
30	126	—	27.6	38.3	142	11.4	36.9	53.0	205	17.2	50.5	92.3

## Values (PLF) – Two Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	619	89.5	136	136	743	121	203	203	1070	173	353	353
20	415	51.4	106	106	497	69.5	147	147	717	97.9	244	256
22.5	291	31.7	80.3	80.3	349	41.9	111	111	503	60.0	156	194
25	212	20.4	55.9	62.9	255	26.9	75.3	87.1	367	39.1	105	152
27.5	160	13.7	39.2	50.7	191	18.1	53.0	70.1	276	26.8	72.0	122
30	123	—	28.1	41.7	147	12.7	37.5	57.7	212	19.0	51.3	101

## Values (PLF) – Three Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	456	75.3	170	170	547	101	217	217	788	141	257	379
20	306	45.4	108	116	367	59.4	147	161	528	83.8	210	281
22.5	215	28.0	70.1	89.8	257	36.8	97.2	124	371	52.7	135	217
25	156	18.0	48.2	71.4	188	23.7	65.2	98.8	270	34.5	91.0	172
27.5	118	12.2	34.1	58.1	141	16.1	45.9	80.5	203	23.8	62.9	139
30	90.6	—	24.4	48.2	109	11.3	32.7	66.8	156	17.0	44.7	116

## Values (PLF) – Three Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	464	79.3	163	163	556	107	225	225	801	149	351	392
20	311	47.6	109	124	373	62.5	149	172	537	88.1	213	299
22.5	218	29.7	70.9	97.6	262	39.0	98.3	135	377	55.8	136	235
25	159	19.5	48.8	78.7	191	25.7	65.9	109	275	37.4	92.0	190
27.5	120	13.4	34.4	64.0	143	17.7	46.4	88.7	206	26.1	63.3	155
30	92.1	—	24.6	52.7	110	12.6	33.0	72.9	159	18.9	45.1	127

# SECONDARY FRAMING

# Equal Leg Zee - 10" x 3-1/2" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	296	58.7	134	134	419	81.4	230	230
20	—	—	—	—	198	35.3	103	103	281	48.7	170	176
22.5	—	—	—	—	139	22.3	79.2	81.4	197	31.1	118	139
25	—	—	—	—	101	14.8	54.6	65.9	144	20.9	82.0	112
27.5	—	—	—	—	76.2	10.2	38.7	54.5	108	14.7	56.8	93.0
30	—	—	—	—	58.7	—	28.5	45.8	83.2	10.6	40.8	78.1

## Values (PLF) – Two Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	788	130	175	175	1139	198	304	304
20	—	—	—	—	528	78.9	130	130	763	116	226	226
22.5	—	—	—	—	371	50.4	100	100	536	74.0	175	175
25	—	—	—	—	270	33.5	79.7	79.7	391	49.0	139	139
27.5	—	—	—	—	203	23.1	65.0	65.0	293	33.8	100	113
30	—	—	—	—	156	16.3	50.4	53.9	226	24.1	71.6	93.8

## Values (PLF) – Two Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	816	156	205	205	1179	240	360	360
20	—	—	—	—	547	100	149	149	790	136	260	260
22.5	—	—	—	—	384	57.9	113	113	555	84.7	197	197
25	—	—	—	—	280	37.8	88.7	88.7	404	55.6	147	154
27.5	—	—	—	—	210	25.9	69.4	71.4	304	37.8	101	124
30	—	—	—	—	162	18.0	51.2	58.8	234	26.7	72.8	102

## Values (PLF) – Three Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	601	136	221	221	868	197	385	385
20	—	—	—	—	403	82.9	164	164	582	120	277	286
22.5	—	—	—	—	283	52.7	124	127	409	75.3	187	220
25	—	—	—	—	206	34.0	84.3	101	298	49.1	127	175
27.5	—	—	—	—	155	22.9	60.1	81.9	224	33.5	88.1	142
30	—	—	—	—	119	16.1	44.4	68.0	172	23.8	63.4	118

## Values (PLF) – Three Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	611	142	229	229	883	208	398	398
20	—	—	—	—	409	86.9	175	175	591	126	280	304
22.5	—	—	—	—	288	55.6	125	138	415	79.9	189	239
25	—	—	—	—	210	36.8	85.3	111	303	53.1	129	193
27.5	—	—	—	—	157	25.2	60.7	90.3	228	36.8	89.0	157
30	—	—	—	—	121	17.9	44.8	74.2	175	26.5	63.9	129

# SECONDARY FRAMING

# Equal Leg Zee - 10" x 4" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	322	73.6	136	136	457	108	231	231
20	—	—	—	—	215	46.6	104	104	306	65.7	177	177
22.5	—	—	—	—	151	29.9	82.1	82.1	215	42.7	138	140
25	—	—	—	—	110	20.3	66.5	66.5	157	28.6	99.9	113
27.5	—	—	—	—	82.9	14.0	48.4	55.0	118	19.9	72.1	93.6
30	—	—	—	—	63.8	—	35.4	46.2	90.6	14.4	53.4	78.7

## Values (PLF) – Two Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	859	162	177	177	1244	248	308	308
20	—	—	—	—	576	97.2	131	131	833	152	228	228
22.5	—	—	—	—	404	62.2	102	102	585	98.3	176	176
25	—	—	—	—	295	42.3	80.7	80.7	427	64.8	140	140
27.5	—	—	—	—	221	30.1	65.7	65.7	321	44.8	114	114
30	—	—	—	—	171	21.6	54.6	54.6	247	32.4	94.8	94.8

## Values (PLF) – Two Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	889	195	205	205	1288	299	362	362
20	—	—	—	—	596	114	151	151	863	177	262	262
22.5	—	—	—	—	418	71.4	115	115	606	113	199	199
25	—	—	—	—	305	47.7	89.8	89.8	442	73.3	156	156
27.5	—	—	—	—	229	33.5	75.5	75.5	332	50.1	125	125
30	—	—	—	—	177	23.9	59.5	59.5	256	35.8	97.5	103

## Values (PLF) – Three Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	655	168	242	242	949	260	389	389
20	—	—	—	—	439	103	166	166	636	160	288	288
22.5	—	—	—	—	308	67.3	128	128	446	100	222	222
25	—	—	—	—	225	45.1	102	102	325	66.1	159	177
27.5	—	—	—	—	169	30.8	74.9	82.9	244	45.7	114	144
30	—	—	—	—	130	22.1	54.7	68.8	188	32.3	84.5	119

## Values (PLF) – Three Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	666	176	232	232	964	272	403	403
20	—	—	—	—	446	108	177	177	646	168	307	307
22.5	—	—	—	—	313	70.7	139	139	454	106	228	242
25	—	—	—	—	228	48.7	106	112	331	71.3	161	195
27.5	—	—	—	—	172	33.8	75.6	91.4	249	50.3	115	159
30	—	—	—	—	132	24.4	55.2	75.1	191	36.0	85.3	131

# SECONDARY FRAMING

# Equal Leg Zee - 12" x 2-1/2" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	376	32.5	125	154	532	43.8	184	270
20	—	—	—	—	252	19.3	78.9	118	356	26.4	109	206
22.5	—	—	—	—	177	12.2	50.7	93.2	250	17.0	68.9	163
25	—	—	—	—	129	—	34.1	75.5	182	11.5	45.7	132
27.5	—	—	—	—	97.0	—	23.8	62.4	137	—	31.6	109
30	—	—	—	—	74.7	—	17.0	52.4	106	—	22.6	91.6

## Values (PLF) – Two Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	1003	80.6	176	176	1444	112	327	357
20	—	—	—	—	672	46.7	138	140	968	65.1	193	265
22.5	—	—	—	—	472	28.8	88.4	114	680	40.8	121	204
25	—	—	—	—	344	18.8	59.2	91.3	495	27.1	79.9	163
27.5	—	—	—	—	258	12.8	41.1	74.4	372	18.8	55.0	132
30	—	—	—	—	199	—	29.1	61.8	287	13.5	39.3	110

## Values (PLF) – Two Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	1038	97.3	196	196	1495	135	336	422
20	—	—	—	—	696	54.9	141	155	1002	76.5	197	305
22.5	—	—	—	—	489	33.2	90.3	125	703	47.0	123	231
25	—	—	—	—	356	21.3	59.3	102	513	30.7	81.4	181
27.5	—	—	—	—	268	14.3	41.8	41.8	385	21.0	56.0	146
30	—	—	—	—	206	10.1	29.6	29.6	297	15.0	39.9	120

## Values (PLF) – Three Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	765	80.1	197	208	1102	110	288	450
20	—	—	—	—	513	47.0	122	168	738	65.4	170	334
22.5	—	—	—	—	360	29.1	77.9	138	518	41.2	107	258
25	—	—	—	—	262	18.8	52.3	121	378	27.1	70.7	205
27.5	—	—	—	—	197	12.7	36.4	93.8	284	18.6	48.8	167
30	—	—	—	—	152	—	25.8	77.9	219	13.3	34.8	139

## Values (PLF) – Three Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	778	84.5	200	236	1120	116	292	467
20	—	—	—	—	521	49.4	123	189	750	68.8	172	356
22.5	—	—	—	—	366	30.9	78.8	154	527	43.7	108	280
25	—	—	—	—	267	20.3	52.8	127	384	29.3	71.4	226
27.5	—	—	—	—	200	14.0	36.7	103	289	20.5	49.2	184
30	—	—	—	—	154	—	26.0	85.0	222	14.9	35.1	152

# SECONDARY FRAMING

# Equal Leg Zee - 12" x 3" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	414	49.9	159	159	586	67.1	268	276
20	—	—	—	—	277	29.5	117	122	393	40.2	164	211
22.5	—	—	—	—	195	18.6	77.3	96.2	276	25.7	105	167
25	—	—	—	—	142	12.4	52.1	77.9	201	17.3	71.1	135
27.5	—	—	—	—	107	—	36.5	64.4	151	12.1	48.9	112
30	—	—	—	—	82.1	—	26.2	54.1	116	—	34.9	94.0

## Values (PLF) – Two Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	1105	123	183	183	1596	172	368	368
20	—	—	—	—	741	72.0	147	147	1069	99.3	272	272
22.5	—	—	—	—	520	43.9	119	119	751	61.7	188	211
25	—	—	—	—	379	28.5	90.8	94.6	548	40.6	125	168
27.5	—	—	—	—	285	19.4	63.5	77.0	411	28.0	85.6	136
30	—	—	—	—	219	13.7	44.9	63.9	317	20.0	60.9	113

## Values (PLF) – Two Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	1144	148	204	204	1652	208	433	433
20	—	—	—	—	767	84.1	162	162	1107	117	299	313
22.5	—	—	—	—	538	50.6	131	131	777	71.1	192	238
25	—	—	—	—	392	32.3	92.6	105	567	46.1	127	186
27.5	—	—	—	—	295	21.7	64.5	84.7	426	31.3	87.1	150
30	—	—	—	—	227	15.1	45.6	69.6	328	22.2	61.8	123

## Values (PLF) – Three Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	843	123	215	215	1218	169	429	465
20	—	—	—	—	565	71.9	174	174	816	99.8	258	345
22.5	—	—	—	—	397	44.4	120	144	573	62.4	166	266
25	—	—	—	—	289	28.5	80.1	119	418	40.7	110	211
27.5	—	—	—	—	217	19.2	56.2	97.1	314	27.8	75.9	172
30	—	—	—	—	167	13.5	39.8	80.6	242	19.7	54.0	143

## Values (PLF) – Three Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	857	130	241	241	1238	178	435	481
20	—	—	—	—	574	75.6	185	195	829	105	260	366
22.5	—	—	—	—	403	47.1	121	160	582	66.2	168	289
25	—	—	—	—	294	30.9	81.0	132	425	44.0	111	233
27.5	—	—	—	—	221	21.1	56.7	107	319	30.5	76.6	189
30	—	—	—	—	170	15.0	40.1	88.0	246	22.0	54.4	156

# SECONDARY FRAMING

# Equal Leg Zee - 12" x 3-1/2" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	443	64.4	151	151	640	97.6	280	280
20	—	—	—	—	297	39.0	115	115	429	58.1	214	214
22.5	—	—	—	—	208	24.7	87.3	91.2	301	36.9	146	169
25	—	—	—	—	152	16.3	61.5	73.9	219	24.7	100	137
27.5	—	—	—	—	114	11.3	43.6	61.1	165	17.2	68.9	113
30	—	—	—	—	87.9	—	32.0	51.3	127	12.4	49.4	95.2

## Values (PLF) – Two Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	1185	146	180	180	1749	241	373	373
20	—	—	—	—	794	88.2	143	143	1171	140	277	277
22.5	—	—	—	—	558	56.1	113	113	823	89.1	214	214
25	—	—	—	—	407	36.8	89.8	89.8	600	58.3	170	170
27.5	—	—	—	—	305	25.4	73.2	73.2	451	39.9	122	139
30	—	—	—	—	235	18.0	56.3	60.8	347	28.4	87.5	115

## Values (PLF) – Two Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	1227	176	200	200	1810	329	441	441
20	—	—	—	—	822	103	168	168	1212	164	318	318
22.5	—	—	—	—	577	64.6	127	127	852	102	242	242
25	—	—	—	—	421	41.6	100	100	621	66.1	180	189
27.5	—	—	—	—	316	28.3	78.1	80.5	466	44.7	124	152
30	—	—	—	—	244	19.9	57.3	66.2	359	31.4	88.9	125

## Values (PLF) – Three Spans with 2'-4" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	904	152	211	211	1334	240	472	472
20	—	—	—	—	606	92.3	171	171	893	145	347	350
22.5	—	—	—	—	425	57.7	140	141	627	90.0	232	270
25	—	—	—	—	310	37.8	95.2	113	457	58.3	156	215
27.5	—	—	—	—	233	25.4	67.7	92.3	344	39.6	108	175
30	—	—	—	—	179	17.8	49.7	87.5	265	28.0	77.4	145

## Values (PLF) – Three Spans with 3'-6" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	919	159	238	238	1356	253	490	490
20	—	—	—	—	616	96.9	192	192	908	152	352	373
22.5	—	—	—	—	432	61.0	141	155	638	95.4	235	293
25	—	—	—	—	315	40.9	96.2	125	465	63.1	157	237
27.5	—	—	—	—	237	27.9	68.4	102	349	43.6	109	193
30	—	—	—	—	182	19.8	50.2	83.6	269	31.2	78.1	158

# SECONDARY FRAMING

# Lap Zee - 4" x 2-1/8" x 2-3/8" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	245	141	181	181	292	187	236	236	—	—	—	—
10	126	60.2	116	116	149	82.0	151	151	—	—	—	—
12	72.7	30.1	80.6	80.6	86.5	41.3	105	105	—	—	—	—
14	45.8	16.9	59.2	59.2	54.5	23.4	77.2	77.2	—	—	—	—
16	30.7	10.4	44.0	45.4	36.5	14.4	59.1	59.1	—	—	—	—
18	21.6	—	32.6	35.8	25.6	—	43.5	46.7	—	—	—	—

## Values (PLF) – Two Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	664	312	313	313	792	413	413	413	—	—	—	—
10	340	149	177	177	406	200	233	233	—	—	—	—
12	197	71.9	113	113	235	99.1	148	148	—	—	—	—
14	124	38.2	78.4	78.4	148	53.0	103	103	—	—	—	—
16	83.0	22.5	57.7	57.7	99.0	31.4	75.8	75.8	—	—	—	—
18	58.3	14.2	43.0	44.2	69.5	20.0	58.1	58.1	—	—	—	—

## Values (PLF) – Two Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	714	293	295	295	852	388	388	388	—	—	—	—
10	366	162	192	192	436	217	253	253	—	—	—	—
12	212	86.4	136	136	253	119	178	178	—	—	—	—
14	133	49.3	101	101	159	68.4	133	133	—	—	—	—
16	89.3	30.6	70.6	78.5	107	42.7	94.1	103	—	—	—	—
18	62.7	18.6	44.9	57.9	74.8	26.2	61.2	76.1	—	—	—	—

## Values (PLF) – Three Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	497	298	299	299	593	394	394	394	—	—	—	—
10	254	118	190	190	303	162	249	249	—	—	—	—
12	147	54.6	131	131	176	75.1	172	172	—	—	—	—
14	92.7	29.0	87.9	95.6	111	40.2	117	126	—	—	—	—
16	62.1	17.0	57.9	72.9	74.1	23.8	77.2	95.9	—	—	—	—
18	43.6	10.8	37.0	55.9	52.0	15.2	50.5	73.5	—	—	—	—

## Values (PLF) – Three Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	513	305	307	307	612	403	403	403	—	—	—	—
10	263	133	195	195	313	182	257	257	—	—	—	—
12	152	69.6	135	135	181	92.7	177	177	—	—	—	—
14	95.7	38.2	90.3	98.2	114	53.1	120	129	—	—	—	—
16	64.1	23.2	59.4	74.8	76.5	32.4	79.1	98.3	—	—	—	—
18	45.0	14.0	37.9	58.8	53.8	19.8	51.7	77.3	—	—	—	—

# SECONDARY FRAMING

# Lap Zee - 6" x 2-1/8" x 2-3/8" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	318	96.7	181	181	379	129	238	238	569	243	426	426
12	184	47.6	125	125	219	63.6	165	165	329	122	296	296
14	116	26.2	92.3	92.3	138	35.3	121	121	207	68.9	217	217
16	77.7	15.8	70.6	70.6	92.6	21.3	92.9	92.9	139	42.3	159	167
18	54.5	10.1	54.3	55.8	65.0	13.7	71.5	73.4	97.5	27.7	118	132
20	39.8	—	39.2	45.2	47.4	—	51.6	59.5	71.1	19.1	88.2	107

## Values (PLF) – Two Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	855	245	277	277	1025	325	368	368	1559	562	676	676
12	495	114	177	177	593	153	235	235	902	294	431	431
14	312	59.4	123	123	374	80.3	163	163	568	159	299	299
16	209	34.3	90.4	90.4	250	46.6	120	120	381	93.9	220	220
18	147	21.3	69.3	69.3	176	29.1	92.1	92.1	267	59.7	168	169
20	107	14.1	47.6	54.8	128	19.3	61.6	72.8	195	40.2	118	134

## Values (PLF) – Two Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	916	267	301	301	1099	352	400	400	1671	610	735	735
12	530	137	213	213	636	184	282	282	967	353	518	518
14	334	76.7	158	158	400	104	211	211	609	205	386	386
16	224	46.7	117	123	268	63.4	153	163	408	128	269	299
18	157	27.9	72.9	90.7	188	38.1	96.4	120	287	78.1	182	221
20	115	17.8	47.9	69.3	137	24.4	64.1	92.0	209	50.8	123	169

## Values (PLF) – Three Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	643	190	298	298	770	255	395	395	1172	488	725	725
12	372	86.4	205	205	446	116	272	272	678	226	485	500
14	234	45.1	147	150	281	60.9	194	199	427	121	325	365
16	157	26.0	95.7	114	188	35.3	126	152	286	71.2	220	279
18	110	16.2	60.1	87.6	132	22.1	80.3	116	201	45.3	150	213
20	80.3	10.7	39.7	69.3	96.3	14.6	53.1	92.0	146	30.5	102	169

## Values (PLF) – Three Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	663	214	306	306	795	287	407	407	1209	549	746	746
12	384	107	211	211	460	143	280	280	700	279	500	513
14	242	59.5	151	154	290	80.3	200	204	441	159	333	375
16	162	35.4	98.1	117	194	48.0	129	156	295	96.8	226	286
18	114	21.1	61.6	92.2	136	28.7	82.2	122	207	58.9	154	224
20	82.9	13.4	40.6	74.3	99.4	18.4	54.3	98.7	151	38.4	104	181

# SECONDARY FRAMING

# Lap Zee - 8" x 2-1/8" x 2-3/8" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	318	57.1	157	157	381	75.6	209	209	572	141	382	382
15	184	28.1	109	109	220	37.3	145	145	331	70.6	265	265
17.5	116	15.5	80.1	80.1	139	20.7	106	106	208	39.8	183	195
20	77.7	—	56.3	61.3	92.9	12.5	73.6	81.5	140	24.4	125	149
22.5	54.6	—	35.9	48.4	65.2	—	47.6	64.4	98.0	16.0	86.1	118
25	39.8	—	23.8	39.2	47.6	—	31.5	52.2	71.5	11.0	58.6	95.3

## Values (PLF) – Two Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	845	135	220	220	1016	180	296	296	1552	340	552	552
15	489	62.5	144	144	588	83.6	193	193	898	161	360	360
17.5	308	33.0	101	101	370	44.4	136	136	566	86.8	254	254
20	206	19.2	65.6	75.3	248	26.0	87.0	101	379	51.7	162	188
22.5	145	12.0	41.0	58.1	174	16.4	65.4	77.9	266	33.0	102	145
25	106	—	27.0	46.3	127	10.9	36.0	62.0	194	22.3	68.1	116

## Values (PLF) – Two Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	898	166	270	270	1080	227	373	373	1649	417	676	676
15	520	82.9	191	191	625	111	256	256	955	213	472	478
17.5	327	43.7	117	134	394	58.8	155	180	601	115	283	336
20	219	24.3	68.2	95.1	264	32.8	90.5	128	403	65.2	169	238
22.5	154	14.7	42.6	71.0	185	20.0	56.6	95.2	283	40.4	106	178
25	112	—	28.0	55.1	135	13.0	37.3	73.9	206	26.6	70.4	138

## Values (PLF) – Three Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	641	103	259	259	771	137	347	347	1177	258	641	649
15	371	47.4	172	179	446	63.4	226	240	681	122	385	448
17.5	234	25.1	96.2	128	281	33.7	127	172	429	65.8	233	321
20	156	14.6	56.5	95.1	188	19.7	75.0	128	287	39.2	140	238
22.5	110	—	35.5	73.4	132	12.4	47.1	98.4	202	25.0	88.4	183
25	80.1	—	23.4	58.3	96.3	—	31.2	78.2	147	16.9	59.0	146

## Values (PLF) – Three Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	659	129	267	267	792	174	361	361	1210	325	658	667
15	381	64.2	177	184	459	85.9	232	246	700	165	395	459
17.5	240	32.9	98.5	134	289	44.3	131	180	441	86.5	239	336
20	161	18.4	57.8	102	193	24.8	76.7	137	295	49.3	143	256
22.5	113	11.1	36.2	80.3	136	15.1	48.1	108	208	30.6	90.3	201
25	82.4	—	23.9	64.8	99.1	—	31.8	86.9	151	20.2	60.1	162

# SECONDARY FRAMING

# Lap Zee - 8" x 3-1/8" x 3-3/8" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	397	124	167	167	472	161	225	225	704	298	426	426
15	230	62.2	116	116	273	83.1	156	156	407	147	295	295
17.5	145	35.2	85.4	85.4	172	45.5	115	115	257	81.3	217	217
20	96.9	20.9	65.4	65.4	115	27.1	88.0	88.0	172	49.0	166	166
22.5	68.1	13.2	51.7	51.7	80.9	17.2	69.6	69.6	121	31.5	131	131
25	49.6	—	41.8	41.8	59.0	11.5	55.6	56.4	88.0	21.3	103	106

## Values (PLF) – Two Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	1059	226	226	226	1266	317	317	317	1924	606	613	613
15	613	124	153	153	733	168	207	207	1114	330	400	400
17.5	386	68.8	108	108	461	95.1	146	146	701	179	282	282
20	258	42.1	79.8	79.8	309	56.7	108	108	470	104	209	209
22.5	182	26.8	61.7	61.7	217	35.2	83.8	83.8	330	65.7	162	162
25	132	17.6	49.0	49.0	158	23.1	66.6	66.6	241	43.6	129	129

## Values (PLF) – Two Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	1125	287	287	287	1345	389	389	389	2045	741	752	752
15	651	164	202	202	778	223	275	275	1183	437	532	532
17.5	410	91.0	142	142	490	126	193	193	745	236	373	373
20	275	53.1	101	101	328	71.6	137	137	499	132	265	265
22.5	193	32.8	75.3	75.3	231	43.0	102	102	351	80.2	198	198
25	141	21.0	57.6	58.4	168	27.5	79.4	79.4	256	52.0	150	153

## Values (PLF) – Three Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	803	211	275	275	960	292	373	373	1459	549	719	719
15	464	105	190	190	555	142	258	258	844	255	498	498
17.5	293	57.3	136	136	350	74.4	185	185	532	136	356	356
20	196	33.0	101	101	234	43.0	137	137	356	79.2	265	265
22.5	138	20.4	70.6	77.8	165	26.6	95.1	106	250	49.7	185	204
25	100	13.3	48.2	61.8	120	17.5	66.4	84.1	182	33.0	126	162

## Values (PLF) – Three Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	826	265	282	282	987	366	385	385	1501	690	741	741
15	478	143	195	195	571	192	265	265	868	346	510	510
17.5	301	75.3	142	142	360	97.8	193	193	547	178	373	373
20	202	41.6	108	108	241	54.1	143	147	366	100	272	284
22.5	142	24.9	72.1	85.2	169	32.6	97.1	116	257	60.8	188	223
25	103	15.9	49.1	68.7	123	20.9	67.8	93.4	188	39.4	128	180

# SECONDARY FRAMING

# Lap Zee - 9" x 2-5/8" x 2-7/8" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	272	50.7	128	128	324	66.0	172	172	486	119	322	322
17.5	171	27.7	94.1	94.1	204	36.2	126	126	306	65.8	236	236
20	115	16.5	72.0	72.0	137	21.6	96.6	96.6	205	39.8	181	181
22.5	80.6	10.5	56.8	56.9	96.0	13.7	75.9	76.3	144	25.6	133	143
25	58.8	—	39.8	46.1	70.0	—	54.6	61.8	105	17.4	96.1	116
27.5	44.2	—	28.6	38.1	52.6	—	38.6	51.1	78.8	12.3	69.0	95.6

## Values (PLF) – Two Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	721	111	172	172	864	148	229	229	1319	272	439	439
17.5	454	59.5	119	119	544	77.9	161	161	831	145	309	309
20	304	34.3	88.5	88.5	365	45.1	120	120	557	84.7	229	229
22.5	214	21.2	68.3	68.3	256	28.1	92.4	92.4	319	53.4	177	177
25	156	13.9	49.5	54.3	187	18.5	64.6	73.5	285	35.6	117	141
27.5	117	—	33.9	44.3	140	12.7	44.2	59.9	214	24.8	80.6	115

## Values (PLF) – Two Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	763	148	205	205	915	197	304	304	1397	361	581	581
17.5	481	78.7	152	152	576	103	213	213	879	192	408	480
20	322	43.3	112	112	386	57.0	151	151	589	107	289	290
22.5	226	25.9	76.3	83.5	271	34.3	102	113	414	65.2	183	216
25	165	16.6	51.2	64.8	198	22.0	66.8	87.6	302	42.4	121	168
27.5	124	11.1	34.9	51.7	148	14.8	45.6	69.9	227	29.0	83.1	134

## Values (PLF) – Three Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	549	86.1	197	197	657	112	284	284	1003	206	543	543
17.5	345	45.1	151	151	414	59.1	204	204	632	110	369	391
20	231	26.0	97.6	112	277	34.2	134	151	423	64.2	239	290
22.5	163	16.1	63.6	86.3	195	21.2	84.8	117	297	40.5	153	223
25	118	10.5	42.8	68.6	142	14.0	55.9	92.8	217	26.9	101	178
27.5	89.0	—	29.4	55.8	107	—	38.3	75.5	163	18.8	69.8	145

## Values (PLF) – Three Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	563	117	216	216	675	152	292	292	1030	279	559	559
17.5	355	59.3	157	157	425	77.7	213	213	649	144	377	408
20	238	32.8	100	120	285	43.1	137	162	435	81.0	244	311
22.5	167	19.7	64.9	94.4	200	26.0	86.6	128	305	49.4	156	244
25	122	12.6	43.7	76.2	146	16.7	56.9	103	223	32.2	103	197
27.5	91.4	—	29.9	62.7	110	11.3	39.0	84.9	167	22.0	71.1	163

# SECONDARY FRAMING

# Lap Zee - 9" x 3-1/8" x 3-3/8" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	301	72.2	131	131	358	96	177	177	534	168	336	336
17.5	189	40.7	96	96	225	52.4	130	130	336	92.5	246	246
20	127	24.1	73.8	73.8	151	31.1	99.6	99.6	225	55.5	189	189
22.5	89.1	15.2	58.3	58.3	106	19.7	78.7	78.7	158	35.5	149	149
25	65.0	10.1	47.2	47.2	77.3	13.1	63.7	63.7	115	24.0	120	121
27.5	48.8	—	36.7	39.0	58.0	—	48.6	52.7	86.7	16.8	91.6	99.8

## Values (PLF) – Two Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	799	145	176	176	956	195	235	235	1455	380	457	457
17.5	503	80.1	122	122	602	110	166	166	916	204	323	323
20	337	48.7	90.5	90.5	403	65.2	123	123	614	119	239	239
22.5	237	31.0	69.9	69.6	283	40.3	95.1	95.1	431	74.2	185	185
25	173	20.2	55.6	55.6	206	26.4	75.7	75.7	314	49.2	147	147
27.5	130	13.8	45.3	45.3	155	18.1	61.7	61.7	236	34.0	115	120

## Values (PLF) – Two Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	846	192	206	206	1012	259	313	313	1540	505	606	606
17.5	533	106	164	164	637	146	220	220	970	270	426	426
20	357	61.5	114	114	427	82.3	156	156	650	150	302	302
22.5	251	37.9	85.3	85.3	300	49.3	116	116	456	90.7	226	226
25	183	24.1	66.2	66.2	219	31.5	90.2	90.2	333	58.5	173	175
27.5	137	16.1	47.8	52.9	164	21.1	65.2	72.0	250	39.8	118	140

## Values (PLF) – Three Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	608	123	198	198	727	164	293	293	1107	292	568	568
17.5	383	66.4	170	170	458	85.8	210	210	697	155	407	407
20	256	38.1	114	114	307	49.4	156	156	467	89.9	302	302
22.5	180	23.5	82.7	88.2	215	30.6	111	120	328	56.2	214	233
25	131	15.3	56.3	70.1	157	20.0	77.3	95.5	129	37.2	145	185
27.5	98.6	10.4	40.2	57.1	118	13.7	54.8	77.7	180	25.7	99.4	151

## Values (PLF) – Three Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	624	166	221	221	747	222	300	300	1137	397	585	585
17.5	393	87.2	161	161	470	113	219	219	716	203	426	426
20	263	48.0	123	123	315	62.3	167	167	479	113	316	325
22.5	185	28.7	84.5	96.5	221	37.4	113	131	337	68.7	218	255
25	135	18.3	57.4	77.9	161	23.9	78.8	106	245	44.4	147	206
27.5	101	12.2	40.9	64.2	121	16.0	55.7	87.3	184	30.2	101	169

# SECONDARY FRAMING

# Lap Zee - 10" x 2-1/8" x 2-3/8" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	197	20.0	100	100	235	26.5	134	134	354	49.7	240	249
20	132	11.9	67.2	76.5	157	15.9	90.1	102	237	30.2	164	191
22.5	92.6	—	43.5	60.4	111	10.1	58.7	80.8	166	19.6	112	151
25	67.5	—	27.4	48.9	80.6	—	39.6	65.5	121	13.3	74.7	122
27.5	50.7	—	20.6	40.5	60.6	—	27.7	54.1	91.2	—	51.8	101
30	39.1	—	14.9	34.0	46.7	—	20.0	45.5	70.2	—	37.1	85.0

## Values (PLF) – Two Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	519	42.9	120	120	623	57.1	173	173	956	109	329	329
20	348	24.8	82.2	94.4	418	33.2	111	128	640	64.3	210	244
22.5	244	15.4	52.6	73.6	293	20.7	71.0	99.1	450	40.7	132	189
25	178	10.2	35.2	58.6	214	13.7	47.0	78.9	328	27.3	87.4	150
27.5	134	—	24.3	47.7	161	—	32.2	64.2	246	19.1	60.4	122
30	103	—	17.3	39.6	124	—	22.9	53.3	190	13.9	43.2	102

## Values (PLF) – Two Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	548	56.8	143	145	658	75.6	193	215	1008	145	370	435
20	367	31.4	85.5	112	441	41.9	116	162	675	81.2	218	309
22.5	258	18.9	54.5	89.0	309	25.3	73.6	121	474	49.8	137	230
25	188	12.1	36.4	69.8	226	16.3	48.6	94.0	346	32.5	90.4	179
27.5	141	—	25.1	55.8	169	11.1	33.3	75.1	260	22.3	62.3	143
30	109	—	17.8	45.6	131	—	23.6	61.3	200	16.0	44.4	117

## Values (PLF) – Three Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	396	32.5	118	144	475	43.3	159	215	729	82.8	306	417
20	265	31.1	70.9	115	319	25.2	95.9	162	488	48.7	181	309
22.5	186	11.7	45.4	93.0	224	15.7	61.3	125	343	30.8	114	238
25	136	—	30.5	73.9	163	10.4	40.7	100	250	20.7	75.6	189
27.5	102	—	21.1	60.2	123	—	27.9	81.0	188	14.5	52.3	154
30	78.6	—	15.0	49.9	94.4	—	19.9	67.2	145	10.5	37.4	128

## Values (PLF) – Three Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	406	42.8	120	170	488	57.0	163	229	747	109	313	435
20	272	23.7	72.5	129	327	31.7	98.0	174	501	61.4	185	331
22.5	191	14.3	46.4	102	229	19.2	62.6	137	352	37.7	116	260
25	139	—	31.1	82.1	167	12.4	41.4	110	256	24.7	77.1	211
27.5	105	—	21.5	67.7	126	—	28.4	91.1	193	16.9	53.2	173
30	80.6	—	15.2	56.7	96.8	—	20.2	76.3	148	12.1	38.1	145

# SECONDARY FRAMING

# Lap Zee - 10" x 2-5/8" x 2-7/8" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	219	31.5	104	104	262	40.9	140	140	391	73.7	265	265
20	147	18.7	80.0	80.0	175	24.3	108	108	262	44.4	203	203
22.5	103	11.8	62.7	63.2	123	15.4	85.0	85.0	184	28.5	152	160
25	75.2	—	45.6	51.2	89.8	10.3	62.3	68.9	134	19.3	109	130
27.5	56.5	—	32.7	42.3	67.5	—	43.9	56.9	101	13.6	77.8	107
30	43.5	—	23.7	35.6	52.0	—	31.2	47.8	77.7	—	55.6	90.2

## Values (PLF) – Two Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	579	67.6	126	126	694	88.4	181	181	1061	163	348	348
20	388	38.8	98.9	98.9	465	51.0	134	134	711	94.9	258	258
22.5	273	24.1	76.4	76.4	327	31.7	104	104	499	59.5	200	200
25	199	15.7	56.5	60.8	238	20.8	73.5	82.4	364	39.5	132	159
27.5	149	10.8	38.6	49.5	179	14.2	50.3	67.1	273	27.4	91.1	129
30	115	—	27.3	41.1	138	10.1	35.7	55.7	211	19.8	64.8	107

## Values (PLF) – Two Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	611	89.5	151	151	732	117	227	227	1119	215	461	461
20	409	49.1	118	118	491	64.5	169	169	750	120	327	327
22.5	288	29.4	87.3	93.3	345	38.7	116	126	527	72.7	206	244
25	210	18.7	58.4	72.4	251	24.7	76.0	98.1	384	47.1	137	189
27.5	157	12.6	39.9	57.8	189	16.6	51.9	78.4	288	32.1	93.9	151
30	121	—	28.1	47.3	145	11.7	36.7	64.1	222	22.7	66.7	124

## Values (PLF) – Three Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	442	51.3	185	185	530	67.1	227	227	809	123	422	441
20	296	29.5	112	135	355	38.7	153	169	542	71.9	272	327
22.5	208	18.2	72.8	96.4	249	24.0	96.7	131	381	45.1	173	252
25	152	11.9	48.9	76.6	182	15.7	63.6	104	278	29.9	115	200
27.5	114	—	33.5	62.4	136	10.8	43.6	84.6	209	20.8	78.9	163
30	87.7	—	23.7	50.7	105	—	30.9	70.2	161	14.9	56.2	135

## Values (PLF) – Three Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	453	67.4	176	176	543	88.1	239	239	830	162	433	461
20	304	37.2	115	134	364	48.8	156	182	556	90.6	279	351
22.5	213	22.3	74.3	105	255	29.3	98.7	143	390	55.1	177	275
25	155	14.2	49.9	85.2	186	18.8	64.9	115	285	35.7	117	223
27.5	117	—	34.1	70.1	140	12.6	44.4	95.1	214	24.3	80.3	183
30	89.9	—	24.1	58.8	108	—	31.4	79.7	165	17.3	57.2	154

# SECONDARY FRAMING

# Lap Zee - 10" x 3-1/8" x 3-3/8" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	287	59.5	145	145	257	104	276	276
20	—	—	—	—	192	35.2	111	111	172	62.2	211	211
22.5	—	—	—	—	135	22.3	87.7	87.7	121	39.7	167	167
25	—	—	—	—	98.5	14.8	71.1	71.1	88.1	26.7	135	135
27.5	—	—	—	—	74.0	10.3	55.7	58.7	66.2	18.7	104	112
30	—	—	—	—	57.0	—	41.3	49.4	51.0	13.5	77.9	94.0

## Values (PLF) – Two Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	765	125	186	186	1166	230	362	362
20	—	—	—	—	513	74.0	138	138	781	134	270	270
22.5	—	—	—	—	360	45.7	106	106	549	83.3	208	208
25	—	—	—	—	262	29.9	84.7	84.7	400	54.9	166	166
27.5	—	—	—	—	197	20.4	69.0	69.0	301	37.9	130	135
30	—	—	—	—	152	14.4	52.1	57.3	231	27.1	92.3	112

## Values (PLF) – Two Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	807	166	249	249	1230	305	481	481
20	—	—	—	—	541	93.5	174	174	824	169	340	340
22.5	—	—	—	—	380	55.8	130	130	579	102	254	254
25	—	—	—	—	277	35.6	101	101	422	65.4	196	197
27.5	—	—	—	—	208	23.8	74.5	80.6	317	44.3	134	157
30	—	—	—	—	160	16.6	53.6	65.9	244	31.2	95.1	129

## Values (PLF) – Three Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	584	97.7	229	229	889	175	459	459
20	—	—	—	—	391	56.1	174	174	596	101	340	340
22.5	—	—	—	—	275	34.6	128	135	418	63.1	244	262
25	—	—	—	—	200	22.6	88.6	107	305	41.6	164	209
27.5	—	—	—	—	150	15.4	62.6	87.0	229	28.7	113	170
30	—	—	—	—	116	10.9	45.2	72.2	177	20.5	80.1	141

## Values (PLF) – Three Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	598	128	246	246	912	288	481	481
20	—	—	—	—	401	70.7	187	187	611	128	362	362
22.5	—	—	—	—	282	42.3	130	147	429	77.0	249	287
25	—	—	—	—	205	27.0	90.3	119	313	49.6	167	232
27.5	—	—	—	—	154	18.1	63.7	97.8	235	33.6	115	191
30	—	—	—	—	119	12.6	46.0	82.0	181	23.7	81.4	160

# SECONDARY FRAMING

# Lap Zee - 10" x 3-5/8" x 3-7/8" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	313	79.9	148	148	466	141	285	285
20	—	—	—	—	210	48.7	113	113	312	84.1	218	218
22.5	—	—	—	—	147	30.7	89.5	89.5	219	53.4	172	172
25	—	—	—	—	107	20.4	72.5	72.5	160	35.7	139	139
27.5	—	—	—	—	80.7	14.1	60.0	60.0	120	24.9	115	115
30	—	—	—	—	62.2	10.1	50.3	50.4	92.5	17.9	91.9	96.9

## Values (PLF) – Two Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	836	155	193	193	1272	304	375	375
20	—	—	—	—	560	93.4	141	141	852	181	278	278
22.5	—	—	—	—	393	61.1	109	109	598	112	215	215
25	—	—	—	—	287	40.8	86.4	86.4	436	73.7	171	171
27.5	—	—	—	—	215	28.0	70.4	70.4	328	50.7	139	139
30	—	—	—	—	166	19.8	58.5	58.5	252	36.1	115	115

## Values (PLF) – Two Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	882	205	230	230	1341	403	495	495
20	—	—	—	—	591	118	177	177	899	228	351	351
22.5	—	—	—	—	415	74.6	133	133	631	137	262	262
25	—	—	—	—	303	48.7	103	103	460	87.9	203	203
27.5	—	—	—	—	227	32.7	82.3	82.3	346	59.2	162	162
30	—	—	—	—	175	22.8	67.2	67.2	266	41.5	130	133

## Values (PLF) – Three Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	638	131	264	264	970	238	474	474
20	—	—	—	—	427	77.8	178	178	650	137	351	351
22.5	—	—	—	—	300	47.9	137	137	456	85.1	271	271
25	—	—	—	—	219	31.2	109	109	333	55.8	209	216
27.5	—	—	—	—	164	21.2	77.8	88.8	250	38.3	152	175
30	—	—	—	—	127	15.0	56.7	73.7	192	27.3	109	145

## Values (PLF) – Three Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	654	173	251	251	994	313	495	495
20	—	—	—	—	438	98.0	191	191	666	173	377	377
22.5	—	—	—	—	308	58.5	150	150	468	104	290	297
25	—	—	—	—	224	37.2	112	121	341	66.7	213	239
27.5	—	—	—	—	169	24.8	79.1	100	256	44.9	154	197
30	—	—	—	—	130	17.3	57.6	83.6	197	31.5	111	165

# SECONDARY FRAMING

# Lap Zee - 12" x 2-1/8" x 2-3/8" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	364	32.6	159	159	548	60.1	292	302
20	—	—	—	—	244	19.4	107	122	367	36.3	199	231
22.5	—	—	—	—	171	12.4	69.6	96.0	258	23.3	135	183
25	—	—	—	—	125	—	47.1	77.8	188	15.8	91.0	148
27.5	—	—	—	—	93.9	—	33.1	64.3	141	11.2	63.3	122
30	—	—	—	—	72.3	—	23.9	54.0	109	—	45.2	103

## Values (PLF) – Two Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	1004	70.2	180	180	1489	133	402	402
20	—	—	—	—	672	40.9	134	144	998	77.8	260	298
22.5	—	—	—	—	472	25.4	85.5	117	701	48.9	163	230
25	—	—	—	—	344	16.7	57.4	94.1	511	32.6	108	183
27.5	—	—	—	—	259	11.5	40.0	76.6	384	22.7	74.2	149
30	—	—	—	—	199	—	28.4	63.6	296	16.4	52.9	124

## Values (PLF) – Two Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	1024	92.9	214	214	1571	176	452	524
20	—	—	—	—	686	51.6	139	169	1052	98.2	271	376
22.5	—	—	—	—	482	31.0	88.7	136	739	59.8	169	281
25	—	—	—	—	351	19.9	59.4	111	539	38.8	111	218
27.5	—	—	—	—	264	13.4	41.3	89.5	405	26.5	76.6	174
30	—	—	—	—	203	—	29.3	73.2	312	18.8	54.5	142

## Values (PLF) – Three Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	740	53.6	190	211	1136	101	373	509
20	—	—	—	—	496	31.0	115	172	761	59.0	225	376
22.5	—	—	—	—	348	19.2	73.9	141	534	31.0	141	291
25	—	—	—	—	254	12.6	49.7	118	390	24.6	93.4	211
27.5	—	—	—	—	191	—	34.7	96.6	293	17.1	64.4	188
30	—	—	—	—	147	—	24.7	80.2	225	12.4	45.9	156

## Values (PLF) – Three Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	759	70.4	195	257	1178	132	382	529
20	—	—	—	—	509	39.0	118	206	789	74.3	230	403
22.5	—	—	—	—	357	23.5	75.5	163	554	45.3	144	317
25	—	—	—	—	260	15.1	50.7	132	404	29.4	95.1	256
27.5	—	—	—	—	196	10.2	35.3	109	304	20.1	65.5	211
30	—	—	—	—	151	—	25.1	91.0	234	14.3	46.7	177

# SECONDARY FRAMING

# Lap Zee - 12" x 2-5/8" x 2-7/8" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	402	50.8	168	168	602	90.1	322	322
20	—	—	—	—	269	30.1	129	129	403	53.9	246	246
22.5	—	—	—	—	189	19.0	96.3	102	283	34.4	182	194
25	—	—	—	—	138	12.7	70.0	82.3	206	23.1	132	157
27.5	—	—	—	—	104	—	50.2	68.0	155	16.2	94.2	130
30	—	—	—	—	79.8	—	36.2	57.1	119	11.7	68.0	109

## Values (PLF) – Two Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	1073	106	182	182	1641	200	427	427
20	—	—	—	—	719	62.5	146	146	1100	116	317	317
22.5	—	—	—	—	505	39.2	119	119	772	72.4	245	245
25	—	—	—	—	368	25.6	87.5	98.8	563	47.8	164	195
27.5	—	—	—	—	277	17.5	60.9	81.2	423	33.0	113	159
30	—	—	—	—	213	12.4	43.8	67.4	326	23.6	80.2	132

## Values (PLF) – Two Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	1132	140	216	216	1732	265	562	562
20	—	—	—	—	758	79.0	171	171	1160	147	400	400
22.5	—	—	—	—	533	47.8	135	138	815	88.4	257	299
25	—	—	—	—	388	30.5	90.4	113	594	56.9	170	232
27.5	—	—	—	—	292	20.4	62.9	94.2	446	38.5	116	186
30	—	—	—	—	225	14.3	45.1	77.5	344	27.2	82.5	152

## Values (PLF) – Three Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	818	83.6	213	213	1252	152	526	541
20	—	—	—	—	548	48.1	173	173	839	88.0	333	400
22.5	—	—	—	—	385	29.7	113	143	589	54.8	215	310
25	—	—	—	—	281	19.4	75.7	120	429	36.2	142	246
27.5	—	—	—	—	211	13.2	52.8	102	323	25.0	97.8	200
30	—	—	—	—	162	—	38.0	85.0	248	17.9	69.5	166

## Values (PLF) – Three Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	839	110	258	258	1284	199	526	565
20	—	—	—	—	562	60.5	179	209	860	111	341	431
22.5	—	—	—	—	395	36.3	115	170	604	67.0	219	339
25	—	—	—	—	288	23.1	77.2	140	440	43.2	145	273
27.5	—	—	—	—	216	15.5	53.8	115	331	29.2	100	225
0	—	—	—	—	167	10.8	38.6	96.4	255	20.6	70.7	189

# SECONDARY FRAMING

# Lap Zee - 12" x 3-1/8" x 3-3/8" Load Tables

## Values (PLF) – One Span

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	439	74.1	174	174	384	128	334	334
20	—	—	—	—	294	43.8	133	133	257	76.2	256	256
22.5	—	—	—	—	207	27.6	105	105	181	48.4	203	203
25	—	—	—	—	151	18.3	85.3	85.3	132	32.4	164	164
27.5	—	—	—	—	113	12.6	67.9	70.5	99.0	22.5	130	136
30	—	—	—	—	87.2	—	52.2	59.2	76.2	16.2	96.8	114

## Values (PLF) – Two Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	1175	158	189	189	1794	285	444	444
20	—	—	—	—	787	92.5	152	152	1202	165	330	330
22.5	—	—	—	—	553	56.9	125	125	844	102	255	255
25	—	—	—	—	403	37.1	103	103	615	67.0	203	203
27.5	—	—	—	—	303	25.2	83.7	83.7	462	46.0	162	165
30	—	—	—	—	233	17.8	65.4	69.5	356	32.8	115	137

## Values (PLF) – Two Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	1240	209	222	222	1892	377	588	588
20	—	—	—	—	831	117	177	177	1267	208	417	417
22.5	—	—	—	—	583	69.6	159	159	890	125	312	312
25	—	—	—	—	425	44.2	118	118	649	79.9	242	242
27.5	—	—	—	—	320	29.5	94.0	97.8	488	53.8	167	193
30	—	—	—	—	246	20.5	67.3	79.9	376	37.7	118	158

## Values (PLF) – Three Spans with 2'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	897	122	219	219	1368	216	562	562
20	—	—	—	—	601	70.1	179	179	916	125	417	417
22.5	—	—	—	—	422	43.1	148	148	644	77.4	307	322
25	—	—	—	—	308	28.1	112	125	469	50.7	205	256
27.5	—	—	—	—	231	19.1	79.0	105	353	34.8	140	208
30	—	—	—	—	178	13.5	56.8	87.6	272	24.8	100	173

## Values (PLF) – Three Spans with 4'-3-1/2" Lap Length

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	919	161	262	262	1403	284	588	588
20	—	—	—	—	616	88.3	212	212	940	157	448	448
22.5	—	—	—	—	433	52.7	164	175	660	94.5	313	352
25	—	—	—	—	315	33.5	115	144	481	60.6	209	284
27.5	—	—	—	—	237	22.4	80.4	119	361	40.8	143	234
30	—	—	—	—	182	15.5	57.7	99.4	278	28.6	101	196

# SECONDARY FRAMING

# Slope Zee - 4" x 2-1/8" x 2-3/8" Load Tables

## Values (PLF) – One Span (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	272	118	192	192	325	162	251	251	—	—	—	—
10	139	50.1	123	123	167	69.0	160	160	—	—	—	—
12	80.7	25.1	85.2	85.2	96.4	34.8	111	111	—	—	—	—
14	50.8	14.1	59.7	62.6	60.7	19.7	81.8	81.8	—	—	—	—
16	34.0	—	42.5	47.9	40.7	12.1	59.6	62.6	—	—	—	—
18	23.9	—	30.0	37.9	28.6	—	41.5	49.5	—	—	—	—

## Values (PLF) – Two Spans with 2'-3-1/2" Lap Length (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	804	301	332	332	964	424	439	439	—	—	—	—
10	411	130	187	187	493	180	247	247	—	—	—	—
12	238	60.0	120	120	286	83.4	158	158	—	—	—	—
14	150	31.9	83.1	83.1	180	44.6	110	110	—	—	—	—
16	100	18.8	56.8	61.1	120	20.7	78.0	80.6	—	—	—	—
18	70.5	11.9	35.8	46.8	84.6	16.8	49.3	61.8	—	—	—	—

## Values (PLF) – Two Spans with 4'-3-1/2" Lap Length (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	846	287	317	317	1015	405	418	418	—	—	—	—
10	433	144	207	207	520	199	273	273	—	—	—	—
12	251	73.5	147	147	301	102	193	193	—	—	—	—
14	158	40.0	96.6	104	189	56.0	133	137	—	—	—	—
16	106	22.6	58.5	73.7	127	31.9	80.4	97.3	—	—	—	—
18	74.3	14.0	30.0	55.0	89.1	19.8	50.7	72.5	—	—	—	—

## Values (PLF) – Three Spans with 2'-3-1/2" Lap Length (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	573	265	316	316	678	364	418	418	—	—	—	—
10	293	98.5	201	201	352	136	265	265	—	—	—	—
12	170	45.5	127	139	203	63.2	180	183	—	—	—	—
14	107	24.2	80.1	101	128	33.9	110	134	—	—	—	—
16	72	14.2	48.8	77.2	85.8	20.0	66.9	102	—	—	—	—
18	50	—	30.8	59.2	60.3	12.8	42.4	78.1	—	—	—	—

## Values (PLF) – Three Spans with 4'-3-1/2" Lap Length (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	586	261	324	324	703	358	427	427	—	—	—	—
10	300	112	205	205	360	155	270	270	—	—	—	—
12	174	56.9	130	141	208	79.2	183	187	—	—	—	—
14	109	30.1	81.5	103	131	42.1	112	136	—	—	—	—
16	73.3	17.1	49.6	78.6	87.9	24.1	68.1	104	—	—	—	—
18	51.5	10.6	31.3	61.8	61.7	15.0	43.1	81.5	—	—	—	—

# SECONDARY FRAMING

# Slope Zee - 6" x 2-1/8" x 2-3/8" Load Tables

## Values (PLF) – One Span (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	341	84.5	187	187	406	114	247	247	613	221	444	444
12	197	41.6	130	130	235	56.3	172	172	355	111	309	309
14	124	23.0	95.4	95.4	148	31.2	126	126	223	62.5	224	227
16	83.2	13.8	70.5	73.0	99.1	18.9	96.4	96.4	150	38.4	162	174
18	58.5	—	50.2	57.7	69.9	12.2	68.3	76.2	105	25.1	119	137
20	42.6	—	35.2	46.8	50.7	—	47.4	61.7	76.6	17.3	86.8	111

## Values (PLF) – Two Spans with 2'-3-1/2" Lap Length (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	978	220	287	287	1176	298	382	382	1801	552	704	704
12	566	100	183	183	681	136	244	244	1042	271	448	448
14	356	52.1	127	127	429	71.2	170	170	656	145	313	313
16	239	30.1	93.7	93.7	287	41.3	125	125	440	85.2	229	229
18	168	18.7	61.1	71.8	202	25.8	82.6	95.7	309	54.1	161	176
20	122	12.4	40.3	56.9	147	17.1	54.5	75.7	225	36.4	107	139

## Values (PLF) – Two Spans with 4'-3-1/2" Lap Length (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	1036	244	318	318	1246	330	424	424	1907	613	781	781
12	599	122	225	225	721	166	299	299	1104	332	549	549
14	377	65.4	160	160	454	89.3	213	213	695	181	392	392
16	253	36.3	101	113	304	49.8	136	151	466	103	256	277
18	178	22.0	62.9	84.3	214	30.3	84.9	112	327	63.6	166	207
20	129	14.2	41.3	65.4	156	19.7	55.9	87.0	238	41.9	110	160

## Values (PLF) – Three Spans with 2'-3-1/2" Lap Length (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	708	167	309	309	851	226	410	410	1303	444	758	758
12	410	75.7	213	213	493	103	283	283	754	205	493	521
14	258	39.5	136	156	310	54.0	185	228	475	110	326	380
16	173	22.8	83.8	118	208	31.3	113	158	318	64.6	214	291
18	121	14.2	52.6	90.8	146	19.6	71.1	121	223	41.1	139	222
20	88.5	—	37.4	71.8	106	13.0	47.0	95.6	163	27.6	92.4	176

## Values (PLF) – Three Spans with 4'-3-1/2" Lap Length (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	725	190	314	314	884	257	418	418	1336	505	769	769
12	420	94.8	217	217	512	129	289	289	773	257	503	532
14	264	49.2	138	158	322	67.2	188	211	487	136	332	388
16	177	27.5	85.3	120	216	37.7	115	161	326	77.7	217	295
18	124	16.7	53.4	94.8	152	23.0	72.2	126	229	48.2	141	232
20	90.7	10.8	35.2	76.5	111	14.9	47.7	102	167	31.8	93.7	187

# SECONDARY FRAMING

# Single Slope Low Eave Strut - Load Tables, One Span

## Values (PLF) – SS Eave Strut LE 4" x 3-1/2" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	—	—	—	—	412	188	232	232	598	360	413	413
10	—	—	—	—	211	98.6	148	148	306	205	265	265
12	—	—	—	—	122	55.1	102	103	177	114	184	184
14	—	—	—	—	76.9	34.7	72.4	75.7	112	69.1	132	135
16	—	—	—	—	51.5	22.3	53.4	57.9	74.8	44.7	98.4	103
18	—	—	—	—	36.2	15.0	40.4	45.8	52.5	30.2	75.5	81.8

## Values (PLF) – SS Eave Strut LE 6" x 3-1/2" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	—	—	—	—	506	176	258	258	740	338	446	446
12	—	—	—	—	293	95.4	179	179	428	182	311	311
14	—	—	—	—	185	58.1	127	132	270	107	223	228
16	—	—	—	—	124	36.6	94.0	101	181	66.6	166	175
18	—	—	—	—	86.8	24.1	71.1	79.6	127	43.8	127	138
20	—	—	—	—	63.3	16.6	54.8	64.5	92.5	30.2	99.1	112

## Values (PLF) – SS Eave Strut LE 6" x 4" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	—	—	—	—	563	193	256	256	821	353	446	446
12	—	—	—	—	326	108	178	178	475	211	310	310
14	—	—	—	—	205	64.5	129	131	299	129	227	228
16	—	—	—	—	137	41.6	96.0	100	200	80.6	169	174
18	—	—	—	—	96.5	28.8	73.3	79.1	141	54.1	130	138
20	—	—	—	—	70.3	20.3	57.0	64.1	103	37.8	102	112

## Values (PLF) – SS Eave Strut LE 8" x 3-1/2" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	—	—	—	—	490	125	234	234	718	227	422	422
15	—	—	—	—	284	68.4	162	162	415	118	283	292
17.5	—	—	—	—	179	38.6	115	119	262	66.5	200	215
20	—	—	—	—	120	23.8	83.1	91.3	175	40.8	146	164
22.5	—	—	—	—	84.0	15.3	61.0	72.2	123	26.7	109	130
25	—	—	—	—	61.3	10.3	45.1	58.4	89.7	18.4	82.2	105

## Values (PLF) – SS Eave Strut LE 8" x 4" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	—	—	—	—	540	146	238	238	789	273	422	422
15	—	—	—	—	312	77.7	166	166	457	146	290	293
17.5	—	—	—	—	197	46.5	119	122	288	83.9	205	216
20	—	—	—	—	132	29.8	87.2	93.1	193	52.1	151	165
22.5	—	—	—	—	92.6	19.3	65.1	73.6	135	33.9	113	130
25	—	—	—	—	67.5	13.3	49.3	59.6	98.7	23.2	86.7	106

# SECONDARY FRAMING

# Single Slope Low Eave Strut - Load Tables, One Span

## Values (PLF) – SS Eave Strut LE 8" x 5" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	—	—	—	—	640	149	203	203	934	319	420	420
15	—	—	—	—	371	81.9	141	141	540	181	292	292
17.5	—	—	—	—	233	48.3	103	103	340	109	212	214
20	—	—	—	—	156	30.8	76.1	79.5	228	71.9	157	164
22.5	—	—	—	—	110	20.7	57.9	62.8	160	48.6	120	130
25	—	—	—	—	80.0	14.6	44.8	50.9	117	33.4	93.8	105

## Values (PLF) – SS Eave Strut LE 9" x 3-1/2" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	—	—	—	—	370	80.3	183	183	541	137	333	344
17.5	—	—	—	—	233	45.1	135	135	341	76.4	235	253
20	—	—	—	—	156	27.7	98.9	103	228	46.5	171	194
22.5	—	—	—	—	110	17.7	72.5	81.6	160	30.2	127	153
25	—	—	—	—	79.9	11.9	53.6	66.1	117	20.7	96.2	124
27.5	—	—	—	—	60.0	—	39.6	54.6	87.9	14.7	73.2	102

## Values (PLF) – SS Eave Strut LE 9" x 4" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	—	—	—	—	406	92.3	187	187	593	170	341	345
17.5	—	—	—	—	256	54.8	137	137	374	97.3	242	254
20	—	—	—	—	171	35.0	104	105	250	60.0	178	194
22.5	—	—	—	—	120	22.6	77.6	83.0	176	38.8	132	154
25	—	—	—	—	87.6	15.4	58.8	67.3	128	26.4	102	124
27.5	—	—	—	—	65.9	10.8	44.9	55.6	96.3	18.7	79.2	103

## Values (PLF) – SS Eave Strut LE 9" x 5" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	—	—	—	—	478	99.3	161	161	698	216	344	344
17.5	—	—	—	—	301	58.2	117	118	439	129	251	253
20	—	—	—	—	202	36.8	87.6	90.3	294	84.0	187	194
22.5	—	—	—	—	142	24.6	67.4	71.3	207	56.6	143	153
25	—	—	—	—	103	17.3	53.1	57.8	151	38.6	111	124
27.5	—	—	—	—	77.6	12.7	42.3	47.8	113	27.6	88.0	102

## Values (PLF) – SS Eave Strut LE 10" x 4" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	324	63.5	153	153	473	111	281	294
20	—	—	—	—	217	40.4	117	117	317	68.3	206	225
22.5	—	—	—	—	152	26.0	89.2	92.6	223	43.9	155	178
25	—	—	—	—	111	17.7	69.0	75.0	162	29.7	118	144
27.5	—	—	—	—	83.4	12.4	52.6	62.0	122	21.0	91.7	119
30	—	—	—	—	64.2	—	40.2	52.1	93.9	15.3	71.4	100

# SECONDARY FRAMING

# Single Slope Low Eave Strut - Load Tables, One Span

## Values (PLF) – SS Eave Strut LE 10" x 5" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	379	68.7	131	132	553	150	292	294
20	—	—	—	—	254	43.2	98.1	101	371	96.8	217	225
22.5	—	—	—	—	179	28.8	75.7	79.8	260	65.0	166	178
25	—	—	—	—	130	20.1	59.6	64.6	190	44.2	130	144
27.5	—	—	—	—	97.8	14.7	47.6	53.4	143	31.5	103	119
30	—	—	—	—	75.3	11.1	38.6	44.9	110	23.2	82.0	100

## Values (PLF) – SS Eave Strut LE 12" x 3-1/2" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	450	66.3	181	182	658	108	347	347
20	—	—	—	—	301	40.2	137	139	441	65.1	255	266
22.5	—	—	—	—	212	25.5	103	110	310	41.7	189	210
25	—	—	—	—	154	17.0	78.9	88.9	226	28.2	142	170
27.5	—	—	—	—	116	11.8	60.3	73.5	170	19.8	107	141
30	—	—	—	—	89.2	—	44.2	61.8	131	14.4	78.2	118

## Values (PLF) – SS Eave Strut LE 12" x 4" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	489	82.2	185	185	715	141	354	354
20	—	—	—	—	328	51.9	141	141	479	85.7	261	271
22.5	—	—	—	—	230	33.2	107	112	336	54.7	201	214
25	—	—	—	—	168	22.5	83.1	90.5	245	36.8	153	174
27.5	—	—	—	—	126	15.6	65.3	74.8	184	25.7	118	144
30	—	—	—	—	97.1	11.2	51.6	62.8	142	18.7	91.9	121

## Values (PLF) – SS Eave Strut LE 12" x 5" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	—	—	—	—	828	187	363	363
20	—	—	—	—	—	—	—	—	555	124	278	278
22.5	—	—	—	—	—	—	—	—	390	83.0	217	220
25	—	—	—	—	—	—	—	—	284	56.0	169	178
27.5	—	—	—	—	—	—	—	—	213	39.6	134	147
30	—	—	—	—	—	—	—	—	164	29.0	107	124

# SECONDARY FRAMING

# Single Slope High Eave Strut - Load Tables, One Span

## Values (PLF) – SS Eave Strut HE 4" x 3-1/2" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	—	—	—	—	287	189	189	189	411	334	334	334
10	—	—	—	—	147	119	121	121	211	214	214	214
12	—	—	—	—	85.2	70.1	83.8	83.8	122	139	149	149
14	—	—	—	—	53.6	42.1	61.6	61.6	76.8	84.7	109	109
16	—	—	—	—	35.9	27.5	47.2	47.2	51.4	53.5	83.6	83.6
18	—	—	—	—	25.2	18.7	37.3	37.3	36.1	36.0	66.1	66.1

## Values (PLF) – SS Eave Strut HE 6" x 3-1/2" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	—	—	—	—	406	207	211	211	584	375	383	383
12	—	—	—	—	235	118	147	147	338	224	266	266
14	—	—	—	—	148	69.5	108	108	213	129	195	195
16	—	—	—	—	99.0	44.6	82.5	82.5	143	80.7	150	150
18	—	—	—	—	69.6	29.2	65.2	65.2	100	52.4	118	118
20	—	—	—	—	50.7	19.9	52.8	52.8	73.0	35.8	95.8	95.8

## Values (PLF) – SS Eave Strut HE 6" x 4" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	—	—	—	—	434	208	208	208	634	382	382	382
12	—	—	—	—	251	137	145	145	367	251	265	265
14	—	—	—	—	158	83.0	106	106	231	160	195	195
16	—	—	—	—	106	52.4	81.4	81.4	155	103	149	149
18	—	—	—	—	74.5	35.1	64.3	64.3	109	66.9	118	118
20	—	—	—	—	54.3	24.8	52.1	52.1	79.3	46.2	95.3	95.3

## Values (PLF) – SS Eave Strut HE 8" x 3-1/2" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	—	—	—	—	422	151	195	195	631	276	358	358
15	—	—	—	—	244	80.4	136	136	365	142	249	249
17.5	—	—	—	—	154	46.2	100	100	231	79.7	183	183
20	—	—	—	—	103	28.2	76.3	76.3	154	48.4	140	140
22.5	—	—	—	—	72.4	18.1	60.3	60.3	108	31.4	111	111
25	—	—	—	—	52.8	12.2	48.8	48.8	78.9	21.4	89.8	89.8

## Values (PLF) – SS Eave Strut HE 8" x 4" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	—	—	—	—	457	182	193	193	683	329	358	358
15	—	—	—	—	264	96.7	134	134	395	183	249	249
17.5	—	—	—	—	166	56.3	98.7	98.7	249	103	183	183
20	—	—	—	—	111	35.9	75.6	75.6	167	64.1	140	140
22.5	—	—	—	—	78.3	23.7	59.7	59.7	117	41.5	111	111
25	—	—	—	—	57.1	16.0	48.4	48.4	85.4	28.1	89.6	89.6

# SECONDARY FRAMING

# Single Slope High Eave Strut - Load Tables, One Span

Values (PLF) – SS Eave Strut HE 8" x 5" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	—	—	—	—	521	183	187	187	736	351	351	351
15	—	—	—	—	301	108	1230	130	426	236	244	244
17.5	—	—	—	—	190	64.3	95.6	95.6	268	143	179	179
20	—	—	—	—	127	40.4	73.2	73.2	180	91.5	137	137
22.5	—	—	—	—	89.3	26.9	57.8	57.8	126	62.2	108	108
25	—	—	—	—	65.1	18.7	46.8	46.8	92.0	43.6	87.9	87.9

Values (PLF) – SS Eave Strut HE 9" x 3-1/2" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	—	—	—	—	321	94.1	157	157	467	164	290	290
17.5	—	—	—	—	202	53.7	115	115	294	91.3	213	213
20	—	—	—	—	135	32.7	88.1	88.1	197	55.2	163	163
22.5	—	—	—	—	95.1	20.9	69.6	69.6	138	35.5	129	129
25	—	—	—	—	69.3	14.0	56.4	56.4	101	24.1	104	104
27.5	—	—	—	—	52.1	—	46.4	46.4	75.8	17.0	81.4	81.4

Values (PLF) – SS Eave Strut HE 9" x 4" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	—	—	—	—	353	114	156	156	529	213	289	289
17.5	—	—	—	—	222	66.1	114	114	333	120	213	213
20	—	—	—	—	149	41.9	87.5	87.5	223	74.0	163	163
22.5	—	—	—	—	104	27.5	69.1	69.1	157	47.4	129	129
25	—	—	—	—	76.2	18.5	56.0	56.0	114	32.0	104	104
27.5	—	—	—	—	57.2	13.1	46.3	46.3	85.9	22.5	86.1	86.1

Values (PLF) – SS Eave Strut HE 9" x 5" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	—	—	—	—	402	129	151	151	604	279	284	284
17.5	—	—	—	—	253	76.3	111	111	380	168	209	209
20	—	—	—	—	170	47.8	85.0	85.0	255	107	160	160
22.5	—	—	—	—	119	31.7	67.2	67.2	179	72.3	126	126
25	—	—	—	—	86.9	21.9	54.4	54.4	130	50.2	102	102
27.5	—	—	—	—	65.3	15.8	44.9	44.9	98.0	35.3	84.6	84.6

Values (PLF) – SS Eave Strut HE 10" x 4" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	—	—	—	—	288	76.4	130	130	432	136	243	243
17.5	—	—	—	—	193	48.2	99.3	99.3	290	89.4	186	186
20	—	—	—	—	135	31.5	78.5	78.5	203	53.7	147	147
22.5	—	—	—	—	98.6	21.2	63.6	63.6	148	36.1	119	119
25	—	—	—	—	74.1	14.9	52.5	52.5	111	25.3	98.2	98.2
27.5	—	—	—	—	57.1	10.7	44.2	44.2	85.8	18.3	82.5	82.5

# SECONDARY FRAMING

# Single Slope High Eave Strut - Load Tables, One Span

## Values (PLF) – SS Eave Strut HE 10" x 5" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	328	89.2	127	127	493	194	239	239
20	—	—	—	—	220	55.6	96.9	96.9	331	123	183	183
22.5	—	—	—	—	154	36.7	76.5	76.5	232	82.9	145	145
25	—	—	—	—	112	25.4	62.0	62.0	169	57.1	117	117
27.5	—	—	—	—	84.5	18.2	51.2	51.2	127	40.1	96.7	96.7
30	—	—	—	—	65.1	13.6	43.0	43.0	97.9	29.2	81.3	81.3

## Values (PLF) – SS Eave Strut HE 12" x 3-1/2" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	407	86.4	161	161	593	120	301	301
20	—	—	—	—	272	51.9	123	123	397	72.2	230	230
22.5	—	—	—	—	191	33.1	97.2	97.2	279	46.1	182	182
25	—	—	—	—	140	22.0	76.6	76.6	203	31.0	147	147
27.5	—	—	—	—	105	15.2	57.9	57.9	153	21.7	116	122
30	—	—	—	—	80.7	10.9	42.7	42.7	118	15.8	87.6	102

## Values (PLF) – SS Eave Strut HE 12" x 4" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	450	98.3	161	161	635	166	302	302
20	—	—	—	—	302	61.7	123	123	425	101	231	231
22.5	—	—	—	—	212	39.9	97.1	97.1	299	63.9	183	183
25	—	—	—	—	154	26.8	78.7	78.7	218	42.7	148	148
27.5	—	—	—	—	116	18.7	65.0	65.0	164	29.8	122	122
30	—	—	—	—	89.4	13.4	54.6	54.6	126	21.5	103	103

## Values (PLF) – SS Eave Strut HE 12" x 5" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	—	—	—	—	773	251	299	299
20	—	—	—	—	—	—	—	—	518	158	229	229
22.5	—	—	—	—	—	—	—	—	364	105	181	181
25	—	—	—	—	—	—	—	—	265	72.0	147	147
27.5	—	—	—	—	—	—	—	—	199	50.3	121	121
30	—	—	—	—	—	—	—	—	154	36.5	102	102

# SECONDARY FRAMING

# Double Slope Eave Strut - Load Tables, One Span

## Values (PLF) – DS Eave Strut 4" x 3-1/2" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
8	—	—	—	—	386	161	196	196	564	313	357	357
10	—	—	—	—	197	85.0	125	125	289	180	229	229
12	—	—	—	—	114	47.6	86.4	87.2	167	101	159	159
14	—	—	—	—	71.9	30.1	61.5	64.0	105	60.9	114	117
16	—	—	—	—	48.2	19.4	45.4	49.0	70.5	39.5	85.3	89.4
18	—	—	—	—	33.8	13.0	34.4	38.7	49.5	26.7	65.6	70.6

## Values (PLF) – DS Eave Strut 6" x 3-1/2" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	—	—	—	—	487	159	228	228	728	313	410	410
12	—	—	—	—	282	86.4	158	158	421	170	285	285
14	—	—	—	—	177	52.8	114	116	265	100	205	209
16	—	—	—	—	119	33.3	84.2	89.1	178	62.2	153	160
18	—	—	—	—	83.5	21.9	63.7	70.4	125	40.9	117	127
20	—	—	—	—	60.9	15.2	49.1	57.0	91.0	28.3	91.4	103

## Values (PLF) – DS Eave Strut 6" x 4" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
10	—	—	—	—	540	172	226	226	807	324	405	405
12	—	—	—	—	312	96.8	157	157	467	195	282	282
14	—	—	—	—	197	57.8	114	115	294	120	206	207
16	—	—	—	—	132	37.4	84.7	88.3	197	74.6	154	158
18	—	—	—	—	92.5	25.9	64.7	69.7	138	50.1	118	125
20	—	—	—	—	67.5	18.4	50.4	56.5	101	35.0	92.5	101

## Values (PLF) – DS Eave Strut 8" x 3-1/2" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	—	—	—	—	481	118	202	202	724	220	372	372
15	—	—	—	—	278	64.4	135	140	419	115	250	258
17.5	—	—	—	—	175	36.4	94.5	103	264	64.5	176	189
20	—	—	—	—	117	22.4	68.1	78.5	177	39.5	129	145
22.5	—	—	—	—	82.5	14.4	50.1	62.0	124	25.9	96.2	115
25	—	—	—	—	60.1	—	37.1	50.3	90.5	17.8	73.0	92.9

## Values (PLF) – DS Eave Strut 8" x 4" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	—	—	—	—	529	136	203	203	797	262	378	378
15	—	—	—	—	306	72.3	141	141	461	104	262	262
17.5	—	—	—	—	193	43.3	104	104	290	80.8	193	193
20	—	—	—	—	129	27.9	79.4	79.4	194	50.3	143	148
22.5	—	—	—	—	90.8	18.1	59.9	62.7	137	32.7	108	117
25	—	—	—	—	66.2	12.4	45.4	50.8	100	22.4	82.6	94.5

# SECONDARY FRAMING

# Double Slope Eave Strut - Load Tables, One Span

## Values (PLF) – DS Eave Strut 8" x 5" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	—	—	—	—	627	136	184	184	944	301	381	381
15	—	—	—	—	363	74.6	128	128	546	182	265	265
17.5	—	—	—	—	228	44.2	92.5	94.0	344	104	194	194
20	—	—	—	—	153	28.2	68.6	71.9	230	68.4	147	149
22.5	—	—	—	—	107	19.0	52.2	56.8	162	46.4	113	118
25	—	—	—	—	78.3	13.5	40.5	46.0	118	31.9	87.9	95.2

## Values (PLF) – DS Eave Strut 9" x 3-1/2" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	—	—	—	—	366	76.5	161	161	551	134	298	298
17.5	—	—	—	—	230	43.1	118	118	347	75.2	219	219
20	—	—	—	—	154	26.4	90.3	90.4	233	45.8	166	168
22.5	—	—	—	—	108	16.9	68.5	71.4	163	29.8	124	132
25	—	—	—	—	79.0	11.4	50.7	57.8	119	20.4	93.9	107
27.5	—	—	—	—	59.3	—	37.6	47.8	89.5	14.5	71.6	88.7

## Values (PLF) – DS Eave Strut 9" x 4" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	—	—	—	—	401	87.2	161	161	605	166	301	301
17.5	—	—	—	—	253	51.8	118	118	381	95.1	221	221
20	—	—	—	—	169	33.2	90.6	90.6	255	58.8	169	169
22.5	—	—	—	—	119	21.4	71.5	71.5	179	38.0	129	134
25	—	—	—	—	86.7	14.7	55.1	58.0	131	25.9	98.9	108
27.5	—	—	—	—	65.1	10.3	42.1	47.9	98.2	18.3	76.7	89.5

## Values (PLF) – DS Eave Strut 9" x 5" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
15	—	—	—	—	473	92.0	155	155	713	207	302	302
17.5	—	—	—	—	298	54.0	113	114	449	124	222	222
20	—	—	—	—	199	34.2	83.6	87.0	301	81.3	170	170
22.5	—	—	—	—	140	23.0	63.7	68.8	211	55.0	134	134
25	—	—	—	—	102	16.1	49.4	55.7	154	37.5	106	109
27.5	—	—	—	—	76.7	11.9	38.9	46.0	116	26.8	84.1	90.0

## Values (PLF) – DS Eave Strut 10" x 4" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	—	—	—	—	487	110	249	249
20	—	—	—	—	—	—	—	—	326	67.9	191	191
22.5	—	—	—	—	—	—	—	—	229	43.6	151	151
25	—	—	—	—	—	—	—	—	167	29.5	116	122
27.5	—	—	—	—	—	—	—	—	126	20.8	90.2	101
30	—	—	—	—	—	—	—	—	96.7	15.2	70.4	84.8

# SECONDARY FRAMING

# Double Slope Eave Strut - Load Tables, One Span

## Values (PLF) – DS Eave Strut 10" x 5" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	378	64.7	127	128	571	147	250	250
20	—	—	—	—	253	40.8	95.6	98.1	383	95.1	192	192
22.5	—	—	—	—	178	27.2	73.7	77.5	269	64.1	152	152
25	—	—	—	—	130	19.0	58.1	62.8	196	43.6	123	123
27.5	—	—	—	—	97.4	14.0	46.6	51.9	147	31.0	100	101
30	—	—	—	—	75.0	10.6	37.0	43.6	113	22.9	79.7	85.2

## Values (PLF) – DS Eave Strut 12" x 3-1/2" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	453	65.3	161	161	644	110	303	303
20	—	—	—	—	304	39.7	123	123	432	66.4	232	232
22.5	—	—	—	—	213	25.1	97.6	97.6	303	42.6	183	183
25	—	—	—	—	156	16.7	79.1	79.1	221	28.8	144	148
27.5	—	—	—	—	117	11.6	59.1	65.3	166	20.2	109	123
30	—	—	—	—	90.0	—	43.3	54.9	128	14.7	79.6	103

## Values (PLF) – DS Eave Strut 12" x 4" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	493	80.3	162	162	748	143	306	306
20	—	—	—	—	331	50.9	124	124	501	87.3	234	234
22.5	—	—	—	—	232	32.6	98.0	98.0	352	55.7	185	185
25	—	—	—	—	169	22.1	79.4	79.4	257	37.4	150	150
27.5	—	—	—	—	127	15.3	65.2	65.6	193	26.2	119	124
30	—	—	—	—	98.0	11.0	51.5	55.1	148	19.0	92.9	104

## Values (PLF) DS Eave Strut 12" x 5" (Slopes 1:12 thru 4:14)

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
17.5	—	—	—	—	—	—	—	—	871	196	307	307
20	—	—	—	—	—	—	—	—	583	125	235	235
22.5	—	—	—	—	—	—	—	—	410	84.0	186	186
25	—	—	—	—	—	—	—	—	299	56.7	150	150
27.5	—	—	—	—	—	—	—	—	224	40.1	124	124
30	—	—	—	—	—	—	—	—	173	29.4	104	104

# SECONDARY FRAMING

# Universal Eave Strut - Load Tables, One Span

## Values (PLF) – Universal Eave Strut 8" x 3-1/2"

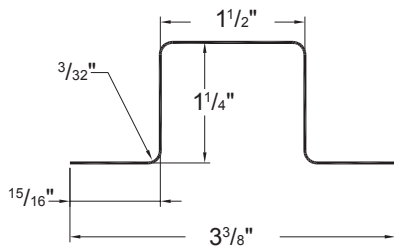
Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	—	—	—	—	543	170	243	243	810	277	457	457
15	—	—	—	—	314	83.5	169	169	469	138	317	317
17.5	—	—	—	—	198	46.0	124	124	295	77.3	233	233
20	—	—	—	—	132	27.5	95.0	95.0	196	47.2	179	179
22.5	—	—	—	—	93.0	17.6	75.1	75.1	139	30.7	139	141
25	—	—	—	—	67.8	11.9	60.8	60.8	101	21.0	103	104

## Values (PLF) – Universal Eave Strut 8" x 5"

Span (feet)	16 Gauge				14 Gauge				12 Gauge			
	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced	Deflection	Un-Braced	Mid-Braced	Fully-Braced
12.5	—	—	—	—	735	224	255	255	1097	488	493	493
15	—	—	—	—	426	138	177	177	635	295	341	341
17.5	—	—	—	—	268	81.6	130	130	400	166	251	251
20	—	—	—	—	180	51.1	99.6	99.6	268	99.5	192	192
22.5	—	—	—	—	126	33.8	77.2	78.7	188	63.8	152	152
25	—	—	—	—	91.9	23.5	61.1	63.8	137	43.0	123	123

Web in	Gauge	End Web Crippling Capacity (lbs)			Interior Web Crippling Capacity (lbs)		
		Bearing Width			Bearing Width		
		2"	4"	6"	2"	4"	6"
4	16	814	1014	1167	1361	1642	1857
4	14	1107	1370	1572	1855	2223	2504
4	12	2337	2844	3233	3943	4643	5179
6	16	764	952	1096	1350	1628	1842
6	14	1046	1295	1486	1841	2206	2486
6	12	2235	2720	3092	3919	4614	5148
8	16	723	901	1038	1340	1617	1830
8	14	996	1232	1414	1830	2192	2470
8	12	2151	2617	2976	3899	4591	5122
9	16	705	878	1011	1336	1612	1824
9	14	973	1204	1382	1825	2186	2463
9	12	2113	2571	2923	3890	4580	5110
10	16	687	856	986	1332	1608	1819
10	14	952	1178	1351	1820	2180	2457
10	12	2077	2527	2874	3882	4570	5099
12	14	912	1129	1295	1811	2170	2445
12	12	2011	2448	2783	3866	4552	5078
14	12	1951	2374	2699	3852	4535	5059
16	12	1895	2306	2622	3839	4520	5042
18	12	1842	2242	2549	3826	4505	5026
20	12	1793	2182	2481	3814	4491	5010
20	10	3090	3717	4199	6367	7410	8210
22	10	3023	3637	4109	6351	7391	8190
24	10	2960	3561	4022	6335	7373	8170

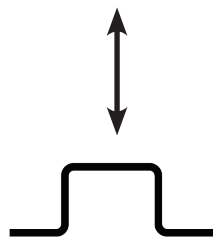
1. Tabulated values have been calculated in accordance with AISI S100-16/S2-20, North American Specification for the Design of Cold-Formed Steel Structural Members, Section G5.
2. Tabulated values do not consider web holes.
3. Tabulated values do not consider combined bending and web crippling.
4. Tabulated values include the application of the safety factor, Omega.
5. Tabulated values are applicable to Cees, Equal Leg Zees and Lap Zees, but not Eave Struts or Slope Zees.



**1.25" Hat Section**

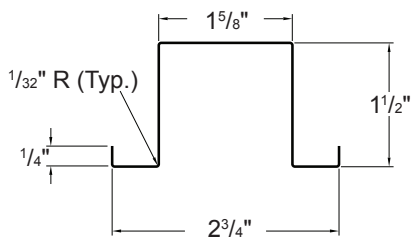
Fy = 50 ksi  
See Page SF-37 for notes.

Size	Thickness		Weight plf	FULL SECTION PROPERTIES							EFFECTIVE SECTION PROPERTIES (FULLY BRACED)				
	gauge	in		A in <sup>2</sup>	Ix-x in <sup>4</sup>	rx in	Iy-y in <sup>4</sup>	ry in	Cw in <sup>6</sup>	J in <sup>4</sup>	Ae in <sup>2</sup>	Ixe in <sup>4</sup>	Sxe in <sup>3</sup>	Max k-in	Vay kips
1-1/4" x 3-3/8"	16	0.057	1.07	0.32	0.79	0.50	0.23	0.86	0.03	0.0004	0.27	0.08	0.12	3.47	2.06



Values (PLF) – 1.25" Hat Section

Span (feet)	One Span			Two Spans			Three or more Spans		
	Deflection	Upward Load	Downward Load	Deflection	Upward Load	Downward Load	Deflection	Upward Load	Downward Load
2	857	510	588	2061	552	546	1622	637	617
3	254	166	261	611	254	221	481	294	207
4	107	67.5	147	258	145	108	203	168	84.3
5	54.9	35.4	94.1	132	93.1	59.0	104	92.3	44.3
6	31.8	21.6	65.3	76.3	64.0	36.0	60.1	56.2	27.0



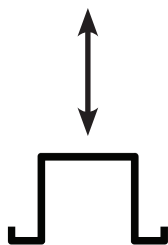
**1.5" Hat Section**

Fy = 50 ksi  
See Page SF-37 for notes.

**FULL SECTION PROPERTIES**

**EFFECTIVE SECTION PROPERTIES (FULLY BRACED)**

Size	Thickness		Weight plf	A in <sup>2</sup>	Ix-x in <sup>4</sup>	rx in	Iy-y in <sup>4</sup>	ry in	Cw in <sup>6</sup>	J in <sup>4</sup>	Ae in <sup>2</sup>	Ixe in <sup>4</sup>	Sxe in <sup>3</sup>	Max k-in	Vay kips
	gauge	in													
1-1/4" x 3-3/8"	22	0.033	0.67	0.20	0.07	0.59	0.14	0.83	0.02	0.00007	0.17	0.06	0.08	2.45	1.70

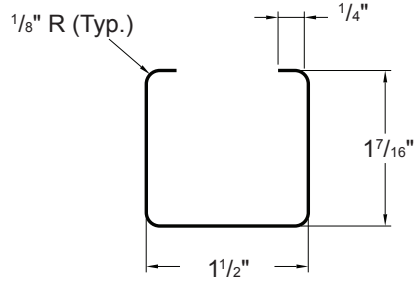


Values (PLF) – 1.5" Hat Section

Span (feet)	One Span			Two Spans			Three or more Spans		
	Deflection	Upward Load	Downward Load	Deflection	Upward Load	Downward Load	Deflection	Upward Load	Downward Load
2	744	340	408	1788	391	400	1407	450	420
3	220	85.3	181	530	178	134	417	207	107
4	93.0	29.7	102	223	87.9	49.4	176	77.2	37.1
5	47.6	13.6	65.4	114	40.2	22.6	90.0	35.3	16.9
6	27.5	-	45.4	66.2	21.8	12.3	52.1	19.2	—

# SECONDARY FRAMING

# Dimensions, Section Properties, Load Tables



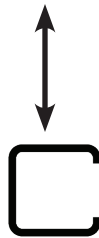
## 1.5" Channel

Fy = 50 ksi  
See Page SF-37 for notes.

### FULL SECTION PROPERTIES

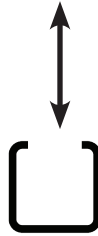
### EFFECTIVE SECTION PROPERTIES (FULLY BRACED)

Size	Thickness		Weight plf	A in <sup>2</sup>	Ix-x in <sup>4</sup>	rx in	Iy-y in <sup>4</sup>	ry in	Cw in <sup>6</sup>	J in <sup>4</sup>	EFFECTIVE SECTION PROPERTIES (FULLY BRACED)				
	gauge	in									Ae in <sup>2</sup>	Ixe in <sup>4</sup>	Sxe in <sup>3</sup>	Max k-in	Vay kips
C 1-1/2" x 1-7/16"	18	0.048	0.73	0.22	0.09	0.63	0.06	0.51	0.03	0.0002	0.19	0.08	0.10	3.06	1.03
U 1-1/2" x 1-7/16"	18	0.048	0.73	0.22	0.06	0.51	0.09	0.63	0.03	0.0002	0.19	0.06	0.07	1.95	1.97



Values (PLF) – 1.5" Channel as 'C' Shape

Span (feet)	One Span			Two Spans			Three or more Spans		
	Deflection	Upward Load	Downward Load	Deflection	Upward Load	Downward Load	Deflection	Upward Load	Downward Load
2	926	510	510	2227	435	435	1775	488	488
3	274	220	220	660	210	210	526	240	240
4	116	115	115	278	122	122	222	140	140
5	59.3	66.5	66.5	143	76.9	76.9	114	86.5	86.5
6	34.3	39.5	39.5	82.5	50.8	50.8	65.8	56.3	56.3

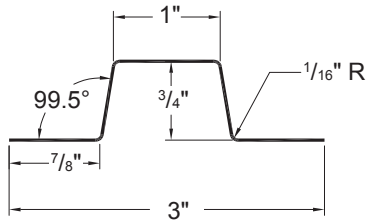


Values (PLF) – 1.5" Channel as 'U' Shape

Span (feet)	One Span			Two Spans			Three or more Spans		
	Deflection	Upward Load	Downward Load	Deflection	Upward Load	Downward Load	Deflection	Upward Load	Downward Load
2	616	325	301	1481	308	318	1165	358	369
3	183	145	108	439	129	143	345	134	166
4	77.0	81.2	44.9	185	63.1	80.8	146	56.1	94.2
5	39.4	52.0	21.7	94.8	34.7	51.8	74.6	27.1	54.2
6	22.8	36.1	12.4	54.9	20.6	36.0	43.2	15.5	32.2

# SECONDARY FRAMING

# Dimensions, Section Properties, Load Tables



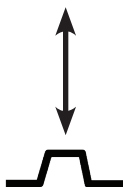
## 3/4" Sub-Girt

Fy = 50 ksi  
See Page SF-37 for notes.

### FULL SECTION PROPERTIES

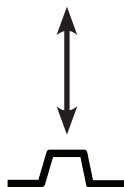
### EFFECTIVE SECTION PROPERTIES (FULLY BRACED)

Size	Thickness		Weight plf	A in <sup>2</sup>	Ix-x in <sup>4</sup>	rx in	Iy-y in <sup>4</sup>	ry in	Cw in <sup>6</sup>	J in <sup>4</sup>	EFFECTIVE SECTION PROPERTIES (FULLY BRACED)				
	gauge	in									Ae in <sup>2</sup>	Ixe in <sup>4</sup>	Sxe in <sup>3</sup>	Max k-in	Vay kips
3/4" x 3"	22	0.033	0.45	0.13	0.01	0.30	0.08	0.78	0.00	0.0000	0.10	0.10	0.03	0.79	0.72
3/4" x 3"	18	0.048	0.68	0.20	0.02	0.30	0.12	0.77	0.00	0.0001	0.18	0.02	0.04	1.18	1.04



### Values (PLF) – 0.75" Sub-Girt 22 ga

Span (feet)	One Span			Two Spans			Three or more Spans		
	Deflection	Upward Load	Downward Load	Deflection	Upward Load	Downward Load	Deflection	Upward Load	Downward Load
2	135	80.0	140	325	136	108	256	158	100
3	40.1	23.5	62.4	96.3	61.5	34.6	75.8	54.1	29.4
4	16.9	10.5	35.1	40.6	27.7	15.6	32.0	24.3	13.1
5	—	—	22.5	20.8	15.5	—	16.4	13.6	—
6	—	—	15.6	12.0	—	—	—	—	—



### Values (PLF) – 0.75" Sub-Girt 18 ga

Span (feet)	One Span			Two Spans			Three or more Spans		
	Deflection	Upward Load	Downward Load	Deflection	Upward Load	Downward Load	Deflection	Upward Load	Downward Load
2	194	173	201	466	195	192	366	226	216
3	57.4	57.8	89.2	138	88.0	82.1	109	102	72.2
4	24.2	27.1	50.2	58.2	49.8	42.0	45.8	58.0	33.9
5	12.4	15.6	32.1	29.8	31.9	25.0	23.4	37.2	19.6
6	—	10.1	22.3	17.2	22.2	16.5	13.6	25.7	12.7

# DENVER, COLORADO

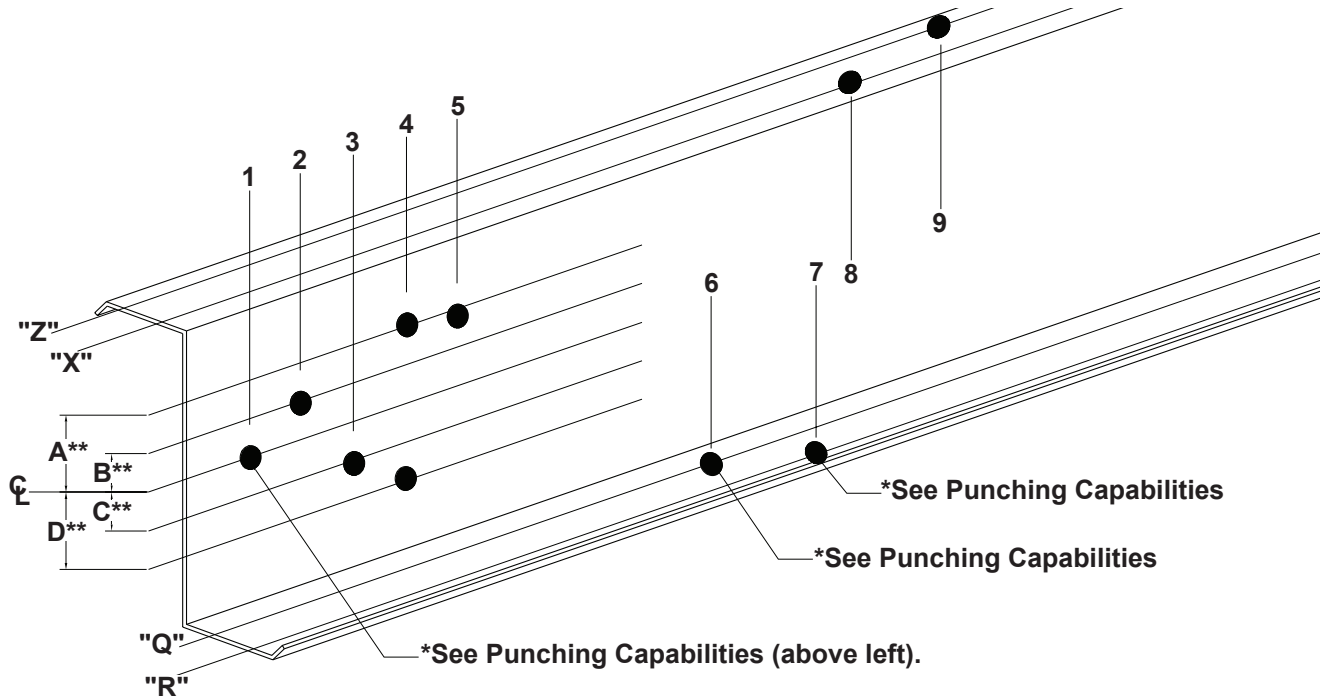
Punching Capabilities	
5/8" Hole	5/8" x 3/4" Horizontal Slot
11/16" Hole	5/8" x 3/4" Vertical Slot
13/16" Hole	

Custom punching is available for Cees, Zees, Channels, Angles and Eave Struts.

Web punching is available in 4" to 24" Cees, Zees and Eave Struts.

Flange punching is available in 4" to 24" Cees, Zees and Eave Struts.

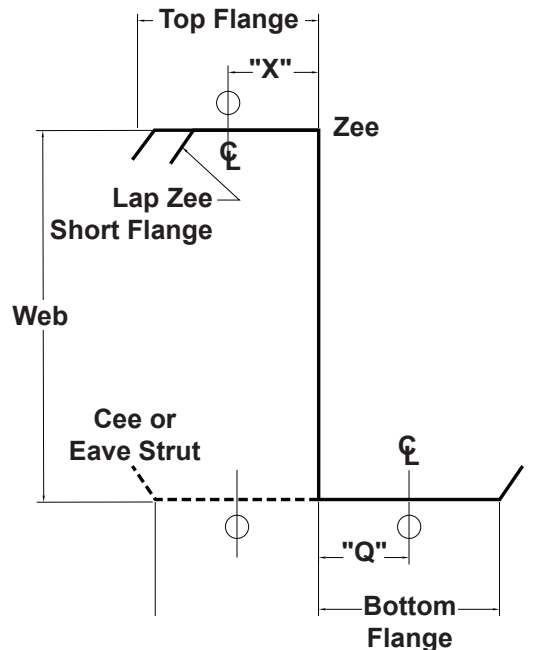
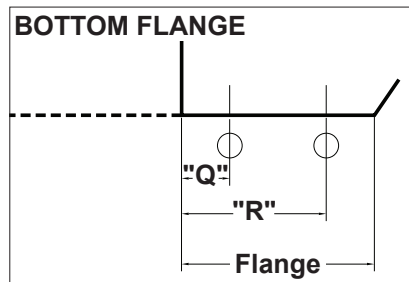
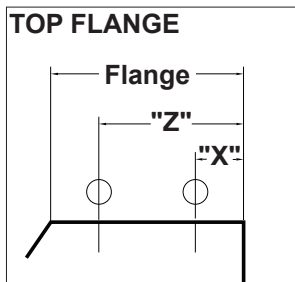
See Pages SF-5 thru SF-7 for limitations and custom options.



\*\*Dimensions A, B, C, and D must be within web of purlin. Contact the Denver Branch for more information (see page SF-3).

## FLANGE PUNCHING

Flange punching can be punched in either "X", "Z", "Q" or "R".  
 "X" must be 3/4" from web and no more than 3/4" from flange.  
 "Z" must be 3/4" from web and no more than 3/4" from flange.  
 "Q" must be 3/4" from web and no more than 3/4" from flange.  
 "R" must be 3/4" from web and no more than 3/4" from flange.



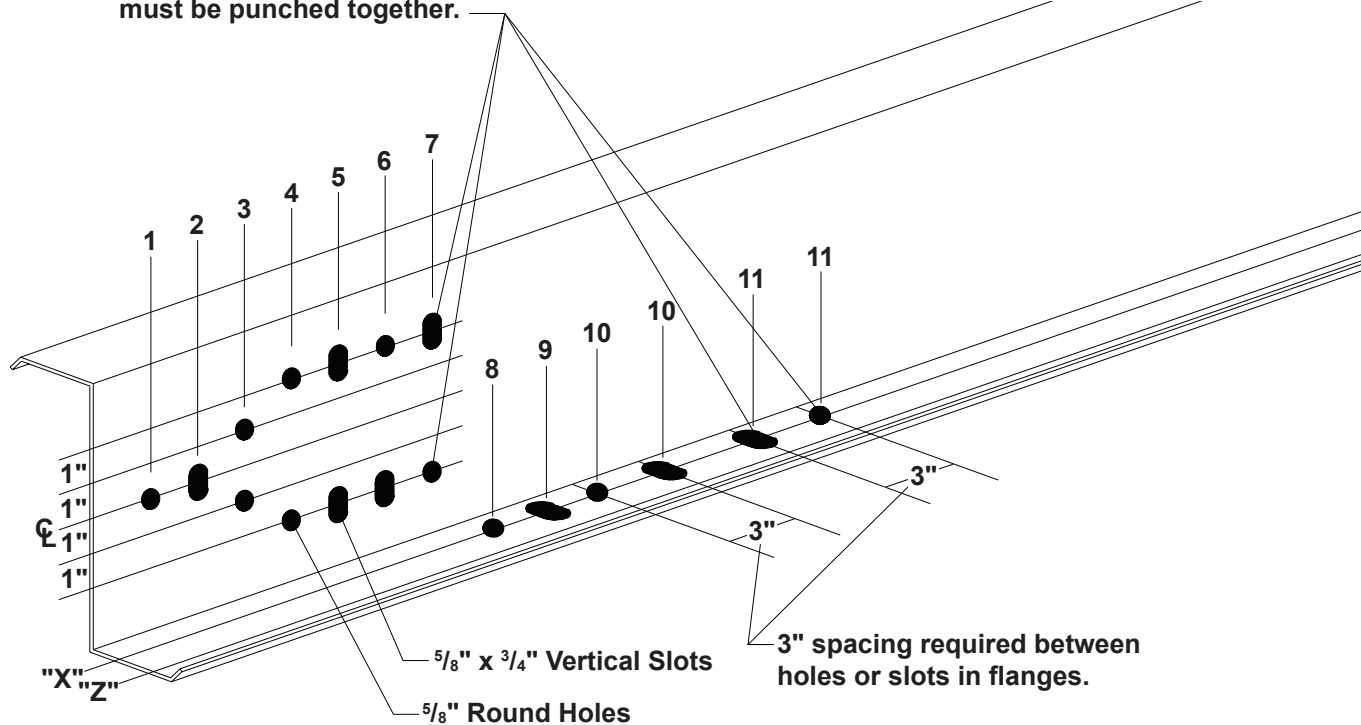
Flange width must be > 27/8" for punching second holes or slots ("Z") "Top Flange" or ("R") "Bottom Flange".

# SELLERSBURG, INDIANA

Punching Capabilities	
5/8" Hole	5/8" x 3/4" Horizontal Slot
1 1/16" Hole	5/8" x 3/4" Vertical Slot
1 3/16" Hole	1 3/16" x 1 1/4" Vertical Slot

Any combination of punching (1-11) can be punched together.

Both holes or slots in 3, 4, 5, 6, 7, 10 and 11 must be punched together.



Custom punching is available for Cees, Zees, and Eave Struts.

Web punching is available in 4" to 12" Cees, Zees and Eave Struts. Punching is available only on center line of web for 4" member.

Flange punching is available in 6" to 12" Cees, Zees and Eave Struts only.

See Pages SF-5 thru SF-7 for limitations and custom options.

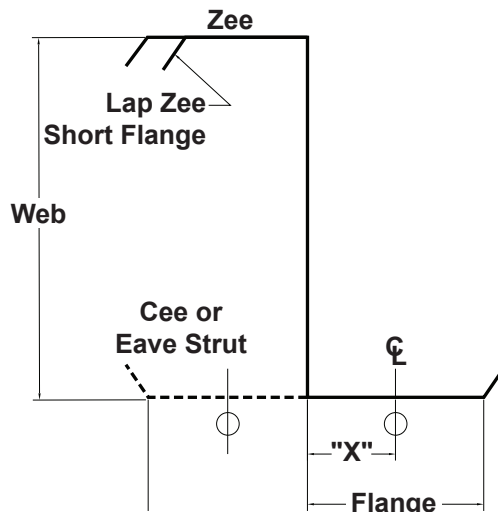
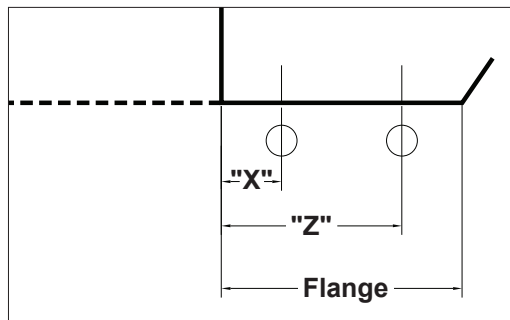
## FLANGE PUNCHING

Flange punching can be punched in either "X" or "Z".

"X" must be 1 1/4", 1 3/4" or 2" from web.

"Z" must be 2 1/4", 3" or 4" from web.

Flange width must be 2 7/8", 3", 3 1/8", 3 3/8", 3 1/2", 3 7/8", 4" or 5" for punching second holes or slots ("Z").



# TEMPLE, TEXAS

Any combination of punching with the exception of (8) can be punched together.

Both holes or slots in 3, 4, 5, 6, 7, 8, 14 and 15 must be punched together.

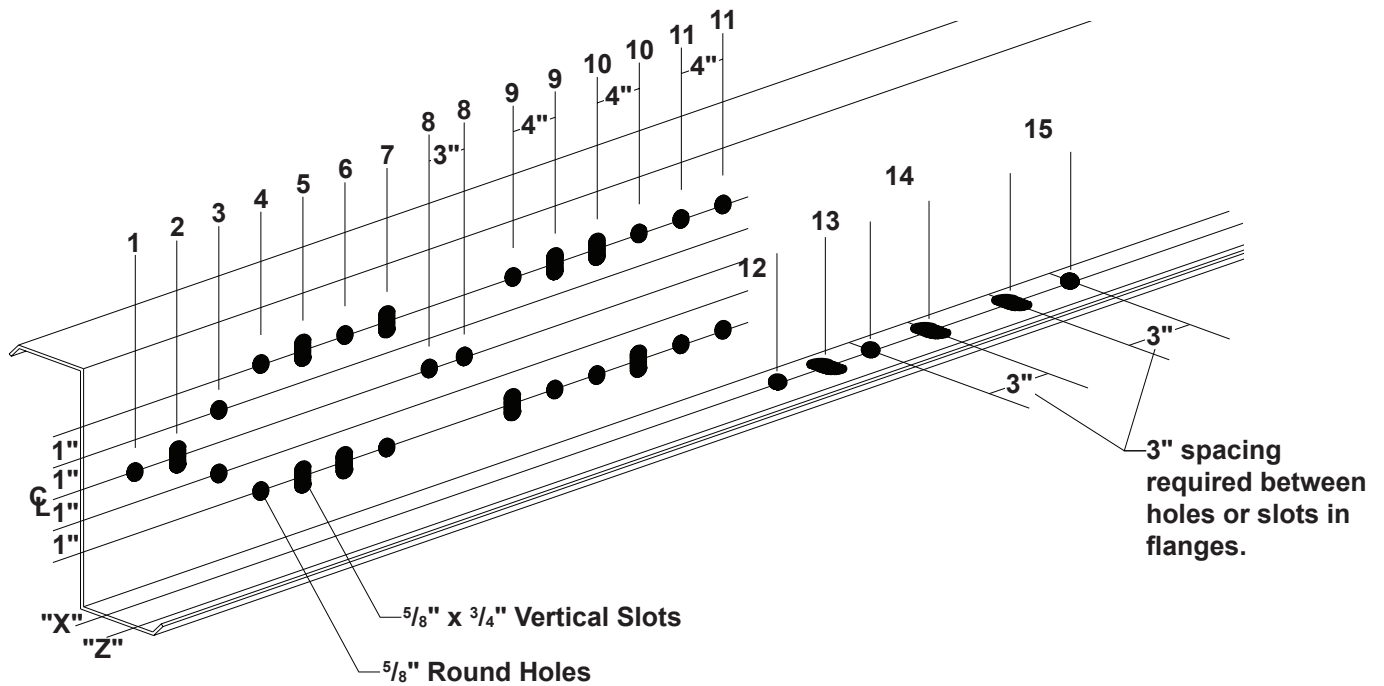
All four holes or slots in 9, 10 and 11 must be punched together.

Custom punching is available for Cees, Equal Leg Zees, Lap Zees and Eave Struts.

Web punching is available in 4" to 12" Cees, Zees and Eave Struts. Punching is available only on center line of web for 4" member.

Flange punching is available in 6" to 12" Cees, Zees and Eave Struts only.

See Pages SF-5 thru SF-7 for limitations and custom options.



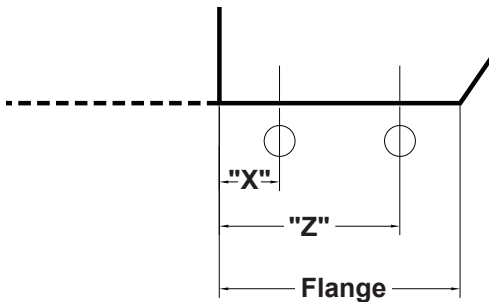
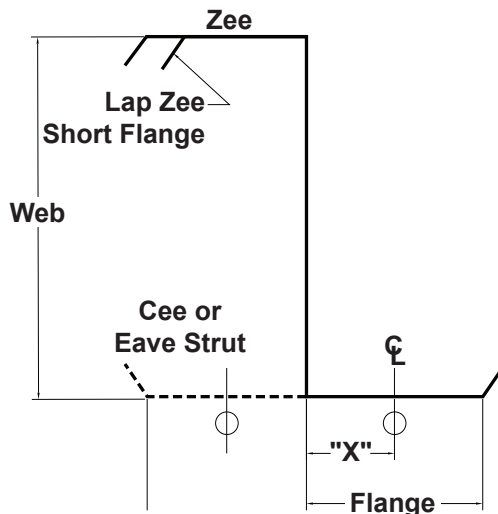
## FLANGE PUNCHING

Flange punching can be punched in either "X" or "Z".

"X" must be 1 1/4", 1 3/4" or 2" from web.

"Z" must be 2 1/4", 3" or 4" from web.

Flange width must be 2 7/8", 3", 3 1/8", 3 3/8", 3 1/2", 3 7/8", 4" or 5" for punching second holes or slots ("Z").



# WOODLAND, CALIFORNIA

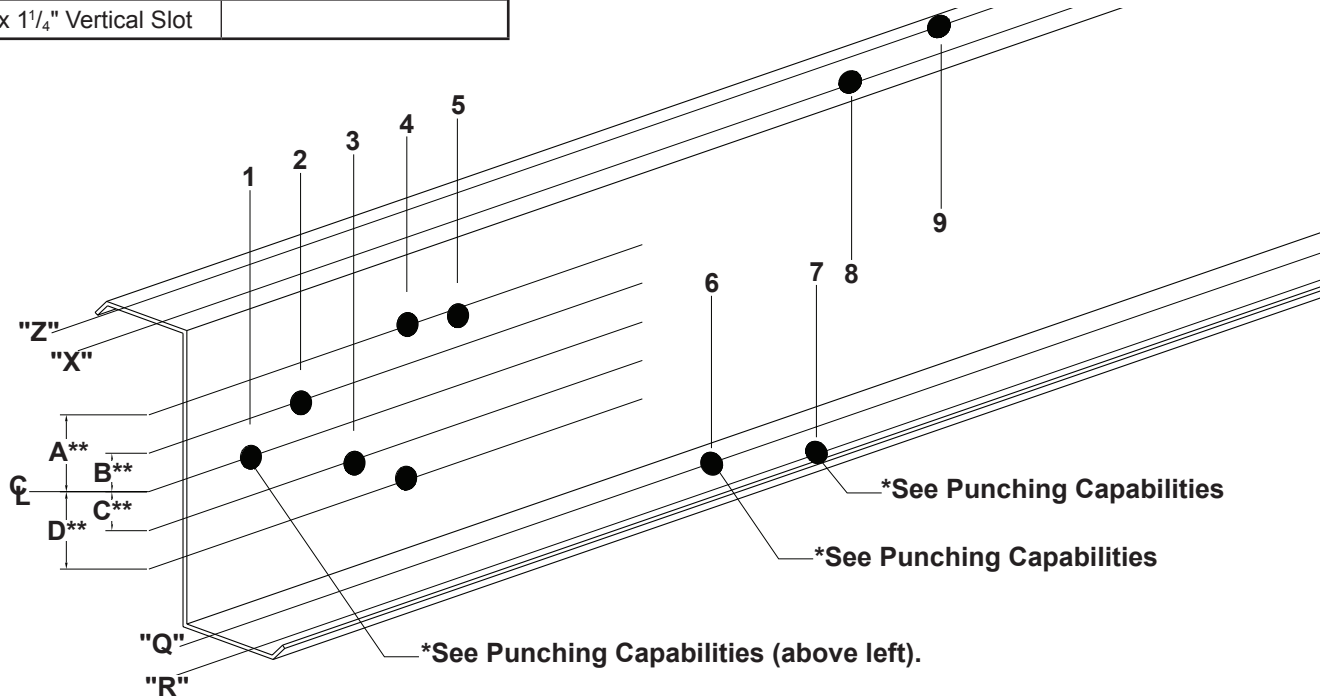
Custom punching is available for Cees, Equal Leg Zees, Lap Zees and Eave Struts.

Web punching is available in 4" to 14" Cees, Zees and Eave Struts.

Flange punching is available in 4" to 14" Cees, Zees and Eave Struts.

See Pages SF-5 thru SF-7 for limitations and custom options.

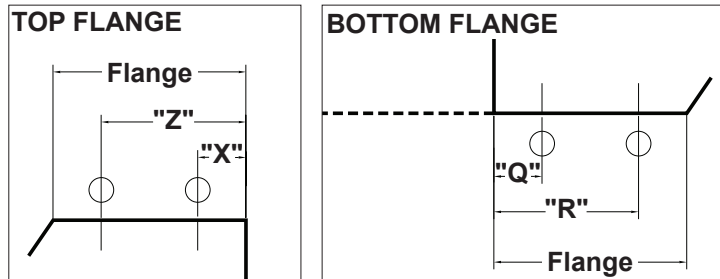
Punching Capabilities	
5/8" Hole	11/16" Hole
5/8" x 3/4" Vertical Slot	1 1/16" Hole
5/8" x 3/4" Horizontal Slot	13/16" x 3/4" Vertical Slot
13/16" Hole	7/16" Hole
13/16" x 1/4" Vertical Slot	



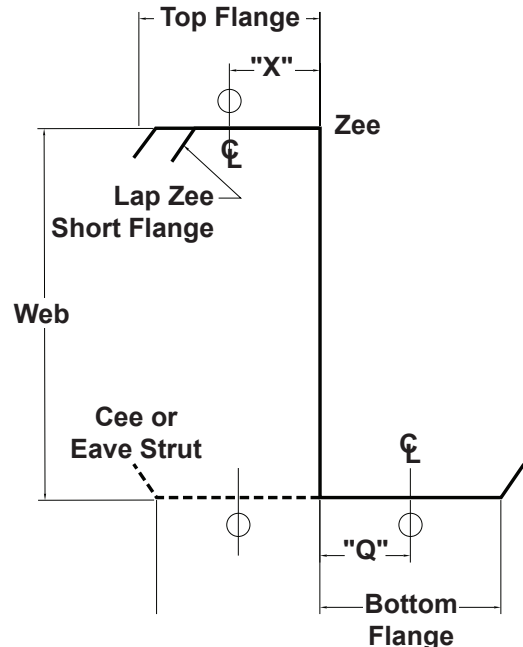
\*\*Dimensions A, B, C and D must be within web of purlin, please contact the Woodland Branch for more information (see page SF-3).

## FLANGE PUNCHING

Flange punching can be punched in either "X", "Z", "Q" or "R".  
 "X" must be 3/4" from web and no more than 3/4" from flange.  
 "Z" must be 3/4" from web and no more than 3/4" from flange.  
 "Q" must be 3/4" from web and no more than 3/4" from flange.  
 "R" must be 3/4" from web and no more than 3/4" from flange.



Flange width must be 2 7/8", 3", 3 1/8", 3 3/8", 3 1/2", 3 7/8" or 4" for punching second holes or slots ("Z") "Top Flange" or ("R") "Bottom Flange".



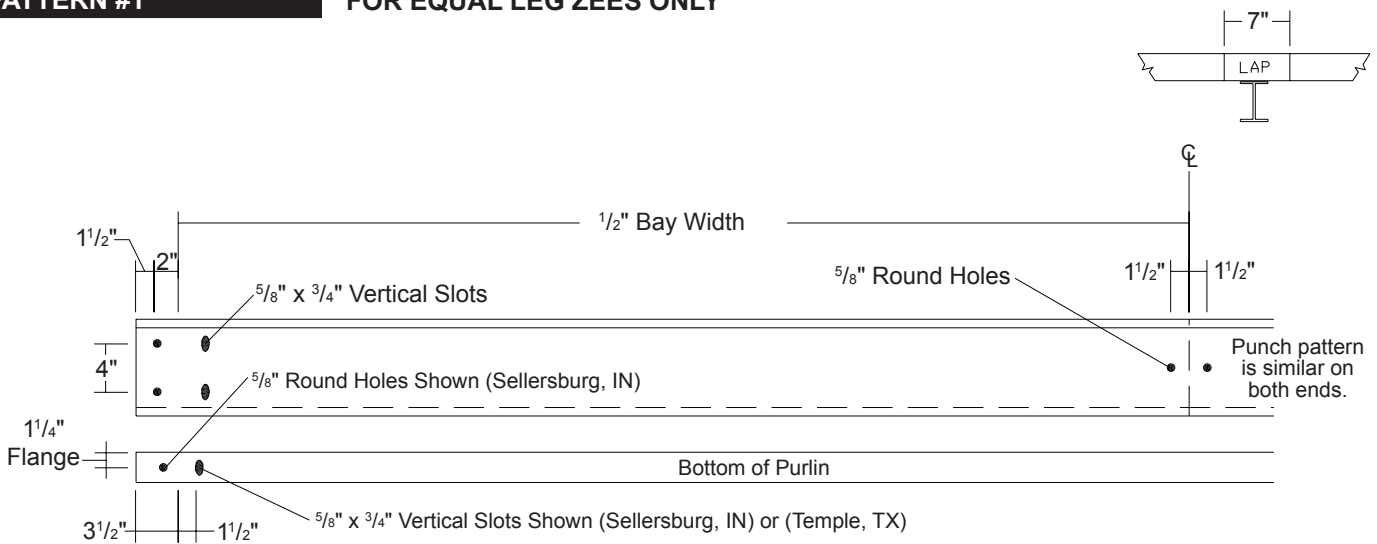
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# SECONDARY FRAMING

# Cee and Zee Punch Patterns

## PATTERN #1

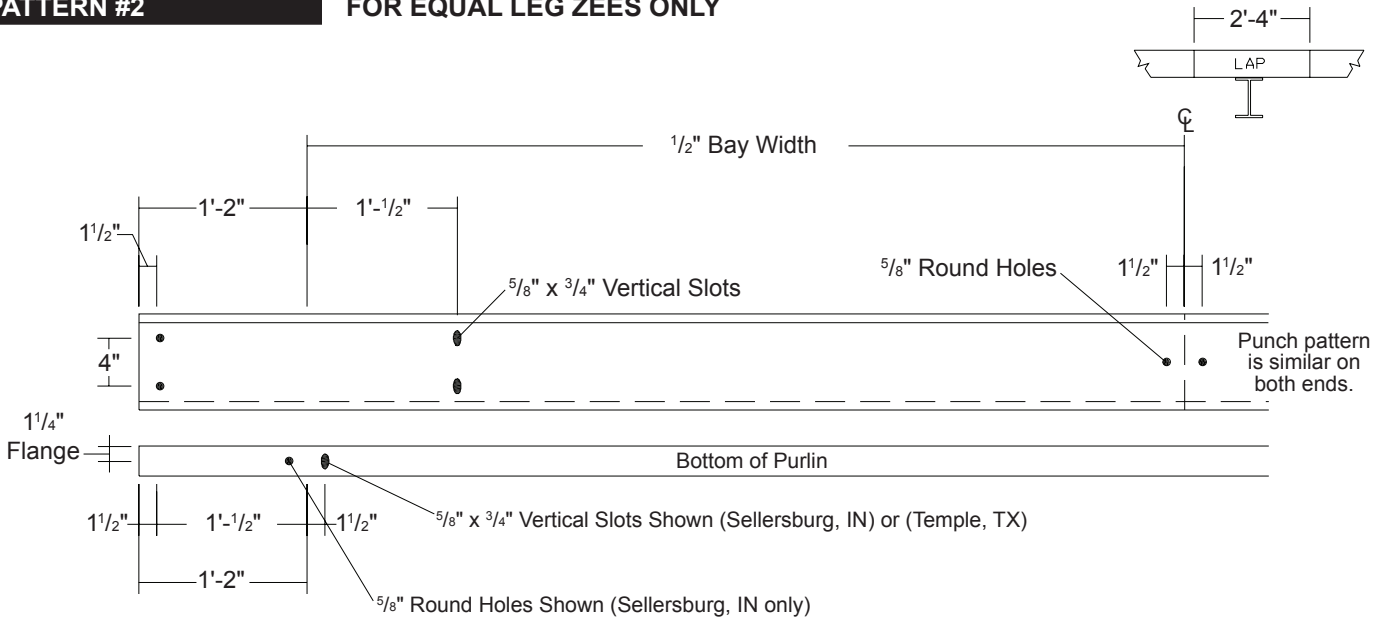
### FOR EQUAL LEG ZEES ONLY



Standard punch patterns not available on 4" web members.

## PATTERN #2

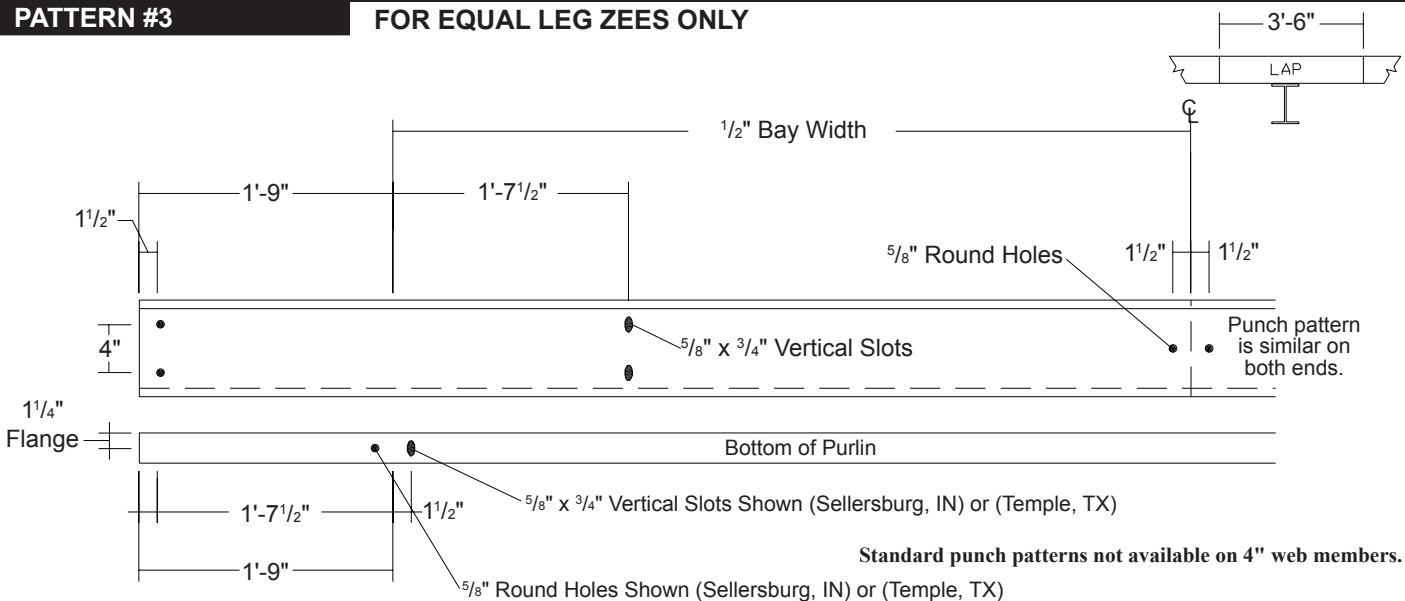
### FOR EQUAL LEG ZEES ONLY



Standard punch patterns not available on 4" web members.

## PATTERN #3

### FOR EQUAL LEG ZEES ONLY



Standard punch patterns not available on 4" web members.

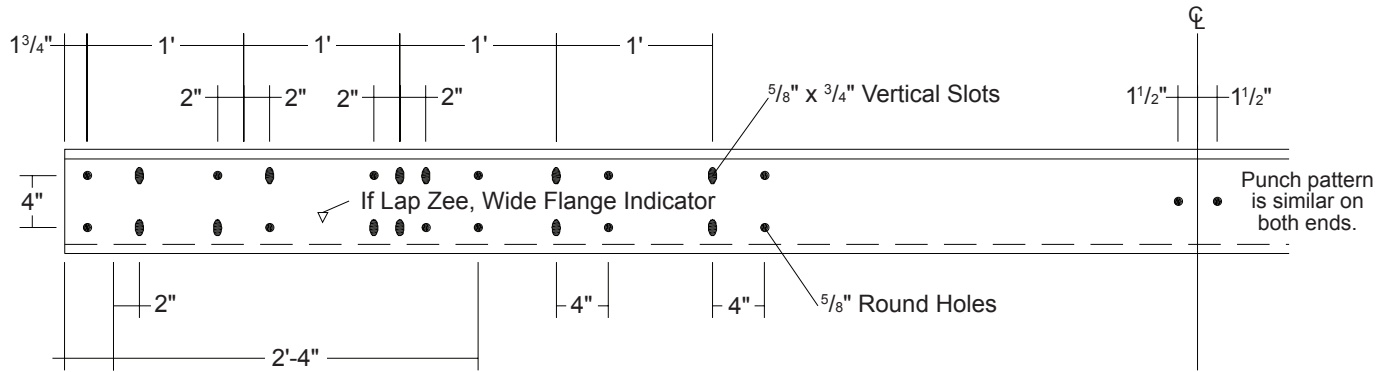
# SECONDARY FRAMING

# Cee and Zee Punch Patterns

**PATTERN #A**

**FOR EQUAL LEG AND LAP ZEES**

**For 2'-3<sup>1</sup>/<sub>2</sub>" or 4'-3<sup>1</sup>/<sub>2</sub>" Laps**



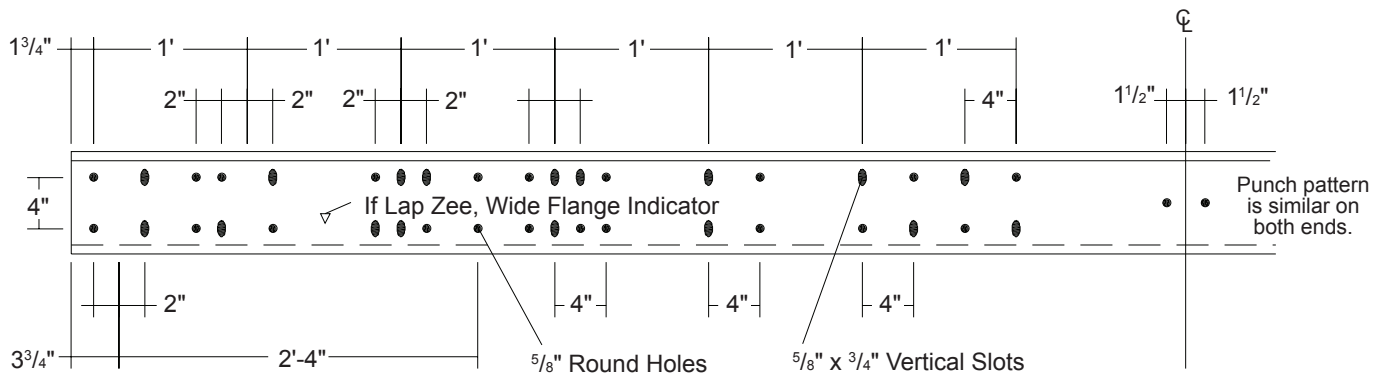
No flange punching for pattern #A.

Standard punch patterns not available on 4" web members.

**PATTERN #B**

**FOR EQUAL LEG AND LAP ZEES**

**For 2'-3<sup>1</sup>/<sub>2</sub>", 4'-3<sup>1</sup>/<sub>2</sub>" or 6'-3<sup>1</sup>/<sub>2</sub>" Laps**

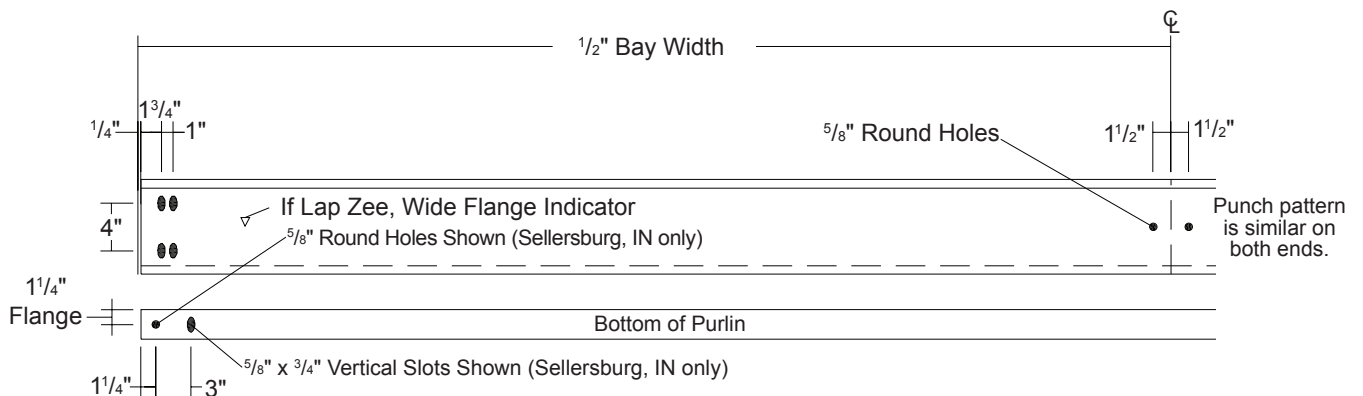
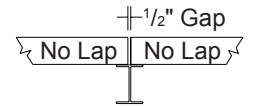


No flange punching for pattern #B.

Standard punch patterns not available on 4" web members.

**PATTERN #C**

**FOR CEES, EQUAL LEG AND LAP ZEES**



Standard punch patterns not available on 4" web members.

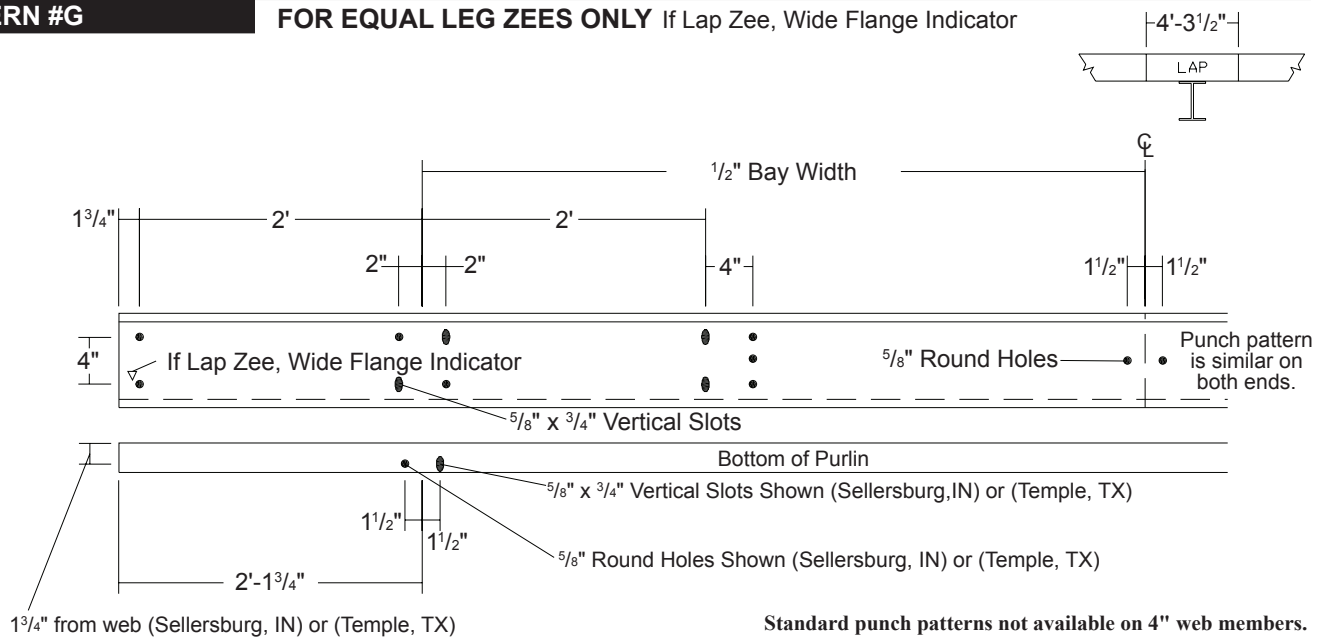


# SECONDARY FRAMING

# Cee and Zee Punch Patterns

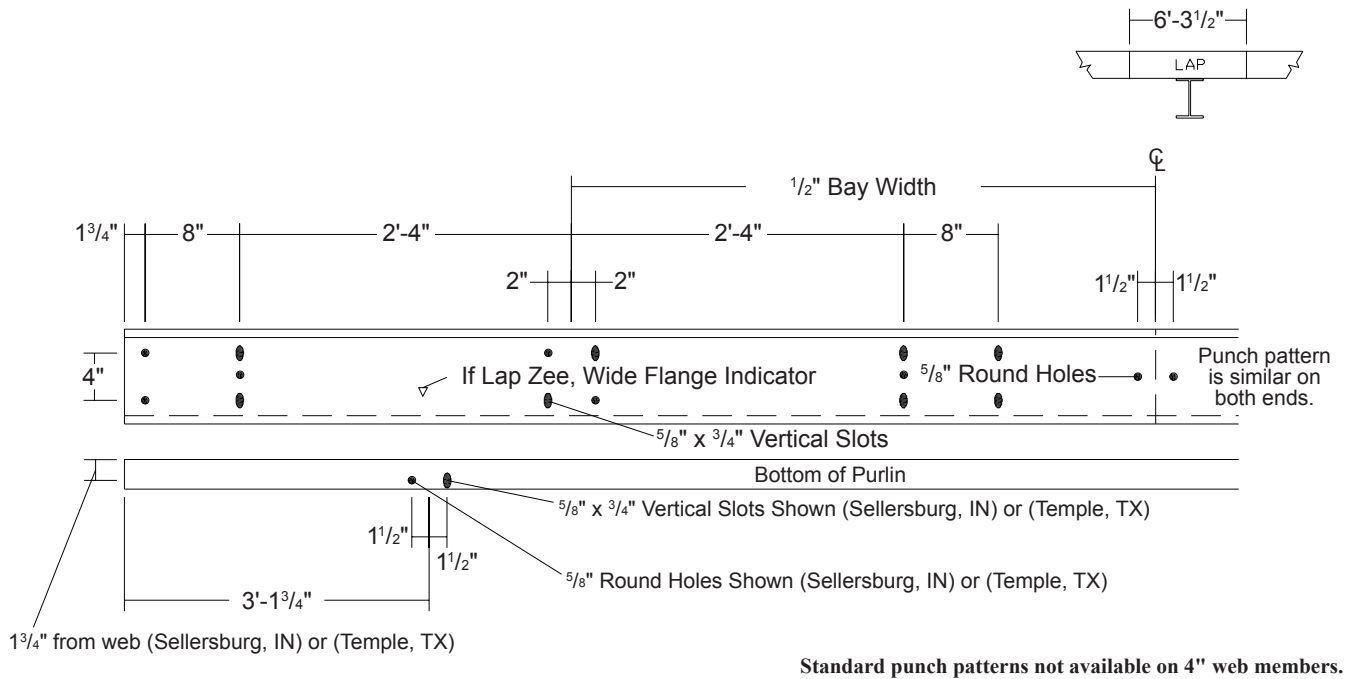
## PATTERN #G

**FOR EQUAL LEG ZEES ONLY** If Lap Zee, Wide Flange Indicator



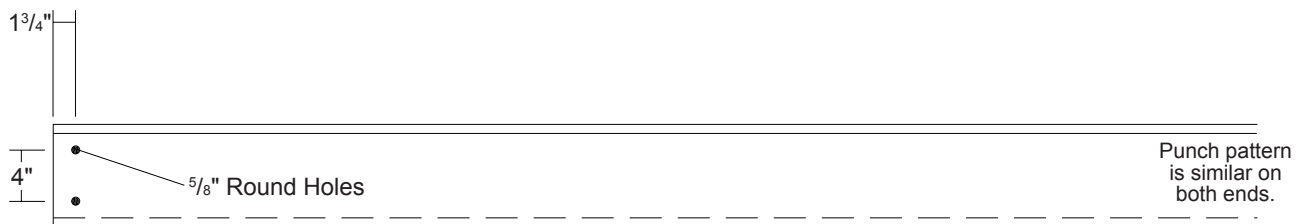
## PATTERN #H

**FOR EQUAL LEG ZEES ONLY**



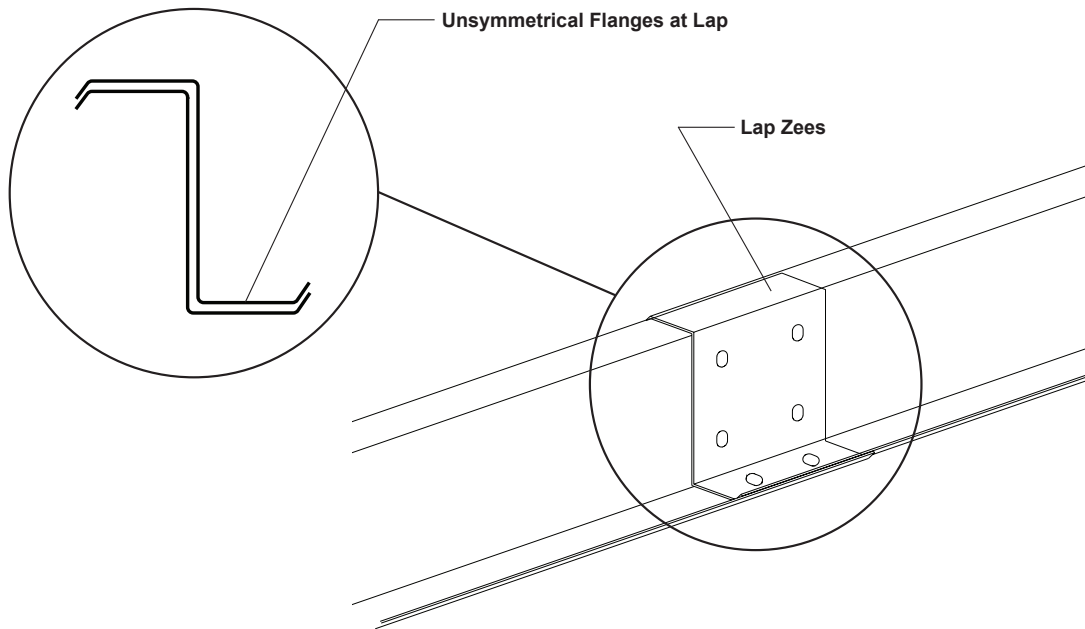
## PATTERN #J

**FOR CEES, EQUAL LEG AND LAP ZEES**



Secondary Framing (members with unsymmetrical flanges) are available in several web sizes including 4", 6", 8", 9", 10" and 12" and several flange sizes, including 2-1/2", 3", 3-1/2" and 4". Metal Sales offers members in various gauges and finishes.

In addition, members can be ordered to your desired length with standard or custom punching.



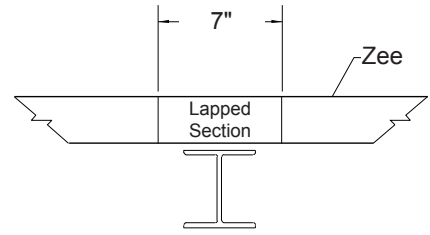
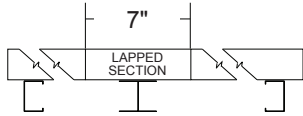
# SECONDARY FRAMING

# Equal Leg Zee Lap Information

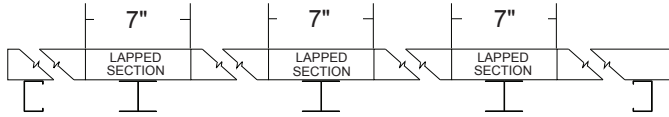
## SHORT LAP

FOR EQUAL LEG ZEES ONLY

### TWO SPAN



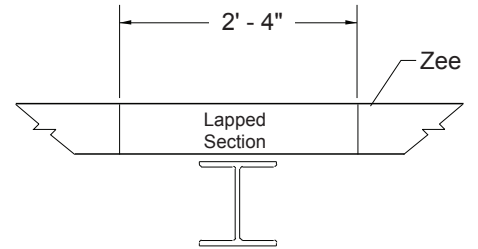
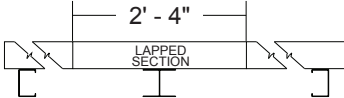
### 3 OR MORE SPANS



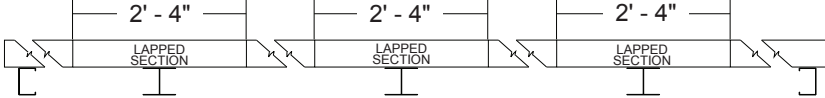
## LONG LAP

FOR EQUAL LEG ZEES ONLY

### TWO SPAN



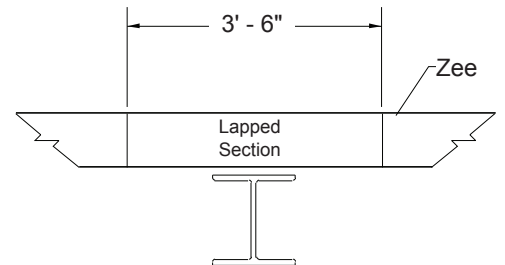
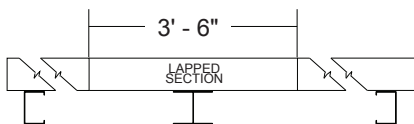
### 3 OR MORE SPANS



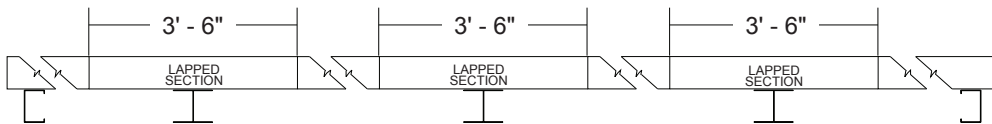
## MAX LAP

FOR EQUAL LEG ZEES ONLY

### TWO SPAN

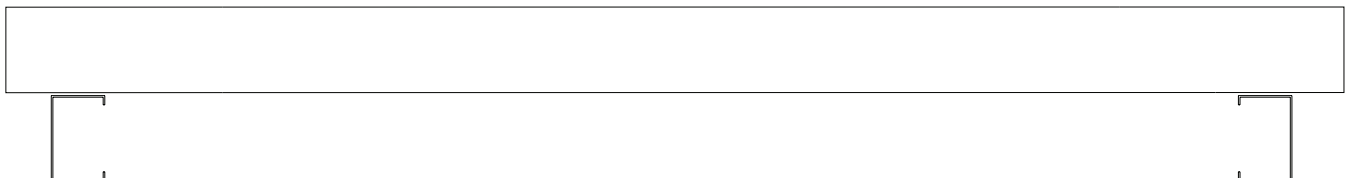


### 3 OR MORE SPANS



## ONE SPAN (NO LAP)

FOR EQUAL LEG ZEES ONLY

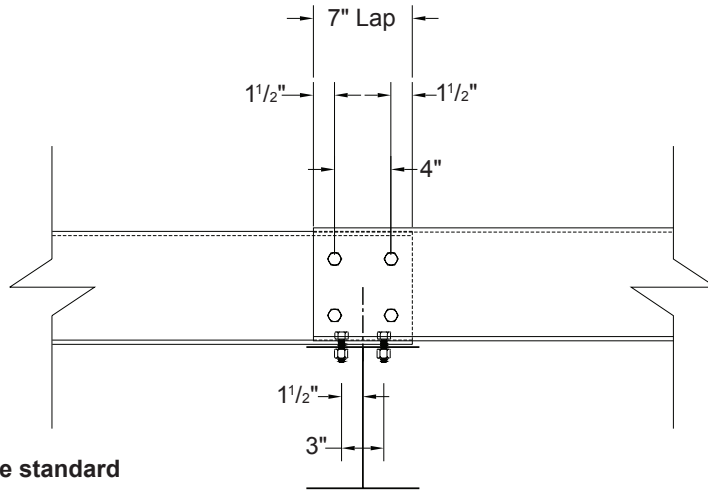


# SECONDARY FRAMING

# Equal Leg Zee Lap Information

## SHORT LAP

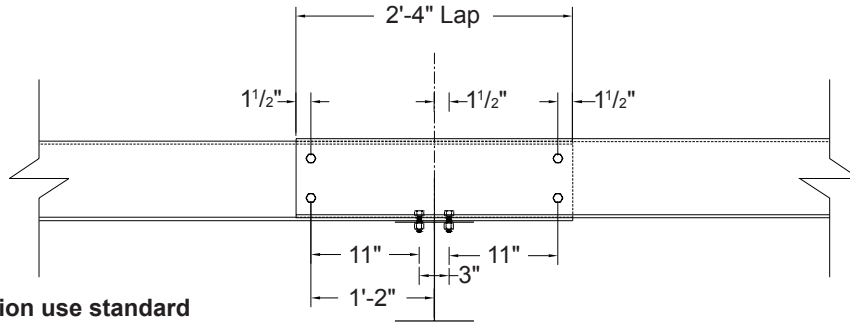
### FOR EQUAL LEG ZEES ONLY



For required lap condition use standard punch pattern #1.

## LONG LAP

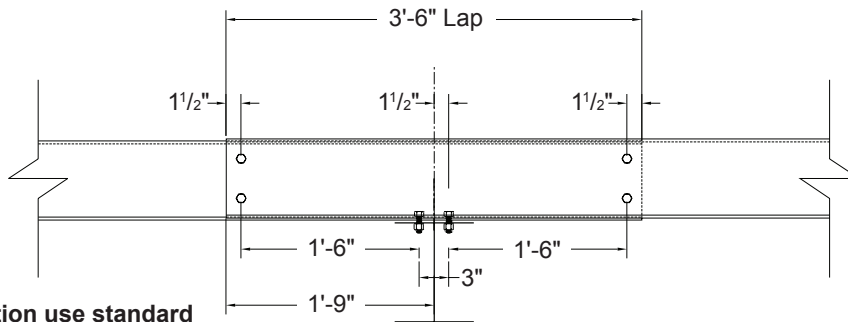
### FOR EQUAL LEG ZEES ONLY



For required lap condition use standard punch pattern #2.

## MAX LAP

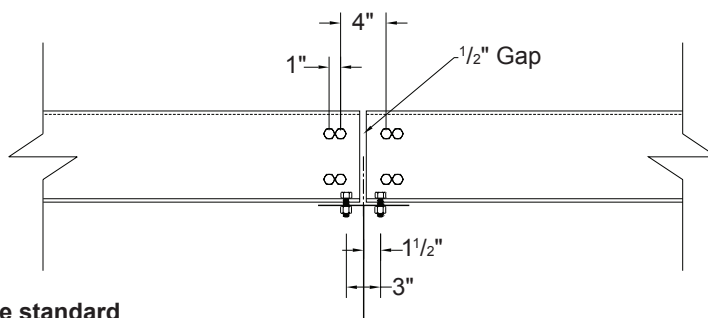
### FOR EQUAL LEG ZEES ONLY



For required lap condition use standard punch pattern #3.

## ONE SPAN (NO LAP)

### FOR EQUAL LEG ZEES ONLY



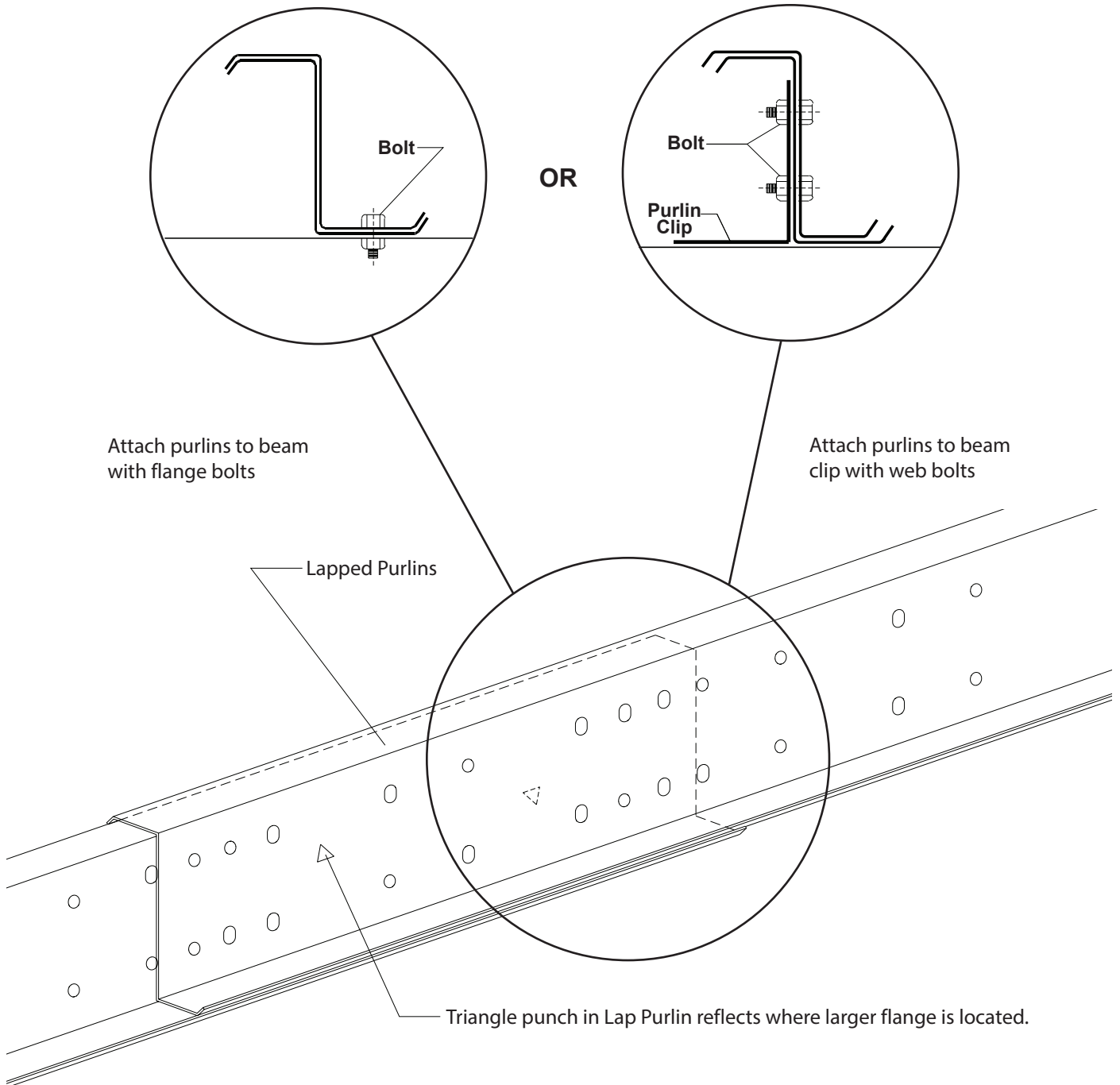
For required lap condition use standard punch pattern #C.

## SECONDARY FRAMING

## Lap Zee Lap Information

Lap Zee Secondary Framing (members with unsymmetrical flanges) are available in 4", 6", 8", 9", 10" and 12" web sizes and available in  $2\frac{1}{8}"$  -  $2\frac{3}{8}"$ ,  $2\frac{5}{8}"$  -  $2\frac{7}{8}"$ ,  $3\frac{1}{8}"$  -  $3\frac{3}{8}"$  and  $3\frac{5}{8}"$  -  $3\frac{7}{8}"$  flange sizes.

Metal Sales offers members in various gauges and finishes. In addition, members can be ordered to your desired length with standard or custom punching.



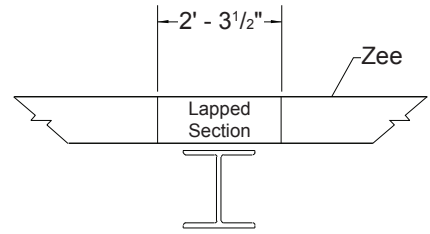
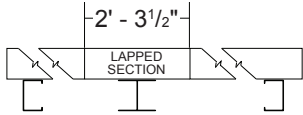
# SECONDARY FRAMING

# Lap Zee Lap Information

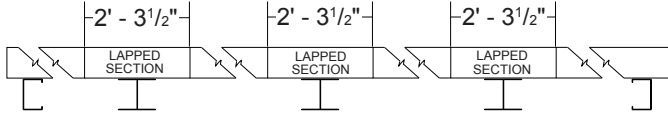
## LONG LAP

## FOR LAP ZEES ONLY

### TWO SPAN

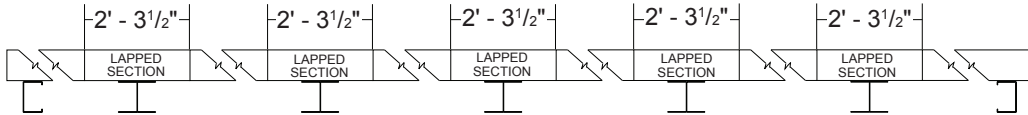


### FOUR SPAN



For required lap condition use standard punch pattern #A, #D or #F.

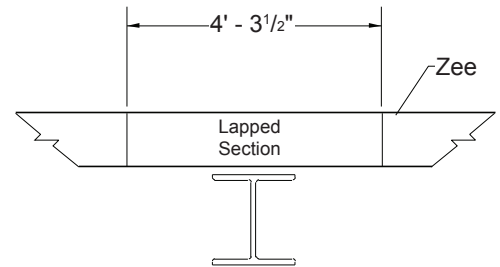
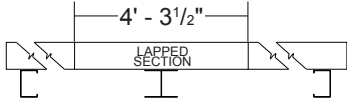
### SIX SPAN



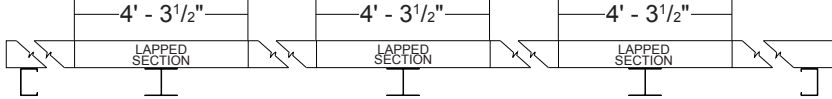
## MAX LAP

## FOR LAP ZEES ONLY

### TWO SPAN

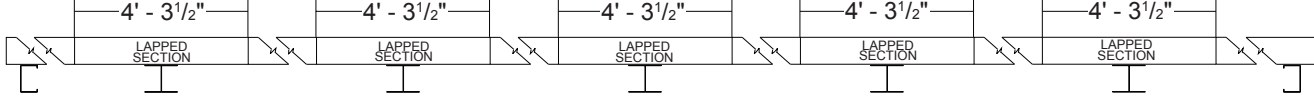


### FOUR SPAN



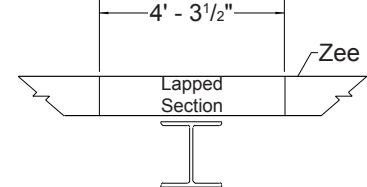
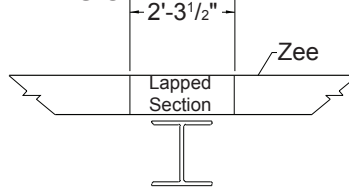
For required lap condition use standard punch pattern #A or #D.

### SIX SPAN

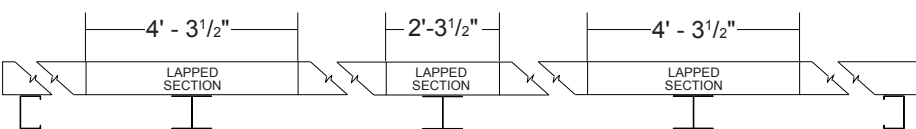


## STANDARD LAP

## FOR LAP ZEES ONLY

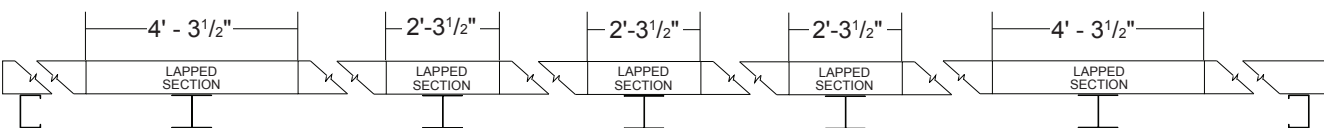


### FOUR SPAN



For required lap condition use standard punch pattern #A or #D.

### SIX SPAN

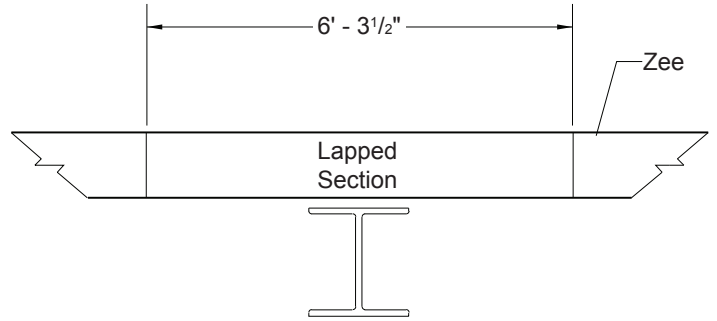


# SECONDARY FRAMING

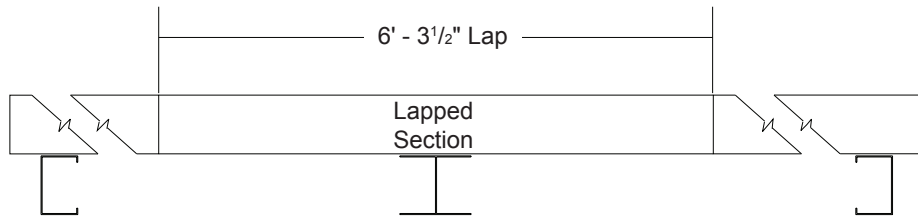
# Lap Zee Lap Information

## SUPER LAP

## FOR LAP ZEES ONLY



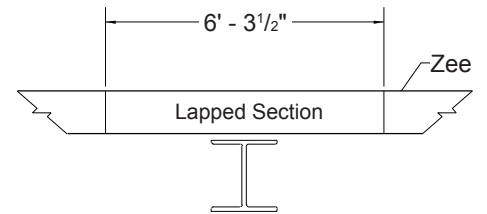
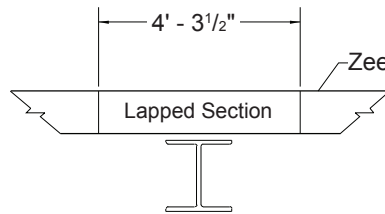
## TWO SPAN



For required lap condition use standard punch pattern #B, #E or #H.

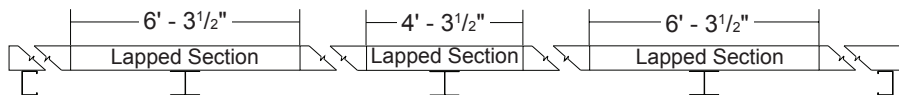
## EXTENDED LAP

## FOR LAP ZEES ONLY

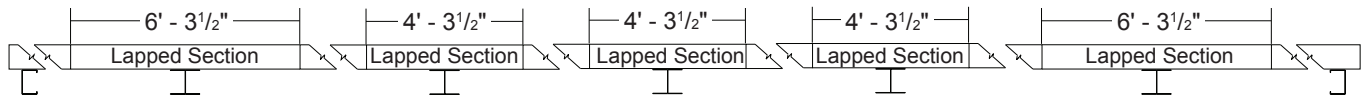


For required lap condition use standard punch pattern #B or #E.

## FOUR SPAN

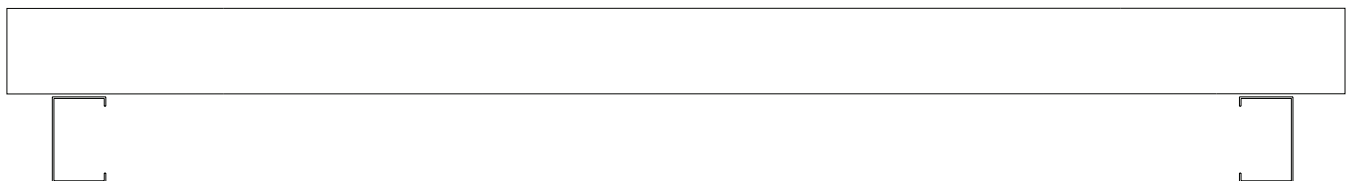


## SIX SPAN



## ONE SPAN

## FOR LAP ZEES ONLY

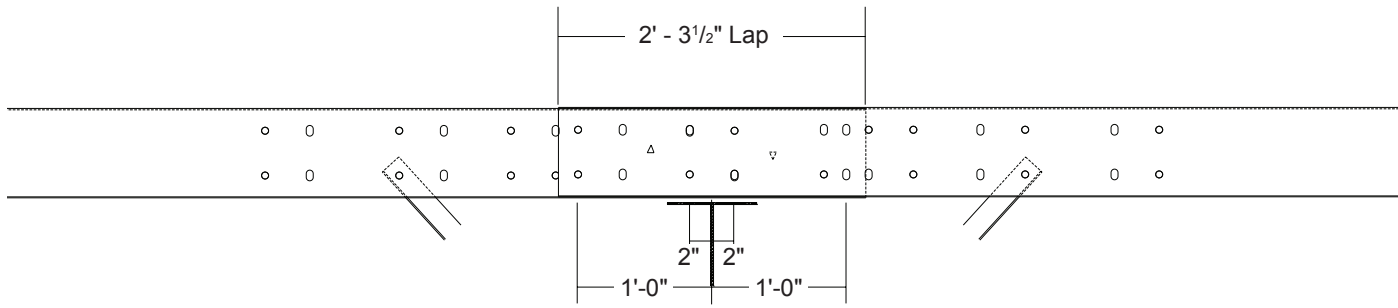


# SECONDARY FRAMING

# Lap Zee Lap Information

## LONG LAP

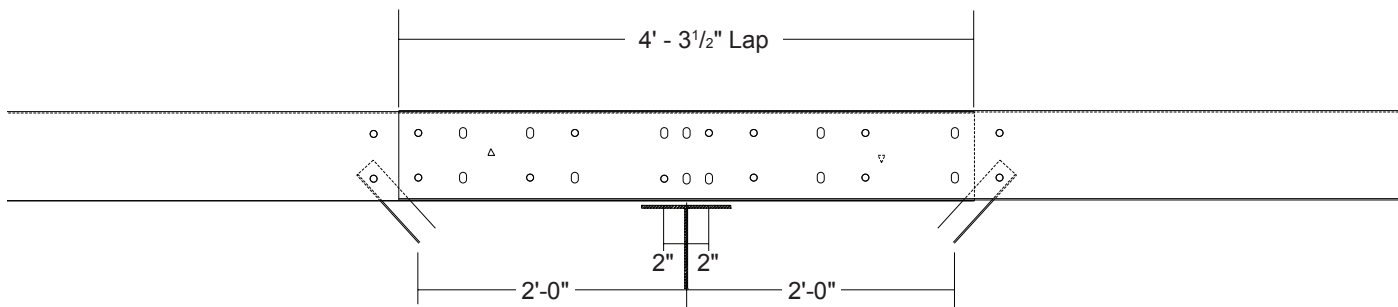
## FOR LAP ZEES ONLY



For required lap condition use standard punch pattern #A, #D, or #F.

## MAX LAP

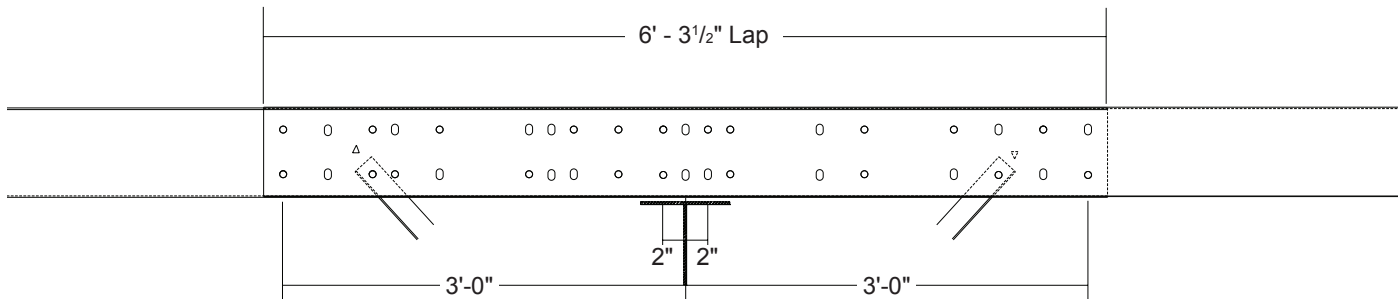
## FOR LAP ZEES ONLY



For required lap condition use standard punch pattern #A, #D, or #G.

## SUPER LAP

## FOR LAP ZEES ONLY



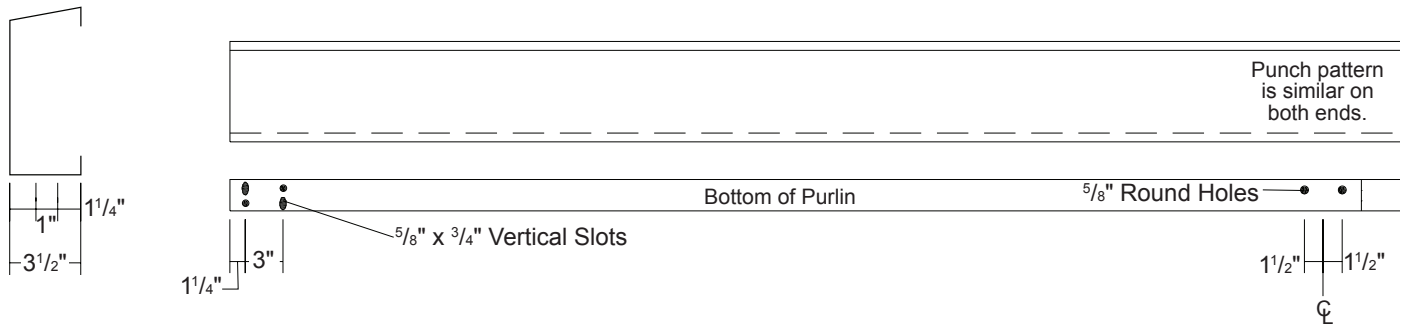
For required lap condition use standard punch pattern #B, #E, or #H.

# SECONDARY FRAMING

# Eave Strut Punch Patterns

## PATTERN #S 3 C

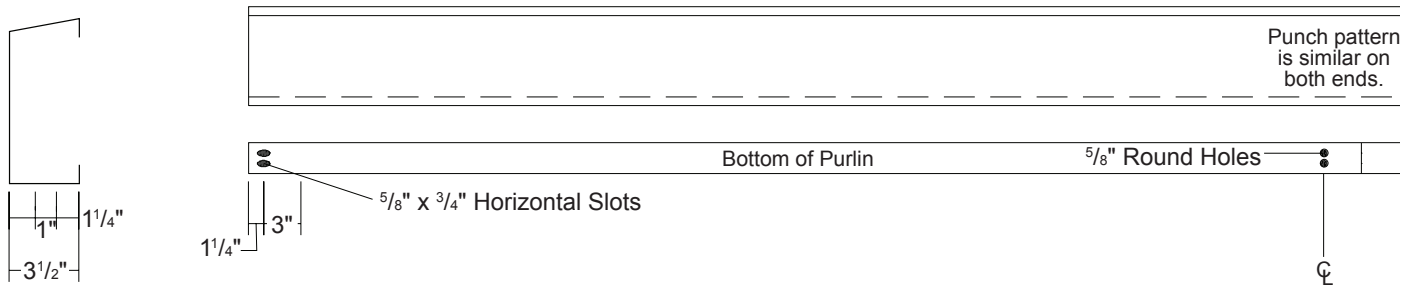
Available at Denver, Sellersburg, Temple and Woodland



Punch pattern for eave struts with 3.5" flange only.

## PATTERN #S 3 D

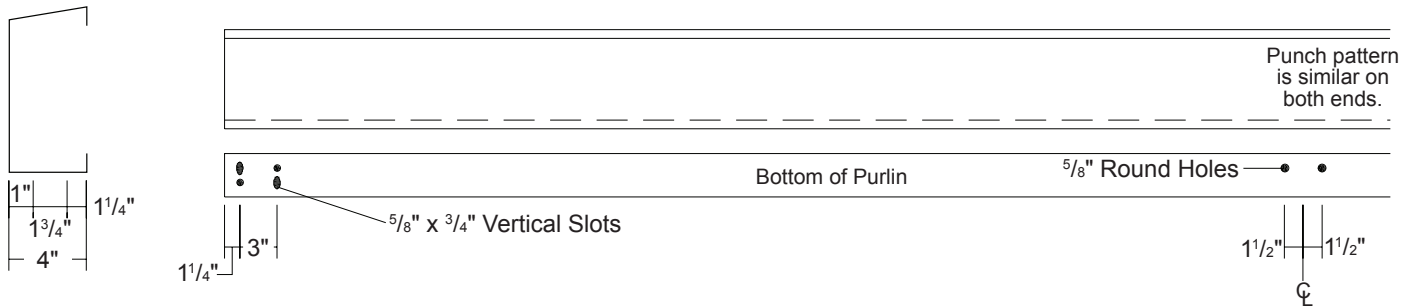
Available at Denver, Sellersburg, Temple and Woodland



Punch pattern for eave struts with 3.5" flange only.

## PATTERN #S 4

4" Flange Eave Struts available at Denver, Sellersburg, Temple and Woodland



Punch pattern for eave struts with 4" flange only.

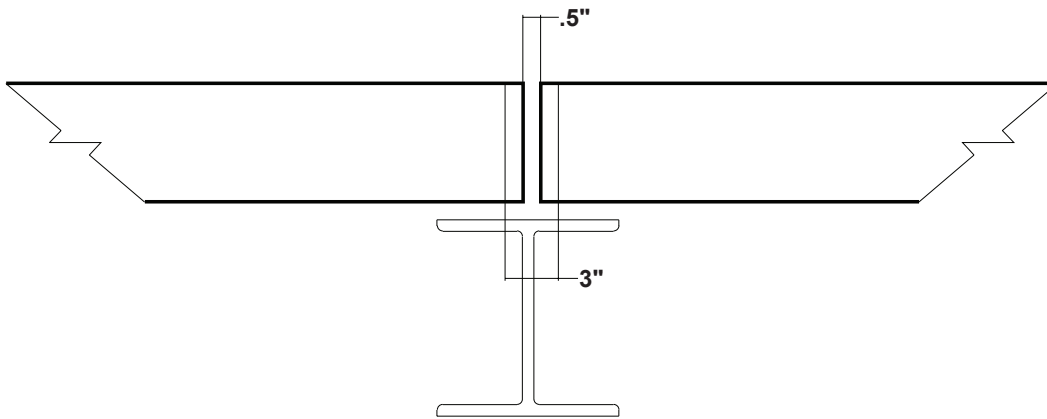
## PATTERN #S 5

5" Flange Eave Struts available at Denver, Sellersburg, Temple and Woodland



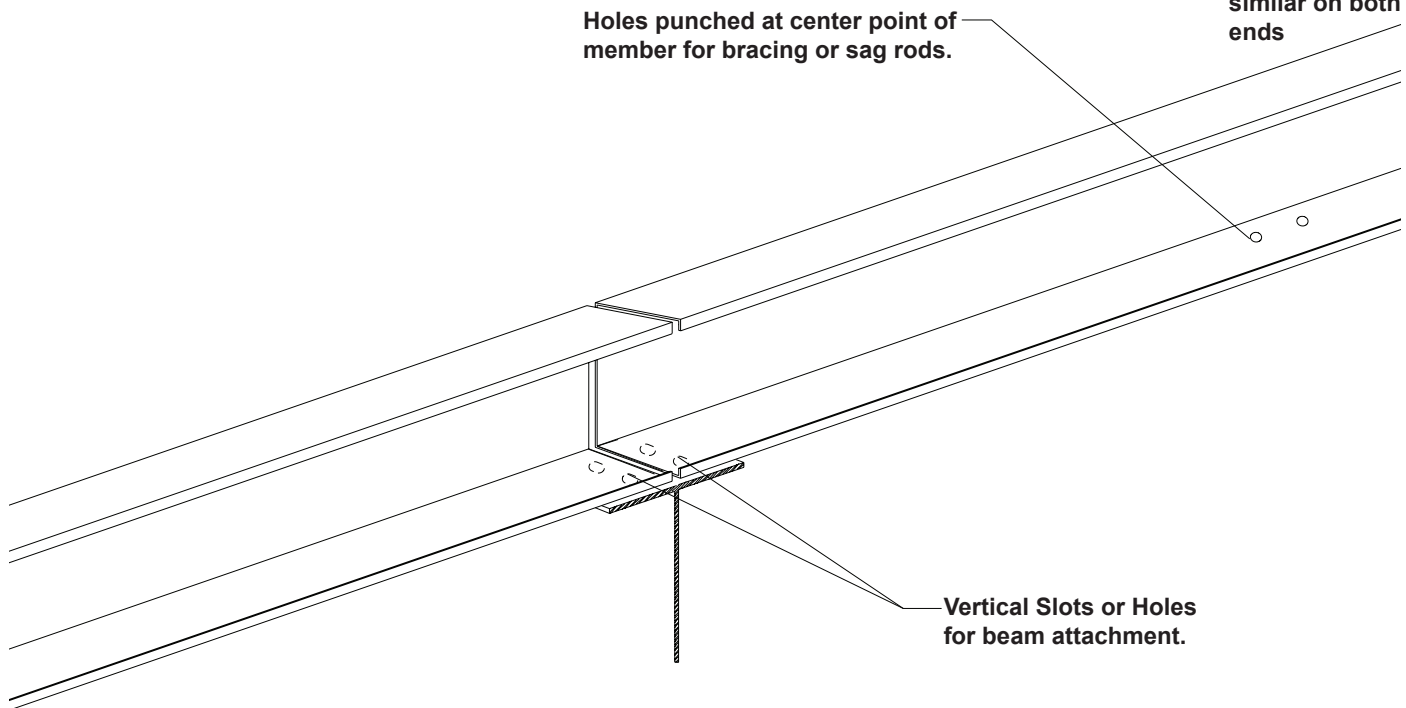
Punch pattern for eave struts with 5" flange only.

Use Eave Strut  
Punch Patterns:  
#S 3 C  
#S 3 D  
#S 4  
#S 5  
See Page SF-105 for  
information.



Holes punched at center point of  
member for bracing or sag rods.

Punch Pattern  
similar on both  
ends



Vertical Slots or Holes  
for beam attachment.

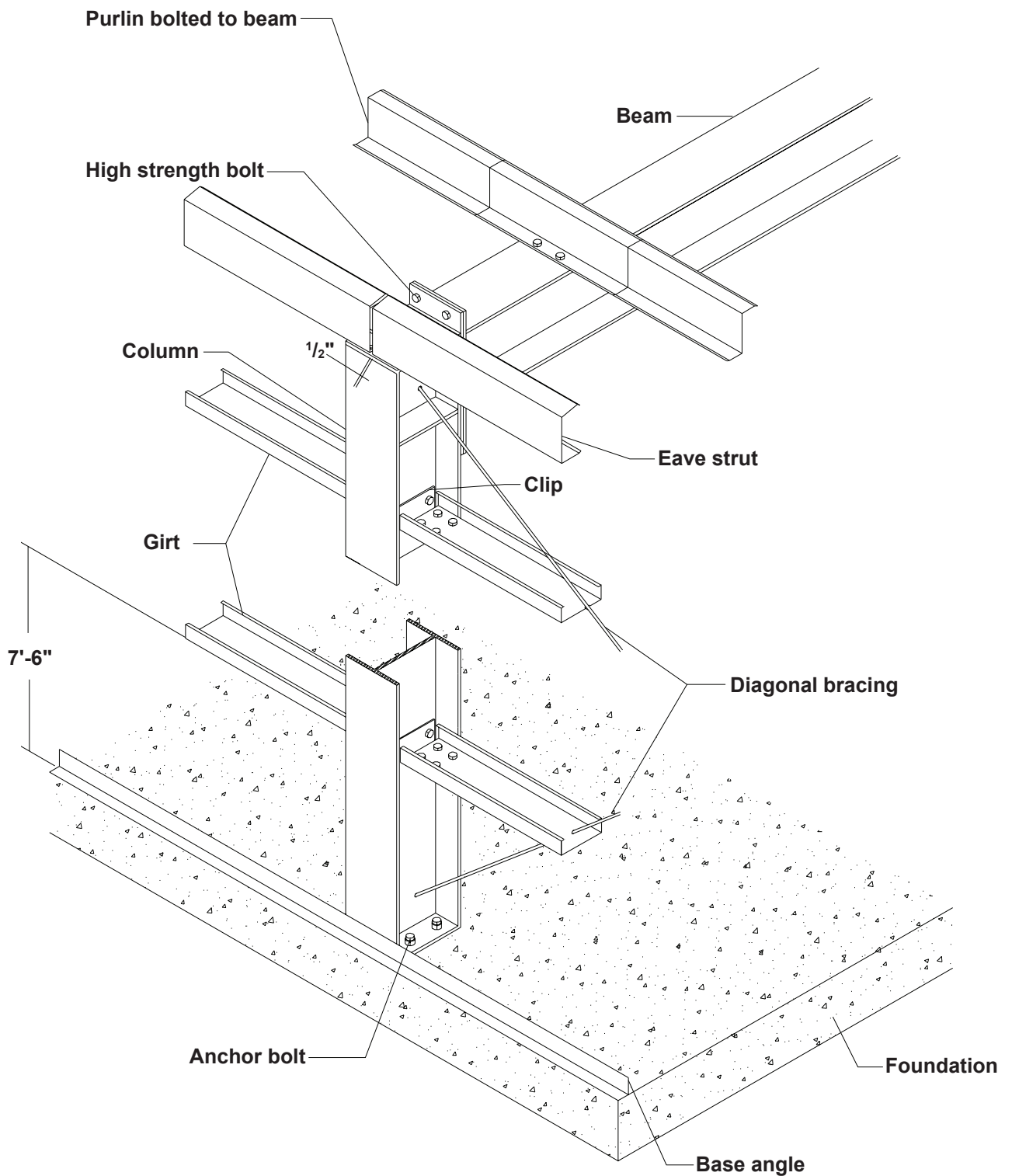
**EAVE STRUT NOTES**

1. Single Slope, Double Slope, or Universal Eave Struts are available, please specify.
2. Before ordering Eave Struts, you must subtract 1/2" from bay width.

## SECONDARY FRAMING

## Purlin and Girt Attachment

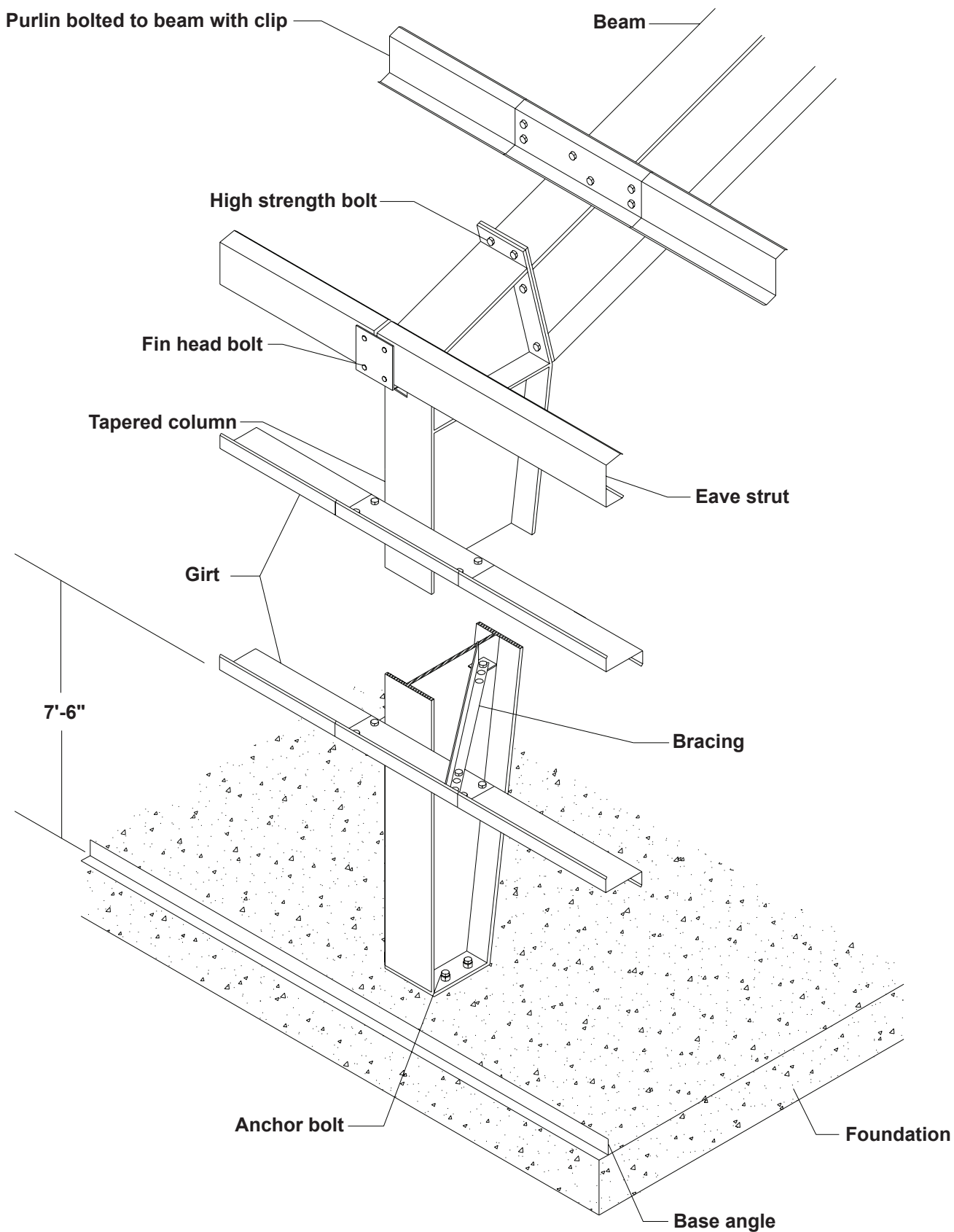
The drawing below represents girts attached flush with the framing utilizing a clip for attachment to the column. Purlins are shown with typical lap condition directly bolted to the beam.

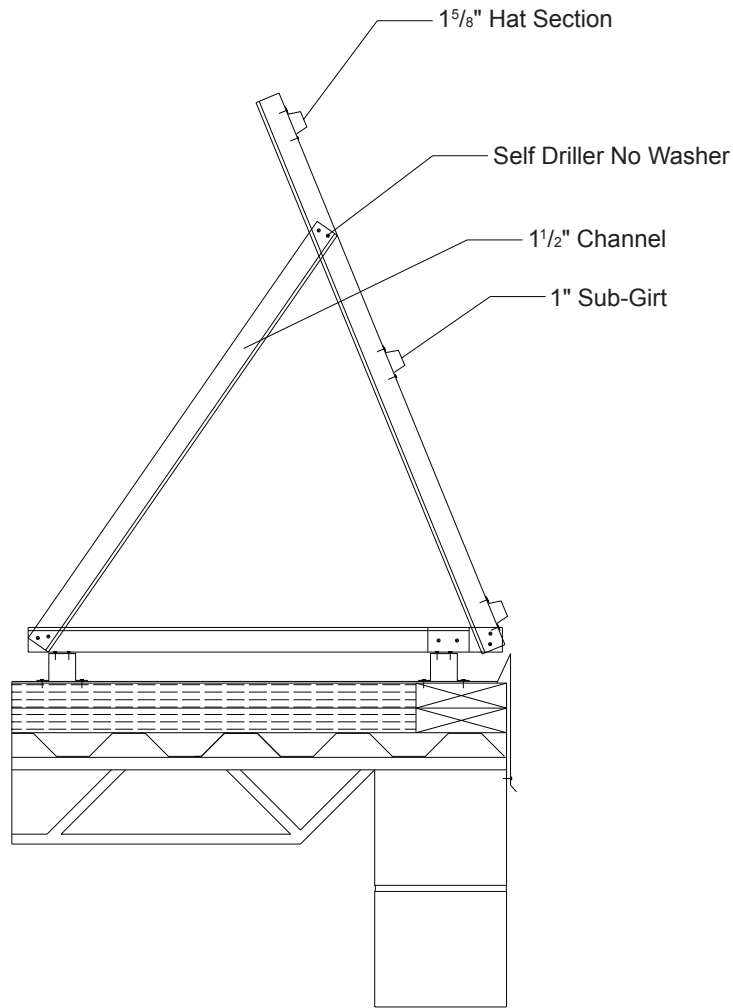


# SECONDARY FRAMING

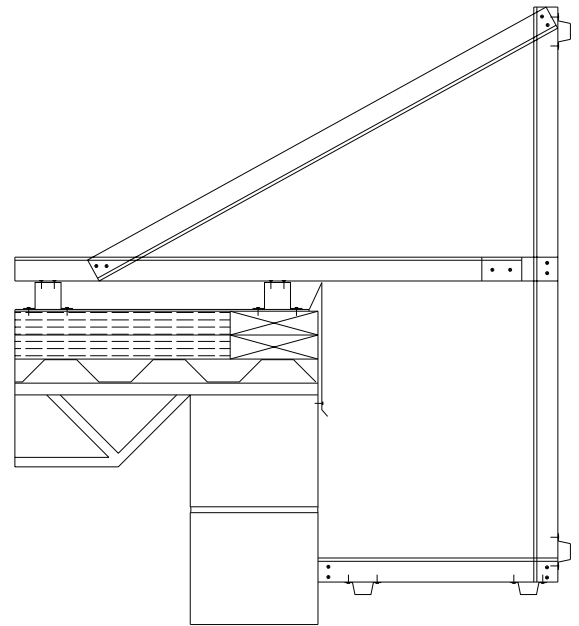
## Purlin and Girt Attachment

The drawing below represents girts outside the column attached with bolts direct to the column. Purlins are shown with typical lap condition bolted to the beam with a clip.

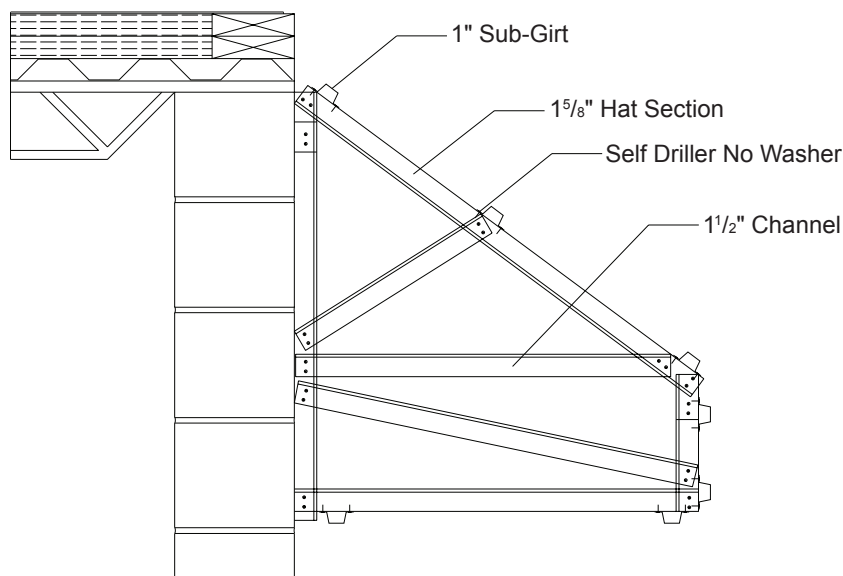




**Wind/Equipment Screen**

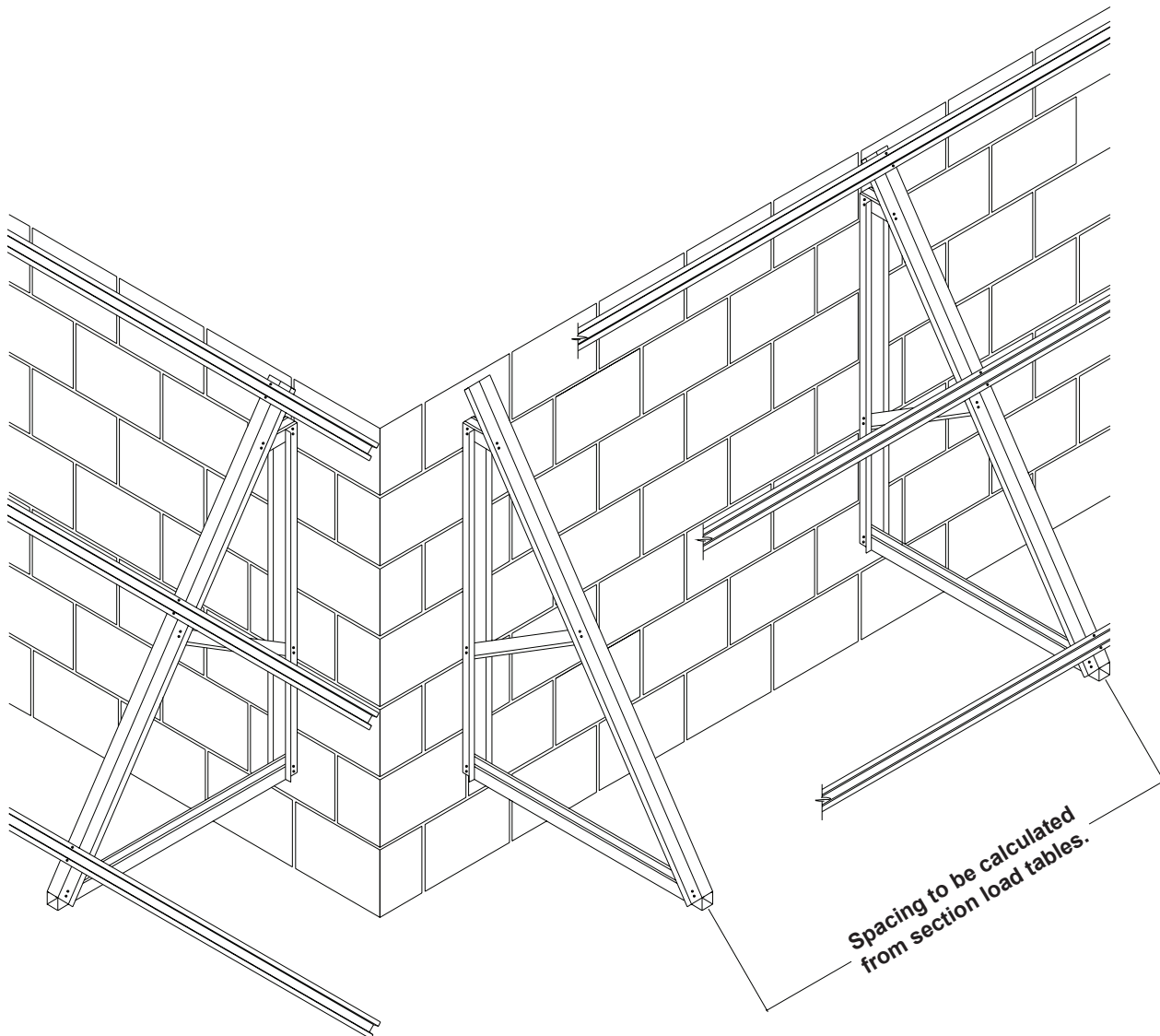
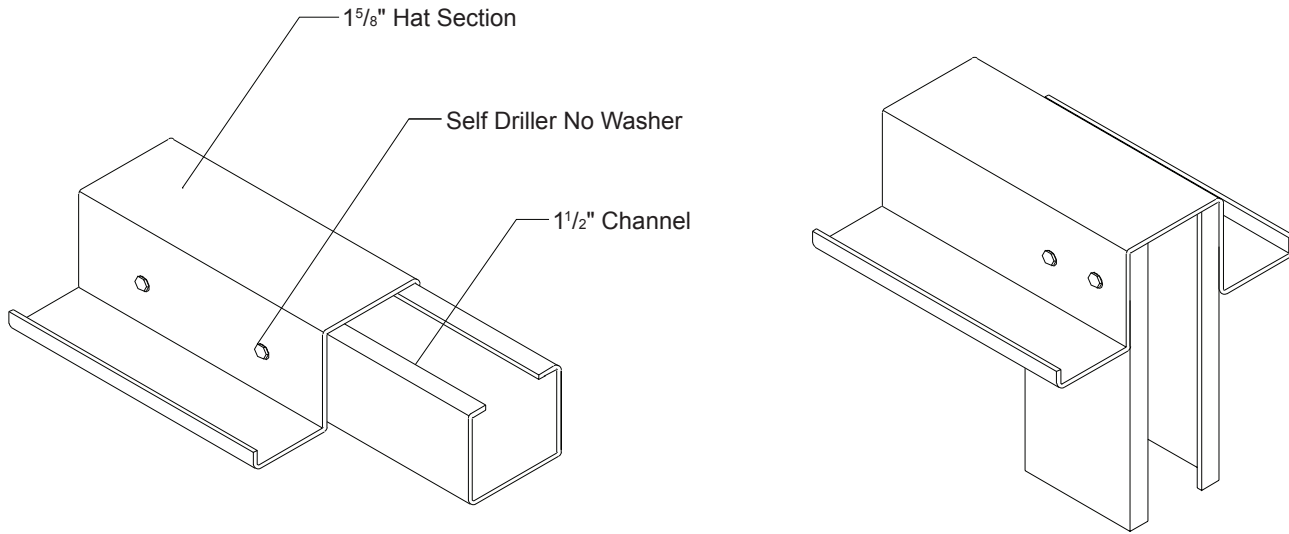


**Vertical Mansard**



**Mansard with Transition**

**Note:** Consult a Professional Engineer for specific design criteria.



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