

NEGATIVE LOAD SPAN CHART FOR : PETERSEN BOX RIB SERIES BOX RIB 4 @ 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	131.84	49.4	164.8	149.82	59.9	164.8
1.25	105.47	49.4	164.8	119.85	59.9	164.8
1.50	87.89	49.4	164.8	99.88	59.9	164.8
1.75	75.34	49.4	164.8	85.61	59.9	164.8
2.00	65.92	49.4	164.8	74.91	59.9	164.8
2.25	58.60	49.4	164.8	66.59	59.9	164.8
2.50	52.74	49.4	164.8	59.93	59.9	164.8
2.75	47.94	49.4	164.8	54.48	59.9	164.8
3.00	43.95	49.4	164.8	49.94	59.9	164.8
3.25	40.57	49.4	164.8	46.10	59.9	164.8
3.50	37.67	49.4	164.8	42.81	59.9	164.8
3.75	35.16	49.4	164.8	39.95	59.9	164.8
4.00	32.96	49.4	164.8	37.45	59.9	164.8

W = Allowable Uniform Wind Load, psf

Re = End Support Reaction, 164.8 #/ft. of panel

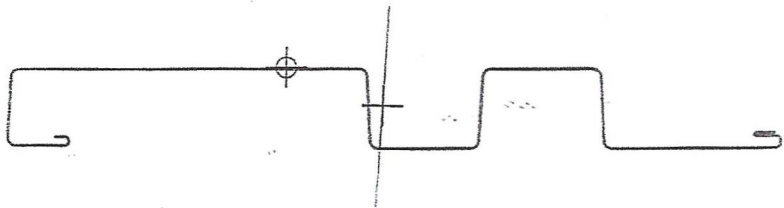
Ri = Intermediate Support Reaction, 164.8 #/ft. of panel

Deflection Limit = L/180

$F_y = 40$ ksi

$I_{xx} = 0.1267$ in⁴

$S_{xx} = 0.1189$ in³

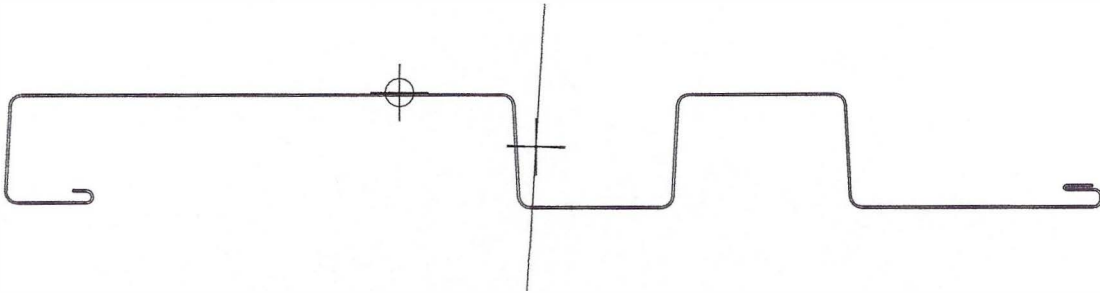


$$\underline{(+)\ I_{xx}/77 = 0.1024\ \text{in}^4/77}$$

$$\underline{(+)\ S_{xx}/77 = 0.1189\ \text{in}^3/77}$$

$$\underline{(-)\ I_{xx}/77 = 0.1366\ \text{in}^4/77}$$

$$\underline{(-)\ S_{xx}/77 = 0.1649\ \text{in}^3/77}$$



$$\underline{(+)\ I_{EFF}/77 = (.71 \times 0.1024) + (.29 \times 0.1366) = 0.1123\ \text{in}^4/77}$$

$$\underline{(-)\ I_{EFF}/77 = (.71 \times 0.1366) + (.29 \times 0.1024) = 0.1267\ \text{in}^4/77}$$

Section: PETERSEN BOX RIB - 4 PANEL_WITH CLIP - 12 X 24 GA..cfss
 PETERSEN BOX RIB - 4 PANEL - 12" X 24 GA. Design Dynamics, Inc.
 BOX RIB - 4 W/ CLIP 1333 W. McDermott Dr., Suite 150
 Rev. Date: 8/13/2018 10:25:04 AM Allen, Texas 75013
 By: Thomas M. Shingler, PE Ph: (972) 740-5580
 Printed: 4/7/2020 10:01:53 AM designdynamics04@aol.com

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	1.3150	87.000	0.12500	None	0.000	0.0000	0.6575
6	6.0000	0.000	0.12500	None	0.000	0.0000	3.0000
7	1.3750	-87.000	0.12500	Single	0.000	0.0000	0.6875
8	1.8440	0.000	0.12500	None	0.000	0.0000	0.9220
9	1.3750	87.000	0.12500	Single	0.000	0.0000	0.6875
10	2.0000	0.000	0.12500	None	0.000	0.0000	1.0000
11	1.3750	-87.000	0.12500	Single	0.000	0.0000	0.6875
12	3.0000	0.000	0.12500	None	0.000	0.0000	1.5000
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

Area	0.47900 in ²	Wt.	0.0016286 k/ft	Width	19.958 in
Ix	0.1688 in ⁴	rx	0.5937 in	Ixy	-0.4683 in ⁴
Sx(t)	0.2639 in ³	y(t)	0.6397 in	α	86.570 deg
Sx(b)	0.2298 in ³	y(b)	0.7346 in		
Zx	0.2706 in ³	Height	1.3744 in		
Iy	7.9558 in ⁴	ry	4.0754 in	x _o	-1.6231 in
Sy(l)	1.2590 in ³	x(l)	6.3190 in	y _o	0.6562 in
Sy(r)	1.1822 in ³	x(r)	6.7298 in	jx	1.1982 in
Zy	1.6754 in ³	Width	13.0488 in	jy	-5.4862 in

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I ₁	7.9839 in ⁴	r ₁	4.0826 in	Cw	2.8699 in ⁶
I ₂	0.1408 in ⁴	r ₂	0.5421 in	J	0.0000920 in ⁴
I _c	8.1246 in ⁴	r _c	4.1184 in		
I _o	9.5928 in ⁴	r _o	4.4751 in		

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

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

Axial		Positive Bending		Positive Bending	
Pao	4.446 k	Maxo	2.849 k-in	Mayo	20.486 k-in
Ae	0.20008 in ²	Ixe	0.1024 in ⁴	Iye	6.4944 in ⁴
Ta	11.871 k	Sxe(t)	0.1189 in ³	Sye(l)	1.1904 in ³
		Sxe(b)	0.1993 in ³	Sye(r)	0.8553 in ³
Shear		Negative Bending		Negative Bending	
Vay	1.178 k	Maxo	3.949 k-in	Mayo	19.480 k-in
Vax	0.062 k	Ixe	0.1366 in ⁴	Iye	5.9810 in ⁴
Torsion		Sxe(t)	0.2501 in ³	Sye(l)	0.8133 in ³
Ba	12.294 k-in ²	Sxe(b)	0.1649 in ³	Sye(r)	1.0503 in ³

Section contains no web elements for horizontal shear.

DESIGN INPUT DATA FOR BOX RIB 4 X 24 GA. W/ CLIP

PRODUCT PROPERTIES :

E = 29500. KSI

I = .1267 IN⁴/FT

S = .1189 IN³/FT

DESIGN PARAMETERS :

DEFLECTION = L/ 180.

ALLOW. BENDING STRESS (PSI) = 24000.0

ALLOW. END SUPPORT REACTION (#/FT) = 164.8

ALLOW. INTERMEDIATE SUPPORT REACTION (#/FT) = 164.8

LOAD-SPAN TABLE FOR BOX RIB 4 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	329.60	164.8	131.84	49.4	164.8	149.82	59.9	164.8
1.25	263.68	164.8	105.47	49.4	164.8	119.85	59.9	164.8
1.50	219.73	164.8	87.89	49.4	164.8	99.88	59.9	164.8
1.75	188.34	164.8	75.34	49.4	164.8	85.61	59.9	164.8
2.00	164.80	164.8	65.92	49.4	164.8	74.91	59.9	164.8
2.25	146.49	164.8	58.60	49.4	164.8	66.59	59.9	164.8
2.50	131.84	164.8	52.74	49.4	164.8	59.93	59.9	164.8
2.75	119.85	164.8	47.94	49.4	164.8	54.48	59.9	164.8
3.00	109.87	164.8	43.95	49.4	164.8	49.94	59.9	164.8
3.25	101.42	164.8	40.57	49.4	164.8	46.10	59.9	164.8
3.50	94.17	164.8	37.67	49.4	164.8	42.81	59.9	164.8
3.75	87.89	164.8	35.16	49.4	164.8	39.95	59.9	164.8
4.00	82.40	164.8	32.96	49.4	164.8	37.45	59.9	164.8

W = ALLOWABLE UNIFORM LOAD

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

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