

NEGATIVE LOAD SPAN CHART FOR : PETERSEN BOX RIB SERIES  
BOX RIB 2 @ 12" X 24 GA. STEEL (w/ CLIP)

Span, ft.	TWO EQUAL SPANS			THREE EQUAL SPANS		
	W (psf)	Re	Ri	W (psf)	Re	Ri
1.00	125.60	47.1	157.0	142.73	57.1	157.0
1.25	100.48	47.1	157.0	114.18	57.1	157.0
1.50	83.73	47.1	157.0	95.15	57.1	157.0
1.75	71.77	47.1	157.0	81.56	57.1	157.0
2.00	62.80	47.1	157.0	71.36	57.1	157.0
2.25	55.82	47.1	157.0	63.43	57.1	157.0
2.50	50.24	47.1	157.0	57.09	57.1	157.0
2.75	45.67	47.1	157.0	51.90	57.1	157.0
3.00	41.87	47.1	157.0	47.58	57.1	157.0
3.25	38.65	47.1	157.0	43.92	57.1	157.0
3.50	35.89	47.1	157.0	40.78	57.1	157.0
3.75	33.49	47.1	157.0	38.06	57.1	157.0
4.00	31.40	47.1	157.0	35.68	57.1	157.0

W = Allowable Uniform Wind Load, psf

Re = End Support Reaction, 157.0 #/ft. of panel

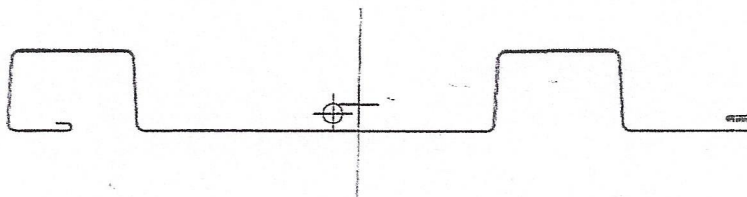
Ri = Intermediate Support Reaction, 157.0 #/ft. of panel

Deflection Limit = L/180

$F_y = 40$  ksi

$I_{xx} = 0.1070$  in<sup>4</sup>

$S_{xx} = 0.1199$  in<sup>3</sup>



cfss PE

PETERSEN BOX RIB-2 PANEL - 12" X

Design Dynamics, Inc.

24 GA. BOX RIB-2 W/ CLIP

1333 W. McDermott Dr., Suite 150

Rev. Date: 8/14/2018 2:43:58 PM

Allen, Texas 75013

By: Thomas M. Shingler, PE

Ph: (972) 740-5580

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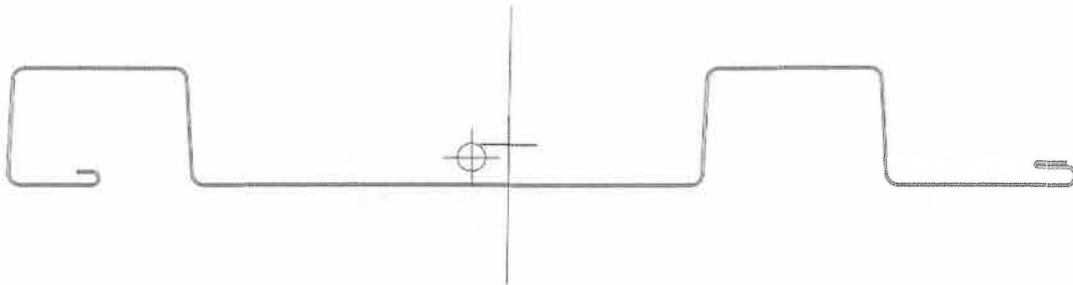
designdynamics04@aol.com

$$(+) I_{xx}/ft = 0.1146 \text{ in}^4/ft.$$

$$(+) S_{xx}/ft = 0.1199 \text{ in}^3/ft.$$

$$(-) I_{xx}/ft = 0.1041 \text{ in}^4/ft.$$

$$(-) S_{xx}/ft = 0.1604 \text{ in}^3/ft.$$



$$(+) I_{EFF}/ft = (.71 \times 0.1146) + (.29 \times 0.1041) = 0.112 \text{ in}^4/ft$$

$$(-) I_{EFF}/ft = (.71 \times 0.1041) + (.29 \times 0.1146) = 0.107 \text{ in}^4/ft$$

C

PETERSEN BOX RIB-2 PANEL - 12" X 24 GA.

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Section Inputs

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Material: A653 SS Grade 40

Apply cold work of forming strength increase.

No inelastic reserve strength increase.

Modulus of Elasticity, E 29500 ksi

Yield Strength, Fy 40 ksi

Tensile Strength, Fu 55 ksi

Torsion Constant Override, J 0 in<sup>4</sup>

Warping Constant Override, Cw 0 in<sup>6</sup>

Part 1, Thickness 0.024 in

Placement of Part from Origin:

X to center of gravity 0 in

Y to center of gravity 0 in

Outside dimensions, Open shape

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.2500	0.000	0.12500	None	0.000	0.0000	0.1250
2	0.1680	-90.000	0.06000	None	0.000	0.0000	0.0840
3	0.1000	-180.000	0.06000	None	0.000	0.0000	0.0500
4	0.9670	-180.000	0.12500	None	0.000	0.0000	0.4835
5	1.3650	87.000	0.12500	None	0.000	0.0000	0.6825
6	2.0000	0.000	0.12500	None	0.000	0.0000	1.0000
7	1.3650	-87.000	0.12500	Single	0.000	0.0000	0.6825
8	5.8440	0.000	0.12500	None	0.000	0.0000	2.9220
9	1.3650	87.000	0.12500	Single	0.000	0.0000	0.6825
10	2.0000	0.000	0.12500	None	0.000	0.0000	1.0000
11	1.3650	-87.000	0.12500	Single	0.000	0.0000	0.6825
12	2.1540	0.000	0.12500	None	0.000	0.0000	1.0770
13	0.2280	90.000	0.07550	None	0.000	0.0000	0.1140
14	0.4600	180.000	0.07550	None	0.000	0.0000	0.2300
15	0.0720	90.000	0.01200	None	0.000	0.0000	0.0360
16	0.0360	0.000	0.01200	None	0.000	0.0000	0.0180
17	0.3100	0.000	0.01875	None	0.000	0.0000	0.1550

Full Section Properties

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Area	0.45918 in <sup>2</sup>	Wt.	0.0015612 k/ft	Width	19.132 in
Ix	0.1412 in <sup>4</sup>	rx	0.5545 in	Ixy	-0.1220 in <sup>4</sup>
Sx(t)	0.1587 in <sup>3</sup>	y(t)	0.8896 in	α	89.025 deg
Sx(b)	0.2974 in <sup>3</sup>	y(b)	0.4748 in		
Zx	0.2092 in <sup>3</sup>	Height	1.3644 in		
Iy	7.3091 in <sup>4</sup>	ry	3.9897 in	x <sub>o</sub>	-0.4234 in
Sy(l)	1.2738 in <sup>3</sup>	x(l)	5.7382 in	y <sub>o</sub>	-0.1520 in
Sy(r)	1.1305 in <sup>3</sup>	x(r)	6.4656 in	jx	0.5083 in
Zy	1.6425 in <sup>3</sup>	Width	12.2038 in	jy	1.4908 in

Section: PETERSEN BOX RIB-2 PANEL\_WITH CLIP - 12 X 24

Thomas M. Shingler,

GA..cfss PE

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I <sub>1</sub>	7.3112 in <sup>4</sup>	r <sub>1</sub>	3.9903 in	Cw	3.4170 in <sup>6</sup>
I <sub>2</sub>	0.1391 in <sup>4</sup>	r <sub>2</sub>	0.5504 in	J	0.0000882 in <sup>4</sup>
I <sub>c</sub>	7.4503 in <sup>4</sup>	r <sub>c</sub>	4.0281 in		
I <sub>o</sub>	7.5432 in <sup>4</sup>	r <sub>o</sub>	4.0531 in		

### Fully Braced Strength - AISI S100-16/S1-18, US, ASD

Material Type: A653 SS Grade 40, Fy=40 ksi

Axial

Pao 4.468 k

Ae 0.20108 in<sup>2</sup>

Ta 11.397 k

Shear

Vay 1.167 k

Vax 0.061 k

Torsion

Ba 17.291 k-in<sup>2</sup>

Positive Bending

Maxo 2.872 k-in

Ixe 0.1146 in<sup>4</sup>Sxe(t) 0.1199 in<sup>3</sup>Sxe(b) 0.2803 in<sup>3</sup>

Negative Bending

Maxo 3.487 k-in

Ixe 0.1041 in<sup>4</sup>Sxe(t) 0.1456 in<sup>3</sup>Sxe(b) 0.1604 in<sup>3</sup>

Positive Bending

Mayo 19.182 k-in

Iye 6.5439 in<sup>4</sup>Sye(l) 1.2161 in<sup>3</sup>Sye(r) 0.9591 in<sup>3</sup>

Negative Bending

Mayo 20.830 k-in

Iye 6.5091 in<sup>4</sup>Sye(l) 1.0415 in<sup>3</sup>Sye(r) 1.0932 in<sup>3</sup>

Part 1 element 8 h/t exceeds 200.

Section contains no web elements for horizontal shear.

DESIGN INPUT DATA FOR BOX RIB 2 X 24 GA. W/ CLIP

PRODUCT PROPERTIES :

E = 29500. KSI

I = .1070 IN4/FT

S = .1199 IN3/FT

DESIGN PARAMETERS :

DEFLECTION = L/ 180.

ALLOW. BENDING STRESS (PSI) = 24000.0

ALLOW. END SUPPORT REACTION (#/FT) = 157.0

ALLOW. INTERMEDIATE SUPPORT REACTION (#/FT) = 157.0

## LOAD-SPAN TABLE FOR BOX RIB 2 X 24 GA. W/ CLIP

DEFLECIION =  $L / 180$ .

SPAN (FT)	SIMPLE SPAN		TWO EQUAL SPAN			THREE EQUAL SPAN		
	W(PSF)	RE	W(PSF)	RE	RI	W(PSF)	RE	RI
1.00	314.00	157.0	125.60	47.1	157.0	142.73	57.1	157.0
1.25	251.20	157.0	100.48	47.1	157.0	114.18	57.1	157.0
1.50	209.33	157.0	83.73	47.1	157.0	95.15	57.1	157.0
1.75	179.43	157.0	71.77	47.1	157.0	81.56	57.1	157.0
2.00	157.00	157.0	62.80	47.1	157.0	71.36	57.1	157.0
2.25	139.56	157.0	55.82	47.1	157.0	63.43	57.1	157.0
2.50	125.60	157.0	50.24	47.1	157.0	57.09	57.1	157.0
2.75	114.18	157.0	45.67	47.1	157.0	51.90	57.1	157.0
3.00	104.67	157.0	41.87	47.1	157.0	47.58	57.1	157.0
3.25	96.62	157.0	38.65	47.1	157.0	43.92	57.1	157.0
3.50	89.71	157.0	35.89	47.1	157.0	40.78	57.1	157.0
3.75	83.73	157.0	33.49	47.1	157.0	38.06	57.1	157.0
4.00	78.50	157.0	31.40	47.1	157.0	35.68	57.1	157.0

W = ALLOWABLE UNIFORM LOAD

RE = END SOPPORT REACTION AT ALLOW. LOAD (#/FT)

RI = INTERMEDIATE SUPPORT REACTION AT ALLOW. LOAD (#/FT)