| NEGATIVE LOAD SPAN CHART FOR : PETERSEN BOX RIB SERIES<br>BOX RIB 3 @ 12" X 0.032" ALUMINUM (w/ SCREW LEG) | | | | | | |
|---|---|---|---|---|---|---|
| Span, ft. | TWO EQUAL SPANS | | | THREE EQUAL SPANS | | |
| | W (psf) | Re | Ri | W (psf) | Re | Ri |
| 1.00 | 37.84 | 14.2 | 47.3 | 43.00 | 17.2 | 47.3 |
| 1.25 | 30.27 | 14.2 | 47.3 | 34.40 | 17.2 | 47.3 |
| 1.50 | 25.23 | 14.2 | 47.3 | 28.67 | 17.2 | 47.3 |
| 1.75 | 21.62 | 14.2 | 47.3 | 24.57 | 17.2 | 47.3 |
| 2.00 | 18.92 | 14.2 | 47.3 | 21.50 | 17.2 | 47.3 |
| 2.25 | 16.82 | 14.2 | 47.3 | 19.11 | 17.2 | 47.3 |
| 2.50 | 15.14 | 14.2 | 47.3 | 17.20 | 17.2 | 47.3 |
| 2.75 | 13.76 | 14.2 | 47.3 | 15.64 | 17.2 | 47.3 |
| 3.00 | 12.61 | 14.2 | 47.3 | 14.33 | 17.2 | 47.3 |
| 3.25 | 11.64 | 14.2 | 47.3 | 13.23 | 17.2 | 47.3 |
| 3.50 | 10.81 | 14.2 | 47.3 | 12.29 | 17.2 | 47.3 |
| 3.75 | 10.09 | 14.2 | 47.3 | 11.47 | 17.2 | 47.3 |
| 4.00 | 9.46 | 14.2 | 47.3 | 10.75 | 17.2 | 47.3 |

W = Allowable Uniform Wind Load, psf

Re = End Support Reaction, 47.3 #/ft. of panel

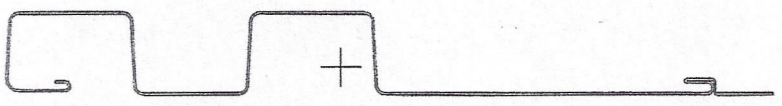
Ri = Intermediate Support Reaction, 47.3 #/ft. of panel

Deflection Limit = L/180

$F_y$ = 5.28 ksi

$I_{xx}$ = 0.1890 $in^4$

$S_{xx}$ = 0.2095 $in^3$



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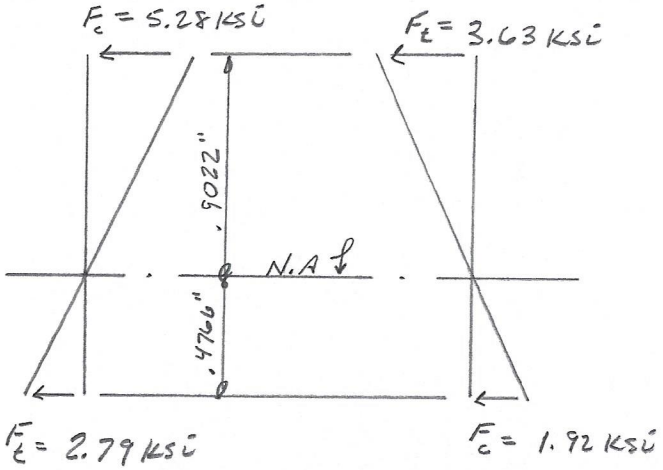



$b/t_{(Top)} = \frac{2}{0.032}$

$b/t_{(Top)} = 62.5$

$F_{c(Top)} = \frac{330}{62.5}$

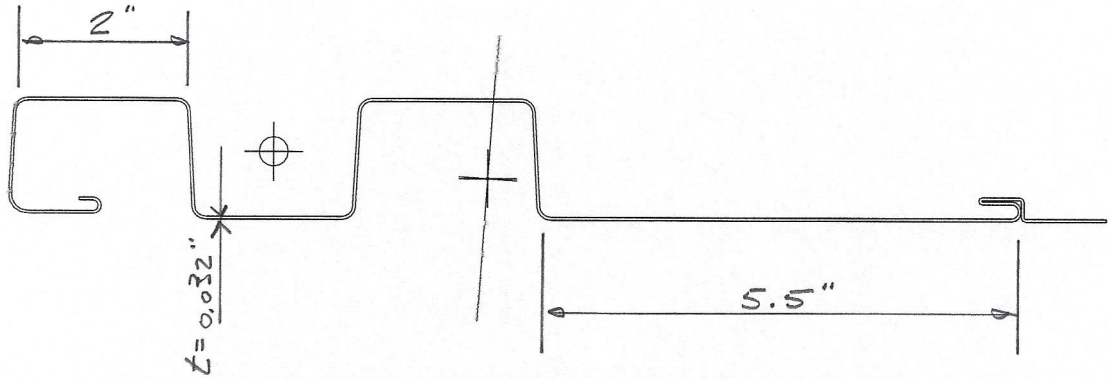
$F_{c(Top)} = 5.28$ ksi

$b/t_{(Bot)} = \frac{5.5}{0.032}$

$b/t_{(Bot)} = 171.9$

$F_{c(Bot)} = \frac{330}{171.9}$

$F_{c(Bot)} = 1.92$ ksi




$F_{c(Top)} = 5.28$ ksi  $F_{t(Top)} = 2.79$ ksi

$F_{c(Bot)} = 1.92$ ksi  $F_{t(Bot)} = 3.63$ ksi

BOX RIB- 3 PANEL - 12" X 0.032" ALUM.
BOX RIB - 3 W/ NAIL STRIP
Rev. Date: 4/27/2020 10:22:20 AM
By: Thomas M. Shingler, PE
Printed: 4/27/2020 10:22:44 AM

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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 0.032 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 | 0.1840 | -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 | 0.18750 | Single | 0.000 | 0.0000 | 0.6575 |
| 6 | 2.0000 | 0.000 | 0.12500 | None | 0.000 | 0.0000 | 1.0000 |
| 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 | 5.5000 | 0.000 | 0.12500 | None | 0.000 | 0.0000 | 2.7500 |
| 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 | 0.0800 | 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 | 0.62923 in² | Wt. | 0.0021394 k/ft | Width | 19.663 in |
| Ix | 0.189 in⁴ | rx | 0.5481 in | Ixy | -0.642 in⁴ |
| Sx(t) | 0.2095 in³ | y(t) | 0.9022 in | α | 86.016 deg |
| Sx(b) | 0.3966 in³ | y(b) | 0.4766 in | | |
| Zx | 0.2789 in³ | Height | 1.3788 in | | |
| Iy | 9.370 in⁴ | ry | 3.8588 in | $x_o$ | -2.4363 in |
| Sy(l) | 1.7185 in³ | x(l) | 5.4523 in | $y_o$ | 0.2978 in |
| Sy(r) | 1.3315 in³ | x(r) | 7.0367 in | jx | 2.8099 in |
| Zy | 2.0956 in³ | Width | 12.4890 in | jy | -1.6606 in |

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| | | | | | |
|---|---|---|---|---|---|
| $I_1$ | 9.414 in⁴ | $r_1$ | 3.8680 in | Cw | 1.8322 in⁶ |
| $I_2$ | 0.144 in⁴ | $r_2$ | 0.4788 in | J | 0.00021478 in⁴ |
| Ic | 9.559 in⁴ | rc | 3.8976 in | | |
| $I_o$ | 13.349 in⁴ | $r_o$ | 4.6060 in | | |

DESIGN INPUT DATA FOR BOX RIB 3 X 0.032" AL W/ SCREW L

PRODUCT PROPERTIES :

E = 10100. KSI

I = .1890 IN4/FT S = .2095 IN3/FT

DESIGN PARAMETERS :

DEFLECTION = L/ 180.

| | | |
|---|---|---|
| ALLOW. BENDING STRESS (PSI) | = | 5280.0 |
| ALLOW. END SUPPORT REACTION (#/FT) | = | 47.3 |
| ALLOW. INTERMEDIATE SUPPORT REACTION (#/FT) | = | 47.3 |

LOAD-SPAN TABLE FOR BOX RIB 3 X 0.032" AL W/ SCREW L

DEFLECION = L/ 180.

| SPAN | SIMPLE SPAN | | TWO EQUAL SPAN | | | THREE EQUAL SPAN | | |
|---|---|---|---|---|---|---|---|---|
| (FT) | W(PSF) | RE | W(PSF) | RE | RI | W(PSF) | RE | RI |
| 1.00 | 94.60 | 47.3 | 37.84 | 14.2 | 47.3 | 43.00 | 17.2 | 47.3 |
| 1.25 | 75.68 | 47.3 | 30.27 | 14.2 | 47.3 | 34.40 | 17.2 | 47.3 |
| 1.50 | 63.07 | 47.3 | 25.23 | 14.2 | 47.3 | 28.67 | 17.2 | 47.3 |
| 1.75 | 54.06 | 47.3 | 21.62 | 14.2 | 47.3 | 24.57 | 17.2 | 47.3 |
| 2.00 | 47.30 | 47.3 | 18.92 | 14.2 | 47.3 | 21.50 | 17.2 | 47.3 |
| 2.25 | 42.04 | 47.3 | 16.82 | 14.2 | 47.3 | 19.11 | 17.2 | 47.3 |
| 2.50 | 37.84 | 47.3 | 15.14 | 14.2 | 47.3 | 17.20 | 17.2 | 47.3 |
| 2.75 | 34.40 | 47.3 | 13.76 | 14.2 | 47.3 | 15.64 | 17.2 | 47.3 |
| 3.00 | 31.53 | 47.3 | 12.61 | 14.2 | 47.3 | 14.33 | 17.2 | 47.3 |
| 3.25 | 29.11 | 47.3 | 11.64 | 14.2 | 47.3 | 13.23 | 17.2 | 47.3 |
| 3.50 | 27.03 | 47.3 | 10.81 | 14.2 | 47.3 | 12.29 | 17.2 | 47.3 |
| 3.75 | 25.23 | 47.3 | 10.09 | 14.2 | 47.3 | 11.47 | 17.2 | 47.3 |
| 4.00 | 23.65 | 47.3 | 9.46 | 14.2 | 47.3 | 10.75 | 17.2 | 47.3 |

W = ALLOWABLE UNIFORM LOAD
RE = END SOPPORT REACTION AT ALLOW. LOAD (#/FT)
RI = INTERMEDIATE SUPPORT REACTION AT ALLOW. LOAD (#/FT)