

NEGATIVE LOAD SPAN CHART FOR : PETERSEN BOX RIB SERIES BOX RIB 2 @ 12" X 24 GA. STEEL (w/ SCREW LEG)						
Span, ft.	TWO EQUAL SPANS			THREE EQUAL SPANS		
	W (psf)	Re	Ri	W (psf)	Re	Ri
1.00	88.64	33.2	110.8	100.73	40.3	110.8
1.25	70.91	33.2	110.8	80.58	40.3	110.8
1.50	59.09	33.2	110.8	67.15	40.3	110.8
1.75	50.65	33.2	110.8	57.56	40.3	110.8
2.00	44.32	33.2	110.8	50.36	40.3	110.8
2.25	39.40	33.2	110.8	44.77	40.3	110.8
2.50	35.46	33.2	110.8	40.29	40.3	110.8
2.75	32.23	33.2	110.8	36.63	40.3	110.8
3.00	29.55	33.2	110.8	33.58	40.3	110.8
3.25	27.27	33.2	110.8	30.99	40.3	110.8
3.50	25.33	33.2	110.8	28.77	40.3	110.8
3.75	23.64	33.2	110.8	26.86	40.3	110.8
4.00	22.16	33.2	110.8	25.18	40.3	110.8

W = Allowable Uniform Wind Load, psf

Re = End Support Reaction, 110.8 #/ft. of panel

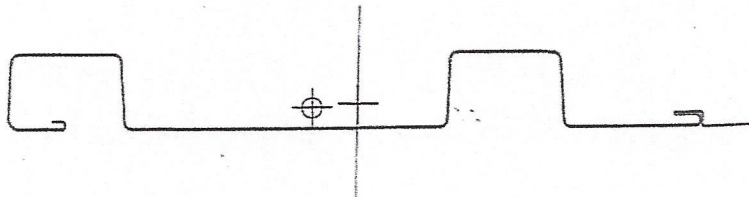
Ri = Intermediate Support Reaction, 110.8 #/ft. of panel

Deflection Limit = $L/180$

$F_y = 40$ ksi

$I_{xx} = 0.1140$ in⁴

$S_{xx} = 0.1213$ in³



PETERSEN BOX RIB-2 PANEL - 12" X 24 GA.
 BOX RIB-2 W/ NAIL STRIP
 Rev. Date: 8/14/2018 2:40:34 PM
 By: Thomas M. Shingler, PE
 Printed: 4/9/2020 1:37:34 PM

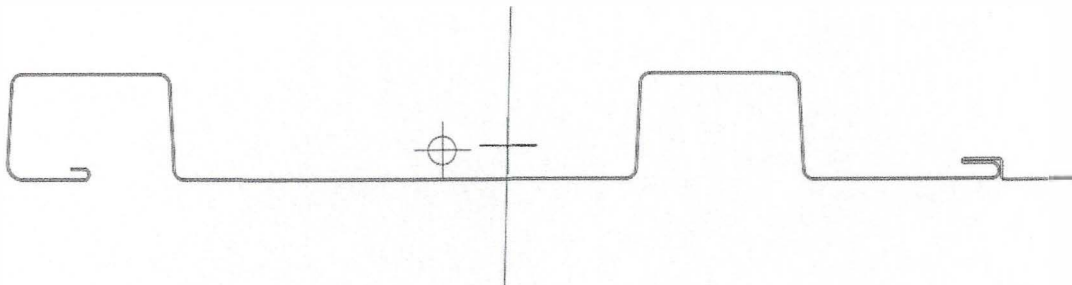
Design Dynamics, Inc.
 1333 W. McDermott Dr., Suite 150
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$$\underline{(+I_{xx}/ft = 0.1196 \text{ in}^4/ft)}$$

$$\underline{(+S_{xx}/ft = 0.1213 \text{ in}^3/ft)}$$

$$\underline{(-)I_{xx}/ft = 0.1121 \text{ in}^4/ft}$$

$$\underline{(-)S_{xx}/ft = 0.1805 \text{ in}^3/ft}$$



$$\underline{(+I_{SPR}/ft = (.71 \times 0.1196) + (.29 \times 0.1121) = 0.117 \text{ in}^4/ft}$$

$$\underline{(-)I_{SPR}/ft = (.71 \times 0.1121) + (.29 \times 0.1196) = 0.114 \text{ in}^4/ft}$$

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Section Inputs

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 in⁴
 Warping Constant Override, Cw 0 in⁶

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	0.18750	Single	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	2.4800	0.000	0.12500	None	0.000	0.0000	1.2400
13	0.2280	90.000	0.07550	None	0.000	0.0000	0.1140
14	0.4800	180.000	0.07550	None	0.000	0.0000	0.2400
15	0.0640	90.000	0.00800	None	0.000	0.0000	0.0320
16	0.0600	0.000	0.00800	None	0.000	0.0000	0.0300
17	0.4550	0.000	0.01875	None	0.000	0.0000	0.2275
18	0.2800	-90.000	0.01875	None	0.000	0.0000	0.1400
19	0.9650	0.000	0.01875	None	0.000	0.0000	0.4825

Full Section Properties

Area	0.49880 in ²	Wt.	0.0016959 k/ft	Width	20.783 in
Ix	0.1482 in ⁴	rx	0.5451 in	Ixy	-0.2386 in ⁴
Sx(t)	0.1604 in ³	y(t)	0.9237 in	α	88.491 deg
Sx(b)	0.3274 in ³	y(b)	0.4527 in		
Zx	0.2133 in ³	Height	1.3764 in		
Iy	9.2027 in ⁴	ry	4.2953 in	x _o	-0.8242 in
Sy(l)	1.4546 in ³	x(l)	6.3265 in	y _o	-0.0542 in
Sy(r)	1.2824 in ³	x(r)	7.1760 in	jx	0.8099 in
Zy	1.9055 in ³	Width	13.5025 in	jy	0.3372 in

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I ₁	9.2090 in ⁴	r ₁	4.2968 in	Cw	3.5945 in ⁶
I ₂	0.1419 in ⁴	r ₂	0.5334 in	J	0.0000958 in ⁴
I _c	9.3509 in ⁴	r _c	4.3298 in		
I _o	9.6912 in ⁴	r _o	4.4078 in		

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

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

Axial

Pao 4.976 k
 Ae 0.22394 in²
 Ta 12.348 k

Positive Bending

Maxo 2.905 k-in
 Ixe 0.1196 in⁴
 Sxe(t) 0.1213 in³
 Sxe(b) 0.3068 in³

Positive Bending

Mayo 21.691 k-in
 Iye 7.7523 in⁴
 Sye(l) 1.3360 in³
 Sye(r) 1.0845 in³

Shear

Vay 1.527 k
 Vax 0.080 k

Negative Bending

Maxo 3.555 k-in
 Ixe 0.1121 in⁴
 Sxe(t) 0.1484 in³
 Sxe(b) 0.1805 in³

Negative Bending

Mayo 23.524 k-in
 Iye 8.1451 in⁴
 Sye(l) 1.1762 in³
 Sye(r) 1.2383 in³

Torsion

Ba 17.281 k-in²

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/ SCREW LEG

PRODUCT PROPERTIES :

$$E = 29500. \text{ KSI}$$

$$I = .1140 \text{ IN}^4/\text{FT}$$

$$S = .1213 \text{ IN}^3/\text{FT}$$

DESIGN PARAMETERS :

$$\text{DEFLECTION} = L/ 180.$$

$$\text{ALLOW. BENDING STRESS (PSI)} = 24000.0$$

$$\text{ALLOW. END SUPPORT REACTION (\#/FT)} = 110.8$$

$$\text{ALLOW. INTERMEDIATE SUPPORT REACTION (\#/FT)} = 110.8$$

LOAD-SPAN TABLE FOR BOX RIB 2 X 24 GA. W/ SCREW LEG

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	221.60	110.8	88.64	33.2	110.8	100.73	40.3	110.8
1.25	177.28	110.8	70.91	33.2	110.8	80.58	40.3	110.8
1.50	147.73	110.8	59.09	33.2	110.8	67.15	40.3	110.8
1.75	126.63	110.8	50.65	33.2	110.8	57.56	40.3	110.8
2.00	110.80	110.8	44.32	33.2	110.8	50.36	40.3	110.8
2.25	98.49	110.8	39.40	33.2	110.8	44.77	40.3	110.8
2.50	88.64	110.8	35.46	33.2	110.8	40.29	40.3	110.8
2.75	80.58	110.8	32.23	33.2	110.8	36.63	40.3	110.8
3.00	73.87	110.8	29.55	33.2	110.8	33.58	40.3	110.8
3.25	68.18	110.8	27.27	33.2	110.8	30.99	40.3	110.8
3.50	63.31	110.8	25.33	33.2	110.8	28.78	40.3	110.8
3.75	59.09	110.8	23.64	33.2	110.8	26.86	40.3	110.8
4.00	55.40	110.8	22.16	33.2	110.8	25.18	40.3	110.8

W = ALLOWABLE UNIFORM LOAD

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

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