

Project: Woodstock Railing
 Location: MLB1, Woodstock Bridge Railing,
 Multi-Loaded Multi-Span Beam
 [2015 International Building Code(AISC 14th Ed ASD)]
 HSS 2.375 x 0.218 x 7.3 FT / ASTM A501-36
 Section Adequate By: 46.4%
 Controlling Factor: Deflection

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DEFLECTIONS		Center
Live Load	0.25	IN L/351
Dead Load	0.01	in
Total Load	0.26	IN L/333
Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180		

REACTIONS		A	B
Live Load	273 lb	292 lb	
Dead Load	19 lb	19 lb	
Total Load	292 lb	311 lb	
Bearing Length	0.41 in	0.41 in	

BEAM DATA		Center
Span Length	7.3	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	7.3	ft

STEEL PROPERTIES
 HSS 2.375 x 0.218 - A501-36

Properties:

Steel Yield Strength:	Fy =	42 ksi
Modulus of Elasticity:	E =	29000 ksi
Tube Steel Section (X Axis):	dx =	2.38 in
Tube Steel Section (Y Axis):	dy =	2.38 in
Tube Steel Wall Thickness:	t =	0.203 in
Area:	A =	1.39 in ²
Moment of Inertia (X Axis):	Ix =	0.82 in ⁴
Section Modulus (X Axis):	Sx =	0.69 in ³
Plastic Section Modulus:	Z =	0.96 in ³

Design Properties per AISC 14th Edition Steel Manual:

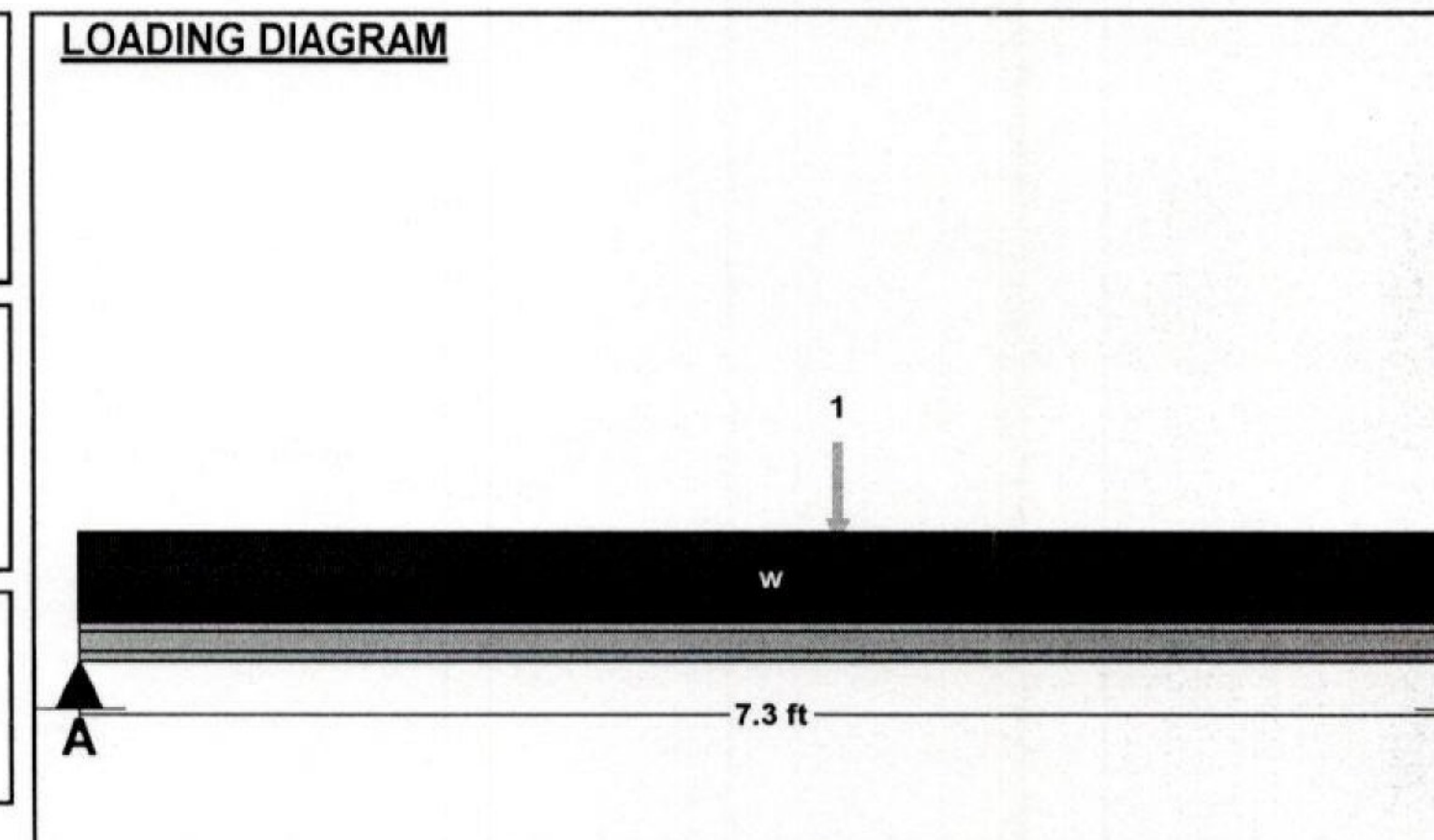
Flange Buckling Ratio:	FBR =	11.7
Allowable Flange Buckling Ratio:	AFBR =	48.33
Allowable Flange Buckling Ratio non-compact:	AFBR_NC =	214.05
Nominal Flexural Strength w/ Safety Factor:	Mn =	2012 ft-lb
Controlling Equation:	F8-1	
Shear Buckling Stress Coefficient Eqn. G6-2b:	Fcr =	25 ksi
Nominal Shear Strength w/ Safety Factor:	Vn =	10487 lb

Controlling Moment: 723 ft-lb
 4.02 Ft from left support of span 2 (Center Span)
 Created by combining all dead loads and live loads on span(s) 2

Controlling Shear: -311 lb
 7.0 Ft from left support of span 2 (Center Span)
 Created by combining all dead loads and live loads on span(s)

Comparisons with required sections:	Req'd	Provided
Moment of Inertia (deflection):	0.56 in ⁴	0.82 in ⁴
Moment:	723 ft-lb	2012 ft-lb
Shear:	-311 lb	10487 lb

NOTES
 2 inch shc 80 pipe, max span of 7.3 feet
 P=20#, w=50#/ft



UNIFORM LOADS		Center
Uniform Live Load	50	plf
Uniform Dead Load	0	plf
Beam Self Weight	5	plf
Total Uniform Load	55	plf

POINT LOADS - CENTER SPAN	
Load Number	One
Live Load	200 lb
Dead Load	0 lb
Location	4 ft

