

STRUCTURAL CALCULATIONS

FOR

Alura Clubhouse Lee's Summit, MO

Date:
6/16/2025



PREPARED BY:



1000 W Nifong Boulevard, Bldg 1 • Columbia, Missouri 65203

ASCE Hazards Report

Address:

Lee's Summit
Missouri,

Standard:

ASCE/SEI 7-16

Risk Category: II

Soil Class:

D - Stiff Soil

Latitude:

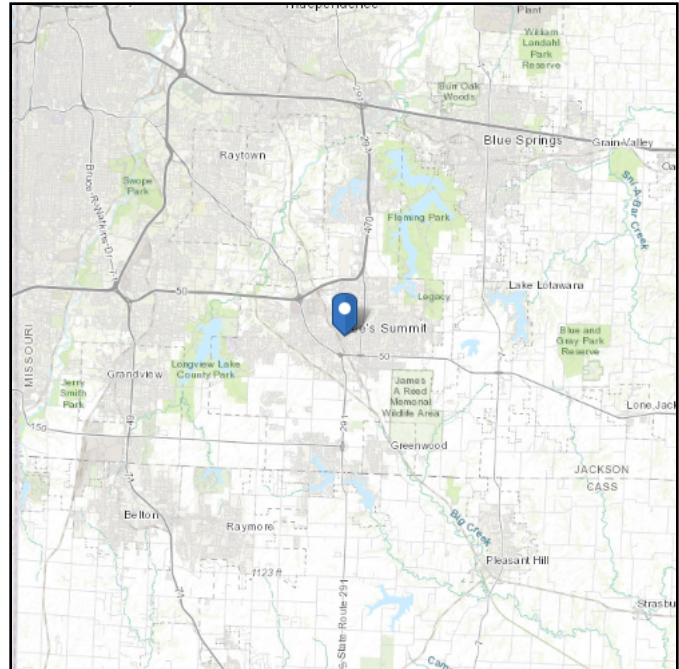
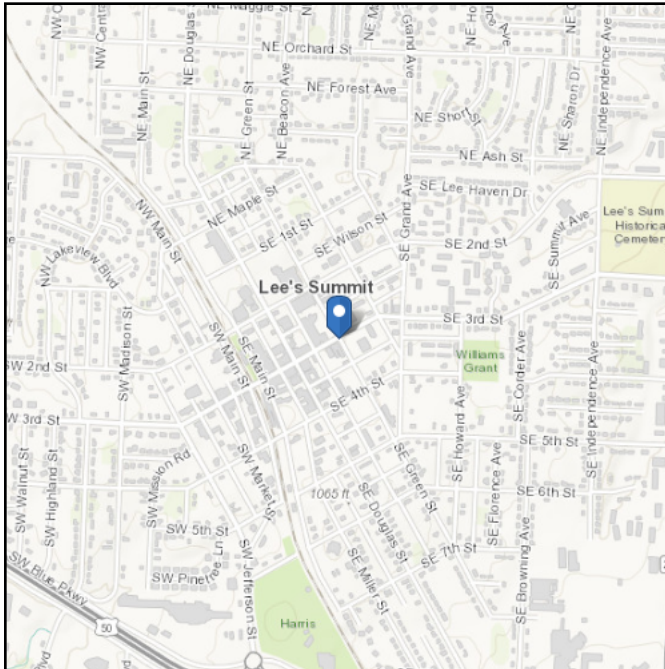
38.913214

Longitude:

-94.374672

Elevation:

1019.1279459585498 ft
(NAVD 88)



Wind

Results:

Wind Speed	109 Vmph
10-year MRI	76 Vmph
25-year MRI	83 Vmph
50-year MRI	88 Vmph
100-year MRI	94 Vmph

Data Source:

ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed:

Tue Jun 10 2025

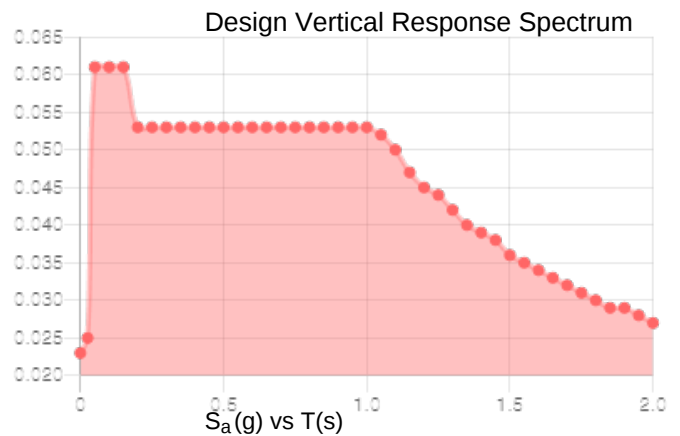
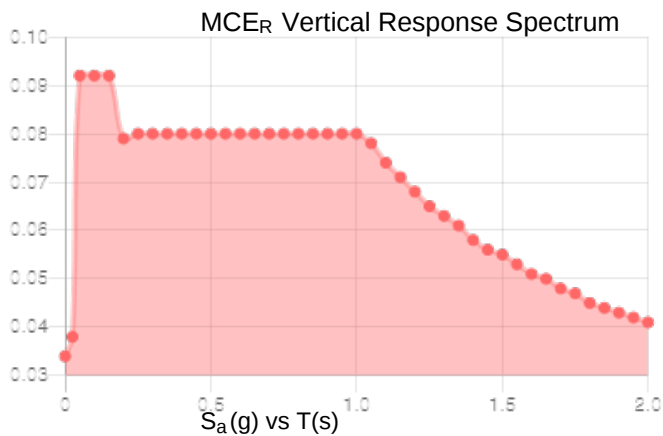
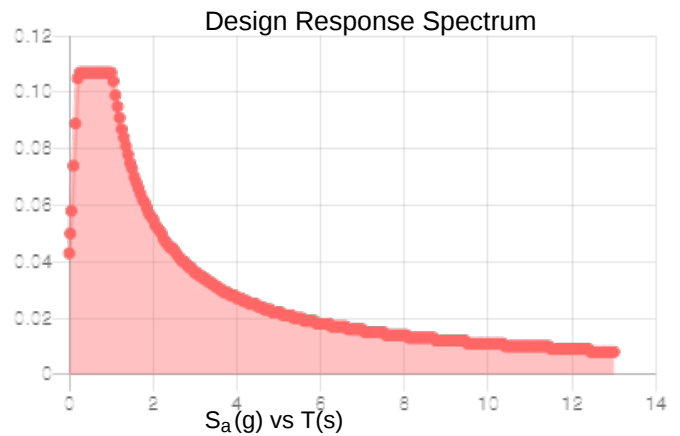
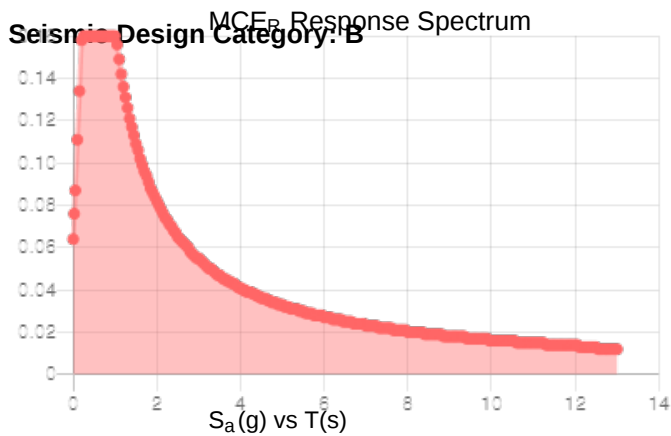
Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

Site Soil Class: D - Stiff Soil

Results:

S_S :	0.1	S_{D1} :	0.109
S_1 :	0.068	T_L :	12
F_a :	1.6	PGA :	0.047
F_v :	2.4	PGA _M :	0.076
S_{MS} :	0.16	F_{PGA} :	1.6
S_{M1} :	0.164	I_e :	1
S_{DS} :	0.107	C_v :	0.7



Data Accessed: Tue Jun 10 2025

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Results:

Ground Snow Load, p_g : 20 lb/ft²

Mapped Elevation: 750.7 ft

Data Source: ASCE/SEI 7-16, Table 7.2-8

Date Accessed: Tue Jun 10 2025

Values provided are ground snow loads. In areas designated "case study required," extreme local variations in ground snow loads preclude mapping at this scale. Site-specific case studies are required to establish ground snow loads at elevations not covered.

Snow load values are mapped to a 0.5 mile resolution. This resolution can create a mismatch between the mapped elevation and the site-specific elevation in topographically complex areas. Engineers should consult the local authority having jurisdiction in locations where the reported 'elevation' and 'mapped elevation' differ significantly from each other.

Rain

Results:

15-minute Precipitation Intensity: 7.49 in./h

60-minute Precipitation Intensity: 3.52 in./h

Data Source: NOAA National Weather Service, Precipitation Frequency Data Server, Atlas 14 (<https://www.nws.noaa.gov/oh/hdsc/>)

Date Accessed: Tue Jun 10 2025

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DESIGN DATA

2018 INTERNATIONAL BUILDING CODE / ASCE 7-16

BUILDING OCCUPANCY CATEGORY

II

ROOF LOADS

LIVE LOAD	20
ROOF MEMBRANE	2
RIGID INSULATION	6
20 GA METAL DECK	4
STEEL BAR JOISTS	3
SPRINKLERS	3
MECHANICAL ALLOWANCE	4
MISC. COLLATERAL	3
TOTAL	45 lbs/sq.ft

ROOF SNOW LOAD*

(*UNBALANCED & DRIFTING SNOW TO BE DETERMINED
IN ADDITION TO UNIFORM LOAD, WHERE APPLICABLE)

$p_g =$	20 lbs/sq.ft
$C_e =$	1.0
$I_s =$	1.10
$C_i =$	1.0
$p_i =$	15.5 lbs/sq.ft

BASIC DESIGN WIND LOAD

$V =$	109 M.P.H. (3-SECOND GUST)
EXPOSURE	C
INTERNAL PRESSURE COEFFICIENT =	± 0.18
COMPONENTS & CLADDING WIND (10 FT ²)	± 41 lbs/sq.ft

EARTHQUAKE DESIGN DATA

$S_S = 0.016$

$S_M = 0.082$

$S_{DS} = 0.140$

$S_{D1} = 0.120$

SITE CLASS D

$I_s = 1.0$

SEISMIC DESIGN CATEGORY B

BASIC SEISMIC-FORCE-RESISTING SYSTEM =

LIGHT-FRAME (WOOD) WALLS SHEATHED W/ WOOD STRUCTURAL PANELS RATED FOR
SHEAR RESISTANCE

$R = 6.5$

$\Omega_o = 3.0$

$C_d = 4.0$

EQUIVALENT LATERAL FORCE PROCEDURE

$V = 0.022W$

BASIC SEISMIC-FORCE-RESISTING SYSTEM =

STEEL ORDINARY CONCENTRICALLY BRACED FRAMES

$R = 3.25$

$\Omega_o = 2.0$

$C_d = 3.25$

EQUIVALENT LATERAL FORCE PROCEDURE

$V = 0.043W$

NET ALLOWABLE SOIL BEARING

2,500 lbs/sq.ft

(*PER THE GEOTECHNICAL REPORT BY OWN ENGINEERING DATED APRIL 1, 2024 &
ADDENDUM LETTER BY OWN ENGINEERING DATED DECEMBER 19, 2024)

Lateral Design

Project Name: Alura Clubhouse
Description: Wind

Wind Loads per ASCE 7-16

Sect. 28.3.2 $q=0.00256K(z)K(z_t)K(d)IV^2$

K_d= 0.85
K_z= 0.71
K_{zt}= 1.00
V_{ult}= 107 mph
I= 1.00
q= 17.688247 psf

Section 28.4.4 Minimum Design Wind

Sect. 28.4.1 Low Rise Building MWFR

Interior Portion				Roof Angle= 2.4 degrees	Horz Roof Dim 37.167 ft	
Factors				Loads		Horz. Value
WW wall=	0.40	+	-0.18 *q=	3.89 psf		
WW roof=	-0.69	+	-0.18 *q=	-15.39 psf		
LW roof=	-0.37	+	-0.18 *q=	-9.73 psf		
LW wall=	-0.29	+	-0.18 *q=	-8.31 psf		
Internal pressure Coeff.= + 0.18						
Exterior Portion				Loads		Horz. Value
WW wall=	0.61	+	-0.18 *q=	7.61 psf		
WW roof=	-1.07	+	-0.18 *q=	-22.11 psf		
LW roof=	-0.53	+	-0.18 *q=	-12.56 psf		
LW wall=	-0.43	+	-0.18 *q=	-10.79 psf		
Mean roof hgt= 28 ft				11.2 ft		
Least Horz. Dim= 64 ft				6.4 ft		
A value= 6.4 ft				3.0 ft		
						Min Horz. Roof Value
						12.46 plf

Sect. 30.4.2 Low Rise Building Comp. and Cladding

Interior Portion				Loads	
Roof 1	-0.80	+	-0.18 *q=	-17.33 psf	
Roof 2	-1.00	+	-0.18 *q=	-20.87 psf	
Roof 3	-1.00	+	-0.18 *q=	-20.87 psf	
Wall 4	-1.00	+	-0.18 *q=	-20.87 psf	
Wall 5	-1.20	+	-0.18 *q=	-24.41 psf	
Roof OH 1&2				-38.56 psf	
Roof OH 3				-38.56 psf	
Internal pressure Coeff.= + 0.18					

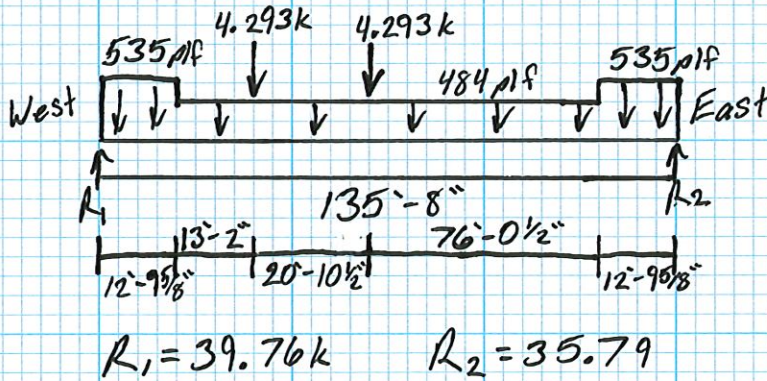
Lateral Design:

Point Loads From Stair Enclosure:

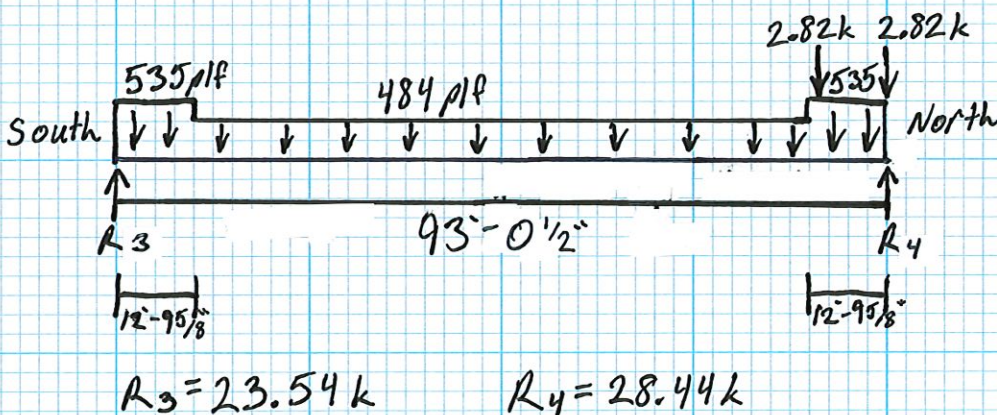
East-West Direction = 2.82k

North-South Direction = 4.293

Line Load For East and West Wall Lines:



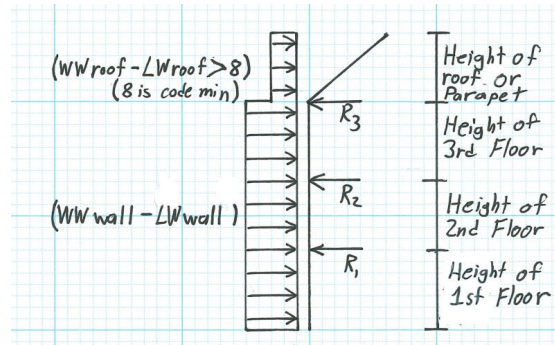
Line Load For Horizontal Lines



Project Name Alura Clubhouse
Description: Lateral Design

Line Load on Wall

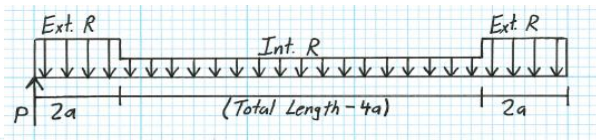
Is Roof Parapet, Hip, Or Gable	Parapet	(Gable Only Applies to End Walls)
Is there multiple stories	No	yes/no
How many stories	1	
Slope of Roof	2.4	°
q _z	18.36	psf
Height of wall 1st Floor	18.5	ft
Height of wall 2nd Floor	0	ft
Height of wall 3rd Floor	0	ft
Height of roof/parapet	5.8333	ft
Interior Portion		
WW Wall=	4.04	psf
WW Roof(horz. value)=	-0.67	psf
LW Roof(horz. value)=	-0.42	psf
LW Wall=	-8.63	psf
R ₁	385	plf
R ₂	0	plf
R ₃	0	plf
Exterior Portion		
WW Wall=	7.89	psf
WW Roof(horz. value)=	-0.96	psf
LW Roof(horz. value)=	-0.55	psf
LW Wall=	-11.2	psf
R ₁	444	plf
R ₂	0	plf
R ₃	0	plf



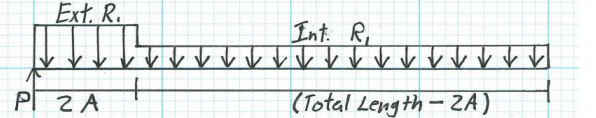
Point Load on Wall

Type of Reaction	Int.	yes/no
A value	6.4	ft
Total Length	87.6	ft
	Ultimate	Service
P 1st Floor	16861	10116
P 2nd Floor	0	0
P Roof	0	0

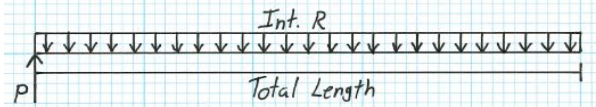
Point Load Manually Changed to Include Stair Enclosure Loads



Simple Span



Muilti Span



Int.

Shear Walls

Location of Wall: Two Small Vertical Sections

Ultimate or Service Loads		Ultimate	
Total Length of Wall Segments		23.81 ft	

Occurrences	Total Length of Wall (ft)	Total Opening Width (ft)	Total Full Height Sheathing (ft)	Shear Adj. Factor	Load on Wall (lbs)		
					1st Floor	2nd Floor	Top Floor
1	13.35	0	13.35	1	9454	0	0
1	10.46	0	10.46	1	7407	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0

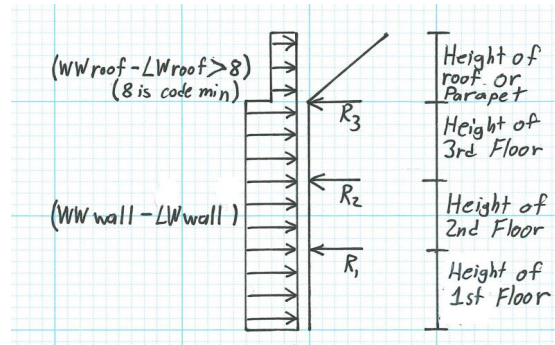
Anchor Spacing					
Applied Shear (plf)			Max O.C. (ft)		
Load From Enercalc			1st Floor	2nd Floor	3rd Floor
1st Floor	2nd Floor	3rd Floor	1/2" Ø Anchor	4" SDWH Screw	4" SDWH Screw
424.9			1.91	N/A	N/A
424.9			1.74	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A

1/2"Ø Anchor Shear Capacity = 845#
4" SDWH Screw Shear Capacity = 295#

Project Name Alura Clubhouse
Description: Lateral Design

Line Load on Wall

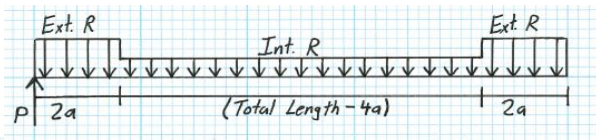
Is Roof Parapet, Hip, Or Gable	Parapet	(Gable Only Applies to End Walls)
Is there multiple stories	No	yes/no
How many stories	1	
Slope of Roof	2.4	°
q _z	18.36	psf
Height of wall 1st Floor	18.5	ft
Height of wall 2nd Floor	0	ft
Height of wall 3rd Floor	0	ft
Height of roof/parapet	5.8333	ft
Interior Portion		
WW Wall=	4.04	psf
WW Roof(horz. value)=	-0.67	psf
LW Roof(horz. value)=	-0.42	psf
LW Wall=	-8.63	psf
R ₁	385	plf
R ₂	0	plf
R ₃	0	plf
Exterior Portion		
WW Wall=	7.89	psf
WW Roof(horz. value)=	-0.96	psf
LW Roof(horz. value)=	-0.55	psf
LW Wall=	-11.2	psf
R ₁	444	plf
R ₂	0	plf
R ₃	0	plf



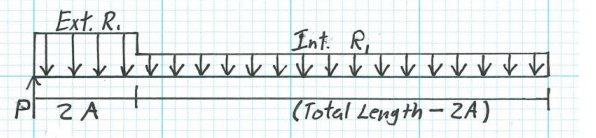
Point Load on Wall

Type of Reaction	Int.	yes/no
A value	6.4	ft
Total Length	74.82	ft
	Ultimate	Service
P 1st Floor	14401	8640
P 2nd Floor	0	0
P Roof	0	0

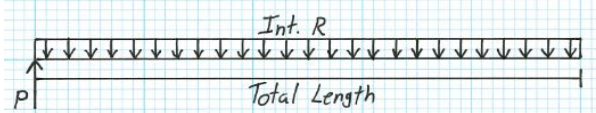
Point Load Manually Changed to Include Stair Enclosure Loads



Simple Span



Muilti Span



Int.

Shear Walls

Location of Wall:

Office Side Wall

Ultimate or Service Loads		Ultimate	
Total Length of Wall Segments		36.35 ft	

Occurrences	Total Length of Wall (ft)	Total Opening Width (ft)	Total Full Height Sheathing (ft)	Shear Adj. Factor	Load on Wall (lbs)		
					1st Floor	2nd Floor	Top Floor
1	36.35	0	36.35	1	14401	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0

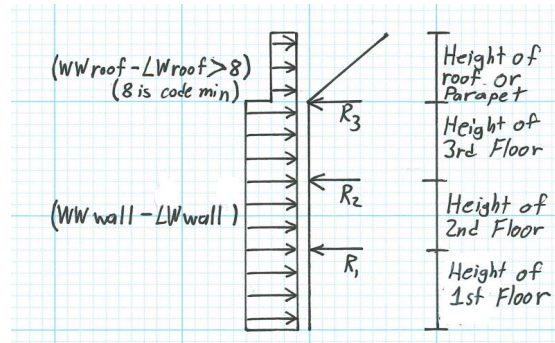
Anchor Spacing					
Applied Shear (plf)			Max O.C. (ft)		
Load From Enercalc			1st Floor	2nd Floor	3rd Floor
1st Floor	2nd Floor	3rd Floor	1/2" Ø Anchor	4" SDWH Screw	4" SDWH Screw
237.7			3.00	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A

1/2"Ø Anchor Shear Capacity = 845#
4" SDWH Screw Shear Capacity = 295#

Project Name Alura Clubhouse
Description: Lateral Design

Line Load on Wall

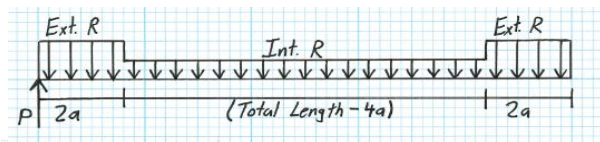
Is Roof Parapet, Hip, Or Gable	Parapet	(Gable Only Applies to End Walls)
Is there multiple stories	No	yes/no
How many stories	1	
Slope of Roof	2.4	°
q _z	18.36	psf
Height of wall 1st Floor	18.5	ft
Height of wall 2nd Floor	0	ft
Height of wall 3rd Floor	0	ft
Height of roof/parapet	5.8333	ft
Interior Portion		
WW Wall=	4.04	psf
WW Roof(horz. value)=	-0.67	psf
LW Roof(horz. value)=	-0.42	psf
LW Wall=	-8.63	psf
R ₁	385	plf
R ₂	0	plf
R ₃	0	plf
Exterior Portion		
WW Wall=	7.89	psf
WW Roof(horz. value)=	-0.96	psf
LW Roof(horz. value)=	-0.55	psf
LW Wall=	-11.2	psf
R ₁	444	plf
R ₂	0	plf
R ₃	0	plf



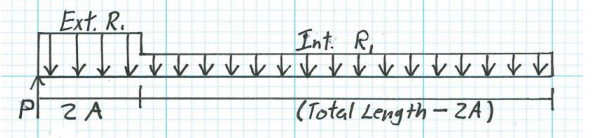
Point Load on Wall

Type of Reaction	Multi Span	yes/no	
A value	6.4	ft	
Total Length	48.052	ft	
	Ultimate	Service	
P 1st Floor	9908	5945	lbs
P 2nd Floor	0	0	lbs
P Roof	0	0	lbs

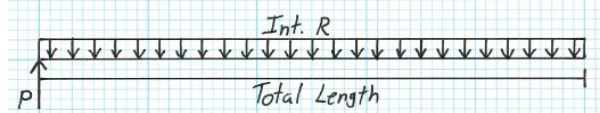
Point Load Manually Changed to Include Stair Enclosure Loads



Simple Span



Multi Span



Int.

Shear Walls

Location of Wall: Right Vertical Wall Option w/ No Middle Walls Used

Location of Wall:		Right Vertical Wall Option w/ No Middle Walls Used					
Ultimate or Service Loads	Ultimate						
Total Length of Wall Segments	60.667	ft					
Occurrences	Total Length of Wall (ft)	Total Opening Width (ft)	Total Full Height Sheathing (ft)	Shear Adj. Factor	Load on Wall (lbs)		
1	30.667	10.667	20	0.63	1st Floor	2nd Floor	Top Floor
1	30	10.667	19.333	0.63	7950	0	0
			0	1	7777	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0

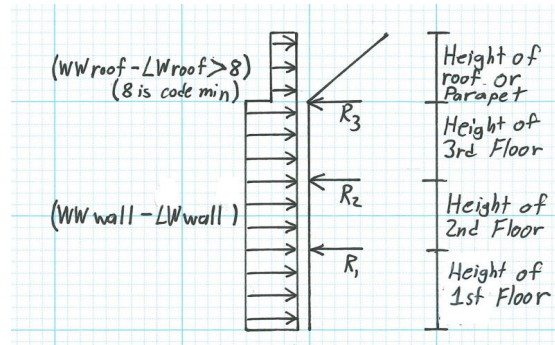
Anchor Spacing					
Applied Shear (plf)			Max O.C. (ft)		
Load From Enercalc			1st Floor	2nd Floor	3rd Floor
1st Floor	2nd Floor	3rd Floor	1/2" Ø Anchor	4" SDWH Screw	4" SDWH Screw
155.5			3.00	N/A	N/A
155.5			3.00	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A

1/2"Ø Anchor Shear Capacity = 845#
4" SDWH Screw Shear Capacity = 295#

Project Name Alura Clubhouse
Description: Lateral Design

Line Load on Wall

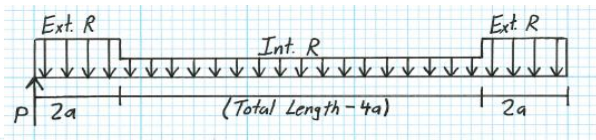
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Is there multiple stories	No	yes/no
How many stories	1	
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WW Roof(horz. value)=	-0.67	psf
LW Roof(horz. value)=	-0.42	psf
LW Wall=	-8.63	psf
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R ₂	0	plf
R ₃	0	plf
Exterior Portion		
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WW Roof(horz. value)=	-0.96	psf
LW Roof(horz. value)=	-0.55	psf
LW Wall=	-11.2	psf
R ₁	444	plf
R ₂	0	plf
R ₃	0	plf



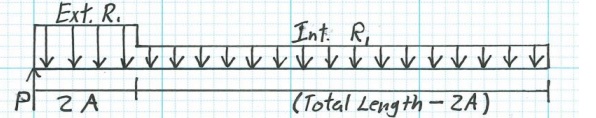
Point Load on Wall

Type of Reaction	Multi Span	yes/no
A value	6.4	ft
Total Length	52.5	ft
	Ultimate	Service
P 1st Floor	10772	6463
P 2nd Floor	0	0
P Roof	0	0

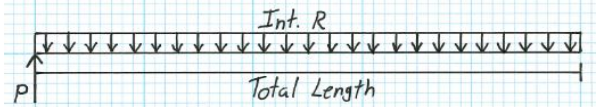
Point Load Manually Changed to Include Stair Enclosure Loads



Simple Span



Multi Span



Int.

Shear Walls

Location of Wall: Top Wall Line Horizontal

Ultimate or Service Loads		Ultimate					
Total Length of Wall Segments		69.817 ft					
Occurrences	Total Length of Wall (ft)	Total Opening Width (ft)	Total Full Height Sheathing (ft)	Shear Adj. Factor	Load on Wall (lbs)		
			0	1	1st Floor	2nd Floor	Top Floor
1	41.15	13.667	27.483	0.63	0	0	0
1	28.667	14.667	14	0.53	10078	0	0
			0	1	8346	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0

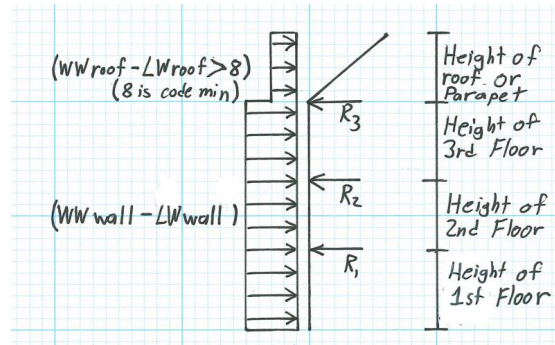
Anchor Spacing					
Applied Shear (plf)			Max O.C. (ft)		
Load From Enercalc			1st Floor	2nd Floor	3rd Floor
1st Floor	2nd Floor	3rd Floor	1/2" Ø Anchor	4" SDWH Screw	4" SDWH Screw
146.9			N/A	N/A	N/A
			3.00	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A
			N/A	N/A	N/A

1/2"Ø Anchor Shear Capacity = 845#
4" SDWH Screw Shear Capacity = 295#

Project Name Alura Clubhouse
Description: Lateral Design

Line Load on Wall

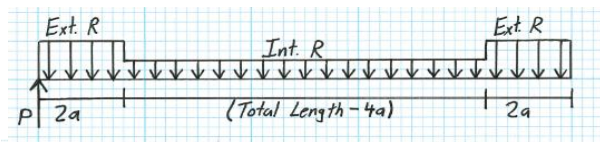
Is Roof Parapet, Hip, Or Gable	Parapet	(Gable Only Applies to End Walls)
Is there multiple stories	No	yes/no
How many stories	1	
Slope of Roof	2.4	°
q _z	18.36	psf
Height of wall 1st Floor	18.5	ft
Height of wall 2nd Floor	0	ft
Height of wall 3rd Floor	0	ft
Height of roof/parapet	5.8333	ft
Interior Portion		
WW Wall=	4.04	psf
WW Roof(horz. value)=	-0.67	psf
LW Roof(horz. value)=	-0.42	psf
LW Wall=	-8.63	psf
R ₁	385	plf
R ₂	0	plf
R ₃	0	plf
Exterior Portion		
WW Wall=	7.89	psf
WW Roof(horz. value)=	-0.96	psf
LW Roof(horz. value)=	-0.55	psf
LW Wall=	-11.2	psf
R ₁	444	plf
R ₂	0	plf
R ₃	0	plf



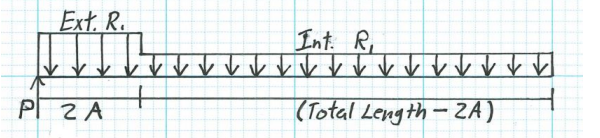
Point Load on Wall

Type of Reaction	Int.	yes/no
A value	6.4	ft
Total Length	93.042	ft
	Ultimate	Service
P 1st Floor	17908	10745
P 2nd Floor	0	0
P Roof	0	0

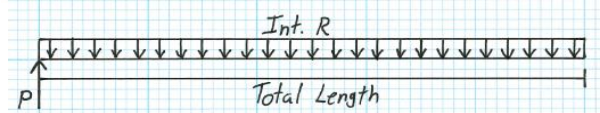
Point Load Manually Changed to Include Stair Enclosure Loads



Simple Span



Muilti Span



Int.

Shear Walls

Location of Wall: Office Bottom Wall

Ultimate or Service Loads		Ultimate
Total Length of Wall Segments		39.5 ft

Occurrences	Total Length of Wall (ft)	Total Opening Width (ft)	Total Full Height Sheathing (ft)	Shear Adj. Factor	Load on Wall (lbs)		
					1st Floor	2nd Floor	Top Floor
1	39.5	0	39.5	1	17908	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0
			0	1	0	0	0

Anchor Spacing		Max O.C. (ft)		
Applied Shear (plf)		1st Floor	2nd Floor	3rd Floor
Load From Enercalc		1/2" Ø Anchor	4" SDWH Screw	4" SDWH Screw
1st Floor	2nd Floor	3rd Floor		
272.1			3.00	N/A
			N/A	N/A
			N/A	N/A
			N/A	N/A
			N/A	N/A
			N/A	N/A
			N/A	N/A
			N/A	N/A
			N/A	N/A
			N/A	N/A
			N/A	N/A
			N/A	N/A

1/2"Ø Anchor Shear Capacity = 845#
4" SDWH Screw Shear Capacity = 295#

Line Load on Wall

Lateral Design

Point Load on Wall		
Type of Reaction	Multi Span	yes/no
A value	6.4	ft
Total Length	40	ft
	Ultimate	Service
P 1st Floor	8337	5002
P 2nd Floor	0	0
P Roof	0	0

Point Load Manually Changed to Include Stair Enclosure Loads

Shear Walls

Location of Wall:	Bottom Horizontal
--------------------------	-------------------

[illegible]

Simple Span

Muilti Span

Int.

1/2"Ø Anchor Shear Capacity = 845#
4" SDWH Screw Shear Capacity = 295#

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 13'-4 1/4" Short Vertical Wall

Code References

Calculations per NDS 2018, IBC 2021, SDPWS 2021
Load Combinations Used : ASCE 7-10

General Information

Calculations per NDS 2018, IBC 2021, SDPWS 2021

Total Wall Length 13.350 ft
Number of Stories 1
Story #1 Height 16.0 ft

Framing & Chord Material :
Wood Species : Douglas Fir-Larch
Wood Grade : No.2
Fc - Prll = 1,350.0 psi Ft - Tension 575.0 psi
Fc - Perp = 625.0 psi E 1,600.0 ksi
Specific Gravity = .5002
SDC : Seismic Design Category : B

Sheathing

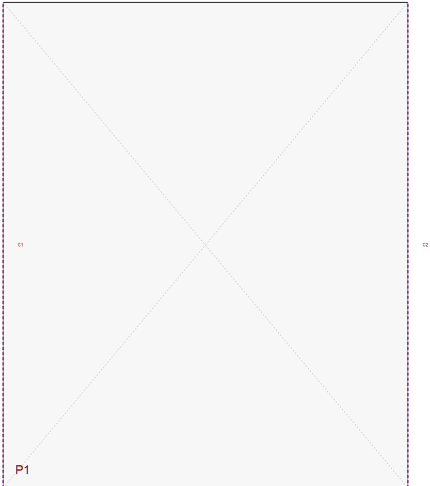
Main Sheathing
SDPWS 2021 Construction Table : 4.3A
Wood Structural Panels, Sheathing, 7/16" Thk, 1-3/8" Min Pen, 8d Fstnrs
Sheathing is Blocked
Nominal Shear Capacities (plf) :
6" Spac. 670 3" Spac. 1260
4" Spac. 980 2" Spac. 1640

Chord Data

Chord Member Size for each level : See Chord Summary Tables for number of Chords required at each panel end.
Level 1 Chord Size : 2x8 Chord Cf: Comp: 1.0 Tens: 1.0 Max. Allow Stress Ratio : 1.0 : 1
Chord Area = 10.875 in^2
All chords treated as fully braced about both axes

Opening ID	Dist to Left Edge	Opening Width	Dist to Bottom	Opening Height
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft

Story 1 ---->



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 13'-4 1/4" Short Vertical Wall

Shear Panel Summary

Panel ID	Level #	Max Shear		# Sides Used	Shear Summary & Attachment					
		(kips)	Load Comb		Actual (plf)	Allow	Status	Attachment		
								Height/Width Ratio		
								Actual	Allow	Notes
P1	1	5.672	+D+0.60W	1	424.9	490.0	OK	Use 4" at panel edges, 12" in field		
								1.20	3.50	Ratio OK

Chord Summary

Dist from			CHORD DESIGN SUMMARY						
Chord ID	Level #	Left (ft)			# Req'd @ Location	Member Size	Stress Ratio	Governs	Status
C1	1	0.00			2	2x8	0.76	Tension	OK
Max Compression in chord :			0.28 k	Load Comb :D Only		Max fc =	13 psi	Allow F'c =	1,350 psi
Max Tension in chord :			-6.60 k	Load Comb :+0.60D+0.60W		Max ft =	438 psi	Allow F't =	575 psi
Hold Down force at anchorage :			-5.96 k	Load Comb :+0.60D+0.60W					
User-specified anchorage device :									
C2	1	13.35			1	2x8	0.48	Comp	OK
Max Compression in chord :			7.08 k	Load Comb :+D+0.60W		Max fc =	651 psi	Allow F'c =	1,350 psi
Max Tension in chord :			0.00 k	Load Comb :		Max ft =	0 psi	Allow F't =	575 psi
Hold Down force at anchorage :			No net uplift force						
User-specified anchorage device :									

Chord Naming Information C : Item is a Chord L : Followed by level number # : Followed by chord number from left to right
WL : Indicates Chord is on left edge of wall WR : Indicates Chord is on right edge of wall

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 10'-5 1/2" Short Vertical Wall

Code References

Calculations per NDS 2018, IBC 2021, SDPWS 2021
Load Combinations Used : ASCE 7-10

General Information

Total Wall Length	10.460 ft
Number of Stories	1
Story #1 Height	16.0 ft

Calculations per NDS 2018, IBC 2021, SDPWS 2021

Framing & Chord Material :			
Wood Species :	Douglas Fir-Larch		
Wood Grade :	No.2		
Fc - Prll =	1,350.0 psi	Ft - Tension	575.0 psi
Fc - Perp =	625.0 psi	E	1,600.0 ksi
Specific Gravity =	.5002		
SDC : Seismic Design Category :	B		

Sheathing

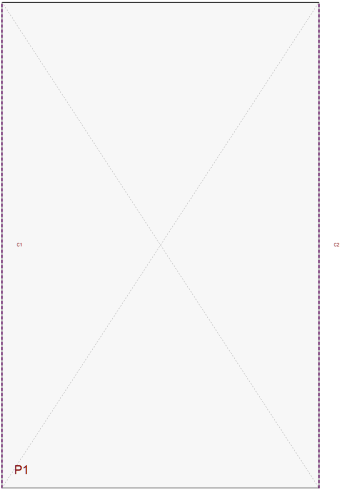
Main Sheathing			
SDPWS 2021 Construction Table : 4.3A			
Wood Structural Panels, Sheathing, 7/16" Thk, 1-3/8" Min Pen, 8d Fstnrs			
Sheathing is Blocked			
Nominal Shear Capacities (plf) :			
6" Spac.	670	3" Spac.	1260
4" Spac.	980	2" Spac.	1640

Chord Data

Chord Member Size for each level :				See Chord Summary Tables for number of Chords required at each panel end.			
Level 1 Chord Size :	2x8	Chord Cf:	Comp: 1.0	Tens: 1.0	Max. Allow Stress Ratio :	1.0 : 1	
Chord Area = 10.875 in^2				All chords treated as fully braced about both axes			

Opening ID	Dist to Left Edge	Opening Width	Dist to Bottom	Opening Height
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft

Story 1 ---->>



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 10'-5 1/2" Short Vertical Wall

Shear Panel Summary

Panel ID	Level #	Max Shear (kips)	Load Comb	# Sides		Shear Summary & Attachment						
				Used	Actual	(plf)	Allow	Status	Attachment	Height/Width Ratio		
										Actual	Allow	Notes
P1	1	4.444	+D+0.60W	1	424.9		490.0	OK	Use 4" at panel edges, 12" in field			
									1.53	3.50	Ratio OK	

Chord Summary

Dist from			CHORD DESIGN SUMMARY				
Chord ID	Level #	Left (ft)	# Req'd @ Location	Member Size	Stress Ratio	Governs	Status
C1	1	0.00	2	2x8	0.77	Tension	OK
Max Compression in chord :			0.28 k	Load Comb :D Only	Max fc =	13 psi	Allow F'c = 1,350 psi
Max Tension in chord :			-6.64 k	Load Comb :+0.60D+0.60W	Max ft =	445 psi	Allow F't = 575 psi
Hold Down force at anchorage :			-6.14 k	Load Comb :+0.60D+0.60W			
User-specified anchorage device :							
C2	1	10.46	1	2x8	0.48	Comp	OK
Max Compression in chord :			7.08 k	Load Comb :+D+0.60W	Max fc =	651 psi	Allow F'c = 1,350 psi
Max Tension in chord :			0.00 k	Load Comb :	Max ft =	0 psi	Allow F't = 575 psi
Hold Down force at anchorage :			No net uplift force				
User-specified anchorage device :							

Chord Naming Information	C : Item is a Chord	L : Followed by level number	# : Followed by chord number from left to right
	WL : Indicates Chord is on left edge of wall		WR : Indicates Chord is on right edge of wall

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 36'-4 1/4" Office Side Wall

Code References

Calculations per NDS 2018, IBC 2021, SDPWS 2021
Load Combinations Used : ASCE 7-10

General Information

Calculations per NDS 2018, IBC 2021, SDPWS 2021

Total Wall Length 36.350 ft
Number of Stories 1
Story #1 Height 16.0 ft

Framing & Chord Material :
Wood Species : Douglas Fir-Larch
Wood Grade : No.2
Fc - Prll = 1,350.0 psi Ft - Tension 575.0 psi
Fc - Perp = 625.0 psi E 1,600.0 ksi
Specific Gravity = .5002
SDC : Seismic Design Category : B

Sheathing

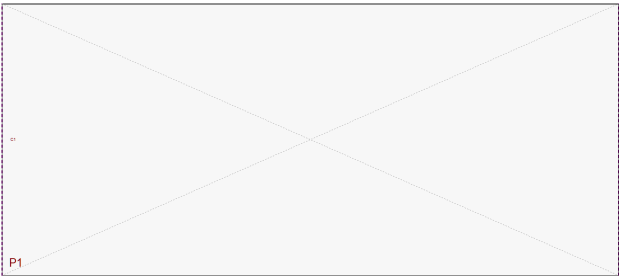
Main Sheathing
SDPWS 2021 Construction Table : 4.3A
Wood Structural Panels, Sheathing, 7/16" Thk, 1-3/8" Min Pen, 8d Fstnrs
Sheathing is Blocked
Nominal Shear Capacities (plf) :
6" Spac. 670 3" Spac. 1260
4" Spac. 980 2" Spac. 1640

Chord Data

Chord Member Size for each level : See Chord Summary Tables for number of Chords required at each panel end.
Level 1 Chord Size : 2x8 Chord Cf: Comp: 1.0 Tens: 1.0 Max. Allow Stress Ratio : 1.0 : 1
Chord Area = 10.875 in^2
All chords treated as fully braced about both axes

Opening ID	Dist to Left Edge	Opening Width	Dist to Bottom	Opening Height
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft

Story 1 ---->>



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 36'-4 1/4" Office Side Wall

Shear Panel Summary

Panel ID	Level #	Max Shear		# Sides Used	Shear Summary & Attachment					
		(kips)	Load Comb		Actual (plf)	Allow	Status	Attachment		
								Height/Width Ratio		
								Actual	Allow	Notes
P1	1	8.641	+D+0.60W	1	237.7	335.0	OK	Use 6" at panel edges, 12" in field		
								0.44	3.50	Ratio OK

Chord Summary

					CHORD DESIGN SUMMARY				
Chord ID	Level #	Dist from Left (ft)	# Req'd @ Location	Member Size	Stress Ratio	Governs	Status		
C1	1	0.00	1	2x8	0.52	Tension	OK		
Max Compression in chord :			0.28 k	Load Comb :D Only	Max fc =	26 psi	Allow F'c =	1,350 psi	
Max Tension in chord :			-3.26 k	Load Comb :+0.60D+0.60W	Max ft =	300 psi	Allow F't =	575 psi	
Hold Down force at anchorage :			-1.51 k	Load Comb :+0.60D+0.60W					
User-specified anchorage device :									
C2	1	36.35	1	2x8	0.28	Comp	OK		
Max Compression in chord :			4.08 k	Load Comb :+D+0.60W	Max fc =	375 psi	Allow F'c =	1,350 psi	
Max Tension in chord :			0.00 k	Load Comb :	Max ft =	0 psi	Allow F't =	575 psi	
Hold Down force at anchorage :			No net uplift force						
User-specified anchorage device :									

Chord Naming Information C : Item is a Chord L : Followed by level number # : Followed by chord number from left to right
WL : Indicates Chord is on left edge of wall WR : Indicates Chord is on right edge of wall

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 30'-8" Right Vertical Wall

Code References

Calculations per NDS 2018, IBC 2021, SDPWS 2021
Load Combinations Used : ASCE 7-10

General Information

Calculations per NDS 2018, IBC 2021, SDPWS 2021

Total Wall Length 30.667 ft
Number of Stories 1
Story #1 Height 16.0 ft

Framing & Chord Material :
Wood Species : Douglas Fir-Larch
Wood Grade : No.2
Fc - Prll = 1,350.0 psi Ft - Tension 575.0 psi
Fc - Perp = 625.0 psi E 1,600.0 ksi
Specific Gravity = .5002
SDC : Seismic Design Category : B

Sheathing

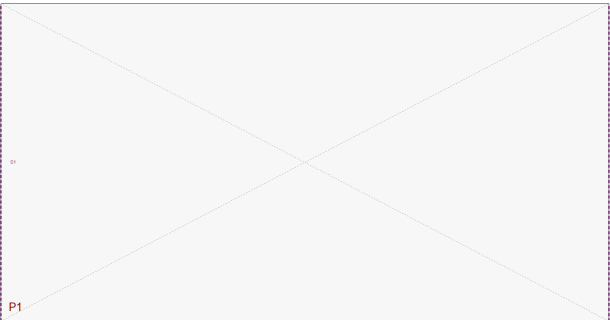
Main Sheathing
SDPWS 2021 Construction Table : 4.3A
Wood Structural Panels, Sheathing, 7/16" Thk, 1-3/8" Min Pen, 8d Fstnrs
Sheathing is Blocked
Nominal Shear Capacities (plf) :
6" Spac. 670 3" Spac. 1260
4" Spac. 980 2" Spac. 1640

Chord Data

Chord Member Size for each level : See Chord Summary Tables for number of Chords required at each panel end.
Level 1 Chord Size : 2x8 Chord Cf: Comp: 1.0 Tens: 1.0 Max. Allow Stress Ratio : 1.0 : 1
Chord Area = 10.875 in^2
All chords treated as fully braced about both axes

Opening ID	Dist to Left Edge	Opening Width	Dist to Bottom	Opening Height
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft

Story 1 ---->>



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 30'-8" Right Vertical Wall

Shear Panel Summary

Panel ID	Level #	Max Shear		# Sides Used	Shear Summary & Attachment						
		(kips)	Load Comb		Actual (plf)	Allow	Status	Attachment			
								Height/Width Ratio			
								Actual	Allow	Notes	
P1	1	4.770	+D+0.60W	1	155.5	335.0	OK	Use 6" at panel edges, 12" in field	0.52	3.50	Ratio OK

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 30'-0" Right Vertical Wall

Code References

Calculations per NDS 2018, IBC 2021, SDPWS 2021
Load Combinations Used : ASCE 7-10

General Information

Calculations per NDS 2018, IBC 2021, SDPWS 2021

Total Wall Length	30.0 ft	Framing & Chord Material :			
Number of Stories	1	Wood Species :	Douglas Fir-Larch		
Story #1 Height	16.0 ft	Wood Grade :	No.2		
		Fc - Prll =	1,350.0 psi	Ft - Tension	575.0 psi
		Fc - Perp =	625.0 psi	E	1,600.0 ksi
		Specific Gravity =	.5002		
		SDC : Seismic Design Category :	B		

Sheathing

Main Sheathing

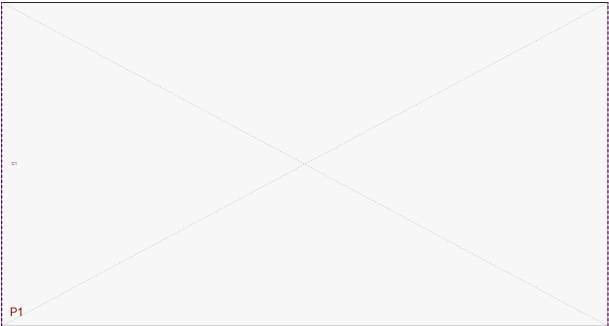
SDPWS 2021 Construction Table : 4.3A
Wood Structural Panels, Sheathing, 7/16" Thk, 1-3/8" Min Pen, 8d Fstnrs
Sheathing is Blocked
Nominal Shear Capacities (plf) :
6" Spac. 670 3" Spac. 1260
4" Spac. 980 2" Spac. 1640

Chord Data

Chord Member Size for each level : See Chord Summary Tables for number of Chords required at each panel end.
Level 1 Chord Size : 2x8 Chord Cf: Comp: 1.0 Tens: 1.0 Max. Allow Stress Ratio : 1.0 : 1
Chord Area = 10.875 in^2
All chords treated as fully braced about both axes

Opening ID	Dist to Left Edge	Opening Width	Dist to Bottom	Opening Height
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft

Story 1 ---->>



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 30'-0" Right Vertical Wall

Shear Panel Summary

Panel ID	Level #	Max Shear		# Sides		Shear Summary & Attachment					
		(kips)	Load Comb	Used	Actual	(plf)	Allow	Status	Attachment		
P1	1	4.666	+D+0.60W	1	155.5	335.0	OK	Use 6" at panel edges, 12" in field	Height/Width Ratio		
									Actual	Allow	Notes
									0.53	3.50	Ratio OK

Chord Summary

Dist from			CHORD DESIGN SUMMARY					
Chord ID	Level #	Left (ft)	# Req'd @ Location	Member Size	Stress Ratio	Governs	Status	
C1	1	0.00	1	2x8	0.33	Tension	OK	
Max Compression in chord :			0.28 k	Load Comb :D Only	Max fc =	26 psi	Allow F'c =	1,350 psi
Max Tension in chord :			-2.04 k	Load Comb :+0.60D+0.60W	Max ft =	187 psi	Allow F't =	575 psi
Hold Down force at anchorage :			-0.60 k	Load Comb :+0.60D+0.60W				
User-specified anchorage device :								
C2	1	30.00	1	2x8	0.19	Comp	OK	
Max Compression in chord :			2.77 k	Load Comb :+D+0.60W	Max fc =	255 psi	Allow F'c =	1,350 psi
Max Tension in chord :			0.00 k	Load Comb :	Max ft =	0 psi	Allow F't =	575 psi
Hold Down force at anchorage :			No net uplift force					
User-specified anchorage device :								

Chord Naming Information	C : Item is a Chord	L : Followed by level number	# : Followed by chord number from left to right
	WL : Indicates Chord is on left edge of wall		WR : Indicates Chord is on right edge of wall

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 41'-1 3/4" Top Wall Line Horizontal

Code References

Calculations per NDS 2018, IBC 2021, SDPWS 2021
Load Combinations Used : ASCE 7-10

General Information

Calculations per NDS 2018, IBC 2021, SDPWS 2021

Total Wall Length 41.150 ft
Number of Stories 1
Story #1 Height 16.0 ft

Framing & Chord Material :
Wood Species : Douglas Fir-Larch
Wood Grade : No.2
Fc - Prll = 1,350.0 psi Ft - Tension 575.0 psi
Fc - Perp = 625.0 psi E 1,600.0 ksi
Specific Gravity = .5002
SDC : Seismic Design Category : B

Sheathing

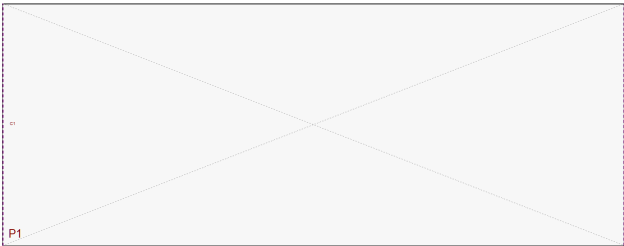
Main Sheathing
SDPWS 2021 Construction Table : 4.3A
Wood Structural Panels, Sheathing, 7/16" Thk, 1-3/8" Min Pen, 8d Fstnrs
Sheathing is Blocked
Nominal Shear Capacities (plf) :
6" Spac. 670 3" Spac. 1260
4" Spac. 980 2" Spac. 1640

Chord Data

Chord Member Size for each level : See Chord Summary Tables for number of Chords required at each panel end.
Level 1 Chord Size : 2x8 Chord Cf: Comp: 1.0 Tens: 1.0 Max. Allow Stress Ratio : 1.0 : 1
Chord Area = 10.875 in^2
All chords treated as fully braced about both axes

Opening ID	Dist to Left Edge	Opening Width	Dist to Bottom	Opening Height
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft

Story 1 ---->>



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 41'-1 3/4" Top Wall Line Horizontal

Shear Panel Summary

Panel ID	Level #	Max Shear		# Sides Used	Shear Summary & Attachment					
		(kips)	Load Comb		Actual (plf)	Allow	Status	Attachment		
								Height/Width Ratio		
								Actual	Allow	Notes
P1	1	6.047	+D+0.60W	1	146.9	335.0	OK	Use 6" at panel edges, 12" in field		
								0.39	3.50	Ratio OK

Chord Summary

				CHORD DESIGN SUMMARY				
Chord ID	Level #	Dist from Left (ft)		# Req'd @ Location	Member Size	Stress Ratio	Governs	Status
C1	1	0.00		1	2x8	0.05	Comp	OK
Max Compression in chord :				0.73 k	Load Comb :D Only	Max fc =	67 psi	Allow F'c = 1,350 psi
Max Tension in chord :				0.00 k	Load Comb :	Max ft =	0 psi	Allow F't = 575 psi
Hold Down force at anchorage :				No net uplift force				
User-specified anchorage device :								
C2	1	41.15		1	2x8	0.21	Comp	OK
Max Compression in chord :				3.08 k	Load Comb :+D+0.60W	Max fc =	283 psi	Allow F'c = 1,350 psi
Max Tension in chord :				0.00 k	Load Comb :	Max ft =	0 psi	Allow F't = 575 psi
Hold Down force at anchorage :				No net uplift force				
User-specified anchorage device :								

Chord Naming Information C : Item is a Chord L : Followed by level number # : Followed by chord number from left to right
WL : Indicates Chord is on left edge of wall WR : Indicates Chord is on right edge of wall

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 28'-8" (14'-8" Opening) Top Wall Line Horizontal

Code References

Calculations per NDS 2018, IBC 2021, SDPWS 2021
Load Combinations Used : ASCE 7-10

General Information

Calculations per NDS 2018, IBC 2021, SDPWS 2021

Total Wall Length	28.667 ft	Framing & Chord Material :			
Number of Stories	1	Wood Species :	Douglas Fir-Larch		
Story #1 Height	16.0 ft	Wood Grade :	No.2		
		Fc - Prll =	1,350.0 psi	Ft - Tension	575.0 psi
		Fc - Perp =	625.0 psi	E	1,600.0 ksi
		Specific Gravity =	.5002		
		SDC : Seismic Design Category :	B		

Sheathing

Main Sheathing

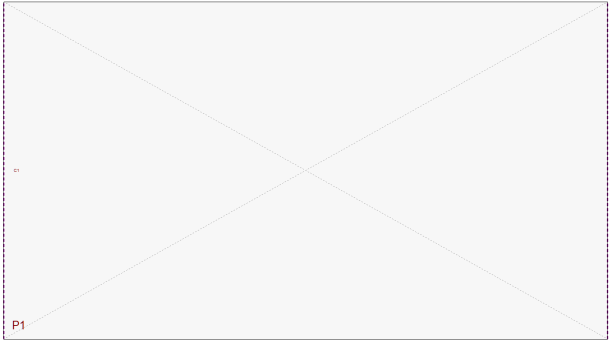
SDPWS 2021 Construction Table : 4.3A
Wood Structural Panels, Sheathing, 7/16" Thk, 1-3/8" Min Pen, 8d Fstnrs
Sheathing is Blocked
Nominal Shear Capacities (plf) :
6" Spac. 670 3" Spac. 1260
4" Spac. 980 2" Spac. 1640

Chord Data

Chord Member Size for each level : See Chord Summary Tables for number of Chords required at each panel end.
Level 1 Chord Size : 2x8 Chord Cf: Comp: 1.0 Tens: 1.0 Max. Allow Stress Ratio : 1.0 : 1
Chord Area = 10.875 in^2
All chords treated as fully braced about both axes

Opening ID	Dist to Left Edge	Opening Width	Dist to Bottom	Opening Height
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft

Story 1 ---->>



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 28'-8" (14'-8" Opening) Top Wall Line Horizontal

Shear Panel Summary

Panel ID	Level #	Max Shear		# Sides		Shear Summary & Attachment				
		(kips)	Load Comb	Used	Actual (plf)	Allow	Status	Attachment		
								Height/Width Ratio		
								Actual	Allow	Notes
P1	1	5.008	+D+0.60W	1	174.7	335.0	OK	Use 6" at panel edges, 12" in field		
								0.56	3.50	Ratio OK

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 39'-6" Bottom Office Wall

Code References

Calculations per NDS 2018, IBC 2021, SDPWS 2021
Load Combinations Used : ASCE 7-10

General Information

Calculations per NDS 2018, IBC 2021, SDPWS 2021

Total Wall Length	39.50 ft	Framing & Chord Material :			
Number of Stories	1	Wood Species :	Douglas Fir-Larch		
Story #1 Height	16.0 ft	Wood Grade :	No.2		
		Fc - Prll =	1,350.0 psi	Ft - Tension	575.0 psi
		Fc - Perp =	625.0 psi	E	1,600.0 ksi
		Specific Gravity =	.5002		
		SDC : Seismic Design Category :	B		

Sheathing

Main Sheathing

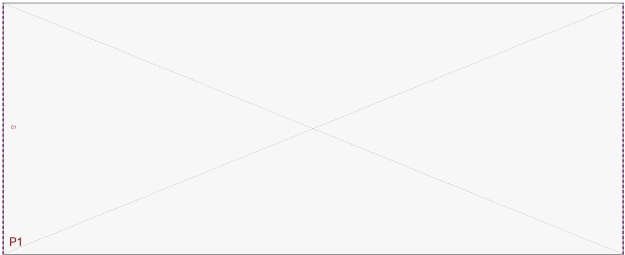
SDPWS 2021 Construction Table : 4.3A
Wood Structural Panels, Sheathing, 7/16" Thk, 1-3/8" Min Pen, 8d Fstnrs
Sheathing is Blocked
Nominal Shear Capacities (plf) :
6" Spac. 670 3" Spac. 1260
4" Spac. 980 2" Spac. 1640

Chord Data

Chord Member Size for each level : See Chord Summary Tables for number of Chords required at each panel end.
Level 1 Chord Size : 2x8 Chord Cf: Comp: 1.0 Tens: 1.0 Max. Allow Stress Ratio : 1.0 : 1
Chord Area = 10.875 in^2
All chords treated as fully braced about both axes

Opening ID	Dist to Left Edge	Opening Width	Dist to Bottom	Opening Height
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft

Story 1 ---->>



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 39'-6" Bottom Office Wall

Shear Panel Summary

Panel ID	Level #	Max Shear		# Sides Used	Shear Summary & Attachment					
		(kips)	Load Comb		Actual (plf)	Allow	Status	Attachment		
								Height/Width Ratio		
								Actual	Allow	Notes
P1	1	10.746	+D+0.60W	1	272.1	335.0	OK	Use 6" at panel edges, 12" in field		
								0.41	3.50	Ratio OK

Chord Summary

Dist from			CHORD DESIGN SUMMARY				
Chord ID	Level #	Left (ft)	# Req'd @ Location	Member Size	Stress Ratio	Governs	Status
C1	1	0.00	1	2x8	0.60	Tension	OK
Max Compression in chord :			0.28 k	Load Comb :D Only	Max fc =	26 psi	Allow F'c = 1,350 psi
Max Tension in chord :			-3.76 k	Load Comb :+0.60D+0.60W	Max ft =	346 psi	Allow F't = 575 psi
Hold Down force at anchorage :			-1.86 k	Load Comb :+0.60D+0.60W			
User-specified anchorage device :							
C2	1	39.50	1	2x8	0.32	Comp	OK
Max Compression in chord :			4.63 k	Load Comb :+D+0.60W	Max fc =	426 psi	Allow F'c = 1,350 psi
Max Tension in chord :			0.00 k	Load Comb :	Max ft =	0 psi	Allow F't = 575 psi
Hold Down force at anchorage :			No net uplift force				
User-specified anchorage device :							

Chord Naming Information C : Item is a Chord L : Followed by level number # : Followed by chord number from left to right
WL : Indicates Chord is on left edge of wall WR : Indicates Chord is on right edge of wall

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 26'-4" Bottom Horizontal

Code References

Calculations per NDS 2018, IBC 2021, SDPWS 2021
Load Combinations Used : ASCE 7-10

General Information

Calculations per NDS 2018, IBC 2021, SDPWS 2021

Total Wall Length	26.333 ft	Framing & Chord Material :			
Number of Stories	1	Wood Species :	Douglas Fir-Larch		
Story #1 Height	16.0 ft	Wood Grade :	No.2		
		Fc - Prll =	1,350.0 psi	Ft - Tension	575.0 psi
		Fc - Perp =	625.0 psi	E	1,600.0 ksi
		Specific Gravity =	.5002		
		SDC : Seismic Design Category :	B		

Sheathing

Main Sheathing

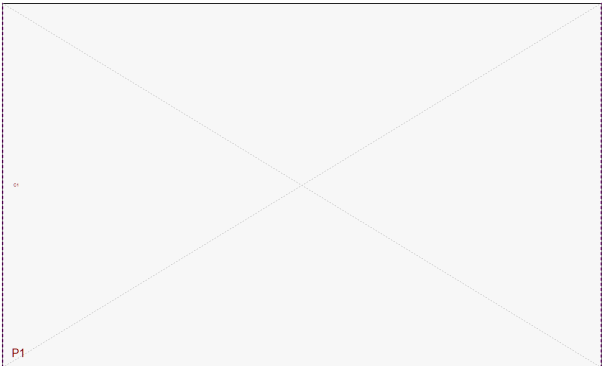
SDPWS 2021 Construction Table : 4.3A
Wood Structural Panels, Sheathing, 7/16" Thk, 1-3/8" Min Pen, 8d Fstnrs
Sheathing is Blocked
Nominal Shear Capacities (plf) :
6" Spac. 670 3" Spac. 1260
4" Spac. 980 2" Spac. 1640

Chord Data

Chord Member Size for each level : See Chord Summary Tables for number of Chords required at each panel end.
Level 1 Chord Size : 2x8 Chord Cf: Comp: 1.0 Tens: 1.0 Max. Allow Stress Ratio : 1.0 : 1
Chord Area = 10.875 in^2
All chords treated as fully braced about both axes

Opening ID	Dist to Left Edge	Opening Width	Dist to Bottom	Opening Height
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft

Story 1 ---->>



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 26'-4" Bottom Horizontal

Shear Panel Summary

Panel ID	Level #	Max Shear		# Sides		Shear Summary & Attachment					
		(kips)	Load Comb	Used	Actual (plf)	Allow	Status	Attachment			
P1	1	5.002	+D+0.60W	1	190.0	335.0	OK	Use 6" at panel edges, 12" in field	Height/Width Ratio		
									Actual	Allow	Notes
									0.61	3.50	Ratio OK

Chord Summary

					CHORD DESIGN SUMMARY			
Chord ID	Level #	Dist from Left (ft)	# Req'd @ Location	Member Size	Stress Ratio	Governs	Status	
C1	1	0.00	1	2x8	0.05	Comp	OK	
Max Compression in chord :			0.71 k	Load Comb :D Only	Max fc =	65 psi	Allow F'c =	1,350 psi
Max Tension in chord :			-0.12 k	Load Comb :+0.60D+0.60W	Max ft =	11 psi	Allow F't =	575 psi
Hold Down force at anchorage :			No net uplift force					
User-specified anchorage device : _____								
C2	1	26.33	1	2x8	0.26	Comp	OK	
Max Compression in chord :			3.74 k	Load Comb :+D+0.60W	Max fc =	344 psi	Allow F'c =	1,350 psi
Max Tension in chord :			0.00 k	Load Comb :	Max ft =	0 psi	Allow F't =	575 psi
Hold Down force at anchorage :			No net uplift force					
User-specified anchorage device : _____								

Chord Naming Information	C : Item is a Chord	L : Followed by level number	# : Followed by chord number from left to right
	WL : Indicates Chord is on left edge of wall		WR : Indicates Chord is on right edge of wall

Jambs

Max Wall Height: $16'-0" = 192"$

Max Deflection: $192" / 360 = 0.53"$

C & C Load: -25.33

3'-4" Openings:

$$\frac{3'-4"}{2} + 0'-8" = 2'-4"$$

$$2'-4" (25.33) = \underline{59.1 \text{ plf}}$$

6'-4" Openings:

$$\frac{6'-4"}{2} + 0'-8" = 3'-10"$$

$$3'-10" (25.33) = \underline{47.1 \text{ plf}}$$

7'-4" Openings:

$$\frac{7'-4"}{2} + 0'-8" = 4'-4"$$

$$4'-4" (25.33) = \underline{109.8 \text{ plf}}$$

8'-4" Openings:

$$\frac{8'-4"}{2} + 0'-8" = 4'-10"$$

$$4'-10" (25.33) = \underline{122.4 \text{ plf}}$$

10'-4" Openings:

$$\frac{10'-4"}{2} + 0'-8" = 5'-10"$$

$$5'-10" (25.33) = \underline{147.8 \text{ plf}}$$

16'-4" Openings:

$$\frac{16'-4"}{2} + 0'-8" = 8'-10"$$

$$8'-10" (25.33) = \underline{223.7 \text{ plf}}$$

Typ. Studs:

$$\frac{1'-4"}{2} + 0'-8" = 1'-4"$$

$$1'-4" (25.33) = \underline{33.8 \text{ plf}}$$

Stair Windows:

Wall Height: $29'-9"$

Max Deflection: $1"$

7'-4" Openings(half):

$$\frac{3'-8"}{2} + 0'-8" = 2'-6"$$

$$2'-6" (25.33) = \underline{63.3 \text{ plf}}$$

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 3'-4" Openings

Code References

Calculations per NDS 2018, IBC 2021

Load Combinations Used : ASCE 7-10

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	2-2x8
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber
Overall Column Height	16 ft			Wood Member Type	Sawn
(Used for non-slender calculations)					
Wood Species	Southern Pine			Exact Width	3.0 in
Wood Grade	No.2: 2"-4" Thick: 8" Wide			Exact Depth	7.250 in
Fb +	925.0 psi	Fv	175.0 psi	Area	21.750 in^2
Fb -	925.0 psi	Ft	550.0 psi	Ix	95.270 in^4
Fc - Prll	1,350.0 psi	Density	34.330 pcf	Iy	16.313 in^4
Fc - Perp	565.0 psi				
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial		
	Basic	1,400.0	1,400.0	1,400.0 ksi	
	Minimum	510.0	510.0		
Column Buckling Condition:					
ABOUT X-X Axis: Lux = 16 ft, Kx = 1.0					
Fully braced against buckling ABOUT Y-Y Axis					

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 82.964 lbs * Dead Load Factor

BENDING LOADS . . .

Lat. Uniform Load creating M_{x-x} , $W = 0.0590 \text{ k/ft}$

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = 0.3643 : 1

Load Combination +D+0.60W

Governing NDS Formula $\text{Comp} + \text{Mxx}$, NDS Eq. 3.9-3

Location of max.above base	7.946 ft
----------------------------	----------

At maximum location values are .

Applied Axial	0.08296 k
---------------	-----------

Applied Mx	1.133 k-ft
------------	------------

Applied My 0.0 k-ft

F_c : Allowable 558.75 psi

PASS Maximum Shear Stress Ratio = 0.06975 : 1

Load Combination +D+0.60W

Location of max.above base 0.0 ft

Applied Design Shear 29.297 psi

Allowable Shear 280.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.4720 k	Bottom along Y-Y	0.4720 k
---------------	----------	------------------	----------

Top along X-X	0.0 k	Bottom along X-X	0.0 k
---------------	-------	------------------	-------

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y 0.3956 in at 8.054 ft above base

for load combination : +D+0.60W

Along X-X 0.0 in at 0.0 ft above base

for load combination : n/a

Other Factors used to calculate allowable stresses . . .

Bending Compression Tension

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.428	0.007336	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+0.60W	1.600	0.259	0.3643	PASS	7.946 ft	0.06975	PASS	0.0 ft
+D+0.450W	1.600	0.259	0.2732	PASS	8.054 ft	0.05232	PASS	0.0 ft
+0.60D+0.60W	1.600	0.259	0.3633	PASS	7.946 ft	0.06975	PASS	0.0 ft
+0.60D	1.600	0.259	0.004096	PASS	0.0 ft	0.0	PASS	16.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top		@ Base	@ Top		@ Base	@ Top
D Only						0.083					
+D+0.60W				0.283	0.283	0.083					

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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DESCRIPTION: 3'-4" Openings

Maximum Reactions

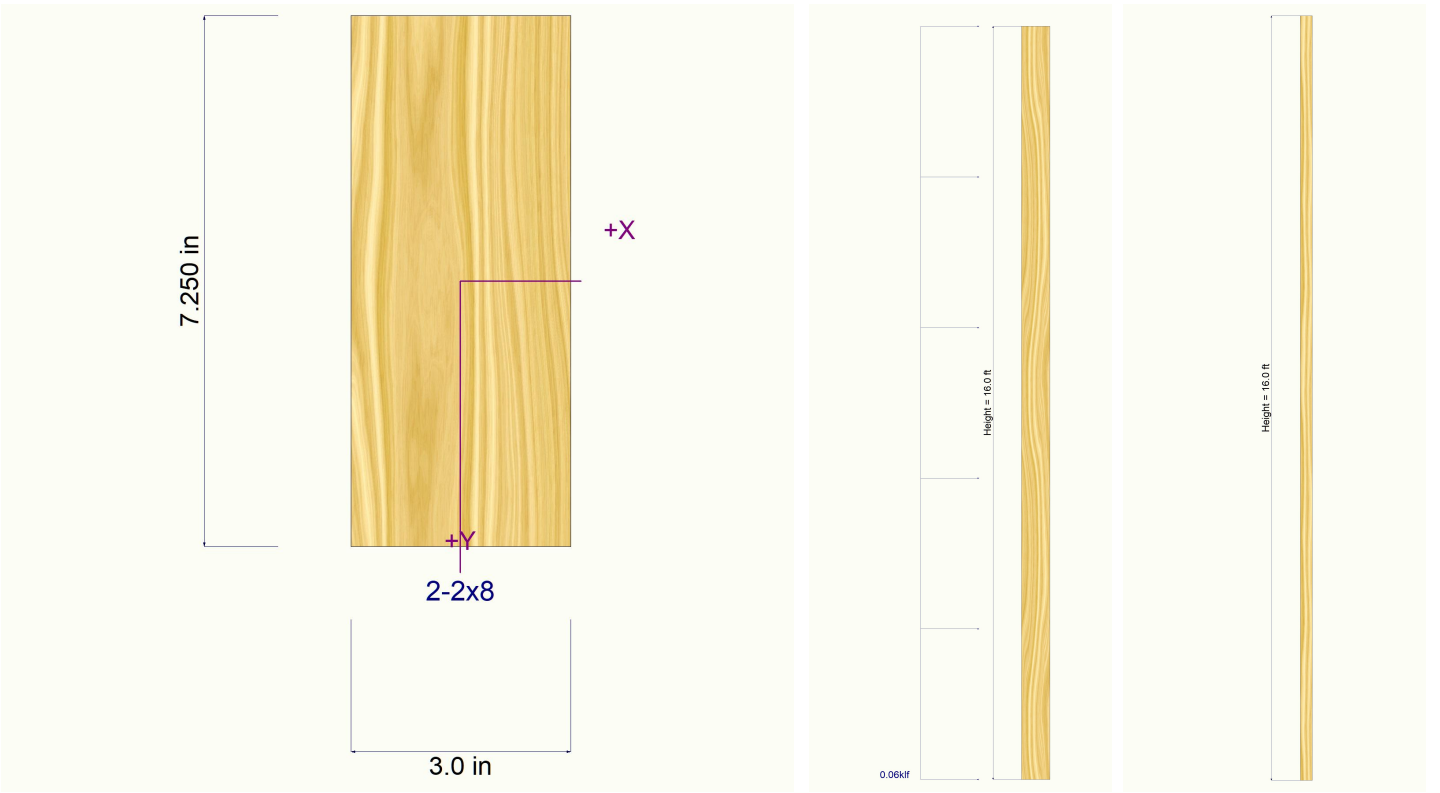
Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+0.450W				0.212	0.212	0.083					
+0.60D+0.60W				0.283	0.283	0.050					
+0.60D						0.050					
W Only				0.472	0.472						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+0.60W	0.0000 in	0.000ft	0.396 in	8.054 ft
+D+0.450W	0.0000 in	0.000ft	0.297 in	8.054 ft
+0.60D+0.60W	0.0000 in	0.000ft	0.396 in	8.054 ft
+0.60D	0.0000 in	0.000ft	0.000 in	0.000 ft

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 6'-4" Openings

Code References

Calculations per NDS 2018, IBC 2021
Load Combinations Used : ASCE 7-10

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	3-2x8		
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber		
Overall Column Height	16 ft			Wood Member Type	Sawn		
(Used for non-slender calculations)				Exact Width	4.50 in	Allow Stress Modification Factors	
Wood Species	Southern Pine			Exact Depth	7.250 in	Cf or Cv for Bending	1.0
Wood Grade	No.2: 2"-4" Thick: 8" Wide			Area	32.625 in^2	Cf or Cv for Compression	1.0
Fb +	925 psi	Fv	175 psi	Ix	142.904 in^4	Cf or Cv for Tension	1.0
Fb -	925 psi	Ft	550 psi	Iy	55.055 in^4	Cm : Wet Use Factor	1.0
Fc - Prll	1350 psi	Density	34.33 pcf			Ct : Temperature Fact	1.0
Fc - Perp	565 psi					Cfu : Flat Use Factor	1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial			Kf : Built-up columns	1.0
	Basic	1400	1400	1400 ksi		Use Cr : Repetitive ?	No
	Minimum	510	510	Column Buckling Condition:			
				ABOUT X-X Axis: Lux = 16 ft, Kx = 1.0			
				Fully braced against buckling ABOUT Y-Y Axis			

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 124.446 lbs * Dead Load Factor
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.0970 k/ft

DESIGN SUMMARY

Bending & Shear Check Results							
PASS	Max. Axial+Bending Stress Ratio =	0.390 : 1		Maximum SERVICE Lateral Load Reactions . .			
	Load Combination	+D+0.60W		Top along Y-Y	0.7760 k	Bottom along Y-Y	0.7760 k
	Governing NDS Forumla	Comp + Mxx, NDS Eq. 3.9-3		Top along X-X	0.0 k	Bottom along X-X	0.0 k
	Location of max.above base	8.054 ft		Maximum SERVICE Load Lateral Deflections . . .			
	At maximum location values are .			Along Y-Y	0.4336 in	at	8.054 ft above base
	Applied Axial	0.1244 k		for load combination : +D+0.60W			
	Applied Mx	1.862 k-ft		Along X-X	0.0 in	at	0.0 ft above base
	Applied My	0.0 k-ft		for load combination : n/a			
	Fc : Allowable	558.75 psi		Other Factors used to calculate allowable stresses . . .			
PASS	Maximum Shear Stress Ratio =	0.07645 : 1		Bending Compression Tension			
	Load Combination	+D+0.60W					
	Location of max.above base	0.0 ft					
	Applied Design Shear	32.110 psi					
	Allowable Shear	280.0 psi					

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.428	0.007336	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+0.60W	1.600	0.259	0.390	PASS	8.054 ft	0.07645	PASS	0.0 ft
+D+0.450W	1.600	0.259	0.2925	PASS	7.946 ft	0.05734	PASS	0.0 ft
+0.60D+0.60W	1.600	0.259	0.3890	PASS	8.054 ft	0.07645	PASS	0.0 ft
+0.60D	1.600	0.259	0.004096	PASS	0.0 ft	0.0	PASS	16.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		Y-Y Axis Reaction		Axial Reaction @ Base	My - End Moments		Mx - End Moments	
	@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top
D Only					0.124				
+D+0.60W			0.466	0.466	0.124				

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 6'-4" Openings

Maximum Reactions

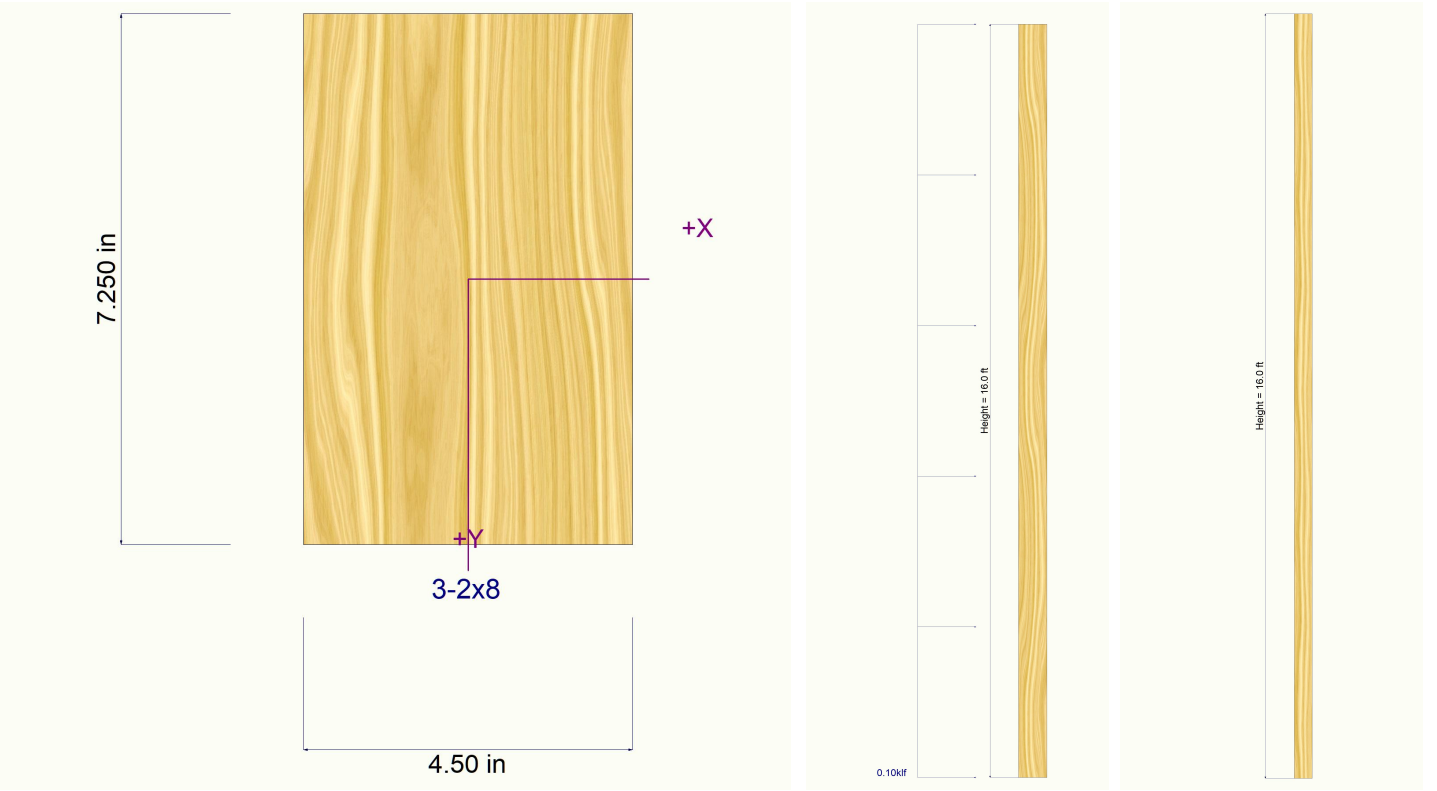
Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+0.450W				0.349	0.349	0.124					
+0.60D+0.60W				0.466	0.466	0.075					
+0.60D						0.075					
W Only				0.776	0.776						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+0.60W	0.0000 in	0.000ft	0.434 in	8.054 ft
+D+0.450W	0.0000 in	0.000ft	0.325 in	8.054 ft
+0.60D+0.60W	0.0000 in	0.000ft	0.434 in	8.054 ft
+0.60D	0.0000 in	0.000ft	0.000 in	0.000 ft

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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DESCRIPTION: 7'-4" Openings

Code References

Calculations per NDS 2018, IBC 2021
Load Combinations Used : ASCE 7-10

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	3-2x8	
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber	
Overall Column Height	16 ft			Wood Member Type	Sawn	
(Used for non-slender calculations)						
Wood Species	Southern Pine			Exact Width	4.50 in	Allow Stress Modification Factors
Wood Grade	No.2: 2"-4" Thick: 8" Wide			Exact Depth	7.250 in	Cf or Cv for Bending 1.0
Fb +	925.0 psi	Fv	175.0 psi	Area	32.625 in^2	Cf or Cv for Compression 1.0
Fb -	925.0 psi	Ft	550.0 psi	Ix	142.904 in^4	Cf or Cv for Tension 1.0
Fc - Prll	1,350.0 psi	Density	34.330 pcf	Iy	55.055 in^4	Cm : Wet Use Factor 1.0
Fc - Perp	565.0 psi					Ct : Temperature Fact 1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial			Cfu : Flat Use Factor 1.0
	Basic	1,400.0	1,400.0	1,400.0 ksi		Kf : Built-up columns 1.0
	Minimum	510.0	510.0			Use Cr : Repetitive ? No
Column Buckling Condition:						
ABOUT X-X Axis: Lux = 16 ft, Kx = 1.0						
Fully braced against buckling ABOUT Y-Y Axis						

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 124.446 lbs * Dead Load Factor

BENDING LOADS . . .

Lat. Uniform Load creating Mx-x, W = 0.110 k/ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.4423 : 1**

Load Combination +D+0.60W

Governing NDS Formula Comp + Mxx, NDS Eq. 3.9-3

Location of max.above base 7.946 ft

At maximum location values are .

Applied Axial 0.1244 k

Applied Mx 2.112 k-ft

Applied My 0.0 k-ft

Fc : Allowable 558.75 psi

PASS Maximum Shear Stress Ratio = **0.08670 : 1**

Load Combination +D+0.60W

Location of max.above base 0.0 ft

Applied Design Shear 36.414 psi

Allowable Shear 280.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y 0.880 k Bottom along Y-Y 0.880 k

Top along X-X 0.0 k Bottom along X-X 0.0 k

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y 0.4917 in at 8.054 ft above base

for load combination : +D+0.60W

Along X-X 0.0 in at 0.0 ft above base

for load combination : n/a

Other Factors used to calculate allowable stresses . . .

Bending Compression Tension

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.428	0.007336	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+0.60W	1.600	0.259	0.4423	PASS	7.946 ft	0.08670	PASS	0.0 ft
+D+0.450W	1.600	0.259	0.3317	PASS	7.946 ft	0.06503	PASS	0.0 ft
+0.60D+0.60W	1.600	0.259	0.4411	PASS	7.946 ft	0.08670	PASS	0.0 ft
+0.60D	1.600	0.259	0.004096	PASS	0.0 ft	0.0	PASS	16.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		Y-Y Axis Reaction		Axial Reaction @ Base	My - End Moments		Mx - End Moments	
	@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top
D Only					0.124				
+D+0.60W			0.528	0.528	0.124				

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 7'-4" Openings

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+0.450W				0.396	0.396	0.124					
+0.60D+0.60W				0.528	0.528	0.075					
+0.60D						0.075					
W Only				0.880	0.880						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+0.60W	0.0000 in	0.000ft	0.492 in	8.054 ft
+D+0.450W	0.0000 in	0.000ft	0.369 in	8.054 ft
+0.60D+0.60W	0.0000 in	0.000ft	0.492 in	8.054 ft
+0.60D	0.0000 in	0.000ft	0.000 in	0.000 ft

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 8'-4" Openings

Code References

Calculations per NDS 2018, IBC 2021
Load Combinations Used : ASCE 7-10

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	4-2x8		
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber		
Overall Column Height	16 ft			Wood Member Type	Sawn		
(Used for non-slender calculations)							
Wood Species	Southern Pine			Exact Width	6.0 in	Allow Stress Modification Factors	
Wood Grade	No.2: 2"-4" Thick: 8" Wide			Exact Depth	7.250 in	Cf or Cv for Bending	1.0
Fb +	925 psi	Fv	175 psi	Area	43.50 in^2	Cf or Cv for Compression	1.0
Fb -	925 psi	Ft	550 psi	Ix	190.539 in^4	Cf or Cv for Tension	1.0
Fc - Prll	1350 psi	Density	34.33 pcf	Iy	130.50 in^4	Cm : Wet Use Factor	1.0
Fc - Perp	565 psi					Ct : Temperature Fact	1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial			Cfu : Flat Use Factor	1.0
	Basic	1400	1400	1400 ksi		Kf : Built-up columns	1.0
	Minimum	510	510			Use Cr : Repetitive ?	No
Column Buckling Condition:							
ABOUT X-X Axis: Lux = 16 ft, Kx = 1.0							
Fully braced against buckling ABOUT Y-Y Axis							

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 165.928 lbs * Dead Load Factor
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.1220 k/ft

DESIGN SUMMARY

Bending & Shear Check Results							
PASS	Max. Axial+Bending Stress Ratio =	0.3659 : 1		Maximum SERVICE Lateral Load Reactions . .			
	Load Combination	+D+0.60W		Top along Y-Y	0.9760 k	Bottom along Y-Y	0.9760 k
	Governing NDS Formula	Comp + Mxx, NDS Eq. 3.9-3		Top along X-X	0.0 k	Bottom along X-X	0.0 k
	Location of max.above base	8.054 ft		Maximum SERVICE Load Lateral Deflections . . .			
	At maximum location values are .			Along Y-Y	0.4090 in	at	8.054 ft above base
	Applied Axial	0.1659 k		for load combination : +D+0.60W			
	Applied Mx	2.342 k-ft		Along X-X	0.0 in	at	0.0 ft above base
	Applied My	0.0 k-ft		for load combination : n/a			
	Fc : Allowable	558.75 psi		Other Factors used to calculate allowable stresses . . .			
PASS	Maximum Shear Stress Ratio =	0.07212 : 1					
	Load Combination	+D+0.60W		Bending Compression Tension			
	Location of max.above base	0.0 ft					
	Applied Design Shear	30.290 psi					
	Allowable Shear	280.0 psi					

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.428	0.007336	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+0.60W	1.600	0.259	0.3659	PASS	8.054 ft	0.07212	PASS	0.0 ft
+D+0.450W	1.600	0.259	0.2744	PASS	7.946 ft	0.05409	PASS	0.0 ft
+0.60D+0.60W	1.600	0.259	0.3649	PASS	8.054 ft	0.07212	PASS	0.0 ft
+0.60D	1.600	0.259	0.004096	PASS	0.0 ft	0.0	PASS	16.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		Y-Y Axis Reaction		Axial Reaction	My - End Moments		Mx - End Moments	
	@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top
D Only					0.166				
+D+0.60W			0.586	0.586	0.166				

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 8'-4" Openings

Maximum Reactions

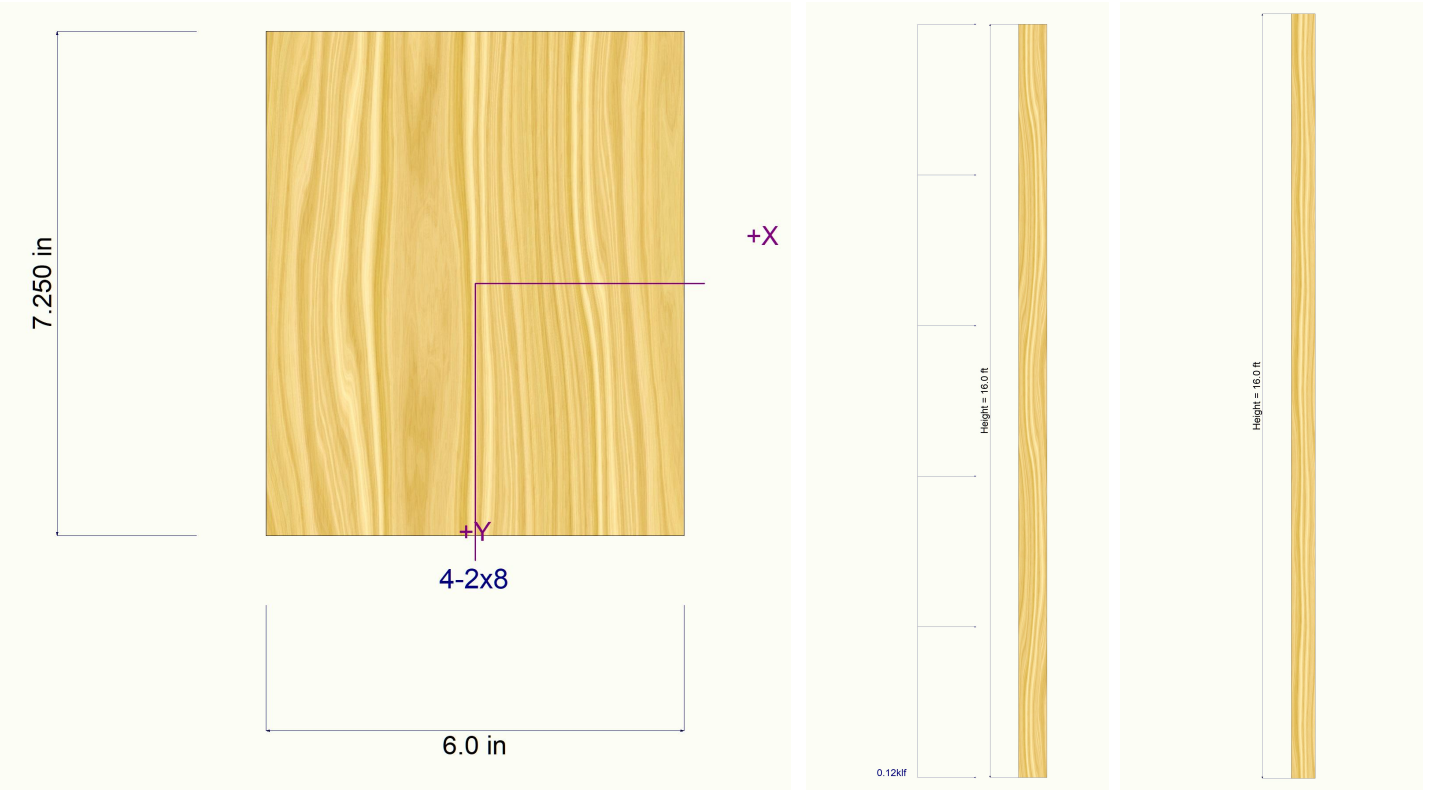
Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+0.450W				0.439	0.439	0.166					
+0.60D+0.60W				0.586	0.586	0.100					
+0.60D						0.100					
W Only				0.976	0.976						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+0.60W	0.0000 in	0.000ft	0.409 in	8.054 ft
+D+0.450W	0.0000 in	0.000ft	0.307 in	8.054 ft
+0.60D+0.60W	0.0000 in	0.000ft	0.409 in	8.054 ft
+0.60D	0.0000 in	0.000ft	0.000 in	0.000 ft

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 10'-4" Openings

Code References

Calculations per NDS 2018, IBC 2021
Load Combinations Used : ASCE 7-10

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	4-2x8		
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber		
Overall Column Height	16 ft			Wood Member Type	Sawn		
(Used for non-slender calculations)				Exact Width	6.0 in	Allow Stress Modification Factors	
Wood Species	Southern Pine			Exact Depth	7.250 in	Cf or Cv for Bending	1.0
Wood Grade	No.2: 2"-4" Thick: 8" Wide			Area	43.50 in^2	Cf or Cv for Compression	1.0
Fb +	925 psi	Fv	175 psi	Ix	190.539 in^4	Cf or Cv for Tension	1.0
Fb -	925 psi	Ft	550 psi	Iy	130.50 in^4	Cm : Wet Use Factor	1.0
Fc - Prll	1350 psi	Density	34.33 pcf			Ct : Temperature Fact	1.0
Fc - Perp	565 psi					Cfu : Flat Use Factor	1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial			Kf : Built-up columns	1.0
	Basic	1400	1400	1400 ksi		Use Cr : Repetitive ?	No
	Minimum	510	510	Column Buckling Condition:			
				ABOUT X-X Axis: Lux = 16 ft, Kx = 1.0			
				Fully braced against buckling ABOUT Y-Y Axis			

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 165.928 lbs * Dead Load Factor
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.1480 k/ft

DESIGN SUMMARY

Bending & Shear Check Results							
PASS	Max. Axial+Bending Stress Ratio =	0.4438 : 1		Maximum SERVICE Lateral Load Reactions . .			
	Load Combination	+D+0.60W		Top along Y-Y	1.184 k	Bottom along Y-Y	1.184 k
	Governing NDS Formula	Comp + Mxx, NDS Eq. 3.9-3		Top along X-X	0.0 k	Bottom along X-X	0.0 k
	Location of max.above base	8.054 ft		Maximum SERVICE Load Lateral Deflections . . .			
	At maximum location values are .			Along Y-Y	0.4962 in	at	8.054 ft above base
	Applied Axial	0.1659 k		for load combination : +D+0.60W			
	Applied Mx	2.841 k-ft		Along X-X	0.0 in	at	0.0 ft above base
	Applied My	0.0 k-ft		for load combination : n/a			
	Fc : Allowable	558.75 psi		Other Factors used to calculate allowable stresses . . .			
PASS	Maximum Shear Stress Ratio =	0.08749 : 1				Bending	Compression
	Load Combination	+D+0.60W					Tension
	Location of max.above base	0.0 ft					
	Applied Design Shear	36.745 psi					
	Allowable Shear	280.0 psi					

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.428	0.007336	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+0.60W	1.600	0.259	0.4438	PASS	8.054 ft	0.08749	PASS	0.0 ft
+D+0.450W	1.600	0.259	0.3329	PASS	7.946 ft	0.06562	PASS	0.0 ft
+0.60D+0.60W	1.600	0.259	0.4427	PASS	8.054 ft	0.08749	PASS	0.0 ft
+0.60D	1.600	0.259	0.004096	PASS	0.0 ft	0.0	PASS	16.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		Y-Y Axis Reaction		Axial Reaction	My - End Moments		Mx - End Moments	
	@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top
D Only					0.166				
+D+0.60W			0.710	0.710	0.166				

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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DESCRIPTION: 10'-4" Openings

Maximum Reactions

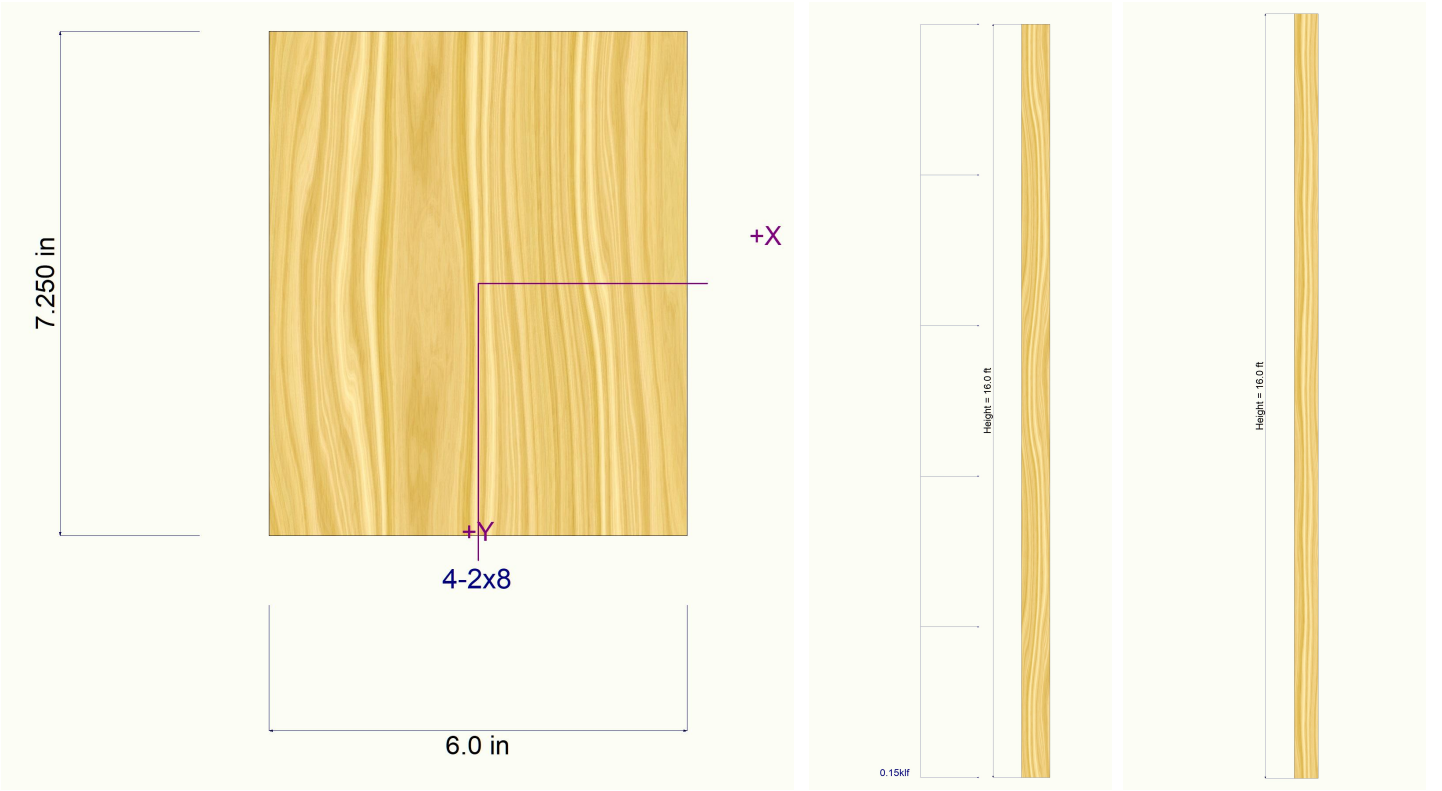
Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+0.450W				0.533	0.533	0.166					
+0.60D+0.60W				0.710	0.710	0.100					
+0.60D						0.100					
W Only				1.184	1.184						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+0.60W	0.0000 in	0.000ft	0.496 in	8.054 ft
+D+0.450W	0.0000 in	0.000ft	0.372 in	8.054 ft
+0.60D+0.60W	0.0000 in	0.000ft	0.496 in	8.054 ft
+0.60D	0.0000 in	0.000ft	0.000 in	0.000 ft

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 16'-4" Openings

Code References

Calculations per NDS 2018, IBC 2021
Load Combinations Used : ASCE 7-10

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	6-2x8		
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber		
Overall Column Height	16 ft			Wood Member Type	Sawn		
(Used for non-slender calculations)							
Wood Species	Southern Pine			Exact Width	9.0 in		
Wood Grade	No.2: 2"-4" Thick: 8" Wide			Exact Depth	7.250 in		
Fb +	925.0 psi	Fv	175.0 psi	Area	65.250 in^2	Cf or Cv for Bending	1.0
Fb -	925.0 psi	Ft	550.0 psi	Ix	285.809 in^4	Cf or Cv for Compression	1.0
Fc - Prll	1,350.0 psi	Density	34.330 pcf	Iy	440.438 in^4	Cf or Cv for Tension	1.0
Fc - Perp	565.0 psi					Cm : Wet Use Factor	1.0
E : Modulus of Elasticity . . .		x-x Bending	y-y Bending	Axial		Ct : Temperature Fact	1.0
	Basic	1,400.0	1,400.0	1,400.0 ksi		Cfu : Flat Use Factor	1.0
	Minimum	510.0	510.0			Kf : Built-up columns	1.0
				Column Buckling Condition:		Use Cr : Repetitive ?	No
				ABOUT X-X Axis: Lux = 16 ft, Kx = 1.0			
				Fully braced against buckling ABOUT Y-Y Axis			

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 248.893 lbs * Dead Load Factor
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.2240 k/ft

DESIGN SUMMARY

Bending & Shear Check Results							
PASS	Max. Axial+Bending Stress Ratio =	0.4452 : 1		Maximum SERVICE Lateral Load Reactions . .			
	Load Combination	+D+0.60W		Top along Y-Y	1.792 k	Bottom along Y-Y	1.792 k
	Governing NDS Formula	Comp + Mxx, NDS Eq. 3.9-3		Top along X-X	0.0 k	Bottom along X-X	0.0 k
	Location of max.above base	7.946 ft		Maximum SERVICE Load Lateral Deflections . . .			
	At maximum location values are .			Along Y-Y	0.5006 in	at	8.054 ft above base
	Applied Axial	0.2489 k		for load combination : +D+0.60W			
	Applied Mx	4.301 k-ft		Along X-X	0.0 in	at	0.0 ft above base
	Applied My	0.0 k-ft		for load combination : n/a			
	Fc : Allowable	558.75 psi		Other Factors used to calculate allowable stresses . . .			
PASS	Maximum Shear Stress Ratio =	0.08828 : 1				Bending	Compression
	Load Combination	+D+0.60W					Tension
	Location of max.above base	0.0 ft					
	Applied Design Shear	37.076 psi					
	Allowable Shear	280.0 psi					

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.428	0.007336	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+0.60W	1.600	0.259	0.4452	PASS	7.946 ft	0.08828	PASS	0.0 ft
+D+0.450W	1.600	0.259	0.3339	PASS	8.054 ft	0.06621	PASS	0.0 ft
+0.60D+0.60W	1.600	0.259	0.4440	PASS	7.946 ft	0.08828	PASS	0.0 ft
+0.60D	1.600	0.259	0.004096	PASS	0.0 ft	0.0	PASS	16.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		Y-Y Axis Reaction		Axial Reaction @ Base	My - End Moments		Mx - End Moments	
	@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top
D Only					0.249				
+D+0.60W			1.075	1.075	0.249				

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 16'-4" Openings

Maximum Reactions

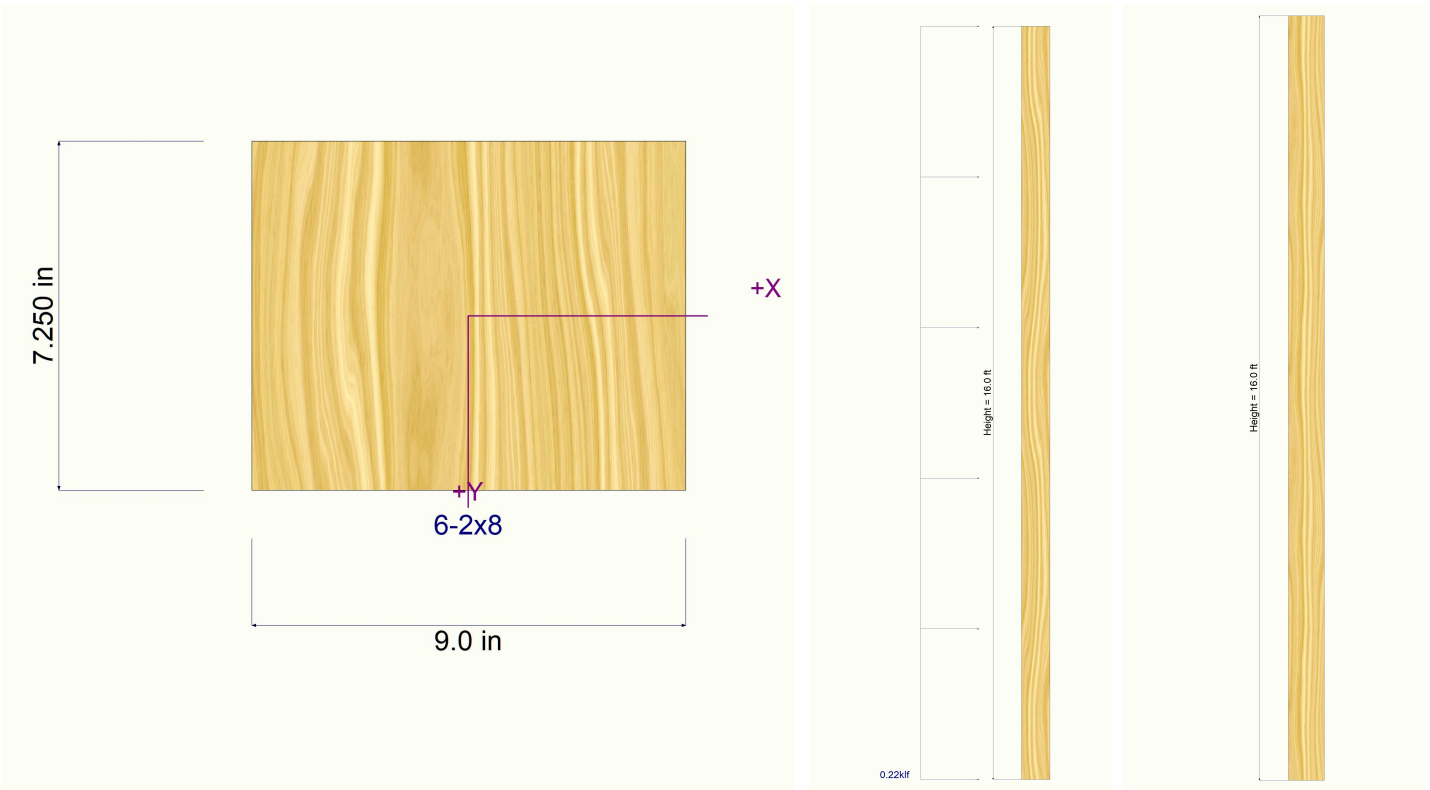
Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+0.450W				0.806	0.806	0.249					
+0.60D+0.60W				1.075	1.075	0.149					
+0.60D						0.149					
W Only				1.792	1.792						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+0.60W	0.0000 in	0.000ft	0.501 in	8.054 ft
+D+0.450W	0.0000 in	0.000ft	0.375 in	8.054 ft
+0.60D+0.60W	0.0000 in	0.000ft	0.501 in	8.054 ft
+0.60D	0.0000 in	0.000ft	0.000 in	0.000 ft

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.04.16

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Stair Window Jambs

Code References

Calculations per NDS 2018, IBC 2021

Load Combinations Used : ASCE 7-10

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	4-1.75x7.25		
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Trus-Joist		
Overall Column Height	29 ft			Wood Member Type	Microllam LVL		
(Used for non-slender calculations)				Exact Width	7.0 in	Allow Stress Modification Factors	
Wood Species	iLevel Truss Joist			Exact Depth	9.0 in	Cf or Cv for Bending	1.071
Wood Grade	MicroLam LVL 2.0 E			Area	63.0 in^2	Cf or Cv for Compression	1.0
Fb +	2,600.0 psi	Fv	285.0 psi	Ix	425.250 in^4	Cf or Cv for Tension	1.0
Fb -	2,600.0 psi	Ft	1,555.0 psi	Iy	257.250 in^4	Cm : Wet Use Factor	1.0
Fc - Prll	2,510.0 psi	Density	42.010 pcf			Ct : Temperature Fact	1.0
Fc - Perp	750.0 psi					Cfu : Flat Use Factor	1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial			Kf : Built-up columns	1.0
	Basic	2,000.0	2,000.0	2,000.0 ksi		Use Cr : Repetitive ?	No
	Minimum	1,016.54	1,016.54				
Column Buckling Condition:							
ABOUT X-X Axis: Lux = 29 ft, Kx = 1.0							
Fully braced against buckling ABOUT Y-Y Axis							

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 533.0 lbs * Dead Load Factor

BENDING LOADS . . .

Lat. Uniform Load creating M_{x-x} , $W = 0.0630 \text{ k/ft}$

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.1162 : 1**

Load Combination +D+0.60W

Governing NDS Formula Comp + Mxx, NDS Eq. 3.9-3

Location of max.above base 14.403 ft

At maximum location values are .

Applied Axial 0.5330 k

Applied Mx 3.974 k-ft

Applied My 0.0 k-ft

Fc : Allowable 550.15 psi

Maximum SERVICE Lateral Load Reactions . .			
Top along Y-Y	0.9135 k	Bottom along Y-Y	0.9135 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . .				
Along Y-Y	0.7149 in	at	14.597 ft	above base
for load combination : +D+0.60W				
Along X-X	0.0 in	at	0.0 ft	above base
for load combination : n/a				

Other Factors used to calculate allowable stresses . . .	Bending	Compression	Tension
1. Allowable stress, F_b			
2. Allowable stress, F_c			
3. Allowable stress, F_t			
4. Allowable stress, F_v			
5. Allowable stress, F_p			
6. Allowable stress, $F_{p'}$			
7. Allowable stress, $F_{p''}$			
8. Allowable stress, $F_{p'''}$			
9. Allowable stress, $F_{p''''}$			
10. Allowable stress, $F_{p'''''}$			
11. Allowable stress, $F_{p''''''}$			
12. Allowable stress, $F_{p'''''''} \dots$			

PASS Maximum Shear Stress Ratio =	0.02862 : 1
Load Combination	+D+0.60W
Location of max.above base	0.0 ft
Applied Design Shear	19.575 psi
Allowable Shear	456.0 psi

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.240	0.01562	PASS	0.0 ft	0.0	PASS	29.0 ft
+D+0.60W	1.600	0.137	0.1162	PASS	14.403 ft	0.02862	PASS	0.0 ft
+D+0.450W	1.600	0.137	0.08724	PASS	14.403 ft	0.02146	PASS	0.0 ft
+0.60D+0.60W	1.600	0.137	0.1154	PASS	14.403 ft	0.02862	PASS	0.0 ft
+0.60D	1.600	0.137	0.009227	PASS	0.0 ft	0.0	PASS	29.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top		@ Base	@ Top		@ Base	@ Top
D Only						0.533					
+D+0.60W				0.548	0.548	0.533					

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.04.16 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Stair Window Jambs

Maximum Reactions

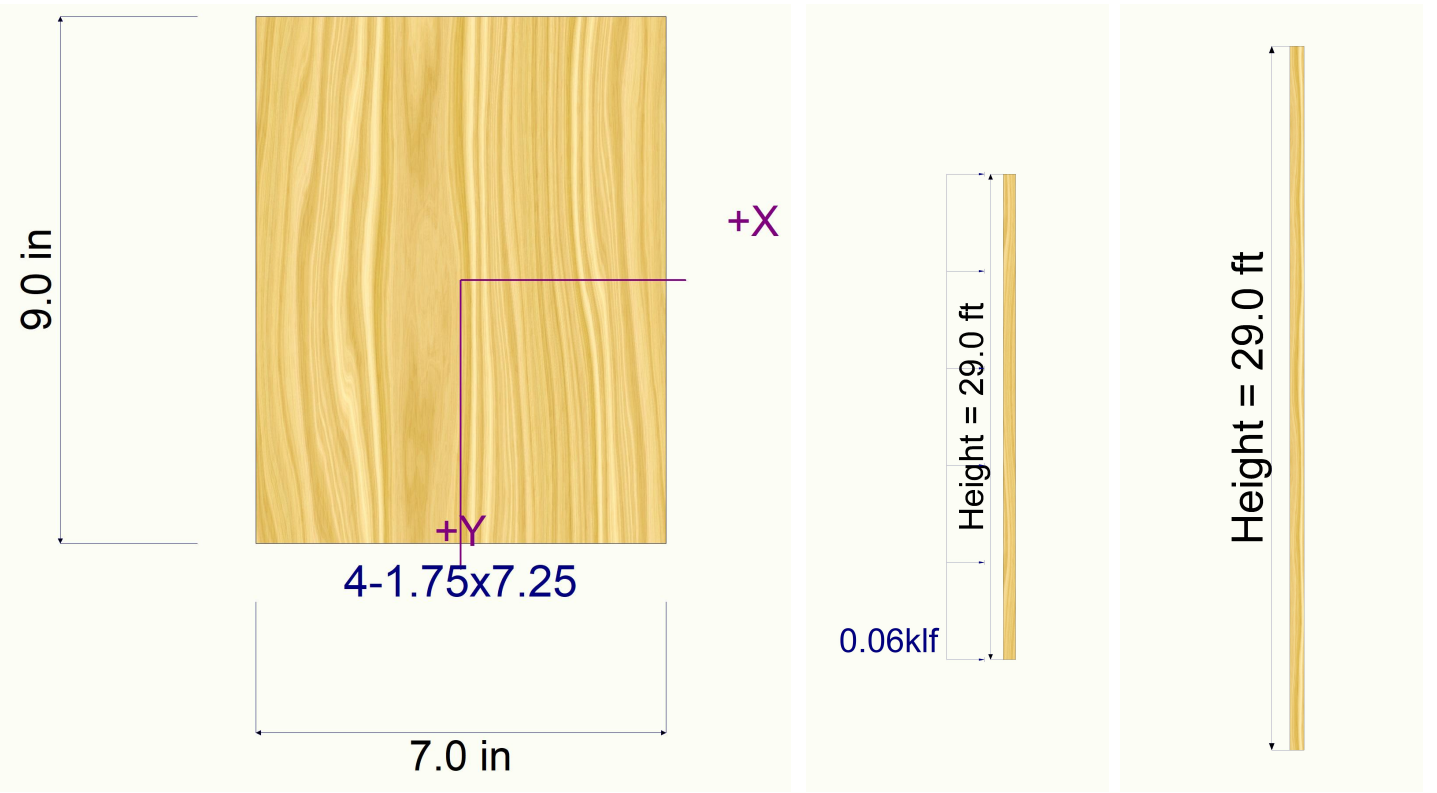
Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+0.450W				0.411	0.411	0.533					
+0.60D+0.60W				0.548	0.548	0.320					
+0.60D						0.320					
W Only				0.914	0.913						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+0.60W	0.0000 in	0.000ft	0.715 in	14.597 ft
+D+0.450W	0.0000 in	0.000ft	0.536 in	14.597 ft
+0.60D+0.60W	0.0000 in	0.000ft	0.715 in	14.597 ft
+0.60D	0.0000 in	0.000ft	0.000 in	0.000 ft

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Steel Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.04.16 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Stairwell Column

Code References

Calculations per AISC 360-16, IBC 2021
Load Combinations Used : ASCE 7-22 / IBC 2024

General Information

Steel Section Name :	HSS7x7x1/2	Overall Column Height	29 ft
Analysis Method :	Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade		Brace condition :	
Fy : Steel Yield	46 ksi	Unbraced Length for buckling ABOUT X-X Axis = 29 ft, K = 1.0	
E : Elastic Bending Modulus	29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 29 ft, K = 1.0	

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 1,219.45 lbs * Dead Load Factor
AXIAL LOADS . . .
Stair: Axial Load at 29.0 ft, D = 1.50, L = 5.0 k
Wall/Roof: Axial Load at 29.0 ft, D = 1.50, LR = 1.0, S = 2.0 k
BENDING LOADS . . .
Wall Glrt: Lat. Point Load at 12.670 ft creating Mx-x, W = 3.0 k

DESIGN SUMMARY

Bending & Shear Check Results							
PASS	Max. Axial+Bending Stress Ratio =	0.2214	: 1	Maximum Load Reactions . .			
	Load Combination	+D+0.60W		Top along X-X		0.0 k	
	Location of max.above base	12.651 ft		Bottom along X-X		0.0 k	
	At maximum location values are . . .			Top along Y-Y		1.311 k	
	Pa : Axial	4.219 k		Bottom along Y-Y		1.689 k	
	Pn / Omega : Allowable	99.585 k		Maximum Load Deflections . .			
	Ma-x : Applied	12.823 k-ft		Along Y-Y	1.116 in at	14.013ft	above base
	Mn-x / Omega : Allowable	64.042 k-ft		for load combination :W Only			
	Ma-y : Applied	0.0 k-ft		Along X-X	0.0 in at	0.0ft	above base
	Mn-y / Omega : Allowable	64.042 k-ft		for load combination :			
PASS	Maximum Shear Stress Ratio	0.01177	: 1				
	Load Combination	+D+0.60W					
	Location of max.above base	0.0 ft					
	At maximum location values are . . .						
	Va : Applied	1.014 k					
	Vn / Omega : Allowable	86.149 k					

Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios						
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location	
D Only	0.042	PASS	0.00 ft	1.38	1.00	132.32	132.32	0.000	PASS	0.00 ft	
+D+L	0.093	PASS	0.00 ft	1.38	1.00	132.32	132.32	0.000	PASS	0.00 ft	
+D+Lr	0.052	PASS	0.00 ft	1.38	1.00	132.32	132.32	0.000	PASS	0.00 ft	
+D+0.70S	0.056	PASS	0.00 ft	1.38	1.00	132.32	132.32	0.000	PASS	0.00 ft	
+D+0.750Lr+0.750L	0.088	PASS	0.00 ft	1.38	1.00	132.32	132.32	0.000	PASS	0.00 ft	
+D+0.750L+0.5250S	0.091	PASS	0.00 ft	1.38	1.00	132.32	132.32	0.000	PASS	0.00 ft	
+D+0.60W	0.221	PASS	12.65 ft	1.38	1.00	132.32	132.32	0.012	PASS	0.00 ft	
+D+0.750Lr+0.750L+0.45C	0.194	PASS	12.65 ft	1.38	1.00	132.32	132.32	0.009	PASS	0.00 ft	
+D+0.750L+0.5250S+0.45C	0.195	PASS	12.65 ft	1.38	1.00	132.32	132.32	0.009	PASS	0.00 ft	
+0.60D+0.60W	0.213	PASS	12.65 ft	1.38	1.00	132.32	132.32	0.012	PASS	0.00 ft	
+D+0.750L+0.10S	0.082	PASS	0.00 ft	1.38	1.00	132.32	132.32	0.000	PASS	0.00 ft	
+0.60D	0.025	PASS	0.00 ft	1.38	1.00	132.32	132.32	0.000	PASS	0.00 ft	

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction @ Base	X-X Axis Reaction @ Base @ Top	k	Y-Y Axis Reaction @ Base @ Top	Mx - End Moments @ Base @ Top	k-ft	My - End Moments @ Base @ Top
D Only	4.219						

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.04.16

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Stairwell Column

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		k-ft	My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top
+D+L	9.219										
+D+Lr	5.219										
+D+0.70S	5.619										
+D+0.750Lr+0.750L	8.719										
+D+0.750L+0.5250S	9.019										
+D+0.60W	4.219				1.014	0.786					
+D+0.750Lr+0.750L+0.450W	8.719				0.760	0.590					
+D+0.750L+0.5250S+0.450W	9.019				0.760	0.590					
+0.60D+0.60W	2.532				1.014	0.786					
+D+0.750L+0.10S	8.169										
+0.60D	2.532										
Lr Only	1.000										
L Only	5.000										
S Only	2.000										
W Only					1.689	1.311					

Extreme Reactions

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		k-ft	My - End Moments	
		@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top
Axial @ Base	Maximum	9.219										
"	Minimum					1.689	1.311					
Reaction, X-X Axis Base	Maximum	4.219										
"	Minimum	4.219										
Reaction, Y-Y Axis Base	Maximum					1.689	1.311					
"	Minimum	4.219										
Reaction, X-X Axis Top	Maximum	4.219										
"	Minimum	4.219										
Reaction, Y-Y Axis Top	Maximum	4.219										
"	Minimum	4.219										
Moment, X-X Axis Base	Maximum	4.219										
"	Minimum	4.219										
Moment, Y-Y Axis Base	Maximum	4.219										
"	Minimum	4.219										
Moment, X-X Axis Top	Maximum	4.219										
"	Minimum	4.219										
Moment, Y-Y Axis Top	Maximum	4.219										
"	Minimum	4.219										

Maximum Deflections for Load Combinations

Load Combination	Max. Deflection in X dir		Distance	Max. Deflection in Y dir		Distance
D Only	0.0000	in	0.000 ft	0.000	in	0.000 ft
+D+L	0.0000	in	0.000 ft	0.000	in	0.000 ft
+D+Lr	0.0000	in	0.000 ft	0.000	in	0.000 ft
+D+0.70S	0.0000	in	0.000 ft	0.000	in	0.000 ft
+D+0.750Lr+0.750L	0.0000	in	0.000 ft	0.000	in	0.000 ft
+D+0.750L+0.5250S	0.0000	in	0.000 ft	0.000	in	0.000 ft
+D+0.60W	0.0000	in	0.000 ft	0.670	in	14.013 ft
+D+0.750Lr+0.750L+0.450W	0.0000	in	0.000 ft	0.502	in	14.013 ft
+D+0.750L+0.5250S+0.450W	0.0000	in	0.000 ft	0.502	in	14.013 ft
+0.60D+0.60W	0.0000	in	0.000 ft	0.670	in	14.013 ft
+D+0.750L+0.10S	0.0000	in	0.000 ft	0.000	in	0.000 ft
+0.60D	0.0000	in	0.000 ft	0.000	in	0.000 ft
Lr Only	0.0000	in	0.000 ft	0.000	in	0.000 ft
L Only	0.0000	in	0.000 ft	0.000	in	0.000 ft
S Only	0.0000	in	0.000 ft	0.000	in	0.000 ft
W Only	0.0000	in	0.000 ft	1.116	in	14.013 ft

Steel Section Properties : HSS7x7x1/2

Steel Section Properties : HSS7x7x1/2

Steel Column

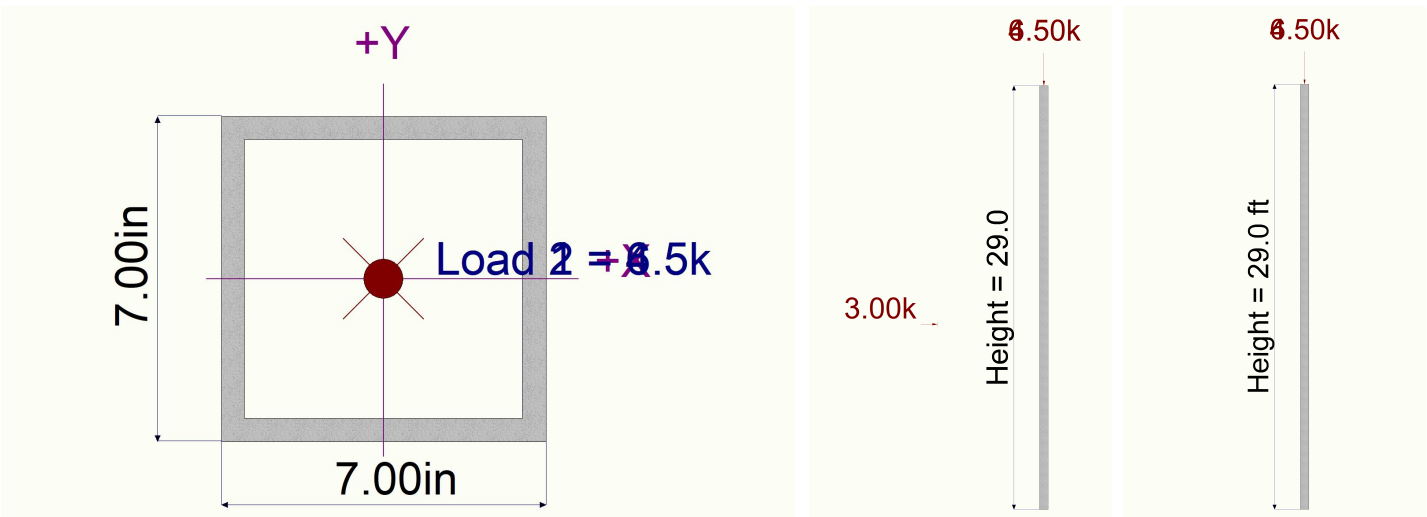
Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.04.16 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Stairwell Column

Depth	=	7.000 in	I xx	=	80.50 in^4	J	=	133.000 in^4
Design Thick	=	0.465 in	S xx	=	23.00 in^3			
Width	=	7.000 in	R xx	=	2.630 in			
Wall Thick	=	0.500 in	Zx	=	27.900 in^3			
Area	=	11.600 in^2	I yy	=	80.500 in^4	C	=	39.300 in^3
Weight	=	42.050 plf	S yy	=	23.000 in^3			
			R yy	=	2.630 in			
Ycg	=	0.000 in						

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.04.16 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

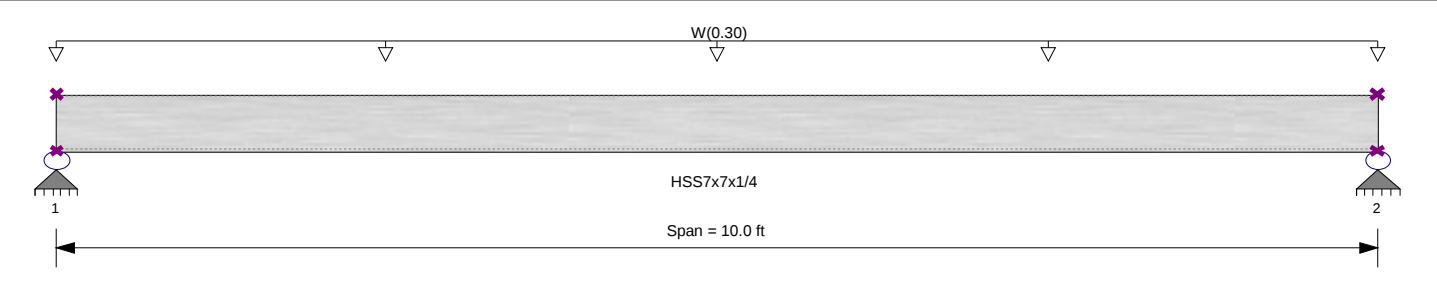
DESCRIPTION: Wall Girt at Stairwell

CODE REFERENCES

Calculations per AISC 360-16, IBC 2021
Load Combination Set : ASCE 7-22 / IBC 2024

Material Properties

Analysis Method : Allowable Strength Design	Fy : Steel Yield : 46.0 ksi
Beam Bracing : Completely Unbraced	E: Modulus : 29,000.0 ksi
Bending Axis : Major Axis Bending	



Applied Loads Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Uniform Load : W = 0.020 ksf, Tributary Width = 15.0 ft, (Wind)

DESIGN SUMMARY

				Design OK			
Maximum Bending Stress Ratio =		0.071 : 1		Maximum Shear Stress Ratio =		0.021 : 1	
Section used for this span		HSS7x7x1/4		Section used for this span		HSS7x7x1/4	
Ma : Applied		2.530 k-ft		Va : Applied		1.012 k	
Mn / Omega : Allowable		35.579 k-ft		Vn/Omega : Allowable		48.528 k	
Load Combination		+D+0.60W		Load Combination		+D+0.60W	
Span # where maximum occurs		Span # 1		Location of maximum on span		0.000 ft	
Span # where maximum occurs		Span # 1		Span # where maximum occurs		Span # 1	
Maximum Deflection							
Max Downward Transient Deflection		0.050 in Ratio = 2,386 >=360		Span: 1 : W Only			
Max Upward Transient Deflection		0 in Ratio = 0 <360		n/a			
Max Downward Total Deflection		0.034 in Ratio = 3537 >=180		Span: 1 : +D+0.60W			
Max Upward Total Deflection		0 in Ratio = 0 <180		n/a			

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios		Summary of Moment Values							Summary of Shear Values		
Segment Length	Span #	M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only													
Dsgn. L = 10.00 ft	1	0.008	0.002	0.28		0.28	59.42	35.58	1.14	1.00	0.11	81.04	48.53
+D+0.60W													
Dsgn. L = 10.00 ft	1	0.071	0.021	2.53		2.53	59.42	35.58	1.14	1.00	1.01	81.04	48.53
+D+0.450W													
Dsgn. L = 10.00 ft	1	0.055	0.016	1.97		1.97	59.42	35.58	1.14	1.00	0.79	81.04	48.53
+0.60D+0.60W													
Dsgn. L = 10.00 ft	1	0.068	0.020	2.42		2.42	59.42	35.58	1.14	1.00	0.97	81.04	48.53
+0.60D													
Dsgn. L = 10.00 ft	1	0.005	0.001	0.17		0.17	59.42	35.58	1.14	1.00	0.07	81.04	48.53

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	W Only	0.0503	5.029		0.0000	0.000

Vertical Reactions

Support notation : Far left is #: Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	1.500	1.500
Max Upward from Load Combinations	1.012	1.012
Max Upward from Load Cases	1.500	1.500
D Only	0.112	0.112
+D+0.60W	1.012	1.012

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.04.16 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Wall Girt at Stairwell

Load Combination	Support notation : Far left is #.		Values in KIPS
	Support 1	Support 2	
+D+0.450W	0.787	0.787	
+0.60D+0.60W	0.967	0.967	
+0.60D	0.067	0.067	
W Only	1.500	1.500	

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 3'-4" Openings

Code References

Calculations per NDS 2018, IBC 2021
Load Combinations Used : ASCE 7-10

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	2-2x8		
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber		
Overall Column Height	16 ft			Wood Member Type	Sawn		
(Used for non-slender calculations)				Exact Width	3.0 in	Allow Stress Modification Factors	
Wood Species	Southern Pine			Exact Depth	7.250 in	Cf or Cv for Bending	1.0
Wood Grade	No.2: 2"-4" Thick: 8" Wide			Area	21.750 in^2	Cf or Cv for Compression	1.0
Fb +	925.0 psi	Fv	175.0 psi	Ix	95.270 in^4	Cf or Cv for Tension	1.0
Fb -	925.0 psi	Ft	550.0 psi	Iy	16.313 in^4	Cm : Wet Use Factor	1.0
Fc - Prll	1,350.0 psi	Density	34.330 pcf			Ct : Temperature Fact	1.0
Fc - Perp	565.0 psi					Cfu : Flat Use Factor	1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial			Kf : Built-up columns	1.0
	Basic	1,400.0	1,400.0	1,400.0 ksi		Use Cr : Repetitive ?	No
	Minimum	510.0	510.0	Column Buckling Condition:			
				ABOUT X-X Axis: Lux = 16 ft, Kx = 1.0			
				Fully braced against buckling ABOUT Y-Y Axis			

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 82.964 lbs * Dead Load Factor
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.0590 k/ft

DESIGN SUMMARY

Bending & Shear Check Results							
PASS	Max. Axial+Bending Stress Ratio =	0.3643 : 1					
	Load Combination	+D+0.60W					
	Governing NDS Formula	Comp + Mxx, NDS Eq. 3.9-3					
	Location of max.above base	7.946 ft					
	At maximum location values are .						
	Applied Axial	0.08296 k					
	Applied Mx	1.133 k-ft					
	Applied My	0.0 k-ft					
	Fc : Allowable	558.75 psi					
PASS	Maximum Shear Stress Ratio =	0.06975 : 1					
	Load Combination	+D+0.60W					
	Location of max.above base	0.0 ft					
	Applied Design Shear	29.297 psi					
	Allowable Shear	280.0 psi					
				Maximum SERVICE Lateral Load Reactions . .			
				Top along Y-Y	0.4720 k	Bottom along Y-Y	0.4720 k
				Top along X-X	0.0 k	Bottom along X-X	0.0 k
				Maximum SERVICE Load Lateral Deflections . . .			
				Along Y-Y	0.3956 in	at	8.054 ft above base
				for load combination : +D+0.60W			
				Along X-X	0.0 in	at	0.0 ft above base
				for load combination : n/a			
				Other Factors used to calculate allowable stresses . . .			
					Bending	Compression	Tension

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.428	0.007336	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+0.60W	1.600	0.259	0.3643	PASS	7.946 ft	0.06975	PASS	0.0 ft
+D+0.450W	1.600	0.259	0.2732	PASS	8.054 ft	0.05232	PASS	0.0 ft
+0.60D+0.60W	1.600	0.259	0.3633	PASS	7.946 ft	0.06975	PASS	0.0 ft
+0.60D	1.600	0.259	0.004096	PASS	0.0 ft	0.0	PASS	16.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		Y-Y Axis Reaction		Axial Reaction @ Base	My - End Moments k-ft		Mx - End Moments	
	@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top
D Only					0.083				
+D+0.60W			0.283	0.283	0.083				

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 3'-4" Openings

Maximum Reactions

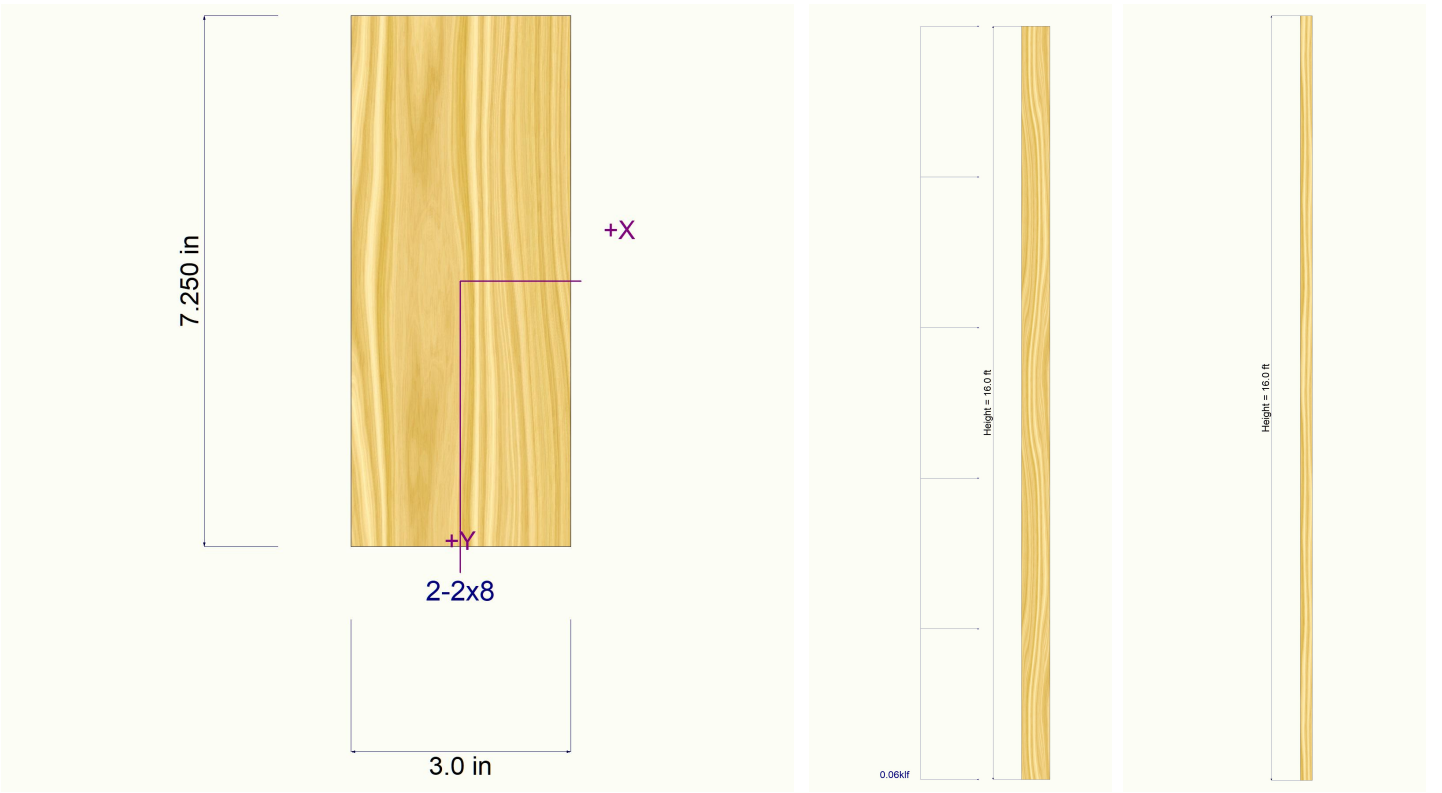
Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+0.450W				0.212	0.212	0.083					
+0.60D+0.60W				0.283	0.283	0.050					
+0.60D						0.050					
W Only				0.472	0.472						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+0.60W	0.0000 in	0.000ft	0.396 in	8.054 ft
+D+0.450W	0.0000 in	0.000ft	0.297 in	8.054 ft
+0.60D+0.60W	0.0000 in	0.000ft	0.396 in	8.054 ft
+0.60D	0.0000 in	0.000ft	0.000 in	0.000 ft

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 6'-4" Openings

Code References

Calculations per NDS 2018, IBC 2021
Load Combinations Used : ASCE 7-10

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	3-2x8		
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber		
Overall Column Height	16 ft			Wood Member Type	Sawn		
(Used for non-slender calculations)							
Wood Species	Southern Pine			Exact Width	4.50 in	Allow Stress Modification Factors	
Wood Grade	No.2: 2"-4" Thick: 8" Wide			Exact Depth	7.250 in	Cf or Cv for Bending	1.0
Fb +	925 psi	Fv	175 psi	Area	32.625 in^2	Cf or Cv for Compression	1.0
Fb -	925 psi	Ft	550 psi	Ix	142.904 in^4	Cf or Cv for Tension	1.0
Fc - Prll	1350 psi	Density	34.33 pcf	Iy	55.055 in^4	Cm : Wet Use Factor	1.0
Fc - Perp	565 psi					Ct : Temperature Fact	1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial			Cfu : Flat Use Factor	1.0
	Basic	1400	1400	1400 ksi		Kf : Built-up columns	1.0
	Minimum	510	510			Use Cr : Repetitive ?	No
Column Buckling Condition:							
ABOUT X-X Axis: Lux = 16 ft, Kx = 1.0							
Fully braced against buckling ABOUT Y-Y Axis							

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 124.446 lbs * Dead Load Factor
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.0970 k/ft

DESIGN SUMMARY

Bending & Shear Check Results							
PASS	Max. Axial+Bending Stress Ratio =	0.390 : 1		Maximum SERVICE Lateral Load Reactions . .			
	Load Combination	+D+0.60W		Top along Y-Y	0.7760 k	Bottom along Y-Y	0.7760 k
	Governing NDS Forumla	Comp + Mxx, NDS Eq. 3.9-3		Top along X-X	0.0 k	Bottom along X-X	0.0 k
	Location of max.above base	8.054 ft		Maximum SERVICE Load Lateral Deflections . . .			
	At maximum location values are .			Along Y-Y	0.4336 in	at	8.054 ft above base
	Applied Axial	0.1244 k		for load combination : +D+0.60W			
	Applied Mx	1.862 k-ft		Along X-X	0.0 in	at	0.0 ft above base
	Applied My	0.0 k-ft		for load combination : n/a			
	Fc : Allowable	558.75 psi		Other Factors used to calculate allowable stresses . . .			
PASS	Maximum Shear Stress Ratio =	0.07645 : 1		Bending Compression Tension			
	Load Combination	+D+0.60W					
	Location of max.above base	0.0 ft					
	Applied Design Shear	32.110 psi					
	Allowable Shear	280.0 psi					

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.428	0.007336	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+0.60W	1.600	0.259	0.390	PASS	8.054 ft	0.07645	PASS	0.0 ft
+D+0.450W	1.600	0.259	0.2925	PASS	7.946 ft	0.05734	PASS	0.0 ft
+0.60D+0.60W	1.600	0.259	0.3890	PASS	8.054 ft	0.07645	PASS	0.0 ft
+0.60D	1.600	0.259	0.004096	PASS	0.0 ft	0.0	PASS	16.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		Y-Y Axis Reaction		Axial Reaction @ Base	My - End Moments		Mx - End Moments	
	@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top
D Only					0.124				
+D+0.60W			0.466	0.466	0.124				

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 6'-4" Openings

Maximum Reactions

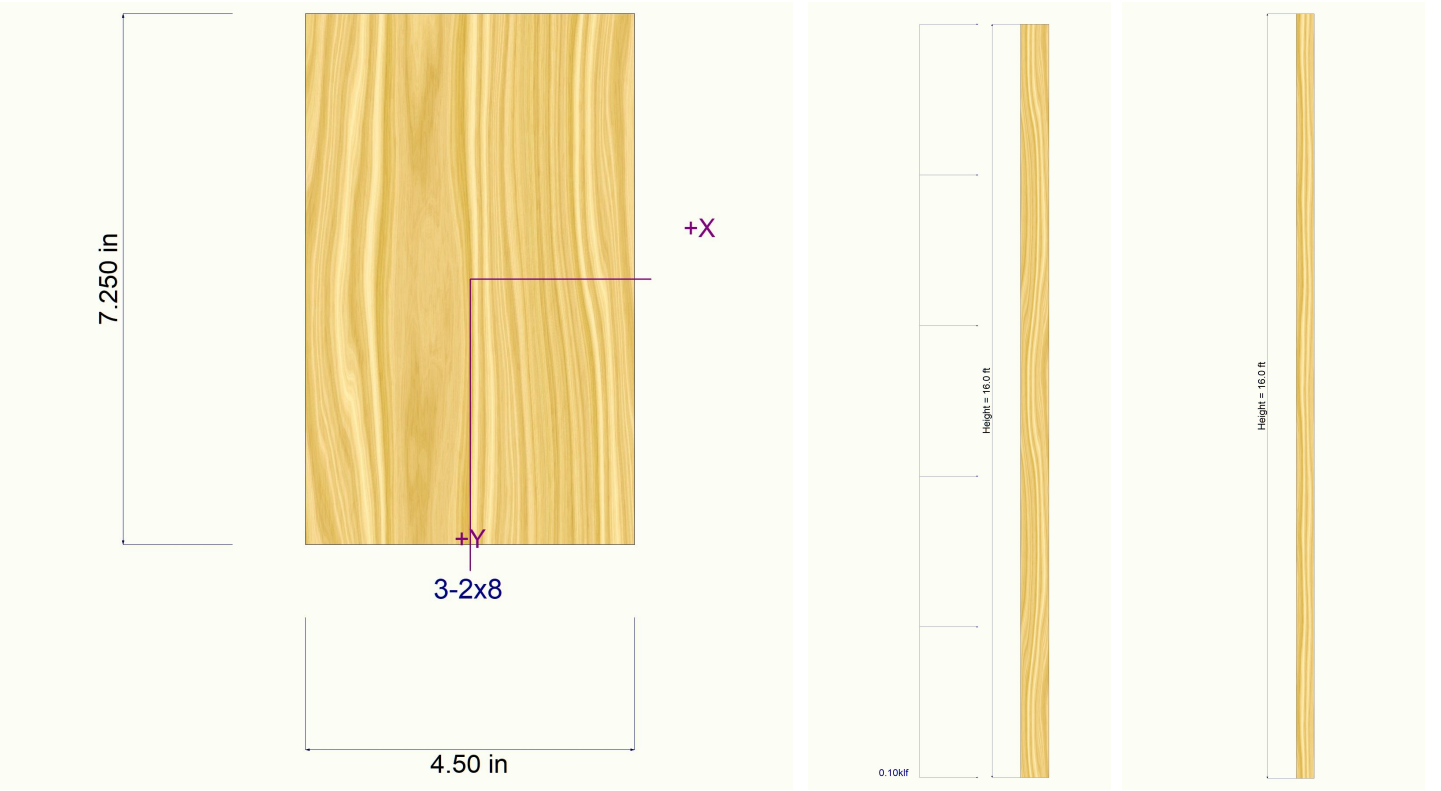
Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+0.450W				0.349	0.349	0.124					
+0.60D+0.60W				0.466	0.466	0.075					
+0.60D						0.075					
W Only				0.776	0.776						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+0.60W	0.0000 in	0.000ft	0.434 in	8.054 ft
+D+0.450W	0.0000 in	0.000ft	0.325 in	8.054 ft
+0.60D+0.60W	0.0000 in	0.000ft	0.434 in	8.054 ft
+0.60D	0.0000 in	0.000ft	0.000 in	0.000 ft

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 7'-4" Openings

Code References

Calculations per NDS 2018, IBC 2021

Load Combinations Used : ASCE 7-10

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	3-2x8		
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber		
Overall Column Height	16 ft			Wood Member Type	Sawn		
(Used for non-slender calculations)							
Wood Species	Southern Pine			Exact Width	4.50 in	Allow Stress Modification Factors	
Wood Grade	No.2: 2"-4" Thick: 8" Wide			Exact Depth	7.250 in	Cf or Cv for Bending	1.0
Fb +	925.0 psi	Fv	175.0 psi	Area	32.625 in^2	Cf or Cv for Compression	1.0
Fb -	925.0 psi	Ft	550.0 psi	Ix	142.904 in^4	Cf or Cv for Tension	1.0
Fc - Prll	1,350.0 psi	Density	34.330 pcf	Iy	55.055 in^4	Cm : Wet Use Factor	1.0
Fc - Perp	565.0 psi					Ct : Temperature Fact	1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial			Cfu : Flat Use Factor	1.0
	Basic	1,400.0	1,400.0	1,400.0 ksi		Kf : Built-up columns	1.0
	Minimum	510.0	510.0			Use Cr : Repetitive ?	No
Column Buckling Condition:							
ABOUT X-X Axis: Lux = 16 ft, Kx = 1.0							
Fully braced against buckling ABOUT Y-Y Axis							

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 124.446 lbs * Dead Load Factor

BENDING LOADS . . .

Lat. Uniform Load creating Mx-x, W = 0.110 k/ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.4423 : 1**

Load Combination +D+0.60W

Governing NDS Formula Comp + Mxx, NDS Eq. 3.9-3

Location of max.above base 7.946 ft

At maximum location values are .

Applied Axial 0.1244 k

Applied Mx 2.112 k-ft

Applied My 0.0 k-ft

Fc : Allowable 558.75 psi

PASS Maximum Shear Stress Ratio = **0.08670 : 1**

Load Combination +D+0.60W

Location of max.above base 0.0 ft

Applied Design Shear 36.414 psi

Allowable Shear 280.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y 0.880 k Bottom along Y-Y 0.880 k

Top along X-X 0.0 k Bottom along X-X 0.0 k

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y 0.4917 in at 8.054 ft above base

for load combination : +D+0.60W

Along X-X 0.0 in at 0.0 ft above base

for load combination : n/a

Other Factors used to calculate allowable stresses . . .

Bending Compression Tension

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.428	0.007336	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+0.60W	1.600	0.259	0.4423	PASS	7.946 ft	0.08670	PASS	0.0 ft
+D+0.450W	1.600	0.259	0.3317	PASS	7.946 ft	0.06503	PASS	0.0 ft
+0.60D+0.60W	1.600	0.259	0.4411	PASS	7.946 ft	0.08670	PASS	0.0 ft
+0.60D	1.600	0.259	0.004096	PASS	0.0 ft	0.0	PASS	16.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		Y-Y Axis Reaction		Axial Reaction @ Base	My - End Moments		Mx - End Moments	
	@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top
D Only					0.124				
+D+0.60W			0.528	0.528	0.124				

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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DESCRIPTION: 7'-4" Openings

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+0.450W				0.396	0.396	0.124					
+0.60D+0.60W				0.528	0.528	0.075					
+0.60D						0.075					
W Only				0.880	0.880						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+0.60W	0.0000 in	0.000ft	0.492 in	8.054 ft
+D+0.450W	0.0000 in	0.000ft	0.369 in	8.054 ft
+0.60D+0.60W	0.0000 in	0.000ft	0.492 in	8.054 ft
+0.60D	0.0000 in	0.000ft	0.000 in	0.000 ft

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 8'-4" Openings

Code References

Calculations per NDS 2018, IBC 2021
Load Combinations Used : ASCE 7-10

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	4-2x8		
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber		
Overall Column Height	16 ft			Wood Member Type	Sawn		
(Used for non-slender calculations)							
Wood Species	Southern Pine			Exact Width	6.0 in	Allow Stress Modification Factors	
Wood Grade	No.2: 2"-4" Thick: 8" Wide			Exact Depth	7.250 in	Cf or Cv for Bending	1.0
Fb +	925 psi	Fv	175 psi	Area	43.50 in^2	Cf or Cv for Compression	1.0
Fb -	925 psi	Ft	550 psi	Ix	190.539 in^4	Cf or Cv for Tension	1.0
Fc - Prll	1350 psi	Density	34.33 pcf	Iy	130.50 in^4	Cm : Wet Use Factor	1.0
Fc - Perp	565 psi					Ct : Temperature Fact	1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial			Cfu : Flat Use Factor	1.0
	Basic	1400	1400	1400 ksi		Kf : Built-up columns	1.0
	Minimum	510	510			Use Cr : Repetitive ?	No
Column Buckling Condition:							
ABOUT X-X Axis: Lux = 16 ft, Kx = 1.0							
Fully braced against buckling ABOUT Y-Y Axis							

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 165.928 lbs * Dead Load Factor
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.1220 k/ft

DESIGN SUMMARY

Bending & Shear Check Results											
PASS Max. Axial+Bending Stress Ratio =		0.3659 : 1		Maximum SERVICE Lateral Load Reactions . .							
Load Combination		+D+0.60W		Top along Y-Y		0.9760 k		Bottom along Y-Y		0.9760 k	
Governing NDS Formula		Comp + Mxx, NDS Eq. 3.9-3		Top along X-X		0.0 k		Bottom along X-X		0.0 k	
Location of max.above base		8.054 ft		Maximum SERVICE Load Lateral Deflections . . .							
At maximum location values are .				Along Y-Y		0.4090 in		at		8.054 ft above base	
Applied Axial		0.1659 k		for load combination : +D+0.60W							
Applied Mx		2.342 k-ft		Along X-X		0.0 in		at		0.0 ft above base	
Applied My		0.0 k-ft		for load combination : n/a							
Fc : Allowable		558.75 psi		Other Factors used to calculate allowable stresses . . .							
PASS Maximum Shear Stress Ratio =		0.07212 : 1				<u>Bending</u>		<u>Compression</u>		<u>Tension</u>	
Load Combination		+D+0.60W									
Location of max.above base		0.0 ft									
Applied Design Shear		30.290 psi									
Allowable Shear		280.0 psi									

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.428	0.007336	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+0.60W	1.600	0.259	0.3659	PASS	8.054 ft	0.07212	PASS	0.0 ft
+D+0.450W	1.600	0.259	0.2744	PASS	7.946 ft	0.05409	PASS	0.0 ft
+0.60D+0.60W	1.600	0.259	0.3649	PASS	8.054 ft	0.07212	PASS	0.0 ft
+0.60D	1.600	0.259	0.004096	PASS	0.0 ft	0.0	PASS	16.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		Y-Y Axis Reaction		Axial Reaction	My - End Moments		Mx - End Moments	
	@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top
D Only					0.166				
+D+0.60W			0.586	0.586	0.166				

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 8'-4" Openings

Maximum Reactions

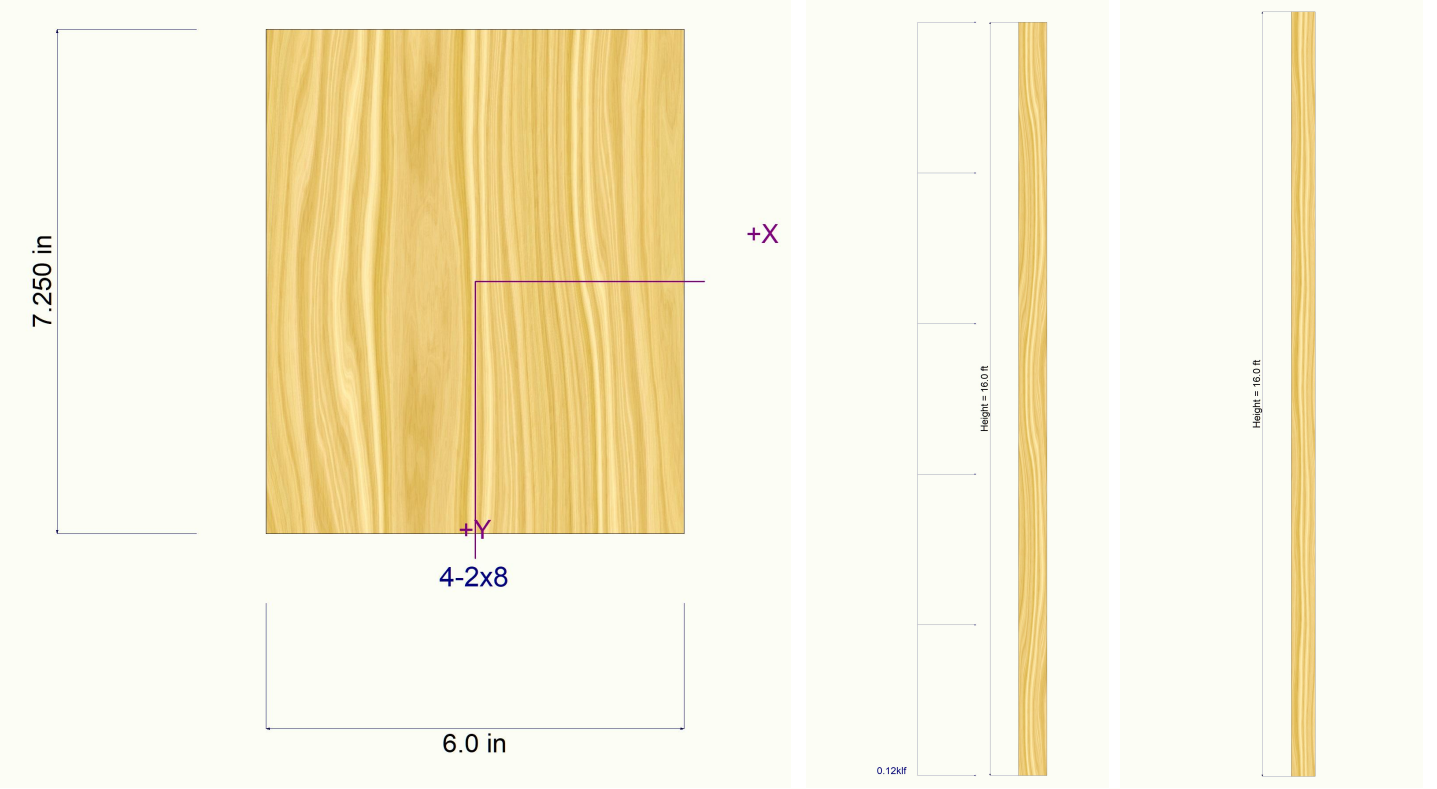
Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+0.450W				0.439	0.439	0.166					
+0.60D+0.60W				0.586	0.586	0.100					
+0.60D						0.100					
W Only				0.976	0.976						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+0.60W	0.0000 in	0.000ft	0.409 in	8.054 ft
+D+0.450W	0.0000 in	0.000ft	0.307 in	8.054 ft
+0.60D+0.60W	0.0000 in	0.000ft	0.409 in	8.054 ft
+0.60D	0.0000 in	0.000ft	0.000 in	0.000 ft

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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DESCRIPTION: 10'-4" Openings

Code References

Calculations per NDS 2018, IBC 2021
Load Combinations Used : ASCE 7-10

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	4-2x8		
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber		
Overall Column Height	16 ft			Wood Member Type	Sawn		
(Used for non-slender calculations)							
Wood Species	Southern Pine			Exact Width	6.0 in	Allow Stress Modification Factors	
Wood Grade	No.2: 2"-4" Thick: 8" Wide			Exact Depth	7.250 in	Cf or Cv for Bending	1.0
Fb +	925 psi	Fv	175 psi	Area	43.50 in^2	Cf or Cv for Compression	1.0
Fb -	925 psi	Ft	550 psi	Ix	190.539 in^4	Cf or Cv for Tension	1.0
Fc - Prll	1350 psi	Density	34.33 pcf	Iy	130.50 in^4	Cm : Wet Use Factor	1.0
Fc - Perp	565 psi					Ct : Temperature Fact	1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial			Cfu : Flat Use Factor	1.0
	Basic	1400	1400	1400 ksi		Kf : Built-up columns	1.0
	Minimum	510	510			Use Cr : Repetitive ?	No
Column Buckling Condition:							
ABOUT X-X Axis: Lux = 16 ft, Kx = 1.0							
Fully braced against buckling ABOUT Y-Y Axis							

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 165.928 lbs * Dead Load Factor
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.1480 k/ft

DESIGN SUMMARY

Bending & Shear Check Results							
PASS	Max. Axial+Bending Stress Ratio =	0.4438 : 1		Maximum SERVICE Lateral Load Reactions . .			
	Load Combination	+D+0.60W		Top along Y-Y	1.184 k	Bottom along Y-Y	1.184 k
	Governing NDS Formula	Comp + Mxx, NDS Eq. 3.9-3		Top along X-X	0.0 k	Bottom along X-X	0.0 k
	Location of max.above base	8.054 ft		Maximum SERVICE Load Lateral Deflections . . .			
	At maximum location values are .			Along Y-Y	0.4962 in	at	8.054 ft above base
	Applied Axial	0.1659 k		for load combination : +D+0.60W			
	Applied Mx	2.841 k-ft		Along X-X	0.0 in	at	0.0 ft above base
	Applied My	0.0 k-ft		for load combination : n/a			
	Fc : Allowable	558.75 psi		Other Factors used to calculate allowable stresses . . .			
PASS	Maximum Shear Stress Ratio =	0.08749 : 1					
	Load Combination	+D+0.60W		Bending Compression Tension			
	Location of max.above base	0.0 ft					
	Applied Design Shear	36.745 psi					
	Allowable Shear	280.0 psi					

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.428	0.007336	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+0.60W	1.600	0.259	0.4438	PASS	8.054 ft	0.08749	PASS	0.0 ft
+D+0.450W	1.600	0.259	0.3329	PASS	7.946 ft	0.06562	PASS	0.0 ft
+0.60D+0.60W	1.600	0.259	0.4427	PASS	8.054 ft	0.08749	PASS	0.0 ft
+0.60D	1.600	0.259	0.004096	PASS	0.0 ft	0.0	PASS	16.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		Y-Y Axis Reaction		Axial Reaction	My - End Moments		Mx - End Moments	
	@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top
D Only					0.166				
+D+0.60W			0.710	0.710	0.166				

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 10'-4" Openings

Maximum Reactions

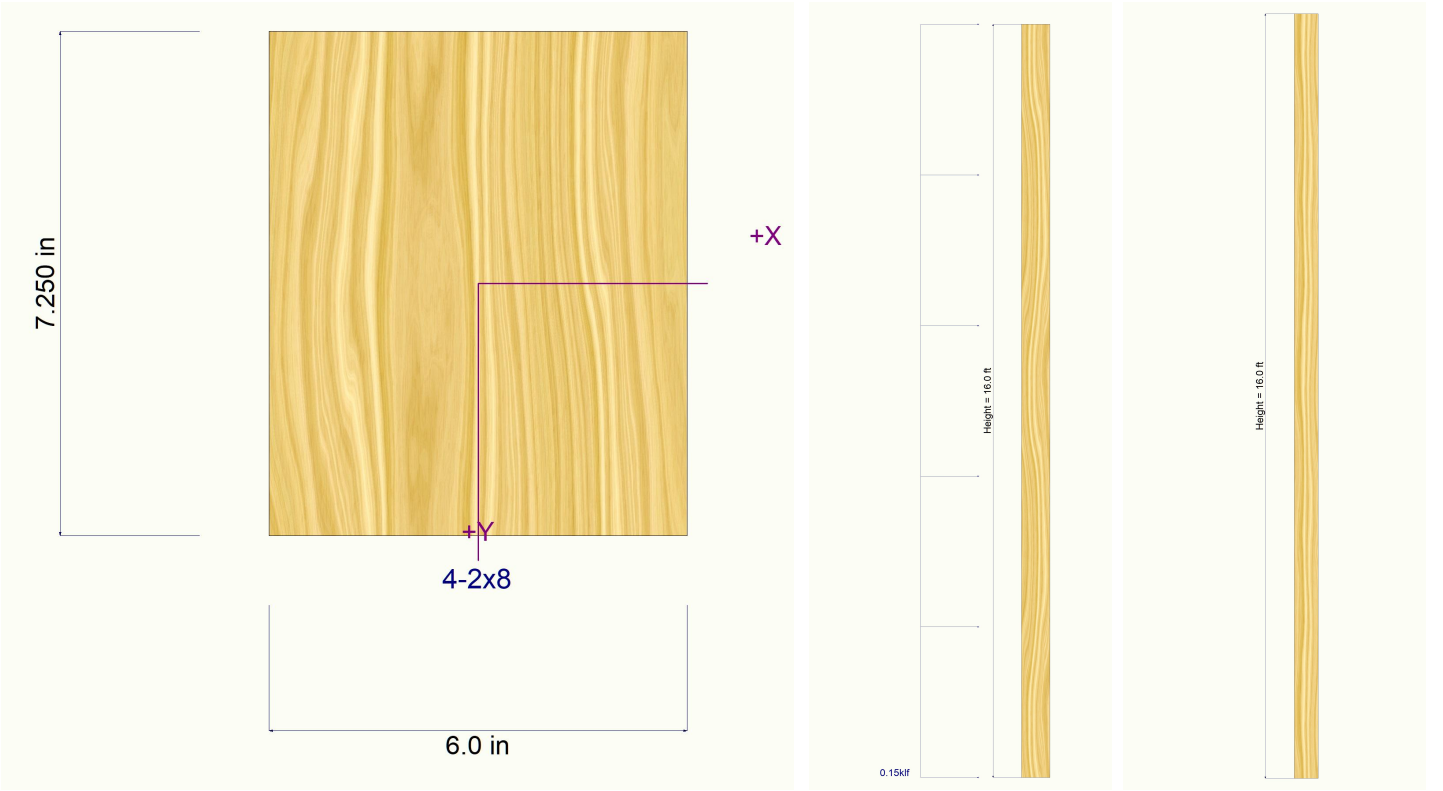
Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+0.450W				0.533	0.533	0.166					
+0.60D+0.60W				0.710	0.710	0.100					
+0.60D						0.100					
W Only				1.184	1.184						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+0.60W	0.0000 in	0.000ft	0.496 in	8.054 ft
+D+0.450W	0.0000 in	0.000ft	0.372 in	8.054 ft
+0.60D+0.60W	0.0000 in	0.000ft	0.496 in	8.054 ft
+0.60D	0.0000 in	0.000ft	0.000 in	0.000 ft

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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DESCRIPTION: 16'-4" Openings

Code References

Calculations per NDS 2018, IBC 2021

Load Combinations Used : ASCE 7-10

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	6-2x8
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber
Overall Column Height	16 ft			Wood Member Type	Sawn
(Used for non-slender calculations)					
Wood Species	Southern Pine			Exact Width	9.0 in
Wood Grade	No.2: 2"-4" Thick: 8" Wide			Exact Depth	7.250 in
Fb +	925.0 psi	Fv	175.0 psi	Area	65.250 in^2
Fb -	925.0 psi	Ft	550.0 psi	Ix	285.809 in^4
Fc - Prll	1,350.0 psi	Density	34.330 pcf	Iy	440.438 in^4
Fc - Perp	565.0 psi				
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial		
	Basic	1,400.0	1,400.0	1,400.0 ksi	
	Minimum	510.0	510.0	Column Buckling Condition:	
ABOUT X-X Axis: Lux = 16 ft, Kx = 1.0					
Fully braced against buckling ABOUT Y-Y Axis					

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 248.893 lbs * Dead Load Factor

BENDING LOADS . . .

Lat. Uniform Load creating M_{x-x} , $W = 0.2240 \text{ k/ft}$

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = 0.4452 : 1

Load Combination +D+0.60W

Governing NDS Formula Comp + Mxx, NDS Eq. 3.9-3

Location of max.above base	7.946 ft
----------------------------	----------

At maximum location values are .

Applied Axial	0.2489 k
---------------	----------

Applied Mx	4.301 k-ft
------------	------------

Applied My	0.0 k-ft
------------	----------

F_c : Allowable 558.75 psi

PASS Maximum Shear Stress Ratio = 0.08828 : 1

Load Combination	+D+0.60W
------------------	----------

Location of max.above base 0.0 ft

Applied Design Shear 37.076 psi

Allowable Shear 280.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	1.792 k	Bottom along Y-Y	1.792 k
---------------	---------	------------------	---------

Top along X-X	0.0 k	Bottom along X-X	0.0 k
---------------	-------	------------------	-------

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y 0.5006 in at 8.054 ft above base

for load combination : +D+0.60W

Along X-X 0.0 in at 0.0 ft above base

for load combination : n/a

Other Factors used to calculate allowable stresses . . .

Bending Compression Tension

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.428	0.007336	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+0.60W	1.600	0.259	0.4452	PASS	7.946 ft	0.08828	PASS	0.0 ft
+D+0.450W	1.600	0.259	0.3339	PASS	8.054 ft	0.06621	PASS	0.0 ft
+0.60D+0.60W	1.600	0.259	0.4440	PASS	7.946 ft	0.08828	PASS	0.0 ft
+0.60D	1.600	0.259	0.004096	PASS	0.0 ft	0.0	PASS	16.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top		@ Base	@ Top		@ Base	@ Top
D Only						0.249					
+D+0.60W				1.075	1.075	0.249					

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 16'-4" Openings

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+0.450W				0.806	0.806	0.249					
+0.60D+0.60W				1.075	1.075	0.149					
+0.60D						0.149					
W Only				1.792	1.792						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+0.60W	0.0000 in	0.000ft	0.501 in	8.054 ft
+D+0.450W	0.0000 in	0.000ft	0.375 in	8.054 ft
+0.60D+0.60W	0.0000 in	0.000ft	0.501 in	8.054 ft
+0.60D	0.0000 in	0.000ft	0.000 in	0.000 ft

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.04.16

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Stair Window Jambs

Code References

Calculations per NDS 2018, IBC 2021

Load Combinations Used : ASCE 7-10

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	4-1.75x7.25		
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Trus-Joist		
Overall Column Height	29 ft			Wood Member Type	Microllam LVL		
(Used for non-slender calculations)				Exact Width	7.0 in	Allow Stress Modification Factors	
Wood Species	iLevel Truss Joist			Exact Depth	9.0 in	Cf or Cv for Bending	1.071
Wood Grade	MicroLam LVL 2.0 E			Area	63.0 in^2	Cf or Cv for Compression	1.0
Fb +	2,600.0 psi	Fv	285.0 psi	Ix	425.250 in^4	Cf or Cv for Tension	1.0
Fb -	2,600.0 psi	Ft	1,555.0 psi	Iy	257.250 in^4	Cm : Wet Use Factor	1.0
Fc - Prll	2,510.0 psi	Density	42.010 pcf			Ct : Temperature Fact	1.0
Fc - Perp	750.0 psi					Cfu : Flat Use Factor	1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial			Kf : Built-up columns	1.0
	Basic	2,000.0	2,000.0	2,000.0 ksi		Use Cr : Repetitive ?	No
	Minimum	1,016.54	1,016.54	Column Buckling Condition:			
				ABOUT X-X Axis: Lux = 29 ft, Kx = 1.0			
				Fully braced against buckling ABOUT Y-Y Axis			

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 533.0 lbs * Dead Load Factor

BENDING LOADS . . .

Lat. Uniform Load creating M_{x-x} , $W = 0.0630 \text{ k/ft}$

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.1162 : 1**
 Load Combination +D+0.60W
 Governing NDS Formula Comp + Mxx, NDS Eq. 3.9-3
 Location of max.above base 14.403 ft
 At maximum location values are .
 Applied Axial 0.5330 k
 Applied Mx 3.974 k-ft
 Applied My 0.0 k-ft
 Fc : Allowable 550.15 psi

Maximum SERVICE Lateral Load Reactions . .			
Top along Y-Y	0.9135 k	Bottom along Y-Y	0.9135 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . .				
Along Y-Y	0.7149 in	at	14.597 ft	above base
for load combination : +D+0.60W				
Along X-X	0.0 in	at	0.0 ft	above base
for load combination : n/a				

Other Factors used to calculate allowable stresses . . .	Bending	Compression	Tension
1. Allowable stress	15,000 psi	15,000 psi	15,000 psi
2. Factor of safety	1.5	1.5	1.5
3. Allowable stress	10,000 psi	10,000 psi	10,000 psi
4. Factor of safety	1.5	1.5	1.5
5. Allowable stress	6,667 psi	6,667 psi	6,667 psi
6. Factor of safety	1.5	1.5	1.5
7. Allowable stress	4,444 psi	4,444 psi	4,444 psi
8. Factor of safety	1.5	1.5	1.5
9. Allowable stress	2,963 psi	2,963 psi	2,963 psi
10. Factor of safety	1.5	1.5	1.5
11. Allowable stress	1,975 psi	1,975 psi	1,975 psi
12. Factor of safety	1.5	1.5	1.5
13. Allowable stress	1,317 psi	1,317 psi	1,317 psi
14. Factor of safety	1.5	1.5	1.5
15. Allowable stress	878 psi	878 psi	878 psi
16. Factor of safety	1.5	1.5	1.5
17. Allowable stress	585 psi	585 psi	585 psi
18. Factor of safety	1.5	1.5	1.5
19. Allowable stress	390 psi	390 psi	390 psi
20. Factor of safety	1.5	1.5	1.5
21. Allowable stress	260 psi	260 psi	260 psi
22. Factor of safety	1.5	1.5	1.5
23. Allowable stress	173 psi	173 psi	173 psi
24. Factor of safety	1.5	1.5	1.5
25. Allowable stress	115 psi	115 psi	115 psi
26. Factor of safety	1.5	1.5	1.5
27. Allowable stress	77 psi	77 psi	77 psi
28. Factor of safety	1.5	1.5	1.5
29. Allowable stress	51 psi	51 psi	51 psi
30. Factor of safety	1.5	1.5	1.5
31. Allowable stress	34 psi	34 psi	34 psi
32. Factor of safety	1.5	1.5	1.5
33. Allowable stress	23 psi	23 psi	23 psi
34. Factor of safety	1.5	1.5	1.5
35. Allowable stress	15 psi	15 psi	15 psi
36. Factor of safety	1.5	1.5	1.5
37. Allowable stress	10 psi	10 psi	10 psi
38. Factor of safety	1.5	1.5	1.5
39. Allowable stress	7 psi	7 psi	7 psi
40. Factor of safety	1.5	1.5	1.5
41. Allowable stress	4.7 psi	4.7 psi	4.7 psi
42. Factor of safety	1.5	1.5	1.5
43. Allowable stress	3.1 psi	3.1 psi	3.1 psi
44. Factor of safety	1.5	1.5	1.5
45. Allowable stress	2.1 psi	2.1 psi	2.1 psi
46. Factor of safety	1.5	1.5	1.5
47. Allowable stress	1.4 psi	1.4 psi	1.4 psi
48. Factor of safety	1.5	1.5	1.5
49. Allowable stress	0.9 psi	0.9 psi	0.9 psi
50. Factor of safety	1.5	1.5	1.5
51. Allowable stress	0.6 psi	0.6 psi	0.6 psi
52. Factor of safety	1.5	1.5	1.5
53. Allowable stress	0.4 psi	0.4 psi	0.4 psi
54. Factor of safety	1.5	1.5	1.5
55. Allowable stress	0.3 psi	0.3 psi	0.3 psi
56. Factor of safety	1.5	1.5	1.5
57. Allowable stress	0.2 psi	0.2 psi	0.2 psi
58. Factor of safety	1.5	1.5	1.5
59. Allowable stress	0.1 psi	0.1 psi	0.1 psi
60. Factor of safety	1.5	1.5	1.5
61. Allowable stress	0.1 psi	0.1 psi	0.1 psi
62. Factor of safety	1.5	1.5	1.5
63. Allowable stress	0.1 psi	0.1 psi	0.1 psi
64. Factor of safety	1.5	1.5	1.5
65. Allowable stress	0.1 psi	0.1 psi	0.1 psi
66. Factor of safety	1.5	1.5	1.5
67. Allowable stress	0.1 psi	0.1 psi	0.1 psi
68. Factor of safety	1.5	1.5	1.5
69. Allowable stress	0.1 psi	0.1 psi	0.1 psi
70. Factor of safety	1.5	1.5	1.5
71. Allowable stress	0.1 psi	0.1 psi	0.1 psi
72. Factor of safety	1.5	1.5	1.5
73. Allowable stress	0.1 psi	0.1 psi	0.1 psi
74. Factor of safety	1.5	1.5	1.5
75. Allowable stress	0.1 psi	0.1 psi	0.1 psi
76. Factor of safety	1.5	1.5	1.5
77. Allowable stress	0.1 psi	0.1 psi	0.1 psi
78. Factor of safety	1.5	1.5	1.5
79. Allowable stress	0.1 psi	0.1 psi	0.1 psi
80. Factor of safety	1.5	1.5	1.5
81. Allowable stress	0.1 psi	0.1 psi	0.1 psi
82. Factor of safety	1.5	1.5	1.5
83. Allowable stress	0.1 psi	0.1 psi	0.1 psi
84. Factor of safety	1.5	1.5	1.5
85. Allowable stress	0.1 psi	0.1 psi	

PASS Maximum Shear Stress Ratio =	0.02862 : 1
Load Combination	+D+0.60W
Location of max.above base	0.0 ft
Applied Design Shear	19.575 psi
Allowable Shear	456.0 psi

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.240	0.01562	PASS	0.0 ft	0.0	PASS	29.0 ft
+D+0.60W	1.600	0.137	0.1162	PASS	14.403 ft	0.02862	PASS	0.0 ft
+D+0.450W	1.600	0.137	0.08724	PASS	14.403 ft	0.02146	PASS	0.0 ft
+0.60D+0.60W	1.600	0.137	0.1154	PASS	14.403 ft	0.02862	PASS	0.0 ft
+0.60D	1.600	0.137	0.009227	PASS	0.0 ft	0.0	PASS	29.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top		@ Base	@ Top		@ Base	@ Top
D Only						0.533					
+D+0.60W				0.548	0.548	0.533					

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.04.16 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Stair Window Jambs

Maximum Reactions

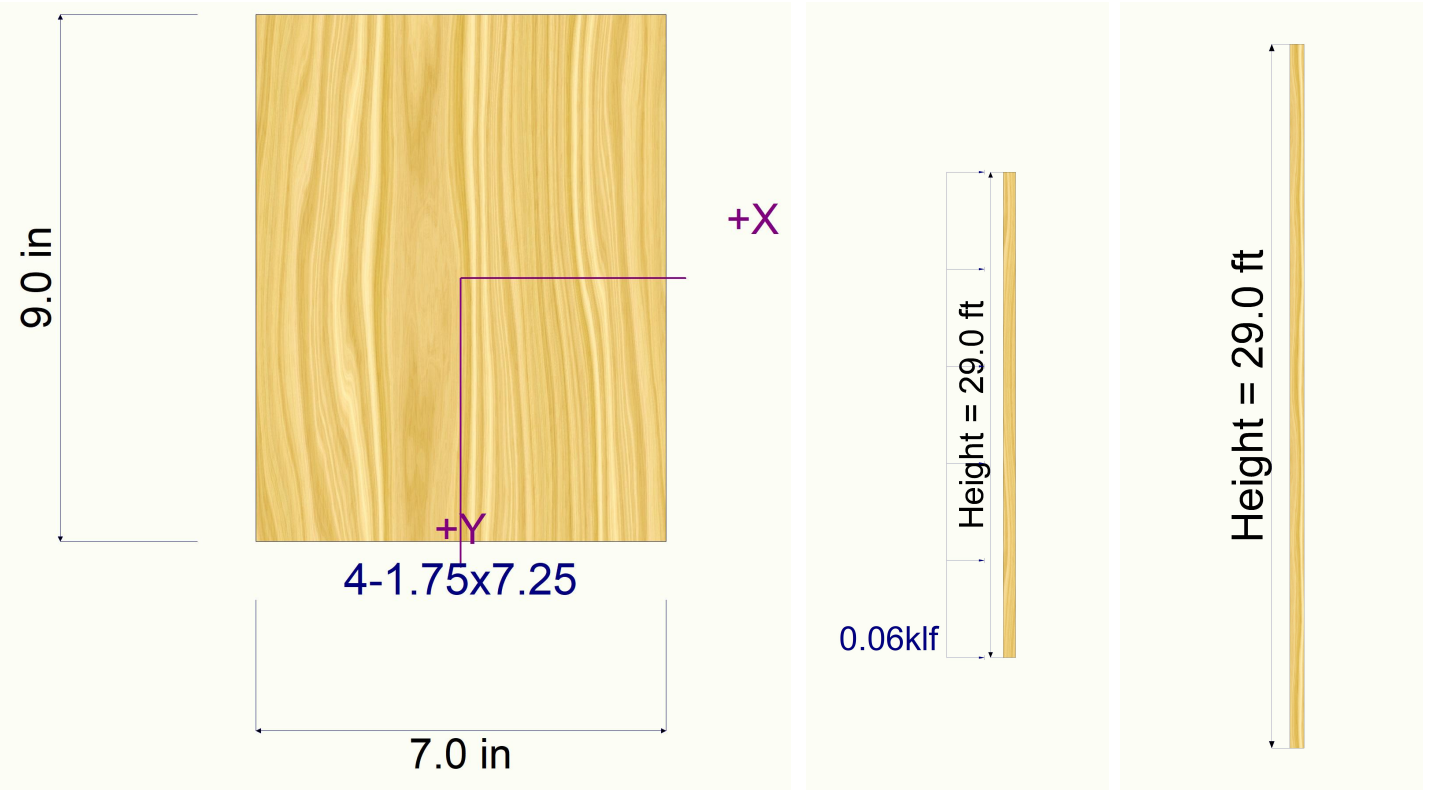
Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+0.450W				0.411	0.411	0.533					
+0.60D+0.60W				0.548	0.548	0.320					
+0.60D						0.320					
W Only				0.914	0.913						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+0.60W	0.0000 in	0.000ft	0.715 in	14.597 ft
+D+0.450W	0.0000 in	0.000ft	0.536 in	14.597 ft
+0.60D+0.60W	0.0000 in	0.000ft	0.715 in	14.597 ft
+0.60D	0.0000 in	0.000ft	0.000 in	0.000 ft

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Steel Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.04.16 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Stairwell Column

Code References

Calculations per AISC 360-16, IBC 2021
Load Combinations Used : ASCE 7-22 / IBC 2024

General Information

Steel Section Name :	HSS7x7x1/2	Overall Column Height	29 ft
Analysis Method :	Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade		Brace condition :	
Fy : Steel Yield	46 ksi	Unbraced Length for buckling ABOUT X-X Axis = 29 ft, K = 1.0	
E : Elastic Bending Modulus	29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 29 ft, K = 1.0	

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 1,219.45 lbs * Dead Load Factor
AXIAL LOADS . . .
Stair: Axial Load at 29.0 ft, D = 1.50, L = 5.0 k
Wall/Roof: Axial Load at 29.0 ft, D = 1.50, LR = 1.0, S = 2.0 k
BENDING LOADS . . .
Wall Girt: Lat. Point Load at 12.670 ft creating Mx-x, W = 3.0 k

DESIGN SUMMARY

Bending & Shear Check Results							
PASS	Max. Axial+Bending Stress Ratio =	0.2214	: 1	Maximum Load Reactions . .			
	Load Combination	+D+0.60W		Top along X-X		0.0 k	
	Location of max.above base	12.651 ft		Bottom along X-X		0.0 k	
	At maximum location values are . . .			Top along Y-Y		1.311 k	
	Pa : Axial	4.219 k		Bottom along Y-Y		1.689 k	
	Pn / Omega : Allowable	99.585 k		Maximum Load Deflections . . .			
	Ma-x : Applied	12.823 k-ft		Along Y-Y	1.116 in at	14.013ft	above base
	Mn-x / Omega : Allowable	64.042 k-ft		for load combination :W Only			
	Ma-y : Applied	0.0 k-ft		Along X-X	0.0 in at	0.0ft	above base
	Mn-y / Omega : Allowable	64.042 k-ft		for load combination :			
PASS	Maximum Shear Stress Ratio	0.01177	: 1				
	Load Combination	+D+0.60W					
	Location of max.above base	0.0 ft					
	At maximum location values are . . .						
	Va : Applied	1.014 k					
	Vn / Omega : Allowable	86.149 k					

Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios						
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location	
D Only	0.042	PASS	0.00 ft	1.38	1.00	132.32	132.32	0.000	PASS	0.00 ft	
+D+L	0.093	PASS	0.00 ft	1.38	1.00	132.32	132.32	0.000	PASS	0.00 ft	
+D+Lr	0.052	PASS	0.00 ft	1.38	1.00	132.32	132.32	0.000	PASS	0.00 ft	
+D+0.70S	0.056	PASS	0.00 ft	1.38	1.00	132.32	132.32	0.000	PASS	0.00 ft	
+D+0.750Lr+0.750L	0.088	PASS	0.00 ft	1.38	1.00	132.32	132.32	0.000	PASS	0.00 ft	
+D+0.750L+0.5250S	0.091	PASS	0.00 ft	1.38	1.00	132.32	132.32	0.000	PASS	0.00 ft	
+D+0.60W	0.221	PASS	12.65 ft	1.38	1.00	132.32	132.32	0.012	PASS	0.00 ft	
+D+0.750Lr+0.750L+0.45C	0.194	PASS	12.65 ft	1.38	1.00	132.32	132.32	0.009	PASS	0.00 ft	
+D+0.750L+0.5250S+0.45C	0.195	PASS	12.65 ft	1.38	1.00	132.32	132.32	0.009	PASS	0.00 ft	
+0.60D+0.60W	0.213	PASS	12.65 ft	1.38	1.00	132.32	132.32	0.012	PASS	0.00 ft	
+D+0.750L+0.10S	0.082	PASS	0.00 ft	1.38	1.00	132.32	132.32	0.000	PASS	0.00 ft	
+0.60D	0.025	PASS	0.00 ft	1.38	1.00	132.32	132.32	0.000	PASS	0.00 ft	

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction @ Base	X-X Axis Reaction @ Base @ Top	k	Y-Y Axis Reaction @ Base @ Top	Mx - End Moments @ Base @ Top	k-ft	My - End Moments @ Base @ Top
D Only	4.219						

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.04.16

CROCKETT ENGINEERING CONSULTANTS

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DESCRIPTION: Stairwell Column

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		k-ft	My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top
+D+L	9.219										
+D+Lr	5.219										
+D+0.70S	5.619										
+D+0.750Lr+0.750L	8.719										
+D+0.750L+0.5250S	9.019										
+D+0.60W	4.219				1.014	0.786					
+D+0.750Lr+0.750L+0.450W	8.719				0.760	0.590					
+D+0.750L+0.5250S+0.450W	9.019				0.760	0.590					
+0.60D+0.60W	2.532				1.014	0.786					
+D+0.750L+0.10S	8.169										
+0.60D	2.532										
Lr Only	1.000										
L Only	5.000										
S Only	2.000										
W Only					1.689	1.311					

Extreme Reactions

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		k-ft	My - End Moments	
		@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top
Axial @ Base	Maximum	9.219										
"	Minimum					1.689	1.311					
Reaction, X-X Axis Base	Maximum	4.219										
"	Minimum	4.219										
Reaction, Y-Y Axis Base	Maximum					1.689	1.311					
"	Minimum	4.219										
Reaction, X-X Axis Top	Maximum	4.219										
"	Minimum	4.219										
Reaction, Y-Y Axis Top	Maximum	4.219										
"	Minimum	4.219										
Moment, X-X Axis Base	Maximum	4.219										
"	Minimum	4.219										
Moment, Y-Y Axis Base	Maximum	4.219										
"	Minimum	4.219										
Moment, X-X Axis Top	Maximum	4.219										
"	Minimum	4.219										
Moment, Y-Y Axis Top	Maximum	4.219										
"	Minimum	4.219										

Maximum Deflections for Load Combinations

Load Combination	Max. Deflection in X dir		Distance	Max. Deflection in Y dir		Distance
D Only	0.0000	in	0.000 ft	0.000	in	0.000 ft
+D+L	0.0000	in	0.000 ft	0.000	in	0.000 ft
+D+Lr	0.0000	in	0.000 ft	0.000	in	0.000 ft
+D+0.70S	0.0000	in	0.000 ft	0.000	in	0.000 ft
+D+0.750Lr+0.750L	0.0000	in	0.000 ft	0.000	in	0.000 ft
+D+0.750L+0.5250S	0.0000	in	0.000 ft	0.000	in	0.000 ft
+D+0.60W	0.0000	in	0.000 ft	0.670	in	14.013 ft
+D+0.750Lr+0.750L+0.450W	0.0000	in	0.000 ft	0.502	in	14.013 ft
+D+0.750L+0.5250S+0.450W	0.0000	in	0.000 ft	0.502	in	14.013 ft
+0.60D+0.60W	0.0000	in	0.000 ft	0.670	in	14.013 ft
+D+0.750L+0.10S	0.0000	in	0.000 ft	0.000	in	0.000 ft
+0.60D	0.0000	in	0.000 ft	0.000	in	0.000 ft
Lr Only	0.0000	in	0.000 ft	0.000	in	0.000 ft
L Only	0.0000	in	0.000 ft	0.000	in	0.000 ft
S Only	0.0000	in	0.000 ft	0.000	in	0.000 ft
W Only	0.0000	in	0.000 ft	1.116	in	14.013 ft

Steel Section Properties : HSS7x7x1/2

Steel Section Properties : HSS7x7x1/2

Steel Column

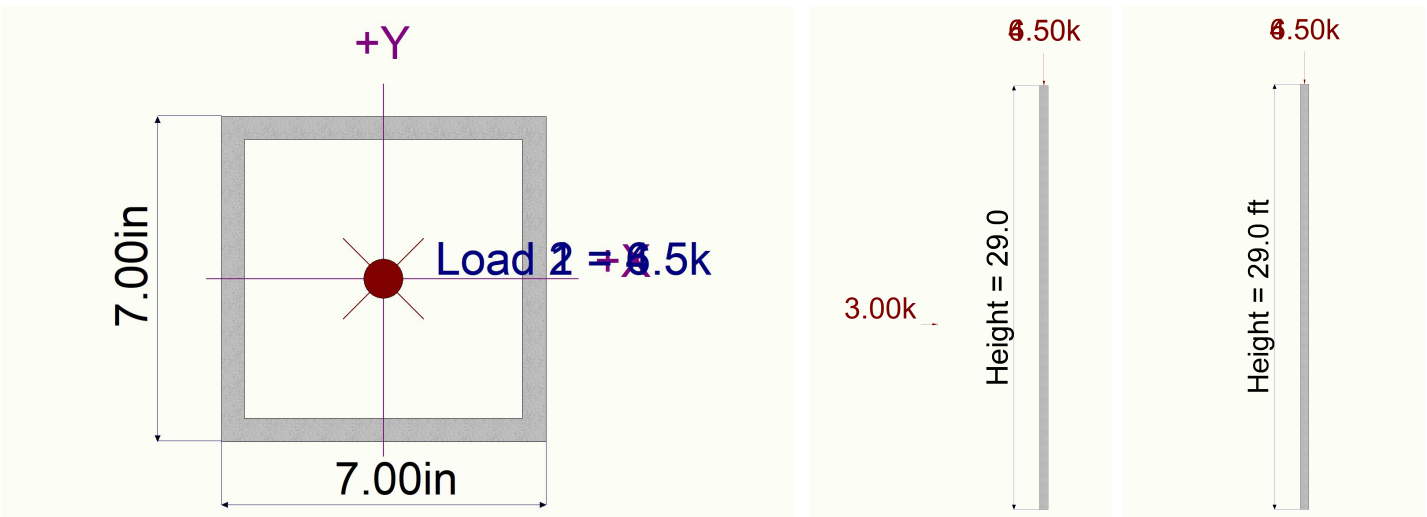
Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.04.16 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Stairwell Column

Depth	=	7.000 in	I xx	=	80.50 in^4	J	=	133.000 in^4
Design Thick	=	0.465 in	S xx	=	23.00 in^3			
Width	=	7.000 in	R xx	=	2.630 in			
Wall Thick	=	0.500 in	Zx	=	27.900 in^3			
Area	=	11.600 in^2	I yy	=	80.500 in^4	C	=	39.300 in^3
Weight	=	42.050 plf	S yy	=	23.000 in^3			
			R yy	=	2.630 in			
Ycg	=	0.000 in						

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.04.16 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

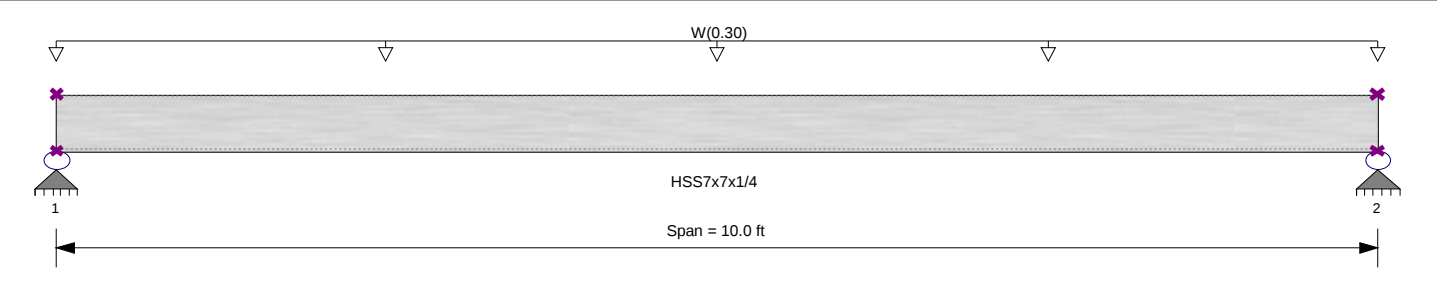
DESCRIPTION: Wall Girt at Stairwell

CODE REFERENCES

Calculations per AISC 360-16, IBC 2021
Load Combination Set : ASCE 7-22 / IBC 2024

Material Properties

Analysis Method : Allowable Strength Design	Fy : Steel Yield : 46.0 ksi
Beam Bracing : Completely Unbraced	E: Modulus : 29,000.0 ksi
Bending Axis : Major Axis Bending	



Applied Loads Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Uniform Load : W = 0.020 ksf, Tributary Width = 15.0 ft, (Wind)

DESIGN SUMMARY

				Design OK			
Maximum Bending Stress Ratio =		0.071 : 1		Maximum Shear Stress Ratio =		0.021 : 1	
Section used for this span		HSS7x7x1/4		Section used for this span		HSS7x7x1/4	
Ma : Applied		2.530 k-ft		Va : Applied		1.012 k	
Mn / Omega : Allowable		35.579 k-ft		Vn/Omega : Allowable		48.528 k	
Load Combination		+D+0.60W		Load Combination		+D+0.60W	
Span # where maximum occurs		Span # 1		Location of maximum on span		0.000 ft	
Span # where maximum occurs		Span # 1		Span # where maximum occurs		Span # 1	
Maximum Deflection							
Max Downward Transient Deflection		0.050 in Ratio = 2,386 >=360		Span: 1 : W Only			
Max Upward Transient Deflection		0 in Ratio = 0 <360		n/a			
Max Downward Total Deflection		0.034 in Ratio = 3537 >=180		Span: 1 : +D+0.60W			
Max Upward Total Deflection		0 in Ratio = 0 <180		n/a			

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios		Summary of Moment Values							Summary of Shear Values		
Segment Length	Span #	M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only													
Dsgn. L = 10.00 ft	1	0.008	0.002	0.28		0.28	59.42	35.58	1.14	1.00	0.11	81.04	48.53
+D+0.60W													
Dsgn. L = 10.00 ft	1	0.071	0.021	2.53		2.53	59.42	35.58	1.14	1.00	1.01	81.04	48.53
+D+0.450W													
Dsgn. L = 10.00 ft	1	0.055	0.016	1.97		1.97	59.42	35.58	1.14	1.00	0.79	81.04	48.53
+0.60D+0.60W													
Dsgn. L = 10.00 ft	1	0.068	0.020	2.42		2.42	59.42	35.58	1.14	1.00	0.97	81.04	48.53
+0.60D													
Dsgn. L = 10.00 ft	1	0.005	0.001	0.17		0.17	59.42	35.58	1.14	1.00	0.07	81.04	48.53

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	W Only	0.0503	5.029		0.0000	0.000

Vertical Reactions

Support notation : Far left is #: Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	1.500	1.500
Max Upward from Load Combinations	1.012	1.012
Max Upward from Load Cases	1.500	1.500
D Only	0.112	0.112
+D+0.60W	1.012	1.012

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.04.16

CROCKETT ENGINEERING CONSULTANTS

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DESCRIPTION: Wall Girt at Stairwell

Vertical Reactions	Support notation : Far left is #.		Values in KIPS
	Support 1	Support 2	
Load Combination			
+D+0.450W	0.787	0.787	
+0.60D+0.60W	0.967	0.967	
+0.60D	0.067	0.067	
W Only	1.500	1.500	

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Heavy Studs

Code References

Calculations per NDS 2018, IBC 2021
Load Combinations Used : ASCE 7-10

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	2-2x8		
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber		
Overall Column Height	16 ft			Wood Member Type	Sawn		
(Used for non-slender calculations)							
Wood Species	Southern Pine			Exact Width	3.0 in		
Wood Grade	No.2: 2"-4" Thick: 8" Wide			Exact Depth	7.250 in		
Fb +	925.0 psi	Fv	175.0 psi	Area	21.750 in^2	Cf or Cv for Bending	1.0
Fb -	925.0 psi	Ft	550.0 psi	Ix	95.270 in^4	Cf or Cv for Compression	1.0
Fc - Prll	1,350.0 psi	Density	34.330 pcf	Iy	16.313 in^4	Cf or Cv for Tension	1.0
Fc - Perp	565.0 psi					Cm : Wet Use Factor	1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial			Ct : Temperature Fact	1.0
	Basic	1,400.0	1,400.0	1,400.0 ksi		Cfu : Flat Use Factor	1.0
	Minimum	510.0	510.0			Kf : Built-up columns	1.0
				Column Buckling Condition:		Use Cr : Repetitive ?	No
				ABOUT X-X Axis: Lux = 16 ft, Kx = 1.0			
				Fully braced against buckling ABOUT Y-Y Axis			

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 82.964 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 16.0 ft, D = 0.8270, L = 2.070 k
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.0340 k/ft

DESIGN SUMMARY

Bending & Shear Check Results							
PASS	Max. Axial+Bending Stress Ratio =	0.2588 : 1	Maximum SERVICE Lateral Load Reactions . .				
	Load Combination	+D+L	Top along Y-Y	0.2720 k	Bottom along Y-Y	0.2720 k	
	Governing NDS Formula	Comp Only, fc/Fc'	Top along X-X	0.0 k	Bottom along X-X	0.0 k	
	Location of max.above base	0.0 ft	Maximum SERVICE Load Lateral Deflections . . .				
	At maximum location values are .		Along Y-Y	0.2280 in at 8.054 ft	above base		
	Applied Axial	2.980 k	for load combination : +D+0.60W				
	Applied Mx	0.0 k-ft	Along X-X	0.0 in at 0.0 ft	above base		
	Applied My	0.0 k-ft	for load combination : n/a				
	Fc : Allowable	529.43 psi	Other Factors used to calculate allowable stresses . . .				
PASS	Maximum Shear Stress Ratio =	0.04020 : 1					
	Load Combination	+D+0.60W					
	Location of max.above base	0.0 ft					
	Applied Design Shear	16.883 psi					
	Allowable Shear	280.0 psi					

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.428	0.08046	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+L	1.000	0.392	0.2588	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+0.750L	1.250	0.323	0.2075	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+0.60W	1.600	0.259	0.2298	PASS	7.946 ft	0.04020	PASS	0.0 ft
+D+0.750L+0.450W	1.600	0.259	0.2340	PASS	7.946 ft	0.03015	PASS	0.0 ft
+0.60D+0.60W	1.600	0.259	0.2197	PASS	7.946 ft	0.04020	PASS	0.0 ft
+0.60D	1.600	0.259	0.04493	PASS	0.0 ft	0.0	PASS	16.0 ft

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Heavy Studs

Maximum Reactions

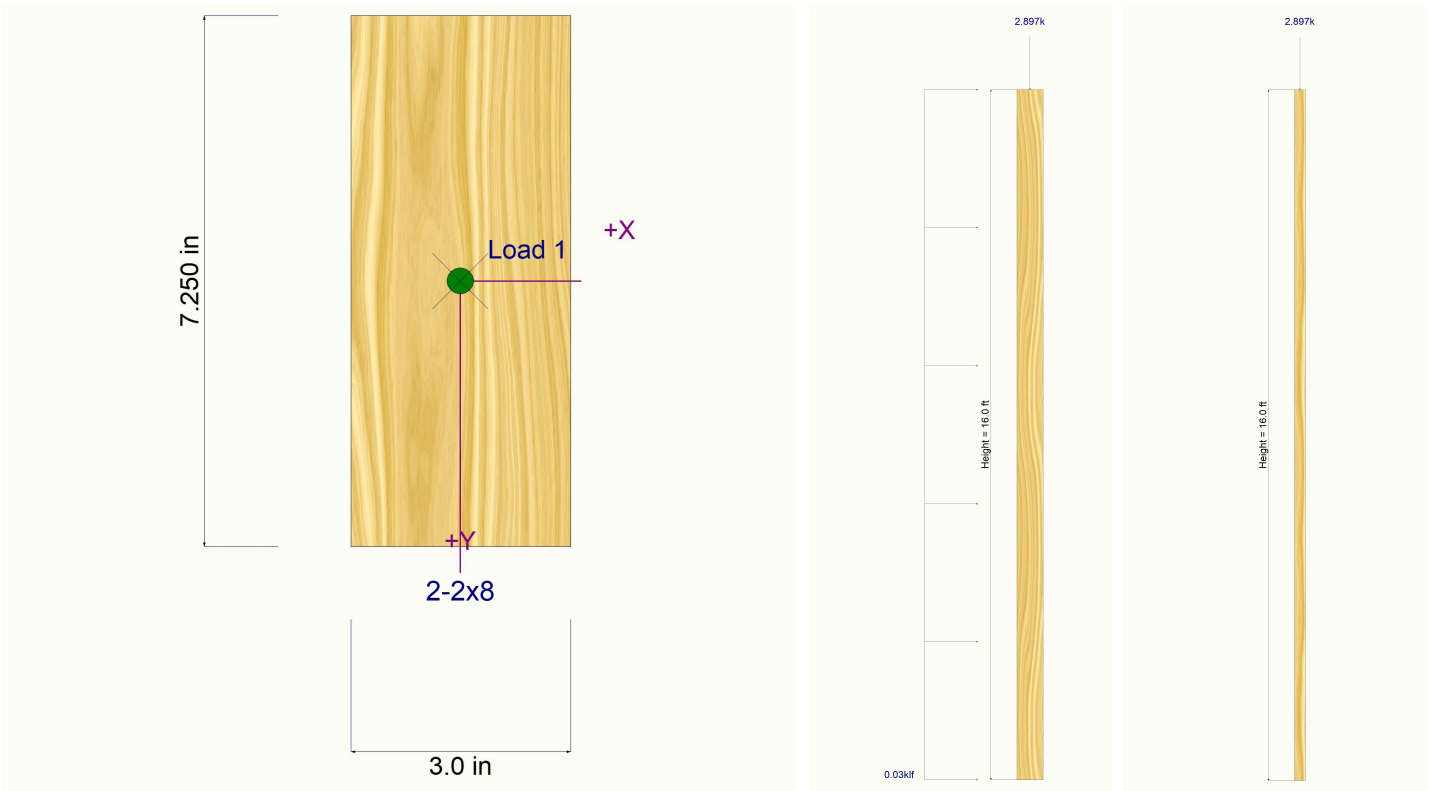
Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top		@ Base	@ Top		@ Base	@ Top
D Only						0.910					
+D+L						2.980					
+D+0.750L						2.462					
+D+0.60W				0.163	0.163	0.910					
+D+0.750L+0.450W				0.122	0.122	2.462					
+0.60D+0.60W				0.163	0.163	0.546					
+0.60D						0.546					
L Only						2.070					
W Only				0.272	0.272						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+L	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+0.750L	0.0000 in	0.000ft	0.000 in	0.000 ft
+D+0.60W	0.0000 in	0.000ft	0.228 in	8.054 ft
+D+0.750L+0.450W	0.0000 in	0.000ft	0.171 in	8.054 ft
+0.60D+0.60W	0.0000 in	0.000ft	0.228 in	8.054 ft
+0.60D	0.0000 in	0.000ft	0.000 in	0.000 ft
L Only	0.0000 in	0.000ft	0.000 in	0.000 ft

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Typ. Studs

Code References

Calculations per NDS 2018, IBC 2021
Load Combinations Used : ASCE 7-10

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	2x8		
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber		
Overall Column Height	16 ft			Wood Member Type	Sawn		
(Used for non-slender calculations)				Exact Width	1.50 in	Allow Stress Modification Factors	
Wood Species	Southern Pine			Exact Depth	7.250 in	Cf or Cv for Bending	1.0
Wood Grade	No.2: 2"-4" Thick: 8" Wide			Area	10.875 in^2	Cf or Cv for Compression	1.0
Fb +	925.0 psi	Fv	175.0 psi	Ix	47.635 in^4	Cf or Cv for Tension	1.0
Fb -	925.0 psi	Ft	550.0 psi	Iy	2.039 in^4	Cm : Wet Use Factor	1.0
Fc - Prll	1,350.0 psi	Density	34.330 pcf			Ct : Temperature Fact	1.0
Fc - Perp	565.0 psi					Cfu : Flat Use Factor	1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial			Kf : Built-up columns	1.0
	Basic	1,400.0	1,400.0	1,400.0 ksi		Use Cr : Repetitive ?	No
	Minimum	510.0	510.0	Column Buckling Condition:			
				ABOUT X-X Axis: Lux = 16 ft, Kx = 1.0			
				Fully braced against buckling ABOUT Y-Y Axis			

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 41.482 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 16.0 ft, D = 0.6590, Lr = 0.5260 k
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.0340 k/ft

DESIGN SUMMARY

Bending & Shear Check Results							
PASS	Max. Axial+Bending Stress Ratio =	0.8371 : 1	Maximum SERVICE Lateral Load Reactions . .				
	Load Combination	+D+0.60W	Top along Y-Y	0.2720 k	Bottom along Y-Y	0.2720 k	
	Governing NDS Formula	Comp + Mxx, NDS Eq. 3.9-3	Top along X-X	0.0 k	Bottom along X-X	0.0 k	
	Location of max.above base	7.946 ft	Maximum SERVICE Load Lateral Deflections . . .				
	At maximum location values are .		Along Y-Y	0.4559 in at 8.054 ft	above base		
	Applied Axial	0.7005 k	for load combination : +D+0.60W				
	Applied Mx	0.6528 k-ft	Along X-X	0.0 in at 0.0 ft	above base		
	Applied My	0.0 k-ft	for load combination : n/a				
	Fc : Allowable	558.75 psi	Other Factors used to calculate allowable stresses . . .				
PASS	Maximum Shear Stress Ratio =	0.08039 : 1		Bending	Compression	Tension	
	Load Combination	+D+0.60W					
	Location of max.above base	0.0 ft					
	Applied Design Shear	33.766 psi					
	Allowable Shear	280.0 psi					

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.428	0.1239	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+Lr	1.250	0.323	0.2067	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+0.750Lr	1.250	0.323	0.1845	PASS	0.0 ft	0.0	PASS	16.0 ft
+D+0.60W	1.600	0.259	0.8371	PASS	7.946 ft	0.08039	PASS	0.0 ft
+D+0.750Lr+0.450W	1.600	0.259	0.6954	PASS	8.054 ft	0.06030	PASS	0.0 ft
+D+0.450W	1.600	0.259	0.6311	PASS	8.054 ft	0.06030	PASS	0.0 ft
+0.60D+0.60W	1.600	0.259	0.7906	PASS	7.946 ft	0.08039	PASS	0.0 ft
+0.60D	1.600	0.259	0.06917	PASS	0.0 ft	0.0	PASS	16.0 ft

Wood Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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DESCRIPTION: Typ. Studs

Maximum Reactions

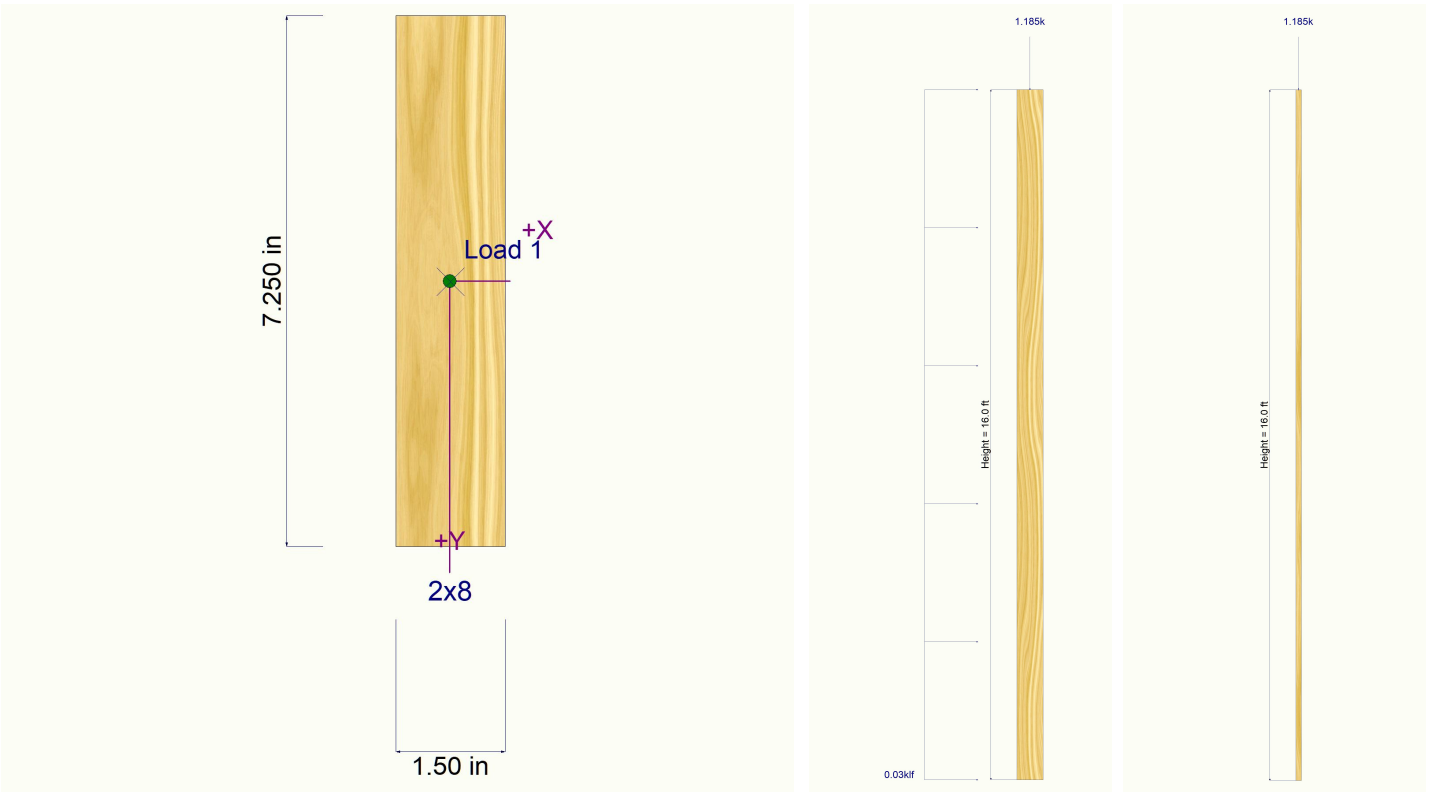
Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
D Only						0.700					
+D+Lr						1.226					
+D+0.750Lr						1.095					
+D+0.60W				0.163	0.163	0.700					
+D+0.750Lr+0.450W				0.122	0.122	1.095					
+D+0.450W				0.122	0.122	0.700					
+0.60D+0.60W				0.163	0.163	0.420					
+0.60D						0.420					
Lr Only						0.526					
W Only				0.272	0.272						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.000 in	0.000ft	0.000 in	0.000 ft
+D+Lr	0.000 in	0.000ft	0.000 in	0.000 ft
+D+0.750Lr	0.000 in	0.000ft	0.000 in	0.000 ft
+D+0.60W	0.000 in	0.000ft	0.456 in	8.054 ft
+D+0.750Lr+0.450W	0.000 in	0.000ft	0.342 in	8.054 ft
+D+0.450W	0.000 in	0.000ft	0.342 in	8.054 ft
+0.60D+0.60W	0.000 in	0.000ft	0.456 in	8.054 ft
+0.60D	0.000 in	0.000ft	0.000 in	0.000 ft
Lr Only	0.000 in	0.000ft	0.000 in	0.000 ft

Sketches



Gravity Design

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 3'-4" Bottom Left Door

CODE REFERENCES

Calculations per NDS 2018, IBC 2021
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Stress Design	Fb +	925 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-10	Fb -	925 psi	Ebend- xx	1400ksi
	Fc - Prll	1350 psi	Eminbend - xx	510ksi
Wood Species : Southern Pine	Fc - Perp	565 psi		
Wood Grade : No.2: 2"-4" Thick: 8" Wide	Fv	175 psi		
	Ft	550 psi	Density	34.33pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Uniform Load : D = 0.0250, Lr = 0.020 ksf, Tributary Width = 12.830 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.317	1	Maximum Shear Stress Ratio	=	0.195	1
Section used for this span		2x8		Section used for this span		2x8	
fb: Actual	=	366.06psi		fv: Actual	=	42.62 psi	
F'b	=	1,156.25psi		F'v	=	218.75 psi	
Load Combination		+D+Lr		Load Combination		+D+Lr	
Location of maximum on span	=	1.667ft		Location of maximum on span	=	2.737 ft	
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
Maximum Deflection							
Max Downward Transient Deflection	0.005 in	Ratio =	7443 >=360	Span: 1 : Lr Only			
Max Upward Transient Deflection	0 in	Ratio =	0 <360	n/a			
Max Downward Total Deflection	0.012 in	Ratio =	3308 >=180	Span: 1 : +D+Lr			
Max Upward Total Deflection	0 in	Ratio =	0 <180	n/a			

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CLx	C _F	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 3.333 ft	1	0.244	0.150	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.45	203.4	832.5	0.34	23.7	157.5
+D+Lr														0.0	0.00	0.0	0.0
Length = 3.333 ft	1	0.317	0.195	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.80	366.1	1,156.3	0.62	42.6	218.8
+D+0.750Lr														0.0	0.00	0.0	0.0
Length = 3.333 ft	1	0.281	0.173	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.71	325.4	1,156.3	0.55	37.9	218.8
+0.60D														0.0	0.00	0.0	0.0
Length = 3.333 ft	1	0.082	0.051	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.27	122.0	1,480.0	0.21	14.2	280.0

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 3'-4" Bottom Left Door

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	+D+Lr	0.0121	1.679		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	0.962	0.962
Max Upward from Load Combinations	0.962	0.962
Max Upward from Load Cases	0.535	0.535
D Only	0.535	0.535
+D+Lr	0.962	0.962
+D+0.750Lr	0.855	0.855
+0.60D	0.321	0.321
Lr Only	0.428	0.428

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 7'-4" Typ. Windows

CODE REFERENCES

Calculations per NDS 2018, IBC 2021

Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Stress Design

Load Combination : ASCE 7-10

Wood Species : Douglas Fir-Larch

Wood Grade : Select Structural

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb + 1,500.0 psi

Fb - 1,500.0 psi

Fc - Prll 1,700.0 psi

Fc - Perp 625.0 psi

Fv 180.0 psi

Ft 1,000.0 psi

E : Modulus of Elasticity

Ebend- xx 1,900.0ksi

Eminbend - xx 690.0ksi

Density 31.210pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added

Uniform Load : D = 0.0250, Lr = 0.020 ksf, Tributary Width = 23.50 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.719 1	Maximum Shear Stress Ratio	=	0.570 : 1
Section used for this span		2-2x12	Section used for this span		2-2x12
fb: Actual	=	1,347.91psi	fv: Actual	=	128.30 psi
F'b	=	1,875.00psi	F'v	=	225.00 psi
Load Combination		+D+Lr	Load Combination		+D+Lr
Location of maximum on span	=	3.667ft	Location of maximum on span	=	6.396 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection	0.045 in	Ratio = 1934 >=360	Span: 1 : Lr Only		n/a
Max Upward Transient Deflection	0 in	Ratio = 0 <360			
Max Downward Total Deflection	0.102 in	Ratio = 859 >=180	Span: 1 : +D+Lr		n/a
Max Upward Total Deflection	0 in	Ratio = 0 <180			

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CLx	C _F	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 7.333 ft	1	0.555	0.440	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	3.95	748.8	1,350.0	1.60	71.3	162.0
+D+Lr														0.0	0.00	0.0	0.0
Length = 7.333 ft	1	0.719	0.570	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	7.11	1,347.9	1,875.0	2.89	128.3	225.0
+D+0.750Lr														0.0	0.00	0.0	0.0
Length = 7.333 ft	1	0.639	0.507	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	6.32	1,198.1	1,875.0	2.57	114.0	225.0
+0.60D														0.0	0.00	0.0	0.0
Length = 7.333 ft	1	0.187	0.148	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	2.37	449.3	2,400.0	0.96	42.8	288.0

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 7'-4" Typ. Windows

Overall Maximum Deflections

Span	Load Combination	Max. "- " Defl	Location in Span	Load Combination	Max. "+ " Defl	Location in Span
1	+D+Lr	0.1023	3.693		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	3.877	3.877
Max Upward from Load Combinations	3.877	3.877
Max Upward from Load Cases	2.154	2.154
D Only	2.154	2.154
+D+Lr	3.877	3.877
+D+0.750Lr	3.447	3.447
+0.60D	1.292	1.292
Lr Only	1.723	1.723

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 6'-4" Top Door

CODE REFERENCES

Calculations per NDS 2018, IBC 2021
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Stress Design	Fb +	1,500.0 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-10	Fb -	1,500.0 psi	Ebend- xx	1,900.0ksi
	Fc - Prll	1,700.0 psi	Eminbend - xx	690.0ksi
Wood Species : Douglas Fir-Larch	Fc - Perp	625.0 psi		
Wood Grade : Select Structural	Fv	180.0 psi		
	Ft	1,000.0 psi	Density	31.210pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Uniform Load : D = 0.0250, Lr = 0.020 ksf, Tributary Width = 17.083 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.390	1	Maximum Shear Stress Ratio	=	0.340	1
Section used for this span		2-2x12		Section used for this span		2-2x12	
fb: Actual	=	730.82 psi		fv: Actual	=	76.60 psi	
F'b	=	1,875.00 psi		F'v	=	225.00 psi	
Load Combination		+D+Lr		Load Combination		+D+Lr	
Location of maximum on span	=	3.167 ft		Location of maximum on span	=	5.408 ft	
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
Maximum Deflection							
Max Downward Transient Deflection	0.018 in	Ratio =	4132 >=360	Span: 1 : Lr Only			
Max Upward Transient Deflection	0 in	Ratio =	0 <360	n/a			
Max Downward Total Deflection	0.041 in	Ratio =	1836 >=180	Span: 1 : +D+Lr			
Max Upward Total Deflection	0 in	Ratio =	0 <180	n/a			

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CLx	C _F	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 6.333 ft	1	0.301	0.263	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	2.14	406.0	1,350.0	0.96	42.6	162.0
+D+Lr														0.0	0.00	0.0	0.0
Length = 6.333 ft	1	0.390	0.340	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	3.85	730.8	1,875.0	1.72	76.6	225.0
+D+0.750Lr														0.0	0.00	0.0	0.0
Length = 6.333 ft	1	0.346	0.303	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	3.43	649.6	1,875.0	1.53	68.1	225.0
+0.60D														0.0	0.00	0.0	0.0
Length = 6.333 ft	1	0.102	0.089	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	1.28	243.6	2,400.0	0.57	25.5	288.0

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 6'-4" Top Door

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	+D+Lr	0.0414	3.190		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	2.434	2.434
Max Upward from Load Combinations	2.434	2.434
Max Upward from Load Cases	1.352	1.352
D Only	1.352	1.352
+D+Lr	2.434	2.434
+D+0.750Lr	2.164	2.164
+0.60D	0.811	0.811
Lr Only	1.082	1.082

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 10'-4" Left Side Store Front Window

CODE REFERENCES

Calculations per NDS 2018, IBC 2021

Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Stress Design

Load Combination : ASCE 7-10

Wood Species : Douglas Fir-Larch

Wood Grade : Select Structural

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb + 1,500.0 psi

Fb - 1,500.0 psi

Fc - Prll 1,700.0 psi

Fc - Perp 625.0 psi

Fv 180.0 psi

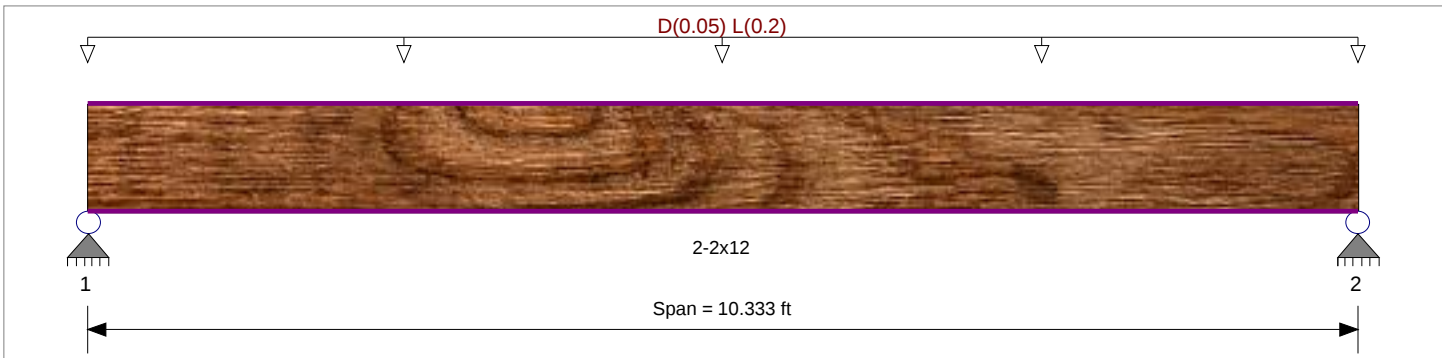
Ft 1,000.0 psi

E : Modulus of Elasticity

Ebend- xx 1,900.0ksi

Eminbend - xx 690.0ksi

Density 31.210pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added

Uniform Load : D = 0.0250, L = 0.10 ksf, Tributary Width = 2.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.422 1	Maximum Shear Stress Ratio	=	0.263 : 1
Section used for this span		2-2x12	Section used for this span		2-2x12
fb: Actual	=	632.72psi	fv: Actual	=	47.35 psi
F'b	=	1,500.00psi	F'v	=	180.00 psi
Load Combination		+D+L	Load Combination		+D+L
Location of maximum on span	=	5.167ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection	0.076 in	Ratio = 1625 >=600	Span: 1 : L Only		n/a
Max Upward Transient Deflection	0 in	Ratio = 0 <600			
Max Downward Total Deflection	0.095 in	Ratio = 1300 >=600	Span: 1 : +D+L		n/a
Max Upward Total Deflection	0 in	Ratio = 0 <600			

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CLx	C _F	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 10.333 ft	1	0.094	0.058	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.67	126.5	1,350.0	0.21	9.5	162.0
+D+L														0.0	0.00	0.0	0.0
Length = 10.333 ft	1	0.422	0.263	1.00	1.00	1.00	1.00	1.000	1.00	1.00	1.00	3.34	632.7	1,500.0	1.07	47.3	180.0
+D+0.750L														0.0	0.00	0.0	0.0
Length = 10.333 ft	1	0.270	0.168	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	2.67	506.2	1,875.0	0.85	37.9	225.0
+0.60D														0.0	0.00	0.0	0.0
Length = 10.333 ft	1	0.032	0.020	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.40	75.9	2,400.0	0.13	5.7	288.0

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 10'-4" Left Side Store Front Window

Overall Maximum Deflections

Span	Load Combination	Max. "- " Defl	Location in Span	Load Combination	Max. "+ " Defl	Location in Span
1	+D+L	0.0954	5.204		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	1.292	1.292
Max Upward from Load Combinations	1.292	1.292
Max Upward from Load Cases	1.033	1.033
D Only	0.258	0.258
+D+L	1.292	1.292
+D+0.750L	1.033	1.033
+0.60D	0.155	0.155
L Only	1.033	1.033

Wood Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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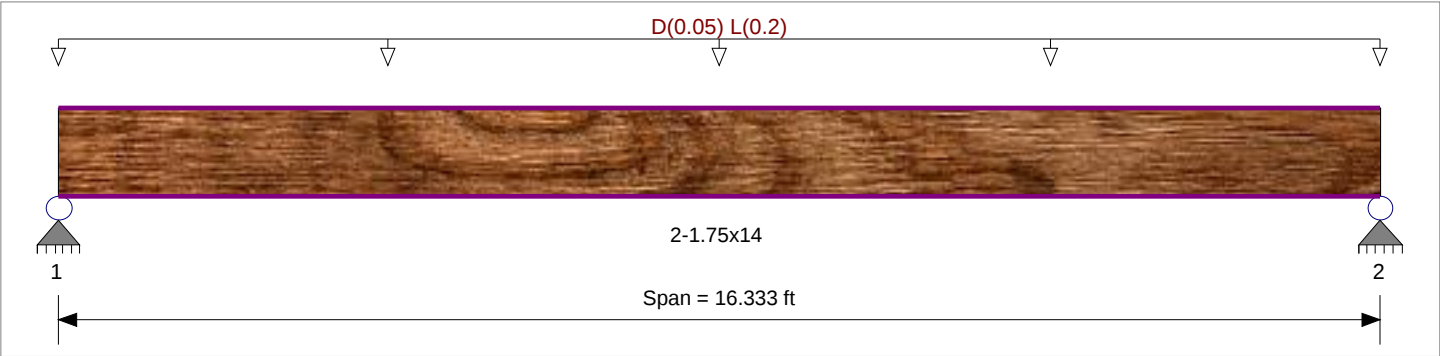
DESCRIPTION: 16'-4" Left Side Store Front Window NLB

CODE REFERENCES

Calculations per NDS 2018, IBC 2021
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method :	Allowable Stress Design	Fb +	2,600.0 psi	<i>E : Modulus of Elasticity</i>	
Load Combination :	ASCE 7-10	Fb -	2,600.0 psi	Ebend- xx	2,000.0 ksi
		Fc - Prll	2,510.0 psi	Eminbend - xx	1,016.54 ksi
Wood Species :	iLevel Truss Joist	Fc - Perp	750.0 psi		
Wood Grade :	MicroLam LVL 2.0 E	Fv	285.0 psi		
		Ft	1,555.0 psi	Density	42.010pcf
Beam Bracing :	Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Uniform Load : D = 0.0250, L = 0.10 ksf, Tributary Width = 2.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.344	1	Maximum Shear Stress Ratio	=	0.189	1
Section used for this span		2-1.75x14		Section used for this span		2-1.75x14	
fb: Actual	=	874.96 psi		fv: Actual	=	53.83 psi	
F'b	=	2,546.06 psi		F'v	=	285.00 psi	
Load Combination		+D+L		Load Combination		+D+L	
Location of maximum on span	=	8.167 ft		Location of maximum on span	=	15.200 ft	
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
Maximum Deflection							
Max Downward Transient Deflection	0.201 in	Ratio =	973 >= 600	Span: 1 : L Only			
Max Upward Transient Deflection	0 in	Ratio =	0 < 600	n/a			
Max Downward Total Deflection	0.252 in	Ratio =	779 >= 600	Span: 1 : +D+L			
Max Upward Total Deflection	0 in	Ratio =	0 < 600	n/a			

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CLx	C _F	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 16.333 ft	1	0.076	0.042	0.90	1.00	1.00	1.00	0.979	1.00	1.00	1.00	1.67	175.0	2,291.5	0.35	10.8	256.5
+D+L														0.0	0.00	0.0	0.0
Length = 16.333 ft	1	0.344	0.189	1.00	1.00	1.00	1.00	0.979	1.00	1.00	1.00	8.34	875.0	2,546.1	1.76	53.8	285.0
+D+0.750L														0.0	0.00	0.0	0.0
Length = 16.333 ft	1	0.220	0.121	1.25	1.00	1.00	1.00	0.979	1.00	1.00	1.00	6.67	700.0	3,182.6	1.41	43.1	356.3
+0.60D														0.0	0.00	0.0	0.0
Length = 16.333 ft	1	0.026	0.014	1.60	1.00	1.00	1.00	0.979	1.00	1.00	1.00	1.00	105.0	4,073.7	0.21	6.5	456.0

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 16'-4" Left Side Store Front Window NLB

Overall Maximum Deflections

Span	Load Combination	Max. "- " Defl	Location in Span	Load Combination	Max. "+ " Defl	Location in Span
1	+D+L	0.2515	8.226		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	2.042	2.042
Max Upward from Load Combinations	2.042	2.042
Max Upward from Load Cases	1.633	1.633
D Only	0.408	0.408
+D+L	2.042	2.042
+D+0.750L	1.633	1.633
+0.60D	0.245	0.245
L Only	1.633	1.633

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: 16'-7 1/4" Steel Beam (1)

CODE REFERENCES

Calculations per AISC 360-16, IBC 2021

Load Combination Set : ASCE 7-10

Material Properties

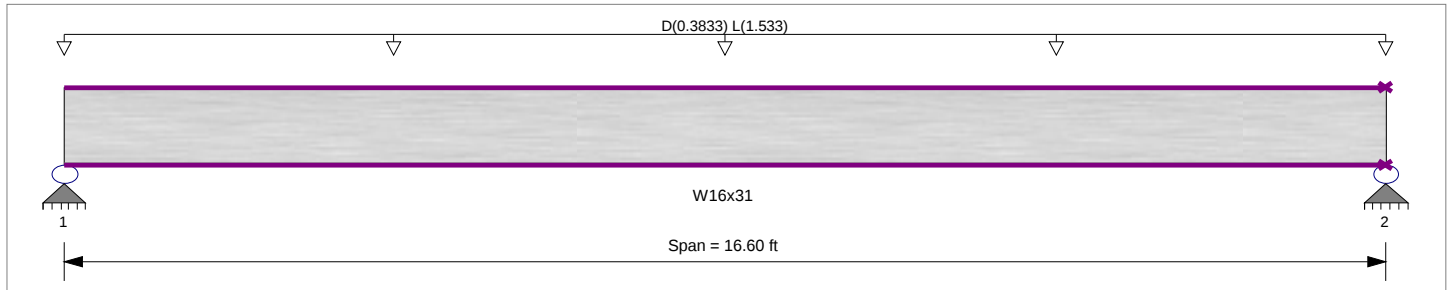
Analysis Method : Allowable Strength Design

Fy : Steel Yield : 50.0 ksi

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

E: Modulus : 29,000.0 ksi

Bending Axis : Major Axis Bending



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added

Uniform Load : D = 0.0250, L = 0.10 ksf, Tributary Width = 15.333 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio = **0.490** : 1

Maximum Shear Stress Ratio = **0.182** : 1

Section used for this span

W16x31

Section used for this span

W16x31

Ma : Applied 66.018 k-ft

Va : Applied 15.908 k

Mn / Omega : Allowable 134.731 k-ft

Vn/Omega : Allowable 87.450 k

Load Combination

Load Combination

+D+L

+D+L

Span # where maximum occurs

Span # 1

Location of maximum on span

0.000 ft

Span # where maximum occurs

Span # 1

Maximum Deflection

Max Downward Transient Deflection 0.242 in Ratio = **823** >=600. Span: 1 : L Only

Max Upward Transient Deflection 0 in Ratio = **0** <600.0 n/a

Max Downward Total Deflection 0.302 in Ratio = **659** >=600. Span: 1 : +D+L

Max Upward Total Deflection 0 in Ratio = **0** <600.0 n/a

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values							Summary of Shear Values		
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only														
Dsgn. L = 16.60 ft		1	0.098	0.036	13.20		13.20	225.00	134.73	1.00	1.00	3.18	131.18	87.45
+D+L														
Dsgn. L = 16.60 ft		1	0.490	0.182	66.02		66.02	225.00	134.73	1.00	1.00	15.91	131.18	87.45
+D+0.750L														
Dsgn. L = 16.60 ft		1	0.392	0.146	52.81		52.81	225.00	134.73	1.00	1.00	12.73	131.18	87.45
+0.60D														
Dsgn. L = 16.60 ft		1	0.059	0.022	7.92		7.92	225.00	134.73	1.00	1.00	1.91	131.18	87.45

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	+D+L	0.3025	8.347		0.0000	0.000

Vertical Reactions

Support notation : Far left is #:

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	15.908	15.908
Max Upward from Load Combinations	15.908	15.908
Max Upward from Load Cases	12.726	12.726
D Only	3.182	3.182
+D+L	15.908	15.908
+D+0.750L	12.726	12.726
+0.60D	1.909	1.909

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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DESCRIPTION: 16'-7 1/4" Steel Beam (1)

Vertical Reactions		Support notation : Far left is #.		Values in KIPS
Load Combination		Support 1	Support 2	
L Only		12.726	12.726	

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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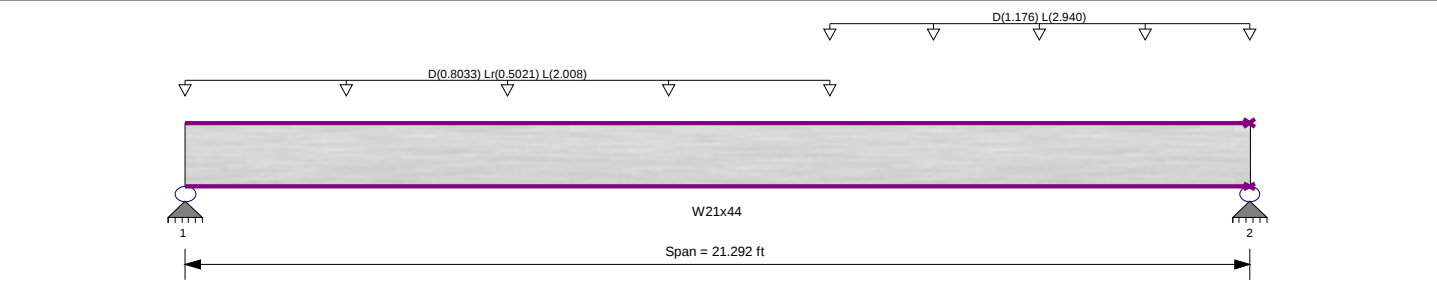
DESCRIPTION: 21'-3 1/2" Steel Beam (4)

CODE REFERENCES

Calculations per AISC 360-16, IBC 2021
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Strength Design	Fy : Steel Yield : 50.0 ksi
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling	E: Modulus : 29,000.0 ksi
Bending Axis : Major Axis Bending	



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Load for Span Number 1
Uniform Load : D = 0.040, Lr = 0.0250, L = 0.10 ksf, Extent = 0.0 --> 12.890 ft, Tributary Width = 20.083 ft
Uniform Load : D = 0.040, L = 0.10 ksf, Extent = 12.890 --> 21.292 ft, Tributary Width = 29.40 ft

DESIGN SUMMARY

Maximum Bending Stress Ratio =				0.770 : 1		Maximum Shear Stress Ratio =				0.267 : 1	
Section used for this span				W21x44		Section used for this span				W21x44	
Ma : Applied				183.182 k-ft		Va : Applied				38.730 k	
Mn / Omega : Allowable				238.024 k-ft		Vn/Omega : Allowable				144.90 k	
Load Combination						Load Combination					
				+D+L						+D+L	
Span # where maximum occurs				Span # 1		Location of maximum on span				21.292 ft	
Span # where maximum occurs						Span # where maximum occurs				Span # 1	
Maximum Deflection											
Max Downward Transient Deflection				0.441 in		Ratio =		579		>=360. Span: 1 : L Only	
Max Upward Transient Deflection				0 in		Ratio =		0		<360.0 n/a	
Max Downward Total Deflection				0.617 in		Ratio =		414		>=360. Span: 1 : +D+L	
Max Upward Total Deflection				0 in		Ratio =		0		<360.0 n/a	

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios		Summary of Moment Values							Summary of Shear Values		
Segment Length	Span #	M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only													
Dsgn. L = 21.29 ft	1	0.220	0.076	52.34		52.34	397.50	238.02	1.00	1.00	11.07	217.35	144.90
+D+L													
Dsgn. L = 21.29 ft	1	0.770	0.267	183.18		183.18	397.50	238.02	1.00	1.00	38.73	217.35	144.90
+D+Lr													
Dsgn. L = 21.29 ft	1	0.301	0.094	71.71		71.71	397.50	238.02	1.00	1.00	13.68	217.35	144.90
+D+0.750Lr+0.750L													
Dsgn. L = 21.29 ft	1	0.692	0.230	164.73		164.73	397.50	238.02	1.00	1.00	33.28	217.35	144.90
+D+0.750L													
Dsgn. L = 21.29 ft	1	0.632	0.220	150.47		150.47	397.50	238.02	1.00	1.00	31.81	217.35	144.90
+0.60D													
Dsgn. L = 21.29 ft	1	0.132	0.046	31.40		31.40	397.50	238.02	1.00	1.00	6.64	217.35	144.90

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	+D+L	0.6174	10.829		0.0000	0.000

Vertical Reactions

Support notation : Far left is #:

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	32.095	38.730

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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DESCRIPTION: 21'-3 1/2" Steel Beam (4)

Vertical Reactions	Support notation : Far left is #.		Values in KIPS
	Support 1	Support 2	
Load Combination			
Max Upward from Load Combinations	32.095	38.730	
Max Upward from Load Cases	22.925	27.664	
D Only	9.170	11.066	
+D+L	32.095	38.730	
+D+Lr	13.683	13.025	
+D+0.750Lr+0.750L	29.748	33.283	
+D+0.750L	26.364	31.814	
+0.60D	5.502	6.639	
Lr Only	4.513	1.959	
L Only	22.925	27.664	

Steel Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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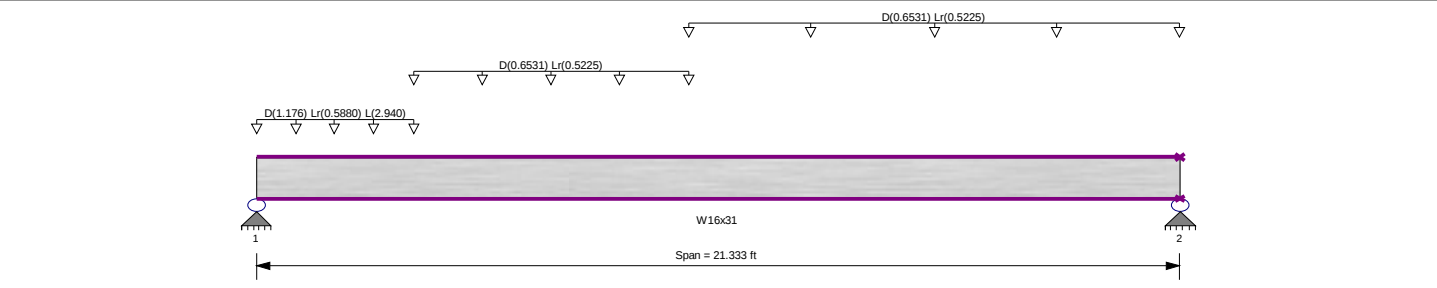
DESCRIPTION: 21'-4" Steel Beam (5)

CODE REFERENCES

Calculations per AISC 360-16, IBC 2021
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Strength Design	Fy : Steel Yield : 50.0 ksi
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling	E: Modulus : 29,000.0 ksi
Bending Axis : Major Axis Bending	



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Load for Span Number 1
Uniform Load : D = 0.040, Lr = 0.020, L = 0.10 ksf, Extent = 0.0 -->> 3.625 ft, Tributary Width = 29.40 ft
Uniform Load : D = 0.0250, Lr = 0.020 ksf, Extent = 3.625 -->> 10.0 ft, Tributary Width = 26.125 ft
Uniform Load : D = 0.0250, Lr = 0.020 ksf, Extent = 10.0 -->> 21.333 ft, Tributary Width = 26.125 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio = 0.512 : 1	Maximum Shear Stress Ratio = 0.233 : 1
Section used for this span W16x31	Section used for this span W16x31
Ma : Applied 68.920 k-ft	Va : Applied 20.358 k
Mn / Omega : Allowable 134.731 k-ft	Vn/Omega : Allowable 87.450 k
Load Combination +D+0.750Lr+0.750L	Load Combination +D+0.750Lr+0.750L
Span # where maximum occurs Span # 1	Location of maximum on span 0.000 ft
Span # where maximum occurs Span # 1	Span # where maximum occurs Span # 1
Maximum Deflection	
Max Downward Transient Deflection 0.227 in Ratio = 1,128 >=360. Span: 1 : Lr Only	
Max Upward Transient Deflection 0 in Ratio = 0 <360.0 n/a	
Max Downward Total Deflection 0.532 in Ratio = 482 >=360. Span: 1 : +D+0.750Lr+0.750L	
Max Upward Total Deflection 0 in Ratio = 0 <360.0 n/a	

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios		Summary of Moment Values							Summary of Shear Values		
Segment Length	Span #	M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only													
Dsgn. L = 21.33 ft	1	0.289	0.099	38.89		38.89	225.00	134.73	1.00	1.00	8.70	131.18	87.4
+D+L													
Dsgn. L = 21.33 ft	1	0.367	0.211	49.40		49.40	225.00	134.73	1.00	1.00	18.45	131.18	87.4
+D+Lr													
Dsgn. L = 21.33 ft	1	0.511	0.166	68.82		68.82	225.00	134.73	1.00	1.00	14.49	131.18	87.4
+D+0.750Lr+0.750L													
Dsgn. L = 21.33 ft	1	0.512	0.233	68.92		68.92	225.00	134.73	1.00	1.00	20.36	131.18	87.4
+D+0.750L													
Dsgn. L = 21.33 ft	1	0.346	0.183	46.66		46.66	225.00	134.73	1.00	1.00	16.01	131.18	87.4
+0.60D													
Dsgn. L = 21.33 ft	1	0.173	0.060	23.34		23.34	225.00	134.73	1.00	1.00	5.22	131.18	87.4

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	+D+0.750Lr+0.750L	0.5315	10.484		0.0000	0.000

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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DESCRIPTION: 21'-4" Steel Beam (5)

Vertical Reactions	Support notation : Far left is #.		Values in KIPS
	Support 1	Support 2	
Load Combination			
Max Upward from all Load Conditions	20.358	12.721	
Max Upward from Load Combinations	20.358	12.721	
Max Upward from Load Cases	9.752	7.128	
D Only	8.701	7.128	
+D+L	18.453	8.033	
+D+Lr	14.491	12.721	
+D+0.750Lr+0.750L	20.358	12.002	
+D+0.750L	16.015	7.807	
+0.60D	5.221	4.277	
Lr Only	5.791	5.593	
L Only	9.752	0.905	

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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DESCRIPTION: Typ. Column

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction @ Base	X-X Axis Reaction @ Base @ Top	k	Y-Y Axis Reaction @ Base @ Top	Mx - End Moments @ Base @ Top	k-ft	My - End Moments @ Base @ Top
L Only	50.430						
W Only				1.120 1.120			

Extreme Reactions

Item	Extreme Value	Axial Reaction @ Base	X-X Axis Reaction @ Base @ Top	k	Y-Y Axis Reaction @ Base @ Top	Mx - End Moments @ Base @ Top	k-ft	My - End Moments @ Base @ Top
Axial @ Base	Maximum	69.954						
"	Minimum				1.120 1.120			
Reaction, X-X Axis Base	Maximum	19.524						
"	Minimum	19.524						
Reaction, Y-Y Axis Base	Maximum				1.120 1.120			
"	Minimum	19.524						
Reaction, X-X Axis Top	Maximum	19.524						
"	Minimum	19.524						
Reaction, Y-Y Axis Top	Maximum	19.524						
"	Minimum	19.524						
Moment, X-X Axis Base	Maximum	19.524						
"	Minimum	19.524						
Moment, Y-Y Axis Base	Maximum	19.524						
"	Minimum	19.524						
Moment, X-X Axis Top	Maximum	19.524						
"	Minimum	19.524						
Moment, Y-Y Axis Top	Maximum	19.524						
"	Minimum	19.524						

Maximum Deflections for Load Combinations

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+L	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.60W	0.0000 in	0.000 ft	0.049 in	5.034 ft
+D+0.750L+0.450W	0.0000 in	0.000 ft	0.036 in	5.034 ft
+0.60D+0.60W	0.0000 in	0.000 ft	0.049 in	5.034 ft
+0.60D	0.0000 in	0.000 ft	0.000 in	0.000 ft
L Only	0.0000 in	0.000 ft	0.000 in	0.000 ft

Steel Section Properties : HSS5x5x3/8

Depth	=	5.000 in	I xx	=	21.70 in^4	J	=	36.100 in^4
Design Thick	=	0.349 in	S xx	=	8.68 in^3			
Width	=	5.000 in	R xx	=	1.870 in			
Wall Thick	=	0.375 in	Zx	=	10.600 in^3			
Area	=	6.180 in^2	I yy	=	21.700 in^4	C	=	14.900 in^3
Weight	=	22.370 plf	S yy	=	8.680 in^3			
			R yy	=	1.870 in			

Ycg = 0.000 in

Steel Column

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

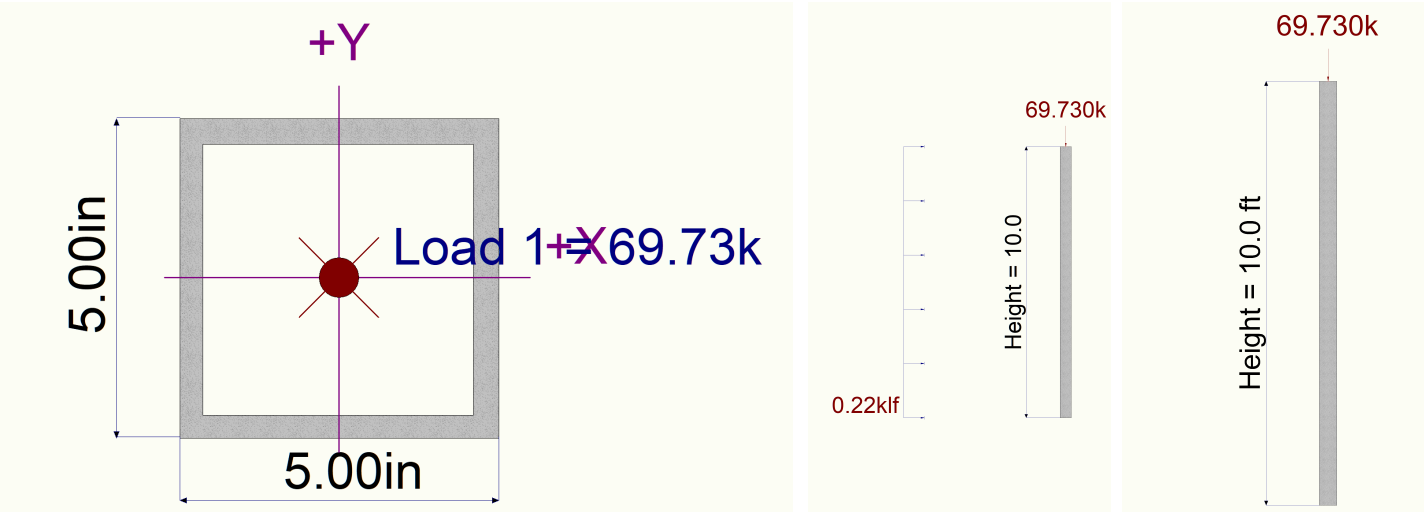
LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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DESCRIPTION: Typ. Column

Sketches



Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

(c) ENERCALC, LLC 1982-2025

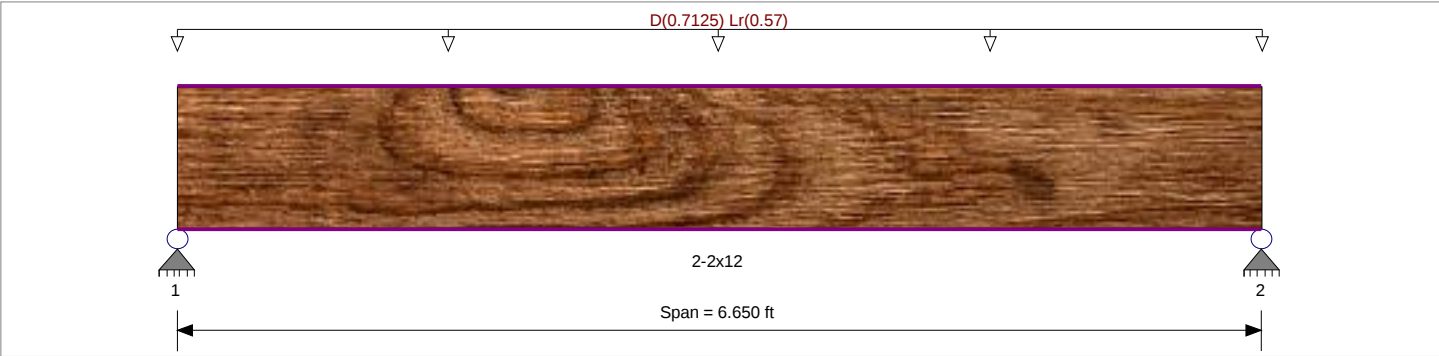
DESCRIPTION: 6'-7 3/4" Interior Beam @ Roof Girder

CODE REFERENCES

Calculations per NDS 2018, IBC 2021
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method :	Allowable Stress Design	Fb +	1,500.0 psi	E : Modulus of Elasticity	
Load Combination :	ASCE 7-10	Fb -	1,500.0 psi	Ebend- xx	1,900.0ksi
		Fc - Prll	1,700.0 psi	Eminbend - xx	690.0ksi
Wood Species :	Douglas Fir-Larch	Fc - Perp	625.0 psi		
Wood Grade :	Select Structural	Fv	180.0 psi		
		Ft	1,000.0 psi	Density	31.210pcf
Beam Bracing :	Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Uniform Load : D = 0.0250, Lr = 0.020 ksf, Tributary Width = 28.50 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.717 : 1	Maximum Shear Stress Ratio	=	0.609 : 1
Section used for this span		2-2x12	Section used for this span		2-2x12
fb: Actual	=	1,344.36 psi	fv: Actual	=	136.96 psi
F'b	=	1,875.00 psi	F'v	=	225.00 psi
Load Combination		+D+Lr	Load Combination		+D+Lr
Location of maximum on span	=	3.325 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection	0.037 in	Ratio = 2139 >=360	Span: 1 : Lr Only		
Max Upward Transient Deflection	0 in	Ratio = 0 <360	n/a		
Max Downward Total Deflection	0.084 in	Ratio = 950 >=180	Span: 1 : +D+Lr		
Max Upward Total Deflection	0 in	Ratio = 0 <180	n/a		

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CLx	C _F	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 6.650 ft	1	0.553	0.470	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	3.94	746.9	1,350.0	1.71	76.1	162.0
+D+Lr														0.0	0.00	0.0	0.0
Length = 6.650 ft	1	0.717	0.609	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	7.09	1,344.4	1,875.0	3.08	137.0	225.0
+D+0.750Lr														0.0	0.00	0.0	0.0
Length = 6.650 ft	1	0.637	0.541	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	6.30	1,195.0	1,875.0	2.74	121.7	225.0
+0.60D														0.0	0.00	0.0	0.0
Length = 6.650 ft	1	0.187	0.159	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	2.36	448.1	2,400.0	1.03	45.7	288.0

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 6'-7 3/4" Interior Beam @ Roof Girder

Overall Maximum Deflections

Span	Load Combination	Max. "-." Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	+D+Lr	0.0839	3.349		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	4.264	4.264
Max Upward from Load Combinations	4.264	4.264
Max Upward from Load Cases	2.369	2.369
D Only	2.369	2.369
+D+Lr	4.264	4.264
+D+0.750Lr	3.791	3.791
+0.60D	1.421	1.421
Lr Only	1.895	1.895

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC#: KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 6'-4" Bearing Wall Doorway

CODE REFERENCES

Calculations per NDS 2018, IBC 2021
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Stress Design	Fb +	1,500.0 psi	<i>E : Modulus of Elasticity</i>	
Load Combination : ASCE 7-10	Fb -	1,500.0 psi	Ebend- xx	1,900.0ksi
	Fc - Prll	1,700.0 psi	Eminbend - xx	690.0ksi
Wood Species : Douglas Fir-Larch	Fc - Perp	625.0 psi		
Wood Grade : Select Structural	Fv	180.0 psi		
	Ft	1,000.0 psi	Density	31.210pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

Beam self weight NOT internally calculated and added
Uniform Load : D = 0.0250, Lr = 0.020 ksf, Tributary Width = 37.910 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.865	1	Maximum Shear Stress Ratio	=	0.755	1
Section used for this span		2-2x12		Section used for this span		2-2x12	
fb: Actual	=	1,621.82 psi		fv: Actual	=	169.99 psi	
F'b	=	1,875.00 psi		F'v	=	225.00 psi	
Load Combination		+D+Lr		Load Combination		+D+Lr	
Location of maximum on span	=	3.167 ft		Location of maximum on span	=	5.408 ft	
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
Maximum Deflection							
Max Downward Transient Deflection	0.041 in	Ratio =	1862 >=360	Span: 1 : Lr Only			
Max Upward Transient Deflection	0 in	Ratio =	0 <360	n/a			
Max Downward Total Deflection	0.092 in	Ratio =	827 >=180	Span: 1 : +D+Lr			
Max Upward Total Deflection	0 in	Ratio =	0 <180	n/a			

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CLx	C _F	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 6.333 ft	1	0.667	0.583	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	4.75	901.0	1,350.0	2.12	94.4	162.0
+D+Lr														0.0	0.00	0.0	0.0
Length = 6.333 ft	1	0.865	0.755	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	8.55	1,621.8	1,875.0	3.82	170.0	225.0
+D+0.750Lr														0.0	0.00	0.0	0.0
Length = 6.333 ft	1	0.769	0.672	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	7.60	1,441.6	1,875.0	3.40	151.1	225.0
+0.60D														0.0	0.00	0.0	0.0
Length = 6.333 ft	1	0.225	0.197	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	2.85	540.6	2,400.0	1.27	56.7	288.0

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 6'-4" Bearing Wall Doorway

Overall Maximum Deflections

Span	Load Combination	Max. "- " Defl	Location in Span	Load Combination	Max. "+ " Defl	Location in Span
1	+D+Lr	0.0918	3.190		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	5.402	5.402
Max Upward from Load Combinations	5.402	5.402
Max Upward from Load Cases	3.001	3.001
D Only	3.001	3.001
+D+Lr	5.402	5.402
+D+0.750Lr	4.802	4.802
+0.60D	1.801	1.801
Lr Only	2.401	2.401

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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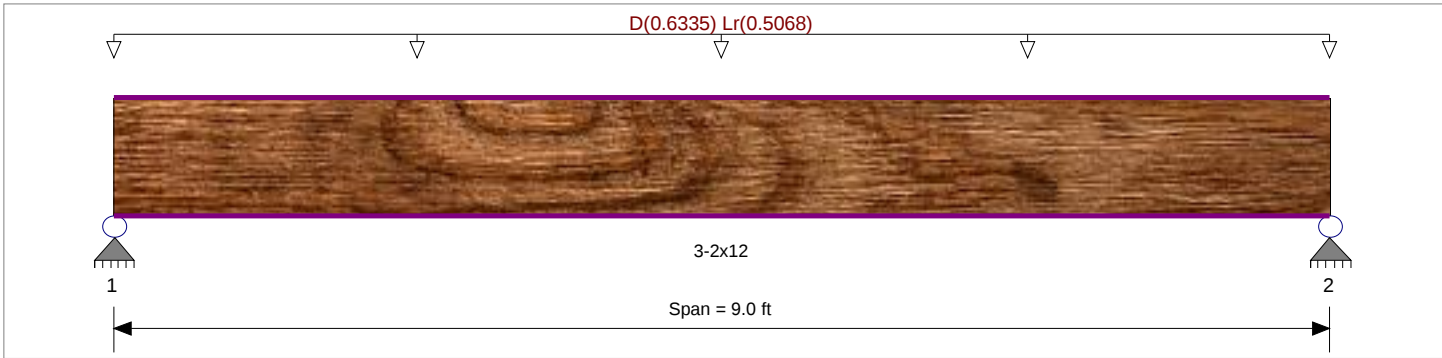
DESCRIPTION: 9'-0" Interior Header @ Roof Girder

CODE REFERENCES

Calculations per NDS 2018, IBC 2021
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Stress Design	Fb +	1,500.0 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-10	Fb -	1,500.0 psi	Ebend- xx	1,900.0 ksi
	Fc - Prll	1,700.0 psi	Eminbend - xx	690.0 ksi
Wood Species : Douglas Fir-Larch	Fc - Perp	625.0 psi		
Wood Grade : Select Structural	Fv	180.0 psi		
	Ft	1,000.0 psi	Density	31.210pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Uniform Load : D = 0.0250, Lr = 0.020 ksf, Tributary Width = 25.340 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.778 1	Maximum Shear Stress Ratio	=	0.538 : 1
Section used for this span		3-2x12	Section used for this span		3-2x12
fb: Actual	=	1,459.58psi	fv: Actual	=	120.97 psi
F'b	=	1,875.00psi	F'v	=	225.00 psi
Load Combination		+D+Lr	Load Combination		+D+Lr
Location of maximum on span	=	4.500ft	Location of maximum on span	=	8.080 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection	0.074 in	Ratio = 1455 >=360	Span: 1 : Lr Only		
Max Upward Transient Deflection	0 in	Ratio = 0 <360	n/a		
Max Downward Total Deflection	0.167 in	Ratio = 647 >=180	Span: 1 : +D+Lr		
Max Upward Total Deflection	0 in	Ratio = 0 <180	n/a		

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CLx	C _F	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 9.0 ft	1	0.601	0.415	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	6.41	810.9	1,350.0	2.27	67.2	162.0
+D+Lr														0.0	0.00	0.0	0.0
Length = 9.0 ft	1	0.778	0.538	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	11.55	1,459.6	1,875.0	4.08	121.0	225.0
+D+0.750Lr														0.0	0.00	0.0	0.0
Length = 9.0 ft	1	0.692	0.478	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	10.26	1,297.4	1,875.0	3.63	107.5	225.0
+0.60D														0.0	0.00	0.0	0.0
Length = 9.0 ft	1	0.203	0.140	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	3.85	486.5	2,400.0	1.36	40.3	288.0

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: 9'-0" Interior Header @ Roof Girder

Overall Maximum Deflections

Span	Load Combination	Max. "- " Defl	Location in Span	Load Combination	Max. "+ " Defl	Location in Span
1	+D+Lr	0.1669	4.533		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	5.131	5.131
Max Upward from Load Combinations	5.131	5.131
Max Upward from Load Cases	2.851	2.851
D Only	2.851	2.851
+D+Lr	5.131	5.131
+D+0.750Lr	4.561	4.561
+0.60D	1.710	1.710
Lr Only	2.281	2.281

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

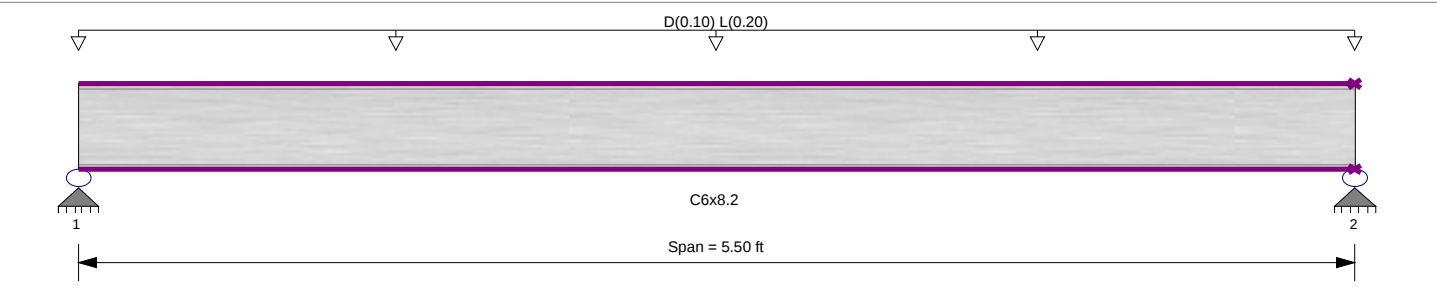
DESCRIPTION: Stair Landing Joists

CODE REFERENCES

Calculations per AISC 360-16, IBC 2021
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Strength Design	Fy : Steel Yield : 50.0 ksi
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling	E: Modulus : 29,000.0 ksi
Bending Axis : Major Axis Bending	



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Uniform Load : D = 0.050, L = 0.10 ksf, Tributary Width = 2.0 ft

DESIGN SUMMARY

				Design OK			
Maximum Bending Stress Ratio =		0.088 : 1		Maximum Shear Stress Ratio =		0.038 : 1	
Section used for this span		C6x8.2		Section used for this span		C6x8.2	
Ma : Applied		1.134 k-ft		Va : Applied		0.8250 k	
Mn / Omega : Allowable		12.874 k-ft		Vn/Omega : Allowable		21.557 k	
Load Combination				Load Combination			
		+D+L				+D+L	
Span # where maximum occurs		Span # 1		Location of maximum on span		0.000 ft	
Span # where maximum occurs		Span # 1		Span # where maximum occurs		Span # 1	
Maximum Deflection							
Max Downward Transient Deflection		0.011 in		Ratio = 6,061		>=360	
Max Upward Transient Deflection		0 in		Ratio = 0		<360	
Max Downward Total Deflection		0.016 in		Ratio = 4041		>=180	
Max Upward Total Deflection		0 in		Ratio = 0		<180	

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios		Summary of Moment Values							Summary of Shear Values		
Segment Length	Span #	M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only													
Dsgn. L = 5.50 ft	1	0.029	0.013	0.38		0.38	21.50	12.87	1.00	1.00	0.28	36.00	21.56
+D+L													
Dsgn. L = 5.50 ft	1	0.088	0.038	1.13		1.13	21.50	12.87	1.00	1.00	0.83	36.00	21.56
+D+0.750L													
Dsgn. L = 5.50 ft	1	0.073	0.032	0.95		0.95	21.50	12.87	1.00	1.00	0.69	36.00	21.56
+0.60D													
Dsgn. L = 5.50 ft	1	0.018	0.008	0.23		0.23	21.50	12.87	1.00	1.00	0.17	36.00	21.56

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	+D+L	0.0163	2.766		0.0000	0.000

Vertical Reactions

Support notation : Far left is #:

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	0.825	0.825
Max Upward from Load Combinations	0.825	0.825
Max Upward from Load Cases	0.550	0.550
D Only	0.275	0.275
+D+L	0.825	0.825
+D+0.750L	0.688	0.688
+0.60D	0.165	0.165

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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DESCRIPTION: Stair Landing Joists

Vertical Reactions		Support notation : Far left is #.		Values in KIPS
Load Combination		Support 1	Support 2	
L Only		0.550	0.550	

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24

CROCKETT ENGINEERING CONSULTANTS

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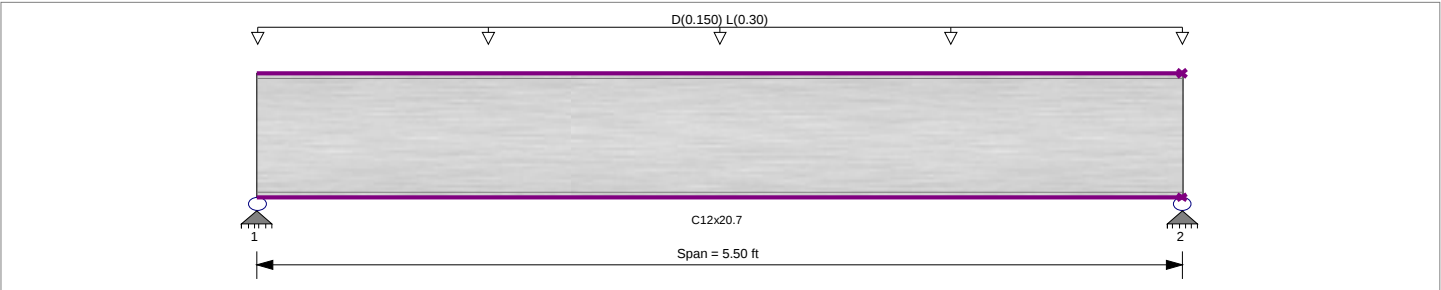
DESCRIPTION: Stair Landing Girder

CODE REFERENCES

Calculations per AISC 360-16, IBC 2021
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Strength Design
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling
Bending Axis : Major Axis Bending
Fy : Steel Yield : 50.0 ksi
E: Modulus : 29,000.0 ksi



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Uniform Load : D = 0.050, L = 0.10 ksf, Tributary Width = 3.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.027 : 1	Maximum Shear Stress Ratio =	0.020 : 1
Section used for this span	C12x20.7	Section used for this span	C12x20.7
Ma : Applied	1.702 k-ft	Va : Applied	1.238 k
Mn / Omega : Allowable	63.872 k-ft	Vn/Omega : Allowable	60.790 k
Load Combination		Load Combination	
	+D+L		+D+L
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward Transient Deflection	0.002 in Ratio = 39,792 >=360	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = 0 <360	n/a	
Max Downward Total Deflection	0.002 in Ratio = 26528 >=180	Span: 1 : +D+L	
Max Upward Total Deflection	0 in Ratio = 0 <180	n/a	

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values							Summary of Shear Values		
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only														
Dsgn. L =	5.50 ft	1	0.009	0.007	0.57		0.57	106.67	63.87	1.00	1.00	0.41	101.52	60.79
+D+L														
Dsgn. L =	5.50 ft	1	0.027	0.020	1.70		1.70	106.67	63.87	1.00	1.00	1.24	101.52	60.79
+D+0.750L														
Dsgn. L =	5.50 ft	1	0.022	0.017	1.42		1.42	106.67	63.87	1.00	1.00	1.03	101.52	60.79
+0.60D														
Dsgn. L =	5.50 ft	1	0.005	0.004	0.34		0.34	106.67	63.87	1.00	1.00	0.25	101.52	60.79

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	+D+L	0.0025	2.766		0.0000	0.000

Vertical Reactions

Support notation : Far left is #:

Values in KIPS

Load Combination	Support	
	1	2
Max Upward from all Load Conditions	1.238	1.238
Max Upward from Load Combinations	1.238	1.238
Max Upward from Load Cases	0.825	0.825
D Only	0.413	0.413
+D+L	1.238	1.238
+D+0.750L	1.031	1.031
+0.60D	0.248	0.248

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Alura Clubhouse updated design (Apr. 2025).ec6

LIC# : KW-06015690, Build:20.25.03.24 CROCKETT ENGINEERING CONSULTANTS (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Stair Landing Girder

Vertical Reactions		Support notation : Far left is #.		Values in KIPS
Load Combination		Support 1	Support 2	
L Only		0.825	0.825	

Footings

Exterior Continuous:

$$\text{Roof: } 40(15'-6") = 620 \text{ plf DL}$$

$$100(15'-6") = 1,550 \text{ plf LL}$$

$$\text{Wall: } 50(21'-9") = 1,087.5 \text{ plf DL}$$

$$\text{Total: } 620 + 1,550 + 1,088 = 3,258 \text{ plf}$$

$$3,258 \text{ plf} / 2,500 \text{ psf} = 1.3 \approx 1'-6"$$

$$\frac{1.5(2.5)(144)(0.0018)}{0.31} = 3.14 \approx 4/2 = 2 \#5 \text{ Cont. T \& B}$$

Interior Continuous:

$$\text{Roof: } 40(12'-3") + 25(4'-6") = 602.5 \text{ plf DL}$$

$$100(16'-9") = 1,675 \text{ plf LL}$$

$$\text{Wall: } 10(32'-0") = 320 \text{ plf DL}$$

$$\text{Total: } 603 + 1,675 + 320 = 2,598 \text{ plf}$$

$$2,598 \text{ plf} / 2,500 \text{ psf} = 1.04 \approx 1'-6"$$

$$\frac{1.5(1')(144)(0.0018)}{0.31} = 1.25 \approx 2 \#5 \text{ Cont.}$$

Exterior Pad Footings:

$$\text{Point: } 8.98 \text{ k DL} / 31.77 \text{ k LL} / 0.65 \text{ k DL} / 1.63 \text{ k LL}$$

$$\text{Total: } 8.98 + 31.77 + 0.65 + 1.63 = 43.03 \text{ k}$$

$$43.03 / 2.5 \text{ ksf} = 17.21 \text{ ft}^2$$

$$\sqrt{17.21} = 4.15 \approx 4'-6"$$

$$\frac{4.5(2.5)(144)(0.0018)}{0.31} = 9.41/2 \approx 5 \#5 \text{ bars E.W. T \& B}$$

Pad Footing Interior Heavy:

Point: 8.98 k DL / 31.77 k LL
10.32 k DL / 18.66 k LL

Total: $8.98 + 31.77 + 10.32 + 18.66 = 69.73 \text{ k}$

$69.73 \text{ k} / 2.5 \text{ ksf} = 27.892 \text{ ft}^2$

$\sqrt{27.892} = 5.281 \approx 5'-6" \times 5'-6"$

$\frac{5.5(1.33)(144)(0.0018)}{0.31} = 6.12 / 2 = 3.06 \approx 4 \#5 \text{ bars E.W. T \& B}$

Next Heaviest Interior Pad:

Point: 8.73 k DL / 8.66 k LL
7.3 k DL / 5.84 k LL

Total: $8.73 + 8.66 + 7.3 + 5.84 = 30.53 \text{ k}$

$30.53 \text{ k} / 2.5 \text{ ksf} = 12.212 \text{ ft}^2$

$\sqrt{12.212} = 3.49 \approx 3'-6" \times 3'-6"$

$\frac{3.5(1.33)(144)(0.0018)}{0.31} = 3.89 / 2 = 1.9 \approx 3 \#5 \text{ bars E.W. T \& B}$