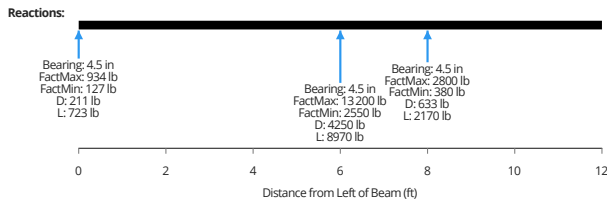




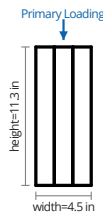
<b>Client:</b>	Happy Client	<b>Date:</b>	May 27, 2021
<b>Author:</b>	Efficient Engineer	<b>Job #:</b>	19201029
<b>Project:</b>	Example Project	<b>Subject:</b>	<b>B2</b> <span style="border: 1px solid green; border-radius: 5px; padding: 2px;">PASS</span>
<b>References:</b>	NDS 2018 (ASD)		

## Summary

<span style="border: 1px solid green; border-radius: 5px; padding: 2px;">37%</span>	Allowable Bending Moment	$M' = 7870 \text{ lb} \cdot \text{ft}$
<span style="border: 1px solid green; border-radius: 5px; padding: 2px;">24%</span>	Allowable Shear	$V' = 6070 \text{ lb}$
<span style="border: 1px solid orange; border-radius: 5px; padding: 2px;">96%</span>	Allowable Bearing Load	$R' = 13\,700 \text{ lb}$
<span style="border: 1px solid green; border-radius: 5px; padding: 2px;">11%</span>	Governing Live / Short-Term Deflection	$\delta_{ST} = -0.0295 \text{ in}$
	Critical Live / Short-Term Deflection Ratio	$(L/\delta)_{ST} = 1630$
<span style="border: 1px solid green; border-radius: 5px; padding: 2px;">8%</span>	Governing Long-Term Deflection	$\delta_{LT} = -0.0338 \text{ in}$
	Critical Long-Term Deflection Ratio	$(L/\delta)_{LT} = 1420$
<span style="border: 1px solid green; border-radius: 5px; padding: 2px;">7%</span>	Simplified DL+LL Deflection	$\delta_{DL+LL} = -0.0381 \text{ in}$
	Critical Simplified DL+LL Deflection Ratio	$(L/\delta)_{DL+LL} = 1260$

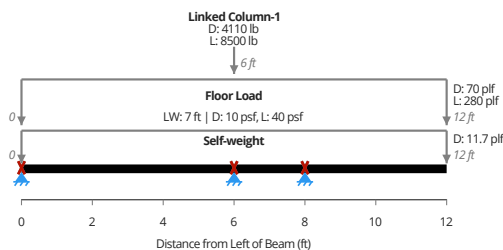


## Key Properties



Member	3 plies - 2x12 D.Fir-L No. 1
Beam Plan Length	$L_X = 12 \text{ ft}$
Continuous Bracing for Lateral Torsional Buckling	No continuous bracing

## Loads



## Design Conditions

Design Code for Load Combinations	International Building Code (IBC) 2018
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## Member Properties

Cross-Sectional Area	$A = 50.6 \text{ in}^2$
Strong Axis Moment of Inertia	$I_{xx} = 534 \text{ in}^4$
Section Modulus	$S = 94.9 \text{ in}^3$
Base Allowable Bending Stress	$F_b = 1000 \text{ psi}$
Base Allowable Shear Stress	$F_v = 180 \text{ psi}$
Base Perpendicular Compression Allowable Stress	$F_{c\perp} = 625 \text{ psi}$
Base Modulus of Elasticity	$E = 1\,700\,000 \text{ psi}$

## Elastic Modulus (NDS 2018 2.3)

Adjusted Modulus of Elasticity	$E' = 1\,700\,000 \text{ psi}$
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## Section Bending (NDS 2018 2.3)

Size Factor	$C_{F,b} = 1$
Incising Factor	$C_{i,b} = 1$

## Positive Bending (NDS 2018 2.3)

Governing Duration Factor - Positive Bending	$C_{D,b}^+ = 1$
Governing Beam Stability Factor - Positive Bending	$C_L^+ = 0.994$
Adjusted Bending Strength - Positive Bending	$F_b'^+ = 994 \text{ psi}$

## Negative Bending (NDS 2018 2.3)

Governing Duration Factor - Negative Bending	$C_{D,b}^- = 1$
Governing Beam Stability Factor - Negative Bending	$C_L^- = 0.995$
Adjusted Bending Strength - Negative Bending	$F_b'^- = 995 \text{ psi}$

## Shear Design (NDS 2018 3.4)

Governing Duration Factor	$C_D = 1$
Adjusted Shear Strength	$F_v' = 180 \text{ psi}$

## Bearing (NDS 2018 3.10)

Base Bearing Strength	$F_{c\perp}'/C_b = 625 \text{ psi}$
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## Comments