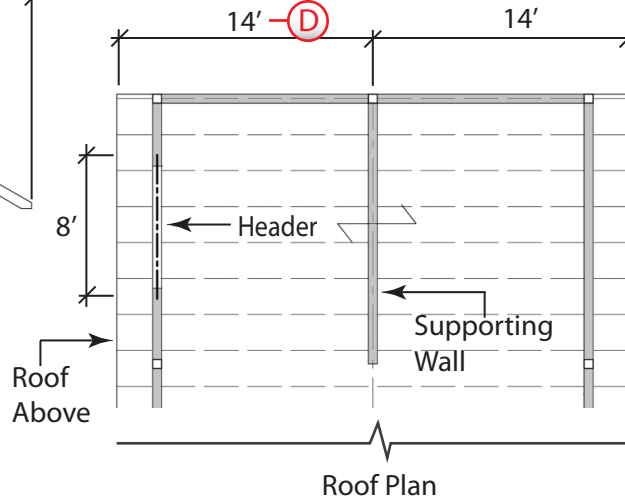
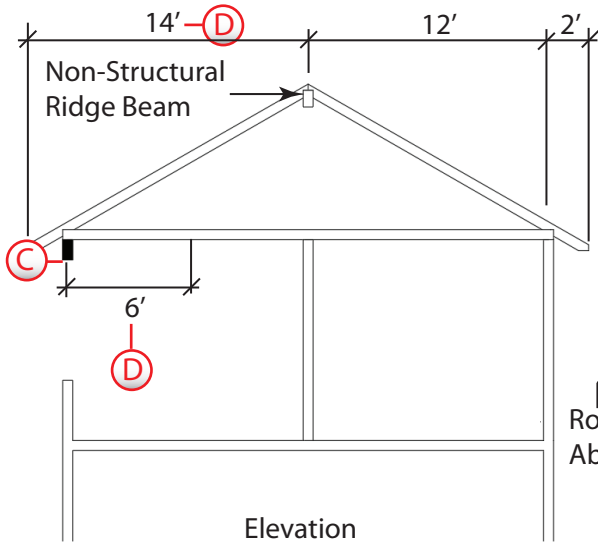


Roof Header [USA Wood Beam] - Example 2

See how to design a Roof Header to ASD or LRFD requirements.

Learn how to translate your elevation and plan directly to a ClearCalcs Calculation!



DESIGN CRITERIA

Type: Hem-Fir No.2 A

Length: 8'-0" B

Short-Term Defl.: $L/180$

Long-Term Defl.: $L/120$ F

LOADING DATA

Dead = 10 psf

Snow = 30 psf

Roof Live = 20 psf

Attic = 20 psf E

Key Properties

Primary Loading: height=11.5 in, width=3 in

Section Type: Standard Sections Database

Size and Grade: **2x12 H-F No. 2** A

Number of Piles: $n_{piles} = 2$

Beam Plan Length: $L_x = 8$ ft B

Total Material Length: $L = 8$ ft, 0 in

Continuous Bracing for Lateral Torsional Buckling: **No continuous bracing** C

Supports and Braces:

Support/Brace Type	Position From Left x_i (in)	Bearing Length l_i (in)
Pinned	0	3
Pinned	8	3
Pinned		

2 pieces of wood

Conservative to assume no continuous bracing. Dependant on floor connection above

Support distance measured from the left side of beam

Must be set for bearing check

Loads

Distributed Loads Table:

Label	Start Location x_s (ft)	End Location x_e (ft)	Total Start Trips TW_s (ft)	Total End Trips TW_e (ft)	Load Magnitudes w
Roof Loads	0	8	14	14	D, S, Lr
Attic Loads	0	8	6	6	L: 20 psf
					TW_s

Given area loads from building code

End location automatically set to "L" for entire beam plan length

Tributary area (see diagram)

Design Conditions

Design Code for Load Combinations: International Building Code (IBC) 2018

Beam Incline: Horizontal

Repeating Member?: Non-Repeating Repeating

Service Condition: Dry Wet

Temperature Range: $T \leq 100^\circ\text{F}$ $100^\circ\text{F} < T \leq 125^\circ\text{F}$ $125^\circ\text{F} < T \leq 150^\circ\text{F}$

Incised?: Yes No

Deflection Limit Absolute Limit: $\Delta_{max} = 0.25$ in

Live / Short-term Deflection Limit: $(L/)_ST = 180$

Long Term Deflection Limit: $(L/)_LT = 120$ F

Simplified DL+LL Deflection Limit: $(L/)_DL+LL = 100$

Maximum allowable deflection specified by building code

Generally no changes required for typical structure

Bending Axis: Strong (X-X) Weak (Y-Y)

Include Self-weight: Yes No

Live Load Type: Storage

Brace at Point Loads?: Yes No

Generally no changes required for typical structure

Live Load Type should be set as "Storage" for attic loads. If attic is inaccessible for storage or is occupied, this can be set to "Occupation".