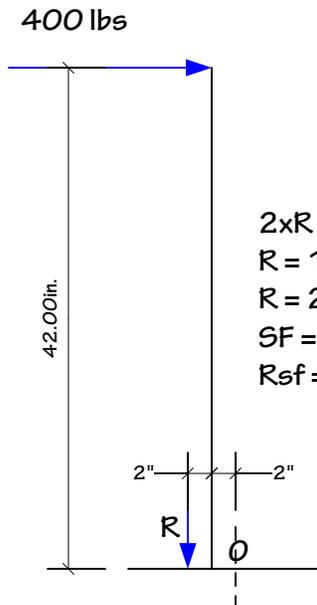




STIFFENER CAPACITY / LATERAL LOAD to Evolutiondeck EDECK625S1200-54

Load Reaction per Bolt



$$2xR \times 4/12 = 400 \times 42/12$$

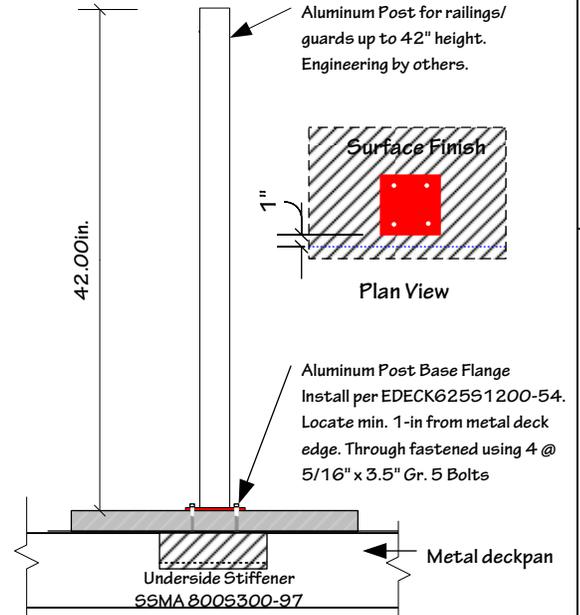
$$R = 16800/8$$

$$R = 2100 \text{ lbs}$$

$$SF = 2.0$$

$$Rsf = 4200 \text{ lbs}$$

Section View



Stiffener Analysis

Stiffener spec = Steel C-channel SSMA 800S300-97 x 9in.
 $I_{xx} = 15.1 \text{ in}^4$; $x_cg = 0.7 \text{ in}$
 Factored load on stiffener = 4200 lbs

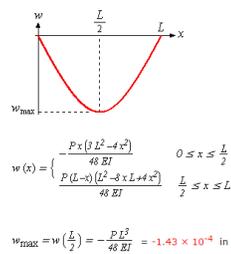
Calculator Input

Length of beam, L:	9	in
Load on beam, P:	4200	lbf
Young's Modulus, E:	29500	ksi
Distance from neutral axis to extreme fibers, c:	0.7	in
Moment of Inertia, I:	15.1	in ⁴

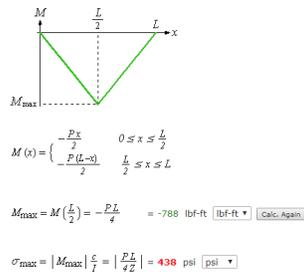
Beam Diagram and Calculator Input



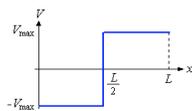
Displacement



Moment and Maximum Bending Stress



Shear



Induced stress from guard post
 $438 \text{ psi} < 50000 \text{ psi} = \text{OK}$

Bolt Pull-out Analysis (Industrial Fasteners Institute) IFI 7th Edition Inch Standards Book

Size	Bolt tensile Stress Area sq. in.	Bolt Thread Stripping Areas sq. in. per in. of Engagement	Internal Thread Stripping Areas sq. in. per in. of Engagement
5/16-18 UNC	0.0524	0.470	0.682

Engineering Analysis:

GR. 2: 5/16-18 Bolt (Galvanized)

($T_s = 120000 \text{ psi}$, $Y_s = 92000$, $S_s = 0.6 Y_s$)

(1) Bolt tensile strength = $A_s \times T_s = .0524 \times 120000 = 6288 \text{ lbs} > 4200 \text{ lbs} = \text{OK}$

(2) Bolt thread shear strength per inch = $0.470 \times .6 \times 120000 = 33840 \text{ lbs}$

(3) Length of engagement needed to avoid bolt thread stripping
 = bolt tensile strength / bolt thread shear strength per inch
 = $6288 / 33840 = .186 \text{ in}$

(4) Internal thread shear strength per inch = $A_Sn \times \text{Internal thread shear strength}$
 = $0.682 \times 120000 \times 0.5 = 40920 \text{ lbs}$

(5) Length of engagement needed to avoid internal thread stripping
 = bolt tensile strength / internal thread shear strength per inch
 = $6288 / 40920 = 0.154 \text{ in}$

(6) Engagement height of 5/16-18 Nut = $19/64 \text{ in} = 0.297 \text{ in} > 0.186 \text{ in} = \text{OK}$

Note: Design limit may be based on maximum lateral load from wind.
 Engineering / capacity of guard post to be determined by other.

STIFFENER CAPACITY / LATERAL WIND LOAD

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