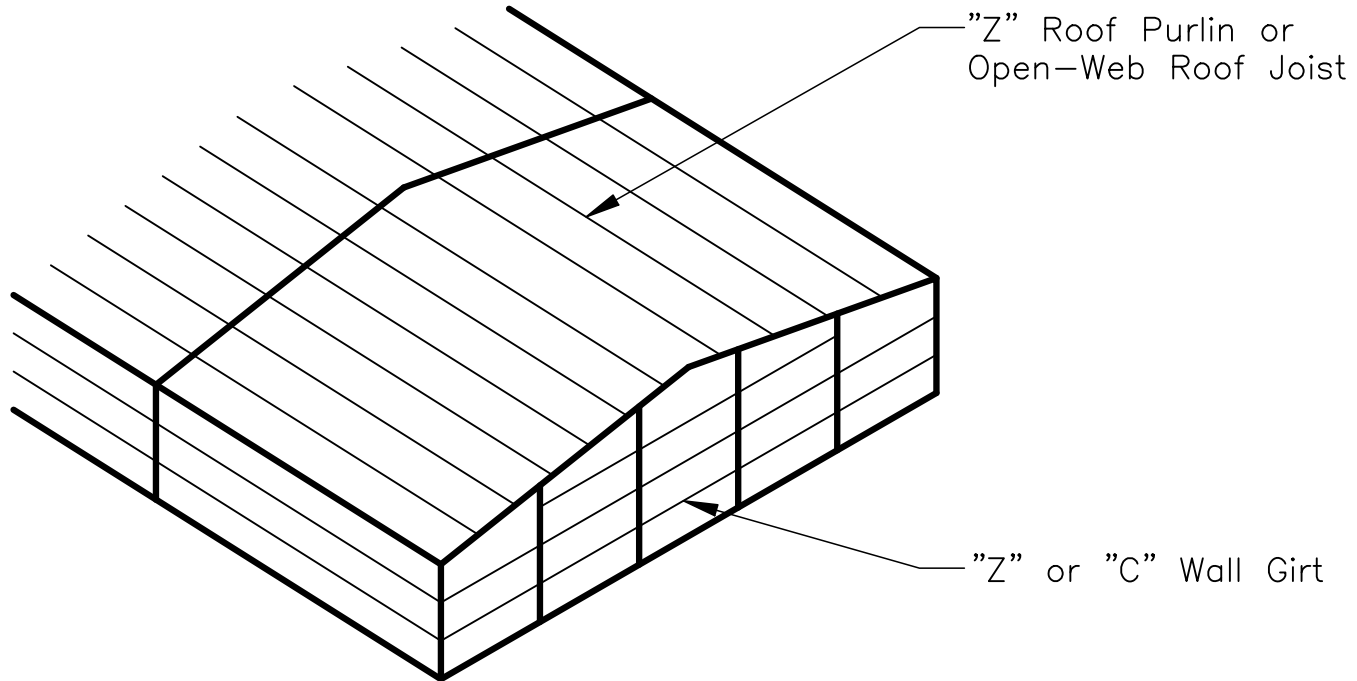




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### SF0010PE - SECONDARY FRAMING



1. Standard Secondary Framing consists of Cold Formed "Z" shaped roof purlins and wall girts. "C" shaped wall girts may be used for framed openings and other special applications.
2. "Z" and "C" members are shop punched for simple field bolted connections.
3. "Z" and "C" members are available in either 8 or 10 inch depths. 12 and 14 inch members depths are available on a limited basis. Consult the plant for specifics.
4. Optional Open-Web joists are available for wide bay applications with spans over 40 feet, and for mezzanine applications.
5. All section properties listed in this section were determined using the proper provisions of the "Cold-Formed Steel Design Manual", AISI, 1996 Edition. Any use of these properties for design should also be completed per these provisions.
6. As a standard, all bypass roof purlins and wall girts will utilize a shop welded clip. Bolted clips are also available.
7. **Some Nucor Divisions may offer welded clips for inset or flush girts. Contact your NBS Division for availability.**

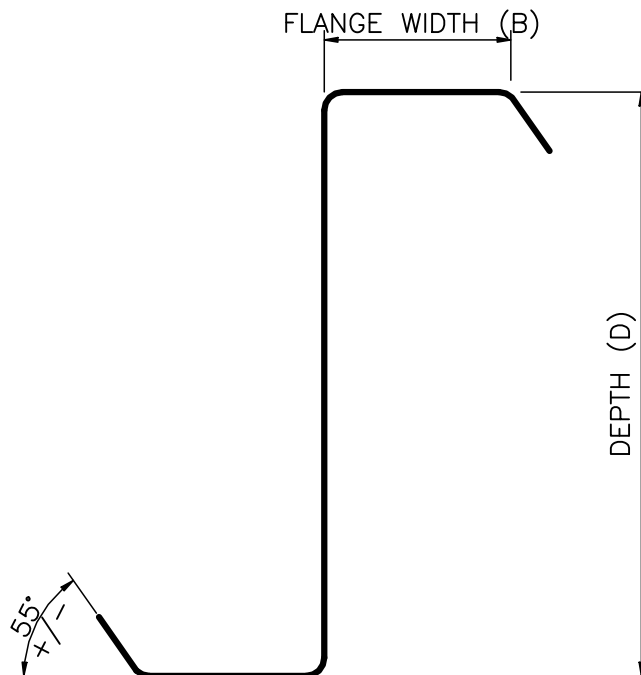


# PRODUCT AND ENGINEERING MANUAL

## 4.3 SECONDARY FRAMING

### SF0020PE - "Z" SECTION PROPERTIES

SECTION	D (in.)	B (in.)	DESIGN t (in.)	DESIGN t Wt. (plf)	GROSS Ix (in <sup>4</sup> )	Sx (in <sup>3</sup> )	Ma (in-kip)
8 Z 060	8.00	2.500	0.0600	2.95	8.44	1.91	62.80
8 Z 071	8.00	2.500	0.0710	3.49	9.96	2.49	76.80
8 Z 076	8.00	2.500	0.0760	3.73	10.66	2.57	84.72
8 Z 086	8.00	2.500	0.0860	4.22	12.05	3.01	98.64
8 Z 098	8.00	2.500	0.0980	4.81	13.71	3.43	112.86
8 Z 105	8.00	2.500	0.1050	5.15	14.67	3.67	120.80
<hr/>							
10 Z 060	10.00	2.500	0.0600	3.35	14.32	2.36	77.89
10 Z 071	10.00	2.500	0.0710	3.97	16.91	3.38	103.32
10 Z 076	10.00	2.500	0.0760	4.25	18.12	3.50	115.42
10 Z 086	10.00	2.500	0.0860	4.81	20.48	4.10	134.17
10 Z 098	10.00	2.500	0.0980	5.48	23.33	4.67	153.69
10 Z 105	10.00	2.500	0.1050	5.87	24.99	5.00	164.60
<hr/>							
12 Z 076	12.00	3.500	0.0760	5.23	33.50	5.58	141.10
12 Z 086	12.00	3.500	0.0860	5.92	37.89	6.31	172.41
12 Z 098	12.00	3.500	0.0980	6.75	43.17	7.20	209.82
12 Z 105	12.00	3.500	0.1050	7.23	46.24	7.71	224.6



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 BY: CDM CHK: RJF

DETAIL NAME IF APPLICABLE  
**SF0020PE.DWG**

**4.3.3**

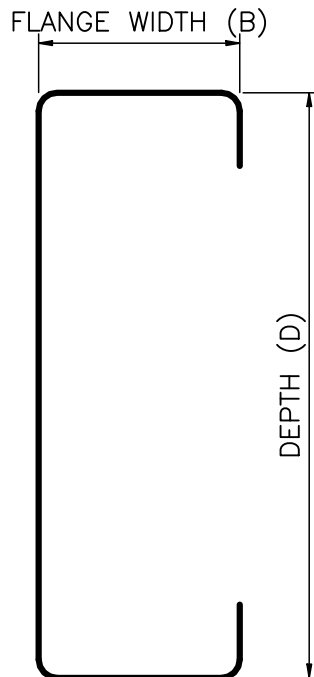


# PRODUCT AND ENGINEERING MANUAL

## 4.3 SECONDARY FRAMING

### SF0030PE - "C" SECTION PROPERTIES

SECTION	D (in.)	B (in.)	DESIGN t (in.)	DESIGN t Wt. (plf)	GROSS Ix (in <sup>4</sup> )	Sx (in <sup>3</sup> )	Ma (in-kip)
8 C 060	8.00	2.750	0.0600	2.95	8.39	1.75	57.72
8 C 071	8.00	2.750	0.0710	3.49	9.89	2.47	71.31
8 C 076	8.00	2.750	0.0760	3.73	10.58	2.30	75.77
8 C 086	8.00	2.750	0.0860	4.22	11.92	2.98	90.35
8 C 098	8.00	2.750	0.0980	4.81	13.53	3.27	107.92
8 C 105	8.00	2.750	0.1050	5.15	14.47	3.55	117.11
10 C 060	10.00	2.750	0.0600	3.35	14.21	2.16	71.43
10 C 071	10.00	2.750	0.0710	3.97	16.77	3.35	93.88
10 C 076	10.00	2.750	0.0760	4.25	17.94	3.12	103.08
10 C 0856	10.00	2.750	0.0860	4.81	20.24	4.05	123.36
10 C 098	10.00	2.750	0.0980	5.48	23.00	4.45	146.87
10 C 105	10.00	2.750	0.1050	5.87	24.61	4.83	159.38



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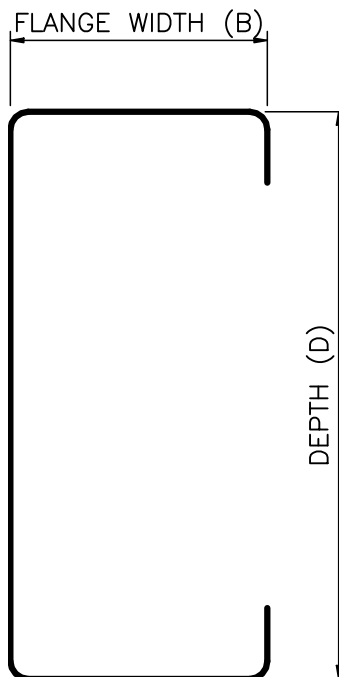
DETAIL NAME IF APPLICABLE  
**SF0030PE.DWG**

**4.3.4**



### SF0040PE - "S" SECTION PROPERTIES

SECTION	D (in.)	B (in.)	DESIGN t (in.)	DESIGN t Wt. (plf)	GROSS Ix (in <sup>4</sup> )	Sx (in <sup>3</sup> )	Ma (in-kip)
8 S 076	8.00	3.625	0.0760	4.25	12.46	2.74	81.56
8 S 086	8.00	3.625	0.0860	4.75	14.08	3.52	95.20
8 S 098	8.00	3.625	0.0980	5.48	16.03	4.01	112.29
8 S 105	8.00	3.625	0.1050	5.87	17.22	4.30	120.20
8 S 125	8.00	3.625	0.1250	6.99	20.43	5.11	157.05
12 S 076	12.00	3.625	0.0760	4.81	32.06	3.90	128.69
12 S 086	12.00	3.625	0.0860	5.15	36.26	6.04	159.83
12 S 098	12.00	3.625	0.0980	5.42	41.35	6.89	197.28
12 S 105	12.00	3.625	0.1050	7.31	44.47	6.94	211.42
12 S 125	12.00	3.625	0.1250	8.71	52.92	8.82	272.70
12 S 150	12.00	3.625	0.1500	10.33	63.46	10.58	341.15



LAST REVISION  
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 BY: CDM CHK: RJF

DETAIL NAME IF APPLICABLE  
**SF0040PE.DWG**

### AG0001 - "Z" ROOF PURLINS

#### TYPICAL WASHER REQUIREMENTS

**ERECTOR NOTE**  
(UNLESS NOTED OTHERWISE ON DRAWINGS)

	<p><b>SLOT TO SLOT CONNECTIONS</b> WASHERS ARE REQUIRED ON BOTH SIDES OF MATERIAL IF SLOTS ARE USED ON BOTH SIDES. (SEE DETAIL AT RIGHT FOR LAPPED ZEE MEMBERS)</p>
	<p><b>SLOT TO HOLE CONNECTIONS</b> ONE WASHER REQUIRED ON SLOTTED SIDE ONLY.</p>
	<p><b>HOLE TO HOLE CONNECTIONS</b> NO WASHERS ARE REQUIRED WHEN SLOTS ARE NOT USED.</p>

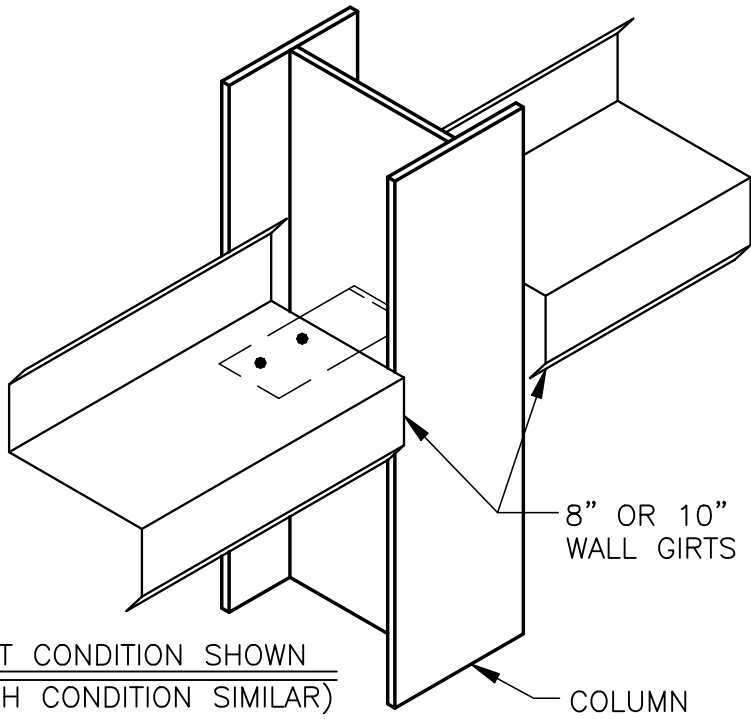
**WASHER PART NUMBERS**

H0200 - 1/2" FLAT WASHER	H0240 - 1" FLAT WASHER
H0210 - 5/8" FLAT WASHER	H0250 - 1 1/8" FLAT WASHER
H0220 - 3/4" FLAT WASHER	H0260 - 1 1/4" FLAT WASHER
H0230 - 7/8" FLAT WASHER	

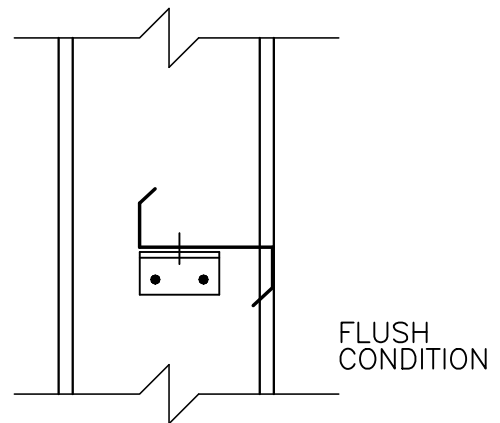
#### NOTES:

- 1) ALL PURLIN CONNECTIONS UTILIZE 1/2" DIAMETER BOLTS.
- 2) "Z" PURLINS HAVE SYMMETRICAL FLANGES FOR EASE OF ERECTION.
- 3) "Z" PURLINS ARE ECONOMICAL FOR SPANS UP TO AND INCLUDING 40 FEET.

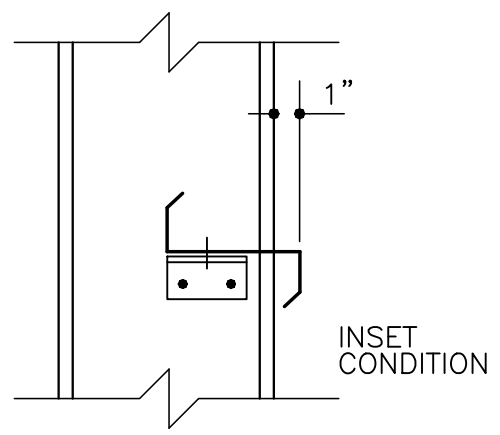
### SF0050PE - "Z" WALL GIRTS (INSET/FLUSH)



INSET CONDITION SHOWN  
(FLUSH CONDITION SIMILAR)



FLUSH CONDITION



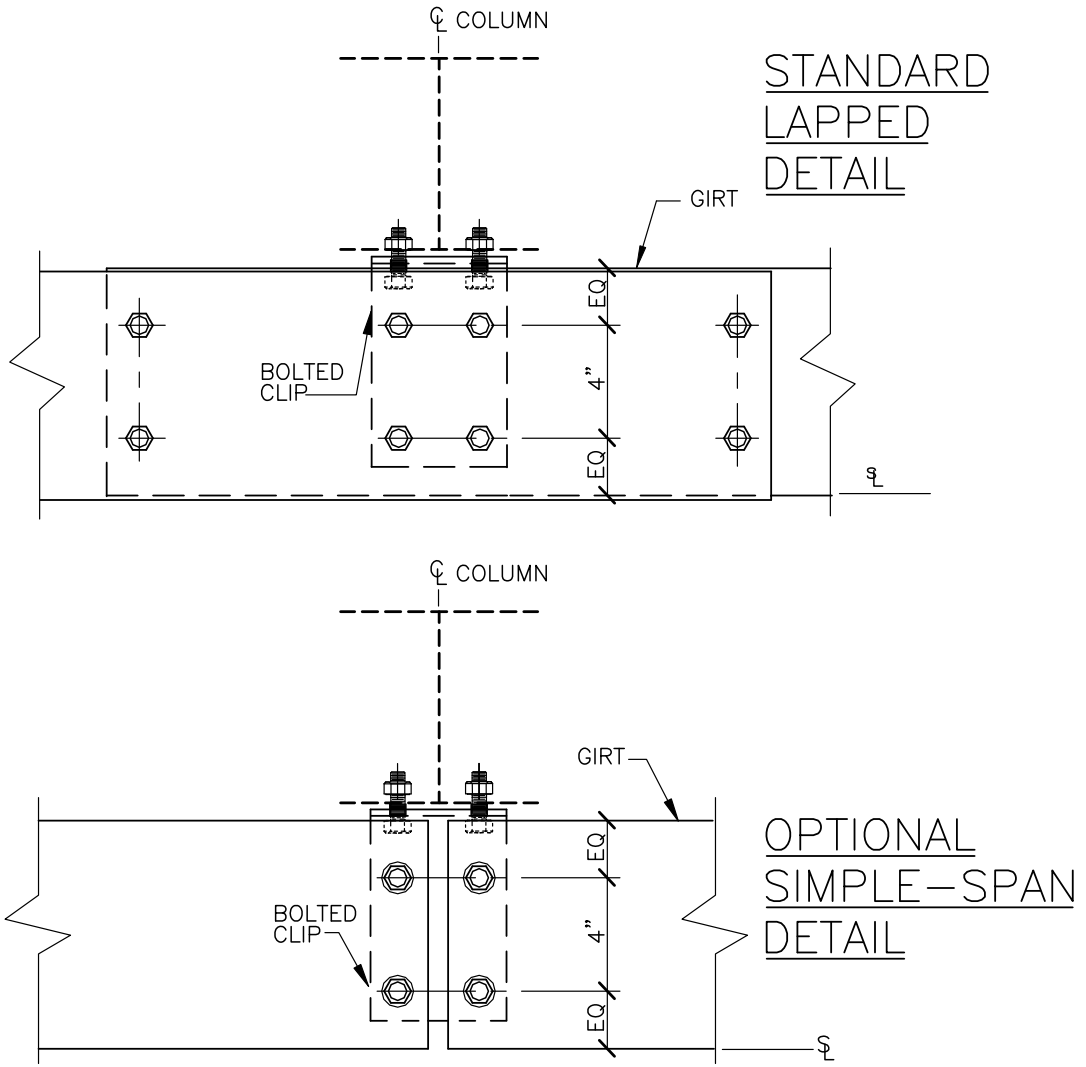
INSET CONDITION

NOTES

- 1) ALL WALL GIRT CONNECTIONS UTILIZE 1/2" DIA. BOLTS.
- 2) INSET CONDITION IS STANDARD ON ENDWALLS. INSET CONDITION IS OPTIONAL ON SIDEWALLS.
- 3) "Z" GIRTS ARE ECONOMICAL FOR SPANS UP TO AND INCLUDING 40 FEET.
- 4) 8 AND 10 INCH "C" SHAPED MEMBERS ARE AVAILABLE AS WALL GIRTS AS AN OPTION.
- 5) FLUSH GIRTS ARE NOT RECOMMENDED FOR PROJECTS WITH CLASSIC WALL BECAUSE THE COLUMN LOCATIONS MAY BE VISIBLE FROM THE EXTERIOR OF THE BUILDING DUE TO THE INSULATION BEING COMPRESSED TO 0".

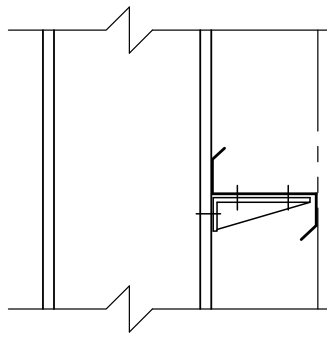
LAST REVISION DATE: <u>02/09/01</u> BY: <u>CDM</u> CHK: <u>RJF</u>	<u>DETAIL NAME IF APPLICABLE</u> <b>SF0050PE.DWG</b>	<b>4.3.7</b>
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### SF0060PE - "Z" WALL GIRTS (BYPASS BOLTED CLIPS)



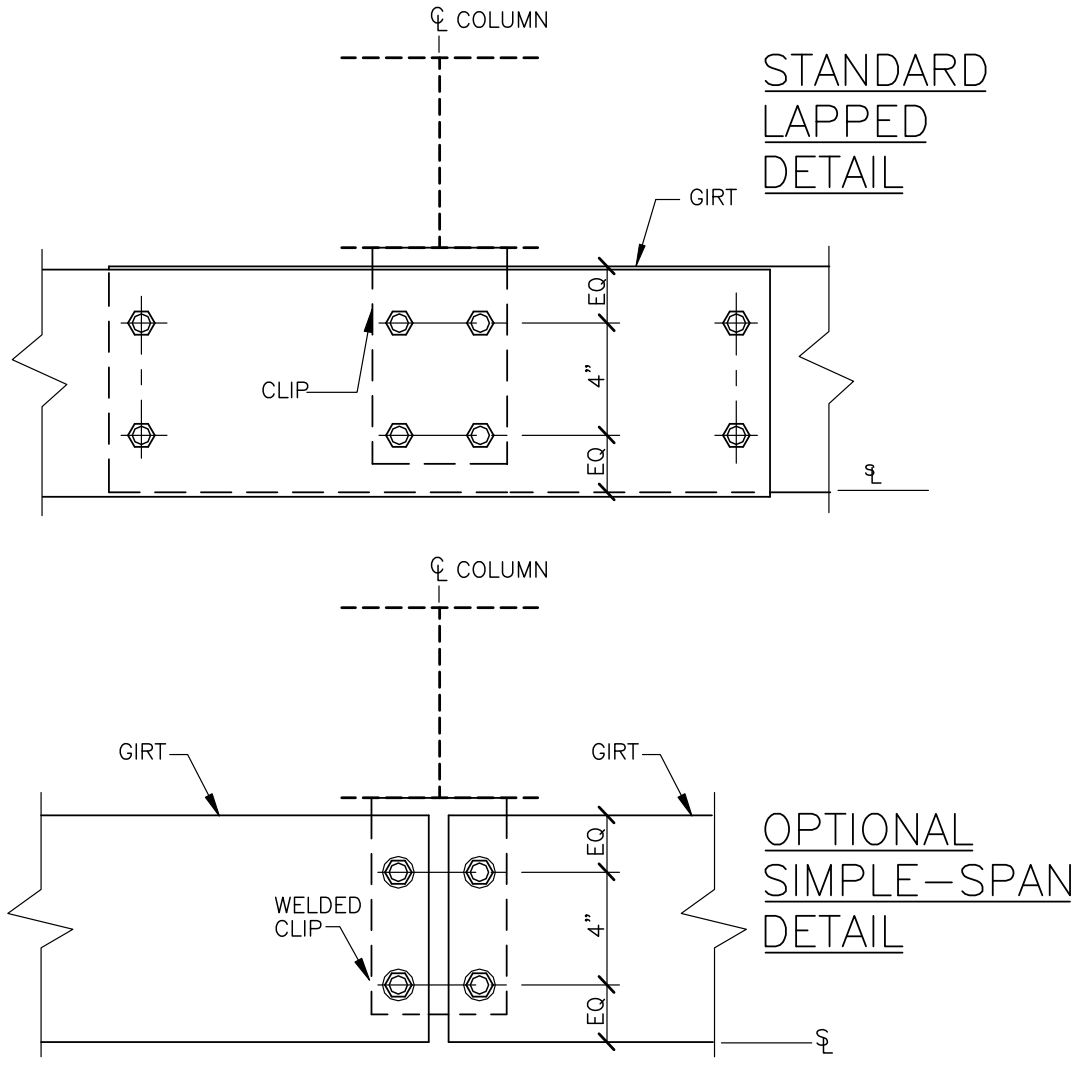
**NOTES**

- 1) ALL WALL GIRTS CONNECTIONS UTILIZE 1/2" DIAMETER BOLTS.
- 2) BYPASS CONDITION IS STANDARD ON SIDEWALLS, OPTIONAL ON ENDWALLS.
- 3) "Z" GIRTS ARE ECONOMICAL FOR SPANS UP TO 40 FEET.
- 4) 8 AND 10 INCH "C" SHAPED MEMBERS ARE AVAILABLE FOR WALL GIRTS AS AN OPTION.

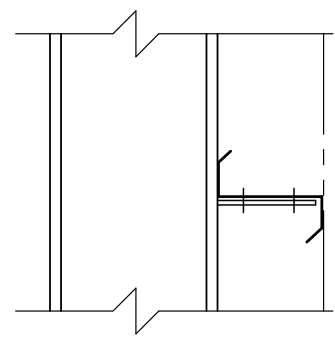




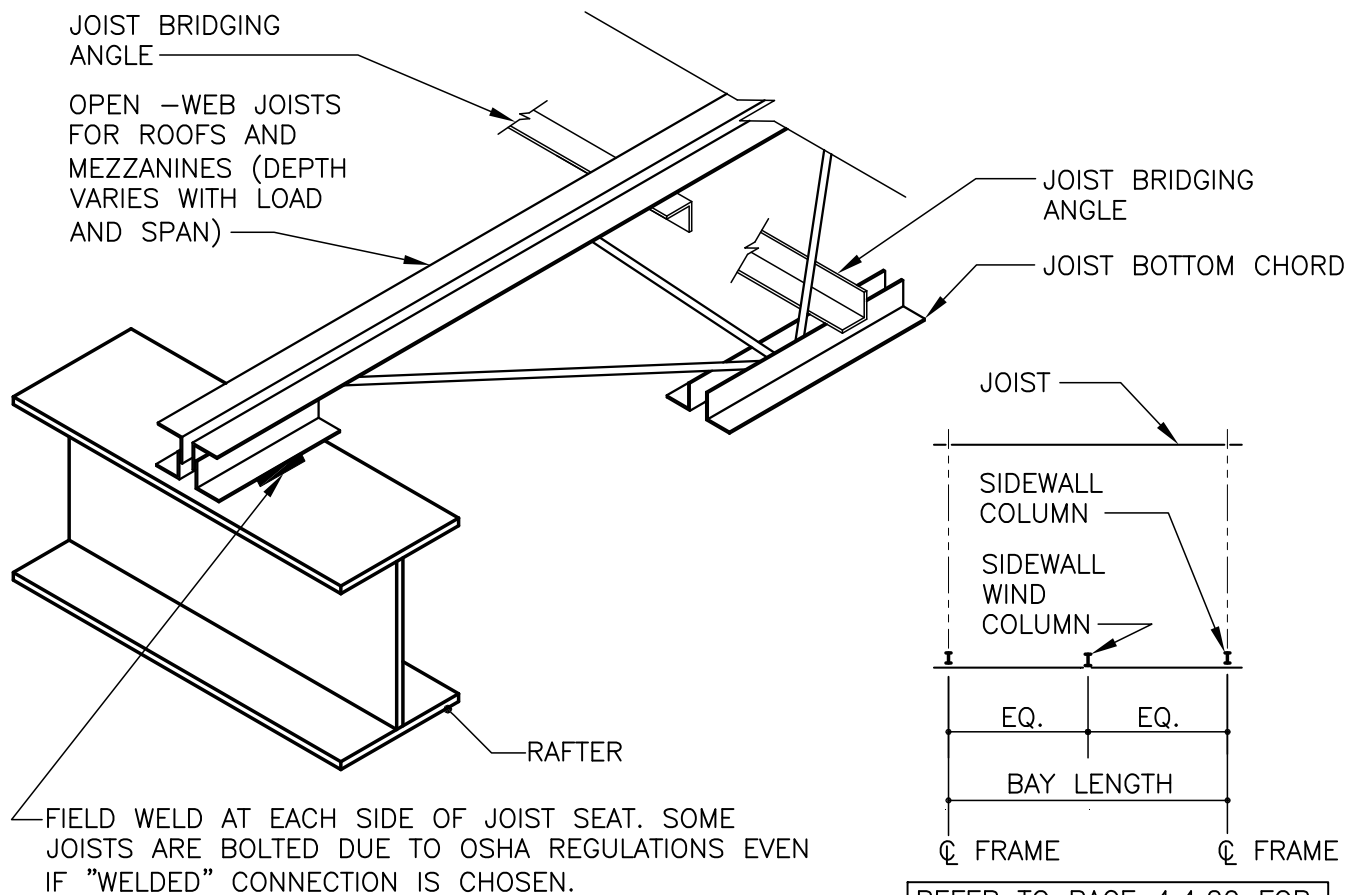
### SF0065PE - "Z" WALL GIRTS (BYPASS WELDED CLIPS)



- NOTES**
- 1) ALL WALL GIRTS CONNECTIONS UTILIZE 1/2" DIAMETER BOLTS.
  - 2) BYPASS CONDITION IS STANDARD ON SIDEWALLS, OPTIONAL ON ENDWALLS.
  - 3) "Z" GIRTS ARE ECONOMICAL FOR SPANS UP TO 40 FEET.
  - 4) 8 AND 10 INCH "C" SHAPED MEMBERS ARE AVAILABLE FOR WALL GIRTS AS AN OPTION.



### SF0070PE –OPEN-WEB WELDED JOISTS

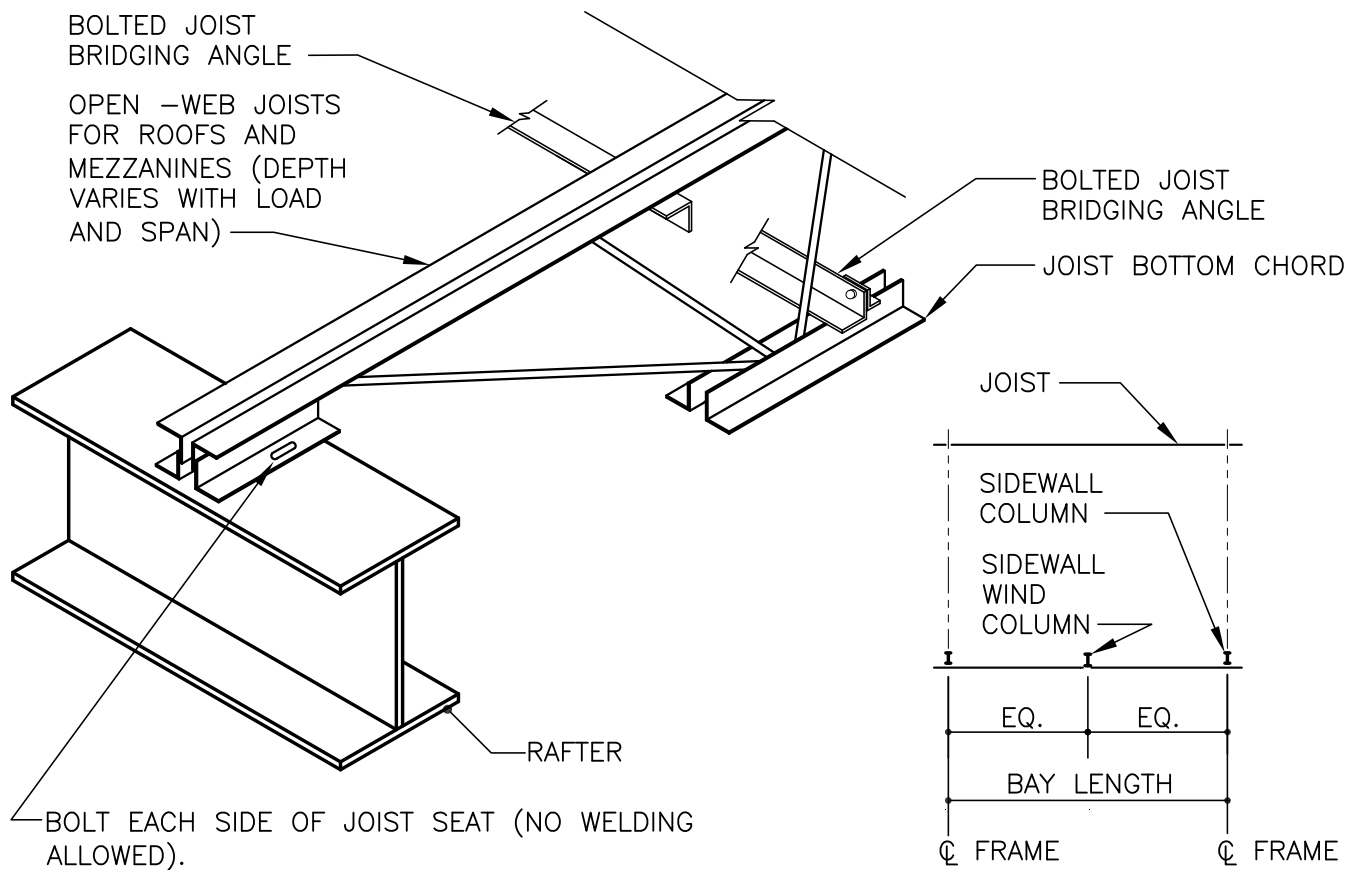


REFER TO PAGE 4.4.20 FOR BRACING REQUIREMENTS

#### NOTES

- 1) OPEN-WEB JOISTS ARE ECONOMICAL FOR SPANS OVER 40 FEET.
- 2) SIDEWALL WIND COLUMNS ARE CENTERED IN THE BAYS UNLESS NOTED OTHERWISE ON THE ORDER DOCUMENTS. PLEASE SPECIFY REQUIREMENTS ON THE ORDER DOCUMENTS.
- 3) EAVE AND RAKE EXTENSIONS ARE NOT AVAILABLE ON JOIST BUILDINGS.
- 4) FIELD WELDED BRIDGING IS REQUIRED AT THE TOP AND BOTTOM CHORDS OF THE JOISTS. NUMBER OF ROWS VARIES BASED UPON LOADS AND BAY SIZES.

### SF0071PE -OPEN-WEB ALL BOLTED JOISTS



REFER TO PAGE 4.4.20 FOR BRACING REQUIREMENTS

#### NOTES

- 1) OPEN-WEB JOISTS ARE ECONOMICAL FOR SPANS OVER 40 FEET.
- 2) SIDEWALL WIND COLUMNS ARE CENTERED IN THE BAYS UNLESS NOTED OTHERWISE ON THE ORDER DOCUMENTS. PLEASE SPECIFY REQUIREMENTS ON THE ORDER DOCUMENTS.
- 3) EAVE AND RAKE EXTENSIONS ARE NOT AVAILABLE ON JOIST BUILDINGS.
- 4) BOLTED BRIDGING IS REQUIRED AT THE TOP AND BOTTOM CHORDS OF THE JOISTS. NUMBER OF ROWS VARIES BASED UPON LOADS AND BAY SIZES.
- 5) ALL CONNECTIONS WILL BE BOLTED.



### CLEARBAY CFR

- This system is only available for projects with roof joists and CFR panels.
- The ClearBay CFR system was set in place to minimize joist bridging by utilizing the capacity of the CFR roof panel system. This reduction in bridging will also result in a reduction of cost.
- ClearBay CFR is available in a welded and all bolted option.
- These joists will be detailed the same as our typical roof joist system. The reduced bridging will be specified by Vulcraft.
- Click the link below to see the predetermined bridging rows and spacing for bays that are 40' to 60'in width. Any bay sizes other than these would be custom quoted. This table only applies to ClearBay CFR projects.

[ClearBay CFR Bridging Locations](#)

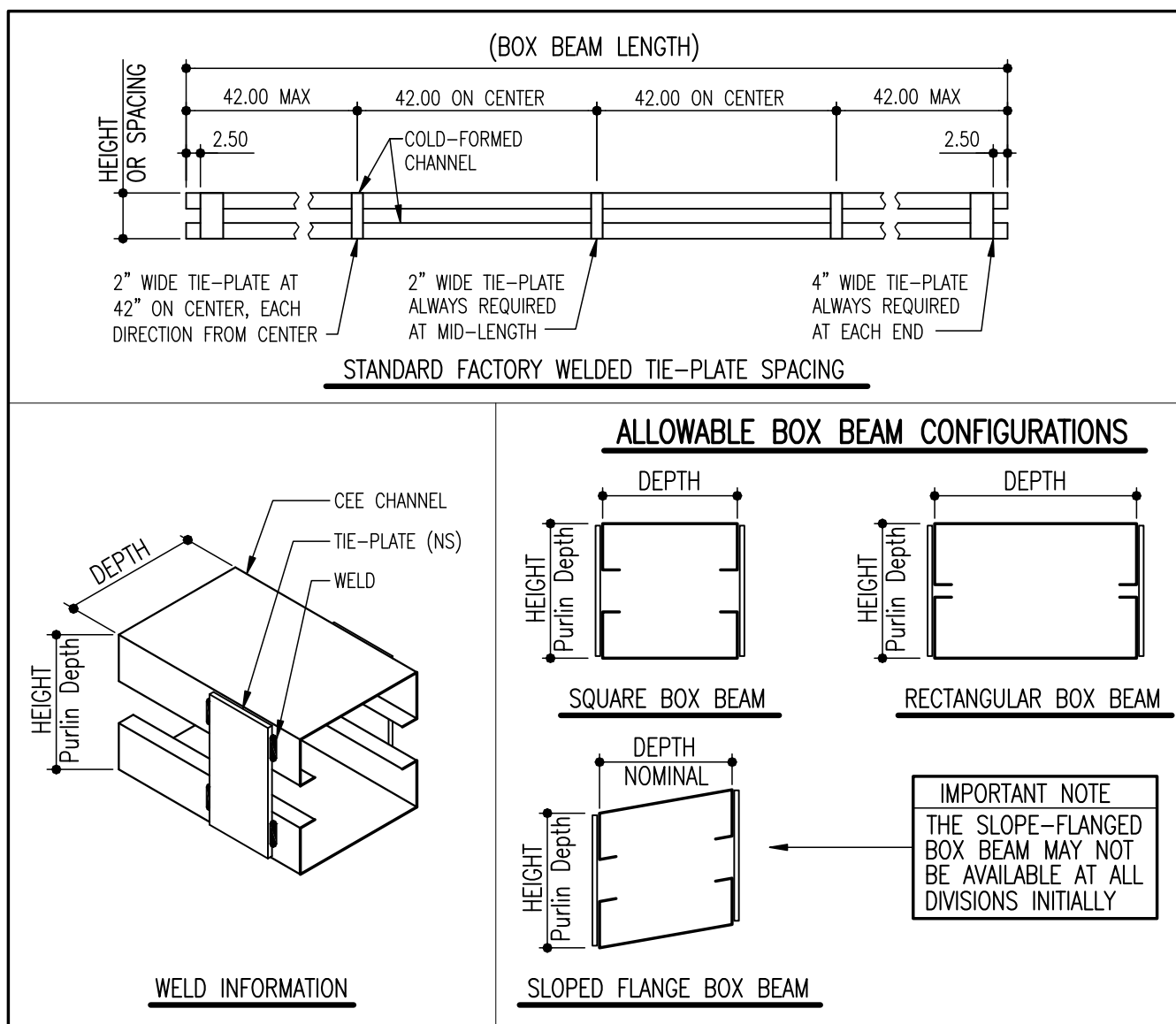
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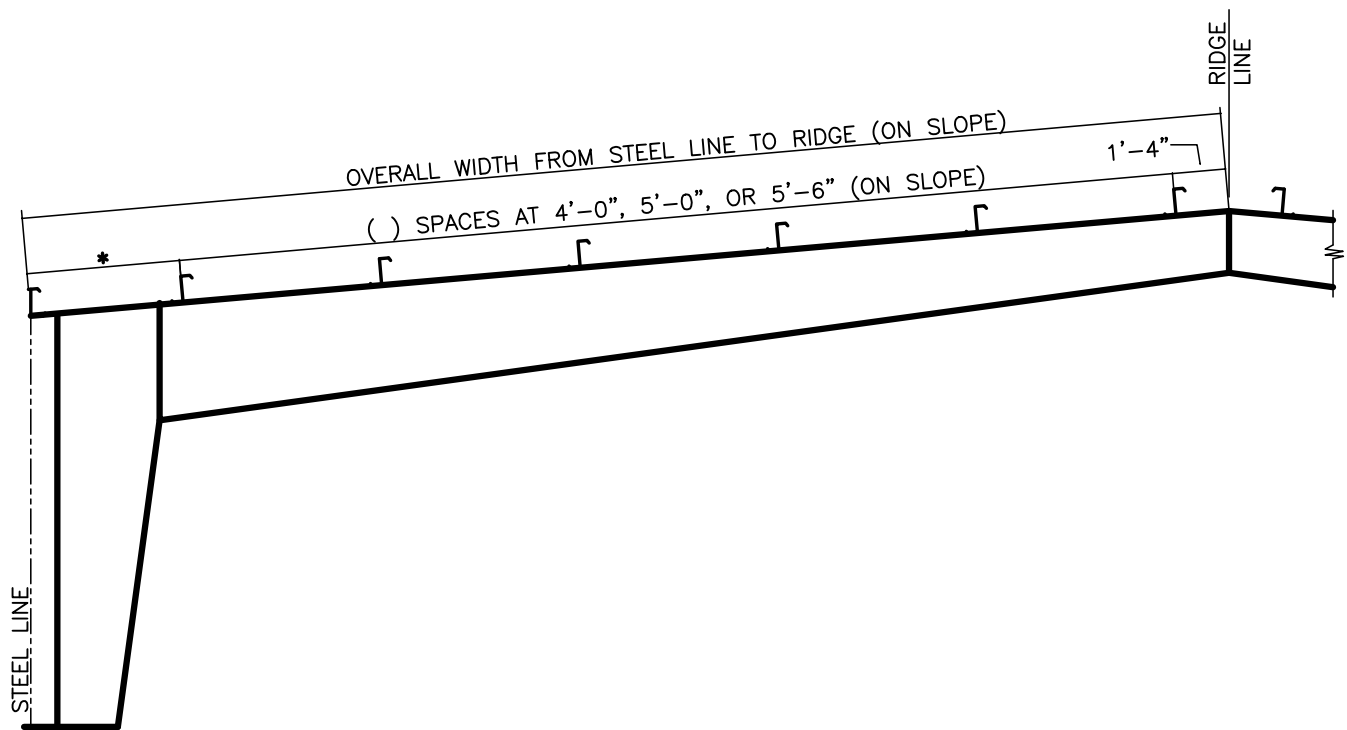
**4.3.12**

### SF0080PE - COLD-FORMED BOX BEAMS

1. Cold-formed box beams consist of two "C" or "S" sections, forming a cold-formed "tube".
2. These tubes may be square or rectangular in shape.
3. The height of the box beam matches the purlin depth. The depth of the box beam will be 8", 10", or 12", depending on the design requirements of a particular project.
4. Cold-formed box beams are typically used as a replacement for the eave strut, eave purlin, or strong-back eave beam.
5. Standard connection for the box beam to primary framing member is with either (2) or (4) ½" diameter A325 bolts per end.



### SF0090PE - STANDARD PURLIN SPACING (GABLE BUILDING)



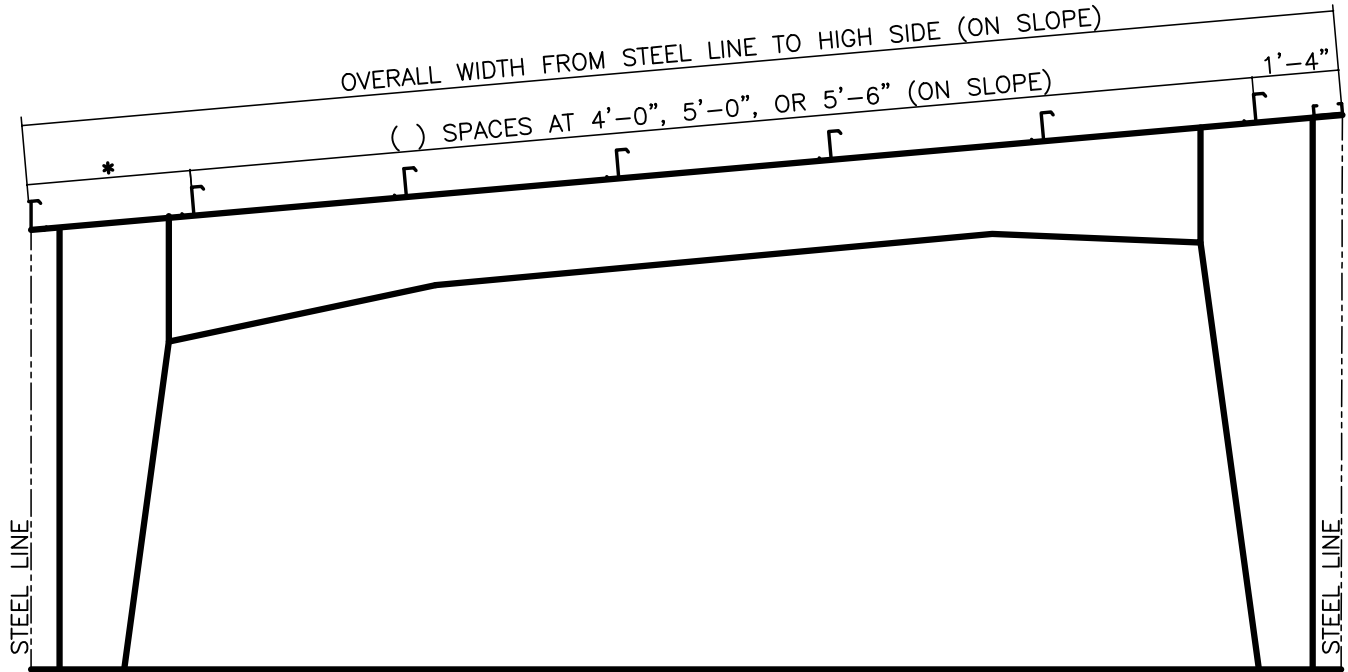
* INDICATES ODD SPACE AS FOLLOWS:	
ROOF SLOPE	PURLIN SPACE
< 1/2:12	MIN. = 1'-10"      MAX = 3'-10"
≥ 1/2:12	MIN. = 1'-10"      MAX = 5'-6"

NOTE: THESE SPACINGS ARE TO BE USED FOR BOTH NUCOR "CFR"<sup>TM</sup> AND NUCOR "CLASSIC ROOF"<sup>TM</sup> SYSTEMS.

WITH NUCOR "CFR"<sup>TM</sup> ROOF (UL CLASS 90, UL 580, CONSTRUCTION NO. 210).

- MAXIMUM PURLIN SPACING IS 5'-0" W/ PURLINS.
- MAXIMUM PURLIN SPACING IS 5'-6" W/ JOISTS.

### SF0100PE - STANDARD PURLIN SPACING (SINGLE SLOPE BUILDING)



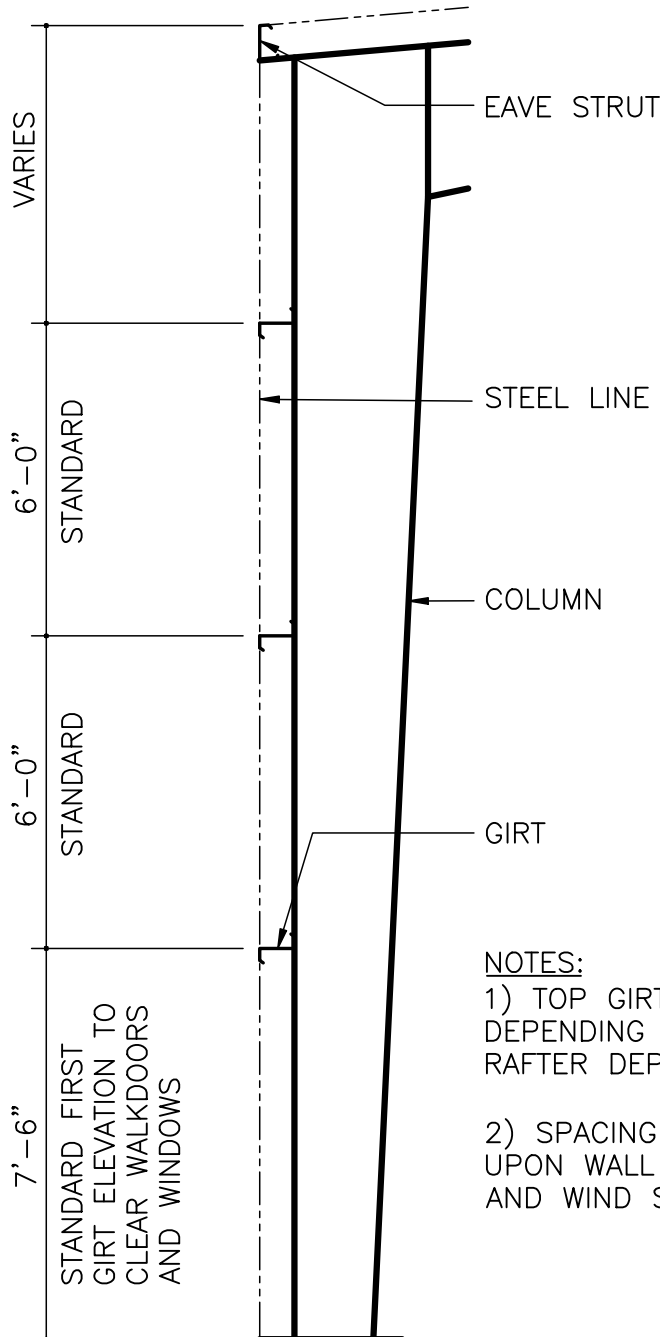
* INDICATES ODD SPACE AS FOLLOWS:	
ROOF SLOPE	PURLIN SPACE
< 1/2:12	MIN. = 1'-10"      MAX = 3'-10"
≥ 1/2:12	MIN. = 1'-10"      MAX = 5'-6"

NOTE: THESE SPACINGS ARE TO BE USED FOR BOTH NUCOR "CFR"<sup>TM</sup> AND NUCOR "CLASSIC ROOF"<sup>TM</sup> SYSTEMS.

WITH NUCOR "CFR"<sup>TM</sup> ROOF (UL CLASS 90, UL 580, CONSTRUCTION NO. 210).

- MAXIMUM PURLIN SPACING IS 5'-0" W/ PURLINS.
- MAXIMUM PURLIN SPACING IS 5'-6" W/ JOISTS.

### SF0110PE - STANDARD GIRT SPACING



NOTES:

1) TOP GIRT SPACE 2'-0" MINIMUM DEPENDING ON ROOF SLOPE AND RAFTER DEPTH.

2) SPACING MAY VARY DEPENDING UPON WALL COVERING APPLICATION AND WIND SPEED.