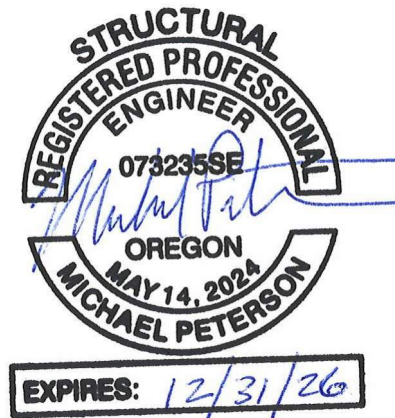


Structural Calculations For Klamath Tribes Fitness Addition – Chiloquin, OR

Chiloquin, OR
Steele Associates

9/4/2026

FE Job Number – 26-B224



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*** LIMITATIONS ***

ENGINEERING DESIGN IS BASED UPON INFORMATION PROVIDED BY THE CLIENT, WHO IS SOLELY RESPONSIBLE FOR ACCURACY OF SAME. NO RESPONSIBILITY AND / OR LIABILITY IS ASSUMED BY, OR IS TO BE ASSIGNED TO THE ENGINEER FOR ITEMS BEYOND THAT SHOWN ON THESE SHEETS.

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Client:	Steele Associates
Project Name:	Klamath Tribes Fitness Center Addition - Chiloquin
Project Number:	26-B224
Date:	8/28/2026
By:	MP

SCOPE OF WORK

Froelich Engineers, Inc. (FE) has provided full structural lateral and gravity design of the project per the 2024 International Building Code (IBC) and 2025 Oregon Structural Specialty Code (OSSC).

Froelich Engineers, Inc. has provided drawings and details as required by code to the areas pertaining to our design.

PROJECT DESCRIPTION

1-story addition to the existing Fitness Center in Chiloquin, OR. The new addition is wood-framed with open-web wood roof trusses. Bearing is on traditional concrete strip and spread footings. There is a non-structural concrete slab on grade. Lateral support is provided by plywood shear walls. The new addition is seismically separated from the existing building due to mixture of CMU and wood shear walls in the existing.

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Project Design Criteria

Client: Steele
Project: Klamath Tribes Fitness Addition
Proj. #: 26-B224
Date: 7/29/2026
By: SM

Project Description

Fitness facility addition with wood framed roof and wood sheathed shear walls

Project Location

Chiloquin, OR
42.5759°
-121.87514°
Average Elevation = 4200 ft (approximate)

General

Building Department:	Klamath County
Building Code(s):	2024 International Building Code (IBC)
	2025 Oregon Structural Specialty Code (OSSC)
	ASCE 7-22

Building/Structure Information

Construction Type (Upper)	V-B (Ref Architect and IBC/OSSC Tables 504.3 and 601)
Gravity System Framing Roof:	Roof Trusses with bearing walls
Upper Lateral Force Resisting System:	Wood sheathed shear walls and wood sheathed diaphragm
Foundation:	Conventional shallow foundations
Risk Category:	III (ASCE 7-16 Table 1.5-1 IBC/OSSC 1604.5)

Roof Live Load:

Ordinary Roof - unoccupied =	20 psf (IBC Table 1607.1)
------------------------------	---------------------------

Snow Load:

Ground Snow Load =	96 psf (Snow Load Analysis for Oregon)
Minimum Roof Snow Load =	69.6 psf (Snow Load Analysis for Oregon)
Deflection Criteria =	L/240

Wind Load:

Basic (3-Second Gust) Wind Speed =	102 mph (OSSC Figure 1609)
Exposure =	C

Seismic Load:

Seismic Importance Factor (I_E) =	1.25 (ASCE 7-16 Table 1.5-2)
Site Class =	D D-Stiff Soil
Mapped Spectral Acceleration Values (S_S) =	0.860 g
Mapped Spectral Acceleration Values (S_1) =	0.300 g
Design Spectral Response Parameter (S_{DS}) =	0.680 g
Design Spectral Response Parameter (S_{D1}) =	0.470 g
Seismic Design Category =	D
Response Modification Coefficient (R) =	6.5

Soils Data:

Allowable Bearing Pressure =	2500 psf *
Exterior Footing Depth =	24 inches*

* Per Geotechnical Engineering Report By: Wallace Group
Project No. 26123 (1)
Dated August 24, 2026



Client: Steele
Project: Kalamath Tribes Fitness Addition
Proj. #: 26-B224
Date: 7/29/2026
By: SM

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Dead Load Calculations

Roof Dead Load

Top Chord of Truss

Component Weights	Actual (psf)	Comments
Solar-Ready Zone Area	5.0	2024 OSSC 1606.4.1, 3111.4.7
Roofing	3.0	Metal Decking
Framing	4.0	Roof Trusses
Roof sheathing	3.0	7/8" shth
Misc.	1.0	

Total = 16.0 psf

For Gravity and Lateral

Bottom Chord of Truss

Component Weights	Actual (psf)	Comments
Mechanical	1.5	
Sprinklers	1.0	
Blown-in Fiberglass Insulation	1.5	R49 = 16.25" thick ~ 0.75 psf
Ceiling	2.8	(1) 5/8" gyp
Misc.	1.2	

Total = 8.0 psf

Total Roof Dead Load = 24.0 psf

Exterior Wall Dead Load

Component Weights	Actual (psf)	Comments
Siding	2.3	Fiber Cement Siding
Sheathing	1.7	1/2" shth
Framing	1.7	2x6 at 16" oc
Insulation	0.6	Assume Fiberglass Owens Corning R-21 Roll is 40 lbs, coverage = 67.8 ft2
Interior Gyp Finish	2.8	5/8" gyp
Misc.	0.9	

Total = 10.0 psf

+ 20.0 Adhered Brick Veneer (as occurs)

Interior Wall /Partition Wall Dead Load

Component Weights	Actual (psf)	Comments
Interior Gyp Finish	5.6	5/8" gyp each side
Framing	1.7	2x6 at 16" oc
Insulation	0.6	Assume Fiberglass Owens Corning R-21 Roll is 40 lbs, coverage = 67.8 ft2
Misc.	0.1	

Total = 8.0 psf

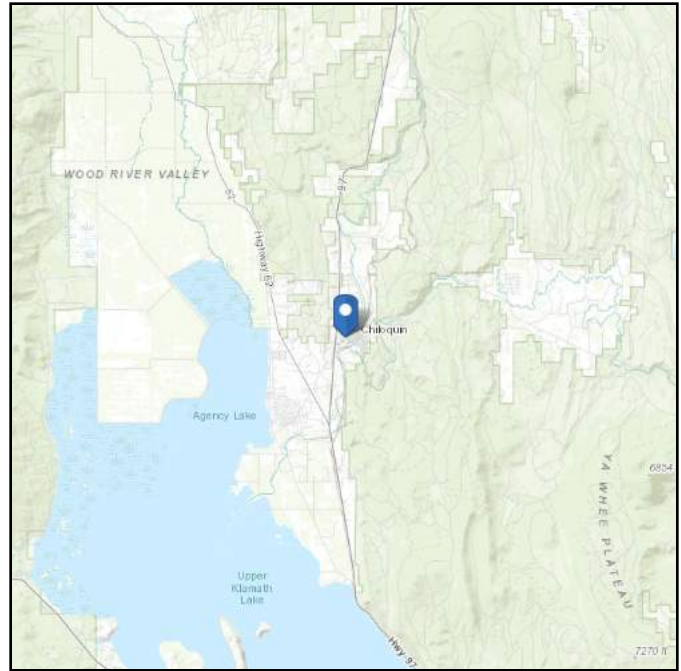
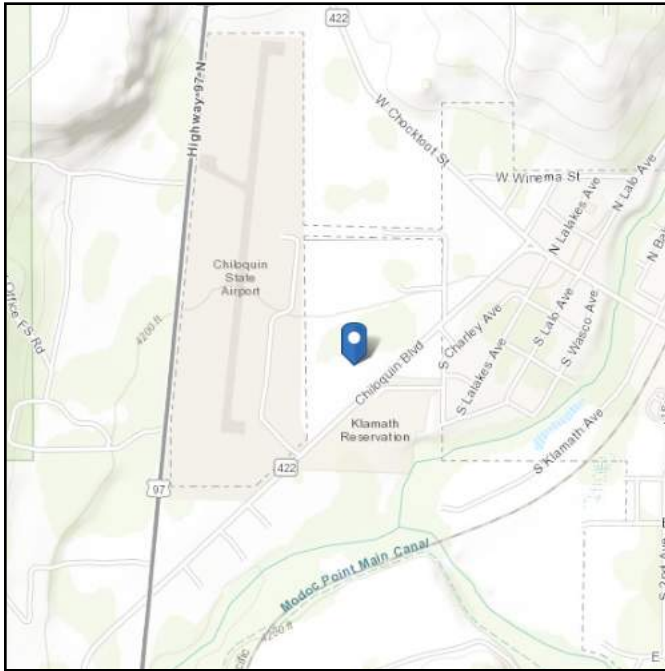


ASCE Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-22
Risk Category: III
Soil Class: Default

Latitude: 42.5759
Longitude: -121.87514
Elevation: 4189.228181903067 ft
(NAVD 88)



Wind

Results:

Wind Speed	102 Vmph
10-year MRI	67 Vmph
25-year MRI	73 Vmph
50-year MRI	77 Vmph
100-year MRI	82 Vmph
300-year MRI	90 Vmph
700-year MRI	96 Vmph
1,700-year MRI	102 Vmph
3,000-year MRI	107 Vmph
10,000-year MRI	116 Vmph
100,000-year MRI	133 Vmph
1,000,000-year MRI	151 Vmph

Data Source: ASCE/SEI 7-22, Fig. 26.5-1C and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Wed Jul 29 2026



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 7-22 Standard. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years). Values for 10-year MRI, 25-year MRI, 50-year MRI and 100-year MRI are Service Level wind speeds, all other wind speeds are Ultimate wind speeds.

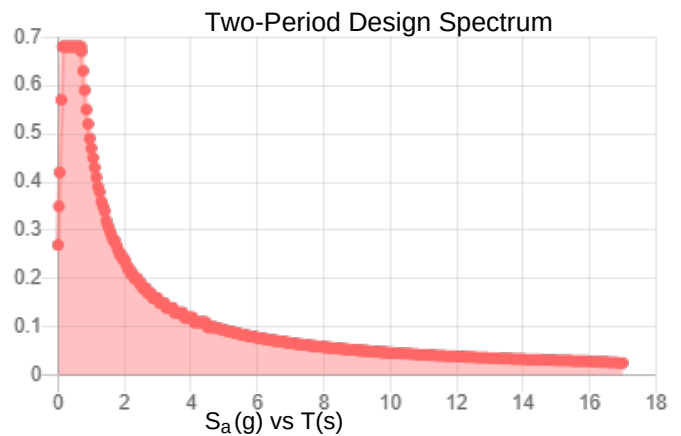
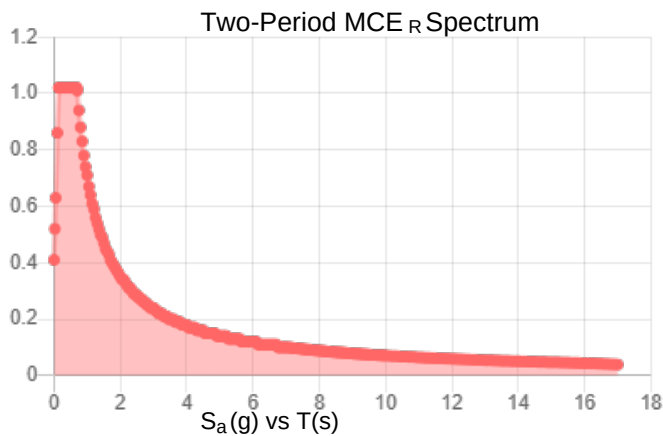
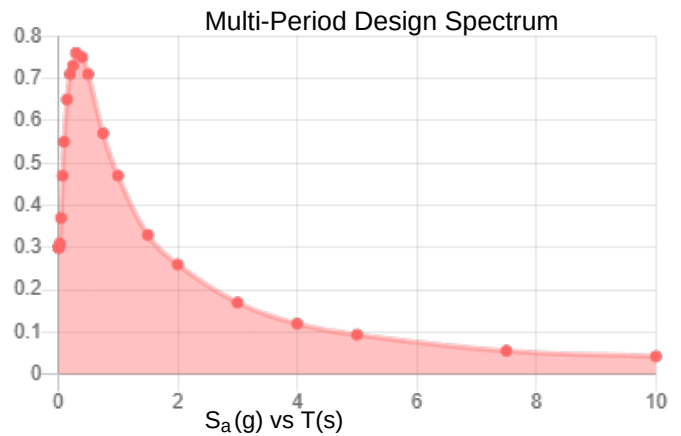
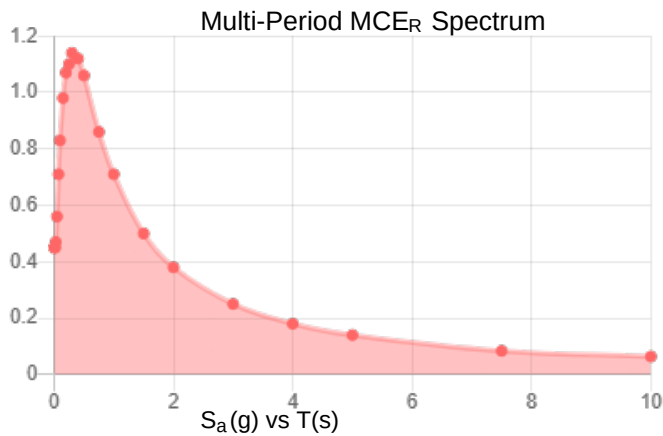
Site is not in a hurricane-prone region as defined in ASCE/SEI 7-22 Section 26.2.

Site Soil Class: Default

Results:

PGA _M :	0.42	T _L :	16
S _{MS} :	1.02	S _S :	0.86
S _{M1} :	0.71	S ₁ :	0.3
S _{DS} :	0.68	V _{S30} :	260
S _{D1} :	0.47		

Seismic Design Category: D



MCE_R Vertical Response Spectrum
Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum
Vertical ground motion data has not yet been made available by USGS.

Data Accessed: Wed Jul 29 2026

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-22 and ASCE/SEI 7-22 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-22 Ch. 21 are available from USGS.

Results:

Ground Snow Load, p_g :	96 lb/ft ²
20-year MRI Value:	39.59 lb/ft ²
Winter Wind Parameter:	0.25
Mapped Elevation:	4291.2 ft
Data Source:	ASCE/SEI 7-22, Figures 7.6-1 and 7.6-2 A-D
Date Accessed:	Wed Jul 29 2026

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.

Ground Snow Loads for IRC only, $p_{g(asd)}$:	67.2 lb/ft ²
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The ASCE Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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Client: Steele
Project: Kalamath Tribes Fitness Additi
Proj. #: 26-B224
Date: 8/28/2026
By: SM

Snow Load Analysis - 2024 IBC

Code Reference

Flat Roof Snow Load Calculation:

Ground Snow Load (p_g) = 96 psf <https://ascehazardtool.org/>
Surface Roughness Category = C
Exposure of Roof = Fully Exposed
Snow Exposure Factor (C_e) = 0.9
Thermal Factor (C_t) = 1.15 (R = 40)
Risk Category: III
Flat Roof Snow Load (p_f) = 69.6 psf $p_f = 0.7 \cdot C_e \cdot C_t \cdot p_g$

ASCE 7-22 Section 7.2
ASCE 7-22 Section 26.7
ASCE 7-22 Table 7.3-1 Footnotes
ASCE 7-22 Table 7.3-1
ASCE 7-22 Table 7.3-2 & 7.3-3
ASCE 7-22 Table 1.5-1
ASCE 7-22 Eq (7.3-1)

Minimum Snow Load For Low-Slope Roofs:

Roof Slope Rise (t_{12}) = 1
Roof Slope Degrees = 5 < 15
Min. Snow Load Upper Limit $p_{m,max}$ = 35.00 psf
Min. Snow Load for low-slope roofs, p_m = 35.00 psf

ASCE 7-22 Section 7.3.3
ASCE 7-22 Section 7.3.3

Sloped Roof Snow Load Calculation:

Roof Slope Rise (t_{12}) = 1
Roof Slope Degrees = 5
Thermal Factor (C_t) = 1.15 Warm Roof w/ $1.1 < C_t < 1.2 \Rightarrow$ Use Fig. 7.4-1b
Unobstructed Slippery Surface? : Yes
Sloped Roof Factor (C_s) = 1.0
Sloped Roof Snow Load (p_s) = 69.6 psf $p_s = C_s \cdot p_f$

ASCE 7-22 Section 7.4

ASCE 7-22 Figure 7.4-1
ASCE 7-22 Eq (7.4-1)

Rain on Snow Load Calculation:

Roof length Ridge to Eave (W) = 120 ft
 $W/50 = 2.4$
Roof Slope Degrees = 4.8 > 2.4
Min. Snow Load Upper Limit $p_{m,max}$ = 35 psf
Ground Snow Load (p_g) = 96 psf > 35 $p_{m,max}$
Rain on snow Surcharge Required: Not Required
Rain on snow Surcharge: 0

ASCE 7-22 7.10

Near-Ground Level Snow Load Calculation:

Snow Density (γ) = 26.5 pcf $0.13p_g + 14, 30\text{pcf max}$
Depth of Ground Snow (h_g) = 3.6 ft p_g/γ
Height of snow accumulation surface = 10 ft
Design Snow Load: See controlling snow load below

ASCE 7-22 Eq (7.7-1)
ASCE 7-22 7.2

Controlling Roof Snow Load(s):

Controlling Flat Roof Snow (p_f) = 69.6 psf
Min. Snow Load for low-slope roofs (p_m) = 35.0 psf
Sloped Roof Snow Load (p_s) = 69.6 psf
Rain on Sloped Roof Snow = N/A psf
Near-Ground Level Snow Load = N/A psf
Local Jurisdiction Minimum = xx psf

Controlling Snow Load = 69.6 psf
Design Balanced Roof Snow Load = 69.6 psf

Roof Snow Load Required in Seismic Weight? 10.4 psf 15% x (design snow load regardless of slope)

ASCE 7-22 12.7.2

Unbalanced Roof Snow Load For Hip and Gable Roofs (as required):

Roof Slope Rise ($\frac{x}{12}$) =	1	$0.5 \leq x \leq 7$		
	Unbalanced Roof Snow Load Required			
Roof length Ridge to Eave (W) =	120	ft	> 20 ft	
Simply supported rafters:	Yes			
Case 1 (Roof Rafters, W ≤ 20 ft):				
Windward Roof Snow Load =	N/A	psf	P_g	ASCE 7-22 7.6.1
Leeward Roof Snow Load =	N/A	psf	P_g	ASCE 7-22 7.6.1
Case 2 (All other Gable Roofs):				
Winter Wind Parameter (W_2) =	0.25		https://ascehazardtool.org/	ASCE 7-22 7.6.1, Fig. 7.6-1, 7.6-2
Height of Snow Drift (h_d) =	2.59	ft	$1.5[(P_g^{0.74} I_u^{0.70} W_2^{1.7})/\gamma]^{1/2}$	ASCE 7-22 Eq (7.6-1)
Snow Density (γ) =	26.5	pcf	$0.13 p_g + 14$, 30pcf max	ASCE 7-22 Eq (7.7-1)
Roof Slope run for a rise of one (S) =	12	ft		
Windward Roof Snow Load =	20.9	psf	$0.3 * P_s$	ASCE 7-22 7.6.1
Leeward Roof Snow Load Surcharge =	19.8	psf	$h_d * \gamma / S^{1/2}$	ASCE 7-22 7.6.1
Roof Snow Load (P_s) =	69.6	psf		
Total Snow Load at Leeward Surcharge =	89.4	psf	$p_s + h_d * \gamma / S^{1/2}$	ASCE 7-22 7.6.1
Horizontal extent of Leeward Surcharge =	24.0	ft	$8 * h_d * S^{1/2} / 3$	ASCE 7-22 7.6.1

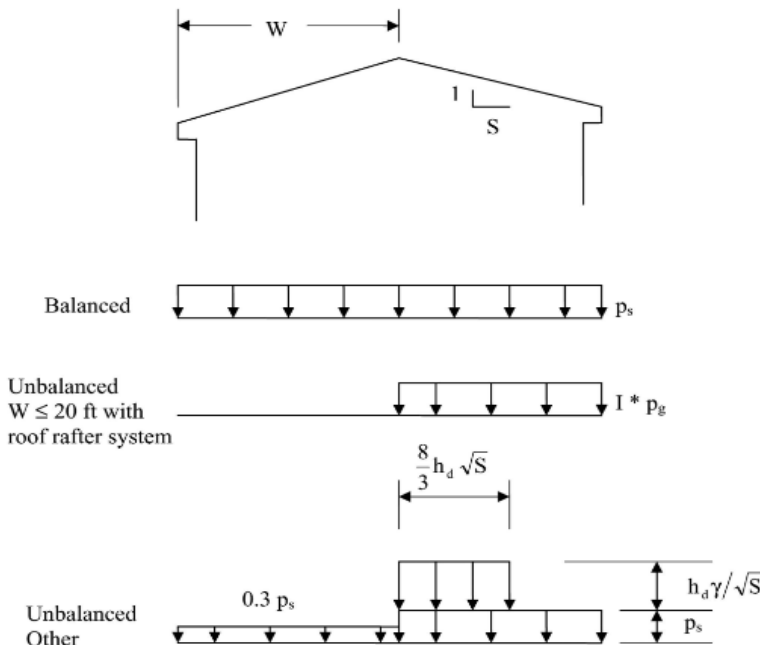


Figure 7.6-2. Balanced and unbalanced snow loads for hip and gable roofs.

Note: Unbalanced loads need not be considered for $\theta > 30.2^\circ$ (7 on 12) or for $\theta < 2.38^\circ$ (1/2 on 12).

ASCE 7-22 7.6.1
ASCE 7-22 7.6.1

ASCE 7-22 7.6.1, Fig. 7.6-1, 7.6-2
ASCE 7-22 Eq (7.6-1)
ASCE 7-22 Eq (7.7-1)

ASCE 7-22 7.6.1
ASCE 7-22 7.6.1

ASCE 7-22 7.6.1
ASCE 7-22 7.6.1

ASCE 7-22 Figure 7.6-2



Client: Steele
 Project: Klamath Tribes Fitness Addition
 Proj. #: 26-B224
 Date: 8/28/2026
 By: SM

Drifts on Lower Roofs - ASCE 7-22 7.7.1

Code Reference

Building and Snow Parameters:

Ground Snow Load, p_g =	96	psf	https://ascehazardtool.org/
Balanced Roof Snow Load, p_s =	69.6	psf	
Snow Density, γ =	26.5	pcf	$\gamma = 0.13p_g + 14 \leq 30$ pcf
Winter Wind Parameter, W_2 =	0.25		https://ascehazardtool.org/
Upper Roof Eave to Ridge Distance =	87	ft	
Lower Roof Eave to Ridge Distance =	120	ft	
Difference in Roof Height =	6	ft	
Balanced Snow Depth, h_b =	2.6	ft	$h_b = p / \gamma$
Clear Height, h_c =	3.4	ft	

ASCE 7-22 Section 7.2

ASCE 7-22 Eq (7.7-1)

Leeward Drifts (ASCE 7-22 7.7.1):

Length of Windward Roof, l_u =	87	ft	
Calculated Drift Height, h_d =	2.3	ft	$h_d = 1.5 \sqrt{\frac{p_g^{0.74} l_u^{0.70} W_2^{1.7}}{\gamma}}$
60% of Lower Roof Length =	72.0	ft	
Clear height, h_c =	3.4	ft	
Calculated drift height vs clear height:	$h_d \leq h_c$		
Controlling Leeward Drift Height =	2.3	ft	
Calculated Drift width, w =	9.3	ft	$w = 4h_d$
Max Drift Width, $8h_c$ =	27.0	ft	
Max Drift Width, Lower Roof Width =	120.0	ft	
Controlling Leeward Drift Width, w =	9.3	ft	
Max Drift Surcharge Load, p_d =	61.4	psf	$p_d = (\gamma)h_d$

ASCE 7-22 Eq (7.6-1)

Windward Drifts (ASCE 7-22 7.7.1):

Length of Windward Roof, l_u =	120	ft	
Drift Height, h_d =	1.9	ft	$h_d = 0.75 \times 1.5 \sqrt{\frac{p_g^{0.74} l_u^{0.70} W_2^{1.7}}{\gamma}}$
Calculated Drift width, w =	15.6	ft	$w = 8h_d$
Max Drift Width, Lower Roof Width =	120.0	ft	
Controlling Windward Drift Width, w =	15.6	ft	
Max Drift Surcharge Load, p_d =	51.5	psf	$p_d = (\gamma)h_d$

ASCE 7-22 Eq (7.6-1) - Modified for windward drift per section 7.7.1

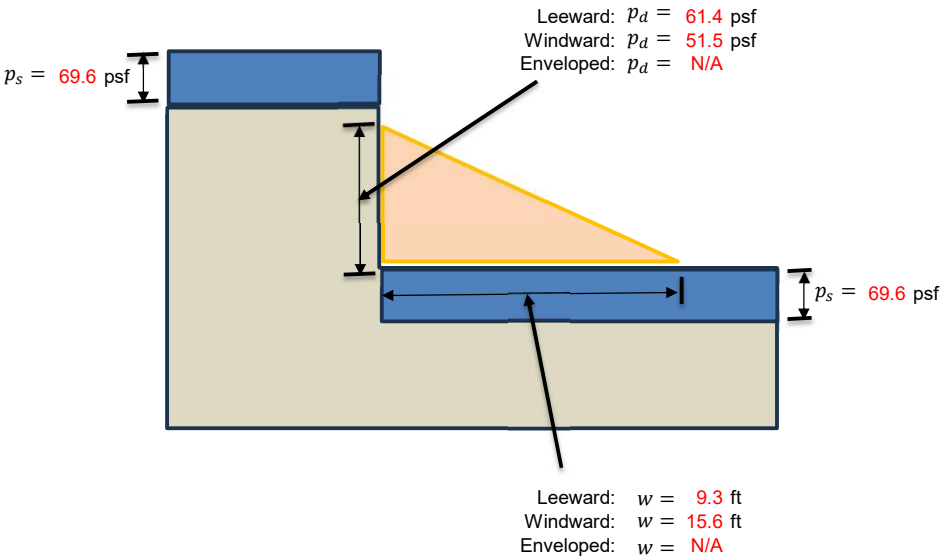
Enveloped Drift Values:

Enveloped Drift Width, w =	15.6	ft
Enveloped Drift Surcharge Load, p_d =	61.4	psf

Percent increase in weight of a 1 ft slice of drift, comparing enveloped drift to worst case of windward or leeward drifts: 19%

Design Drift Load Case(s):

Drift Case(s) selected for design: **Separate Leeward & Windward Cases**





Client
Project:
Proj. #:
Date: 8/28/2026
By:

Drifts on Lower Roofs - ASCE 7-22 7.7.1

Code Reference

Building and Snow Parameters:

Ground Snow Load, p_g =	96	psf	https://ascehazardtool.org/
Balanced Roof Snow Load, p_s =	69.6	psf	
Snow Density, γ =	26.5	pcf	$\gamma = 0.13p_g + 14 \leq 30$ pcf
Winter Wind Parameter, W_2 =	0.25		https://ascehazardtool.org/
Upper Roof Eave to Ridge Distance =	63	ft	
Lower Roof Eave to Ridge Distance =	110	ft	
Difference in Roof Height =	10	ft	
Balanced Snow Depth, h_b =	2.6	ft	$h_b = p / \gamma$
Clear Height, h_c =	7.4	ft	

ASCE 7-22 Section 7.2

ASCE 7-22 Eq (7.7-1)

Leeward Drifts (ASCE 7-22 7.7.1):

Length of Windward Roof, l_u =	63	ft	
Calculated Drift Height, h_d =	2.1	ft	$h_d = 1.5 \sqrt{\frac{p_g^{0.74} l_u^{0.70} W_2^{1.7}}{\gamma}}$
60% of Lower Roof Length =	66.0	ft	
Clear height, h_c =	7.4	ft	
Calculated drift height vs clear height:	$h_d \leq h_c$		
Controlling Leeward Drift Height =	2.1	ft	
Calculated Drift width, w =	8.3	ft	$w = 4h_d$
Max Drift Width, $8h_c$ =	59.0	ft	
Max Drift Width, Lower Roof Width =	110.0	ft	
Controlling Leeward Drift Width, w =	8.3	ft	
Max Drift Surcharge Load, p_d =	54.8	psf	$p_d = (\gamma)h_d$

ASCE 7-22 Eq (7.6-1)

Windward Drifts (ASCE 7-22 7.7.1):

Length of Windward Roof, l_u =	110	ft	
Drift Height, h_d =	1.9	ft	$h_d = 0.75 \times 1.5 \sqrt{\frac{p_g^{0.74} l_u^{0.70} W_2^{1.7}}{\gamma}}$
Calculated Drift width, w =	15.1	ft	$w = 8h_d$
Max Drift Width, Lower Roof Width =	110.0	ft	
Controlling Windward Drift Width, w =	15.1	ft	
Max Drift Surcharge Load, p_d =	50.0	psf	$p_d = (\gamma)h_d$

ASCE 7-22 Eq (7.6-1) - Modified for windward drift per section 7.7.1

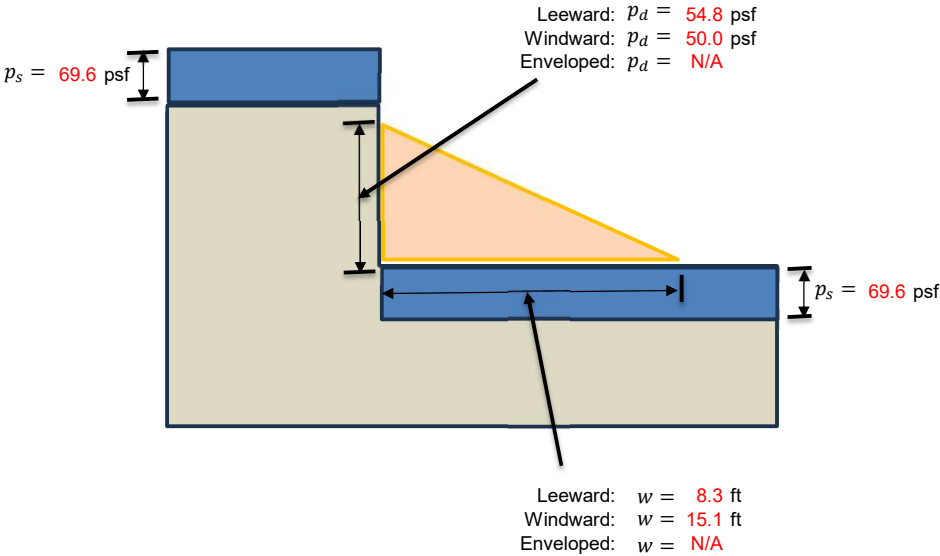
Enveloped Drift Values:

Enveloped Drift Width, w =	15.1	ft
Enveloped Drift Surcharge Load, p_d =	54.8	psf

Percent increase in weight of a 1 ft slice of drift, comparing enveloped drift to worst case of windward or leeward drifts: 10%

Design Drift Load Case(s):

Drift Case(s) selected for design: **Separate Leeward & Windward Cases**



NOT FOR
CONSTRUCTION



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Portland, OR | Bend, OR | Denver, CO
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STEEL

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ASSOCIATES ARCHITECTS LLC
2738 NW POTTS CT. SUITE 110
BEND, OR 97703

KLAMATH TRIBES FITNESS ADDITION

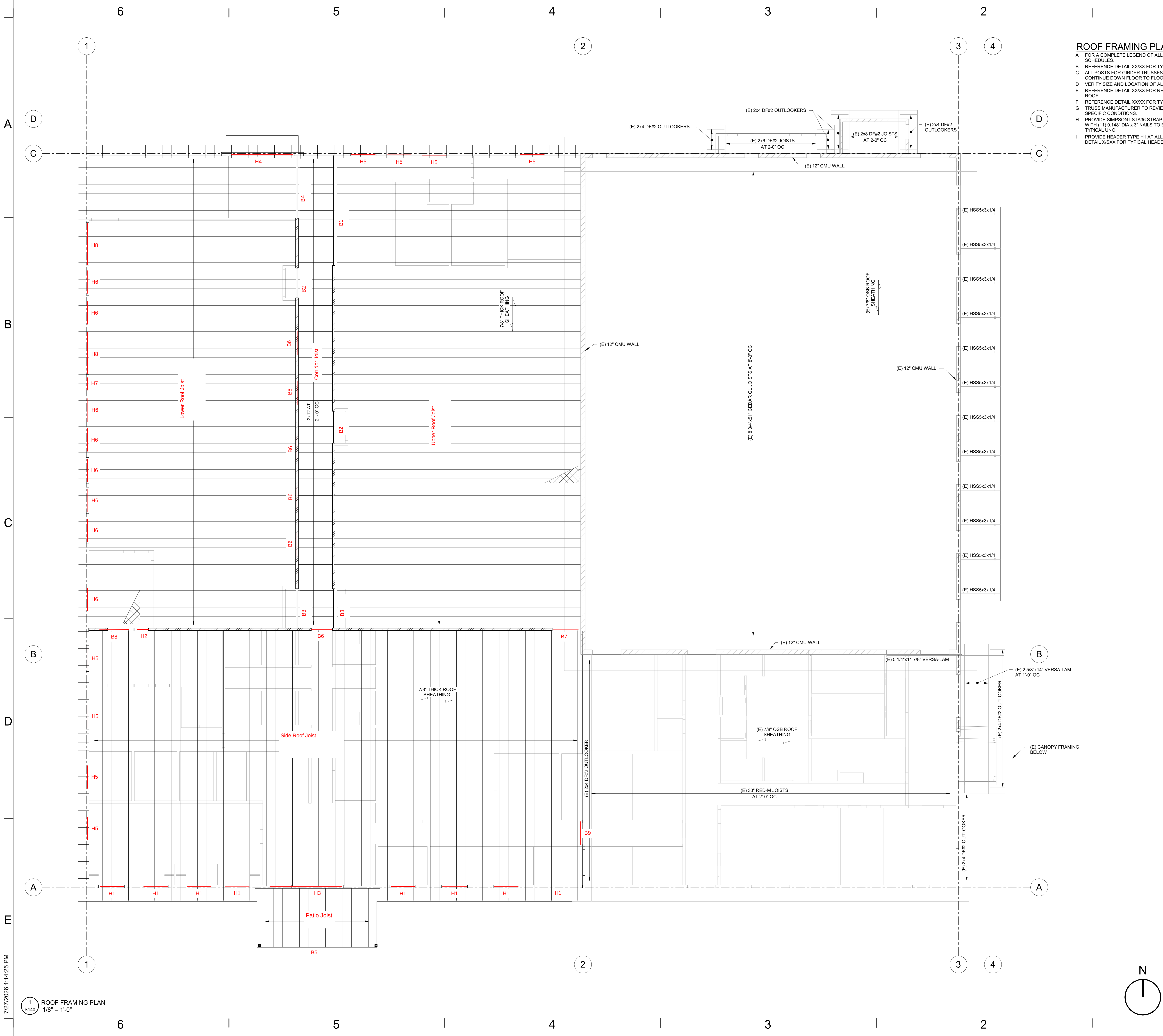
ROOF FRAMING PLAN

[illegible]

ROOF FRAMING PLAN

PRELIMINARY DESIGN

A	FOR A COMPLETE LEGEND OF ALL CALLOUTS AND SYMBOLS SEE COVER SHEET AND SCHEDULES
B	REINFORCE DETAIL XXXX FOR TYPICAL DOUBLE TOP PLSP LSPICE CONNECTION.
C	ALL POSTS FOR GIRDER TRUSSES, BEAMS, HEADERS AND / OR PURLINS SHALL
D	CONTINUE DOWN FLOOR TO FLOOR TO FOUNDATION OR LOWER BEAM / HEADER.
E	VERIFY SIZE AND LOCATION OF ALL MECHANICAL AND WALL PENETRATIONS.
F	REINFORCE DETAIL XXXX FOR REINFORCEMENT AROUND VENT PENETRATION AT ROOF.
G	REINFORCE DETAIL XXXX FOR TYPICAL ROOF OPENINGS.
H	TRUSS MANUFACTURER TO REVIEW ALL DETAILS AND PLANS TO ACCOUNT FOR SPECIFIC CONDITIONS.
I	PROVIDE SIMPSON LSTA36 STRAP CENERAL AT ALL DOUBLE TOP PLATE BREAKS WITH (1) 1" 0.48" DIA 3" X 3" NAILS TO EACH SIDE OF PLATE BREAK, (22) TYPICAL NAILS.
J	PROVIDE HEADER TYPE H1 AT ALL OPENINGS, TYP AT BEARING WALLS UNO. REF DETAIL XXXX FOR TYPICAL HEADER CONSTRUCTION, UNO.



FROELICH CONSULTING ENGINEERS

client: Steele
project: Chiloquin Fitness
job number: 26-B224
date: 9/3/2026
by: MP

ROOF BEAMS

Roof Joist Upper Roof	Location: Upper Roof Span: 57'-0" CLR Loads: Loading Trib. Roof DL: 24 psf x 2.00 ft = 48 plf SL: 69.6 psf x 2.00 ft = 139 plf	40" RED-H AT 24"o.c.
Roof Joist Low Roof	Location: Low Roof Span: 50'-4" CLR Loads: Loading Trib. Roof DL: 24 psf x 2.00 ft = 48 plf SL: 69.6 psf x 2.00 ft = 139 plf	30" RED-H AT 24"o.c.
Roof Joist Side Roof	Location: Side Roof Span: 59'-0" CLR Loads: Loading Trib. Roof DL: 24 psf x 2.00 ft = 48 plf SL: 69.6 psf x 2.00 ft = 139 plf	42" RED-H AT 24"o.c.
Roof Joist Corridor	Location: Corridor Span: 7'-6" CLR Loads: Loading Trib. Roof DL: 24 psf x 2.00 ft = 48 plf SL: 69.6 psf x 2.00 ft = 139 plf	2x10 DF#2 AT 24"o.c.
Roof Joist Patio	Location: Patio Span: 13'-6" CLR Loads: Loading Trib. Roof DL: 24 psf x 2.00 ft = 48 plf SL: 69.6 psf x 2.00 ft = 139 plf	2x12 DF#2 AT 16"o.c.
Roof Beam B1	Location: Corridor Span: 25'-6" CLR Loads: Loading Trib. Roof DL: 24 psf x 32.50 ft = 780 plf SL: 69.6 psf x 32.50 ft = 2262 plf	6-3/4"x31-1/2" GL 24F-V4
Roof Beam B2	Location: Corridor Span: 8'-3" CLR Loads: Loading Trib. Roof DL: 24 psf x 32.50 ft = 780 plf SL: 69.6 psf x 32.50 ft = 2262 plf	5-1/2"x12" GL 24F-V4
Roof Beam B3	Location: Corridor Span: 8'-9" CLR Loads:	

	Loading Roof DL: 24 psf x 32.50 ft = 780 plf SL: 69.6 psf x 32.50 ft = 2262 plf Max SL Drift 55 psf x 32.50 ft = 1788 plf MIN at 15'	5-1/2"x13.5" GL 24F-V4
Roof Beam B4	Location: Corridor Span: 14'-6" CLR Loads: Loading Roof DL: 24 psf x 29.00 ft = 696 plf SL: 69.6 psf x 29.00 ft = 2018 plf	5-1/2"x18" GL 24F-V4
Roof Beam B5	Location: Patio Span: 26'-6" CLR Loads: Loading Roof DL: 24 psf x 7.00 ft = 168 plf SL: 69.6 psf x 7.00 ft = 487 plf	5-1/2"x19.5" GL 24F-V4
Roof Beam B6	Location: Roof Change Span: 6'-6" CLR Loads: Loading Roof DL: 24 psf x 30.50 ft = 732 plf SL: 69.6 psf x 30.50 ft = 2123 plf	5-1/2"x9" GL 24F-V4
Roof Beam B7	Location: Roof Change Span: 6'-6" CLR Loads: Loading Roof DL: 24 psf x 30.50 ft = 732 plf SL: 69.6 psf x 30.50 ft = 2123 plf	SIM to B6
Roof Beam B8	Location: Roof Change Span: 5'-0" CLR Loads: Loading Roof DL: 24 psf x 30.50 ft = 732 plf SL: 69.6 psf x 30.50 ft = 2123 plf	SIM to B6
Roof Beam B9	Location: To existing corridor Span: 5'-3" CLR Loads: Loading Roof DL: 24 psf x 2.00 ft = 48 plf SL: 69.6 psf x 2.00 ft = 139 plf	4x10 DF#2 By Inspection
Roof Beam H1	Location: Ext Wall Span: 6'-0" CLR Loads: Loading Roof DL: 24 psf x 33.00 ft = 792 plf SL: 69.6 psf x 33.00 ft = 2297 plf	5-1/2"x9" GL 24F-V4
Roof Beam H2	Location: Grid E Span: 3'-3" CLR Loads: Loading Roof DL: 24 psf x 36.50 ft = 876 plf SL: 69.6 psf x 36.50 ft = 2540 plf	4x10 DF#2

Roof Beam H3	Location: Ext Wall Span: 17'-4" CLR Loads: Loading Roof DL: 24 psf SL: 69.6 psf Trib. 36.50 ft 36.50 ft = 876 plf = 2540 plf	5-1/2"x25.5" GL 24F-V4
Roof Beam H4	Location: Ext Wall Span: 15'-0" CLR Loads: Loading Roof DL: 24 psf SL: 69.6 psf Trib. 3.00 ft 3.00 ft = 72 plf = 209 plf	5-1/2"x12" GL 24F-V4
Roof Beam H5	Location: Ext Wall Span: 6'-0" CLR Loads: Loading Roof DL: 24 psf SL: 69.6 psf Trib. 3.00 ft 3.00 ft = 72 plf = 209 plf	4x10 DF#2
Roof Beam H6	Location: Ext Wall Span: 6'-0" CLR Loads: Loading Roof DL: 24 psf SL: 69.6 psf Trib. 27.50 ft 27.50 ft = 660 plf = 1914 plf	5-1/2"x9" GL 24F-V4
Roof Beam H7	Location: Ext Wall Span: 3'-3" CLR Loads: Loading Roof DL: 24 psf SL: 69.6 psf Trib. 27.50 ft 27.50 ft = 660 plf = 1914 plf	4x10 DF#2 SIM TO H2
Roof Beam H8	Location: Ext Wall Span: 10'-0" CLR Loads: Loading Roof DL: 24 psf SL: 69.6 psf Trib. 27.50 ft 27.50 ft = 660 plf = 1914 plf	5-1/2"x12" GL 24F-V4



RedSpec™ by RedBuilt™
v7.1.20

Project: Project
Location:
Folder: Folder
Date: 8/30/26 3:13 PM
Designer:
Comment:

Type: Upper Roof

40" Red-H™ @ 24" o.c.

This product meets or exceeds the set design controls for the application and loads listed

This truss design is feasible. The finished design shall be produced by RedBuilt Engineering. All open-web trusses are custom designed to carry the specific design loads for each project. Actual truss capacity when fabricated is limited to that required to resist the specific loads. Do not use this analysis to verify the capacity of existing trusses.

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Pass/Fail
Span Live	45%	1.288	2.850	L / 531	L / 240	PASS
Span Total	66%	1.890	2.850	L / 362	L / 240	PASS

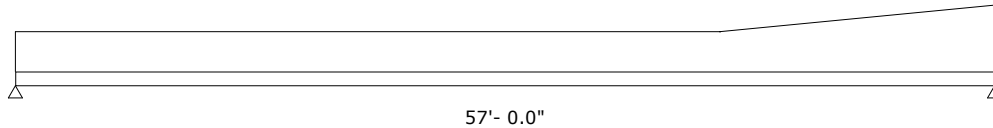
SUPPORTS

	Support 1	Support 2
Live Reaction (lb) (DOL%)	2884 (115)	3454 (115)
Dead Reaction (lb)	1389	1391
Total Reaction (lb) (DOL%)	4273 (115)	4845 (115)
Bearing Support	Top Chord Wall	Top Chord Wall
Bearing Clip	(Red-H) Z-Clip	(Red-H) Z-Clip
Approx. Clip Height	5.75"	5.75"
Approx. Clip Width	8"	8"
Assumed Bearing Width	5.5"	5.5"

SPANS AND LOADS

Dimensions represent horizontal clear span.

Member Slope: 1/12 ↙



APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Roaming	Tributary	Member Type
Uniform	psf	Snow(115%)	69.6	24	0	0 lb	24"	Snow Roof Joist

ADDITIONAL LOADS

Type	Units	DOL	Live	Dead	Location from left	Application	Comment
Tapered	psf	Snow(115%)	0 to 62	0 to 0	41'-0.0" to 57'-0.0"	Adds To	

NOTES

- Building code and design methodology: 2024 IBC ASD (US).
- Repetitive member increase applied in design.
- Beveled plate required at left support.
- Beveled plate required at right support.
- Truss design includes consideration for partial span application live load.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.
- Pricing Load (plf) = 157
- Pricing Index (plf) = 157

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8/30/2026 3:13:59 PM

Project : Folder : Upper Roof

Page 1 of 1

The products noted are intended for interior, untreated, non-corrosive applications with normal temperatures and dry conditions of use, and must be installed in accordance with local building code requirements and RedBuilt™ recommendations. The loads, spans, and spacing have been provided by others and must be approved for the specific application by the design professional for the project. Unless otherwise noted, this output has not been reviewed by a RedBuilt™ associate. PRODUCT SUBSTITUTION VOIDS THIS ANALYSIS.

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Project: Project
Location:
Folder: Folder
Date: 8/30/26 3:15 PM
Designer:
Comment:

Type: Low Roof

30" Red-H™ @ 24" o.c.

This product meets or exceeds the set design controls for the application and loads listed

This truss design is feasible. The finished design shall be produced by RedBuilt Engineering. All open-web trusses are custom designed to carry the specific design loads for each project. Actual truss capacity when fabricated is limited to that required to resist the specific loads. Do not use this analysis to verify the capacity of existing trusses.

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Pass/Fail
Span Live	56%	1.421	2.517	L / 425	L / 240	PASS
Span Total	84%	2.121	2.517	L / 285	L / 240	PASS

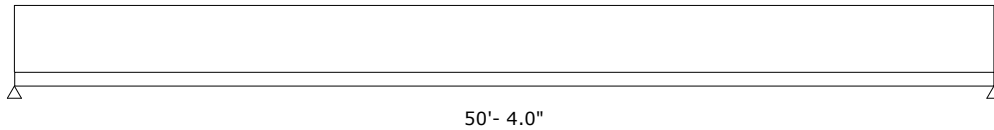
SUPPORTS

	Support 1	Support 2
Live Reaction (lb) (DOL%)	2495 (115)	2499 (115)
Dead Reaction (lb)	1229	1231
Total Reaction (lb) (DOL%)	3724 (115)	3730 (115)
Bearing Support	Top Chord Wall	Top Chord Wall
Bearing Clip	(Red-H) Z-Clip	(Red-H) Z-Clip
Approx. Clip Height	5.75"	5.75"
Approx. Clip Width	8"	8"
Assumed Bearing Width	5.5"	5.5"

SPANS AND LOADS

Dimensions represent horizontal clear span.

Member Slope: 1/12 ↴



APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Roaming	Tributary	Member Type
Uniform	psf	Snow(115%)	69.6	24	0	0 lb	24"	Snow Roof Joist

NOTES

- Building code and design methodology: 2024 IBC ASD (US).
- Repetitive member increase applied in design.
- Beveled plate required at left support.
- Beveled plate required at right support.
- Truss design includes consideration for partial span application live load.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.
- Pricing Load (plf) = 145
- Pricing Index (plf) = 145

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Project : Folder : Low Roof

Page 1 of 1

The products noted are intended for interior, untreated, non-corrosive applications with normal temperatures and dry conditions of use, and must be installed in accordance with local building code requirements and RedBuilt™ recommendations. The loads, spans, and spacing have been provided by others and must be approved for the specific application by the design professional for the project. Unless otherwise noted, this output has not been reviewed by a RedBuilt™ associate. PRODUCT SUBSTITUTION VOIDS THIS ANALYSIS.

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Project: Project
Location:
Folder: Folder
Date: 8/30/26 3:16 PM
Designer:
Comment:

Type: Side Roof

42" Red-H™ @ 24" o.c.

This product meets or exceeds the set design controls for the application and loads listed

This truss design is feasible. The finished design shall be produced by RedBuilt Engineering. All open-web trusses are custom designed to carry the specific design loads for each project. Actual truss capacity when fabricated is limited to that required to resist the specific loads. Do not use this analysis to verify the capacity of existing trusses.

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Pass/Fail
Span Live	43%	1.256	2.950	L / 563	L / 240	PASS
Span Total	64%	1.875	2.950	L / 378	L / 240	PASS

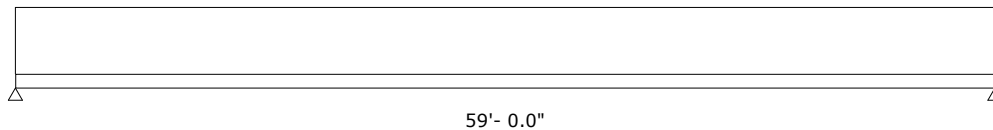
SUPPORTS

	Support 1	Support 2
Live Reaction (lb) (DOL%)	2917 (115)	2921 (115)
Dead Reaction (lb)	1437	1439
Total Reaction (lb) (DOL%)	4354 (115)	4360 (115)
Bearing Support	Top Chord Wall	Top Chord Ledger
Bearing Clip	(Red-H) Z-Clip	(Red-H) Z-Clip
Approx. Clip Height	5.75"	5.75"
Approx. Clip Width	8"	8"
Assumed Bearing Width	5.5"	5.5"

SPANS AND LOADS

Dimensions represent horizontal clear span.

Member Slope: 1/12 ↙



APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Roaming	Tributary	Member Type
Uniform	psf	Snow(115%)	69.6	24	0	0 lb	24"	Snow Roof Joist

NOTES

- Building code and design methodology: 2024 IBC ASD (US).
- Repetitive member increase applied in design.
- Beveled plate required at left support.
- Beveled plate required at right support.
- Truss design includes consideration for partial span application live load.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.
- Pricing Load (plf) = 145
- Pricing Index (plf) = 145

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Project : Folder : Side Roof

Page 1 of 1

The products noted are intended for interior, untreated, non-corrosive applications with normal temperatures and dry conditions of use, and must be installed in accordance with local building code requirements and RedBuilt™ recommendations. The loads, spans, and spacing have been provided by others and must be approved for the specific application by the design professional for the project. Unless otherwise noted, this output has not been reviewed by a RedBuilt™ associate. PRODUCT SUBSTITUTION VOIDS THIS ANALYSIS.

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Aug. 30, 2026 15:21

Corridor Joist

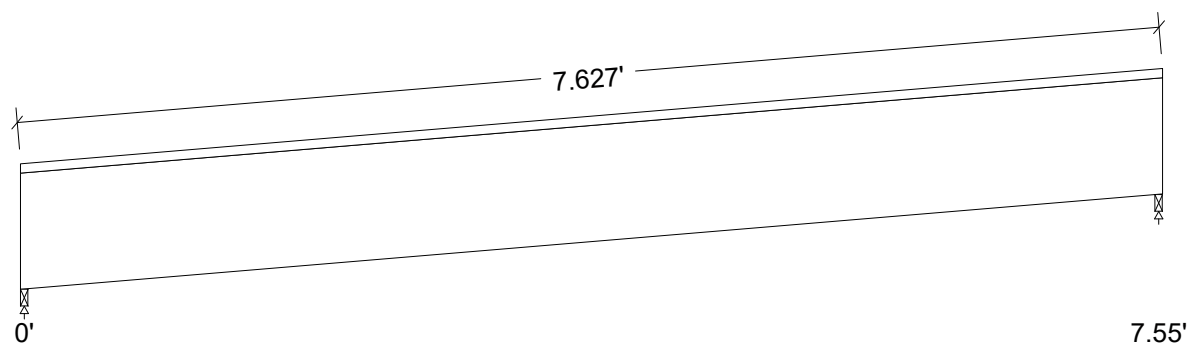
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Full Area			24.00 (24.0")	psf
SL	Snow	Full Area			69.60 (24.0")	psf
Self-weight	Dead	Full UDL			3.3	plf

Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	196		196
Snow	529		529
Factored:			
Combined	567		567
Bearing:			
F'theta	628		628
Capacity			
Joist	567		567
Support	706		706
Des ratio			
Joist	1.00		1.00
Support	0.80		0.80
Load comb	#2		#2
Length	0.60		0.60
Min req'd	0.60		0.60
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.25		1.25
Fcp sup	625		625

Lumber-soft, D.Fir-L, No.2, 2x10 (1-1/2"x9-1/4")

Supports: All - Timber-soft Beam, D.Fir-L No.2

Roof joist spaced at 24.0" c/c; Total length: 7.69'; Clear span(horz): 7.55'; Volume = 0.7 cu.ft.; Pitch: 1/12

Lateral support: top = continuous, bottom = at supports; Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 443	Vr = 1915	lbs	V/Vr = 0.23
Bending(+)	fb = 595	Fb' = 1309	psi	fb/Fb' = 0.45
Live Defl'n	0.05 = < L/999	0.38 = L/240	in	0.12
Total Defl'n	0.08 = < L/999	0.51 = L/180	in	0.16

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	180	1.15	1.00	1.00	-	-	-	-	1.00	1.00	2
Fb'+	900	1.15	1.00	1.00	1.000	1.100	-	1.15	1.00	1.00	2
Fcp'	625	-	1.00	1.00	-	-	-	-	1.00	1.00	-
E'	1.6 million	1.00	1.00	-	-	-	-	-	1.00	1.00	2
Emin'	0.58 million	1.00	1.00	-	-	-	-	-	1.00	1.00	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S

Bending(+): LC #2 = D + 0.7S

Deflection: LC #2 = D + 0.7S (live)

LC #2 = D + 0.7S (total)

Bearing : Support 1 - LC #2 = D + 0.7S

Support 2 - LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load Patterns: s=S/2, X=L+S or L+Lr, _=no pattern load in this span

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V design from NDS 3.4.2.2(a) at support 1, V max = 560 lbs M(+) = 1061 lbs-ft

EI = 158.29e06 lb-in²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Bearing: Allowable bearing at an angle F'theta calculated for each support
as per NDS 3.10.3

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.
4. SLOPED BEAMS: level bearing is required for all sloped beams.



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Aug. 30, 2026 16:22

Patio Joist

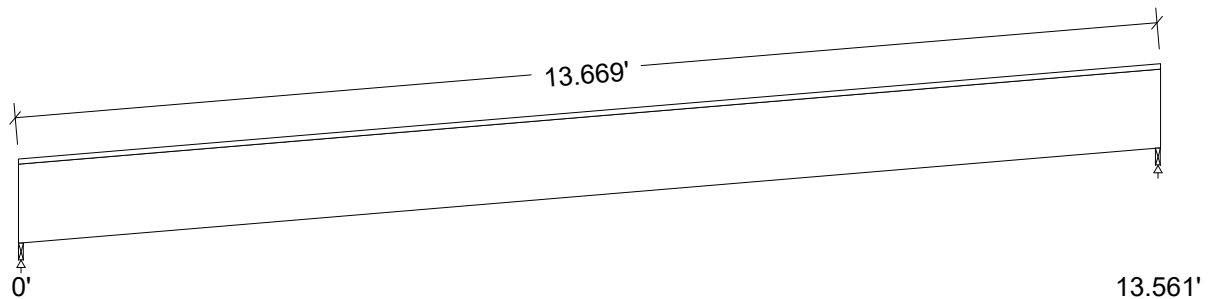
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Full Area			24.00 (16.0")	psf
SL	Snow	Full Area			69.60 (16.0")	psf
Self-weight	Dead	Full UDL			4.0	plf

Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	246		246
Snow	632		632
Factored:			
Combined	689		689
Bearing:			
F'theta	628		628
Capacity			
Joist	689		689
Support	858		858
Des ratio			
Joist	1.00		1.00
Support	0.80		0.80
Load comb	#2		#2
Length	0.73		0.73
Min req'd	0.73		0.73
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.25		1.25
Fcp sup	625		625

Lumber-soft, D.Fir-L, No.2, 2x12 (1-1/2"x11-1/4")

Supports: All - Timber-soft Beam, D.Fir-L No.2

Roof joist spaced at 16.0" c/c; Total length: 13.75'; Clear span(horz): 13.561'; Volume = 1.6 cu.ft.; Pitch: 1/12

Lateral support: top = continuous, bottom = at supports; Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 586	Vr = 2329	lbs	V/Vr = 0.25
Bending (+)	fb = 881	Fb' = 1190	psi	fb/Fb' = 0.74
Live Defl'n	0.17 = L/934	0.68 = L/240	in	0.26
Total Defl'n	0.32 = L/509	0.91 = L/180	in	0.35

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	180	1.15	1.00	1.00	-	-	-	-	1.00	1.00	2
Fb'+	900	1.15	1.00	1.00	1.000	1.000	-	1.15	1.00	1.00	2
Fcp'	625	-	1.00	1.00	-	-	-	-	1.00	1.00	-
E'	1.6 million		1.00	1.00	-	-	-	-	1.00	1.00	2
Emin'	0.58 million		1.00	1.00	-	-	-	-	1.00	1.00	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S

Bending(+): LC #2 = D + 0.7S

Deflection: LC #2 = D + 0.7S (live)

LC #2 = D + 0.7S (total)

Bearing : Support 1 - LC #2 = D + 0.7S

Support 2 - LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load Patterns: s=S/2, X=L+S or L+Lr, _=no pattern load in this span

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V design from NDS 3.4.2.2(a) at support 1, V max = 683 lbs M(+) = 2324 lbs-ft

EI = 284.76e06 lb-in²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Bearing: Allowable bearing at an angle F'theta calculated for each support as per NDS 3.10.3

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.
4. SLOPED BEAMS: level bearing is required for all sloped beams.



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PROJECT

Aug. 30, 2026 16:28

B1

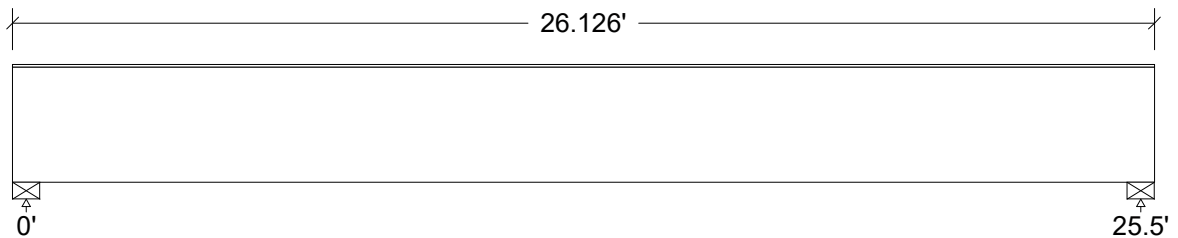
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
Load1	Dead	Full Area			24.00 (32.50')	psf
Load2	Snow	Full Area			69.60 (32.50')	psf
Self-weight	Dead	Full UDL			49.0	plf

Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	10829		10829
Snow	29549		29549
Factored:			
Combined	31725		31725
Bearing:			
Capacity			
Beam	32978		32978
Support	31710		31710
Des ratio			
Beam	0.96		0.96
Support	1.00		1.00
Load comb	#2		#2
Length	7.52		7.52
Min req'd	7.52**		7.52**
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.00		1.00
Fcp sup	625		625

**Minimum bearing length governed by the required width of the supporting member.

Glulam-Unbalan., West Species, 24F-V4 DF, 6-3/4"x31-1/2"

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 26.13'; Clear span: 24.874'; Volume = 38.6 cu.ft.; 21 laminations, 6-3/4" maximum width,

Lateral support: top = continuous, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 23670	Vr = 43198	lbs	V/Vr = 0.55
Bending (+)	fb = 2108	Fb' = 2391	psi	fb/Fb' = 0.88
Live Defl'n	0.48 = L/642	1.27 = L/240	in	0.37
Total Defl'n	0.85 = L/360	1.70 = L/180	in	0.50

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Notes	Cvr	LC#
Fv'	265	1.15	1.00	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	2400	1.15	1.00	1.00	1.000	0.866	-	-	1.00	1.00	-	2
Fcp'	650	-	1.00	1.00	-	-	-	-	1.00	-	-	-
E'	1.8 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2
Eminy'	0.85 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S

Bending(+): LC #2 = D + 0.7S

Deflection: LC #2 = D + 0.7S (live)

LC #2 = D + 0.7S (total)

Bearing : Support 1 - LC #2 = D + 0.7S

Support 2 - LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load Patterns: s=S/2, X=L+S or L+Lr, _=no pattern load in this span

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V design from NDS 3.4.2.2(a) at support 1, V max = 30758 lbs M(+) = 196079 lbs-ft

EI = 31646.08e06 lb-in²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Glulam Beams shall be laterally supported according to the provisions of NDS Clause 3.3.3.
6. GLULAM: bearing length based on smaller of Fcp(tension), Fcp(comp'n).



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PROJECT

Aug. 30, 2026 16:37

B2

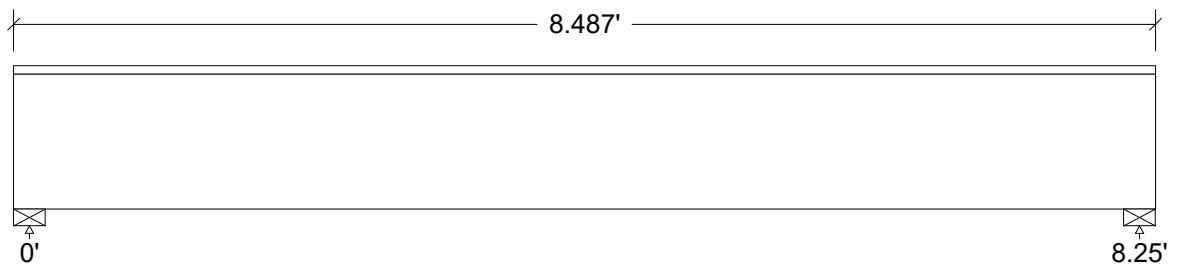
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
Load1	Dead	Full Area			24.00 (32.50')	psf
Load2	Snow	Full Area			69.60 (32.50')	psf
Self-weight	Dead	Full UDL			15.2	plf

Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	3374		3374
Snow	9599		9599
Factored:			
Combined	10174		10174
Bearing:			
Capacity			
Beam	10172		10172
Support	10448		10448
Des ratio			
Beam	1.00		1.00
Support	0.97		0.97
Load comb	#2		#2
Length	2.85		2.85
Min req'd	2.85		2.85
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.07		1.07
Fcp sup	625		625

B2

Glulam-Unbalan., West Species, 24F-V4 DF, 5-1/2"x12"

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 8.49'; Clear span: 8.013'; Volume = 3.9 cu.ft.; 8 laminations, 5-1/2" maximum width,

Lateral support: top = continuous, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 7151	Vr = 13409	lbs	V/Vr = 0.53
Bending (+)	fb = 1840	Fb' = 2760	psi	fb/Fb' = 0.67
Live Defl'n	0.12 = L/855	0.41 = L/240	in	0.28
Total Defl'n	0.20 = L/487	0.55 = L/180	in	0.37

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Notes	Cvr	LC#
Fv'	265	1.15	1.00	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	2400	1.15	1.00	1.00	1.000	1.000	-	-	1.00	1.00	-	2
Fcp'	650	-	1.00	1.00	-	-	-	-	1.00	-	-	-
E'	1.8 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2
E _{miny} '	0.85 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S

Bending(+): LC #2 = D + 0.7S

Deflection: LC #2 = D + 0.7S (live)

LC #2 = D + 0.7S (total)

Bearing : Support 1 - LC #2 = D + 0.7S

Support 2 - LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load Patterns: s=S/2, X=L+S or L+Lr, _=no pattern load in this span

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V design from NDS 3.4.2.2(a) at support 2, V max = 9812 lbs M(+) = 20237 lbs-ft

EI = 1425.58e06 lb-in²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Glulam Beams shall be laterally supported according to the provisions of NDS Clause 3.3.3.
6. GLULAM: bearing length based on smaller of Fcp(tension), Fcp(comp'n).



COMPANY

PROJECT

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B3

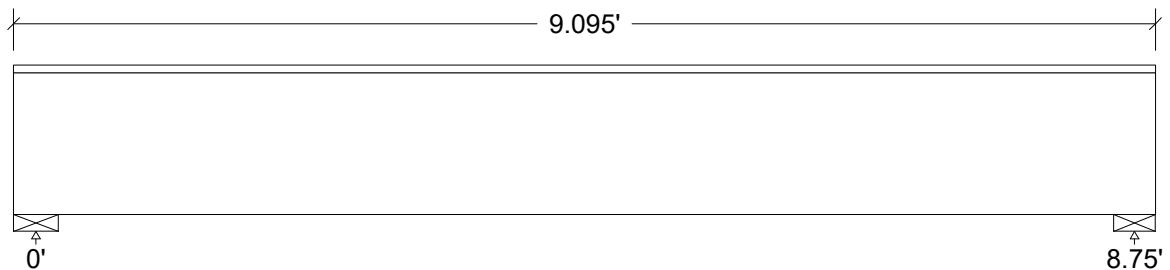
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Pat- tern	Location [ft]		Magnitude		Unit
				Start	End	Start	End	
DL	Dead	Full Area				24.00 (32.50')		psf
SL	Snow	Full Area				69.60 (32.50')		psf
Drift	Snow	Trapezoidal		0.18	8.93	1788.0	745.0	plf
Self-weight	Dead	Full UDL				17.1		plf

Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	3630		3620
Snow	16603		15053
Factored:			
Combined	15374		14270
Bearing:			
Capacity			
Beam	15371		14267
Support	15787		14654
Des ratio			
Beam	1.00		1.00
Support	0.97		0.97
Load comb	#2		#2
Length	4.30		3.99
Min req'd	4.30		3.99
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.07		1.07
Fcp sup	625		625

B2

Glulam-Unbalan., West Species, 24F-V4 DF, 5-1/2"x13-1/2"

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 9.1'; Clear span: 8.405'; Volume = 4.7 cu.ft.; 9 laminations, 5-1/2" maximum width,

Lateral support: top = continuous, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 10226	Vr = 15085	lbs	V/Vr = 0.68
Bending(+)	fb = 2247	Fb' = 2760	psi	fb/Fb' = 0.81
Live Defl'n	0.16 = L/654	0.44 = L/240	in	0.37
Total Defl'n	0.24 = L/440	0.58 = L/180	in	0.41

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Notes	Cvr	LC#
Fv'	265	1.15	1.00	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	2400	1.15	1.00	1.00	1.000	1.000	-	-	1.00	1.00	-	2
Fcp'	650	-	1.00	1.00	-	-	-	-	1.00	-	-	-
E'	1.8 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2
Eminy'	0.85 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S

Bending(+): LC #2 = D + 0.7S

Deflection: LC #2 = D + 0.7S (live)

LC #2 = D + 0.7S (total)

Bearing : Support 1 - LC #2 = D + 0.7S

Support 2 - LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load Patterns: s=S/2, X=L+S or L+Lr, _=no pattern load in this span

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V design from NDS 3.4.2.2(a) at support 1, V max = 14826 lbs M(+) = 31281 lbs-ft

EI = 2029.78e06 lb-in²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Glulam Beams shall be laterally supported according to the provisions of NDS Clause 3.3.3.
6. GLULAM: bearing length based on smaller of Fcp(tension), Fcp(comp'n).



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PROJECT

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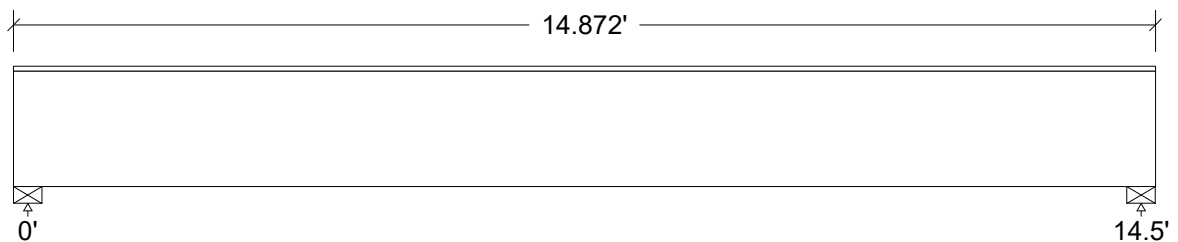
B4

Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Full Area			24.00 (29.00')	psf
SL	Snow	Full Area			69.60 (29.00')	psf
Self-weight	Dead	Full UDL			22.8	plf

Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :

Unfactored:			
Dead	5345		5345
Snow	15009		15009
Factored:			
Combined	15964		15964
Bearing:			
Capacity			
Beam	15960		15960
Support	16392		16392
Des ratio			
Beam	1.00		1.00
Support	0.97		0.97
Load comb	#2		#2
Length	4.46		4.46
Min req'd	4.46		4.46
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.07		1.07
Fcp sup	625		625

Glulam-Unbalan., West Species, 24F-V4 DF, 5-1/2"x18"

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 14.87'; Clear span: 14.128'; Volume = 10.2 cu.ft.; 12 laminations, 5-1/2" maximum width,

Lateral support: top = continuous, bottom = at supports;

This section PASSES the design code check.**Analysis vs. Allowable Stress and Deflection using NDS 2024 :**

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 11861	Vr = 20113	lbs	V/Vr = 0.59
Bending(+)	fb = 2264	Fb' = 2731	psi	fb/Fb' = 0.83
Live Defl'n	0.29 = L/595	0.73 = L/240	in	0.40
Total Defl'n	0.51 = L/337	0.97 = L/180	in	0.53

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Notes	Cvr	LC#
Fv'	265	1.15	1.00	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	2400	1.15	1.00	1.00	1.000	0.989	-	-	1.00	1.00	-	2
Fcp'	650	-	1.00	1.00	-	-	-	-	1.00	-	-	-
E'	1.8 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2
Eminy'	0.85 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S

Bending(+): LC #2 = D + 0.7S

Deflection: LC #2 = D + 0.7S (live)

LC #2 = D + 0.7S (total)

Bearing : Support 1 - LC #2 = D + 0.7S

Support 2 - LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load Patterns: s=S/2, X=L+S or L+Lr, _=no pattern load in this span

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V design from NDS 3.4.2.2(a) at support 2, V max = 15455 lbs M(+) = 56023 lbs-ft

EI = 4811.32e06 lb-in²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Glulam Beams shall be laterally supported according to the provisions of NDS Clause 3.3.3.
6. GLULAM: bearing length based on smaller of Fcp(tension), Fcp(comp'n).



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PROJECT

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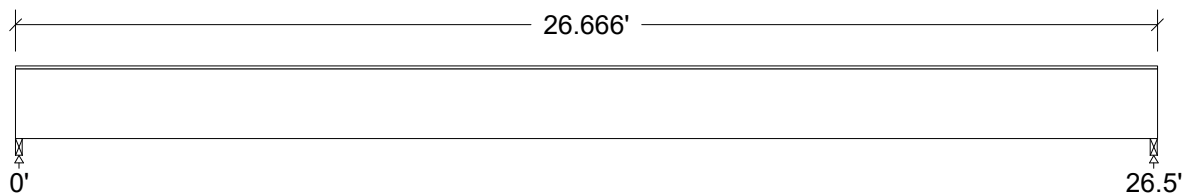
B5

Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Full Area			24.00 (7.00')	psf
SL	Snow	Full Area			69.60 (7.00')	psf
Self-weight	Dead	Full UDL			24.7	plf

Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :

Unfactored:			
Dead	2569		2569
Snow	6496		6496
Factored:			
Combined	7128		7128
Bearing:			
Capacity			
Beam	7126		7126
Support	7319		7319
Des ratio			
Beam	1.00		1.00
Support	0.97		0.97
Load comb	#2		#2
Length	1.99		1.99
Min req'd	1.99		1.99
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.07		1.07
Fcp sup	625		625

Glulam-Unbalan., West Species, 24F-V4 DF, 5-1/2"x19-1/2"

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 26.67'; Clear span: 26.334'; Volume = 19.9 cu.ft.; 13 laminations, 5-1/2" maximum width,

Lateral support: top = continuous, bottom = at supports;

This section PASSES the design code check.**Analysis vs. Allowable Stress and Deflection using NDS 2024 :**

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 6160	Vr = 21789	lbs	V/Vr = 0.28
Bending(+)	fb = 1613	Fb' = 2551	psi	fb/Fb' = 0.63
Live Defl'n	0.62 = L/514	1.33 = L/240	in	0.47
Total Defl'n	1.14 = L/278	1.77 = L/180	in	0.65

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Notes	Cvr	LC#
Fv'	265	1.15	1.00	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	2400	1.15	1.00	1.00	1.000	0.924	-	-	1.00	1.00	-	2
Fcp'	650	-	1.00	1.00	-	-	-	-	1.00	-	-	-
E'	1.8 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2
Eminy'	0.85 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S

Bending(+): LC #2 = D + 0.7S

Deflection: LC #2 = D + 0.7S (live)

LC #2 = D + 0.7S (total)

Bearing : Support 1 - LC #2 = D + 0.7S

Support 2 - LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load Patterns: s=S/2, X=L+S or L+Lr, _=no pattern load in this span

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V design from NDS 3.4.2.2(a) at support 2, V max = 7072 lbs M(+) = 46852 lbs-ft

EI = 6117.18e06 lb-in²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Glulam Beams shall be laterally supported according to the provisions of NDS Clause 3.3.3.
6. GLULAM: bearing length based on smaller of Fcp(tension), Fcp(comp'n).



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PROJECT

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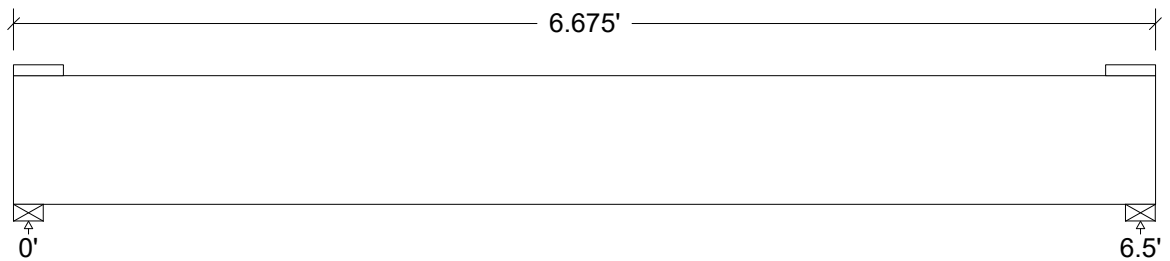
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Full Area			24.00 (30.50')	psf
SL	Snow	Full Area			69.60 (30.50')	psf
Self-weight	Dead	Full UDL			11.4	plf

Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	2481		2481
Snow	7085		7085
Factored:			
Combined	7496		7496
Bearing:			
Capacity			
Beam	7495		7495
Support	7698		7698
Des ratio			
Beam	1.00		1.00
Support	0.97		0.97
Load comb	#2		#2
Length	2.10		2.10
Min req'd	2.10		2.10
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.07		1.07
Fcp sup	625		625

Glulam-Unbalan., West Species, 24F-V4 DF, 5-1/2"x9"

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 6.67'; Clear span: 6.325'; Volume = 2.3 cu.ft.; 6 laminations, 5-1/2" maximum width,

Lateral support: top = at supports, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 5379	Vr = 10057	lbs	V/Vr = 0.53
Bending (+)	fb = 1903	Fb' = 2741	psi	fb/Fb' = 0.69
Live Defl'n	0.10 = L/786	0.32 = L/240	in	0.31
Total Defl'n	0.17 = L/449	0.43 = L/180	in	0.40

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Notes	Cvr	LC#
Fv'	265	1.15	1.00	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	2400	1.15	1.00	1.00	0.993	1.000	-	-	1.00	1.00	-	2
Fcp'	650	-	1.00	1.00	-	-	-	-	1.00	-	-	-
E'	1.8 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2
Eminy'	0.85 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S

Bending(+): LC #2 = D + 0.7S

Deflection: LC #2 = D + 0.7S (live)

LC #2 = D + 0.7S (total)

Bearing : Support 1 - LC #2 = D + 0.7S

Support 2 - LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load Patterns: s=S/2, X=L+S or L+Lr, _=no pattern load in this span

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V design from NDS 3.4.2.2(a) at support 1, V max = 7245 lbs M(+) = 11774 lbs-ft

EI = 601.42e06 lb-in²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Lateral stability(+): Lu = 6.50' Le = 12.88' RB = 6.8

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Glulam Beams shall be laterally supported according to the provisions of NDS Clause 3.3.3.
6. GLULAM: bearing length based on smaller of Fcp(tension), Fcp(comp'n).



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PROJECT

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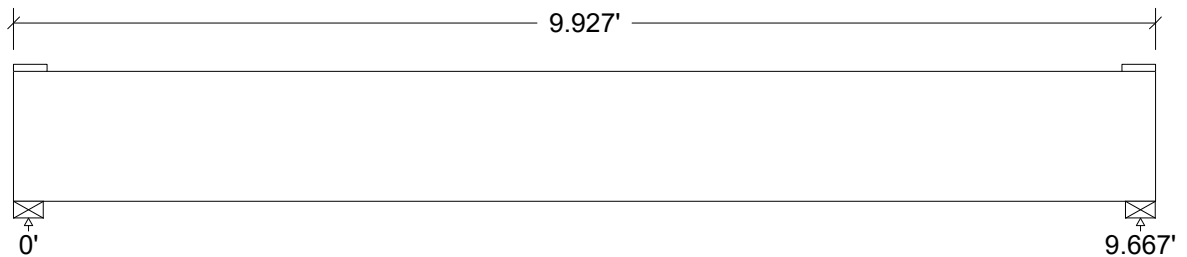
B8

Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Full Area			24.00 (30.50')	psf
SL	Snow	Full Area			69.60 (30.50')	psf
Self-weight	Dead	Full UDL			17.1	plf

Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :

Unfactored:			
Dead	3718		3718
Snow	10537		10537
Factored:			
Combined	11177		11177
Bearing:			
Capacity			
Beam	11175		11175
Support	11478		11478
Des ratio			
Beam	1.00		1.00
Support	0.97		0.97
Load comb	#2		#2
Length	3.13		3.13
Min req'd	3.13		3.13
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.07		1.07
Fcp sup	625		625

Glulam-Unbalan., West Species, 24F-V4 DF, 5-1/2"x13-1/2"

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 9.93'; Clear span: 9.407'; Volume = 5.1 cu.ft.; 9 laminations, 5-1/2" maximum width,

Lateral support: top = at supports, bottom = at supports;

This section PASSES the design code check.**Analysis vs. Allowable Stress and Deflection using NDS 2024 :**

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 7998	Vr = 15085	lbs	V/Vr = 0.53
Bending (+)	fb = 1875	Fb' = 2709	psi	fb/Fb' = 0.69
Live Defl'n	0.14 = L/806	0.48 = L/240	in	0.30
Total Defl'n	0.25 = L/459	0.64 = L/180	in	0.39

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Notes	Cvr	LC#
Fv'	265	1.15	1.00	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	2400	1.15	1.00	1.00	0.982	1.000	-	-	1.00	1.00	-	2
Fcp'	650	-	1.00	1.00	-	-	-	-	1.00	-	-	-
E'	1.8 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2
Eminy'	0.85 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S

Bending(+): LC #2 = D + 0.7S

Deflection: LC #2 = D + 0.7S (live)

LC #2 = D + 0.7S (total)

Bearing : Support 1 - LC #2 = D + 0.7S

Support 2 - LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load Patterns: s=S/2, X=L+S or L+Lr, _=no pattern load in this span

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V design from NDS 3.4.2.2(a) at support 1, V max = 10803 lbs M(+) = 26108 lbs-ft

EI = 2029.78e06 lb-in²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Lateral stability(+): Lu = 9.69' Le = 19.13' RB = 10.1

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Glulam Beams shall be laterally supported according to the provisions of NDS Clause 3.3.3.
6. GLULAM: bearing length based on smaller of Fcp(tension), Fcp(comp'n).



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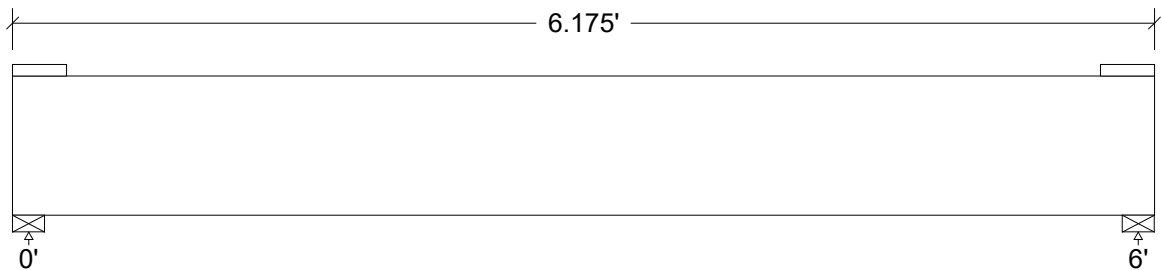
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Full Area			24.00 (33.00')	psf
SL	Snow	Full Area			69.60 (33.00')	psf
Self-weight	Dead	Full UDL			11.4	plf

Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	2480		2480
Snow	7091		7091
Factored:			
Combined	7505		7505
Bearing:			
Capacity			
Beam	7504		7504
Support	7707		7707
Des ratio			
Beam	1.00		1.00
Support	0.97		0.97
Load comb	#2		#2
Length	2.10		2.10
Min req'd	2.10		2.10
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.07		1.07
Fcp sup	625		625

Glulam-Unbalan., West Species, 24F-V4 DF, 5-1/2"x9"

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 6.17'; Clear span: 5.825'; Volume = 2.1 cu.ft.; 6 laminations, 5-1/2" maximum width,

Lateral support: top = at supports, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 5214	Vr = 10057	lbs	V/Vr = 0.52
Bending(+)	fb = 1754	Fb' = 2742	psi	fb/Fb' = 0.64
Live Defl'n	0.08 = L/923	0.30 = L/240	in	0.26
Total Defl'n	0.14 = L/527	0.40 = L/180	in	0.34

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Notes	Cvr	LC#
Fv'	265	1.15	1.00	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	2400	1.15	1.00	1.00	0.994	1.000	-	-	1.00	1.00	-	2
Fcp'	650	-	1.00	1.00	-	-	-	-	1.00	-	-	-
E'	1.8 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2
Eminy'	0.85 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S

Bending(+): LC #2 = D + 0.7S

Deflection: LC #2 = D + 0.7S (live)

LC #2 = D + 0.7S (total)

Bearing : Support 1 - LC #2 = D + 0.7S

Support 2 - LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load Patterns: s=S/2, X=L+S or L+Lr, _=no pattern load in this span

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V design from NDS 3.4.2.2(a) at support 1, V max = 7233 lbs M(+) = 10850 lbs-ft

EI = 601.42e06 lb-in²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Lateral stability(+): Lu = 6.00' Le = 12.00' RB = 6.6

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Glulam Beams shall be laterally supported according to the provisions of NDS Clause 3.3.3.
6. GLULAM: bearing length based on smaller of Fcp(tension), Fcp(comp'n).



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Aug. 30, 2026 17:03

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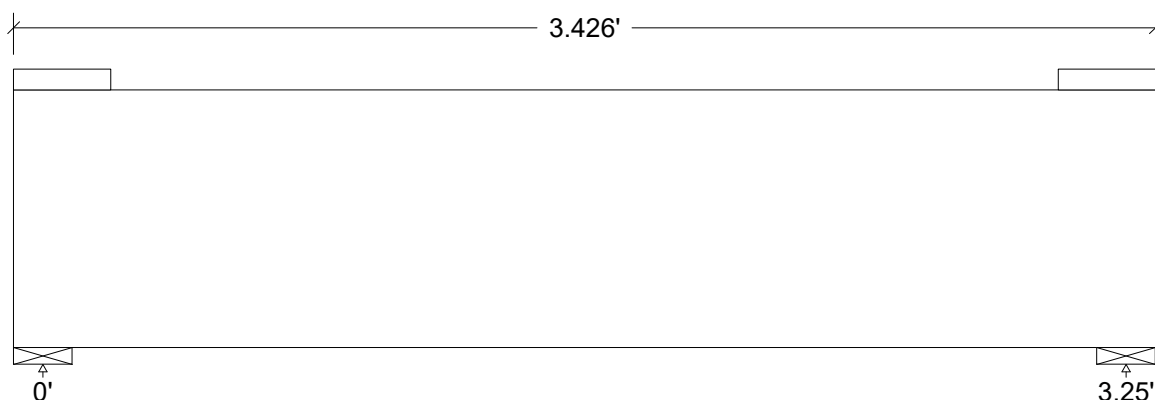
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Full Area			24.00 (36.50')	psf
SL	Snow	Full Area			69.60 (36.50')	psf
Self-weight	Dead	Full UDL			7.7	plf

Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	1514		1514
Snow	4352		4352
Factored:			
Combined	4628		4628
Bearing:			
Capacity			
Beam	4627		4627
Support	5123		5123
Des ratio			
Beam	1.00		1.00
Support	0.90		0.90
Load comb	#2		#2
Length	2.12		2.12
Min req'd	2.12		2.12
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.11		1.11
Fcp sup	625		625

Lumber-soft, D.Fir-L, No.2, 4x10 (3-1/2"x9-1/4")

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 3.43'; Clear span: 3.074'; Volume = 0.8 cu.ft.

Lateral support: top = at supports, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 2039	Vr = 4468	lbs	V/Vr = 0.46
Bending(+)	fb = 845	Fb' = 1235	psi	fb/Fb' = 0.68
Live Defl'n	0.01 = < L/999	0.16 = L/240	in	0.07
Total Defl'n	0.02 = < L/999	0.22 = L/180	in	0.10

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	180	1.15	1.00	1.00	-	-	-	-	1.00	1.00	2
Fb'+	900	1.15	1.00	1.00	0.994	1.200	-	1.00	1.00	1.00	2
Fcp'	625	-	1.00	1.00	-	-	-	-	1.00	1.00	-
E'	1.6 million	1.00	1.00	-	-	-	-	-	1.00	1.00	2
Emin'	0.58 million	1.00	1.00	-	-	-	-	-	1.00	1.00	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S

Bending(+): LC #2 = D + 0.7S

Deflection: LC #2 = D + 0.7S (live)

LC #2 = D + 0.7S (total)

Bearing : Support 1 - LC #2 = D + 0.7S

Support 2 - LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load Patterns: s=S/2, X=L+S or L+Lr, _=no pattern load in this span

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V design from NDS 3.4.2.2(a) at support 2, V max = 4326 lbs M(+) = 3515 lbs-ft

EI = 369.34e06 lb-in^2

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Lateral stability(+): Lu = 3.25' Le = 6.69' RB = 7.8

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.



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PROJECT

Sep. 2, 2026 08:53

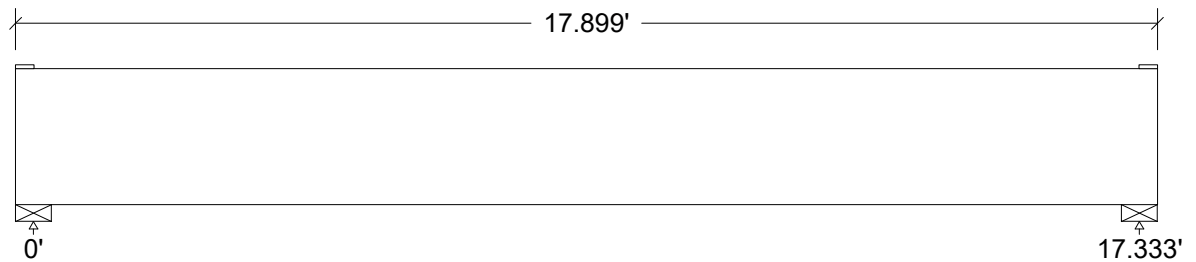
H3

Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Full Area			24.00 (36.50')	psf
SL	Snow	Full Area			69.60 (36.50')	psf
Self-weight	Dead	Full UDL			32.3	plf

Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :

Unfactored:			
Dead	8128		8128
Snow	22735		22735
Factored:			
Combined	24258		24258
Bearing:			
Capacity			
Beam	24249		24249
Support	24906		24906
Des ratio			
Beam	1.00		1.00
Support	0.97		0.97
Load comb	#2		#2
Length	6.78		6.78
Min req'd	6.78		6.78
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.07		1.07
Fcp sup	625		625

Glulam-Unbalan., West Species, 24F-V4 DF, 5-1/2"x25-1/2"

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 17.9'; Clear span: 16.768'; Volume = 17.4 cu.ft.; 17 laminations, 5-1/2" maximum width,

Lateral support: top = at supports, bottom = at supports;

This section PASSES the design code check.**Analysis vs. Allowable Stress and Deflection using NDS 2024 :**

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 16815	Vr = 28494	lbs	V/Vr = 0.59
Bending (+)	fb = 2031	Fb' = 2313	psi	fb/Fb' = 0.88
Live Defl'n	0.26 = L/787	0.87 = L/240	in	0.30
Total Defl'n	0.47 = L/446	1.16 = L/180	in	0.40

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Notes	Cvr	LC#
Fv'	265	1.15	1.00	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	2400	1.15	1.00	1.00	0.838	0.939	-	-	1.00	1.00	-	2
Fcp'	650	-	1.00	1.00	-	-	-	-	1.00	-	-	-
E'	1.8 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2
Eminy'	0.85 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2

Only the lesser of CL and CV is applied, as per NDS 5.3.6

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S

Bending(+): LC #2 = D + 0.7S

Deflection: LC #2 = D + 0.7S (live)

LC #2 = D + 0.7S (total)

Bearing : Support 1 - LC #2 = D + 0.7S

Support 2 - LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load Patterns: s=S/2, X=L+S or L+Lr, _=no pattern load in this span

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V design from NDS 3.4.2.2(a) at support 1, V max = 23284 lbs M(+) = 100895 lbs-ft

EI = 13679.42e06 lb-in²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Lateral stability(+): Lu = 17.31' Le = 34.63' RB = 18.7

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Glulam Beams shall be laterally supported according to the provisions of NDS Clause 3.3.3.
6. GLULAM: bearing length based on smaller of Fcp(tension), Fcp(comp'n).



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Sep. 3, 2026 14:46

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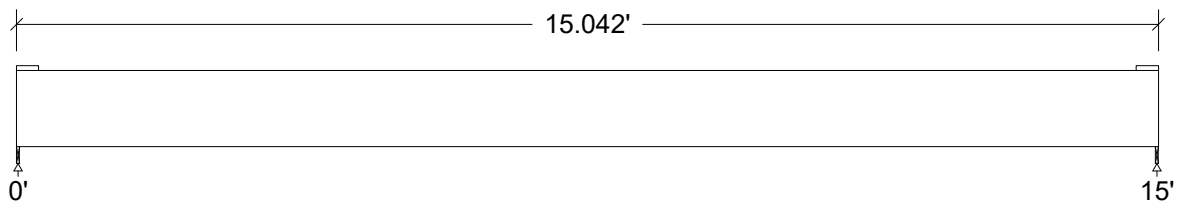
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Full Area			24.00 (3.00')	psf
SL	Snow	Full Area			69.60 (3.00')	psf
Self-weight	Dead	Full UDL			15.2	plf

Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	656		656
Snow	1570		1570
Factored:			
Combined	1756		1756
Bearing:			
Capacity			
Beam	1787		1787
Support	1836		1836
Des ratio			
Beam	0.98		0.98
Support	0.96		0.96
Load comb	#2		#2
Length	0.50*		0.50*
Min req'd	0.50*		0.50*
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.07		1.07
Fcp sup	625		625

*Minimum bearing length setting used: 1/2" for end supports

Glulam-Unbalan., West Species, 24F-V4 DF, 5-1/2"x12"

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 15.04'; Clear span: 14.958'; Volume = 6.9 cu.ft.; 8 laminations, 5-1/2" maximum width,

Lateral support: top = at supports, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 1512	Vr = 13409	lbs	V/Vr = 0.11
Bending (+)	fb = 597	Fb' = 2689	psi	fb/Fb' = 0.22
Live Defl'n	0.12 = < L/999	0.75 = L/240	in	0.16
Total Defl'n	0.22 = L/813	1.00 = L/180	in	0.22

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Notes	Cvr	LC#
Fv'	265	1.15	1.00	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	2400	1.15	1.00	1.00	0.974	1.000	-	-	1.00	1.00	-	2
Fcp'	650	-	1.00	1.00	-	-	-	-	1.00	-	-	-
E'	1.8 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2
Eminy'	0.85 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S

Bending(+): LC #2 = D + 0.7S

Deflection: LC #2 = D + 0.7S (live)

LC #2 = D + 0.7S (total)

Bearing : Support 1 - LC #2 = D + 0.7S

Support 2 - LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load Patterns: s=S/2, X=L+S or L+Lr, _=no pattern load in this span

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V design from NDS 3.4.2.2(a) at support 1, V max = 1750 lbs M(+) = 6563 lbs-ft

EI = 1425.58e06 lb-in²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Lateral stability(+): Lu = 15.00' Le = 27.63' RB = 11.5

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Glulam Beams shall be laterally supported according to the provisions of NDS Clause 3.3.3.
6. GLULAM: bearing length based on smaller of Fcp(tension), Fcp(comp'n).



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Aug. 30, 2026 17:40

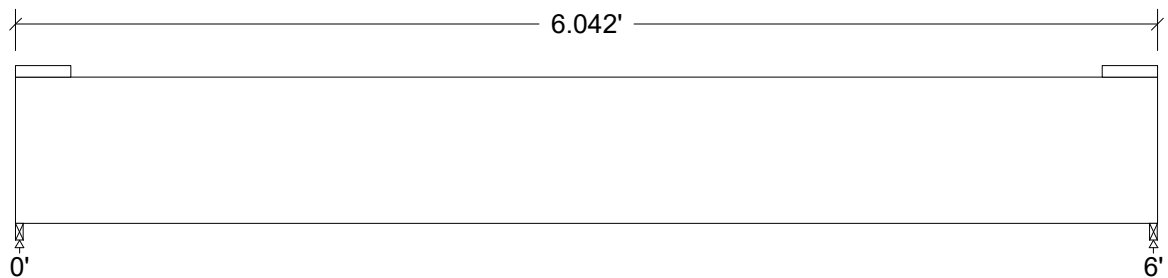
H5

Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Full Area			24.00 (3.00')	psf
SL	Snow	Full Area			69.60 (3.00')	psf
Self-weight	Dead	Full UDL			7.7	plf

Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :

Unfactored:			
Dead	241		241
Snow	631		631
Factored:			
Combined	684		684
Bearing:			
Capacity			
Beam	1094		1094
Support	1211		1211
Des ratio			
Beam	0.62		0.62
Support	0.56		0.56
Load comb	#2		#2
Length	0.50*		0.50*
Min req'd	0.50*		0.50*
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.11		1.11
Fcp sup	625		625

*Minimum bearing length setting used: 1/2" for end supports

Lumber-soft, D.Fir-L, No.2, 4x10 (3-1/2"x9-1/4")

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 6.04'; Clear span: 5.958'; Volume = 1.4 cu.ft.

Lateral support: top = at supports, bottom = at supports;

This section PASSES the design code check.**Analysis vs. Allowable Stress and Deflection using NDS 2024 :**

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 499	Vr = 4468	lbs	V/Vr = 0.11
Bending (+)	fb = 244	Fb' = 1227	psi	fb/Fb' = 0.20
Live Defl'n	0.01 = < L/999	0.30 = L/240	in	0.04
Total Defl'n	0.02 = < L/999	0.40 = L/180	in	0.05

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	180	1.15	1.00	1.00	-	-	-	-	1.00	1.00	2
Fb'+	900	1.15	1.00	1.00	0.988	1.200	-	1.00	1.00	1.00	2
Fcp'	625	-	1.00	1.00	-	-	-	-	1.00	1.00	-
E'	1.6 million		1.00	1.00	-	-	-	-	1.00	1.00	2
Emin'	0.58 million		1.00	1.00	-	-	-	-	1.00	1.00	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S

Bending(+): LC #2 = D + 0.7S

Deflection: LC #2 = D + 0.7S (live)

LC #2 = D + 0.7S (total)

Bearing : Support 1 - LC #2 = D + 0.7S

Support 2 - LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load Patterns: s=S/2, X=L+S or L+Lr, _=no pattern load in this span

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V design from NDS 3.4.2.2(a) at support 2, V max = 678 lbs M(+) = 1016 lbs-ft

EI = 369.34e06 lb-in²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Lateral stability(+): Lu = 6.00' Le = 12.06' RB = 10.5

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.



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Aug. 30, 2026 17:43

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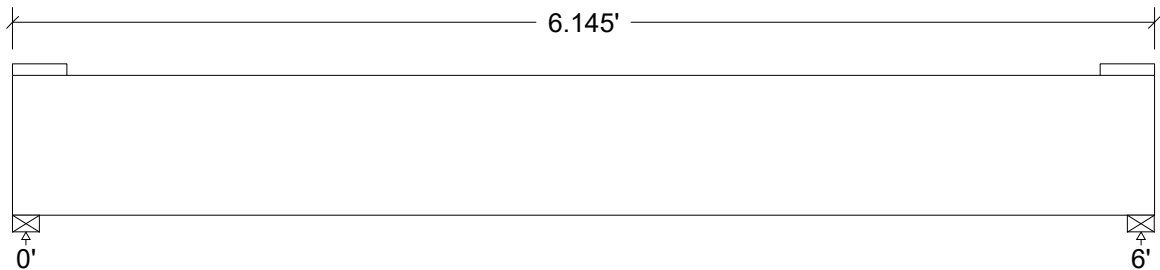
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Full Area			24.00 (27.50')	psf
SL	Snow	Full Area			69.60 (27.50')	psf
Self-weight	Dead	Full UDL			11.4	plf

Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	2063		2063
Snow	5881		5881
Factored:			
Combined	6221		6221
Bearing:			
Capacity			
Beam	6220		6220
Support	6389		6389
Des ratio			
Beam	1.00		1.00
Support	0.97		0.97
Load comb	#2		#2
Length	1.74		1.74
Min req'd	1.74		1.74
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.07		1.07
Fcp sup	625		625

Glulam-Unbalan., West Species, 24F-V4 DF, 5-1/2"x9"

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 6.14'; Clear span: 5.855'; Volume = 2.1 cu.ft.; 6 laminations, 5-1/2" maximum width,

Lateral support: top = at supports, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 4379	Vr = 10057	lbs	V/Vr = 0.44
Bending(+)	fb = 1463	Fb' = 2742	psi	fb/Fb' = 0.53
Live Defl'n	0.06 = < L/999	0.30 = L/240	in	0.22
Total Defl'n	0.11 = L/632	0.40 = L/180	in	0.28

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Notes	Cvr	LC#
Fv'	265	1.15	1.00	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	2400	1.15	1.00	1.00	0.994	1.000	-	-	1.00	1.00	-	2
Fcp'	650	-	1.00	1.00	-	-	-	-	1.00	-	-	-
E'	1.8 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2
Eminy'	0.85 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S

Bending(+): LC #2 = D + 0.7S

Deflection: LC #2 = D + 0.7S (live)

LC #2 = D + 0.7S (total)

Bearing : Support 1 - LC #2 = D + 0.7S

Support 2 - LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load Patterns: s=S/2, X=L+S or L+Lr, _=no pattern load in this span

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V design from NDS 3.4.2.2(a) at support 1, V max = 6034 lbs M(+) = 9050 lbs-ft

EI = 601.42e06 lb-in²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Lateral stability(+): Lu = 6.00' Le = 12.00' RB = 6.6

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Glulam Beams shall be laterally supported according to the provisions of NDS Clause 3.3.3.
6. GLULAM: bearing length based on smaller of Fcp(tension), Fcp(comp'n).



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PROJECT

Aug. 30, 2026 17:46

H8

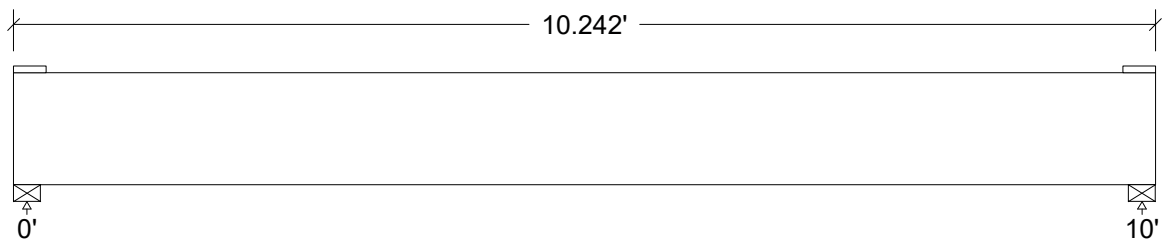
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Full Area			24.00 (27.50')	psf
SL	Snow	Full Area			69.60 (27.50')	psf
Self-weight	Dead	Full UDL			15.2	plf

Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	3458		3458
Snow	9802		9802
Factored:			
Combined	10388		10388
Bearing:			
Capacity			
Beam	10387		10387
Support	10668		10668
Des ratio			
Beam	1.00		1.00
Support	0.97		0.97
Load comb	#2		#2
Length	2.91		2.91
Min req'd	2.91		2.91
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.07		1.07
Fcp sup	625		625

Glulam-Unbalan., West Species, 24F-V4 DF, 5-1/2"x12"

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 10.24'; Clear span: 9.758'; Volume = 4.7 cu.ft.; 8 laminations, 5-1/2" maximum width,

Lateral support: top = at supports, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 7816	Vr = 13409	lbs	V/Vr = 0.58
Bending (+)	fb = 2290	Fb' = 2716	psi	fb/Fb' = 0.84
Live Defl'n	0.21 = L/567	0.50 = L/240	in	0.42
Total Defl'n	0.37 = L/323	0.67 = L/180	in	0.56

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Notes	Cvr	LC#
Fv'	265	1.15	1.00	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	2400	1.15	1.00	1.00	0.984	1.000	-	-	1.00	1.00	-	2
Fcp'	650	-	1.00	1.00	-	-	-	-	1.00	-	-	-
E'	1.8 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2
Eminy'	0.85 million	-	1.00	1.00	-	-	-	-	1.00	-	-	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S

Bending(+): LC #2 = D + 0.7S

Deflection: LC #2 = D + 0.7S (live)

LC #2 = D + 0.7S (total)

Bearing : Support 1 - LC #2 = D + 0.7S

Support 2 - LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load Patterns: s=S/2, X=L+S or L+Lr, _=no pattern load in this span

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V design from NDS 3.4.2.2(a) at support 2, V max = 10075 lbs M(+) = 25187 lbs-ft

EI = 1425.58e06 lb-in²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Lateral stability(+): Lu = 10.00' Le = 19.31' RB = 9.6

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Glulam Beams shall be laterally supported according to the provisions of NDS Clause 3.3.3.
6. GLULAM: bearing length based on smaller of Fcp(tension), Fcp(comp'n).

FROELICH CONSULTING ENGINEERS

client: Steele
project: Chilquin Fitness
job number: 26-B224
date: 8/31/2026
by: MP

WALLS

Wall
W1

Location: Grid 4 (btwn E and F)
Height: 22'-6"
Loads:

Loading		Trib.			
Roof DL:	24	psf x	29.00	ft	= 696 plf
Roof SL:	69.6	psf x	29.00	ft	= 2018 plf
Wall DL:	10	psf x	22.50	ft	= 225 plf
Floor DL:	15	psf x	0.00	ft	= 0 plf
Floor LL:	40	psf x	0.00	ft	= 0 plf

(2) 2x8 1.5E-2250Fb
LSL Studs
at each truss (24"o.c.)
12"o.c. between

Out of Plane Wall Loading

OOP WL:	16	psf	Controls	= 16 psf	Wind Controls
OOP LL:	5	psf			

Wall
W2

Location: Grid 3 (btwn E and F)
Height: 17'-6"
Loads:

Loading		Trib.			
Roof DL:	24	psf x	32.50	ft	= 780 plf
Roof SL:	69.6	psf x	32.50	ft	= 2262 plf
Wall DL:	10	psf x	17.50	ft	= 175 plf
Floor DL:	15	psf x	0.00	ft	= 0 plf
Floor LL:	40	psf x	0.00	ft	= 0 plf

(2) 2x8 1.5E-2250Fb
LSL Studs
at each truss (24"o.c.)
12"o.c. between

Out of Plane Wall Loading

OOP WL:	0	psf	Controls	= 5 psf	Live Controls
OOP LL:	5	psf			

Wall
W3

Location: Grid 2 (btwn E and F)
Height: 17
Loads:

Loading		Trib.			
Roof DL:	24	psf x	29.00	ft	= 696 plf
Roof SL:	69.6	psf x	29.00	ft	= 2018 plf
Wall DL:	10	psf x	17.00	ft	= 170 plf
Floor DL:	15	psf x	0.00	ft	= 0 plf
Floor LL:	40	psf x	0.00	ft	= 0 plf

(2) 2x8 1.5E-2250Fb
LSL Studs
at each truss (24"o.c.)
12"o.c. between

Out of Plane Wall Loading

OOP WL:	0	psf	Controls	= 5 psf	Live Controls
OOP LL:	5	psf			

Wall
W4

Location: Grid 1 (btwn E and F)
Height: 12'-9"
Loads:

Loading		Trib.			
Roof DL:	24	psf x	27.00	ft	= 648 plf
Roof SL:	69.6	psf x	27.00	ft	= 1879 plf
Wall DL:	10	psf x	12.75	ft	= 128 plf
Floor DL:	15	psf x	0.00	ft	= 0 plf
Floor LL:	40	psf x	0.00	ft	= 0 plf

(2) 2x6 DF#2 Studs
at each truss (24"o.c.)
12"o.c. between

Out of Plane Wall Loading

OOP WL: psf Controls = 16 psf
OOP LL: psf

Wall
W5

Location: Grid A
Height: 13'-6"
Loads:

	Loading		Trib.		
Roof DL:	24	psf x	36.50	ft	= 876 plf
Roof SL:	69.6	psf x	36.50	ft	= 2540 plf
Wall DL:	10	psf x	13.50	ft	= 135 plf
Floor DL:	15	psf x	0.00	ft	= 0 plf
Floor LL:	40	psf x	0.00	ft	= 0 plf

(2) 2x6 DF#1 Studs
at each truss (24"o.c.)
12"o.c. between

Out of Plane Wall Loading

OOP WL: psf Controls = 16 psf
OOP LL: psf

Wall
W6

Location: Grid E
Height: 23'-0"
Loads:

	Loading		Trib.		
Roof DL:	24	psf x	29.50	ft	= 708 plf
Roof SL:	69.6	psf x	29.50	ft	= 2053 plf
Wall DL:	10	psf x	23.00	ft	= 230 plf
Floor DL:	15	psf x	0.00	ft	= 0 plf
Floor LL:	40	psf x	0.00	ft	= 0 plf

(2) 2x8 1.5E-2250Fb
LSL Studs
at each truss (24"o.c.)
12"o.c. between

Out of Plane Wall Loading

OOP WL: psf Controls = 5 psf
OOP LL: psf

Wall
W7

Location: Grid F (Grid 1 and 4 between A and E SIM)
Height: 22'-6" (MAX)
Loads:

	Loading		Trib.		
Roof DL:	24	psf x	3.00	ft	= 72 plf
Roof SL:	69.6	psf x	3.00	ft	= 209 plf
Wall DL:	10	psf x	22.50	ft	= 225 plf
Floor DL:	15	psf x	0.00	ft	= 0 plf
Floor LL:	40	psf x	0.00	ft	= 0 plf

(2) 2x6 1.3E-1700Fb
LSL Studs at 12"o.c.

Out of Plane Wall Loading

OOP WL: psf Controls = 16 psf
OOP LL: psf

Wall
W8

Location: Grid F (Grid 1 and 4 between A and E SIM)
Height: 16'-0" (MAX)
Loads:

	Loading		Trib.		
Roof DL:	24	psf x	3.00	ft	= 72 plf
Roof SL:	69.6	psf x	3.00	ft	= 209 plf
Wall DL:	10	psf x	22.50	ft	= 225 plf
Floor DL:	15	psf x	0.00	ft	= 0 plf
Floor LL:	40	psf x	0.00	ft	= 0 plf

2x6 1.3E-1700Fb
LSL Studs at 16"o.c.

Out of Plane Wall Loading

OOP WL: psf Controls = 16 psf

OOP LL: 5 psf



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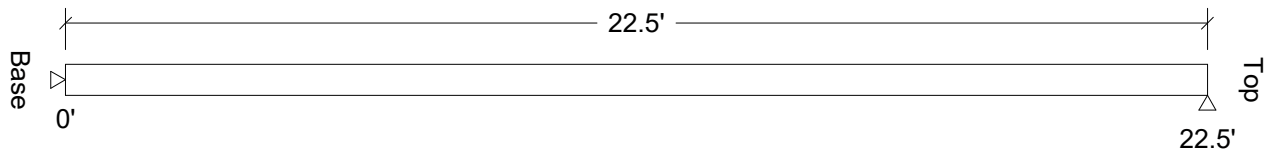
W1

Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Axial	(Ecc. = 1.21")	1392	lbs
SL	Snow	Axial	(Ecc. = 1.21")	4036	lbs
Wind	Wind	Full Area		16.00 (1.00')	psf
Self-weight	Dead	Axial		153	lbs

Reactions (lbs):

Unfactored:			
Lateral:			
Dead	6		-6
Snow	18		-18
Wind	180		180
Axial:			
Dead	1545		1545
Snow	4036		4036
Factored:			
R->L			-19
Load comb			#2
L->R	114		104
Load comb	#5		#4

LSL n-ply, Weyerhaeuser, 1.5E-2250Fb, 1-1/2"x7-1/4", 2-ply (3"x7-1/4")

Support: Non-wood

Total length: 22.5'; Volume = 3.4 cu.ft.

Pinned base; Load face = width(b); Built-up fastener: nails; $K_e \times L_b: 1.0 \times 0.0 = 0.0$ ft; $K_e \times L_d: 1.0 \times 22.5 = 22.5$ ft;

Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.**Analysis vs. Allowable Stress and Deflection using NDS 2024 :**

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	$V = 112$	$V_r = 12302$	lbs	$V/V_r = 0.01$
Bending (+)	$f_b = 310$	$F_b' = 3780$	psi	$f_b/F_b' = 0.08$
Axial	$f_c = 201$	$F_c' = 451$	psi	$f_c/F_c' = 0.45$
Combined	$f_c = 201$	$F_c' = 451$	psi	Eq. 15.4-3 = 0.34
Axial Bearing	$f_c = 201$	$F_c^* = 2421$	psi	$f_c/F_c^* = 0.08$
Live Defl'n	$0.39 = L/696$	$1.12 = L/240$	in	0.34
Total Defl'n	$0.47 = L/576$	$1.12 = L/240$	in	0.42

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CV	Cfu	Cr	Cfrt	CF	LC#
Fv'	505	1.60	—	1.00	—	—	—	—	1.00	—	4
Fb'+	2250	1.60	—	1.00	1.000	1.050	—	1.00	1.00	—	5
Fc'	2105	1.15	—	1.00	0.186	—	—	—	1.00	—	2
E'	1.5 million	—	—	1.00	—	—	—	—	1.00	—	5
Emin'	0.78 million	—	—	1.00	—	—	—	—	1.00	—	5
Eminy'	0.78 million	—	—	1.00	—	—	—	—	1.00	—	5
Fc*	2105	1.15	—	1.00	—	—	—	—	1.00	—	2
Comb'd Fc'	451	1.15	—	1.00	1.00	—	—	—	1.00	—	2
Comb'd Fb	2717	1.15	—	1.00	1.00	0.000	—	—	1.00	—	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #4 = 0.6D + 0.6W
 Bending(+): LC #5 = D + 0.6W
 Deflection: LC #4 = 0.6D + 0.6W (live)
 LC #5 = D + 0.6W (total)
 Axial : LC #2 = D + 0.7S
 Combined : LC #2 = D + 0.7S
 Load Types: D=dead S=snow W=wind
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 112 lbs; M(+) = 680 lbs-ft; P = 4370 lbs, Kf = 1.00
 EI = 71.45e06 lb-in²/ply Apparent E approximates the effect of shear deflection.
 Combined (psi): Fb' = 2717; fb = fc(6e/d) = 194; Fc' = 451; fc = 201; FcE = 461
 Combined: M = 0.00 lbs-ft; P = -4370 lbs
 "Live" deflection is due to all non-dead loads (live, wind, snow...)
 Total deflection = 1.50 permanent + "live"
 Axial d governs, le/b full = 0.0, le/b 1-ply = 0.0, le/d = 37.2

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.
4. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.
5. SCL: Structural composite lumber design has assumed: - dry service conditions - no preservative or fire-retardant treatment - no notches
6. BUILT-UP SCL: Contact manufacturer for connection details when side-loaded or when loads are not applied equally to all plies.
7. SCL: Deflection is calculated using an apparent modulus of elasticity E that incorporates the effect of shear deflection.



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PROJECT

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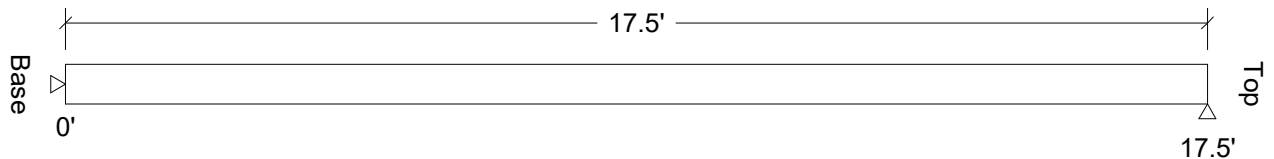
W2

Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Axial	(Ecc. = 1.21")	1560	lbs
SL	Snow	Axial	(Ecc. = 1.21")	4524	lbs
Lateral	Live	Full Area		5.00 (1.00')	psf
Self-weight	Dead	Axial		119	lbs

Reactions (lbs):

Unfactored:			
Lateral:			
Dead	9		-9
Live	44		44
Snow	26		-26
Axial:			
Dead	1679		1679
Snow	4524		4524
Factored:			
R->L			-27
Load comb			#4
L->R	56		35
Load comb	#3		#2

LSL n-ply, Weyerhaeuser, 1.5E-2250Fb, 1-1/2"x7-1/4", 2-ply (3"x7-1/4")

Support: Non-wood

Total length: 17.5'; Volume = 2.6 cu.ft.

Pinned base; Load face = width(b); Built-up fastener: nails; $K_e \times L_b: 1.0 \times 0.0 = 0.0$ ft; $K_e \times L_d: 1.0 \times 17.5 = 17.5$ ft;

Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.**Analysis vs. Allowable Stress and Deflection using NDS 2024 :**

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	$V = 53$	$V_r = 7689$	lbs	$V/V_r = 0.01$
Bending (+)	$f_b = 218$	$F_b' = 2717$	psi	$f_b/F_b' = 0.08$
Axial	$f_c = 223$	$F_c' = 730$	psi	$f_c/F_c' = 0.31$
Combined	$f_c = 223$	$F_c' = 730$	psi	Eq. 15.4-3 = 0.21
Axial Bearing	$f_c = 223$	$F_c^* = 2421$	psi	$f_c/F_c^* = 0.09$
Live Defl'n	$0.11 = < L/999$	$0.88 = L/240$	in	0.13
Total Defl'n	$0.17 = < L/999$	$0.88 = L/240$	in	0.19

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CV	Cfu	Cr	Cfrt	CF	LC#
Fv'	505	1.00	—	1.00	—	—	—	—	1.00	—	2
Fb'+	2250	1.15	—	1.00	1.000	1.050	—	1.00	1.00	—	4
Fc'	2105	1.15	—	1.00	0.302	—	—	—	1.00	—	4
E'	1.5 million	—	—	1.00	—	—	—	—	1.00	—	3
Emin'	0.78 million	—	—	1.00	—	—	—	—	1.00	—	3
Eminy'	0.78 million	—	—	1.00	—	—	—	—	1.00	—	3
Fc*	2105	1.15	—	1.00	—	—	—	—	1.00	—	4
Comb'd Fc'	730	1.15	—	1.00	1.00	—	—	—	1.00	—	4
Comb'd Fb	2717	1.15	—	1.00	1.00	0.000	—	—	1.00	—	4

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + L
 Bending(+): LC #4 = D + 0.7S
 Deflection: LC #3 = D + 0.75(L + 0.7S) (live)
 LC #3 = D + 0.75(L + 0.7S) (total)
 Axial : LC #4 = D + 0.7S
 Combined : LC #4 = D + 0.7S
 Load Types: D=dead L=live S=snow
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 53 lbs; M(+) = 477 lbs-ft; P = 4846 lbs, Kf = 1.00
 EI = 71.45e06 lb-in²/ply Apparent E approximates the effect of shear deflection.
 Combined (psi): Fb' = 2717; fb = fc(6e/d) = 218; Fc' = 730; fc = 223; FcE = 762
 Combined: M = 0.00 lbs-ft; P = -4846 lbs
 "Live" deflection is due to all non-dead loads (live, wind, snow...)
 Total deflection = 1.50 permanent + "live"
 Axial d governs, le/b full = 0.0, le/b 1-ply = 0.0, le/d = 29.0

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.
4. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.
5. SCL: Structural composite lumber design has assumed: - dry service conditions - no preservative or fire-retardant treatment - no notches
6. BUILT-UP SCL: Contact manufacturer for connection details when side-loaded or when loads are not applied equally to all plies.
7. SCL: Deflection is calculated using an apparent modulus of elasticity E that incorporates the effect of shear deflection.



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PROJECT

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W3

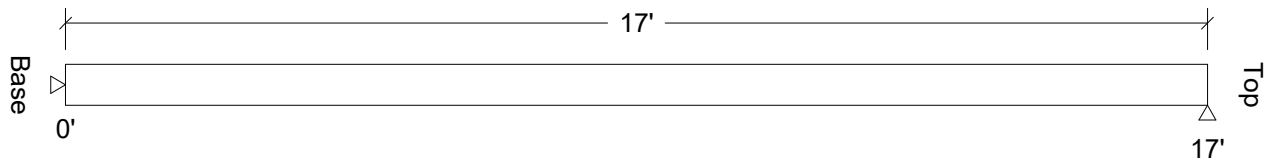
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Axial	(Ecc. = 1.21")	1392	lbs
SL	Snow	Axial	(Ecc. = 1.21")	4036	lbs
Lateral	Live	Full Area		5.00 (1.00')	psf
Self-weight	Dead	Axial		116	lbs

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	8		-8
Live	43		43
Snow	24		-24
Axial:			
Dead	1508		1508
Snow	4036		4036
Factored:			
R->L			-25
Load comb			#4
L->R	53		34
Load comb	#3		#2

LSL n-ply, Weyerhaeuser, 1.5E-2250Fb, 1-1/2"x7-1/4", 2-ply (3"x7-1/4")

Support: Non-wood

Total length: 17.0'; Volume = 2.6 cu.ft.

Pinned base; Load face = width(b); Built-up fastener: nails; $K_e \times L_b: 1.0 \times 0.0 = 0.0$ ft; $K_e \times L_d: 1.0 \times 17.0 = 17.0$ ft;

Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	$V = 51$	$V_r = 7689$	lbs	$V/V_r = 0.01$
Bending (+)	$fb = 194$	$Fb' = 2717$	psi	$fb/Fb' = 0.07$
Axial	$fc = 199$	$Fc' = 771$	psi	$fc/Fc' = 0.26$
Combined	$fc = 199$	$Fc' = 771$	psi	Eq. 15.4-3 = 0.17
Axial Bearing	$fc = 199$	$Fc^* = 2421$	psi	$fc/Fc^* = 0.08$
Live Defl'n	$0.10 = < L/999$	$0.85 = L/240$	in	0.11
Total Defl'n	$0.14 = < L/999$	$0.85 = L/240$	in	0.17

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CV	Cfu	Cr	Cfrt	CF	LC#
Fv'	505	1.00	—	1.00	—	—	—	—	1.00	—	2
Fb'+	2250	1.15	—	1.00	1.000	1.050	—	1.00	1.00	—	4
Fc'	2105	1.15	—	1.00	0.319	—	—	—	1.00	—	4
E'	1.5 million	—	—	1.00	—	—	—	—	1.00	—	3
Emin'	0.78 million	—	—	1.00	—	—	—	—	1.00	—	3
Eminy'	0.78 million	—	—	1.00	—	—	—	—	1.00	—	3
Fc*	2105	1.15	—	1.00	—	—	—	—	1.00	—	4
Comb'd Fc'	771	1.15	—	1.00	1.00	—	—	—	1.00	—	4
Comb'd Fb	2717	1.15	—	1.00	1.00	0.000	—	—	1.00	—	4

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + L
 Bending(+): LC #4 = D + 0.7S
 Deflection: LC #3 = D + 0.75(L + 0.7S) (live)
 LC #3 = D + 0.75(L + 0.7S) (total)
 Axial : LC #4 = D + 0.7S
 Combined : LC #4 = D + 0.7S
 Load Types: D=dead L=live S=snow
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 51 lbs; M(+) = 425 lbs-ft; P = 4333 lbs, Kf = 1.00
 EI = 71.45e06 lb-in²/ply Apparent E approximates the effect of shear deflection.
 Combined (psi): Fb' = 2717; fb = fc(6e/d) = 194; Fc' = 771; fc = 199; FcE = 807
 Combined: M = 0.00 lbs-ft; P = -4333 lbs
 "Live" deflection is due to all non-dead loads (live, wind, snow...)
 Total deflection = 1.50 permanent + "live"
 Axial d governs, le/b full = 0.0, le/b 1-ply = 0.0, le/d = 28.1

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.
4. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.
5. SCL: Structural composite lumber design has assumed: - dry service conditions - no preservative or fire-retardant treatment - no notches
6. BUILT-UP SCL: Contact manufacturer for connection details when side-loaded or when loads are not applied equally to all plies.
7. SCL: Deflection is calculated using an apparent modulus of elasticity E that incorporates the effect of shear deflection.



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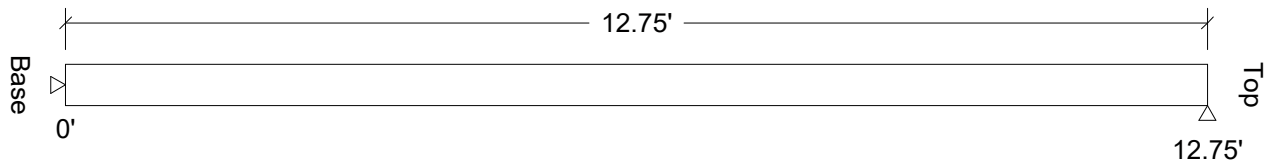
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Axial	(Ecc. = 0.92")	1296	lbs
SL	Snow	Axial	(Ecc. = 0.92")	3758	lbs
Wind	Wind	Full Area		16.00 (1.00')	psf
Self-weight	Dead	Axial		50	lbs

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	8		-8
Snow	23		-23
Wind	102		102
Axial:			
Dead	1346		1346
Snow	3758		3758
Factored:			
R->L			-24
Load comb			#2
L->R	69		57
Load comb	#5		#4

Lumber n-ply, D.Fir-L, No.2, 2x6, 2-ply (3"x5-1/2")

Support: Non-wood

Total length: 12.75'; Volume = 1.5 cu.ft.

Pinned base; Load face = width(b); Built-up fastener: nails; Ke x Lb: 1.0 x 0.0 = 0.0 ft; Ke x Ld: 1.0 x 12.75 = 12.75 ft;

Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 69	Vr = 3168	lbs	V/Vr = 0.02
Bending (+)	fb = 238	Fb' = 1345	psi	fb/Fb' = 0.18
Axial	fc = 241	Fc' = 561	psi	fc/Fc' = 0.43
Combined	fc = 241	Fc' = 561	psi	Eq. 15.4-3 = 0.50
Axial Bearing	fc = 241	Fc* = 1708	psi	fc/Fc* = 0.14
Live Defl'n	0.10 = < L/999	0.64 = L/240	in	0.16
Total Defl'n	0.14 = < L/999	0.64 = L/240	in	0.23

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	180	1.60	1.00	1.00	-	-	-	-	1.00	1.00	5
Fb'+	900	1.15	1.00	1.00	1.000	1.300	-	1.00	1.00	1.00	2
Fc'	1350	1.15	1.00	1.00	0.329	1.100	-	-	1.00	1.00	2
E'	1.6 million		1.00	1.00	-	-	-	-	1.00	1.00	3
Emin'	0.58 million		1.00	1.00	-	-	-	-	1.00	1.00	3
Fc*	1350	1.15	1.00	1.00	-	1.100	-	-	1.00	1.00	2
Comb'd Fc'	561	1.15	1.00	1.00	1.00	1.100	-	-	1.00	1.00	2
Comb'd Fb	1345	1.15	1.00	1.00	1.00	1.300	-	1.00	1.00	1.00	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #5 = D + 0.6W
 Bending(+): LC #2 = D + 0.7S
 Deflection: LC #3 = D + 0.75(0.7S + 0.6W) (live)
 LC #3 = D + 0.75(0.7S + 0.6W) (total)
 Axial : LC #2 = D + 0.7S
 Combined : LC #2 = D + 0.7S

Load Types: D=dead S=snow W=wind

All LC's are listed in the Analysis output

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 69 lbs; M(+) = 301 lbs-ft; P = 3977 lbs, Kf = 1.00
 EI = 33.27e06 lb-in²/ply
 Combined (psi): Fb' = 1345; fb = fc(6e/d) = 238; Fc' = 561; fc = 241; FcE = 616
 Combined: M = 0.00 lbs-ft; P = -3977 lbs
 "Live" deflection is due to all non-dead loads (live, wind, snow...)
 Total deflection = 1.50 permanent + "live"
 Axial d governs, le/b full = 0.0, le/b 1-ply = 0.0, le/d = 27.8

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.
4. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.



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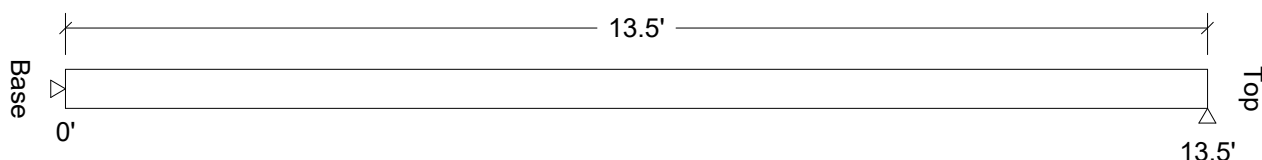
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Axial	(Ecc. = 0.92")	1752	lbs
SL	Snow	Axial	(Ecc. = 0.92")	5080	lbs
Wind	Wind	Full Area		16.00 (1.00')	psf
Self-weight	Dead	Axial		53	lbs

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	10		-10
Snow	29		-29
Wind	108		108
Axial:			
Dead	1805		1805
Snow	5080		5080
Factored:			
R->L			-30
Load comb			#2
L->R	75		59
Load comb	#5		#4

Lumber n-ply, D.Fir-L, No.1, 2x6, 2-ply (3"x5-1/2")

Support: Non-wood

Total length: 13.5'; Volume = 1.5 cu.ft.

Pinned base; Load face = width(b); Built-up fastener: nails; Ke x Lb: 1.0 x 0.0 = 0.0 ft; Ke x Ld: 1.0 x 13.5 = 13.5 ft;

Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 74	Vr = 3168	lbs	V/Vr = 0.02
Bending (+)	fb = 322	Fb' = 1495	psi	fb/Fb' = 0.22
Axial	fc = 325	Fc' = 544	psi	fc/Fc' = 0.60
Combined	fc = 325	Fc' = 544	psi	Eq.15.4-3 = 0.90
Axial Bearing	fc = 325	Fc* = 1897	psi	fc/Fc* = 0.17
Live Defl'n	0.13 = < L/999	0.68 = L/240	in	0.20
Total Defl'n	0.19 = L/850	0.68 = L/240	in	0.28

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	180	1.60	1.00	1.00	—	—	—	—	1.00	1.00	3
Fb'+	1000	1.15	1.00	1.00	1.000	1.300	—	1.00	1.00	1.00	2
Fc'	1500	1.15	1.00	1.00	0.287	1.100	—	—	1.00	1.00	2
E'	1.7 million	1.00	1.00	1.00	—	—	—	—	1.00	1.00	3
Emin'	0.62 million	1.00	1.00	1.00	—	—	—	—	1.00	1.00	3
Fc*	1500	1.15	1.00	1.00	—	1.100	—	—	1.00	1.00	2
Comb'd Fc'	544	1.15	1.00	1.00	1.00	1.100	—	—	1.00	1.00	2
Comb'd Fb	1495	1.15	1.00	1.00	1.00	1.300	—	1.00	1.00	1.00	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #3 = D + 0.75(0.7S + 0.6W)
 Bending(+): LC #2 = D + 0.7S
 Deflection: LC #3 = D + 0.75(0.7S + 0.6W) (live)
 LC #3 = D + 0.75(0.7S + 0.6W) (total)
 Axial : LC #2 = D + 0.7S
 Combined : LC #2 = D + 0.7S

Load Types: D=dead S=snow W=wind

All LC's are listed in the Analysis output

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 74 lbs; M(+) = 406 lbs-ft; P = 5361 lbs, Kf = 1.00
 EI = 35.35e06 lb-in²/ply
 Combined (psi): Fb' = 1495; fb = fc(6e/d) = 322; Fc' = 544; fc = 325; FcE = 587
 Combined: M = 0.00 lbs-ft; P = -5361 lbs
 "Live" deflection is due to all non-dead loads (live, wind, snow...)
 Total deflection = 1.50 permanent + "live"
 Axial d governs, le/b full = 0.0, le/b 1-ply = 0.0, le/d = 29.5

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.
4. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.



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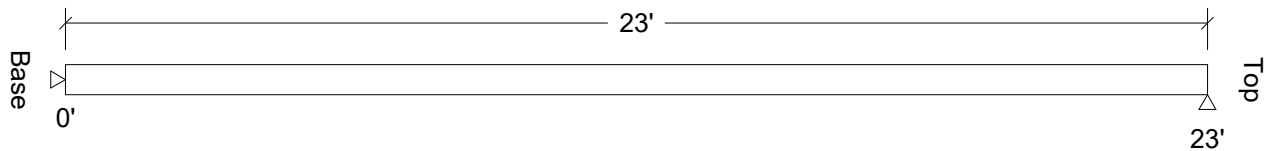
W6

Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Axial	(Ecc. = 1.21")	1416	lbs
SL	Snow	Axial	(Ecc. = 1.21")	4106	lbs
Wind	Wind	Full Area		5.00 (1.00')	psf
Self-weight	Dead	Axial		156	lbs

Reactions (lbs):

Unfactored:			
Lateral:			
Dead	6		-6
Snow	18		-18
Wind	58		58
Axial:			
Dead	1572		1572
Snow	4106		4106
Factored:			
R->L			-19
Load comb			#2
L->R	42		31
Load comb	#3		#4

LSL n-ply, Weyerhaeuser, 1.5E-2250Fb, 1-1/2"x7-1/4", 2-ply (3"x7-1/4")

Support: Non-wood

Total length: 23.0'; Volume = 3.5 cu.ft.

Pinned base; Load face = width(b); Built-up fastener: nails; $K_e \times L_b: 1.0 \times 0.0 = 0.0$ ft; $K_e \times L_d: 1.0 \times 23.0 = 23.0$ ft;

Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.**Analysis vs. Allowable Stress and Deflection using NDS 2024 :**

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	$V = 42$	$V_r = 12302$	lbs	$V/V_r = 0.00$
Bending (+)	$f_b = 198$	$F_b' = 2717$	psi	$f_b/F_b' = 0.07$
Axial	$f_c = 204$	$F_c' = 432$	psi	$f_c/F_c' = 0.47$
Combined	$f_c = 204$	$F_c' = 432$	psi	Eq. 15.4-3 = 0.37
Axial Bearing	$f_c = 204$	$F_c^* = 2421$	psi	$f_c/F_c^* = 0.08$
Live Defl'n	$0.19 = < L/999$	$1.15 = L/240$	in	0.16
Total Defl'n	$0.27 = < L/999$	$1.15 = L/240$	in	0.24

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CV	Cfu	Cr	Cfrt	CF	LC#
Fv'	505	1.60	—	1.00	—	—	—	—	1.00	—	3
Fb'+	2250	1.15	—	1.00	1.000	1.050	—	1.00	1.00	—	2
Fc'	2105	1.15	—	1.00	0.178	—	—	—	1.00	—	2
E'	1.5 million	—	—	1.00	—	—	—	—	1.00	—	3
Emin'	0.78 million	—	—	1.00	—	—	—	—	1.00	—	3
Eminy'	0.78 million	—	—	1.00	—	—	—	—	1.00	—	3
Fc*	2105	1.15	—	1.00	—	—	—	—	1.00	—	2
Comb'd Fc'	432	1.15	—	1.00	1.00	—	—	—	1.00	—	2
Comb'd Fb	2717	1.15	—	1.00	1.00	0.000	—	—	1.00	—	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #3 = D + 0.75(0.7S + 0.6W)
 Bending(+): LC #2 = D + 0.7S
 Deflection: LC #3 = D + 0.75(0.7S + 0.6W) (live)
 LC #3 = D + 0.75(0.7S + 0.6W) (total)
 Axial : LC #2 = D + 0.7S
 Combined : LC #2 = D + 0.7S
 Load Types: D=dead S=snow W=wind
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 42 lbs; M(+) = 433 lbs-ft; P = 4447 lbs, Kf = 1.00
 EI = 71.45e06 lb-in²/ply Apparent E approximates the effect of shear deflection.
 Combined (psi): Fb' = 2717; fb = fc(6e/d) = 198; Fc' = 432; fc = 204; FcE = 441
 Combined: M = 0.00 lbs-ft; P = -4447 lbs
 "Live" deflection is due to all non-dead loads (live, wind, snow...)
 Total deflection = 1.50 permanent + "live"
 Axial d governs, le/b full = 0.0, le/b 1-ply = 0.0, le/d = 38.1

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.
4. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.
5. SCL: Structural composite lumber design has assumed: - dry service conditions - no preservative or fire-retardant treatment - no notches
6. BUILT-UP SCL: Contact manufacturer for connection details when side-loaded or when loads are not applied equally to all plies.
7. SCL: Deflection is calculated using an apparent modulus of elasticity E that incorporates the effect of shear deflection.



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PROJECT

Aug. 31, 2026 14:00

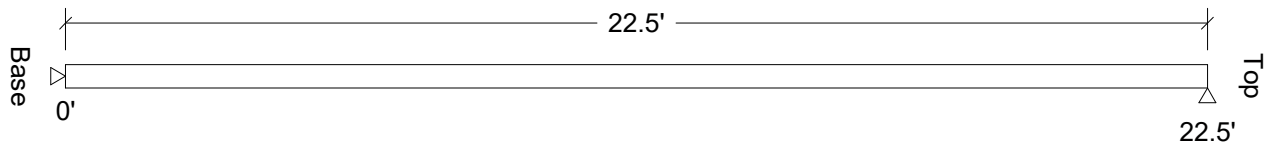
W7

Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft]		Magnitude		Unit
			Start	End	Start	End	
DL	Dead	Axial UDL	(Ecc. = 0.92")		72		plf
SL	Snow	Axial UDL	(Ecc. = 0.92")		209		plf
Wind	Wind	Full Area			16.00 (12.0")		psf
Self-weight	Dead	Axial UDL			0		plf

Reactions (lbs):

Unfactored:			
Lateral:			
Dead	0		-0
Snow	1		-1
Wind	180		180
Axial:			
Dead	72		72
Snow	209		209
Factored:			
R->L			-1
Load comb			#2
L->R	108		108
Load comb	#5		#4

LSL Studs, Weyerhaeuser, 1.3E-1700Fb, 1-1/2"x5-1/2", 2-ply (3"x5-1/2")

Support: None

Spaced at 12.0" c/c; Total length: 22.5'; Volume = 2.6 cu.ft.

Pinned base; Load face = width(b); $K_e \times L_b: 1.0 \times 0.0 = 0.0$ ft; $K_e \times L_d: 1.0 \times 22.5 = 22.5$ ft; Repetitive factor: applied where permitted (refer to online help);**This section PASSES the design code check.****Analysis vs. Allowable Stress and Deflection using NDS 2024 :**

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	$V = 108$	$V_r = 8004$	lbs	$V/V_r = 0.01$
Bending (+)	$f_b = 483$	$F_b' = 2910$	psi	$f_b/F_b' = 0.17$
Axial	$f_c = 13$	$F_c' = 227$	psi	$f_c/F_c' = 0.06$
Combined	$f_c = 4$	$F_c' = 228$	psi	Eq. 15.4-1 = 0.17
Axial Bearing	$f_c = 13$	$F_c^* = 2110$	psi	$f_c/F_c^* = 0.01$
Live Defl'n	$1.02 = L/263$	$1.12 = L/240$	in	0.91
Total Defl'n	$1.03 = L/261$	$1.12 = L/240$	in	0.92

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CV	Cfu	Cr	Cfrt	CF	LC#
Fv'	425	1.60	—	1.00	—	—	—	—	1.00	—	4
Fb'+	1700	1.60	—	1.00	1.000	1.070	—	1.00	1.00	—	4
Fc'	1835	1.15	—	1.00	0.108	—	—	—	1.00	—	2
Fc'comb	1835	1.60	—	—	0.078	—	—	—	—	—	5
E'	1.3 million	—	—	1.00	—	—	—	—	1.00	—	5
Emin'	0.67 million	—	—	1.00	—	—	—	—	1.00	—	5
Eminy'	0.67 million	—	—	1.00	—	—	—	—	1.00	—	5
Fc*	1835	1.15	—	1.00	—	—	—	—	1.00	—	2
Comb'd Fc'	228	1.60	—	1.00	1.00	—	—	—	1.00	—	2
Comb'd Fb	2910	1.60	—	1.00	1.00	0.000	—	—	1.00	—	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #4 = 0.6D + 0.6W
 Bending(+): LC #4 = 0.6D + 0.6W
 Deflection: LC #4 = 0.6D + 0.6W (live)
 LC #5 = D + 0.6W (total)
 Axial : LC #2 = D + 0.7S
 Combined : LC #5 = D + 0.6W
 Load Types: D=dead S=snow W=wind
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 108 lbs; M(+) = 609 lbs-ft; P = 218 lbs, Kf = 1.00
 EI = 27.04e06 lb-in²/ply Apparent E approximates the effect of shear deflection.
 Combined (psi): Fb' = 2910; fb(lat) = 482; fb(ecc) = fc(6e/d) = 4;
 Fc' = 228; fc = 4; FcE = 230
 Combined: M = 607.50 lbs-ft; P = -72 lbs
 "Live" deflection is due to all non-dead loads (live, wind, snow...)
 Total deflection = 1.50 permanent + "live"
 Axial d governs, le/b full = 0.0, le/b 1-ply = 0.0, le/d = 49.1

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.
4. SCL: Structural composite lumber design has assumed: - dry service conditions - no preservative or fire-retardant treatment - no notches
5. BUILT-UP SCL: Contact manufacturer for connection details when side-loaded or when loads are not applied equally to all plies.
6. SCL: Deflection is calculated using an apparent modulus of elasticity E that incorporates the effect of shear deflection.

FROELICH CONSULTING ENGINEERS

client: Steele
 project: Chiloquin Fitness
 job number: 26-B224
 date: 9/2/2026
 by: MP

NOTE:

Reference column
 and footing tables on
 the following pages for
 all columns not
 specifically calculated
 in this calculation

Columns & Footings

Strip FTG
 FTG 1

Location: W1

Loads:

Loading		Trib.			
Roof DL:	24 psf x	29.00 ft	=	696	plf
Roof SL:	69.6 psf x	29.00 ft	=	2018	plf
Wall DL:	10 psf x	22.50 ft	=	225	plf
Floor DL:	0 psf x	0.00 ft	=	0	plf
Floor LL:	0 psf x	0.00 ft	=	0	plf

$$14 \text{ in/12in} \times 10 \text{ in/12in} \times 150 \text{ psf} = 146 \text{ plf}$$

$$\text{Controlling Load Case: DL+0.7*SL} = 2480 \text{ plf}$$

Bearing Capacity:

Allowable Bearing	Actual Bearing	DCR
2500	2125	0.85

Strip Footing:

14"x10"x Cont FTG
 w/ (1)

Add as needed to
 existing CMU wall ftg

Strip FTG
 FTG 2

Location: W2

Loads:

Loading		Trib.			
Roof DL:	24 psf x	32.50 ft	=	780	plf
Roof SL:	69.6 psf x	32.50 ft	=	2262	plf
Wall DL:	10 psf x	17.50 ft	=	175	plf
Floor DL:	0 psf x	0.00 ft	=	0	plf
Floor LL:	0 psf x	0.00 ft	=	0	plf

$$24 \text{ in/12in} \times 10 \text{ in/12in} \times 150 \text{ psf} = 250 \text{ plf}$$

$$\text{Controlling Load Case: DL+0.7*SL} = 2788 \text{ plf}$$

Bearing Capacity:

Allowable Bearing	Actual Bearing	DCR
2500	1394	0.56

Strip Footing:

24"x10"x Cont FTG
 w/ (3)

Strip FTG
 FTG 3

Location: W3

Loads:

Loading		Trib.			
Roof DL:	24 psf x	29.00 ft	=	696	plf
Roof SL:	69.6 psf x	29.00 ft	=	2018	plf
Wall DL:	10 psf x	17.00 ft	=	170	plf
Floor DL:	0 psf x	0.00 ft	=	0	plf
Floor LL:	0 psf x	0.00 ft	=	0	plf

$$24 \text{ in/12in} \times 10 \text{ in/12in} \times 150 \text{ psf} = 250 \text{ plf}$$

$$\text{Controlling Load Case: DL+0.7*SL} = 2529 \text{ plf}$$

Bearing Capacity:

Allowable Bearing	Actual Bearing	DCR
2500	1264	0.51

Strip Footing:

24"x10"x Cont FTG
 w/ (3)

Strip FTG
 FTG 4

Location: W4

Loads:

	Roof DL:	24	psf	x	27.00	ft	=	648	plf
	Roof SL:	69.6	psf	x	27.00	ft	=	1879	plf
	Wall DL:	10	psf	x	12.75	ft	=	128	plf
	Floor DL:	0	psf	x	0.00	ft	=	0	plf
	Floor LL:	0	psf	x	0.00	ft	=	0	plf

$$\boxed{24} \text{ in/12in} \times \boxed{10} \text{ in/12in} \times \boxed{150} \text{ psf} = \underline{250} \text{ plf}$$

Controlling Load Case: DL+0.7*SL = 2341 plf

Bearing Capacity:

Allowable Bearing	Actual Bearing	DCR
2500	1170	0.47

Strip Footing:

24"x10"x Cont FTG
w/ (3)

Strip FTG
FTG 5

Location: W5
Loads:

	Roof DL:	24	psf	x	36.50	ft	=	876	plf
	Roof SL:	69.6	psf	x	36.50	ft	=	2540	plf
	Wall DL:	10	psf	x	13.50	ft	=	135	plf
	Floor DL:	0	psf	x	0.00	ft	=	0	plf
	Floor LL:	0	psf	x	0.00	ft	=	0	plf

$$\boxed{24} \text{ in/12in} \times \boxed{10} \text{ in/12in} \times \boxed{150} \text{ psf} = \underline{250} \text{ plf}$$

Controlling Load Case: DL+0.7*SL = 3039 plf

Bearing Capacity:

Allowable Bearing	Actual Bearing	DCR
2500	1520	0.61

Strip Footing:

24"x10"x Cont FTG
w/ (3)

Strip FTG
FTG 6

Location: W6
Loads:

	Roof DL:	24	psf	x	29.50	ft	=	708	plf
	Roof SL:	69.6	psf	x	29.50	ft	=	2053	plf
	Wall DL:	10	psf	x	23.00	ft	=	230	plf
	Floor DL:	0	psf	x	0.00	ft	=	0	plf
	Floor LL:	0	psf	x	0.00	ft	=	0	plf

$$\boxed{24} \text{ in/12in} \times \boxed{10} \text{ in/12in} \times \boxed{150} \text{ psf} = \underline{250} \text{ plf}$$

Controlling Load Case: DL+0.7*SL = 2625 plf

Bearing Capacity:

Allowable Bearing	Actual Bearing	DCR
2500	1313	0.53

Strip Footing:

24"x10"x Cont FTG
w/ (3)

Strip FTG
FTG 7

Location: W7, W8
Loads:

	Roof DL:	24	psf	x	3.00	ft	=	72	plf
	Roof SL:	69.6	psf	x	3.00	ft	=	208.8	plf
	Wall DL:	10	psf	x	22.50	ft	=	225	plf
	Floor DL:	0	psf	x	0.00	ft	=	0	plf
	Floor LL:	0	psf	x	0.00	ft	=	0	plf

$$\boxed{24} \text{ in/12in} \times \boxed{10} \text{ in/12in} \times \boxed{150} \text{ psf} = \underline{250} \text{ plf}$$

Controlling Load Case: DL+0.7*SL = 693 plf

Bearing Capacity:

Strip Footing:

24"x10"x Cont FTG
w/ (3)

Allowable Bearing	Actual Bearing	DCR
2500	347	0.14

Column C1	Location: Beam B1 Height: 17'-6" Loads: <table><tr><td></td><td>Loading</td><td></td><td></td><td>Load Ratio</td><td></td><td></td></tr><tr><td>B1 DL:</td><td>10829</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>10829 lbs</td></tr><tr><td>LL:</td><td>0</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>0 lbs</td></tr><tr><td>SL:</td><td>29549</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>29549 lbs</td></tr><tr><td colspan="5">Controlling Load Case: DL+0.7*SL</td><td>=</td><td>31513 lbs</td></tr></table>		Loading			Load Ratio			B1 DL:	10829	lbs	x	1	=	10829 lbs	LL:	0	lbs	x	1	=	0 lbs	SL:	29549	lbs	x	1	=	29549 lbs	Controlling Load Case: DL+0.7*SL					=	31513 lbs	Column: HSS6x6x3/16 Footings: 48"x48"x12" Conc FTG w/(4) #5 bars ea way																					
	Loading			Load Ratio																																																						
B1 DL:	10829	lbs	x	1	=	10829 lbs																																																				
LL:	0	lbs	x	1	=	0 lbs																																																				
SL:	29549	lbs	x	1	=	29549 lbs																																																				
Controlling Load Case: DL+0.7*SL					=	31513 lbs																																																				
Column C2	Location: Beam B2 Height: 17'-6" Loads: <table><tr><td></td><td>Loading</td><td></td><td></td><td>Load Ratio</td><td></td><td></td></tr><tr><td>B2 DL:</td><td>3374</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>3374 lbs</td></tr><tr><td>LL:</td><td>0</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>0 lbs</td></tr><tr><td>SL:</td><td>10174</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>10174 lbs</td></tr><tr><td colspan="5">Controlling Load Case: DL+0.7*SL</td><td>=</td><td>10496 lbs</td></tr></table>		Loading			Load Ratio			B2 DL:	3374	lbs	x	1	=	3374 lbs	LL:	0	lbs	x	1	=	0 lbs	SL:	10174	lbs	x	1	=	10174 lbs	Controlling Load Case: DL+0.7*SL					=	10496 lbs	Column: 6-3/4"x6" GL Col Combination 2 Footings: 30"x30"x10" Conc FTG w/(2) #5 bars ea way																					
	Loading			Load Ratio																																																						
B2 DL:	3374	lbs	x	1	=	3374 lbs																																																				
LL:	0	lbs	x	1	=	0 lbs																																																				
SL:	10174	lbs	x	1	=	10174 lbs																																																				
Controlling Load Case: DL+0.7*SL					=	10496 lbs																																																				
Column C3	Location: Beam B3 Height: 17'-6" Loads: <table><tr><td></td><td>Loading</td><td></td><td></td><td>Load Ratio</td><td></td><td></td></tr><tr><td>B2 DL:</td><td>3620</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>3620 lbs</td></tr><tr><td>LL:</td><td>0</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>0 lbs</td></tr><tr><td>SL:</td><td>15053</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>15053 lbs</td></tr><tr><td colspan="5">Controlling Load Case: DL+0.7*SL</td><td>=</td><td>14157 lbs</td></tr></table>		Loading			Load Ratio			B2 DL:	3620	lbs	x	1	=	3620 lbs	LL:	0	lbs	x	1	=	0 lbs	SL:	15053	lbs	x	1	=	15053 lbs	Controlling Load Case: DL+0.7*SL					=	14157 lbs	Column: 6-3/4"x6" GL Col Combination 2 Footings: 30"x30"x10" Conc FTG w/(2) #5 bars ea way																					
	Loading			Load Ratio																																																						
B2 DL:	3620	lbs	x	1	=	3620 lbs																																																				
LL:	0	lbs	x	1	=	0 lbs																																																				
SL:	15053	lbs	x	1	=	15053 lbs																																																				
Controlling Load Case: DL+0.7*SL					=	14157 lbs																																																				
Column C3_alt	Location: Beam B3 and Beam B6 Height: 17'-6" Loads: <table><tr><td></td><td>Loading</td><td></td><td></td><td>Load Ratio</td><td></td><td></td></tr><tr><td>B2 DL:</td><td>3620</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>3620 lbs</td></tr><tr><td>LL:</td><td>0</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>0 lbs</td></tr><tr><td>SL:</td><td>15053</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>15053 lbs</td></tr><tr><td>B6 DL:</td><td>2481</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>2481 lbs</td></tr><tr><td>LL:</td><td>0</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>0 lbs</td></tr><tr><td>SL:</td><td>7085</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>7085 lbs</td></tr><tr><td colspan="5">Controlling Load Case: DL+0.7*SL</td><td>=</td><td>21598 lbs</td></tr></table>		Loading			Load Ratio			B2 DL:	3620	lbs	x	1	=	3620 lbs	LL:	0	lbs	x	1	=	0 lbs	SL:	15053	lbs	x	1	=	15053 lbs	B6 DL:	2481	lbs	x	1	=	2481 lbs	LL:	0	lbs	x	1	=	0 lbs	SL:	7085	lbs	x	1	=	7085 lbs	Controlling Load Case: DL+0.7*SL					=	21598 lbs	NOTE: NOT USED Column: HSS6x6x3/16 Footings: 48"x48"x12" Conc FTG w/(4) #5 bars ea way
	Loading			Load Ratio																																																						
B2 DL:	3620	lbs	x	1	=	3620 lbs																																																				
LL:	0	lbs	x	1	=	0 lbs																																																				
SL:	15053	lbs	x	1	=	15053 lbs																																																				
B6 DL:	2481	lbs	x	1	=	2481 lbs																																																				
LL:	0	lbs	x	1	=	0 lbs																																																				
SL:	7085	lbs	x	1	=	7085 lbs																																																				
Controlling Load Case: DL+0.7*SL					=	21598 lbs																																																				
Column C4	Location: Beam B4 Height: 17'-0" Loads: <table><tr><td></td><td>Loading</td><td></td><td></td><td>Load Ratio</td><td></td><td></td></tr><tr><td>B4 DL:</td><td>5345</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>5345 lbs</td></tr><tr><td>LL:</td><td>0</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>0 lbs</td></tr><tr><td>SL:</td><td>15009</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>15009 lbs</td></tr><tr><td colspan="5">Controlling Load Case: DL+0.7*SL</td><td>=</td><td>15851 lbs</td></tr></table>		Loading			Load Ratio			B4 DL:	5345	lbs	x	1	=	5345 lbs	LL:	0	lbs	x	1	=	0 lbs	SL:	15009	lbs	x	1	=	15009 lbs	Controlling Load Case: DL+0.7*SL					=	15851 lbs	Column: HSS6x6x3/16 Combination 2 Footings: 36"x36"x12" Conc FTG w/(3) #5 bars ea way																					
	Loading			Load Ratio																																																						
B4 DL:	5345	lbs	x	1	=	5345 lbs																																																				
LL:	0	lbs	x	1	=	0 lbs																																																				
SL:	15009	lbs	x	1	=	15009 lbs																																																				
Controlling Load Case: DL+0.7*SL					=	15851 lbs																																																				
Column C5	Location: Beam B5 Height: 11'-0" Loads: <table><tr><td></td><td>Loading</td><td></td><td></td><td>Load Ratio</td><td></td><td></td></tr><tr><td>B5 DL:</td><td>2569</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>2569 lbs</td></tr><tr><td>LL:</td><td>0</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>0 lbs</td></tr><tr><td>SL:</td><td>6496</td><td>lbs</td><td>x</td><td>1</td><td>=</td><td>6496 lbs</td></tr><tr><td colspan="5">Controlling Load Case: DL+0.7*SL</td><td>=</td><td>7116 lbs</td></tr></table>		Loading			Load Ratio			B5 DL:	2569	lbs	x	1	=	2569 lbs	LL:	0	lbs	x	1	=	0 lbs	SL:	6496	lbs	x	1	=	6496 lbs	Controlling Load Case: DL+0.7*SL					=	7116 lbs	Column: HSS5x5x3/16 Footings: 24"x24"x12" Conc FTG w/(2) #5 bars ea way																					
	Loading			Load Ratio																																																						
B5 DL:	2569	lbs	x	1	=	2569 lbs																																																				
LL:	0	lbs	x	1	=	0 lbs																																																				
SL:	6496	lbs	x	1	=	6496 lbs																																																				
Controlling Load Case: DL+0.7*SL					=	7116 lbs																																																				
Column	Location: Beam B6																																																									

C6	Height: 17'-5" <See C3_alt above>																										
Column C7	Location: Beam B7 (same as B6) Height: 8'-0" (cripple at header) Loads: <table><tr><td colspan="2">Loading</td><td colspan="2">Load Ratio</td><td></td></tr><tr><td>B6 DL:</td><td>2481 lbs</td><td>x</td><td>1</td><td>= 2481 lbs</td></tr><tr><td>LL:</td><td>0 lbs</td><td>x</td><td>1</td><td>= 0 lbs</td></tr><tr><td>SL:</td><td>7085 lbs</td><td>x</td><td>1</td><td>= 7085 lbs</td></tr><tr><td colspan="4">Controlling Load Case: DL+0.7*SL</td><td>= 7441 lbs</td></tr></table>	Loading		Load Ratio			B6 DL:	2481 lbs	x	1	= 2481 lbs	LL:	0 lbs	x	1	= 0 lbs	SL:	7085 lbs	x	1	= 7085 lbs	Controlling Load Case: DL+0.7*SL				= 7441 lbs	Column: (2) 2x8 DF or LSL Footing: Typ 24"x24"xCont FTG okay
Loading		Load Ratio																									
B6 DL:	2481 lbs	x	1	= 2481 lbs																							
LL:	0 lbs	x	1	= 0 lbs																							
SL:	7085 lbs	x	1	= 7085 lbs																							
Controlling Load Case: DL+0.7*SL				= 7441 lbs																							
Column C8	Location: Beam B8 Height: 8'-0" (cripple at header) Loads: <table><tr><td colspan="2">Loading</td><td colspan="2">Load Ratio</td><td></td></tr><tr><td>B8 DL:</td><td>3718 lbs</td><td>x</td><td>1</td><td>= 3718 lbs</td></tr><tr><td>LL:</td><td>0 lbs</td><td>x</td><td>1</td><td>= 0 lbs</td></tr><tr><td>SL:</td><td>10537 lbs</td><td>x</td><td>1</td><td>= 10537 lbs</td></tr><tr><td colspan="4">Controlling Load Case: DL+0.7*SL</td><td>= 11094 lbs</td></tr></table>	Loading		Load Ratio			B8 DL:	3718 lbs	x	1	= 3718 lbs	LL:	0 lbs	x	1	= 0 lbs	SL:	10537 lbs	x	1	= 10537 lbs	Controlling Load Case: DL+0.7*SL				= 11094 lbs	Column: (2) 2x8 DF or LSL Footing: 30"x30"x10" Conc FTG w/(3) #5 bars ea way
Loading		Load Ratio																									
B8 DL:	3718 lbs	x	1	= 3718 lbs																							
LL:	0 lbs	x	1	= 0 lbs																							
SL:	10537 lbs	x	1	= 10537 lbs																							
Controlling Load Case: DL+0.7*SL				= 11094 lbs																							
Column C9	Location: Beam H1 Height: 9'-0" (cripple at header) Loads: <table><tr><td colspan="2">Loading</td><td colspan="2">Load Ratio</td><td></td></tr><tr><td>H1 DL:</td><td>2480 lbs</td><td>x</td><td>1</td><td>= 2480 lbs</td></tr><tr><td>LL:</td><td>0 lbs</td><td>x</td><td>1</td><td>= 0 lbs</td></tr><tr><td>SL:</td><td>7091 lbs</td><td>x</td><td>1</td><td>= 7091 lbs</td></tr><tr><td colspan="4">Controlling Load Case: DL+0.7*SL</td><td>= 7444 lbs</td></tr></table>	Loading		Load Ratio			H1 DL:	2480 lbs	x	1	= 2480 lbs	LL:	0 lbs	x	1	= 0 lbs	SL:	7091 lbs	x	1	= 7091 lbs	Controlling Load Case: DL+0.7*SL				= 7444 lbs	Column: (2) 2x6 DF#1 or LSL Footing: Typ 24"x24"xCont FTG okay
Loading		Load Ratio																									
H1 DL:	2480 lbs	x	1	= 2480 lbs																							
LL:	0 lbs	x	1	= 0 lbs																							
SL:	7091 lbs	x	1	= 7091 lbs																							
Controlling Load Case: DL+0.7*SL				= 7444 lbs																							
Column C10	Location: Beam H2 Height: 9'-0" (cripple at header) Loads: <table><tr><td colspan="2">Loading</td><td colspan="2">Load Ratio</td><td></td></tr><tr><td>H2 DL:</td><td>1514 lbs</td><td>x</td><td>1</td><td>= 1514 lbs</td></tr><tr><td>LL:</td><td>0 lbs</td><td>x</td><td>1</td><td>= 0 lbs</td></tr><tr><td>SL:</td><td>4352 lbs</td><td>x</td><td>1</td><td>= 4352 lbs</td></tr><tr><td colspan="4">Controlling Load Case: DL+0.7*SL</td><td>= 4560 lbs</td></tr></table>	Loading		Load Ratio			H2 DL:	1514 lbs	x	1	= 1514 lbs	LL:	0 lbs	x	1	= 0 lbs	SL:	4352 lbs	x	1	= 4352 lbs	Controlling Load Case: DL+0.7*SL				= 4560 lbs	Column: (2) 2x6 DF or LSL Footing: Typ 24"x24"xCont FTG okay
Loading		Load Ratio																									
H2 DL:	1514 lbs	x	1	= 1514 lbs																							
LL:	0 lbs	x	1	= 0 lbs																							
SL:	4352 lbs	x	1	= 4352 lbs																							
Controlling Load Case: DL+0.7*SL				= 4560 lbs																							
Column C11	Location: Beam H3 Height: 9'-0" (cripple at header) Loads: <table><tr><td colspan="2">Loading</td><td colspan="2">Load Ratio</td><td></td></tr><tr><td>H3 DL:</td><td>8128 lbs</td><td>x</td><td>1</td><td>= 8128 lbs</td></tr><tr><td>LL:</td><td>0 lbs</td><td>x</td><td>1</td><td>= 0 lbs</td></tr><tr><td>SL:</td><td>22735 lbs</td><td>x</td><td>1</td><td>= 22735 lbs</td></tr><tr><td colspan="4">Controlling Load Case: DL+0.7*SL</td><td>= 24043 lbs</td></tr></table>	Loading		Load Ratio			H3 DL:	8128 lbs	x	1	= 8128 lbs	LL:	0 lbs	x	1	= 0 lbs	SL:	22735 lbs	x	1	= 22735 lbs	Controlling Load Case: DL+0.7*SL				= 24043 lbs	Column: 5-1/8"x6" GL Col Combination 2 Footing: 48"x48"x12" Conc FTG w/(4) #5 bars ea way
Loading		Load Ratio																									
H3 DL:	8128 lbs	x	1	= 8128 lbs																							
LL:	0 lbs	x	1	= 0 lbs																							
SL:	22735 lbs	x	1	= 22735 lbs																							
Controlling Load Case: DL+0.7*SL				= 24043 lbs																							
Column C12	Location: Beam H4 Height: 9'-0" (cripple at header) Loads: <table><tr><td colspan="2">Loading</td><td colspan="2">Load Ratio</td><td></td></tr><tr><td>H4 DL:</td><td>641 lbs</td><td>x</td><td>1</td><td>= 641 lbs</td></tr><tr><td>LL:</td><td>0 lbs</td><td>x</td><td>1</td><td>= 0 lbs</td></tr><tr><td>SL:</td><td>1570 lbs</td><td>x</td><td>1</td><td>= 1570 lbs</td></tr><tr><td colspan="4">Controlling Load Case: DL+0.7*SL</td><td>= 1740 lbs</td></tr></table>	Loading		Load Ratio			H4 DL:	641 lbs	x	1	= 641 lbs	LL:	0 lbs	x	1	= 0 lbs	SL:	1570 lbs	x	1	= 1570 lbs	Controlling Load Case: DL+0.7*SL				= 1740 lbs	Column: 2x6 DF or LSL Footing: Typ 24"x24"xCont FTG okay BY INSPECTION
Loading		Load Ratio																									
H4 DL:	641 lbs	x	1	= 641 lbs																							
LL:	0 lbs	x	1	= 0 lbs																							
SL:	1570 lbs	x	1	= 1570 lbs																							
Controlling Load Case: DL+0.7*SL				= 1740 lbs																							
Column C13	Location: Beam H5 Height: 9'-0" (cripple at header) Loads: <table><tr><td colspan="2">Loading</td><td colspan="2">Load Ratio</td><td></td></tr><tr><td>H5 DL:</td><td>241 lbs</td><td>x</td><td>1</td><td>= 241 lbs</td></tr></table>	Loading		Load Ratio			H5 DL:	241 lbs	x	1	= 241 lbs	Column: <SIM to C12>															
Loading		Load Ratio																									
H5 DL:	241 lbs	x	1	= 241 lbs																							

	LL: 0 lbs x 1 = 0 lbs SL: 631 lbs x 1 = 631 lbs <u>Controlling Load Case: DL+0.7*SL</u> = 683 lbs	Footings: <SIM to C12>
Column C14	Location: Beam H6 Height: 9'-0" (cripple at header) Loads: Loading Load Ratio H6 DL: 2063 lbs x 1 = 2063 lbs LL: 0 lbs x 1 = 0 lbs SL: 5881 lbs x 1 = 5881 lbs <u>Controlling Load Case: DL+0.7*SL</u> = 6180 lbs	Column: <SIM to C9> Footings: <SIM to C9>
Column C15	Location: Beam H7 Height: 9'-0" (cripple at header) Loads: Loading Load Ratio H7 DL: 1514 lbs x 1 = 1514 lbs LL: 0 lbs x 1 = 0 lbs SL: 4352 lbs x 1 = 4352 lbs <u>Controlling Load Case: DL+0.7*SL</u> = 4560 lbs	Column: <SIM to C10> Footings: <SIM to C10>
Column C16	Location: Beam H8 Height: 10'-0" (cripple at header) Loads: Loading Load Ratio H8 DL: 3458 lbs x 1 = 3458 lbs LL: 0 lbs x 1 = 0 lbs SL: 9802 lbs x 1 = 9802 lbs <u>Controlling Load Case: DL+0.7*SL</u> = 10319 lbs	Column: (3) 2x6 DF or LSL Footings: <input #5="" (2)="" bars="" conc="" ea="" ftg="" type="text" value="30" w="" way"="" x30"x10"=""/>

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Column

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Column, C1

Code References

Governing Code : IBC 2024
Referenced Design Standard(s) : AISC 360-22
Load Combinations Used : ASCE 7-22 / IBC 2024

Rho (or Omega) = 1.00

General Information

Steel Section Name : **HSS6x6x3/16**
Analysis Method : Allowable Strength
Steel Stress Grade
Fy : Steel Yield 46 ksi
E : Elastic Bending Modulus 29,000.0 ksi

Overall Column Height 17.5 ft
Top & Bottom Fixity Top & Bottom Pinned
Brace condition :
Unbraced Length for buckling ABOUT X-X Axis = 17.5 ft, K = 1.0
Unbraced Length for buckling ABOUT Y-Y Axis = 17.5 ft, K = 1.0

Applied Loads

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

Column self weight included : 254.275 lbs * Dead Load Factor

AXIAL LOADS . . .

Axial Load at 17.50 ft, Xecc = 0.250 in, Yecc = 0.250 in, D = 10.829, S = 29.549 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.5541** : 1
Load Combination +D+0.70S
Location of max.above base 17.383 ft
At maximum location values are . . .
Pa : Axial 31.768 k
Pn / Omega : Allowable 64.648 k
Ma-x : Applied -0.6521 k-ft
Mn-x / Omega : Allowable 18.481 k-ft
Ma-y : Applied -0.6521 k-ft
Mn-y / Omega : Allowable 18.486 k-ft

Maximum Load Reactions . .
Top along X-X 0.03752 k
Bottom along X-X 0.03752 k
Top along Y-Y 0.03752 k
Bottom along Y-Y 0.03752 k

Maximum Load Deflections . . .
Along Y-Y -0.03476 in at 10.218ft above base
for load combination : +D+0.70S L/ 6,040.0
Along X-X -0.03476 in at 10.218ft above base
for load combination : +D+0.70S L/ 6,040.0

PASS Maximum Shear Stress Ratio **0.001191** : 1
Load Combination +D+0.70S
Location of max.above base 0.0 ft
At maximum location values are . . .
Va : Applied 0.03752 k
Vn / Omega : Allowable 31.506 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	0.171	PASS	0.00 ft	1.66	1.66	88.61	88.61	0.000	PASS	0.00 ft
+D+0.70S	0.554	PASS	17.38 ft	1.66	1.66	88.61	88.61	0.001	PASS	0.00 ft
+D+0.5250S	0.464	PASS	17.38 ft	1.66	1.66	88.61	88.61	0.001	PASS	0.00 ft
+0.60D	0.103	PASS	0.00 ft	1.66	1.66	88.61	88.61	0.000	PASS	0.00 ft
+D+0.10S	0.245	PASS	17.38 ft	1.66	1.66	88.61	88.61	0.001	PASS	0.00 ft

Reactions for Load Cases

Note: Only non-zero reactions are listed.

Load Combination	Axial (k)		Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
	@ Base		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	11.083		0.013	-0.013	0.013	-0.013				
S Only	29.549		0.035	-0.035	0.035	-0.035				

Reactions for Load Combinations

Note: Only non-zero reactions are listed.

Load Combination	Axial (k)		Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
	@ Base		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
+D+0.70S	31.768		0.038	-0.038	0.038	-0.038				
+D+0.5250S	26.597		0.031	-0.031	0.031	-0.031				
+0.60D	6.650		0.008	-0.008	0.008	-0.008				
+D+0.10S	14.038		0.016	-0.016	0.016	-0.016				

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Steel Column

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Column, C1

Extreme Reactions

Item	Extreme Value	Axial (k)	Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial, Base Max		31.768								
Axial, Base Min		6.650								
Rx, Base Max			0.038							
Rx, Base Min			0.008							
Rx, Top Max				-0.008						
Rx, Top Min				-0.038						
Ry, Base Max					0.038					
Ry, Base Min					0.008					
Ry, Top Max						-0.008				
Ry, Top Min						-0.038				

Maximum Deflections for Load Combinations

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0119 in	10.218 ft	-0.012 in	10.218 ft
+D+0.70S	-0.0348 in	10.218 ft	-0.035 in	10.218 ft
+D+0.5250S	-0.0291 in	10.218 ft	-0.029 in	10.218 ft
+0.60D	-0.0072 in	10.218 ft	-0.007 in	10.218 ft
+D+0.10S	-0.0152 in	10.218 ft	-0.015 in	10.218 ft
+0.70S	-0.0228 in	10.218 ft	-0.023 in	10.218 ft
S Only	-0.0326 in	10.218 ft	-0.033 in	10.218 ft

Steel Section Properties : HSS6x6x3/16

Depth	=	6.000 in	I xx	=	22.30 in^4	J	=	35.000 in^4
Design Thick	=	0.174 in	S xx	=	7.42 in^3			
Width	=	6.000 in	R xx	=	2.370 in			
Wall Thick	=	0.187 in	Zx	=	8.630 in^3			
Area	=	3.980 in^2	I yy	=	22.300 in^4	C	=	11.800 in^3
Weight	=	14.530 plf	S yy	=	7.420 in^3			
			R yy	=	2.370 in			

Ycg = 0.000 in

Steel Column

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

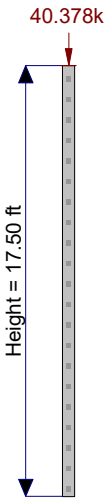
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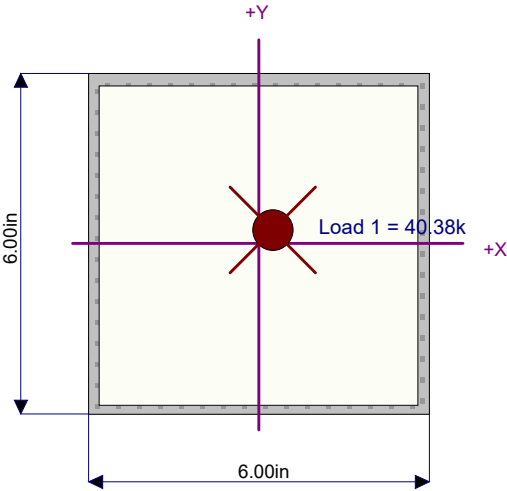
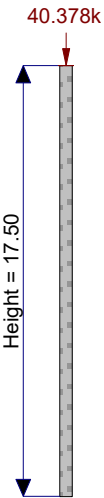
DESCRIPTION: Column, C1

Sketches

My Loads - Looking along Y-Y Axis



Mx Loads - Looking along X-X Axis



Project Title:
Engineer:
Project ID:
Project Descr:

Steel Column

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Column, C4

Code References

Governing Code : IBC 2024
Referenced Design Standard(s) : AISC 360-22
Load Combinations Used : ASCE 7-22 / IBC 2024

Rho (or Omega) = 1.00

General Information

Steel Section Name :	HSS6x6x3/16	Overall Column Height	17 ft
Analysis Method :	Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade		Brace condition :	
Fy : Steel Yield	46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 17 ft, K = 1.0	
E : Elastic Bending Modulus	29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 17 ft, K = 1.0	

Applied Loads

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

Column self weight included : 247.010 lbs * Dead Load Factor

AXIAL LOADS . . .

Axial Load at 17.0 ft, Xecc = 0.250 in, Yecc = 0.250 in, D = 5.345, S = 15.009 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio =	0.2733 : 1	Maximum Load Reactions . .	
Load Combination	+D+0.70S	Top along X-X	0.01943 k
Location of max.above base	16.886 ft	Bottom along X-X	0.01943 k
At maximum location values are . . .		Top along Y-Y	0.01943 k
Pa : Axial	16.098 k	Bottom along Y-Y	0.01943 k
Pn / Omega : Allowable	66.60 k	Maximum Load Deflections . . .	
Ma-x : Applied	-0.3280 k-ft	Along Y-Y -0.01650 in at	9.926ft above base
Mn-x / Omega : Allowable	18.481 k-ft	for load combination : +D+0.70S	L/ 12,362.
Ma-y : Applied	-0.3280 k-ft	Along X-X -0.01650 in at	9.926ft above base
Mn-y / Omega : Allowable	18.486 k-ft	for load combination : +D+0.70S	L/ 12,362.
PASS Maximum Shear Stress Ratio	0.000617 : 1		
Load Combination	+D+0.70S		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.01943 k		
Vn / Omega : Allowable	31.506 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	0.084	PASS	0.00 ft	1.66	1.66	86.08	86.08	0.000	PASS	0.00 ft
+D+0.70S	0.273	PASS	16.89 ft	1.66	1.66	86.08	86.08	0.001	PASS	0.00 ft
+D+0.5250S	0.229	PASS	16.89 ft	1.66	1.66	86.08	86.08	0.001	PASS	0.00 ft
+0.60D	0.050	PASS	0.00 ft	1.66	1.66	86.08	86.08	0.000	PASS	0.00 ft
+D+0.10S	0.106	PASS	0.00 ft	1.66	1.66	86.08	86.08	0.000	PASS	0.00 ft

Reactions for Load Cases

Note: Only non-zero reactions are listed.

Load Combination	Axial (k)		Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
	@ Base		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	5.592		0.007	-0.007	0.007	-0.007				
S Only	15.009		0.018	-0.018	0.018	-0.018				

Reactions for Load Combinations

Note: Only non-zero reactions are listed.

Load Combination	Axial (k)		Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
	@ Base		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
+D+0.70S	16.098		0.019	-0.019	0.019	-0.019				
+D+0.5250S	13.472		0.016	-0.016	0.016	-0.016				
+0.60D	3.355		0.004	-0.004	0.004	-0.004				
+D+0.10S	7.093		0.008	-0.008	0.008	-0.008				

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Steel Column

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Column, C4

Extreme Reactions

Item	Extreme Value	Axial (k)	Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial, Base Max		16.098								
Axial, Base Min		3.355								
Rx, Base Max			0.019							
Rx, Base Min			0.004							
Rx, Top Max				-0.004						
Rx, Top Min				-0.019						
Ry, Base Max					0.019					
Ry, Base Min					0.004					
Ry, Top Max						-0.004				
Ry, Top Min						-0.019				

Maximum Deflections for Load Combinations

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0056 in	9.926 ft	-0.006 in	9.926 ft
+D+0.70S	-0.0165 in	9.926 ft	-0.017 in	9.926 ft
+D+0.5250S	-0.0138 in	9.926 ft	-0.014 in	9.926 ft
+0.60D	-0.0033 in	9.926 ft	-0.003 in	9.926 ft
+D+0.10S	-0.0071 in	9.926 ft	-0.007 in	9.926 ft
+0.70S	-0.0109 in	9.926 ft	-0.011 in	9.926 ft
S Only	-0.0156 in	9.926 ft	-0.016 in	9.926 ft

Steel Section Properties : HSS6x6x3/16

Depth	=	6.000 in	I xx	=	22.30 in^4	J	=	35.000 in^4
Design Thick	=	0.174 in	S xx	=	7.42 in^3			
Width	=	6.000 in	R xx	=	2.370 in			
Wall Thick	=	0.187 in	Zx	=	8.630 in^3			
Area	=	3.980 in^2	I yy	=	22.300 in^4	C	=	11.800 in^3
Weight	=	14.530 plf	S yy	=	7.420 in^3			
			R yy	=	2.370 in			

Ycg = 0.000 in

Steel Column

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

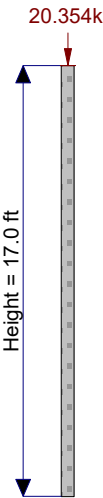
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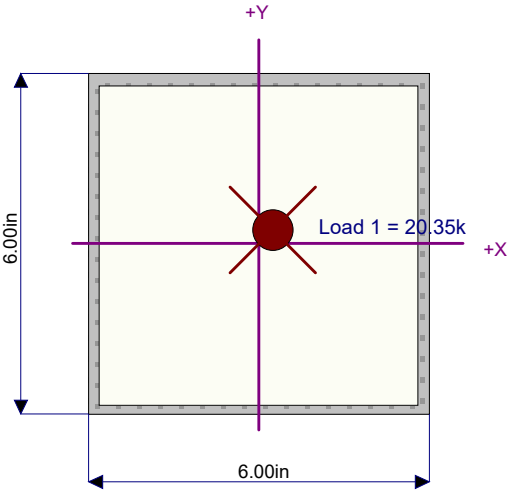
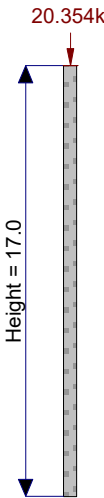
DESCRIPTION: Column, C4

Sketches

My Loads - Looking along Y-Y Axis



Mx Loads - Looking along X-X Axis



Project Title:
Engineer:
Project ID:
Project Descr:

Steel Column

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Column, C5

Code References

Governing Code : IBC 2024
Referenced Design Standard(s) : AISC 360-22
Load Combinations Used : ASCE 7-22 / IBC 2024

Rho (or Omega) = 1.00

General Information

Steel Section Name : **HSS5x5x3/16**
Analysis Method : Allowable Strength
Steel Stress Grade
Fy : Steel Yield 46.0 ksi
E : Elastic Bending Modulus 29,000.0 ksi

Overall Column Height 12 ft
Top & Bottom Fixity Top & Bottom Pinned
Brace condition :
Unbraced Length for buckling ABOUT X-X Axis = 12 ft, K = 1.0
Unbraced Length for buckling ABOUT Y-Y Axis = 12 ft, K = 1.0

Applied Loads

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

Column self weight included : 143.640 lbs * Dead Load Factor

AXIAL LOADS . . .

Axial Load at 12.0 ft, Xecc = 0.250 in, Yecc = 0.250 in, D = 2.569, S = 6.496 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.1155** : 1
Load Combination +D+0.70S
Location of max.above base 0.0 ft
At maximum location values are . . .
Pa : Axial 7.260 k
Pn / Omega : Allowable 62.838 k
Ma-x : Applied 0.0 k-ft
Mn-x / Omega : Allowable 13.520 k-ft
Ma-y : Applied 0.0 k-ft
Mn-y / Omega : Allowable 13.520 k-ft

Maximum Load Reactions . .
Top along X-X 0.01236 k
Bottom along X-X 0.01236 k
Top along Y-Y 0.01236 k
Bottom along Y-Y 0.01236 k

Maximum Load Deflections . .
Along Y-Y -0.006533 in at 7.007ft above base
for load combination : +D+0.70S L/ 22,042.
Along X-X -0.006533 in at 7.007ft above base
for load combination : +D+0.70S L/ 22,042.

PASS Maximum Shear Stress Ratio = **0.000480** : 1
Load Combination +D+0.70S
Location of max.above base 0.0 ft
At maximum location values are . . .
Va : Applied 0.01236 k
Vn / Omega : Allowable 25.755 k

Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios				Cb _x	Cb _y	K _x L _x /R _x	K _y L _y /R _y	Maximum Shear Ratios		
	Stress Ratio	Status	Location						Stress Ratio	Status	Location
D Only	0.043	PASS	0.00 ft		1.66	1.66	73.47	73.47	0.000	PASS	0.00 ft
+D+0.70S	0.116	PASS	0.00 ft		1.66	1.66	73.47	73.47	0.000	PASS	0.00 ft
+D+0.5250S	0.097	PASS	0.00 ft		1.66	1.66	73.47	73.47	0.000	PASS	0.00 ft
+0.60D	0.026	PASS	0.00 ft		1.66	1.66	73.47	73.47	0.000	PASS	0.00 ft
+D+0.10S	0.054	PASS	0.00 ft		1.66	1.66	73.47	73.47	0.000	PASS	0.00 ft

Reactions for Load Cases

Note: Only non-zero reactions are listed.

Load Combination	Axial (k)		R _x (k)		R _y (k)		M _x (k-ft)		M _y (k-ft)	
	@ Base		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	2.713		0.004	-0.004	0.004	-0.004				
S Only	6.496		0.011	-0.011	0.011	-0.011				

Reactions for Load Combinations

Note: Only non-zero reactions are listed.

Load Combination	Axial (k)		R _x (k)		R _y (k)		M _x (k-ft)		M _y (k-ft)	
	@ Base		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
+D+0.70S	7.260		0.012	-0.012	0.012	-0.012				
+D+0.5250S	6.123		0.010	-0.010	0.010	-0.010				
+0.60D	1.628		0.003	-0.003	0.003	-0.003				
+D+0.10S	3.362		0.006	-0.006	0.006	-0.006				

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Steel Column

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Column, C5

Extreme Reactions

Item	Extreme Value	Axial (k)	Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial, Base Max		7.260								
Axial, Base Min		1.628								
Rx, Base Max			0.012							
Rx, Base Min			0.003							
Rx, Top Max				-0.003						
Rx, Top Min				-0.012						
Ry, Base Max					0.012					
Ry, Base Min					0.003					
Ry, Top Max						-0.003				
Ry, Top Min						-0.012				

Maximum Deflections for Load Combinations

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0024 in	7.007 ft	-0.002 in	7.007 ft
+D+0.70S	-0.0065 in	7.007 ft	-0.007 in	7.007 ft
+D+0.5250S	-0.0055 in	7.007 ft	-0.005 in	7.007 ft
+0.60D	-0.0014 in	7.007 ft	-0.001 in	7.007 ft
+D+0.10S	-0.0030 in	7.007 ft	-0.003 in	7.007 ft
+0.70S	-0.0042 in	7.007 ft	-0.004 in	7.007 ft
S Only	-0.0060 in	7.007 ft	-0.006 in	7.007 ft

Steel Section Properties : HSS5x5x3/16

Depth	=	5.000 in	I xx	=	12.60 in^4	J	=	19.900 in^4
Design Thick	=	0.174 in	S xx	=	5.03 in^3			
Width	=	5.000 in	R xx	=	1.960 in			
Wall Thick	=	0.187 in	Zx	=	5.890 in^3			
Area	=	3.280 in^2	I yy	=	12.600 in^4	C	=	8.080 in^3
Weight	=	11.970 plf	S yy	=	5.030 in^3			
			R yy	=	1.960 in			

Ycg = 0.000 in

Steel Column

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

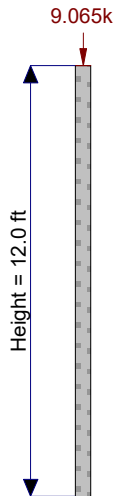
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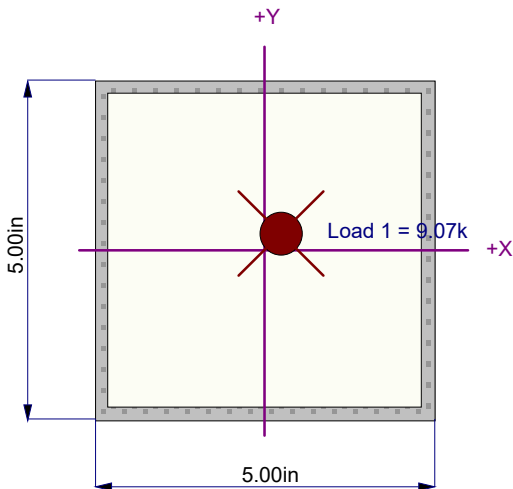
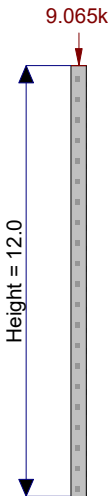
DESCRIPTION: Column, C5

Sketches

My Loads - Looking along Y-Y Axis



Mx Loads - Looking along X-X Axis





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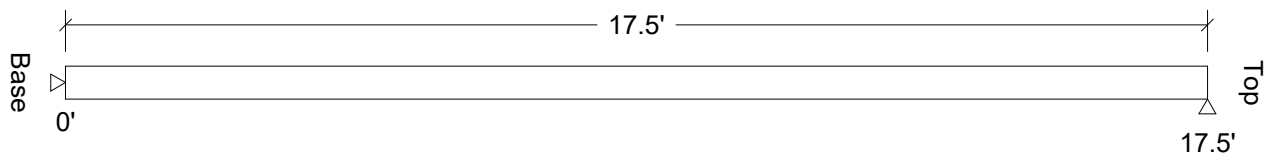
C2

Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft]		Magnitude		Unit
			Start	End	Start	End	
DL	Dead	Axial	(Ecc. = 1.00")		3374		lbs
SL	Snow	Axial	(Ecc. = 1.00")		10174		lbs
Self-weight	Dead	Axial			163		lbs

Reactions (lbs):

Unfactored:			
Lateral:			
Dead	16		-16
Snow	49		-49
Axial:			
Dead	3537		3537
Snow	10174		10174
Factored:			
R->L			-50
Load comb			#2
L->R	50		
Load comb	#2		#1

Glulam-Axial, West Species, 1 (DF L3), 6-3/4"x6"

Support: Non-wood

Total length: 17.5'; Volume = 4.9 cu.ft.; 4 laminations, 6-3/4" maximum width,
Pinned base; Load face = width(b); Ke x Lb: 1.0 x 17.5 = 17.5 ft; Ke x Ld: 1.0 x 17.5 = 17.5 ft;

This section PASSES the design code check.**Analysis vs. Allowable Stress and Deflection using NDS 2024 :**

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 50	Vr = 8228	lbs	V/Vr = 0.01
Bending (+)	fb = 260	Fb' = 1437	psi	fb/Fb' = 0.18
Axial	fc = 263	Fc' = 510	psi	fc/Fc' = 0.52
Combined	fc = 263	Fc' = 510	psi	Eq.15.4-3 = 0.67
Axial Bearing	fc = 263	Fc* = 1782	psi	fc/Fc* = 0.15
Live Defl'n	0.11 = < L/999	0.88 = L/240	in	0.13
Total Defl'n	0.19 = < L/999	0.88 = L/240	in	0.22

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CV	Cfu	Cr	Cfrt	Notes	LC#
Fv'	265	1.15	1.00	1.00	-	-	-	-	1.00	1.00	2
Fb'+	1250	1.15	1.00	1.00	1.000	1.000	-	-	1.00	1.00	2
Fc'	1550	1.15	1.00	1.00	0.286	-	-	-	1.00	-	2
E'	1.5 million	1.00	1.00	-	-	-	-	-	1.00	-	2
Emin'	0.79 million	1.00	1.00	-	-	-	-	-	1.00	-	2
Fc*	1550	1.15	1.00	1.00	-	-	-	-	1.00	-	2
Comb'd Fc'	510	1.15	1.00	1.00	1.00	-	-	-	1.00	-	2
Comb'd Fb	1437	1.15	1.00	1.00	1.00	0.000	-	-	1.00	-	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S
 Bending(+): LC #2 = D + 0.7S
 Deflection: LC #2 = D + 0.7S (live)
 LC #2 = D + 0.7S (total)
 Axial : LC #2 = D + 0.7S
 Combined : LC #2 = D + 0.7S
 Load Types: D=dead S=snow
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 50 lbs; M(+) = 876 lbs-ft; P = 10659 lbs
 EI = 182.25e06 lb-in²
 Combined (psi): Fb' = 1437; fb = fc(6e/d) = 260; Fc' = 510; fc = 263; FcE = 530
 Combined: M = 0.00 lbs-ft; P = -10658 lbs
 "Live" deflection is due to all non-dead loads (live, wind, snow...)
 Total deflection = 1.50 permanent + "live"
 Axial d governs, le/b = 31.1, le/d = 35.0

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.



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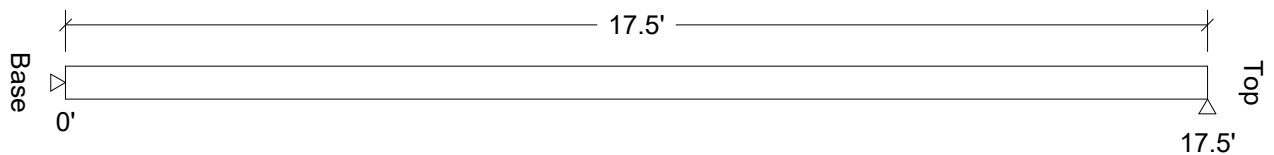
C3

Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft]		Magnitude		Unit
			Start	End	Start	End	
DL	Dead	Axial	(Ecc. = 1.00")		3620		lbs
SL	Snow	Axial	(Ecc. = 1.00")		15053		lbs
Self-weight	Dead	Axial			163		lbs

Reactions (lbs):

Unfactored:			
Lateral:			
Dead	17		-17
Snow	72		-72
Axial:			
Dead	3783		3783
Snow	15053		15053
Factored:			
R->L			-68
Load comb			#2
L->R	68		
Load comb	#2		#1

Glulam-Axial, West Species, 2 (DF L2), 6-3/4"x6"

Support: Non-wood

Total length: 17.5'; Volume = 4.9 cu.ft.; 4 laminations, 6-3/4" maximum width,
Pinned base; Load face = width(b); Ke x Lb: 1.0 x 17.5 = 17.5 ft; Ke x Ld: 1.0 x 17.5 = 17.5 ft;

This section PASSES the design code check.**Analysis vs. Allowable Stress and Deflection using NDS 2024 :**

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 68	Vr = 8228	lbs	V/Vr = 0.01
Bending (+)	fb = 350	Fb' = 1955	psi	fb/Fb' = 0.18
Axial	fc = 354	Fc' = 552	psi	fc/Fc' = 0.64
Combined	fc = 354	Fc' = 552	psi	Eq.15.4-3 = 0.95
Axial Bearing	fc = 354	Fc* = 2242	psi	fc/Fc* = 0.16
Live Defl'n	0.15 = < L/999	0.88 = L/240	in	0.18
Total Defl'n	0.23 = L/901	0.88 = L/240	in	0.27

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CV	Cfu	Cr	Cfrt	Notes	LC#
Fv'	265	1.15	1.00	1.00	-	-	-	-	1.00	1.00	2
Fb'+	1700	1.15	1.00	1.00	1.000	1.000	-	-	1.00	1.00	2
Fc'	1950	1.15	1.00	1.00	0.246	-	-	-	1.00	-	2
E'	1.6 million	1.00	1.00	-	-	-	-	-	1.00	-	2
Emin'	0.85 million	1.00	1.00	-	-	-	-	-	1.00	-	2
Fc*	1950	1.15	1.00	1.00	-	-	-	-	1.00	-	2
Comb'd Fc'	552	1.15	1.00	1.00	1.00	-	-	-	1.00	-	2
Comb'd Fb	1955	1.15	1.00	1.00	1.00	0.000	-	-	1.00	-	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S
 Bending(+): LC #2 = D + 0.7S
 Deflection: LC #2 = D + 0.7S (live)
 LC #2 = D + 0.7S (total)
 Axial : LC #2 = D + 0.7S
 Combined : LC #2 = D + 0.7S
 Load Types: D=dead S=snow
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 68 lbs; M(+) = 1182 lbs-ft; P = 14320 lbs
 EI = 194.40e06 lb-in²
 Combined (psi): Fb' = 1955; fb = fc(6e/d) = 350; Fc' = 552; fc = 354; FcE = 570
 Combined: M = 0.00 lbs-ft; P = -14320 lbs
 "Live" deflection is due to all non-dead loads (live, wind, snow...)
 Total deflection = 1.50 permanent + "live"
 Axial d governs, le/b = 31.1, le/d = 35.0

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.



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C5

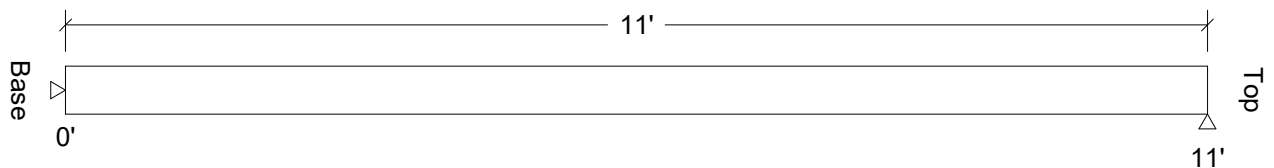
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Axial	(Ecc. = 0.92")	2569	lbs
SL	Snow	Axial	(Ecc. = 0.92")	6496	lbs
Self-weight	Dead	Axial		69	lbs

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	18		-18
Snow	45		-45
Axial:			
Dead	2638		2638
Snow	6496		6496
Factored:			
R->L			-50
Load comb			#2
L->R	50		
Load comb	#2		#1

Timber-soft, Hem-Fir, No.1, 6x6 (5-1/2"x5-1/2")

Support: Non-wood

Total length: 11.0'; Volume = 2.3 cu.ft.; Post or timber

Pinned base; Load face = width(b); Incised; $K_e \times L_b: 1.0 \times 11.0 = 11.0$ ft; $K_e \times L_d: 1.0 \times 11.0 = 11.0$ ft;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	$V = 50$	$V_r = 2597$	lbs	$V/V_r = 0.02$
Bending (+)	$f_b = 236$	$F_b' = 897$	psi	$f_b/F_b' = 0.26$
Axial	$f_c = 238$	$F_c' = 482$	psi	$f_c/F_c' = 0.49$
Combined	$f_c = 238$	$F_c' = 482$	psi	Eq. 15.4-3 = 0.70
Axial Bearing	$f_c = 238$	$F_c^* = 782$	psi	$f_c/F_c^* = 0.30$
Live Defl'n	$0.05 = < L/999$	$0.55 = L/240$	in	0.09
Total Defl'n	$0.09 = < L/999$	$0.55 = L/240$	in	0.17

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	140	1.15	1.00	1.00	-	-	-	-	1.00	0.80	2
Fb'+	975	1.15	1.00	1.00	1.000	1.000	1.00	1.00	1.00	0.80	2
Fc'	850	1.15	1.00	1.00	0.617	1.000	-	-	1.00	0.80	2
E'	1.3 million		1.00	1.00	-	-	1.00	-	1.00	0.95	2
Emin'	0.47 million		1.00	1.00	-	-	1.00	-	1.00	0.95	2
Eminy'	0.47 million		1.00	1.00	-	-	1.00	-	1.00	0.95	2
Fc*	850	1.15	1.00	1.00	-	1.000	-	-	1.00	0.80	2
Comb'd Fc'	482	1.15	1.00	1.00	1.00	1.000	-	-	1.00	0.80	2
Comb'd Fb	897	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.80	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S
 Bending(+): LC #2 = D + 0.7S
 Deflection: LC #2 = D + 0.7S (live)
 LC #2 = D + 0.7S (total)
 Axial : LC #2 = D + 0.7S
 Combined : LC #2 = D + 0.7S
 Load Types: D=dead S=snow
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 50 lbs; M(+) = 545 lbs-ft; P = 7185 lbs
 EI = 99.13e06 lb-in²
 Combined (psi): Fb' = 897; fb = fc(6e/d) = 236; Fc' = 482; fc = 238; FcE = 637
 Combined: M = 0.00 lbs-ft; P = -7185 lbs
 "Live" deflection is due to all non-dead loads (live, wind, snow...)
 Total deflection = 1.50 permanent + "live"
 Axial b used, le/b = 24.0, le/d = 24.0

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.



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C7

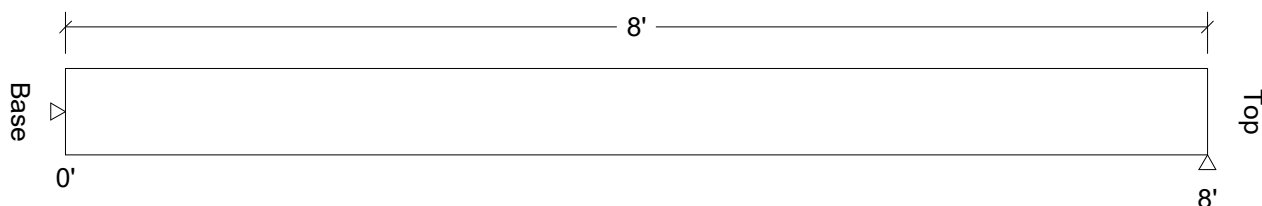
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Axial	(Ecc. = 1.21")	2481	lbs
SL	Snow	Axial	(Ecc. = 1.21")	7085	lbs
Self-weight	Dead	Axial		41	lbs

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	31		-31
Snow	89		-89
Axial:			
Dead	2522		2522
Snow	7085		7085
Factored:			
R->L			-94
Load comb			#2
L->R	94		
Load comb	#2		#1

Lumber n-ply, D.Fir-L, No.2, 2x8, 2-ply (3"x7-1/4")

Support: Non-wood

Total length: 8.0'; Volume = 1.2 cu.ft.

Pinned base; Load face = width(b); Built-up fastener: nails; Incised; Ke x Lb: 1.0 x 0.0 = 0.0 ft; Ke x Ld: 1.0 x 8.0 = 8.0 ft;

Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 94	Vr = 2401	lbs	V/Vr = 0.04
Bending (+)	fb = 343	Fb' = 994	psi	fb/Fb' = 0.34
Axial	fc = 344	Fc' = 1129	psi	fc/Fc' = 0.30
Combined	fc = 344	Fc' = 1129	psi	Eq. 15.4-3 = 0.50
Axial Bearing	fc = 344	Fc* = 1304	psi	fc/Fc* = 0.26
Live Defl'n	0.02 = < L/999	0.40 = L/240	in	0.06
Total Defl'n	0.04 = < L/999	0.40 = L/240	in	0.11

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	180	1.15	1.00	1.00	—	—	—	—	1.00	0.80	2
Fb'+	900	1.15	1.00	1.00	1.000	1.200	—	1.00	1.00	0.80	2
Fc'	1350	1.15	1.00	1.00	0.866	1.050	—	—	1.00	0.80	2
E'	1.6 million	1.00	1.00	—	—	—	—	—	1.00	0.95	2
Emin'	0.58 million	1.00	1.00	—	—	—	—	—	1.00	0.95	2
Fc*	1350	1.15	1.00	1.00	—	1.050	—	—	1.00	0.80	2
Comb'd Fc'	1129	1.15	1.00	1.00	1.00	1.050	—	—	1.00	0.80	2
Comb'd Fb	994	1.15	1.00	1.00	1.00	1.200	—	1.00	1.00	0.80	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S
 Bending(+): LC #2 = D + 0.7S
 Deflection: LC #2 = D + 0.7S (live)
 LC #2 = D + 0.7S (total)
 Axial : LC #2 = D + 0.7S
 Combined : LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 94 lbs; M(+) = 751 lbs-ft; P = 7482 lbs, Kf = 1.00

EI = 76.21e06 lb-in²/ply

Combined (psi): Fb' = 994; fb = fc(6e/d) = 343; Fc' = 1129; fc = 344; FcE = 2583

Combined: M = 0.00 lbs-ft; P = -7482 lbs

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Axial d governs, le/b full = 0.0, le/b 1-ply = 0.0, le/d = 13.2

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.
4. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.



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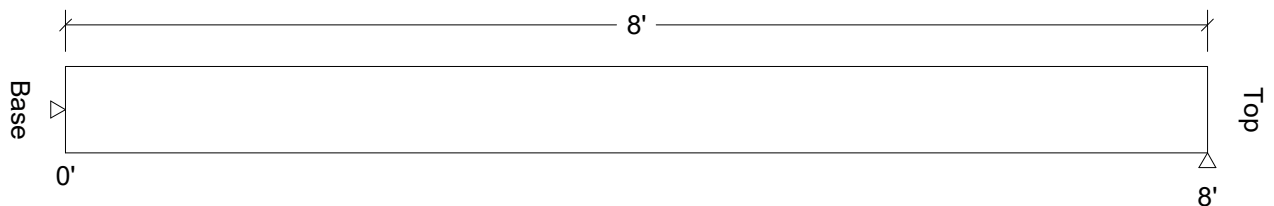
C8

Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Axial	(Ecc. = 1.21")	3718	lbs
SL	Snow	Axial	(Ecc. = 1.21")	10537	lbs
Self-weight	Dead	Axial		41	lbs

Reactions (lbs):

Unfactored:			
Lateral:			
Dead	47		-47
Snow	133		-133
Axial:			
Dead	3759		3759
Snow	10537		10537
Factored:			
R->L			-140
Load comb			#2
L->R	140		
Load comb	#2		#1

Lumber n-ply, D.Fir-L, No.2, 2x8, 2-ply (3"x7-1/4")

Support: Non-wood

Total length: 8.0'; Volume = 1.2 cu.ft.

Pinned base; Load face = width(b); Built-up fastener: nails; Incised; Ke x Lb: 1.0 x 0.0 = 0.0 ft; Ke x Ld: 1.0 x 8.0 = 8.0 ft;

Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.**Analysis vs. Allowable Stress and Deflection using NDS 2024 :**

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 140	Vr = 2401	lbs	V/Vr = 0.06
Bending (+)	fb = 511	Fb' = 994	psi	fb/Fb' = 0.51
Axial	fc = 512	Fc' = 1129	psi	fc/Fc' = 0.45
Combined	fc = 512	Fc' = 1129	psi	Eq. 15.4-3 = 0.88
Axial Bearing	fc = 512	Fc* = 1304	psi	fc/Fc* = 0.39
Live Defl'n	0.04 = < L/999	0.40 = L/240	in	0.09
Total Defl'n	0.06 = < L/999	0.40 = L/240	in	0.16

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	180	1.15	1.00	1.00	—	—	—	—	1.00	0.80	2
Fb'+	900	1.15	1.00	1.00	1.000	1.200	—	1.00	1.00	0.80	2
Fc'	1350	1.15	1.00	1.00	0.866	1.050	—	—	1.00	0.80	2
E'	1.6 million	1.00	1.00	—	—	—	—	—	1.00	0.95	2
Emin'	0.58 million	1.00	1.00	—	—	—	—	—	1.00	0.95	2
Fc*	1350	1.15	1.00	1.00	—	1.050	—	—	1.00	0.80	2
Comb'd Fc'	1129	1.15	1.00	1.00	1.00	1.050	—	—	1.00	0.80	2
Comb'd Fb	994	1.15	1.00	1.00	1.00	1.200	—	1.00	1.00	0.80	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S
 Bending(+): LC #2 = D + 0.7S
 Deflection: LC #2 = D + 0.7S (live)
 LC #2 = D + 0.7S (total)
 Axial : LC #2 = D + 0.7S
 Combined : LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 140 lbs; M(+) = 1119 lbs-ft; P = 11135 lbs, Kf = 1.00

EI = 76.21e06 lb-in²/ply

Combined (psi): Fb' = 994; fb = fc(6e/d) = 511; Fc' = 1129; fc = 512; FcE = 2583

Combined: M = 0.00 lbs-ft; P = -11135 lbs

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Axial d governs, le/b full = 0.0, le/b 1-ply = 0.0, le/d = 13.2

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.
4. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.



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Aug. 31, 2026 18:04

C9

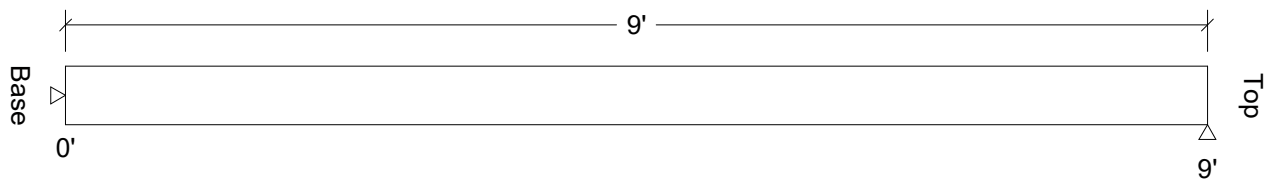
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Axial	(Ecc. = 0.92")	2480	lbs
SL	Snow	Axial	(Ecc. = 0.92")	7091	lbs
Self-weight	Dead	Axial		35	lbs

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	21		-21
Snow	60		-60
Axial:			
Dead	2515		2515
Snow	7091		7091
Factored:			
R->L			-63
Load comb			#2
L->R	63		
Load comb	#2		#1

Lumber n-ply, D.Fir-L, No.1, 2x6, 2-ply (3"x5-1/2")

Support: Non-wood

Total length: 9.0'; Volume = 1.0 cu.ft.

Pinned base; Load face = width(b); Built-up fastener: nails; Incised; Ke x Lb: 1.0 x 0.0 = 0.0 ft; Ke x Ld: 1.0 x 9.0 = 9.0 ft;

Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 63	Vr = 1822	lbs	V/Vr = 0.03
Bending (+)	fb = 452	Fb' = 1196	psi	fb/Fb' = 0.38
Axial	fc = 453	Fc' = 945	psi	fc/Fc' = 0.48
Combined	fc = 453	Fc' = 945	psi	Eq. 15.4-3 = 0.87
Axial Bearing	fc = 453	Fc* = 1518	psi	fc/Fc* = 0.30
Live Defl'n	0.05 = < L/999	0.45 = L/240	in	0.11
Total Defl'n	0.09 = < L/999	0.45 = L/240	in	0.20

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	180	1.15	1.00	1.00	—	—	—	—	1.00	0.80	2
Fb'+	1000	1.15	1.00	1.00	1.000	1.300	—	1.00	1.00	0.80	2
Fc'	1500	1.15	1.00	1.00	0.622	1.100	—	—	1.00	0.80	2
E'	1.7 million	1.00	1.00	—	—	—	—	—	1.00	0.95	2
Emin'	0.62 million	1.00	1.00	—	—	—	—	—	1.00	0.95	2
Fc*	1500	1.15	1.00	1.00	—	1.100	—	—	1.00	0.80	2
Comb'd Fc'	945	1.15	1.00	1.00	1.00	1.100	—	—	1.00	0.80	2
Comb'd Fb	1196	1.15	1.00	1.00	1.00	1.300	—	1.00	1.00	0.80	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S
 Bending(+): LC #2 = D + 0.7S
 Deflection: LC #2 = D + 0.7S (live)
 LC #2 = D + 0.7S (total)
 Axial : LC #2 = D + 0.7S
 Combined : LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 63 lbs; M(+) = 570 lbs-ft; P = 7479 lbs, Kf = 1.00

EI = 35.35e06 lb-in²/ply

Combined (psi): Fb' = 1196; fb = fc(6e/d) = 452; Fc' = 945; fc = 453; FcE = 1256

Combined: M = 0.00 lbs-ft; P = -7479 lbs

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Axial d governs, le/b full = 0.0, le/b 1-ply = 0.0, le/d = 19.6

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.
4. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.



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Aug. 31, 2026 18:07

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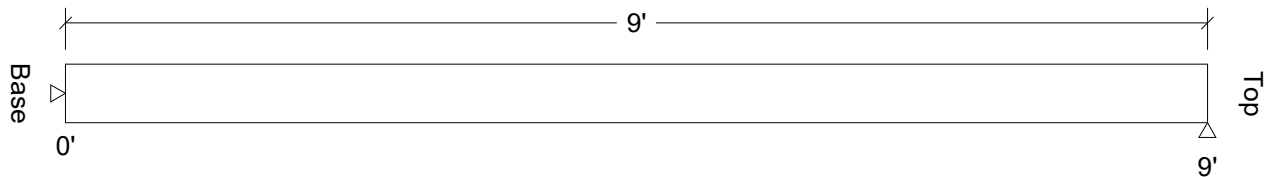
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Axial	(Ecc. = 0.92")	1514	lbs
SL	Snow	Axial	(Ecc. = 0.92")	4352	lbs
Self-weight	Dead	Axial		35	lbs

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	13		-13
Snow	37		-37
Axial:			
Dead	1549		1549
Snow	4352		4352
Factored:			
R->L			-39
Load comb			#2
L->R	39		
Load comb	#2		#1

Lumber n-ply, D.Fir-L, No.2, 2x6, 2-ply (3"x5-1/2")

Support: Non-wood

Total length: 9.0'; Volume = 1.0 cu.ft.

Pinned base; Load face = width(b); Built-up fastener: nails; Incised; Ke x Lb: 1.0 x 0.0 = 0.0 ft; Ke x Ld: 1.0 x 9.0 = 9.0 ft;

Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 39	Vr = 1822	lbs	V/Vr = 0.02
Bending (+)	fb = 277	Fb' = 1076	psi	fb/Fb' = 0.26
Axial	fc = 279	Fc' = 870	psi	fc/Fc' = 0.32
Combined	fc = 279	Fc' = 870	psi	Eq. 15.4-3 = 0.46
Axial Bearing	fc = 279	Fc* = 1366	psi	fc/Fc* = 0.20
Live Defl'n	0.03 = < L/999	0.45 = L/240	in	0.07
Total Defl'n	0.06 = < L/999	0.45 = L/240	in	0.13

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	180	1.15	1.00	1.00	—	—	—	—	1.00	0.80	2
Fb'+	900	1.15	1.00	1.00	1.000	1.300	—	1.00	1.00	0.80	2
Fc'	1350	1.15	1.00	1.00	0.637	1.100	—	—	1.00	0.80	2
E'	1.6 million	1.00	1.00	—	—	—	—	—	1.00	0.95	2
Emin'	0.58 million	1.00	1.00	—	—	—	—	—	1.00	0.95	2
Fc*	1350	1.15	1.00	1.00	—	1.100	—	—	1.00	0.80	2
Comb'd Fc'	870	1.15	1.00	1.00	1.00	1.100	—	—	1.00	0.80	2
Comb'd Fb	1076	1.15	1.00	1.00	1.00	1.300	—	1.00	1.00	0.80	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S
 Bending(+): LC #2 = D + 0.7S
 Deflection: LC #2 = D + 0.7S (live)
 LC #2 = D + 0.7S (total)
 Axial : LC #2 = D + 0.7S
 Combined : LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 39 lbs; M(+) = 349 lbs-ft; P = 4596 lbs, Kf = 1.00

EI = 33.27e06 lb-in²/ply

Combined (psi): Fb' = 1076; fb = fc(6e/d) = 277; Fc' = 870; fc = 279; FcE = 1175

Combined: M = 0.00 lbs-ft; P = -4596 lbs

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Axial d governs, le/b full = 0.0, le/b 1-ply = 0.0, le/d = 19.6

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.
4. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.



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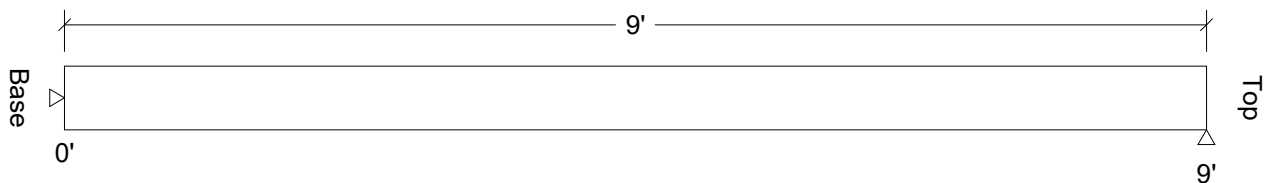
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Axial	(Ecc. = 1.00")	8128	lbs
SL	Snow	Axial	(Ecc. = 1.00")	22735	lbs
Self-weight	Dead	Axial		64	lbs

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	75		-75
Snow	211		-211
Axial:			
Dead	8192		8192
Snow	22735		22735
Factored:			
R->L			-223
Load comb			#2
L->R	223		
Load comb	#2		#1

Glulam-Axial, West Species, 2 (DF L2), 5-1/8"x6"

Support: Non-wood

Total length: 9.0'; Volume = 1.9 cu.ft.; 4 laminations, 5-1/8" maximum width,
Pinned base; Load face = width(b); Ke x Lb: 1.0 x 0.0 = 0.0 ft; Ke x Ld: 1.0 x 9.0 = 9.0 ft;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 223	Vr = 6247	lbs	V/Vr = 0.04
Bending (+)	fb = 783	Fb' = 1955	psi	fb/Fb' = 0.40
Axial	fc = 784	Fc' = 1670	psi	fc/Fc' = 0.47
Combined	fc = 784	Fc' = 1670	psi	Eq.15.4-3 = 0.90
Axial Bearing	fc = 784	Fc* = 2242	psi	fc/Fc* = 0.35
Live Defl'n	0.08 = < L/999	0.45 = L/240	in	0.18
Total Defl'n	0.14 = L/756	0.45 = L/240	in	0.32

Additional Data:

FACTORS:	F/E (psi)	CD	CM	Ct	CL/CP	CV	Cfu	Cr	Cfrt	Notes	LC#
Fv'	265	1.15	1.00	1.00	-	-	-	-	1.00	1.00	2
Fb'+	1700	1.15	1.00	1.00	1.000	1.000	-	-	1.00	1.00	2
Fc'	1950	1.15	1.00	1.00	0.745	-	-	-	1.00	-	2
E'	1.6 million		1.00	1.00	-	-	-	-	1.00	-	2
Emin'	0.85 million		1.00	1.00	-	-	-	-	1.00	-	2
Eminy'	0.85 million		1.00	1.00	-	-	-	-	1.00	-	2
Fc*	1950	1.15	1.00	1.00	-	-	-	-	1.00	-	2
Comb'd Fc'	1670	1.15	1.00	1.00	1.00	-	-	-	1.00	-	2
Comb'd Fb	1955	1.15	1.00	1.00	1.00	0.000	-	-	1.00	-	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S
 Bending(+): LC #2 = D + 0.7S
 Deflection: LC #2 = D + 0.7S (live)
 LC #2 = D + 0.7S (total)
 Axial : LC #2 = D + 0.7S
 Combined : LC #2 = D + 0.7S
 Load Types: D=dead S=snow
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 223 lbs; M(+) = 2008 lbs-ft; P = 24106 lbs
 EI = 147.60e06 lb-in²
 Combined (psi): Fb' = 1955; fb = fc(6e/d) = 783; Fc' = 1670; fc = 784; FcE = 2156
 Combined: M = 0.00 lbs-ft; P = -24106 lbs
 "Live" deflection is due to all non-dead loads (live, wind, snow...)
 Total deflection = 1.50 permanent + "live"
 Axial d governs, le/b = 0.0, le/d = 18.0

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.



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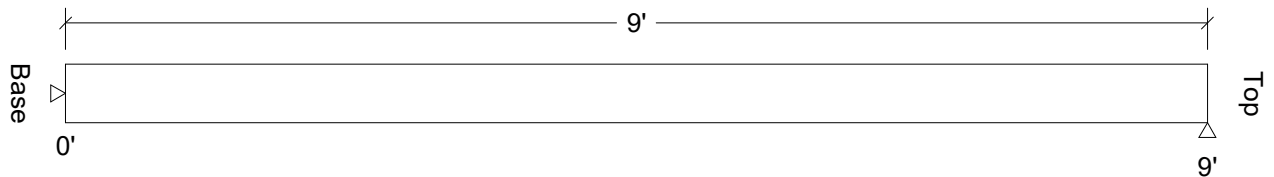
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Axial	(Ecc. = 0.92")	641	lbs
SL	Snow	Axial	(Ecc. = 0.92")	1570	lbs
Self-weight	Dead	Axial		18	lbs

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	5		-5
Snow	13		-13
Axial:			
Dead	659		659
Snow	1570		1570
Factored:			
R->L			-15
Load comb			#2
L->R	15		
Load comb	#2		#1

Lumber n-ply, D.Fir-L, No.2, 2x6, 1-ply (1-1/2"x5-1/2")

Support: Non-wood

Total length: 9.0'; Volume = 0.5 cu.ft.

Pinned base; Load face = width(b); Incised; $K_e \times L_b: 1.0 \times 0.0 = 0.0$ ft; $K_e \times L_d: 1.0 \times 9.0 = 9.0$ ft; Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	$V = 15$	$V_r = 911$	lbs	$V/V_r = 0.02$
Bending (+)	$f_b = 211$	$F_b' = 1076$	psi	$f_b/F_b' = 0.20$
Axial	$f_c = 213$	$F_c' = 870$	psi	$f_c/F_c' = 0.24$
Combined	$f_c = 213$	$F_c' = 870$	psi	Eq. 15.4-3 = 0.31
Axial Bearing	$f_c = 213$	$F_c^* = 1366$	psi	$f_c/F_c^* = 0.16$
Live Defl'n	$0.02 = < L/999$	$0.45 = L/240$	in	0.05
Total Defl'n	$0.04 = < L/999$	$0.45 = L/240$	in	0.10

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	180	1.15	1.00	1.00	—	—	—	—	1.00	0.80	2
Fb'+	900	1.15	1.00	1.00	1.000	1.300	—	1.00	1.00	0.80	2
Fc'	1350	1.15	1.00	1.00	0.637	1.100	—	—	1.00	0.80	2
E'	1.6 million	1.00	1.00	1.00	—	—	—	—	1.00	0.95	2
Emin'	0.58 million	1.00	1.00	1.00	—	—	—	—	1.00	0.95	2
Fc*	1350	1.15	1.00	1.00	—	1.100	—	—	1.00	0.80	2
Comb'd Fc'	870	1.15	1.00	1.00	1.00	1.100	—	—	1.00	0.80	2
Comb'd Fb	1076	1.15	1.00	1.00	1.00	1.300	—	1.00	1.00	0.80	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S
 Bending(+): LC #2 = D + 0.7S
 Deflection: LC #2 = D + 0.7S (live)
 LC #2 = D + 0.7S (total)
 Axial : LC #2 = D + 0.7S
 Combined : LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 15 lbs; M(+) = 133 lbs-ft; P = 1758 lbs

EI = 33.27e06 lb-in²

Combined (psi): Fb' = 1076; fb = fc(6e/d) = 211; Fc' = 870; fc = 213; FcE = 1175

Combined: M = 0.00 lbs-ft; P = -1758 lbs

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Axial d governs, le/b = 0.0, le/d = 19.6

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.
4. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.



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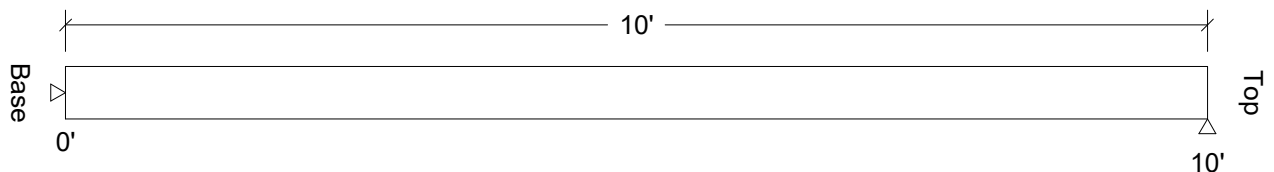
Design Check Calculation Sheet

WoodWorks Sizer 14.0.1

Loads:

Load	Type	Distribution	Location [ft] Start End	Magnitude Start End	Unit
DL	Dead	Axial	(Ecc. = 0.92")	3458	lbs
SL	Snow	Axial	(Ecc. = 0.92")	9802	lbs
Self-weight	Dead	Axial		59	lbs

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	26		-26
Snow	75		-75
Axial:			
Dead	3517		3517
Snow	9802		9802
Factored:			
R->L			-79
Load comb			#2
L->R	79		
Load comb	#2		#1

Lumber n-ply, D.Fir-L, No.2, 2x6, 3-ply (4-1/2"x5-1/2")

Support: Non-wood

Total length: 10.0'; Volume = 1.7 cu.ft.

Pinned base; Load face = width(b); Built-up fastener: nails; Incised; Ke x Lb: 1.0 x 0.0 = 0.0 ft; Ke x Ld: 1.0 x 10.0 = 10.0 ft;

Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2024 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	V = 79	Vr = 2732	lbs	V/Vr = 0.03
Bending (+)	fb = 418	Fb' = 1238	psi	fb/Fb' = 0.34
Axial	fc = 419	Fc' = 760	psi	fc/Fc' = 0.55
Combined	fc = 419	Fc' = 760	psi	Eq. 15.4-3 = 0.97
Axial Bearing	fc = 419	Fc* = 1366	psi	fc/Fc* = 0.31
Live Defl'n	0.06 = < L/999	0.50 = L/240	in	0.12
Total Defl'n	0.11 = < L/999	0.50 = L/240	in	0.22

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	180	1.15	1.00	1.00	—	—	—	—	1.00	0.80	2
Fb'+	900	1.15	1.00	1.00	1.000	1.300	—	1.15	1.00	0.80	2
Fc'	1350	1.15	1.00	1.00	0.557	1.100	—	—	1.00	0.80	2
E'	1.6 million	1.00	1.00	—	—	—	—	—	1.00	0.95	2
Emin'	0.58 million	1.00	1.00	—	—	—	—	—	1.00	0.95	2
Fc*	1350	1.15	1.00	1.00	—	1.100	—	—	1.00	0.80	2
Comb'd Fc'	760	1.15	1.00	1.00	1.00	1.100	—	—	1.00	0.80	2
Comb'd Fb	1238	1.15	1.00	1.00	1.00	1.300	—	1.15	1.00	0.80	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D + 0.7S
 Bending(+): LC #2 = D + 0.7S
 Deflection: LC #2 = D + 0.7S (live)
 LC #2 = D + 0.7S (total)
 Axial : LC #2 = D + 0.7S
 Combined : LC #2 = D + 0.7S

Load Types: D=dead S=snow

All LC's are listed in the Analysis output

Load combinations: ASD Basic from ASCE 7-22 2.4

CALCULATIONS:

V = 79 lbs; M(+) = 790 lbs-ft; P = 10378 lbs, Kf = 1.00

EI = 33.27e06 lb-in²/ply

Combined (psi): Fb' = 1238; fb = fc(6e/d) = 418; Fc' = 760; fc = 419; FcE = 951

Combined: M = 0.00 lbs-ft; P = -10378 lbs

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.50 permanent + "live"

Axial d governs, le/b full = 0.0, le/b 1-ply = 0.0, le/d = 21.8

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2024) and the National Design Specification (NDS 2024), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.
4. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C1

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.8460	Soil Bearing	2.115 ksf	2.50 ksf	+D+0.70S about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	999.0	Sliding - X-X	0.0 k	3.945 k	D Only
PASS	999.0	Sliding - Z-Z	0.0 k	3.945 k	D Only
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.3356	Z Flexure (+X) Bot Tens	4.071 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.3356	Z Flexure (-X) Bot Tens	4.071 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.836	Min Steel X Flexure Bottom	0.259 in2/ft	0.310 in2/ft	n/a
PASS	0.3356	X Flexure (+Z) Bot Tens	4.071 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.3356	X Flexure (-Z) Bot Tens	4.071 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.836	Min Steel Z Flexure Bottom	0.259 in2/ft	0.310 in2/ft	n/a
PASS	0.0	Z Flexure (+X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	Z Flexure (-X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel X Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.0	X Flexure (+Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	X Flexure (-Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel Z Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.5272	1-way Shear (+X)	24.620 psi	46.704 psi	+1.20D+S
PASS	0.5272	1-way Shear (-X)	24.620 psi	46.704 psi	+1.20D+S
PASS	0.5272	1-way Shear (+Z)	24.620 psi	46.704 psi	+1.20D+S
PASS	0.5272	1-way Shear (-Z)	24.620 psi	46.704 psi	+1.20D+S
PASS	0.4304	2-way Punching	70.717 psi	164.317 psi	+1.20D+S

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Zecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
			(in)			Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.50	n/a	0.0	0.8218	0.8218	n/a	n/a	n/a	n/a	0.329
X-X, +D+0.70S	2.50	n/a	0.0	2.115	2.115	n/a	n/a	n/a	n/a	0.846
X-X, +D+0.5250S	2.50	n/a	0.0	1.791	1.791	n/a	n/a	n/a	n/a	0.716
X-X, +0.60D	2.50	n/a	0.0	0.4931	0.4931	n/a	n/a	n/a	n/a	0.197
X-X, +D+0.10S	2.50	n/a	0.0	1.006	1.006	n/a	n/a	n/a	n/a	0.402
Z-Z, D Only	2.50	0.0	n/a	n/a	n/a	0.8218	0.8218	0.8218	0.8218	0.329
Z-Z, +D+0.70S	2.50	0.0	n/a	n/a	n/a	2.115	2.115	2.115	2.115	0.846
Z-Z, +D+0.5250S	2.50	0.0	n/a	n/a	n/a	1.791	1.791	1.791	1.791	0.716
Z-Z, +0.60D	2.50	0.0	n/a	n/a	n/a	0.4931	0.4931	0.4931	0.4931	0.197
Z-Z, +D+0.10S	2.50	0.0	n/a	n/a	n/a	1.006	1.006	1.006	1.006	0.402

Overturning Stability

Rotation Axis & Load Combination...	Moment Sum About Negative Edge (k-ft)				Moment Sum About Positive Edge (k-ft)			
	Overturning	Resisting	Ratio	Status	Overturning	Resisting	Ratio	Status

Footing Has NO Overturning

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force		Resisting Force		Stability Ratio	Status

Footing Has NO Sliding

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	1.451	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.40D	1.451	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D	1.244	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D	1.244	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.30S	2.092	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.30S	2.092	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+S	4.071	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+S	4.071	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +0.90D	0.9327	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Footing, C1

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +0.90D	0.9327	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.150S	1.668	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.150S	1.668	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.40D	1.451	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.40D	1.451	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D	1.244	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D	1.244	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.30S	2.092	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.30S	2.092	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+S	4.071	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+S	4.071	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +0.90D	0.9327	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +0.90D	0.9327	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.150S	1.668	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.150S	1.668	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	8.77 psi	8.77 psi	8.77 psi	46.70 psi	0.19	OK
+1.20D	7.52 psi	7.52 psi	7.52 psi	46.70 psi	0.16	OK
+1.20D+0.30S	12.65 psi	12.65 psi	12.65 psi	46.70 psi	0.27	OK
+1.20D+S	24.62 psi	24.62 psi	24.62 psi	46.70 psi	0.53	OK
+0.90D	5.64 psi	5.64 psi	5.64 psi	46.70 psi	0.12	OK
+1.20D+0.150S	10.09 psi	10.09 psi	10.09 psi	46.70 psi	0.22	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	8.77 psi	8.77 psi	8.77 psi	46.70 psi	0.19	OK
+1.20D	7.52 psi	7.52 psi	7.52 psi	46.70 psi	0.16	OK
+1.20D+0.30S	12.65 psi	12.65 psi	12.65 psi	46.70 psi	0.27	OK
+1.20D+S	24.62 psi	24.62 psi	24.62 psi	46.70 psi	0.53	OK
+0.90D	5.64 psi	5.64 psi	5.64 psi	46.70 psi	0.12	OK
+1.20D+0.150S	10.09 psi	10.09 psi	10.09 psi	46.70 psi	0.22	OK

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	25.20 psi	164.32 psi	0.15	OK
+1.20D	21.60 psi	164.32 psi	0.13	OK
+1.20D+0.30S	36.34 psi	164.32 psi	0.22	OK
+1.20D+S	70.72 psi	164.32 psi	0.43	OK
+0.90D	16.20 psi	164.32 psi	0.10	OK
+1.20D+0.150S	28.97 psi	164.32 psi	0.18	OK

All units k

General Footing

Project File: Chiloquin Fitness.ec6

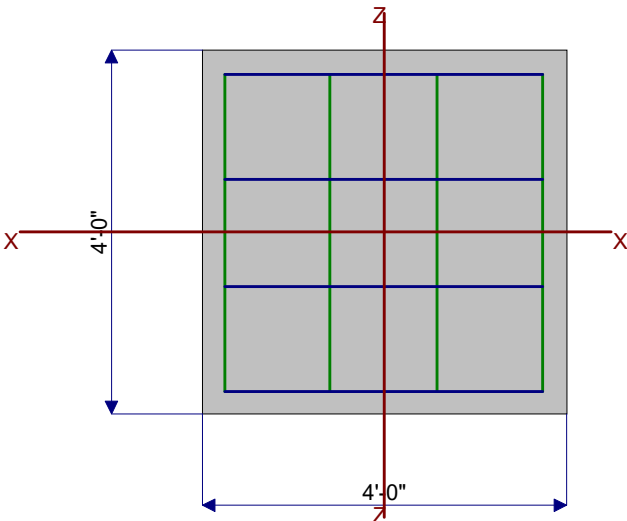
LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Footing, C1

Plan and Section Views



Bottom Mat: 4#5 parallel to X-X, 4#5 parallel to Z-Z



X-X Section Looking to +Z



Z-Z Section Looking to +X

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Footing, C2

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.720	Soil Bearing	1.80 ksf	2.50 ksf	+D+0.70S about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	999.0	Sliding - X-X	0.0 k	1.239 k	D Only
PASS	999.0	Sliding - Z-Z	0.0 k	1.239 k	D Only
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.1024	Z Flexure (+X) Bot Tens	1.138 k-ft/ft	11.107 k-ft/ft	+1.20D+S
PASS	0.1024	Z Flexure (-X) Bot Tens	1.138 k-ft/ft	11.107 k-ft/ft	+1.20D+S
PASS	0.581	Min Steel X Flexure Bottom	0.216 in2/ft	0.372 in2/ft	n/a
PASS	0.1024	X Flexure (+Z) Bot Tens	1.138 k-ft/ft	11.107 k-ft/ft	+1.20D+S
PASS	0.1024	X Flexure (-Z) Bot Tens	1.138 k-ft/ft	11.107 k-ft/ft	+1.20D+S
PASS	0.581	Min Steel Z Flexure Bottom	0.216 in2/ft	0.372 in2/ft	n/a
PASS	0.0	Z Flexure (+X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	Z Flexure (-X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel X Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.0	X Flexure (+Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	X Flexure (-Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel Z Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.2133	1-way Shear (+X)	11.514 psi	53.968 psi	+1.20D+S
PASS	0.2133	1-way Shear (-X)	11.514 psi	53.968 psi	+1.20D+S
PASS	0.2133	1-way Shear (+Z)	11.514 psi	53.968 psi	+1.20D+S
PASS	0.2133	1-way Shear (-Z)	11.514 psi	53.968 psi	+1.20D+S
PASS	0.1918	2-way Punching	31.509 psi	164.317 psi	+1.20D+S

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Zecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
			(in)			Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.50	n/a	0.0	0.6607	0.6607	n/a	n/a	n/a	n/a	0.264
X-X, +D+0.70S	2.50	n/a	0.0	1.80	1.80	n/a	n/a	n/a	n/a	0.720
X-X, +D+0.5250S	2.50	n/a	0.0	1.515	1.515	n/a	n/a	n/a	n/a	0.606
X-X, +0.60D	2.50	n/a	0.0	0.3964	0.3964	n/a	n/a	n/a	n/a	0.159
X-X, +D+0.10S	2.50	n/a	0.0	0.8235	0.8235	n/a	n/a	n/a	n/a	0.329
Z-Z, D Only	2.50	0.0	n/a	n/a	n/a	0.6607	0.6607	0.6607	0.6607	0.264
Z-Z, +D+0.70S	2.50	0.0	n/a	n/a	n/a	1.80	1.80	1.80	1.80	0.720
Z-Z, +D+0.5250S	2.50	0.0	n/a	n/a	n/a	1.515	1.515	1.515	1.515	0.606
Z-Z, +0.60D	2.50	0.0	n/a	n/a	n/a	0.3964	0.3964	0.3964	0.3964	0.159
Z-Z, +D+0.10S	2.50	0.0	n/a	n/a	n/a	0.8235	0.8235	0.8235	0.8235	0.329

Overturning Stability

Rotation Axis & Load Combination...	Moment Sum About Negative Edge (k-ft)				Moment Sum About Positive Edge (k-ft)			
	Overturning	Resisting	Ratio	Status	Overturning	Resisting	Ratio	Status

Footing Has NO Overturning

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force		Resisting Force		Stability Ratio	Status

Footing Has NO Sliding

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.3779	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.40D	0.3779	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D	0.3239	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D	0.3239	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+0.30S	0.5681	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+0.30S	0.5681	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+S	1.138	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+S	1.138	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +0.90D	0.2429	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C2

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +0.90D	0.2429	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+0.150S	0.4460	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+0.150S	0.4460	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.40D	0.3779	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.40D	0.3779	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D	0.3239	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D	0.3239	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+0.30S	0.5681	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+0.30S	0.5681	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+S	1.138	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+S	1.138	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +0.90D	0.2429	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +0.90D	0.2429	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+0.150S	0.4460	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+0.150S	0.4460	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	3.82 psi	3.82 psi	3.82 psi	53.97 psi	0.07	OK
+1.20D	3.28 psi	3.28 psi	3.28 psi	53.97 psi	0.06	OK
+1.20D+0.30S	5.75 psi	5.75 psi	5.75 psi	53.97 psi	0.11	OK
+1.20D+S	11.51 psi	11.51 psi	11.51 psi	53.97 psi	0.21	OK
+0.90D	2.46 psi	2.46 psi	2.46 psi	53.97 psi	0.05	OK
+1.20D+0.150S	4.51 psi	4.51 psi	4.51 psi	53.97 psi	0.08	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	3.82 psi	3.82 psi	3.82 psi	53.97 psi	0.07	OK
+1.20D	3.28 psi	3.28 psi	3.28 psi	53.97 psi	0.06	OK
+1.20D+0.30S	5.75 psi	5.75 psi	5.75 psi	53.97 psi	0.11	OK
+1.20D+S	11.51 psi	11.51 psi	11.51 psi	53.97 psi	0.21	OK
+0.90D	2.46 psi	2.46 psi	2.46 psi	53.97 psi	0.05	OK
+1.20D+0.150S	4.51 psi	4.51 psi	4.51 psi	53.97 psi	0.08	OK

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	10.47 psi	164.32 psi	0.06	OK
+1.20D	8.97 psi	164.32 psi	0.05	OK
+1.20D+0.30S	15.73 psi	164.32 psi	0.10	OK
+1.20D+S	31.51 psi	164.32 psi	0.19	OK
+0.90D	6.73 psi	164.32 psi	0.04	OK
+1.20D+0.150S	12.35 psi	164.32 psi	0.08	OK

All units k

General Footing

Project File: Chiloquin Fitness.ec6

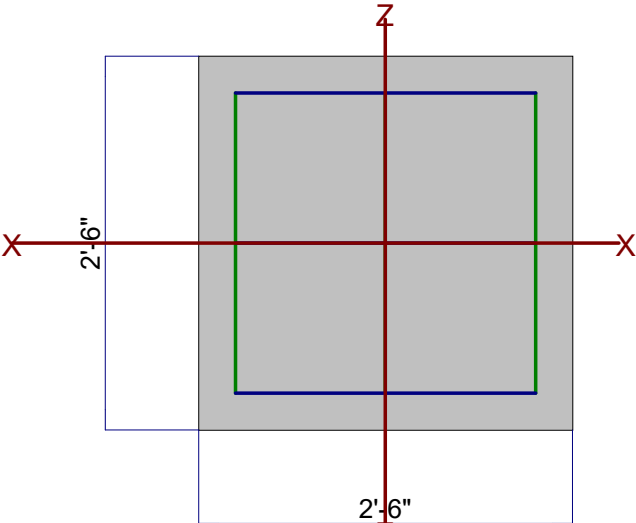
LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

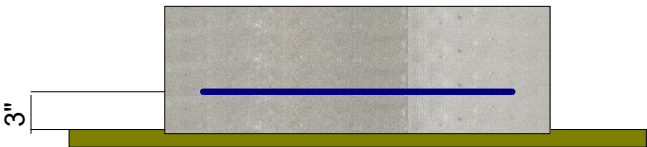
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DESCRIPTION: Footing, C2

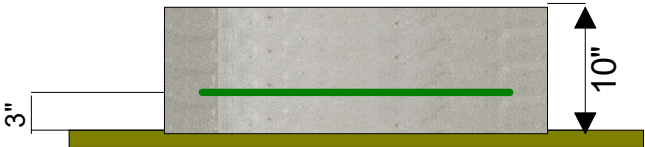
Plan and Section Views



Bottom Mat: 3#5 parallel to X-X, 3#5 parallel to Z-Z



X-X Section Looking to +Z



Z-Z Section Looking to +X

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C3

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9544	Soil Bearing	2.386 ksf	2.50 ksf	+D+0.70S about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	999.0	Sliding - X-X	0.0 k	1.313 k	D Only
PASS	999.0	Sliding - Z-Z	0.0 k	1.313 k	D Only
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.1397	Z Flexure (+X) Bot Tens	1.552 k-ft/ft	11.107 k-ft/ft	+1.20D+S
PASS	0.1397	Z Flexure (-X) Bot Tens	1.552 k-ft/ft	11.107 k-ft/ft	+1.20D+S
PASS	0.581	Min Steel X Flexure Bottom	0.216 in2/ft	0.372 in2/ft	n/a
PASS	0.1397	X Flexure (+Z) Bot Tens	1.552 k-ft/ft	11.107 k-ft/ft	+1.20D+S
PASS	0.1397	X Flexure (-Z) Bot Tens	1.552 k-ft/ft	11.107 k-ft/ft	+1.20D+S
PASS	0.581	Min Steel Z Flexure Bottom	0.216 in2/ft	0.372 in2/ft	n/a
PASS	0.0	Z Flexure (+X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	Z Flexure (-X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel X Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.0	X Flexure (+Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	X Flexure (-Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel Z Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.2910	1-way Shear (+X)	15.702 psi	53.968 psi	+1.20D+S
PASS	0.2910	1-way Shear (-X)	15.702 psi	53.968 psi	+1.20D+S
PASS	0.2910	1-way Shear (+Z)	15.702 psi	53.968 psi	+1.20D+S
PASS	0.2910	1-way Shear (-Z)	15.702 psi	53.968 psi	+1.20D+S
PASS	0.2615	2-way Punching	42.972 psi	164.317 psi	+1.20D+S

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc	Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
		(in)		Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.50	n/a	0.0	0.70	0.70	n/a	n/a	0.280
X-X, +D+0.70S	2.50	n/a	0.0	2.386	2.386	n/a	n/a	0.954
X-X, +D+0.5250S	2.50	n/a	0.0	1.964	1.964	n/a	n/a	0.786
X-X, +0.60D	2.50	n/a	0.0	0.420	0.420	n/a	n/a	0.168
X-X, +D+0.10S	2.50	n/a	0.0	0.9409	0.9409	n/a	n/a	0.376
Z-Z, D Only	2.50	0.0	n/a	n/a	n/a	0.70	0.70	0.280
Z-Z, +D+0.70S	2.50	0.0	n/a	n/a	n/a	2.386	2.386	0.954
Z-Z, +D+0.5250S	2.50	0.0	n/a	n/a	n/a	1.964	1.964	0.786
Z-Z, +0.60D	2.50	0.0	n/a	n/a	n/a	0.420	0.420	0.168
Z-Z, +D+0.10S	2.50	0.0	n/a	n/a	n/a	0.9409	0.9409	0.376

Overturning Stability

Rotation Axis & Load Combination...	Moment Sum About Negative Edge (k-ft)				Moment Sum About Positive Edge (k-ft)			
	Overturning	Resisting	Ratio	Status	Overturning	Resisting	Ratio	Status

Footing Has NO Overturning

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force		Resisting Force		Stability Ratio	Status

Footing Has NO Sliding

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.4054	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.40D	0.4054	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D	0.3475	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D	0.3475	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+0.30S	0.7088	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+0.30S	0.7088	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+S	1.552	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+S	1.552	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +0.90D	0.2606	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C3

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +0.90D	0.2606	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+0.150S	0.5282	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+0.150S	0.5282	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.40D	0.4054	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.40D	0.4054	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D	0.3475	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D	0.3475	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+0.30S	0.7088	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+0.30S	0.7088	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+S	1.552	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+S	1.552	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +0.90D	0.2606	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +0.90D	0.2606	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+0.150S	0.5282	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+0.150S	0.5282	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	4.10 psi	4.10 psi	4.10 psi	53.97 psi	0.08	OK
+1.20D	3.52 psi	3.52 psi	3.52 psi	53.97 psi	0.07	OK
+1.20D+0.30S	7.17 psi	7.17 psi	7.17 psi	53.97 psi	0.13	OK
+1.20D+S	15.70 psi	15.70 psi	15.70 psi	53.97 psi	0.29	OK
+0.90D	2.64 psi	2.64 psi	2.64 psi	53.97 psi	0.05	OK
+1.20D+0.150S	5.34 psi	5.34 psi	5.34 psi	53.97 psi	0.10	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	4.10 psi	4.10 psi	4.10 psi	53.97 psi	0.08	OK
+1.20D	3.52 psi	3.52 psi	3.52 psi	53.97 psi	0.07	OK
+1.20D+0.30S	7.17 psi	7.17 psi	7.17 psi	53.97 psi	0.13	OK
+1.20D+S	15.70 psi	15.70 psi	15.70 psi	53.97 psi	0.29	OK
+0.90D	2.64 psi	2.64 psi	2.64 psi	53.97 psi	0.05	OK
+1.20D+0.150S	5.34 psi	5.34 psi	5.34 psi	53.97 psi	0.10	OK

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	11.23 psi	164.32 psi	0.07	OK
+1.20D	9.62 psi	164.32 psi	0.06	OK
+1.20D+0.30S	19.63 psi	164.32 psi	0.12	OK
+1.20D+S	42.97 psi	164.32 psi	0.26	OK
+0.90D	7.22 psi	164.32 psi	0.04	OK
+1.20D+0.150S	14.63 psi	164.32 psi	0.09	OK

All units k

General Footing

Project File: Chiloquin Fitness.ec6

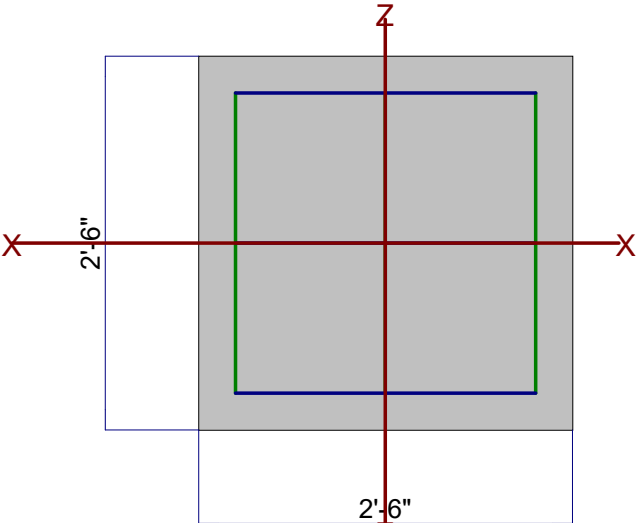
LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

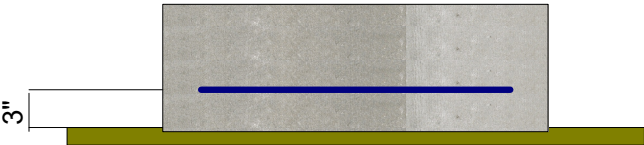
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DESCRIPTION: Footing, C3

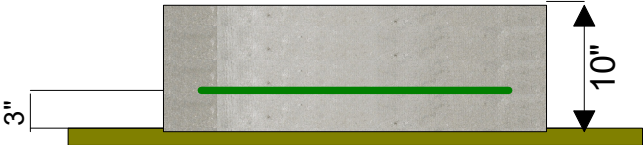
Plan and Section Views



Bottom Mat: 3#5 parallel to X-X, 3#5 parallel to Z-Z



X-X Section Looking to +Z



Z-Z Section Looking to +X

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C3_alt

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.5980	Soil Bearing	1.495 ksf	2.50 ksf	+D+0.70S about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	999.0	Sliding - X-X	0.0 k	2.526 k	D Only
PASS	999.0	Sliding - Z-Z	0.0 k	2.526 k	D Only
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.2324	Z Flexure (+X) Bot Tens	2.819 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.2324	Z Flexure (-X) Bot Tens	2.819 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.836	Min Steel X Flexure Bottom	0.259 in2/ft	0.310 in2/ft	n/a
PASS	0.2324	X Flexure (+Z) Bot Tens	2.819 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.2324	X Flexure (-Z) Bot Tens	2.819 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.836	Min Steel Z Flexure Bottom	0.259 in2/ft	0.310 in2/ft	n/a
PASS	0.0	Z Flexure (+X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	Z Flexure (-X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel X Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.0	X Flexure (+Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	X Flexure (-Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel Z Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.3650	1-way Shear (+X)	17.048 psi	46.704 psi	+1.20D+S
PASS	0.3650	1-way Shear (-X)	17.048 psi	46.704 psi	+1.20D+S
PASS	0.3650	1-way Shear (+Z)	17.048 psi	46.704 psi	+1.20D+S
PASS	0.3650	1-way Shear (-Z)	17.048 psi	46.704 psi	+1.20D+S
PASS	0.2980	2-way Punching	48.968 psi	164.317 psi	+1.20D+S

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Zecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
			(in)			Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.50	n/a	0.0	0.5263	0.5263	n/a	n/a	n/a	n/a	0.211
X-X, +D+0.70S	2.50	n/a	0.0	1.495	1.495	n/a	n/a	n/a	n/a	0.598
X-X, +D+0.5250S	2.50	n/a	0.0	1.253	1.253	n/a	n/a	n/a	n/a	0.501
X-X, +0.60D	2.50	n/a	0.0	0.3158	0.3158	n/a	n/a	n/a	n/a	0.126
X-X, +D+0.10S	2.50	n/a	0.0	0.6647	0.6647	n/a	n/a	n/a	n/a	0.266
Z-Z, D Only	2.50	0.0	n/a	n/a	n/a	0.5263	0.5263	0.5263	0.5263	0.211
Z-Z, +D+0.70S	2.50	0.0	n/a	n/a	n/a	1.495	1.495	1.495	1.495	0.598
Z-Z, +D+0.5250S	2.50	0.0	n/a	n/a	n/a	1.253	1.253	1.253	1.253	0.501
Z-Z, +0.60D	2.50	0.0	n/a	n/a	n/a	0.3158	0.3158	0.3158	0.3158	0.126
Z-Z, +D+0.10S	2.50	0.0	n/a	n/a	n/a	0.6647	0.6647	0.6647	0.6647	0.266

Overturning Stability

Rotation Axis & Load Combination...	Moment Sum About Negative Edge (k-ft)				Moment Sum About Positive Edge (k-ft)			
	Overturning	Resisting	Ratio	Status	Overturning	Resisting	Ratio	Status

Footing Has NO Overturning

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force		Resisting Force		Stability Ratio	Status

Footing Has NO Sliding

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.8174	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.40D	0.8174	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D	0.7006	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D	0.7006	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.30S	1.336	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.30S	1.336	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+S	2.819	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+S	2.819	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +0.90D	0.5255	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Footing, C3_alt

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +0.90D	0.5255	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.150S	1.018	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.150S	1.018	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.40D	0.8174	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.40D	0.8174	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D	0.7006	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D	0.7006	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.30S	1.336	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.30S	1.336	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+S	2.819	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+S	2.819	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +0.90D	0.5255	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +0.90D	0.5255	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.150S	1.018	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.150S	1.018	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	4.94 psi	4.94 psi	4.94 psi	46.70 psi	0.11	OK
+1.20D	4.24 psi	4.24 psi	4.24 psi	46.70 psi	0.09	OK
+1.20D+0.30S	8.08 psi	8.08 psi	8.08 psi	46.70 psi	0.17	OK
+1.20D+S	17.05 psi	17.05 psi	17.05 psi	46.70 psi	0.37	OK
+0.90D	3.18 psi	3.18 psi	3.18 psi	46.70 psi	0.07	OK
+1.20D+0.150S	6.16 psi	6.16 psi	6.16 psi	46.70 psi	0.13	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	4.94 psi	4.94 psi	4.94 psi	46.70 psi	0.11	OK
+1.20D	4.24 psi	4.24 psi	4.24 psi	46.70 psi	0.09	OK
+1.20D+0.30S	8.08 psi	8.08 psi	8.08 psi	46.70 psi	0.17	OK
+1.20D+S	17.05 psi	17.05 psi	17.05 psi	46.70 psi	0.37	OK
+0.90D	3.18 psi	3.18 psi	3.18 psi	46.70 psi	0.07	OK
+1.20D+0.150S	6.16 psi	6.16 psi	6.16 psi	46.70 psi	0.13	OK

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	14.20 psi	164.32 psi	0.09	OK
+1.20D	12.17 psi	164.32 psi	0.07	OK
+1.20D+0.30S	23.21 psi	164.32 psi	0.14	OK
+1.20D+S	48.97 psi	164.32 psi	0.30	OK
+0.90D	9.13 psi	164.32 psi	0.06	OK
+1.20D+0.150S	17.69 psi	164.32 psi	0.11	OK

All units k

General Footing

Project File: Chiloquin Fitness.ec6

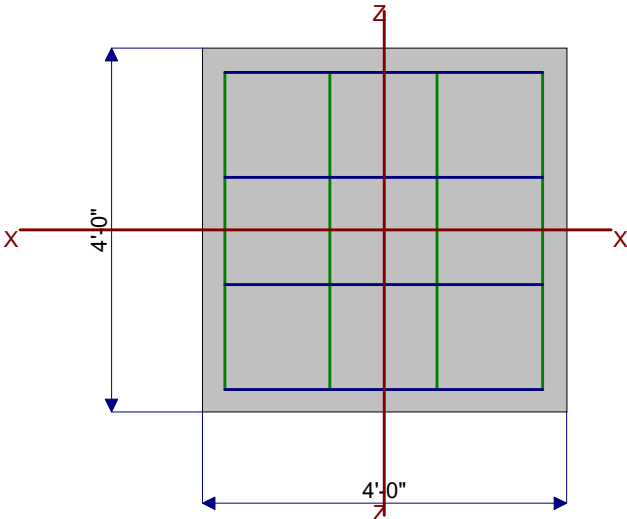
LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C3_alt

Plan and Section Views



Bottom Mat: 4#5 parallel to X-X, 4#5 parallel to Z-Z



X-X Section Looking to +Z



Z-Z Section Looking to +X

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Footing, C4

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.7624	Soil Bearing	1.906 ksf	2.50 ksf	+D+0.70S about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	999.0	Sliding - X-X	0.0 k	1.995 k	D Only
PASS	999.0	Sliding - Z-Z	0.0 k	1.995 k	D Only
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.1533	Z Flexure (+X) Bot Tens	1.860 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.1533	Z Flexure (-X) Bot Tens	1.860 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.836	Min Steel X Flexure Bottom	0.259 in2/ft	0.310 in2/ft	n/a
PASS	0.1533	X Flexure (+Z) Bot Tens	1.860 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.1533	X Flexure (-Z) Bot Tens	1.860 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.836	Min Steel Z Flexure Bottom	0.259 in2/ft	0.310 in2/ft	n/a
PASS	0.0	Z Flexure (+X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	Z Flexure (-X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel X Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.0	X Flexure (+Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	X Flexure (-Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel Z Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.2407	1-way Shear (+X)	11.240 psi	46.704 psi	+1.20D+S
PASS	0.2407	1-way Shear (-X)	11.240 psi	46.704 psi	+1.20D+S
PASS	0.2407	1-way Shear (+Z)	11.240 psi	46.704 psi	+1.20D+S
PASS	0.2407	1-way Shear (-Z)	11.240 psi	46.704 psi	+1.20D+S
PASS	0.1988	2-way Punching	32.674 psi	164.317 psi	+1.20D+S

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Zecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
			(in)			Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.50	n/a	0.0	0.7389	0.7389	n/a	n/a	n/a	n/a	0.296
X-X, +D+0.70S	2.50	n/a	0.0	1.906	1.906	n/a	n/a	n/a	n/a	0.762
X-X, +D+0.5250S	2.50	n/a	0.0	1.614	1.614	n/a	n/a	n/a	n/a	0.646
X-X, +0.60D	2.50	n/a	0.0	0.4433	0.4433	n/a	n/a	n/a	n/a	0.177
X-X, +D+0.10S	2.50	n/a	0.0	0.9057	0.9057	n/a	n/a	n/a	n/a	0.362
Z-Z, D Only	2.50	0.0	n/a	n/a	n/a	0.7389	0.7389	0.7389	0.7389	0.296
Z-Z, +D+0.70S	2.50	0.0	n/a	n/a	n/a	1.906	1.906	1.906	1.906	0.762
Z-Z, +D+0.5250S	2.50	0.0	n/a	n/a	n/a	1.614	1.614	1.614	1.614	0.646
Z-Z, +0.60D	2.50	0.0	n/a	n/a	n/a	0.4433	0.4433	0.4433	0.4433	0.177
Z-Z, +D+0.10S	2.50	0.0	n/a	n/a	n/a	0.9057	0.9057	0.9057	0.9057	0.362

Overturning Stability

Rotation Axis & Load Combination...	Moment Sum About Negative Edge (k-ft)				Moment Sum About Positive Edge (k-ft)			
	Overturning	Resisting	Ratio	Status	Overturning	Resisting	Ratio	Status

Footing Has NO Overturning

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force		Resisting Force		Stability Ratio	Status

Footing Has NO Sliding

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.6495	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.40D	0.6495	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D	0.5567	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D	0.5567	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.30S	0.9476	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.30S	0.9476	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+S	1.860	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+S	1.860	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +0.90D	0.4176	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Footing, C4

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +0.90D	0.4176	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.150S	0.7522	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.150S	0.7522	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.40D	0.6495	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.40D	0.6495	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D	0.5567	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D	0.5567	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.30S	0.9476	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.30S	0.9476	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+S	1.860	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+S	1.860	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +0.90D	0.4176	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +0.90D	0.4176	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.150S	0.7522	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.150S	0.7522	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	3.93 psi	3.93 psi	3.93 psi	46.70 psi	0.08	OK
+1.20D	3.37 psi	3.37 psi	3.37 psi	46.70 psi	0.07	OK
+1.20D+0.30S	5.73 psi	5.73 psi	5.73 psi	46.70 psi	0.12	OK
+1.20D+S	11.24 psi	11.24 psi	11.24 psi	46.70 psi	0.24	OK
+0.90D	2.52 psi	2.52 psi	2.52 psi	46.70 psi	0.05	OK
+1.20D+0.150S	4.55 psi	4.55 psi	4.55 psi	46.70 psi	0.10	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	3.93 psi	3.93 psi	3.93 psi	46.70 psi	0.08	OK
+1.20D	3.37 psi	3.37 psi	3.37 psi	46.70 psi	0.07	OK
+1.20D+0.30S	5.73 psi	5.73 psi	5.73 psi	46.70 psi	0.12	OK
+1.20D+S	11.24 psi	11.24 psi	11.24 psi	46.70 psi	0.24	OK
+0.90D	2.52 psi	2.52 psi	2.52 psi	46.70 psi	0.05	OK
+1.20D+0.150S	4.55 psi	4.55 psi	4.55 psi	46.70 psi	0.10	OK

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	11.41 psi	164.32 psi	0.07	OK
+1.20D	9.78 psi	164.32 psi	0.06	OK
+1.20D+0.30S	16.65 psi	164.32 psi	0.10	OK
+1.20D+S	32.67 psi	164.32 psi	0.20	OK
+0.90D	7.34 psi	164.32 psi	0.04	OK
+1.20D+0.150S	13.22 psi	164.32 psi	0.08	OK

All units k

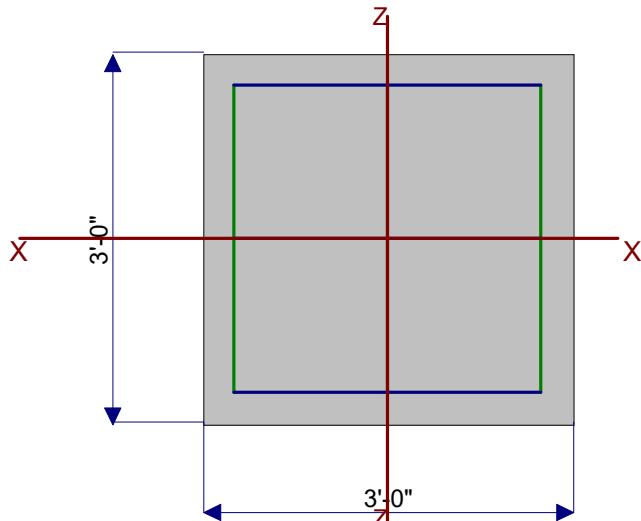
General Footing

LIC# : KW-06014743, Build:20.26.06.08

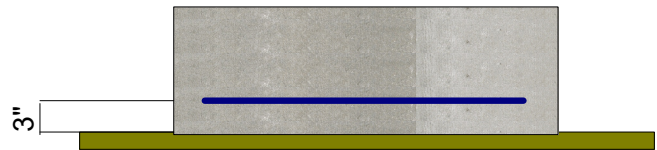
FROELICH CONSULTING ENGINEERS

DESCRIPTION: Footing, C4

Plan and Section Views



Bottom Mat: 3#5 parallel to X-X, 3#5 parallel to Z-Z



X-X Section Looking to +Z



Z-Z Section Looking to +X

Project Title:
Engineer:
Project ID:
Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C5

Code References

Governing Code : IBC 2024

Referenced Design Standard(s) : ACI 318-19

Load Combinations Used : ASCE 7-22 / IBC 2024

Rho (or Omega) = 1.00

General Information

Material Properties

f'_c : Concrete 28 day strength	=	3.0 ksi
f_y : Rebar Yield	=	60.0 ksi
E_c : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
ϕ Values Flexure	=	0.90
Shear	=	0.750

Soil Design Values

Allowable Soil Bearing	=	2.50 ksf
Soil Density	=	110.0 pcf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	No
Use Pedestal wt for stability, mom & shear	:	No

Increases based on footing Depth

Footings base depth below soil surface	=	ft
Allow press. increase per foot of depth	=	ksf
when footing base is below	=	ft

Increases based on footing plan dimension

Allowable pressure increase per foot of depth = ksf
when max. length or width is greater than = ft

Dimensions

Width parallel to X-X Axis	=	2.0 ft
Length parallel to Z-Z Axis	=	2.0 ft
Footing Thickness	=	12.0 in

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	n/a
# Bars required within zone	n/a
# Bars required on each side of zone	n/a

Pedestal dimensions...		
px : parallel to X-X Axis	=	6.0 in
pz : parallel to Z-Z Axis	=	6.0 in
Height	=	in

Bottom Reinforcing

Bars parallel to X-X Axis (resisting Z Flexure)

Number of Bars	=	2
Reinforcing Bar Size	=	# 5

Bars parallel to Z-Z Axis (resisting X Flexure)

Number of Bars	=	#	2
Reinforcing Bar Size	=		5

Rebar Centerline to Edge of Concrete...

at Bottom of footing = 3.0 in

Applied Loads

[illegible]

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C5

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.7696	Soil Bearing	1.924 ksf	2.50 ksf	+D+0.70S about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	999.0	Sliding - X-X	0.0 k	0.9447 k	D Only
PASS	999.0	Sliding - Z-Z	0.0 k	0.9447 k	D Only
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.05551	Z Flexure (+X) Bot Tens	0.6734 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.05551	Z Flexure (-X) Bot Tens	0.6734 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.836	Min Steel X Flexure Bottom	0.259 in2/ft	0.310 in2/ft	n/a
PASS	0.05551	X Flexure (+Z) Bot Tens	0.6734 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.05551	X Flexure (-Z) Bot Tens	0.6734 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.836	Min Steel Z Flexure Bottom	0.259 in2/ft	0.310 in2/ft	n/a
PASS	0.0	Z Flexure (+X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	Z Flexure (-X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel X Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.0	X Flexure (+Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	X Flexure (-Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel Z Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	n/a	1-way Shear (+X)	0.0 psi	46.704 psi	n/a
PASS	0.0	1-way Shear (-X)	0.0 psi	0.0 psi	n/a
PASS	n/a	1-way Shear (+Z)	0.0 psi	46.704 psi	n/a
PASS	n/a	1-way Shear (-Z)	0.0 psi	46.704 psi	n/a
PASS	n/a	2-way Punching	10.920 psi	46.704 psi	+1.20D+S

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Zecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
			(in)			Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.50	n/a	0.0	0.7873	0.7873	n/a	n/a	n/a	n/a	0.315
X-X, +D+0.70S	2.50	n/a	0.0	1.924	1.924	n/a	n/a	n/a	n/a	0.770
X-X, +D+0.5250S	2.50	n/a	0.0	1.640	1.640	n/a	n/a	n/a	n/a	0.656
X-X, +0.60D	2.50	n/a	0.0	0.4724	0.4724	n/a	n/a	n/a	n/a	0.189
X-X, +D+0.10S	2.50	n/a	0.0	0.9497	0.9497	n/a	n/a	n/a	n/a	0.380
Z-Z, D Only	2.50	0.0	n/a	n/a	n/a	0.7873	0.7873	0.7873	0.7873	0.315
Z-Z, +D+0.70S	2.50	0.0	n/a	n/a	n/a	1.924	1.924	1.924	1.924	0.770
Z-Z, +D+0.5250S	2.50	0.0	n/a	n/a	n/a	1.640	1.640	1.640	1.640	0.656
Z-Z, +0.60D	2.50	0.0	n/a	n/a	n/a	0.4724	0.4724	0.4724	0.4724	0.189
Z-Z, +D+0.10S	2.50	0.0	n/a	n/a	n/a	0.9497	0.9497	0.9497	0.9497	0.380

Overturning Stability

Rotation Axis & Load Combination...	Moment Sum About Negative Edge (k-ft)				Moment Sum About Positive Edge (k-ft)			
	Overturning	Resisting	Ratio	Status	Overturning	Resisting	Ratio	Status

Footing Has NO Overturning

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force		Resisting Force		Stability Ratio	Status

Footing Has NO Sliding

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.2528	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.40D	0.2528	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D	0.2167	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D	0.2167	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.30S	0.3537	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.30S	0.3537	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+S	0.6734	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+S	0.6734	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +0.90D	0.1625	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C5

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +0.90D	0.1625	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.150S	0.2852	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.150S	0.2852	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.40D	0.2528	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.40D	0.2528	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D	0.2167	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D	0.2167	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.30S	0.3537	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.30S	0.3537	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+S	0.6734	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+S	0.6734	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +0.90D	0.1625	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +0.90D	0.1625	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.150S	0.2852	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.150S	0.2852	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+1.20D	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+1.20D+0.30S	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+1.20D+S	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+0.90D	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+1.20D+0.150S	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+1.20D	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+1.20D+0.30S	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+1.20D+S	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+0.90D	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+1.20D+0.150S	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	4.10 psi	164.32 psi	0.02	OK
+1.20D	3.51 psi	164.32 psi	0.02	OK
+1.20D+0.30S	5.74 psi	164.32 psi	0.03	OK
+1.20D+S	10.92 psi	164.32 psi	0.07	OK
+0.90D	2.64 psi	164.32 psi	0.02	OK
+1.20D+0.150S	4.63 psi	164.32 psi	0.03	OK

All units k

General Footing

Project File: Chiloquin Fitness.ec6

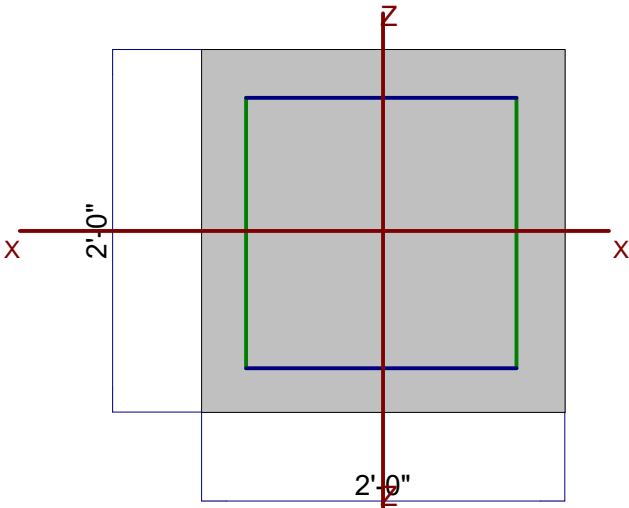
LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

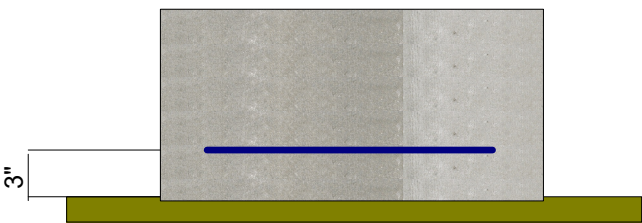
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DESCRIPTION: Footing, C5

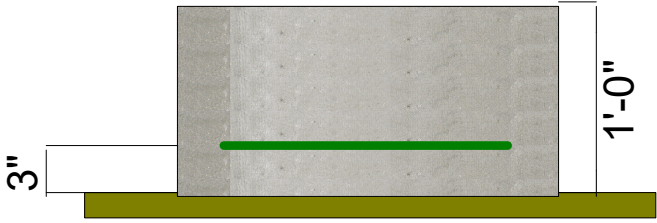
Plan and Section Views



Bottom Mat: 2#5 parallel to X-X, 2#5 parallel to Z-Z



X-X Section Looking to +Z



Z-Z Section Looking to +X

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C7

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.8020	Soil Bearing	2.005 ksf	2.50 ksf	+D+0.70S about Z-Z axis
PASS	n/a	Overturing - X-X	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Overturing - Z-Z	0.0 k-ft	0.0 k-ft	No Overturing
PASS	999.0	Sliding - X-X	0.0 k	0.9183 k	D Only
PASS	999.0	Sliding - Z-Z	0.0 k	0.9183 k	D Only
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.05831	Z Flexure (+X) Bot Tens	0.7074 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.05831	Z Flexure (-X) Bot Tens	0.7074 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.836	Min Steel X Flexure Bottom	0.259 in2/ft	0.310 in2/ft	n/a
PASS	0.05831	X Flexure (+Z) Bot Tens	0.7074 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.05831	X Flexure (-Z) Bot Tens	0.7074 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.836	Min Steel Z Flexure Bottom	0.259 in2/ft	0.310 in2/ft	n/a
PASS	0.0	Z Flexure (+X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	Z Flexure (-X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel X Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.0	X Flexure (+Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	X Flexure (-Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel Z Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	n/a	1-way Shear (+X)	0.0 psi	46.704 psi	n/a
PASS	0.0	1-way Shear (-X)	0.0 psi	0.0 psi	n/a
PASS	n/a	1-way Shear (+Z)	0.0 psi	46.704 psi	n/a
PASS	n/a	1-way Shear (-Z)	0.0 psi	46.704 psi	n/a
PASS	n/a	2-way Punching	11.471 psi	46.704 psi	+1.20D+S

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Zecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
			(in)			Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.50	n/a	0.0	0.7653	0.7653	n/a	n/a	n/a	n/a	0.306
X-X, +D+0.70S	2.50	n/a	0.0	2.005	2.005	n/a	n/a	n/a	n/a	0.802
X-X, +D+0.5250S	2.50	n/a	0.0	1.695	1.695	n/a	n/a	n/a	n/a	0.678
X-X, +0.60D	2.50	n/a	0.0	0.4592	0.4592	n/a	n/a	n/a	n/a	0.184
X-X, +D+0.10S	2.50	n/a	0.0	0.9424	0.9424	n/a	n/a	n/a	n/a	0.377
Z-Z, D Only	2.50	0.0	n/a	n/a	n/a	0.7653	0.7653	0.7653	0.7653	0.306
Z-Z, +D+0.70S	2.50	0.0	n/a	n/a	n/a	2.005	2.005	2.005	2.005	0.802
Z-Z, +D+0.5250S	2.50	0.0	n/a	n/a	n/a	1.695	1.695	1.695	1.695	0.678
Z-Z, +0.60D	2.50	0.0	n/a	n/a	n/a	0.4592	0.4592	0.4592	0.4592	0.184
Z-Z, +D+0.10S	2.50	0.0	n/a	n/a	n/a	0.9424	0.9424	0.9424	0.9424	0.377

Overturing Stability

Rotation Axis & Load Combination...	Moment Sum About Negative Edge (k-ft)				Moment Sum About Positive Edge (k-ft)			
	Overturing	Resisting	Ratio	Status	Overturing	Resisting	Ratio	Status

Footing Has NO Overturing

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force		Resisting Force		Stability Ratio	Status

Footing Has NO Sliding

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.2442	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.40D	0.2442	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D	0.2093	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D	0.2093	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.30S	0.3587	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.30S	0.3587	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+S	0.7074	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+S	0.7074	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +0.90D	0.1570	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C7

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +0.90D	0.1570	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.150S	0.2840	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.150S	0.2840	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.40D	0.2442	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.40D	0.2442	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D	0.2093	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D	0.2093	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.30S	0.3587	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.30S	0.3587	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+S	0.7074	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+S	0.7074	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +0.90D	0.1570	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +0.90D	0.1570	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.150S	0.2840	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.150S	0.2840	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+1.20D	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+1.20D+0.30S	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+1.20D+S	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+0.90D	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+1.20D+0.150S	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+1.20D	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+1.20D+0.30S	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+1.20D+S	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+0.90D	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK
+1.20D+0.150S	0.00 psi	0.00 psi	0.00 psi	46.70 psi	0.00	OK

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	3.96 psi	164.32 psi	0.02	OK
+1.20D	3.39 psi	164.32 psi	0.02	OK
+1.20D+0.30S	5.82 psi	164.32 psi	0.04	OK
+1.20D+S	11.47 psi	164.32 psi	0.07	OK
+0.90D	2.55 psi	164.32 psi	0.02	OK
+1.20D+0.150S	4.61 psi	164.32 psi	0.03	OK

All units k

General Footing

Project File: Chiloquin Fitness.ec6

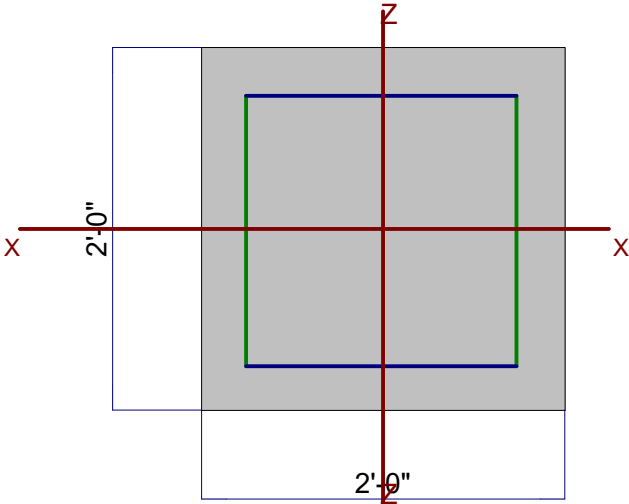
LIC# : KW-06014743, Build:20.26.06.08

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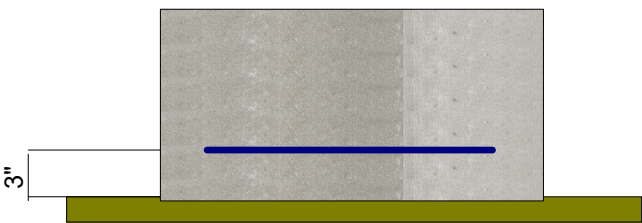
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DESCRIPTION: Footing, C7

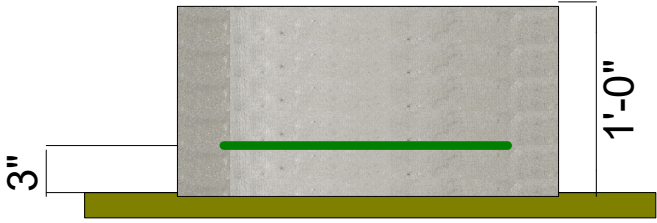
Plan and Section Views



Bottom Mat: 2#5 parallel to X-X, 2#5 parallel to Z-Z



X-X Section Looking to +Z



Z-Z Section Looking to +X

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Footing, C8

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.7584	Soil Bearing	1.896 ksf	2.50 ksf	+D+0.70S about Z-Z axis
PASS	n/a	Overturing - X-X	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Overturing - Z-Z	0.0 k-ft	0.0 k-ft	No Overturing
PASS	999.0	Sliding - X-X	0.0 k	1.342 k	D Only
PASS	999.0	Sliding - Z-Z	0.0 k	1.342 k	D Only
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.1080	Z Flexure (+X) Bot Tens	1.20 k-ft/ft	11.107 k-ft/ft	+1.20D+S
PASS	0.1080	Z Flexure (-X) Bot Tens	1.20 k-ft/ft	11.107 k-ft/ft	+1.20D+S
PASS	0.581	Min Steel X Flexure Bottom	0.216 in2/ft	0.372 in2/ft	n/a
PASS	0.1080	X Flexure (+Z) Bot Tens	1.20 k-ft/ft	11.107 k-ft/ft	+1.20D+S
PASS	0.1080	X Flexure (-Z) Bot Tens	1.20 k-ft/ft	11.107 k-ft/ft	+1.20D+S
PASS	0.581	Min Steel Z Flexure Bottom	0.216 in2/ft	0.372 in2/ft	n/a
PASS	0.0	Z Flexure (+X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	Z Flexure (-X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel X Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.0	X Flexure (+Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	X Flexure (-Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel Z Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.2250	1-way Shear (+X)	12.142 psi	53.968 psi	+1.20D+S
PASS	0.2250	1-way Shear (-X)	12.142 psi	53.968 psi	+1.20D+S
PASS	0.2250	1-way Shear (+Z)	12.142 psi	53.968 psi	+1.20D+S
PASS	0.2250	1-way Shear (-Z)	12.142 psi	53.968 psi	+1.20D+S
PASS	0.2022	2-way Punching	33.228 psi	164.317 psi	+1.20D+S

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Zecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
			(in)			Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.50	n/a	0.0	0.7157	0.7157	n/a	n/a	n/a	n/a	0.286
X-X, +D+0.70S	2.50	n/a	0.0	1.896	1.896	n/a	n/a	n/a	n/a	0.758
X-X, +D+0.5250S	2.50	n/a	0.0	1.601	1.601	n/a	n/a	n/a	n/a	0.640
X-X, +0.60D	2.50	n/a	0.0	0.4294	0.4294	n/a	n/a	n/a	n/a	0.172
X-X, +D+0.10S	2.50	n/a	0.0	0.8843	0.8843	n/a	n/a	n/a	n/a	0.354
Z-Z, D Only	2.50	0.0	n/a	n/a	n/a	0.7157	0.7157	0.7157	0.7157	0.286
Z-Z, +D+0.70S	2.50	0.0	n/a	n/a	n/a	1.896	1.896	1.896	1.896	0.758
Z-Z, +D+0.5250S	2.50	0.0	n/a	n/a	n/a	1.601	1.601	1.601	1.601	0.640
Z-Z, +0.60D	2.50	0.0	n/a	n/a	n/a	0.4294	0.4294	0.4294	0.4294	0.172
Z-Z, +D+0.10S	2.50	0.0	n/a	n/a	n/a	0.8843	0.8843	0.8843	0.8843	0.354

Overturing Stability

Rotation Axis & Load Combination...	Moment Sum About Negative Edge (k-ft)				Moment Sum About Positive Edge (k-ft)			
	Overturing	Resisting	Ratio	Status	Overturing	Resisting	Ratio	Status

Footing Has NO Overturing

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force		Resisting Force		Stability Ratio	Status

Footing Has NO Sliding

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.4164	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.40D	0.4164	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D	0.3569	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D	0.3569	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+0.30S	0.6098	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+0.30S	0.6098	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+S	1.20	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+S	1.20	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +0.90D	0.2677	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C8

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +0.90D	0.2677	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+0.150S	0.4834	+Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
X-X, +1.20D+0.150S	0.4834	-Z	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.40D	0.4164	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.40D	0.4164	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D	0.3569	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D	0.3569	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+0.30S	0.6098	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+0.30S	0.6098	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+S	1.20	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+S	1.20	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +0.90D	0.2677	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +0.90D	0.2677	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+0.150S	0.4834	-X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK
Z-Z, +1.20D+0.150S	0.4834	+X	Bottom	0.2160	ACI 7.6.1.1	0.3720	11.107	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	4.21 psi	4.21 psi	4.21 psi	53.97 psi	0.08	OK
+1.20D	3.61 psi	3.61 psi	3.61 psi	53.97 psi	0.07	OK
+1.20D+0.30S	6.17 psi	6.17 psi	6.17 psi	53.97 psi	0.11	OK
+1.20D+S	12.14 psi	12.14 psi	12.14 psi	53.97 psi	0.23	OK
+0.90D	2.71 psi	2.71 psi	2.71 psi	53.97 psi	0.05	OK
+1.20D+0.150S	4.89 psi	4.89 psi	4.89 psi	53.97 psi	0.09	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	4.21 psi	4.21 psi	4.21 psi	53.97 psi	0.08	OK
+1.20D	3.61 psi	3.61 psi	3.61 psi	53.97 psi	0.07	OK
+1.20D+0.30S	6.17 psi	6.17 psi	6.17 psi	53.97 psi	0.11	OK
+1.20D+S	12.14 psi	12.14 psi	12.14 psi	53.97 psi	0.23	OK
+0.90D	2.71 psi	2.71 psi	2.71 psi	53.97 psi	0.05	OK
+1.20D+0.150S	4.89 psi	4.89 psi	4.89 psi	53.97 psi	0.09	OK

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	11.53 psi	164.32 psi	0.07	OK
+1.20D	9.88 psi	164.32 psi	0.06	OK
+1.20D+0.30S	16.89 psi	164.32 psi	0.10	OK
+1.20D+S	33.23 psi	164.32 psi	0.20	OK
+0.90D	7.41 psi	164.32 psi	0.05	OK
+1.20D+0.150S	13.39 psi	164.32 psi	0.08	OK

All units k

General Footing

Project File: Chiloquin Fitness.ec6

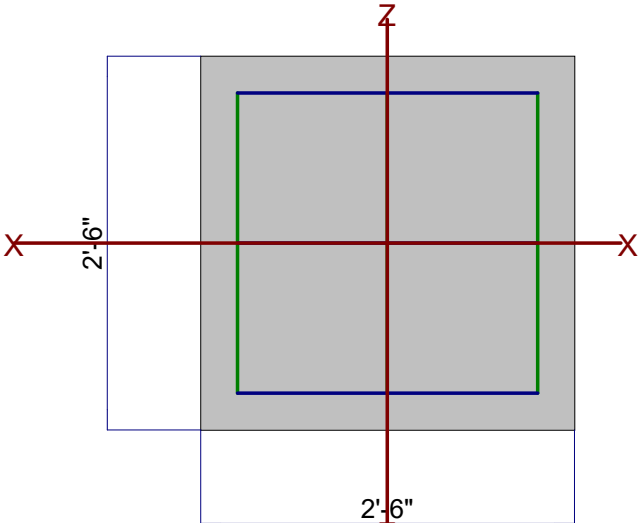
LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

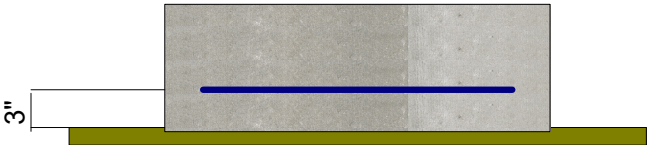
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DESCRIPTION: Footing, C8

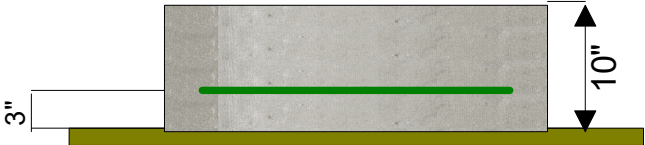
Plan and Section Views



Bottom Mat: 3#5 parallel to X-X, 3#5 parallel to Z-Z



X-X Section Looking to +Z



Z-Z Section Looking to +X

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C9

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.7928	Soil Bearing	1.982 ksf	2.50 ksf	+D+0.70S about Z-Z axis
PASS	n/a	Overturing - X-X	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Overturing - Z-Z	0.0 k-ft	0.0 k-ft	No Overturing
PASS	999.0	Sliding - X-X	0.0 k	0.8890 k	D Only
PASS	999.0	Sliding - Z-Z	0.0 k	0.8890 k	D Only
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.07576	Z Flexure (+X) Bot Tens	0.7077 k-ft/ft	9.341 k-ft/ft	+1.20D+S
PASS	0.07576	Z Flexure (-X) Bot Tens	0.7077 k-ft/ft	9.341 k-ft/ft	+1.20D+S
PASS	0.697	Min Steel X Flexure Bottom	0.216 in2/ft	0.310 in2/ft	n/a
PASS	0.07576	X Flexure (+Z) Bot Tens	0.7077 k-ft/ft	9.341 k-ft/ft	+1.20D+S
PASS	0.07576	X Flexure (-Z) Bot Tens	0.7077 k-ft/ft	9.341 k-ft/ft	+1.20D+S
PASS	0.697	Min Steel Z Flexure Bottom	0.216 in2/ft	0.310 in2/ft	n/a
PASS	0.0	Z Flexure (+X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	Z Flexure (-X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel X Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.0	X Flexure (+Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	X Flexure (-Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel Z Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.09439	1-way Shear (+X)	4.794 psi	50.785 psi	+1.20D+S
PASS	0.09439	1-way Shear (-X)	4.794 psi	50.785 psi	+1.20D+S
PASS	0.09439	1-way Shear (+Z)	4.794 psi	50.785 psi	+1.20D+S
PASS	0.09439	1-way Shear (-Z)	4.794 psi	50.785 psi	+1.20D+S
PASS	0.1192	2-way Punching	19.592 psi	164.317 psi	+1.20D+S

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Zecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
			(in)			Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.50	n/a	0.0	0.7408	0.7408	n/a	n/a	n/a	n/a	0.296
X-X, +D+0.70S	2.50	n/a	0.0	1.982	1.982	n/a	n/a	n/a	n/a	0.793
X-X, +D+0.5250S	2.50	n/a	0.0	1.672	1.672	n/a	n/a	n/a	n/a	0.669
X-X, +0.60D	2.50	n/a	0.0	0.4445	0.4445	n/a	n/a	n/a	n/a	0.178
X-X, +D+0.10S	2.50	n/a	0.0	0.9181	0.9181	n/a	n/a	n/a	n/a	0.367
Z-Z, D Only	2.50	0.0	n/a	n/a	n/a	0.7408	0.7408	0.7408	0.7408	0.296
Z-Z, +D+0.70S	2.50	0.0	n/a	n/a	n/a	1.982	1.982	1.982	1.982	0.793
Z-Z, +D+0.5250S	2.50	0.0	n/a	n/a	n/a	1.672	1.672	1.672	1.672	0.669
Z-Z, +0.60D	2.50	0.0	n/a	n/a	n/a	0.4445	0.4445	0.4445	0.4445	0.178
Z-Z, +D+0.10S	2.50	0.0	n/a	n/a	n/a	0.9181	0.9181	0.9181	0.9181	0.367

Overturing Stability

Rotation Axis & Load Combination...	Moment Sum About Negative Edge (k-ft)				Moment Sum About Positive Edge (k-ft)			
	Overturing	Resisting	Ratio	Status	Overturing	Resisting	Ratio	Status

Footing Has NO Overturing

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force		Resisting Force		Stability Ratio	Status

Footing Has NO Sliding

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.2441	+Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.40D	0.2441	-Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.20D	0.2092	+Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.20D	0.2092	-Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.20D+0.30S	0.3588	+Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.20D+0.30S	0.3588	-Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.20D+S	0.7077	+Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.20D+S	0.7077	-Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +0.90D	0.1569	+Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C9

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +0.90D	0.1569	-Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.20D+0.150S	0.2840	+Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.20D+0.150S	0.2840	-Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.40D	0.2441	-X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.40D	0.2441	+X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.20D	0.2092	-X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.20D	0.2092	+X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.20D+0.30S	0.3588	-X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.20D+0.30S	0.3588	+X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.20D+S	0.7077	-X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.20D+S	0.7077	+X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +0.90D	0.1569	-X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +0.90D	0.1569	+X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.20D+0.150S	0.2840	-X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.20D+0.150S	0.2840	+X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	1.65 psi	1.65 psi	1.65 psi	50.79 psi	0.03	OK
+1.20D	1.42 psi	1.42 psi	1.42 psi	50.79 psi	0.03	OK
+1.20D+0.30S	2.43 psi	2.43 psi	2.43 psi	50.79 psi	0.05	OK
+1.20D+S	4.79 psi	4.79 psi	4.79 psi	50.79 psi	0.09	OK
+0.90D	1.06 psi	1.06 psi	1.06 psi	50.79 psi	0.02	OK
+1.20D+0.150S	1.92 psi	1.92 psi	1.92 psi	50.79 psi	0.04	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	1.65 psi	1.65 psi	1.65 psi	50.79 psi	0.03	OK
+1.20D	1.42 psi	1.42 psi	1.42 psi	50.79 psi	0.03	OK
+1.20D+0.30S	2.43 psi	2.43 psi	2.43 psi	50.79 psi	0.05	OK
+1.20D+S	4.79 psi	4.79 psi	4.79 psi	50.79 psi	0.09	OK
+0.90D	1.06 psi	1.06 psi	1.06 psi	50.79 psi	0.02	OK
+1.20D+0.150S	1.92 psi	1.92 psi	1.92 psi	50.79 psi	0.04	OK

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	6.76 psi	164.32 psi	0.04	OK
+1.20D	5.79 psi	164.32 psi	0.04	OK
+1.20D+0.30S	9.93 psi	164.32 psi	0.06	OK
+1.20D+S	19.59 psi	164.32 psi	0.12	OK
+0.90D	4.34 psi	164.32 psi	0.03	OK
+1.20D+0.150S	7.86 psi	164.32 psi	0.05	OK

All units k

General Footing

Project File: Chiloquin Fitness.ec6

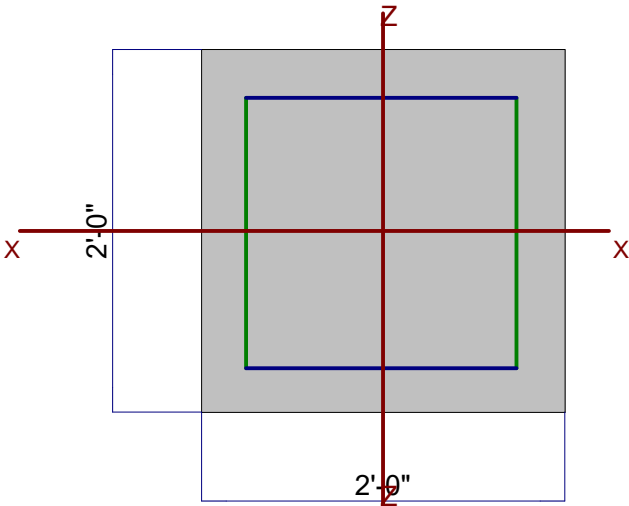
LIC# : KW-06014743, Build:20.26.06.08

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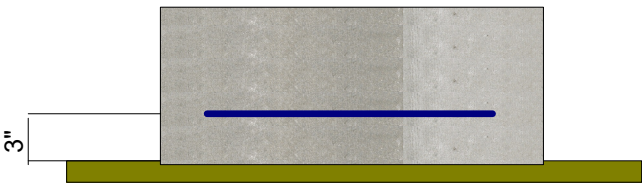
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DESCRIPTION: Footing, C9

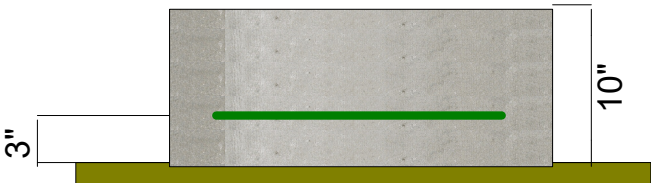
Plan and Section Views



Bottom Mat: 2#5 parallel to X-X, 2#5 parallel to Z-Z



X-X Section Looking to +Z



Z-Z Section Looking to +X

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C10

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.5044	Soil Bearing	1.261 ksf	2.50 ksf	+D+0.70S about Z-Z axis
PASS	n/a	Overturing - X-X	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Overturing - Z-Z	0.0 k-ft	0.0 k-ft	No Overturing
PASS	999.0	Sliding - X-X	0.0 k	0.5992 k	D Only
PASS	999.0	Sliding - Z-Z	0.0 k	0.5992 k	D Only
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.04643	Z Flexure (+X) Bot Tens	0.4337 k-ft/ft	9.341 k-ft/ft	+1.20D+S
PASS	0.04643	Z Flexure (-X) Bot Tens	0.4337 k-ft/ft	9.341 k-ft/ft	+1.20D+S
PASS	0.697	Min Steel X Flexure Bottom	0.216 in2/ft	0.310 in2/ft	n/a
PASS	0.04643	X Flexure (+Z) Bot Tens	0.4337 k-ft/ft	9.341 k-ft/ft	+1.20D+S
PASS	0.04643	X Flexure (-Z) Bot Tens	0.4337 k-ft/ft	9.341 k-ft/ft	+1.20D+S
PASS	0.697	Min Steel Z Flexure Bottom	0.216 in2/ft	0.310 in2/ft	n/a
PASS	0.0	Z Flexure (+X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	Z Flexure (-X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel X Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.0	X Flexure (+Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	X Flexure (-Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel Z Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.05784	1-way Shear (+X)	2.938 psi	50.785 psi	+1.20D+S
PASS	0.05784	1-way Shear (-X)	2.938 psi	50.785 psi	+1.20D+S
PASS	0.05784	1-way Shear (+Z)	2.938 psi	50.785 psi	+1.20D+S
PASS	0.05784	1-way Shear (-Z)	2.938 psi	50.785 psi	+1.20D+S
PASS	0.07306	2-way Punching	12.005 psi	164.317 psi	+1.20D+S

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Zecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
			(in)			Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.50	n/a	0.0	0.4993	0.4993	n/a	n/a	n/a	n/a	0.200
X-X, +D+0.70S	2.50	n/a	0.0	1.261	1.261	n/a	n/a	n/a	n/a	0.504
X-X, +D+0.5250S	2.50	n/a	0.0	1.071	1.071	n/a	n/a	n/a	n/a	0.428
X-X, +0.60D	2.50	n/a	0.0	0.2996	0.2996	n/a	n/a	n/a	n/a	0.120
X-X, +D+0.10S	2.50	n/a	0.0	0.6081	0.6081	n/a	n/a	n/a	n/a	0.243
Z-Z, D Only	2.50	0.0	n/a	n/a	n/a	0.4993	0.4993	0.4993	0.4993	0.200
Z-Z, +D+0.70S	2.50	0.0	n/a	n/a	n/a	1.261	1.261	1.261	1.261	0.504
Z-Z, +D+0.5250S	2.50	0.0	n/a	n/a	n/a	1.071	1.071	1.071	1.071	0.428
Z-Z, +0.60D	2.50	0.0	n/a	n/a	n/a	0.2996	0.2996	0.2996	0.2996	0.120
Z-Z, +D+0.10S	2.50	0.0	n/a	n/a	n/a	0.6081	0.6081	0.6081	0.6081	0.243

Overturing Stability

Rotation Axis & Load Combination...	Moment Sum About Negative Edge (k-ft)				Moment Sum About Positive Edge (k-ft)			
	Overturing	Resisting	Ratio	Status	Overturing	Resisting	Ratio	Status

Footing Has NO Overturing

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force		Resisting Force		Stability Ratio	Status

Footing Has NO Sliding

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.1490	+Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.40D	0.1490	-Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.20D	0.1277	+Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.20D	0.1277	-Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.20D+0.30S	0.2195	+Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.20D+0.30S	0.2195	-Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.20D+S	0.4337	+Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.20D+S	0.4337	-Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +0.90D	0.09579	+Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C10

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +0.90D	0.09579	-Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.20D+0.150S	0.1736	+Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
X-X, +1.20D+0.150S	0.1736	-Z	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.40D	0.1490	-X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.40D	0.1490	+X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.20D	0.1277	-X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.20D	0.1277	+X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.20D+0.30S	0.2195	-X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.20D+0.30S	0.2195	+X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.20D+S	0.4337	-X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.20D+S	0.4337	+X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +0.90D	0.09579	-X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +0.90D	0.09579	+X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.20D+0.150S	0.1736	-X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK
Z-Z, +1.20D+0.150S	0.1736	+X	Bottom	0.2160	ACI 7.6.1.1	0.310	9.341	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	1.01 psi	1.01 psi	1.01 psi	50.79 psi	0.02	OK
+1.20D	0.87 psi	0.87 psi	0.87 psi	50.79 psi	0.02	OK
+1.20D+0.30S	1.49 psi	1.49 psi	1.49 psi	50.79 psi	0.03	OK
+1.20D+S	2.94 psi	2.94 psi	2.94 psi	50.79 psi	0.06	OK
+0.90D	0.65 psi	0.65 psi	0.65 psi	50.79 psi	0.01	OK
+1.20D+0.150S	1.18 psi	1.18 psi	1.18 psi	50.79 psi	0.02	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	1.01 psi	1.01 psi	1.01 psi	50.79 psi	0.02	OK
+1.20D	0.87 psi	0.87 psi	0.87 psi	50.79 psi	0.02	OK
+1.20D+0.30S	1.49 psi	1.49 psi	1.49 psi	50.79 psi	0.03	OK
+1.20D+S	2.94 psi	2.94 psi	2.94 psi	50.79 psi	0.06	OK
+0.90D	0.65 psi	0.65 psi	0.65 psi	50.79 psi	0.01	OK
+1.20D+0.150S	1.18 psi	1.18 psi	1.18 psi	50.79 psi	0.02	OK

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	4.13 psi	164.32 psi	0.03	OK
+1.20D	3.54 psi	164.32 psi	0.02	OK
+1.20D+0.30S	6.08 psi	164.32 psi	0.04	OK
+1.20D+S	12.01 psi	164.32 psi	0.07	OK
+0.90D	2.65 psi	164.32 psi	0.02	OK
+1.20D+0.150S	4.81 psi	164.32 psi	0.03	OK

All units k

General Footing

Project File: Chiloquin Fitness.ec6

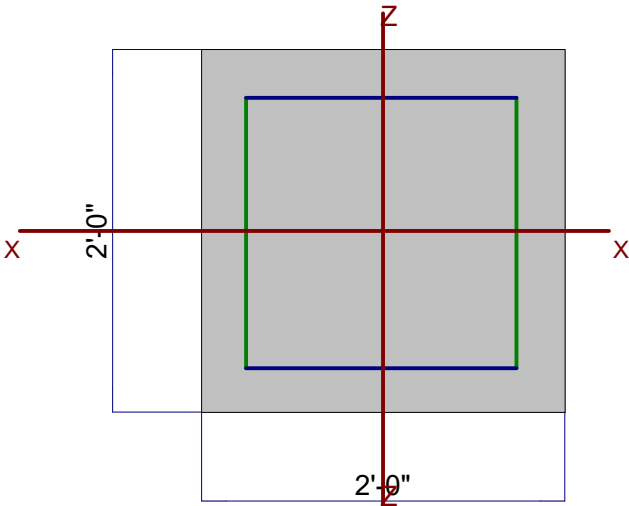
LIC# : KW-06014743, Build:20.26.06.08

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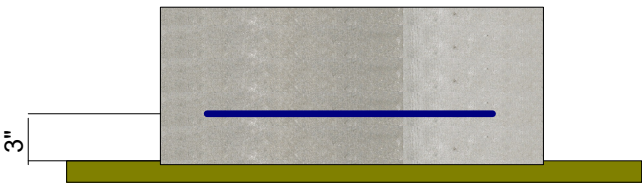
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DESCRIPTION: Footing, C10

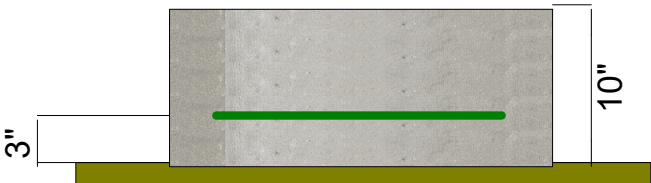
Plan and Section Views



Bottom Mat: 2#5 parallel to X-X, 2#5 parallel to Z-Z



X-X Section Looking to +Z



Z-Z Section Looking to +X

Project Title:
Engineer:
Project ID:
Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

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DESCRIPTION: Footing, C11

Code References

Governing Code : IBC 2024

Referenced Design Standard(s) : ACI 318-19

Load Combinations Used : ASCE 7-22 / IBC 2024

Rho (or Omega) = 1.00

General Information

Material Properties

f'_c : Concrete 28 day strength	=	3.0 ksi
f_y : Rebar Yield	=	60.0 ksi
E_c : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
ϕ Values Flexure	=	0.90
Shear	=	0.750

Soil Design Values

Allowable Soil Bearing	=	2.50 ksf
Soil Density	=	110.0 pcf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	No
Use Pedestal wt for stability, mom & shear	:	No

Increases based on footing Depth

Footings base depth below soil surface	=	ft
Allow press. increase per foot of depth	=	ksf
when footing base is below	=	ft

Increases based on footing plan dimension

Allowable pressure increase per foot of depth = ksf
when max. length or width is greater than = ft

Dimensions

Width parallel to X-X Axis	=	3.0 ft
Length parallel to Z-Z Axis	=	3.0 ft
Footing Thickness	=	12.0 in

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	n/a
# Bars required within zone	n/a
# Bars required on each side of zone	n/a

Pedestal dimensions...		
px : parallel to X-X Axis	=	6.0 in
pz : parallel to Z-Z Axis	=	6.0 in
Height	=	in

Bottom Reinforcing

Bars parallel to X-X Axis (resisting Z Flexure)

Number of Bars	=		3
Reinforcing Bar Size	=	#	5

Bars parallel to Z-Z Axis (resisting X Flexure)

Number of Bars	=	#	3
Reinforcing Bar Size	=		5

Rebar Centerline to Edge of Concrete...

at Bottom of footing = 3.0 in

Applied Loads

[illegible]

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C11

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.7944	Soil Bearing	1.986 ksf	2.50 ksf	+D+0.70S about Z-Z axis
PASS	n/a	Overturing - X-X	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Overturing - Z-Z	0.0 k-ft	0.0 k-ft	No Overturing
PASS	999.0	Sliding - X-X	0.0 k	2.058 k	D Only
PASS	999.0	Sliding - Z-Z	0.0 k	2.058 k	D Only
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.1603	Z Flexure (+X) Bot Tens	1.945 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.1603	Z Flexure (-X) Bot Tens	1.945 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.836	Min Steel X Flexure Bottom	0.259 in2/ft	0.310 in2/ft	n/a
PASS	0.1603	X Flexure (+Z) Bot Tens	1.945 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.1603	X Flexure (-Z) Bot Tens	1.945 k-ft/ft	12.131 k-ft/ft	+1.20D+S
PASS	0.836	Min Steel Z Flexure Bottom	0.259 in2/ft	0.310 in2/ft	n/a
PASS	0.0	Z Flexure (+X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	Z Flexure (-X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel X Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.0	X Flexure (+Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	X Flexure (-Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel Z Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.2517	1-way Shear (+X)	11.755 psi	46.704 psi	+1.20D+S
PASS	0.2517	1-way Shear (-X)	11.755 psi	46.704 psi	+1.20D+S
PASS	0.2517	1-way Shear (+Z)	11.755 psi	46.704 psi	+1.20D+S
PASS	0.2517	1-way Shear (-Z)	11.755 psi	46.704 psi	+1.20D+S
PASS	0.2080	2-way Punching	34.171 psi	164.317 psi	+1.20D+S

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Zecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
			(in)			Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.50	n/a	0.0	0.7623	0.7623	n/a	n/a	n/a	n/a	0.305
X-X, +D+0.70S	2.50	n/a	0.0	1.986	1.986	n/a	n/a	n/a	n/a	0.794
X-X, +D+0.5250S	2.50	n/a	0.0	1.680	1.680	n/a	n/a	n/a	n/a	0.672
X-X, +0.60D	2.50	n/a	0.0	0.4574	0.4574	n/a	n/a	n/a	n/a	0.183
X-X, +D+0.10S	2.50	n/a	0.0	0.9372	0.9372	n/a	n/a	n/a	n/a	0.375
Z-Z, D Only	2.50	0.0	n/a	n/a	n/a	0.7623	0.7623	0.7623	0.7623	0.305
Z-Z, +D+0.70S	2.50	0.0	n/a	n/a	n/a	1.986	1.986	1.986	1.986	0.794
Z-Z, +D+0.5250S	2.50	0.0	n/a	n/a	n/a	1.680	1.680	1.680	1.680	0.672
Z-Z, +0.60D	2.50	0.0	n/a	n/a	n/a	0.4574	0.4574	0.4574	0.4574	0.183
Z-Z, +D+0.10S	2.50	0.0	n/a	n/a	n/a	0.9372	0.9372	0.9372	0.9372	0.375

Overturing Stability

Rotation Axis & Load Combination...	Moment Sum About Negative Edge (k-ft)				Moment Sum About Positive Edge (k-ft)			
	Overturing	Resisting	Ratio	Status	Overturing	Resisting	Ratio	Status

Footing Has NO Overturing

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force		Resisting Force		Stability Ratio	Status

Footing Has NO Sliding

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.6752	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.40D	0.6752	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D	0.5787	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D	0.5787	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.30S	0.9885	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.30S	0.9885	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+S	1.945	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+S	1.945	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +0.90D	0.4340	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C11

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +0.90D	0.4340	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.150S	0.7836	+Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
X-X, +1.20D+0.150S	0.7836	-Z	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.40D	0.6752	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.40D	0.6752	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D	0.5787	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D	0.5787	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.30S	0.9885	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.30S	0.9885	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+S	1.945	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+S	1.945	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +0.90D	0.4340	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +0.90D	0.4340	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.150S	0.7836	-X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK
Z-Z, +1.20D+0.150S	0.7836	+X	Bottom	0.2592	ACI 7.6.1.1	0.310	12.131	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	4.08 psi	4.08 psi	4.08 psi	46.70 psi	0.09	OK
+1.20D	3.50 psi	3.50 psi	3.50 psi	46.70 psi	0.07	OK
+1.20D+0.30S	5.98 psi	5.98 psi	5.98 psi	46.70 psi	0.13	OK
+1.20D+S	11.76 psi	11.76 psi	11.76 psi	46.70 psi	0.25	OK
+0.90D	2.62 psi	2.62 psi	2.62 psi	46.70 psi	0.06	OK
+1.20D+0.150S	4.74 psi	4.74 psi	4.74 psi	46.70 psi	0.10	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	4.08 psi	4.08 psi	4.08 psi	46.70 psi	0.09	OK
+1.20D	3.50 psi	3.50 psi	3.50 psi	46.70 psi	0.07	OK
+1.20D+0.30S	5.98 psi	5.98 psi	5.98 psi	46.70 psi	0.13	OK
+1.20D+S	11.76 psi	11.76 psi	11.76 psi	46.70 psi	0.25	OK
+0.90D	2.62 psi	2.62 psi	2.62 psi	46.70 psi	0.06	OK
+1.20D+0.150S	4.74 psi	4.74 psi	4.74 psi	46.70 psi	0.10	OK

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	11.86 psi	164.32 psi	0.07	OK
+1.20D	10.17 psi	164.32 psi	0.06	OK
+1.20D+0.30S	17.37 psi	164.32 psi	0.11	OK
+1.20D+S	34.17 psi	164.32 psi	0.21	OK
+0.90D	7.63 psi	164.32 psi	0.05	OK
+1.20D+0.150S	13.77 psi	164.32 psi	0.08	OK

All units k

General Footing

Project File: Chiloquin Fitness.ec6

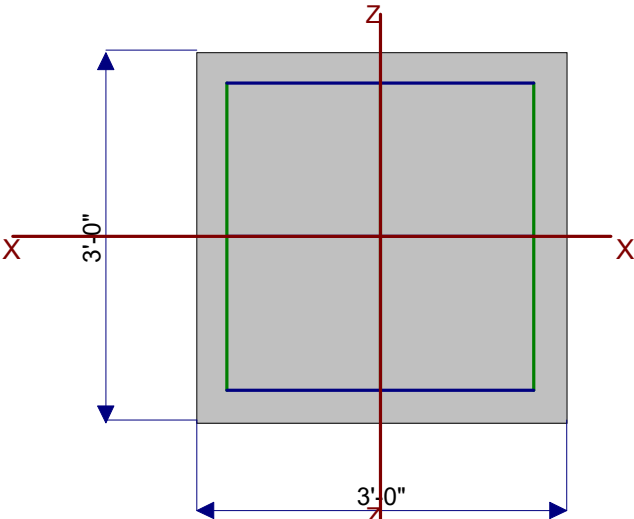
LIC# : KW-06014743, Build:20.26.06.08

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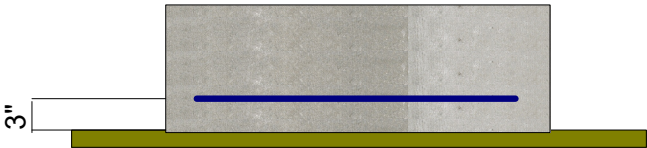
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DESCRIPTION: Footing, C11

Plan and Section Views



Bottom Mat: 3#5 parallel to X-X, 3#5 parallel to Z-Z



X-X Section Looking to +Z



Z-Z Section Looking to +X

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Footing, C16

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.7088	Soil Bearing	1.772 ksf	2.50 ksf	+D+0.70S about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	999.0	Sliding - X-X	0.0 k	1.264 k	D Only
PASS	999.0	Sliding - Z-Z	0.0 k	1.264 k	D Only
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.1480	Z Flexure (+X) Bot Tens	1.116 k-ft/ft	7.541 k-ft/ft	+1.20D+S
PASS	0.1480	Z Flexure (-X) Bot Tens	1.116 k-ft/ft	7.541 k-ft/ft	+1.20D+S
PASS	0.871	Min Steel X Flexure Bottom	0.216 in2/ft	0.248 in2/ft	n/a
PASS	0.1480	X Flexure (+Z) Bot Tens	1.116 k-ft/ft	7.541 k-ft/ft	+1.20D+S
PASS	0.1480	X Flexure (-Z) Bot Tens	1.116 k-ft/ft	7.541 k-ft/ft	+1.20D+S
PASS	0.871	Min Steel Z Flexure Bottom	0.216 in2/ft	0.248 in2/ft	n/a
PASS	0.0	Z Flexure (+X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	Z Flexure (-X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel X Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.0	X Flexure (+Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	X Flexure (-Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel Z Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.2396	1-way Shear (+X)	11.294 psi	47.145 psi	+1.20D+S
PASS	0.2396	1-way Shear (-X)	11.294 psi	47.145 psi	+1.20D+S
PASS	0.2396	1-way Shear (+Z)	11.294 psi	47.145 psi	+1.20D+S
PASS	0.2396	1-way Shear (-Z)	11.294 psi	47.145 psi	+1.20D+S
PASS	0.1881	2-way Punching	30.908 psi	164.317 psi	+1.20D+S

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Zecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
			(in)			Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.50	n/a	0.0	0.6741	0.6741	n/a	n/a	n/a	n/a	0.270
X-X, +D+0.70S	2.50	n/a	0.0	1.772	1.772	n/a	n/a	n/a	n/a	0.709
X-X, +D+0.5250S	2.50	n/a	0.0	1.497	1.497	n/a	n/a	n/a	n/a	0.599
X-X, +0.60D	2.50	n/a	0.0	0.4045	0.4045	n/a	n/a	n/a	n/a	0.162
X-X, +D+0.10S	2.50	n/a	0.0	0.8309	0.8309	n/a	n/a	n/a	n/a	0.332
Z-Z, D Only	2.50	0.0	n/a	n/a	n/a	0.6741	0.6741	0.6741	0.6741	0.270
Z-Z, +D+0.70S	2.50	0.0	n/a	n/a	n/a	1.772	1.772	1.772	1.772	0.709
Z-Z, +D+0.5250S	2.50	0.0	n/a	n/a	n/a	1.497	1.497	1.497	1.497	0.599
Z-Z, +0.60D	2.50	0.0	n/a	n/a	n/a	0.4045	0.4045	0.4045	0.4045	0.162
Z-Z, +D+0.10S	2.50	0.0	n/a	n/a	n/a	0.8309	0.8309	0.8309	0.8309	0.332

Overturning Stability

Rotation Axis & Load Combination...	Moment Sum About Negative Edge (k-ft)				Moment Sum About Positive Edge (k-ft)			
	Overturning	Resisting	Ratio	Status	Overturning	Resisting	Ratio	Status

Footing Has NO Overturning

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force		Resisting Force		Stability Ratio	Status

Footing Has NO Sliding

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.3873	+Z	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
X-X, +1.40D	0.3873	-Z	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
X-X, +1.20D	0.3320	+Z	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
X-X, +1.20D	0.3320	-Z	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
X-X, +1.20D+0.30S	0.5672	+Z	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
X-X, +1.20D+0.30S	0.5672	-Z	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
X-X, +1.20D+S	1.116	+Z	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
X-X, +1.20D+S	1.116	-Z	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
X-X, +0.90D	0.2490	+Z	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

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DESCRIPTION: Footing, C16

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +0.90D	0.2490	-Z	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
X-X, +1.20D+0.150S	0.4496	+Z	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
X-X, +1.20D+0.150S	0.4496	-Z	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
Z-Z, +1.40D	0.3873	-X	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
Z-Z, +1.40D	0.3873	+X	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
Z-Z, +1.20D	0.3320	-X	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
Z-Z, +1.20D	0.3320	+X	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
Z-Z, +1.20D+0.30S	0.5672	-X	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
Z-Z, +1.20D+0.30S	0.5672	+X	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
Z-Z, +1.20D+S	1.116	-X	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
Z-Z, +1.20D+S	1.116	+X	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
Z-Z, +0.90D	0.2490	-X	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
Z-Z, +0.90D	0.2490	+X	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
Z-Z, +1.20D+0.150S	0.4496	-X	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK
Z-Z, +1.20D+0.150S	0.4496	+X	Bottom	0.2160	ACI 7.6.1.1	0.2480	7.541	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	3.92 psi	3.92 psi	3.92 psi	47.15 psi	0.08	OK
+1.20D	3.36 psi	3.36 psi	3.36 psi	47.15 psi	0.07	OK
+1.20D+0.30S	5.74 psi	5.74 psi	5.74 psi	47.15 psi	0.12	OK
+1.20D+S	11.29 psi	11.29 psi	11.29 psi	47.15 psi	0.24	OK
+0.90D	2.52 psi	2.52 psi	2.52 psi	47.15 psi	0.05	OK
+1.20D+0.150S	4.55 psi	4.55 psi	4.55 psi	47.15 psi	0.10	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	3.92 psi	3.92 psi	3.92 psi	47.15 psi	0.08	OK
+1.20D	3.36 psi	3.36 psi	3.36 psi	47.15 psi	0.07	OK
+1.20D+0.30S	5.74 psi	5.74 psi	5.74 psi	47.15 psi	0.12	OK
+1.20D+S	11.29 psi	11.29 psi	11.29 psi	47.15 psi	0.24	OK
+0.90D	2.52 psi	2.52 psi	2.52 psi	47.15 psi	0.05	OK
+1.20D+0.150S	4.55 psi	4.55 psi	4.55 psi	47.15 psi	0.10	OK

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	10.73 psi	164.32 psi	0.07	OK
+1.20D	9.19 psi	164.32 psi	0.06	OK
+1.20D+0.30S	15.71 psi	164.32 psi	0.10	OK
+1.20D+S	30.91 psi	164.32 psi	0.19	OK
+0.90D	6.90 psi	164.32 psi	0.04	OK
+1.20D+0.150S	12.45 psi	164.32 psi	0.08	OK

All units k

General Footing

Project File: Chiloquin Fitness.ec6

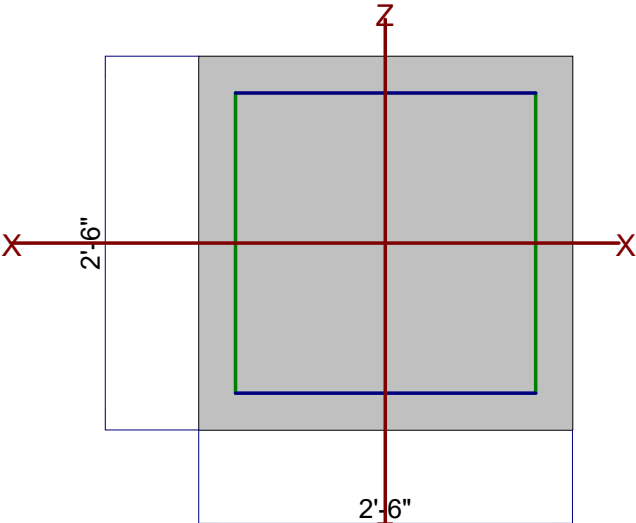
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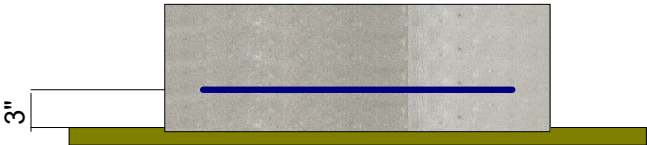
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DESCRIPTION: Footing, C16

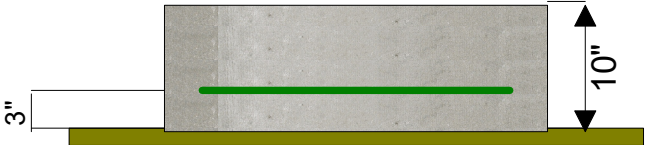
Plan and Section Views



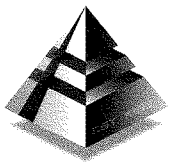
Bottom Mat: 2#5 parallel to X-X, 2#5 parallel to Z-Z



X-X Section Looking to +Z



Z-Z Section Looking to +X



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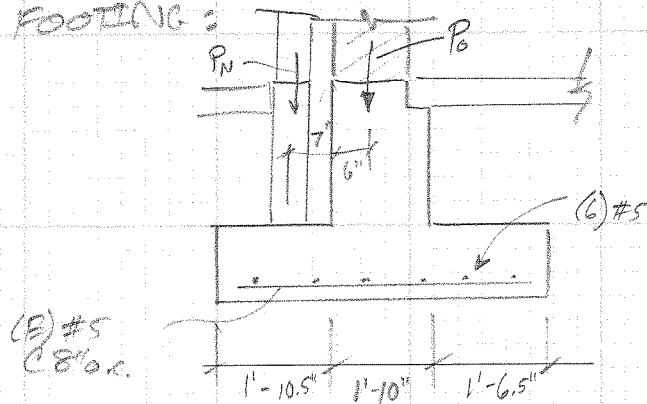
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BY:

CHECK (E) FTG AT CMU WALL

- NEW LOAD ADDED TO (E) FTG)

ORIG FOOTING:



$$P_{DLN} = 921 \text{ PLF}$$

$$P_{SLN} = 2018 \text{ PLF}$$

$$\underline{2939 \text{ PLF}}$$

$$P_{DL0} = (25 \text{ PSF})(45') + (125 \text{ PSF})(29') = 4750 \text{ PLF}$$

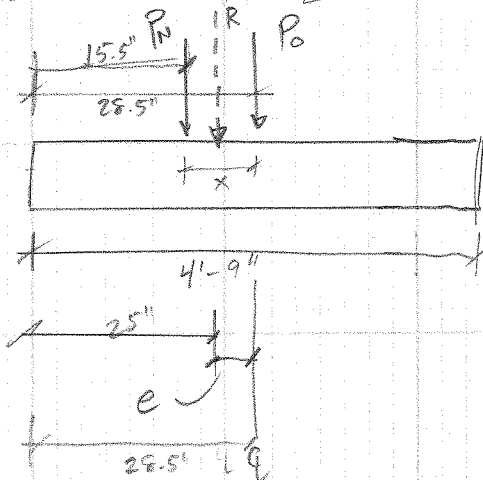
$$P_{SL0} = (69.6 \text{ PSF})(45') = 3132 \text{ PLF}$$

$$\underline{7882 \text{ PLF}}$$

TOTAL LOAD: DL = 5671#

SL = 5750#

EQUIVALENT ECCENTRICITY:



$$\frac{7882}{10821} = 0.728$$

$$x = 13"$$

$$(0.728)(13") = 9.5"$$

$$e = 28.5" - 25" = \underline{3.5"} \quad \text{OK}$$

- SEE COMP. CALC.

- (E) 4'-9" x 12" x CONT. CONC.
FTG OKAY

Wall Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

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DESCRIPTION: Existing Footing (Grid 4) w/ new load

Code References

Governing Code : IBC 2024
Referenced Design Standard(s) : ACI 318-19
Load Combinations Used : ASCE 7-22 / IBC 2024

Rho (or Omega) = 1.00

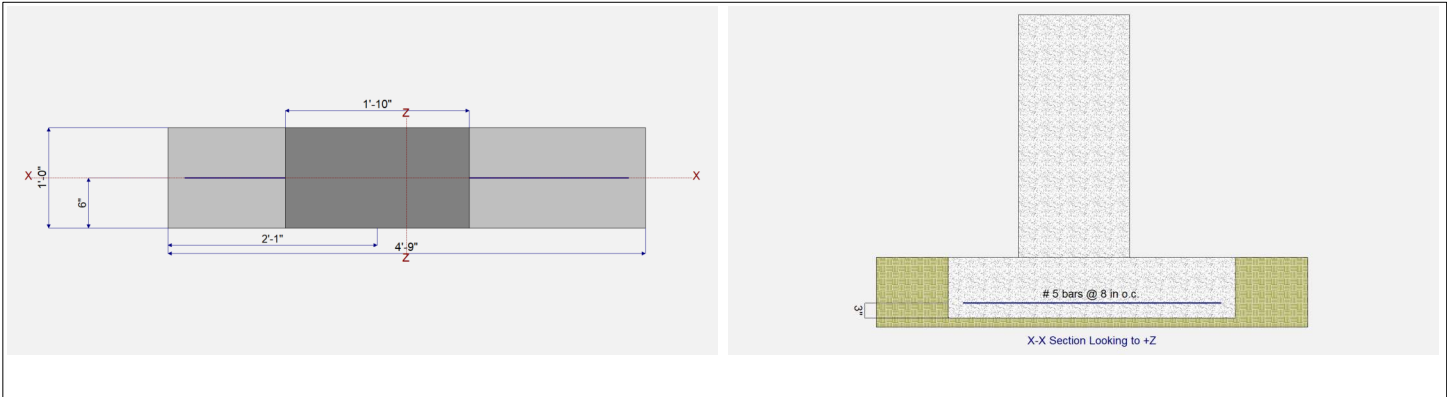
General Information

Material Properties		Soil Design Values	
f'c : Concrete 28 day strength	=	3.0 ksi	Allowable Soil Bearing = 2.50 ksf
fy : Rebar Yield	=	60.0 ksi	Increase Bearing By Footing Weight = No
Ec : Concrete Elastic Modulus	=	3,122.0 ksi	Soil Passive Resistance (for Sliding) = 250.0 pcf
Concrete Density	=	145.0 pcf	Soil/Concrete Friction Coeff. = 0.30
φ Values Flexure	=	0.90	
Shear	=	0.750	
Analysis Settings		Increases based on footing Depth	
Min Steel % Bending Reinf.	=	0.0018	Reference Depth below Surface = 2.50 ft
Min. Overturning Safety Factor	=	1.0 : 1	Allow. Pressure Increase per foot of depth = 0.20 ksf
Min. Sliding Safety Factor	=	1.0 : 1	when base footing is below = 0.50 ft
AutoCalc Footing Weight as DL :	=	Yes	
			Increases based on footing Width
			Allow. Pressure Increase per foot of width = ksf
			when footing is wider than = ft
			Adjusted Allowable Bearing Pressure = 2.90 ksf

Dimensions

Reinforcing

Footing Width	=	4.75 ft	Footing Thickness	=	12.0 in	Bars along X-X Axis	
Wall Thickness	=	22.0 in	Rebar Centerline to Edge of Concrete...			Bar spacing	= 8.00
Wall center offset from center of footing	=	-3.5 in	at Bottom of footing	=	3.0 in	Reinforcing Bar Size	= # 5



Applied Loads

	D	Lr	L	S	W	E	H
P : Column Load	=	5.671		5.150			k
OB : Overburden	=						ksf
V-x	=						k
M-zz	=						k-ft
Vx applied	=		in above top of footing				

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Wall Footing

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

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DESCRIPTION: Existing Footing (Grid 4) w/ new load

DESIGN SUMMARY

Design OK

Factor of Safety	Item	Applied	Capacity	Governing Load Combination
PASS	n/a	Overturning - Z-Z	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	No Uplift
Utilization Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9713	Soil Bearing	2.817 ksf	+D+0.70S
PASS	0.1706	Z Flexure (+X)	3.049 k-ft	+1.20D+S
PASS	0.08606	Z Flexure (-X)	1.539 k-ft	+1.20D+0.150S
PASS	0.4870	1-way Shear (+X)	26.0 psi	+1.20D+S
PASS	0.1771	1-way Shear (-X)	9.5 psi	+1.20D+S

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Actual Soil Bearing Stress		Actual / Allowable Ratio
			-X	+X	
D Only	2.90 ksf	-3.121 in	1.778 ksf	0.8993 ksf	0.613
+D+0.70S	2.90 ksf	-3.258 in	2.817 ksf	1.379 ksf	0.971
+D+0.5250S	2.90 ksf	-3.234 in	2.557 ksf	1.259 ksf	0.882
+0.60D	2.90 ksf	-3.121 in	1.067 ksf	0.5396 ksf	0.368
+D+0.10S	2.90 ksf	-3.149 in	1.927 ksf	0.9678 ksf	0.664

Units : k-ft

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturning				

Sliding Stability

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio	Status
Footing Has NO Sliding				

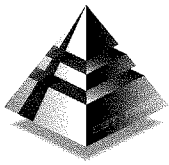
Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
+1.40D	1.626	-X	Bottom	0.2592	ACI 7.6.1.1	0.465	17.879	OK
+1.40D	2.159	+X	Bottom	0.2592	ACI 7.6.1.1	0.465	17.879	OK
+1.20D	1.394	-X	Bottom	0.2592	ACI 7.6.1.1	0.465	17.879	OK
+1.20D	1.851	+X	Bottom	0.2592	ACI 7.6.1.1	0.465	17.879	OK
+1.20D+0.30S	1.683	-X	Bottom	0.2592	ACI 7.6.1.1	0.465	17.879	OK
+1.20D+0.30S	2.21	+X	Bottom	0.2592	ACI 7.6.1.1	0.465	17.879	OK
+1.20D+S	2.359	-X	Bottom	0.2592	ACI 7.6.1.1	0.465	17.879	OK
+1.20D+S	3.049	+X	Bottom	0.2592	ACI 7.6.1.1	0.465	17.879	OK
+0.90D	1.045	-X	Bottom	0.2592	ACI 7.6.1.1	0.465	17.879	OK
+0.90D	1.388	+X	Bottom	0.2592	ACI 7.6.1.1	0.465	17.879	OK
+1.20D+0.150S	1.539	-X	Bottom	0.2592	ACI 7.6.1.1	0.465	17.879	OK
+1.20D+0.150S	2.03	+X	Bottom	0.2592	ACI 7.6.1.1	0.465	17.879	OK

Units : k

One Way Shear

Load Combination...	vu @ -X	vu @ +X	vu:Max	Φ vn	vu / PHI vn	Status
+1.40D	6.6 psi	18.1 psi	18.1 psi	53.5 psi	0.339	OK
+1.20D	5.7 psi	15.5 psi	15.5 psi	53.5 psi	0.291	OK
+1.20D+0.30S	6.8 psi	18.7 psi	18.7 psi	53.5 psi	0.350	OK
+1.20D+S	9.5 psi	26.0 psi	26.0 psi	53.5 psi	0.487	OK
+0.90D	4.2 psi	11.7 psi	11.7 psi	53.5 psi	0.218	OK
+1.20D+0.150S	6.2 psi	17.1 psi	17.1 psi	53.5 psi	0.320	OK



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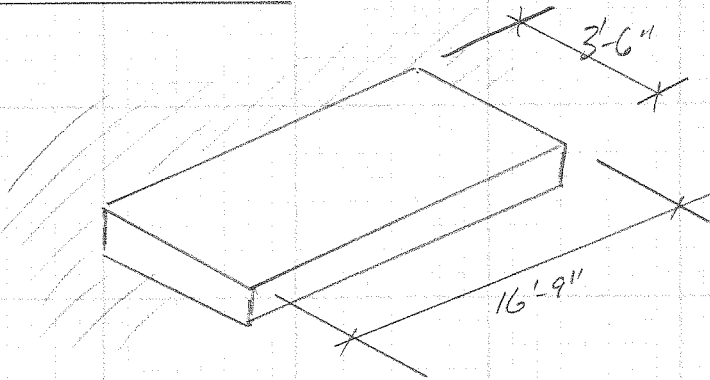
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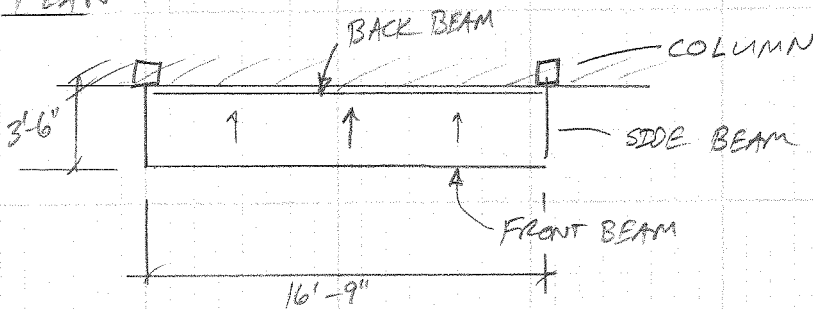
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CANOPY DESIGN



- CANT. FROM STEEL COL IN WALL
- SUPPORT SNOW / DRIIFT
- DRAIN TO FACE OF BUILDING TO GUTTER

PLAN

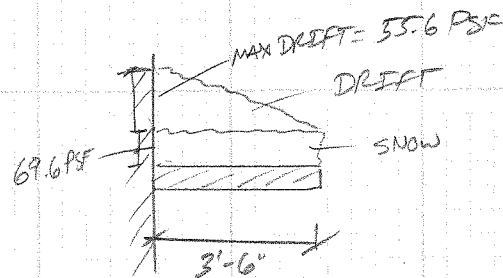


LOADS

DL = 10 PSF

SL = 69.6 PSF + DRIIFT

DRIIFT = <SEE CALL>



FRONT BEAM

SPAN = 16.75'

DL = (10 PSF)(1.5') = 15 PLF

SL = (69.6 PSF)(1.5') + (1/3)(1/2)(3.5')(55.6 PSF) = 137 PLF

HSS 12 x 2 x 1/4

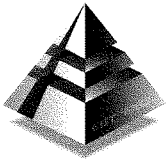
REAR BEAM

SPAN = 16.75'

DL = 15 PLF

SL = (69.6 PSF)(1.5') + (2/3)(1/2)(3.5')(55.6 PSF) = 169 PLF

HSS 6 x 6 x 1/4



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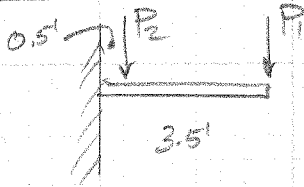
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BY:

CANOPY (CONT.)

SIDE BEAM



$$P_{DL1} = 126 \#$$

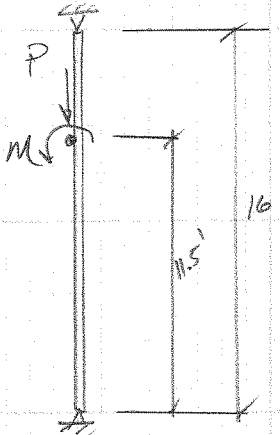
$$P_{SL1} = 1147 \#$$

$$P_{DL2} = 126 \#$$

$$P_{SL2} = 1415 \#$$

HSS 12x2x1/4

COLUMN



$$P_{DL} = 252 \#$$

$$P_{SL} = 2562 \#$$

$$M_D = 504 \text{ lb-ft}$$

$$M_{SL} = 4722 \text{ lb-ft}$$

HSS 5x5x1/4



Client
Project:
Proj. #:
Date: 9/3/2026
By:

Drifts on Lower Roofs - ASCE 7-22 7.7.1

Code Reference

Building and Snow Parameters:

Ground Snow Load, p_g =	96	psf	https://ascehazardtool.org/
Balanced Roof Snow Load, p_s =	69.6	psf	
Snow Density, γ =	26.5	pcf	$\gamma = 0.13p_g + 14 \leq 30$ pcf
Winter Wind Parameter, W_z =	0.25		https://ascehazardtool.org/
Upper Roof Eave to Ridge Distance =	110	ft	
Lower Roof Eave to Ridge Distance =	3.5	ft	
Difference in Roof Height =	5.5	ft	
Balanced Snow Depth, h_b =	2.6	ft	$h_b = p / \gamma$
Clear Height, h_c =	2.9	ft	

ASCE 7-22 Section 7.2

ASCE 7-22 Eq (7.7-1)

Leeward Drifts (ASCE 7-22 7.7.1):

Length of Windward Roof, l_u =	110	ft	
Calculated Drift Height, h_d =	2.5	ft	$h_d = 1.5 \sqrt{\frac{p_g^{0.74} l_u^{0.70} W_z^{1.7}}{\gamma}}$
60% of Lower Roof Length =	2.1	ft	
Clear height, h_c =	2.9	ft	
Calculated drift height vs clear height:	$h_d \leq h_c$		
Controlling Leeward Drift Height =	2.1	ft	
Calculated Drift width, w =	10.1	ft	$w = 4h_d$
Max Drift Width, $8h_c$ =	23.0	ft	
Max Drift Width, Lower Roof Width =	3.5	ft	
Controlling Leeward Drift Width, w =	3.5	ft	
Max Drift Surcharge Load, p_d =	55.6	psf	$p_d = (\gamma)h_d$

ASCE 7-22 Eq (7.6-1)

Windward Drifts (ASCE 7-22 7.7.1):

Length of Windward Roof, l_u =	4	ft	
Drift Height, h_d =	0.6	ft	$h_d = 0.75 \times 1.5 \sqrt{\frac{p_g^{0.74} l_u^{0.70} W_z^{1.7}}{\gamma}}$
Calculated Drift width, w =	4.5	ft	$w = 8h_d$
Max Drift Width, Lower Roof Width =	3.5	ft	
Controlling Windward Drift Width, w =	3.5	ft	
Max Drift Surcharge Load, p_d =	15.0	psf	$p_d = (\gamma)h_d$

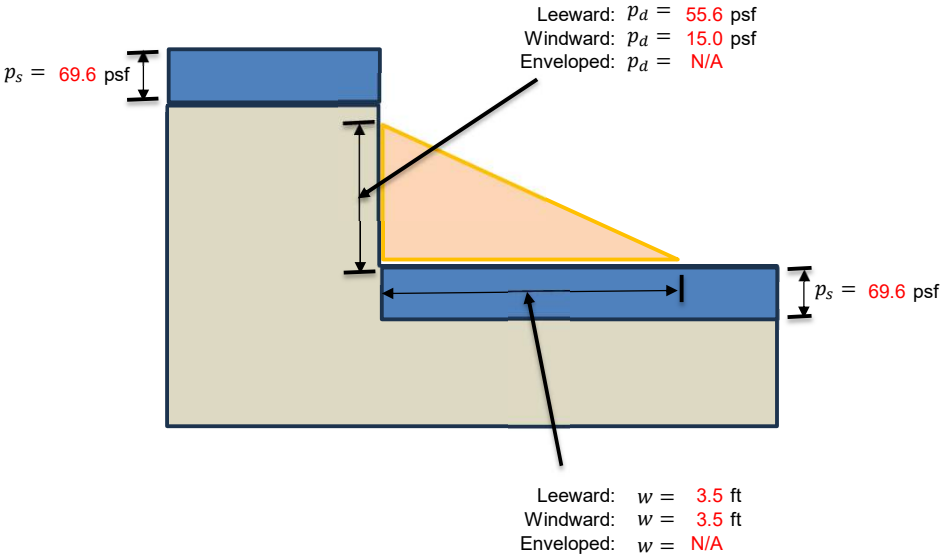
ASCE 7-22 Eq (7.6-1) - Modified
for windward drift per section 7.7.1

Enveloped Drift Values:

Enveloped Drift Width, w =	3.5	ft
Enveloped Drift Surcharge Load, p_d =	55.6	psf
Percent increase in weight of a 1 ft slice of drift, comparing enveloped drift to worst case of windward or leeward drifts:	0%	

Design Drift Load Case(s):

Drift Case(s) selected for design: **Separate Leeward & Windward Cases**



Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

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DESCRIPTION: Canopy - Front Beam

Code References

Governing Code : IBC 2024

Referenced Design Standard(s) : AISC 360-22

Load Combination Set : ASCE 7-22 / IBC 2024

Rho (or Omega) = 1.00

Material Properties

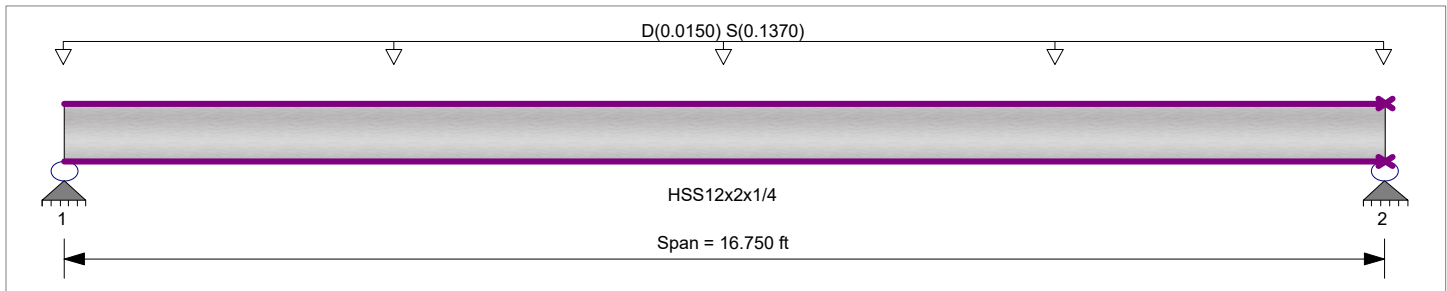
Analysis Method : Allowable Strength Design

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

Bending Axis : Major Axis Bending

Fy : Steel Yield : 46.0 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 = 0.0150, S = 0.1370 k/ft, Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =		0.084 : 1		Maximum Shear Stress Ratio =		0.011 : 1	
Section used for this span		HSS12x2x1/4		Section used for this span		HSS12x2x1/4	
Ma : Applied		3.889 k-ft		Va : Applied		0.9288 k	
Mn / Ω : Allowable		46.138 k-ft		Vn / Ω : Allowable		87.035 k	
Load Combination				Load Combination			
		+D+0.70S				+D+0.70S	
Span # where maximum occurs		Span # 1		Location of maximum on span		0.000 ft	
Maximum Deflection				Span # where maximum occurs		Span # 1	
Max Downward Transient Deflection		0.097 in Ratio = 2,078 >=360		Span: 1 : S Only			
Max Upward Transient Deflection		0 in Ratio = 0 <360		n/a			
Max Downward Total Deflection		0.078 in Ratio = 2567 >=180		Span: 1 : +D+0.70S			
Max Upward Total Deflection		0 in Ratio = 0 <180		n/a			

Maximum Flexural Forces & Stresses for Load Combinations

Load Combination	Unbraced Length				Max Flexural	+ve Moment			-ve Moment		
Segment	UL Length ft	Span #	Cb	Stress Ratio		+ve M SR	Mmax +	Mnx/Ω+	-ve M SR	Mmax -	Mnx/Ω-
D Only											
Design Segment 1 L=16.75	1	16.75	1	1.00	0.011	0.011	0.53	46.14			
+D+0.70S											
Design Segment 1 L=16.75	1	16.75	1	1.00	0.084	0.084	3.89	46.14			
+D+0.5250S											
Design Segment 1 L=16.75	1	16.75	1	1.00	0.066	0.066	3.05	46.14			
+0.60D											
Design Segment 1 L=16.75	1	16.75	1	1.00	0.007	0.007	0.32	46.14			
+D+0.10S											
Design Segment 1 L=16.75	1	16.75	1	1.00	0.022	0.022	1.01	46.14			

Maximum Shear Forces & Stresses for Load Combinations

Load Combination	V SR	Vmax	Vnx	Vnx/ Ω
D Only				
Design Segment 1 L=16.75	0.001	0.13	145.35	87.04
+D+0.70S				
Design Segment 1 L=16.75	0.011	0.93	145.35	87.04
+D+0.5250S				
Design Segment 1 L=16.75	0.008	0.73	145.35	87.04
+0.60D				
Design Segment 1 L=16.75	0.001	0.08	145.35	87.04
+D+0.10S				

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Canopy - Front Beam

Maximum Shear Forces & Stresses for Load Combinations

Load Combination	V SR	Vmax	Vnx	Vnx/Ω
Design Segment 1 L=16.75	0.003	0.24	145.35	87.04

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	S Only	0.0967	8.423		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 Cases & Combinations	1.147	1.147
Max Upward from Load Combinations	0.929	0.929
Max Upward from Load Cases	1.147	1.147
D Only	0.126	0.126
+D+0.70S	0.929	0.929
+D+0.5250S	0.728	0.728
+0.60D	0.075	0.075
+D+0.10S	0.240	0.240
S Only	1.147	1.147

Vertical Reactions for Load Cases

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from Load Cases	1.147	1.147
D Only	0.126	0.126
S Only	1.147	1.147

Vertical Reactions for Load Combinations

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from Load Combinations	0.929	0.929
+D+0.70S	0.929	0.929
+D+0.5250S	0.728	0.728
+0.60D	0.075	0.075
+D+0.10S	0.240	0.240

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Canopy - Rear Beam

Code References

Governing Code : IBC 2024

Referenced Design Standard(s) : AISC 360-22

Load Combination Set : ASCE 7-22 / IBC 2024

Rho (or Omega) = 1.00

Material Properties

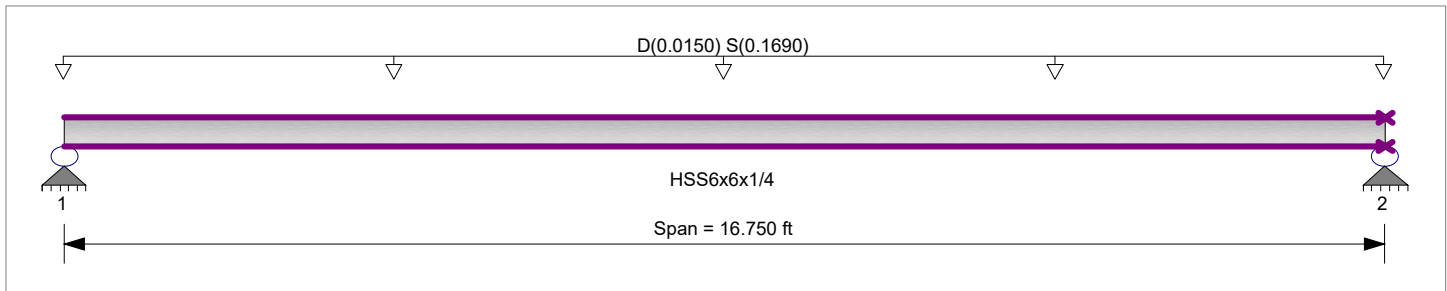
Analysis Method : Allowable Strength Design

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

Bending Axis : Major Axis Bending

Fy : Steel Yield : 46.0 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 = 0.0150, S = 0.1690 k/ft, Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =		0.182 : 1		Maximum Shear Stress Ratio =		0.027 : 1	
Section used for this span		HSS6x6x1/4		Section used for this span		HSS6x6x1/4	
Ma : Applied		4.675 k-ft		Va : Applied		1.116 k	
Mn / Ω : Allowable		25.709 k-ft		Vn / Ω : Allowable		40.826 k	
Load Combination				Load Combination			
		+D+0.70S				+D+0.70S	
Span # where maximum occurs		Span # 1		Location of maximum on span		0.000 ft	
Maximum Deflection				Span # where maximum occurs		Span # 1	
Max Downward Transient Deflection		0.362 in Ratio = 554 >=360		Span: 1 : S Only			
Max Upward Transient Deflection		0 in Ratio = 0 <360		n/a			
Max Downward Total Deflection		0.286 in Ratio = 703 >=180		Span: 1 : +D+0.70S			
Max Upward Total Deflection		0 in Ratio = 0 <180		n/a			

Maximum Flexural Forces & Stresses for Load Combinations

Load Combination	Unbraced Length		Max Flexural	+ve Moment			-ve Moment		
	UL Length ft	Span #		+ve M SR	Mmax +	Mnx/ Ω +	-ve M SR	Mmax -	Mnx/ Ω -
D Only									
Design Segment 1 L=16.75	1	16.75	1	1.00	0.020	0.020	0.53	25.71	
+D+0.70S									
Design Segment 1 L=16.75	1	16.75	1	1.00	0.182	0.182	4.67	25.71	
+D+0.5250S									
Design Segment 1 L=16.75	1	16.75	1	1.00	0.141	0.141	3.64	25.71	
+0.60D									
Design Segment 1 L=16.75	1	16.75	1	1.00	0.012	0.012	0.32	25.71	
+D+0.10S									
Design Segment 1 L=16.75	1	16.75	1	1.00	0.044	0.044	1.12	25.71	

Maximum Shear Forces & Stresses for Load Combinations

Load Combination	V SR	Vmax	Vnx	Vnx/ Ω
D Only				
Design Segment 1 L=16.75	0.003	0.13	68.18	40.83
+D+0.70S				
Design Segment 1 L=16.75	0.027	1.12	68.18	40.83
+D+0.5250S				
Design Segment 1 L=16.75	0.021	0.87	68.18	40.83
+0.60D				
Design Segment 1 L=16.75	0.002	0.08	68.18	40.83
+D+0.10S				

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Steel Beam

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Canopy - Rear Beam

Maximum Shear Forces & Stresses for Load Combinations

Load Combination	V SR	Vmax	Vnx	Vnx/Ω
Design Segment 1 L=16.75	0.007	0.27	68.18	40.83

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	S Only	0.3625	8.423		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 Cases & Combinations	1.415	1.415
Max Upward from Load Combinations	1.116	1.116
Max Upward from Load Cases	1.415	1.415
D Only	0.126	0.126
+D+0.70S	1.116	1.116
+D+0.5250S	0.869	0.869
+0.60D	0.075	0.075
+D+0.10S	0.267	0.267
S Only	1.415	1.415

Vertical Reactions for Load Cases

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from Load Cases	1.415	1.415
D Only	0.126	0.126
S Only	1.415	1.415

Vertical Reactions for Load Combinations

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from Load Combinations	1.116	1.116
+D+0.70S	1.116	1.116
+D+0.5250S	0.869	0.869
+0.60D	0.075	0.075
+D+0.10S	0.267	0.267

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Canopy - Side Beam

Code References

Governing Code : IBC 2024

Referenced Design Standard(s) : AISC 360-22

Load Combination Set : ASCE 7-22 / IBC 2024

Rho (or Omega) = 1.00

Material Properties

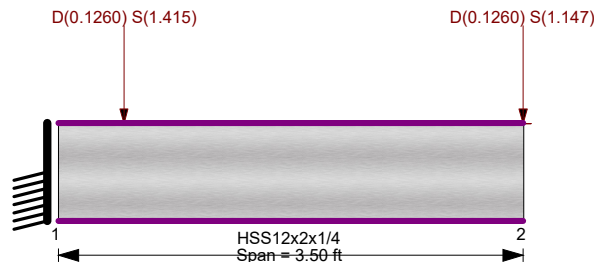
Analysis Method : Allowable Strength Design

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

Bending Axis : Major Axis Bending

Fy : Steel Yield : 46.0 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
Load(s) for Span Number 1

Point Load : D = 0.1260, S = 1.147 k @ 3.50 ft

Point Load : D = 0.1260, S = 1.415 k @ 0.50 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio = 0.083 : 1

Maximum Shear Stress Ratio = 0.024 : 1

Section used for this span

HSS12x2x1/4

Section used for this span

HSS12x2x1/4

Ma : Applied

3.809 k-ft

Va : Applied

2.045 k

Mn / Ω : Allowable

46.138 k-ft

Vn / Ω : Allowable

87.035 k

Load Combination

+D+0.70S

Load Combination

+D+0.70S

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 0.012 in Ratio = 7,229 >=360 Span: 1 : S Only

Max Upward Transient Deflection 0 in Ratio = 0 <360 n/a

Max Downward Total Deflection 0.009 in Ratio = 8934 >=180 Span: 1 : +D+0.70S

Max Upward Total Deflection 0 in Ratio = 0 <180 n/a

Maximum Flexural Forces & Stresses for Load Combinations

Load Combination	Unbraced Length		Max Flexural		+ve Moment		-ve Moment	
	UL Length ft	Span #	Cb	Stress Ratio	+ve M SR	Mmax +	-ve M SR	Mmax -
D Only								
Design Segment 1 L=3.50	1	3.50	1	1.00	0.011		0.011	-0.50
+D+0.70S								
Design Segment 1 L=3.50	1	3.50	1	1.00	0.083		0.083	-3.81
+D+0.5250S								
Design Segment 1 L=3.50	1	3.50	1	1.00	0.065		0.065	-2.98
+0.60D								
Design Segment 1 L=3.50	1	3.50	1	1.00	0.007		0.007	-0.30
+D+0.10S								
Design Segment 1 L=3.50	1	3.50	1	1.00	0.021		0.021	-0.98

Maximum Shear Forces & Stresses for Load Combinations

Load Combination	V SR	Vmax	Vnx	Vnx/Ω
D Only				
Design Segment 1 L=3.50	0.003	0.25	145.35	87.04
+D+0.70S				
Design Segment 1 L=3.50	0.024	2.05	145.35	87.04
+D+0.5250S				
Design Segment 1 L=3.50	0.018	1.60	145.35	87.04
+0.60D				

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Canopy - Side Beam

Maximum Shear Forces & Stresses for Load Combinations

Load Combination	V SR	Vmax	Vnx	Vnx/Ω
Design Segment 1 L=3.50	0.002	0.15	145.35	87.04
+D+0.10S				
Design Segment 1 L=3.50	0.006	0.51	145.35	87.04

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	S Only	0.0116	3.500		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 Cases & Combinations	2.562	
Max Upward from Load Combinations	2.045	
Max Upward from Load Cases	2.562	
D Only	0.252	
+D+0.70S	2.045	
+D+0.5250S	1.597	
+0.60D	0.151	
+D+0.10S	0.508	
S Only	2.562	

Vertical Reactions for Load Cases

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from Load Cases	2.562	
D Only	0.252	
S Only	2.562	

Vertical Reactions for Load Combinations

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from Load Combinations	2.045	
+D+0.70S	2.045	
+D+0.5250S	1.597	
+0.60D	0.151	
+D+0.10S	0.508	

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Column

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Canopy - Column

Code References

Governing Code : IBC 2024
Referenced Design Standard(s) : AISC 360-22
Load Combinations Used : ASCE 7-22 / IBC 2024

Rho (or Omega) = 1.00

General Information

Steel Section Name : **HSS5x5x1/4**
Analysis Method : Allowable Strength
Steel Stress Grade
Fy : Steel Yield 46.0 ksi
E : Elastic Bending Modulus 29,000.0 ksi
Overall Column Height 16.0 ft
Top & Bottom Fixity Top & Bottom Pinned
Brace condition :
Fully braced against buckling ABOUT X-X Axis
Fully braced against buckling ABOUT Y-Y Axis

Applied Loads

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

Column self weight included : 249.920 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 11.50 ft, Xecc = 2.50 in, D = 0.2520, S = 2.562 k
BENDING LOADS . . .
Moment acting about Y-Y axis at 11.50 ft, D = 0.5040, S = 4.722 k-ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.1838** : 1
Load Combination +D+0.70S
Location of max.above base 11.490 ft
At maximum location values are . . .
Pa : Axial 2.295 k
Pn / Omega : Allowable 118.443 k
Ma-x : Applied 0.0 k-ft
Mn-x / Omega : Allowable 17.468 k-ft
Ma-y : Applied -3.042 k-ft
Mn-y / Omega : Allowable 17.468 k-ft

Maximum Load Reactions . .
Top along X-X 0.3285 k
Bottom along X-X 0.3285 k
Top along Y-Y 0.0 k
Bottom along Y-Y 0.0 k

Maximum Load Deflections . . .
Along Y-Y 0.0 in at 0.0ft above base L/
for load combination :
Along X-X -0.2162 in at 8.161ft above base L/ 887.0
for load combination : S Only

PASS Maximum Shear Stress Ratio = **0.007992** : 1
Load Combination +D+0.70S
Location of max.above base 0.0 ft
At maximum location values are . . .
Va : Applied 0.2647 k
Vn / Omega : Allowable 33.124 k

Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios				CbX	CbY	KxLx/Rx	KyLy/Ry	Maximum Shear Ratios		
	Stress Ratio	Status	Location						Stress Ratio	Status	Location
D Only	0.025	PASS	11.49 ft		1.00	1.00	0.00	0.00	0.001	PASS	0.00 ft
+D+0.70S	0.184	PASS	11.49 ft		1.00	1.00	0.00	0.00	0.008	PASS	0.00 ft
+D+0.5250S	0.144	PASS	11.49 ft		1.00	1.00	0.00	0.00	0.006	PASS	0.00 ft
+0.60D	0.015	PASS	11.49 ft		1.00	1.00	0.00	0.00	0.001	PASS	0.00 ft
+D+0.10S	0.048	PASS	11.49 ft		1.00	1.00	0.00	0.00	0.002	PASS	0.00 ft

Reactions for Load Cases

Note: Only non-zero reactions are listed.

Load Combination	Axial (k)		Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
	@ Base		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	0.502		0.035	-0.035						
S Only	2.562		0.328	-0.328						

Reactions for Load Combinations

Note: Only non-zero reactions are listed.

Load Combination	Axial (k)		Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
	@ Base		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
+D+0.70S	2.295		0.265	-0.265						
+D+0.5250S	1.847		0.207	-0.207						

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Steel Column

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

FROELICH CONSULTING ENGINEERS

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DESCRIPTION: Canopy - Column

Reactions for Load Combinations

Note: Only non-zero reactions are listed.

Load Combination	Axial (k)	Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
+0.60D	0.301	0.021	-0.021						
+D+0.10S	0.758	0.068	-0.068						

Extreme Reactions

Item	Extreme Value	Axial (k)	Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial, Base Max		2.562								
Axial, Base Min		0.301								
Rx, Base Max			0.328							
Rx, Base Min			0.021							
Rx, Top Max				-0.021						
Rx, Top Min				-0.328						
Ry, Base Max										
Ry, Base Min										
Ry, Top Max										
Ry, Top Min										

Maximum Deflections for Load Combinations

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0229 in	8.161 ft	0.000 in	0.000 ft
+D+0.70S	-0.1743 in	8.161 ft	0.000 in	0.000 ft
+D+0.5250S	-0.1364 in	8.161 ft	0.000 in	0.000 ft
+0.60D	-0.0137 in	8.161 ft	0.000 in	0.000 ft
+D+0.10S	-0.0445 in	8.161 ft	0.000 in	0.000 ft
+0.70S	-0.1514 in	8.161 ft	0.000 in	0.000 ft
S Only	-0.2162 in	8.161 ft	0.000 in	0.000 ft

Steel Section Properties : HSS5x5x1/4

Depth	=	5.000 in	I xx	=	16.00 in^4	J	=	25.800 in^4
Design Thick	=	0.233 in	S xx	=	6.41 in^3			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in^3			
Area	=	4.300 in^2	I yy	=	16.000 in^4	C	=	10.500 in^3
Weight	=	15.620 plf	S yy	=	6.410 in^3			
			R yy	=	1.930 in			

Ycg = 0.000 in

Steel Column

Project File: Chiloquin Fitness.ec6

LIC# : KW-06014743, Build:20.26.06.08

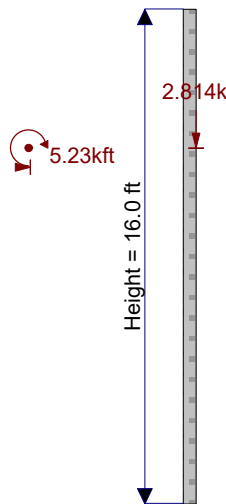
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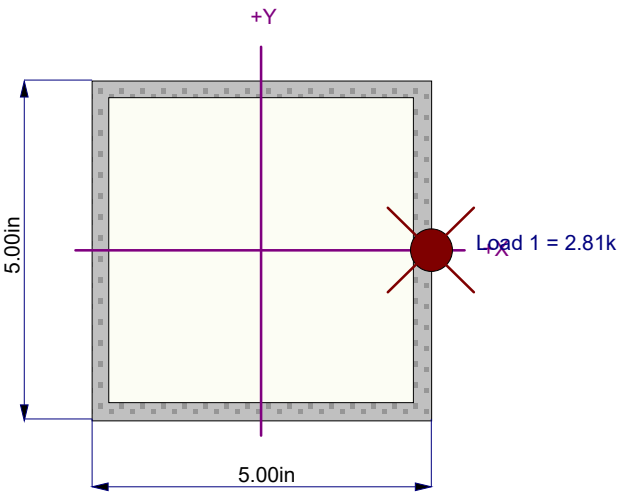
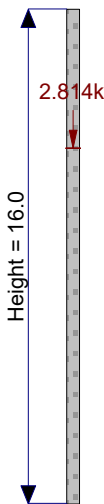
DESCRIPTION: Canopy - Column

Sketches

My Loads - Looking along Y-Y Axis



Mx Loads - Looking along X-X Axis





Client: Steele
 Project: Chiloquin Fitness Center
 Proj. #: 26-B224
 Date: 9/1/2026
 By: MP

WIND FORCE - MWFRS DIRECTIONAL PROCEDURE - ASCE 7-22 SECTION 27.3.1
Enclosed, Partially Enclosed, and Partially Open Buildings - Figure 27.3-1
Low Slope Roofs ($\theta < 10^\circ$) and Wind Parallel to Ridge

Code Reference

Wind Direction: Parallel to Grid A

All Code references are for
 ASCE 7-22 UNO

Basic Wind Speed:

Risk Category: III
 Basic Wind Speed, $V = 102$ mph <https://ascehazardtool.org/>
 Wind Directionality Factor, $K_d = 0.85$
 Exposure Category: C

Table 1.5-1
 Section 26.5
 Table 26.6-1
 Section 26.7

Building Parameters:

Horizontal Dimension of Bldg, $B = 170$ ft Measured Normal to Wind Direction
 Horizontal Dimension of Bldg, $L = 117$ ft Measured Parallel to Wind Direction
 Mean Roof Height, $h = 20$ ft
 Highest Roof Level, $h_n = 24.5$ ft
 Building Elevation = 4200 ft

Figure 27.3-1
 Figure 27.3-1
 Figure 27.3-1

Topographic Effects:

Hill Height, $H = 0$ ft
 Length of 1/2 hill height, $L_h = 0$ ft
 Distance from crest to bldg, $x = 0$ ft
 Height above local ground surface, $z = 0$ ft
 Structure Location: N/A
 Hill Shape: N/A
 $H / L_h = \text{N/A} > 0.5$

Figure 26.8-1
 Figure 26.8-1
 Figure 26.8-1
 Figure 26.8-1

Factor to account for shape, $K_1 = \text{N/A}$
 $K_1 / (H/L_h) = \text{N/A}$
 Horizontal Attenuation Factor, $\mu = \text{N/A}$
 Height Attenuation Factor, $\gamma = \text{N/A}$
 Factor to account for distance, $K_2 = \text{N/A}$
 Factor to account for height, $K_3 = \text{N/A}$
 Topographic Factor, $K_{zt} = 1.00$ $K_{zt} = (1 + K_1 K_2 K_3)^2 \geq 1.0$

Eq. (26.8-1)

Ground Elevation Factor:

Building Elevation, $z_e = 4200$ ft
 Ground Elevation Factor, $K_e = 0.86$ $K_e = e^{-0.0000362z_e}$

Table 26.9-1

Internal Pressure Coefficient:

Building Enclosure Classification: Enclosed

Section 26.13

Table 26.13-1

Reduction Factor, $R_i = \text{N/A}$ $R_i = 1.0 \text{ or } R_i = 0.5 \left(1 + \frac{1}{\sqrt{1 + \frac{V_i^2}{22,800 A_{0g}}}} \right) < 1.0$
 Internal Pressure Coefficient, $GC_{pi} = +/- 0.18$

Eq. (26.13-1)

Gust Effect Factor:

Fundamental Natural Frequency, $n_1 = \text{Undetermined}$
 Building Rigidity Type: Low Rise Building - Permitted to be considered rigid
 Gust Effect Factor, G (or G_f) = 0.85

Section 26.11.2
 Section 26.11.1

Velocity Pressures:

$$\text{Velocity Pressure, } q_z = 0.00256 K_z K_{zt} K_e V^2$$

Eq. (26.10-1)

Table 26.10-1

	Height (ft)	k _z	q _z (psf)
	0-15	0.85	19.4
	20	0.90	20.6
	25	0.94	21.5
	30	0.98	22.4
	40	1.04	23.8
	50	1.09	24.9
	60	1.13	25.9
	70	1.17	26.8
	80	1.21	27.7
h =	20	0.90	20.6
h _{parapet} =	0	0.76	17.3

Pressure Coefficients:Length to Width Ratio, $L / B = 0.688$ Height to Length Ratio, $h / L = 0.171$

Roof Pitch = 1 : 12 = 4.8 deg

Figure 27.3-1

Wind Direction	C_p	Use With
Windward Wall	0.80	q_z
Leeward Wall	-0.50	q_h

External Pressure Coefficients on Roofs ^a		
Horizontal Distance from Windward Edge	C_p	
0 to $h / 2$	-0.9	-0.18
$h / 2$ to h	-0.9	-0.18
h to $2h$	-0.5	-0.18
$> 2h$	-0.3	-0.18

a. For wind direction parallel to ridge for all θ ; and for wind direction normal to ridge when $\theta < 10^\circ$.

Design Wind Pressure(s):

$$\text{Design Wind Pressure: } p = q K_d G C_p - q_i K_d (G C_{pi})$$

Eq (27.3-1)

For Internal Pressure Coefficient $G C_{pi} = 0.18$

Wind Pressure on Walls (psf)				
Height (ft)		Windward	Leeward	WW+LW
h =	15	8.1	-10.6	18.7
	20	8.7	-10.6	19.4
	25	9.3	-10.6	19.9
	30	9.8	-10.6	20.4
	40	10.6	-10.6	21.2
	50	11.3	-10.6	21.9
	60	11.8	-10.6	22.4
	70	12.3	-10.6	22.9
	80	12.8	-10.6	23.5
	h _{parapet} =	20	8.8	-10.6
	0	6.8	-17.3	24.1

* Minimum wind pressure of 16 psf on walls per ASCE 7-22 Section 27.1.5

** Minimum wind pressure of 8 psf on roofs per ASCE 7-22 Section 27.1.5

For Internal Pressure Coefficient $G C_{pi} = -0.18$

Wind Pressure on Walls (psf)			
Height (ft)	Windward	Leeward	WW+LW
15	14.4	-4.3	18.7
20	15.1	-4.3	19.4
25	15.6	-4.3	19.9
30	16.1	-4.3	20.4
40	16.9	-4.3	21.2
50	17.6	-4.3	21.9
60	18.1	-4.3	22.4
70	18.6	-4.3	22.9
80	19.2	-4.3	23.5
h = 20	15.1	-4.3	19.4
h _{parapet} = 0	13.2	-17.3	30.4

* Minimum wind pressure of 16 psf on walls per ASCE 7-22 Section 27.1.5

** Minimum wind pressure of 8 psf on roofs per ASCE 7-22 Section 27.1.5

For Internal Pressure Coefficient GC_{pi} = 0.18

Wind Pressure on Low Angle Roofs ^a		
Horizontal Distance from Windward Edge	p (psf)	
0 to h / 2	-16.6	-5.8
h / 2 to h	-16.6	-5.8
h to 2h	-10.6	-5.8
> 2h	-7.6	-5.8

a. For wind direction parallel to ridge for all θ ; and for wind direction normal to ridge when $\theta < 10^\circ$.

For Internal Pressure Coefficient GC_{pi} = -0.18

Wind Pressure on Low Angle Roofs ^a		
Horizontal Distance from Windward Edge	p (psf)	
0 to h / 2	-10.3	0.5
h / 2 to h	-10.3	0.5
h to 2h	-4.3	0.5
> 2h	-1.3	0.5

a. For wind direction parallel to ridge for all θ ; and for wind direction normal to ridge when $\theta < 10^\circ$.



Client: Steele
 Project: Chiloquin Fitness Center
 Proj. #: 26-B224
 Date: 9/1/2026
 By: MP

WIND FORCE - MWFRS DIRECTIONAL PROCEDURE - ASCE 7-22 SECTION 27.3.1
Enclosed, Partially Enclosed, and Partially Open Buildings - Figure 27.3-1
Low Slope Roofs ($\theta < 10^\circ$) and Wind Parallel to Ridge

Code Reference

Wind Direction: Parallel to Grid A

All Code references are for
 ASCE 7-22 UNO

Basic Wind Speed:

Risk Category: III
 Basic Wind Speed, $V = 102$ mph <https://ascehazardtool.org/>
 Wind Directionality Factor, $K_d = 0.85$
 Exposure Category: C

Table 1.5-1
 Section 26.5
 Table 26.6-1
 Section 26.7

Building Parameters:

Horizontal Dimension of Bldg, $B = 117$ ft Measured Normal to Wind Direction
 Horizontal Dimension of Bldg, $L = 170$ ft Measured Parallel to Wind Direction
 Mean Roof Height, $h = 20$ ft
 Highest Roof Level, $h_n = 24.5$ ft
 Building Elevation = 4200 ft

Figure 27.3-1
 Figure 27.3-1
 Figure 27.3-1

Topographic Effects:

Hill Height, $H = 0$ ft
 Length of 1/2 hill height, $L_h = 0$ ft
 Distance from crest to bldg, $x = 0$ ft
 Height above local ground surface, $z = 0$ ft
 Structure Location: N/A
 Hill Shape: N/A
 $H / L_h = \text{N/A} > 0.5$

Figure 26.8-1
 Figure 26.8-1
 Figure 26.8-1
 Figure 26.8-1

Factor to account for shape, $K_1 = \text{N/A}$
 $K_1 / (H/L_h) = \text{N/A}$
 Horizontal Attenuation Factor, $\mu = \text{N/A}$
 Height Attenuation Factor, $\gamma = \text{N/A}$
 Factor to account for distance, $K_2 = \text{N/A}$
 Factor to account for height, $K_3 = \text{N/A}$
 Topographic Factor, $K_{zt} = 1.00$ $K_{zt} = (1 + K_1 K_2 K_3)^2 \geq 1.0$

Eq (26.8-1)

Ground Elevation Factor:

Building Elevation, $z_e = 4200$ ft
 Ground Elevation Factor, $K_e = 0.86$ $K_e = e^{-0.0000362z_e}$

Table 26.9-1

Internal Pressure Coefficient:

Building Enclosure Classification: Enclosed

Section 26.13

Table 26.13-1

Reduction Factor, $R_i = \text{N/A}$ $R_i = 1.0 \text{ or } R_i = 0.5 \left(1 + \frac{1}{\sqrt{1 + \frac{V_i^2}{22,800 A_{0g}}}} \right) < 1.0$
 Internal Pressure Coefficient, $GC_{pi} = +/- 0.18$

Eq. (26.13-1)

Gust Effect Factor:

Fundamental Natural Frequency, $n_1 = \text{Undetermined}$
 Building Rigidity Type: Low Rise Building - Permitted to be considered rigid
 Gust Effect Factor, G (or G_f) = 0.85

Section 26.11.2
 Section 26.11.1

Velocity Pressures:

$$\text{Velocity Pressure, } q_z: \quad q_z = 0.00256 K_z K_{zt} K_e V^2$$

Eq. (26.10-1)

Table 26.10-1

	Height (ft)	k _z	q _z (psf)
	0-15	0.85	19.4
	20	0.90	20.6
	25	0.94	21.5
	30	0.98	22.4
	40	1.04	23.8
	50	1.09	24.9
	60	1.13	25.9
	70	1.17	26.8
	80	1.21	27.7
h =	20	0.90	20.6
h _{parapet} =	0	0.76	17.3

Pressure Coefficients:Length to Width Ratio, $L / B = 1.453$ Height to Length Ratio, $h / L = 0.118$

Roof Pitch = 2 : 12 = 9.5 deg

Figure 27.3-1

Wind Direction	C_p	Use With
Windward Wall	0.80	q_z
Leeward Wall	-0.41	q_h

External Pressure Coefficients on Roofs ^a		
Horizontal Distance from Windward Edge	C_p	
0 to $h / 2$	-0.9	-0.18
$h / 2$ to h	-0.9	-0.18
h to $2h$	-0.5	-0.18
$> 2h$	-0.3	-0.18

a. For wind direction parallel to ridge for all θ ; and for wind direction normal to ridge when $\theta < 10^\circ$.

Design Wind Pressure(s):

$$\text{Design Wind Pressure: } p = q K_d G C_p - q_i K_d (G C_{pi})$$

Eq (27.3-1)

For Internal Pressure Coefficient $G C_{pi} = 0.18$

Wind Pressure on Walls (psf)			
Height (ft)	Windward	Leeward	WW+LW
15	8.1	-9.3	17.3
20	8.7	-9.3	18.0
25	9.3	-9.3	18.5
30	9.8	-9.3	19.1
40	10.6	-9.3	19.9
50	11.3	-9.3	20.5
60	11.8	-9.3	21.1
70	12.3	-9.3	21.6
80	12.8	-9.3	22.1
20	8.8	-9.3	18.0
0	6.8	-17.3	24.1

* Minimum wind pressure of 16 psf on walls per ASCE 7-22 Section 27.1.5

** Minimum wind pressure of 8 psf on roofs per ASCE 7-22 Section 27.1.5

For Internal Pressure Coefficient $G C_{pi} = -0.18$

Wind Pressure on Walls (psf)			
Height (ft)	Windward	Leeward	WW+LW
15	14.4	-2.9	17.3
20	15.1	-2.9	18.0
25	15.6	-2.9	18.5
30	16.1	-2.9	19.1
40	16.9	-2.9	19.9
50	17.6	-2.9	20.5
60	18.1	-2.9	21.1
70	18.6	-2.9	21.6
80	19.2	-2.9	22.1
20	15.1	-2.9	18.0
0	13.2	-17.3	30.4

* Minimum wind pressure of 16 psf on walls per ASCE 7-22 Section 27.1.5

** Minimum wind pressure of 8 psf on roofs per ASCE 7-22 Section 27.1.5

For Internal Pressure Coefficient GC_{pi} = 0.18

Wind Pressure on Low Angle Roofs ^a		
Horizontal Distance from Windward Edge	p (psf)	
0 to h / 2	-16.6	-5.8
h / 2 to h	-16.6	-5.8
h to 2h	-10.6	-5.8
> 2h	-7.6	-5.8

a. For wind direction parallel to ridge for all θ ; and for wind direction normal to ridge when $\theta < 10^\circ$.

For Internal Pressure Coefficient GC_{pi} = -0.18

Wind Pressure on Low Angle Roofs ^a		
Horizontal Distance from Windward Edge	p (psf)	
0 to h / 2	-10.3	0.5
h / 2 to h	-10.3	0.5
h to 2h	-4.3	0.5
> 2h	-1.3	0.5

a. For wind direction parallel to ridge for all θ ; and for wind direction normal to ridge when $\theta < 10^\circ$.

FROELICH CONSULTING ENGINEERS, INC.

client: Steele

project: Chiloquin Fitness

job number: 26-B224

date: 9/1/2026

by: MP

**SEISMIC WEIGHTS:****Roof 1:**Roof Area: 12770 ft²Seismic Weight Contributed by Roof Snow: 10.4 psf x 12770 ft² = 132808 lbs

Roof Weight: 12770 ft² x 24 psf = 306480 lbs

Interior Wall DL: 12770 ft² x 0 psf = 0 lbs

Exterior Wall Area: 117.0 ft x 10 ft x 2 = 2340 ft²

110.0 ft x 10 ft x 2 = 2200 ft²

Total Wall Area = 4540 ft²

Exterior Wall Weight: 4540 ft² x 10 psf = 45400 lbsTotal Roof 1 Weight = 484688 lbs**Roof 2:**Roof Area: 7374 ft²Seismic Weight Contributed by Roof Snow: 10.4 psf x 7374 ft² = 76690 lbs

Roof Weight: 7374 ft² x 24 psf = 176976 lbs

Interior Wall DL: 7374 ft² x 0 psf = 0 lbs

Exterior Wall Area: 117.0 ft x 10 ft x 2 = 2340 ft²

60.0 ft x 10 ft x 2 = 1200 ft²

Total Wall Area = 3540 ft²

Exterior Wall Weight: 3540 ft² x 10 psf = 35400 lbsTotal Roof 2 Weight = 289066 lbs



Client: Steele
 Project: Chiloquin Fitness
 Proj. #: 26-B224
 Date: 9/1/2026
 By: MP

SEISMIC EQUIVALENT LATERAL FORCE PROCEDURE (ASCE7-22 12.8)

Code Reference

Building Parameters:

Risk Category = III
 Seismic Importance Factor, I_e = 1.25
 Soil Site Class = D Geotech Report
 Response Modification Coefficient, R = 6.5
 Height of Structure, h_n = 24.5 ft

All code references for this sheet are for ASCE 7-22 unless noted otherwise

Table 1.5-2

Table 12.2-1

Spectral Acceleration Parameters:

Site Class B Short-Period Spectral Response Acceleration, S_s = 0.86 From USGS Seismic Design Geodatabase
 Site Class B 1-Second Spectral Response Acceleration, S_1 = 0.3 From USGS Seismic Design Geodatabase
 Short-Period, Calculated S_{MS} to Determine SDC, S_{MS} = 1.020 From USGS Seismic Design Geodatabase
 Long-second Period, S_{M1} = 0.710 From USGS Seismic Design Geodatabase
 Design Spectral Acceleration Short-Period, S_{DS} = 0.680 $S_{DS} = (2/3) * S_{MS}$
 Design Spectral Acceleration Long-Period, S_{D1} = 0.473 $S_{D1} = (2/3) * S_{M1}$
 Seismic Design Category: D

Section 11.4.3

Section 11.4.3

Eq. 11.4-1

Eq. 11.4-2

Section 11.6 & Tables 11.6-1&2

Approximate Fundamental Period & Building Periods:

Approximate Fundamental Period Parameters, C_t = 0.02
 Approximate Fundamental Period Parameters, x = 0.75
 Approximate Period, T_a = 0.220 sec $T_a = C_t * h_n^x$
 Coefficient for upper limit on calculated period, C_u = 1.4
 Upper Limit Period, T = 0.308 sec $T = C_u * T_a$
 Fundamental Period, T = 0.220 sec
 Short Period Transition Period, T_s = 0.696 sec $T_s = S_{D1} / S_{DS}$
 Long Period Transition Period, T_L = 16 sec

Table 12.8-2

Table 12.8-2

Eq. 12.8-8

Table 12.8-1

Section 12.8.2

Section 11.3

Figures 22-14 through 22-17

Seismic Response Coefficient, C_s :

Seismic Response Coefficient, C_s = 0.131 $C_s = S_{DS} / (R / I_e)$
 Upper Limit for $T \leq T_L$; C_s = 0.413 $C_s = S_{D1} / (T * R / I_e)$
 Upper Limit for $T > T_L$; C_s = N/A $C_s = S_{D1} * T_L / (T^2 * R / I_e)$
 Lower Limit C_s = 0.0374 $C_s = 0.044 S_{DS} * I_e \geq 0.01$
 Lower Limit where $S_1 \geq 0.6g$, C_s = N/A $C_s = 0.5 S_1 / (R / I_e)$

Eq. 12.8-3

Eq. 12.8-4

Eq. 12.8-5

Eq. 12.8-6

Eq. 12.8-7

Controlling Seismic Response Coefficient, C_s = 0.131

Base Shear, V :

Seismic Weight, W = 773754 lbs
 Unfactored Seismic Base Shear, V = 101183 lbs $V = C_s * W$

Eq. 12.8-1

Vertical Distribution of Seismic Force:

Story Level x	Height of Story h_x (ft)	Weight of Story, W_x (lbs)	$h_x * W_x$	$h_x * W_x / \sum (h_x * W_x)$	Seismic Shear at Story, V_x (lbs)
Roof 1	20.0	484688	9693760	0.626	63382
Roof 2	20.0	289066	5781320	0.374	37801
	0.0	0	0	0.000	0
	0.0	0	0	0.000	0
	0.0	0	0	0.000	0

Totals: 773754 15475080

FROELICH CONSULTING ENGINEERS, INC.

client: Steele

project: Chiloquin Fitness

job number: 26-B224

date: 9/2/2026

by: MP

**FROELICH**
ENGINEERS**Grid A**

$$\text{Wind on Wall: } \begin{array}{|c|} \hline \text{Pressure} \\ \hline 19.4 \\ \hline \end{array} \text{ psf} \times \begin{array}{|c|} \hline \text{Length} \\ \hline 30 \\ \hline \end{array} \text{ ft} \times \begin{array}{|c|} \hline \text{Height} \\ \hline 6.5 \\ \hline \end{array} \text{ ft} = \begin{array}{|c|} \hline 3783 \\ \hline \end{array} \text{ lbs}$$

$$\text{Wind on Roof: } \begin{array}{|c|} \hline \text{Pressure} \\ \hline \end{array} \text{ psf} \times \begin{array}{|c|} \hline \text{Area} \\ \hline \end{array} \text{ sf} = \begin{array}{|c|} \hline 0 \\ \hline \end{array}$$

$$\text{Wind on Gable End: } \begin{array}{|c|} \hline 19.4 \\ \hline \end{array} \text{ psf} \times \begin{array}{|c|} \hline 75 \\ \hline \end{array} \text{ sf} = \begin{array}{|c|} \hline 1455 \\ \hline \end{array} \text{ lbs}$$

$$\text{Wind Force} = \begin{array}{|c|} \hline 5238 \\ \hline \end{array} \text{ lbs}$$

$$\text{Seismic Force: } \begin{array}{|c|} \hline \text{Force} \\ \hline 37801 \\ \hline \end{array} \text{ lbs} \times \begin{array}{|c|} \hline \text{Trib.} \\ \hline 3687 \\ \hline \end{array} \text{ sf} / \begin{array}{|c|} \hline \text{Total} \\ \hline 7374 \\ \hline \end{array} \text{ sf} = \begin{array}{|c|} \hline 18901 \\ \hline \end{array} \text{ lbs}$$

Grid E

$$\text{Wind on Wall: } \begin{array}{|c|} \hline \text{Pressure} \\ \hline 19.4 \\ \hline \end{array} \text{ psf} \times \begin{array}{|c|} \hline \text{Length} \\ \hline 85 \\ \hline \end{array} \text{ ft} \times \begin{array}{|c|} \hline \text{Height} \\ \hline 6.5 \\ \hline \end{array} \text{ ft} = \begin{array}{|c|} \hline 10719 \\ \hline \end{array} \text{ lbs}$$

$$\text{Wind on Roof: } \begin{array}{|c|} \hline \text{Pressure} \\ \hline 8 \\ \hline \end{array} \text{ psf} \times \begin{array}{|c|} \hline \text{Area} \\ \hline 632 \\ \hline \end{array} \text{ sf} = \begin{array}{|c|} \hline 5056 \\ \hline \end{array}$$

$$\text{Wind on Gable End: } \begin{array}{|c|} \hline 19.4 \\ \hline \end{array} \text{ psf} \times \begin{array}{|c|} \hline 225 \\ \hline \end{array} \text{ sf} = \begin{array}{|c|} \hline 4365 \\ \hline \end{array} \text{ lbs}$$

$$\text{Wind Force} = \begin{array}{|c|} \hline 20140 \\ \hline \end{array} \text{ lbs}$$

$$\text{Seismic Force 1: } \begin{array}{|c|} \hline \text{Force} \\ \hline 63382 \\ \hline \end{array} \text{ lbs} \times \begin{array}{|c|} \hline \text{Trib.} \\ \hline 6385 \\ \hline \end{array} \text{ sf} / \begin{array}{|c|} \hline \text{Total} \\ \hline 12770 \\ \hline \end{array} \text{ sf} = \begin{array}{|c|} \hline 31691 \\ \hline \end{array} \text{ lbs}$$

$$\text{Seismic Force 2: } \begin{array}{|c|} \hline 37801 \\ \hline \end{array} \text{ lbs} \times \begin{array}{|c|} \hline 3687 \\ \hline \end{array} \text{ sf} / \begin{array}{|c|} \hline 7374 \\ \hline \end{array} \text{ sf} = \begin{array}{|c|} \hline 18901 \\ \hline \end{array} \text{ lbs}$$

$$\text{TOTAL SEISMIC FORCE} = \begin{array}{|c|} \hline 50592 \\ \hline \end{array} \text{ lbs}$$

Grid F

$$\text{Wind on Wall: } \begin{array}{|c|} \hline \text{Pressure} \\ \hline 19.4 \\ \hline \end{array} \text{ psf} \times \begin{array}{|c|} \hline \text{Length} \\ \hline 55 \\ \hline \end{array} \text{ ft} \times \begin{array}{|c|} \hline \text{Height} \\ \hline 6.5 \\ \hline \end{array} \text{ ft} = \begin{array}{|c|} \hline 6936 \\ \hline \end{array} \text{ lbs}$$

$$\text{Wind on Roof: } \begin{array}{|c|} \hline \text{Pressure} \\ \hline 8 \\ \hline \end{array} \text{ psf} \times \begin{array}{|c|} \hline \text{Area} \\ \hline 632 \\ \hline \end{array} \text{ sf} = \begin{array}{|c|} \hline 5056 \\ \hline \end{array}$$

$$\text{Wind on Gable End: } \begin{array}{|c|} \hline \end{array} \text{ psf} \times \begin{array}{|c|} \hline \end{array} \text{ sf} = \begin{array}{|c|} \hline 0 \\ \hline \end{array} \text{ lbs}$$

$$\text{Wind Force} = \begin{array}{|c|} \hline 11992 \\ \hline \end{array} \text{ lbs}$$

$$\text{Seismic Force: } \begin{array}{|c|} \hline \text{Force} \\ \hline 63382 \\ \hline \end{array} \text{ lbs} \times \begin{array}{|c|} \hline \text{Trib.} \\ \hline 6385 \\ \hline \end{array} \text{ sf} / \begin{array}{|c|} \hline \text{Total} \\ \hline 12770 \\ \hline \end{array} \text{ sf} = \begin{array}{|c|} \hline 31691 \\ \hline \end{array} \text{ lbs}$$

Grid 1

$$\text{Wind on Wall: } \begin{array}{|c|} \hline \text{Pressure} \\ \hline 18 \\ \hline \end{array} \text{ psf} \times \begin{array}{|c|} \hline \text{Length} \\ \hline 58.5 \\ \hline \end{array} \text{ ft} \times \begin{array}{|c|} \hline \text{Height} \\ \hline 6.5 \\ \hline \end{array} \text{ ft} = \begin{array}{|c|} \hline 6845 \\ \hline \end{array} \text{ lbs}$$

$$\text{Wind on Roof: } \begin{array}{|c|} \hline \text{Pressure} \\ \hline \end{array} \text{ psf} \times \begin{array}{|c|} \hline \text{Area} \\ \hline \end{array} \text{ sf} = \begin{array}{|c|} \hline 0 \\ \hline \end{array}$$

$$\text{Wind on Gable End: } \begin{array}{|c|} \hline 18 \\ \hline \end{array} \text{ psf} \times \begin{array}{|c|} \hline 673 \\ \hline \end{array} \text{ sf} = \begin{array}{|c|} \hline 12114 \\ \hline \end{array} \text{ lbs}$$

$$\text{Wind Force} = \begin{array}{|c|} \hline 18959 \\ \hline \end{array} \text{ lbs}$$

$$\text{Seismic Force: } \begin{array}{|c|} \hline \text{Force} \\ \hline 101183 \\ \hline \end{array} \text{ lbs} \times \begin{array}{|c|} \hline \text{Trib.} \\ \hline 10072 \\ \hline \end{array} \text{ sf} / \begin{array}{|c|} \hline \text{Total} \\ \hline 20144 \\ \hline \end{array} \text{ sf} = \begin{array}{|c|} \hline 50592 \\ \hline \end{array} \text{ lbs}$$

Grid 4

$$\text{Wind on Wall: } \begin{array}{c} \text{Pressure} \\ \boxed{18} \end{array} \text{ psf} \times \begin{array}{c} \text{Length} \\ \boxed{58.5} \end{array} \text{ ft} \times \begin{array}{c} \text{Height} \\ \boxed{6.5} \end{array} \text{ ft} = \boxed{6845} \text{ lbs}$$

$$\text{Wind on Roof: } \begin{array}{c} \text{Pressure} \\ \boxed{} \end{array} \text{ psf} \times \begin{array}{c} \text{Area} \\ \boxed{} \end{array} \text{ sf} = \boxed{0}$$

$$\text{Wind on Gable End: } \begin{array}{c} \text{Pressure} \\ \boxed{18} \end{array} \text{ psf} \times \begin{array}{c} \text{Area} \\ \boxed{673} \end{array} \text{ sf} = \boxed{12114} \text{ lbs}$$

$$\text{Wind Force} = \boxed{18959} \text{ lbs}$$

$$\text{Seismic Force: } \begin{array}{c} \text{Force} \\ \boxed{101183} \end{array} \text{ lbs} \times \begin{array}{c} \text{Trib.} \\ \boxed{10072} \end{array} \text{ sf} / \begin{array}{c} \text{Total} \\ \boxed{20144} \end{array} \text{ sf} = \boxed{50592} \text{ lbs}$$

Client: Steele
Project: Chiloquin Fitness
Proj. #: 26-B224
Date: 9/2/26
By: MP

Roof Level

Resisting Dead load			
Roof DL:	24	psf	
Wall DL:	10	psf	
Floor DL:	0	psf	

Wind Overturning Load Combinations		
Unfactored w/o DL:	W	
ASD:	0.6D + 0.6W	
LRFD:	0.9D + W	

*Reference ASCE7-16 Table 12.2-1 for value of the overstrength factor, Ω . **Footnote b: Where the tabulated value of the overstrength factor, Ω , is greater than or equal to 2.5, Ω is permitted to be reduced by subtracting the value of 0.5 for structures with flexible diaphragms.

Seismic Overturning Load Combinations		
Unfactored w/ p - no DL:	pE	
Unfactored w/ Q - no DL:	QE	
ASD w/o Ω :	(0.6 - 0.14SDS)D + 0.7pE	
ASD w/ Ω :	(0.6 - 0.14SDS)D + 0.7QE	
ASD w/ Q/0.75 :	((0.6 - 0.14SDS)D + 0.7QE)/0.75	
LRFD w/o Ω :	(0.9 - 0.2SDS)D + 1.0pE	
LRFD w/ Ω :	(0.9 - 0.2SDS)D + 1.0QE	
S _{DS} :	0.68	g

Segment Geometry					Loading		DL Trib. Length				Wind Design Output				Seismic Design Output				Redundancy Factor			
L (ft)	Lt (ft)	hu (ft)	h/L	Ratio Factor (2L/h)	Wind (lbs)	Seismic (lbs)	Rtrib (ft)	Wtrib (ft)	Ftrib (ft)	Lo (in)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	p : 1.0	**Ω : 2.5
												(Ref Load Comb.)	(ASD)		(ASD)		(Ref Load Comb.)	(ASD w/ p)		(ASD)	Hardware Used	
					(Unfactored w/o p)		(Unfactored)														Hold Downs	Nailing
Grid A																						
6.50	44.67	13.00	2.0	1.00	5238	18901	31.0	13.0	0.0	0.00	(Unfactored w/o DL)	1524	-790	70	70	(Unfactored w/ p - no DL)	5501	2417	296	296	HDUE3-SDS3	4/12
5.67	44.67	13.00	2.3	0.87	5238	18901	31.0	13.0	0.0	0.00	(Unfactored w/o DL)	1524	-572	70	81	(Unfactored w/ p - no DL)	5501	2600	296	340	HDUE3-SDS3	4/12
6.50	44.67	13.00	2.0	1.00	5238	18901	31.0	13.0	0.0	0.00	(Unfactored w/o DL)	1524	-790	70	70	(Unfactored w/ p - no DL)	5501	2417	296	296	HDUE3-SDS3	4/12
8.00	44.67	13.00	1.6	1.00	5238	18901	31.0	13.0	0.0	0.00	(Unfactored w/o DL)	1524	-1183	70	70	(Unfactored w/ p - no DL)	5501	2086	296	296	HDUE3-SDS3	4/12
6.00	44.67	13.00	2.2	0.92	5238	18901	31.0	13.0	0.0	0.00	(Unfactored w/o DL)	1524	-659	70	76	(Unfactored w/ p - no DL)	5501	2527	296	321	HDUE3-SDS3	4/12
6.00	44.67	13.00	2.2	0.92	5238	18901	31.0	13.0	0.0	0.00	(Unfactored w/o DL)	1524	-659	70	76	(Unfactored w/ p - no DL)	5501	2527	296	321	HDUE3-SDS3	4/12
6.00	44.67	13.00	2.2	0.92	5238	18901	31.0	13.0	0.0	0.00	(Unfactored w/o DL)	1524	-659	70	76	(Unfactored w/ p - no DL)	5501	2527	296	321	HDUE3-SDS3	4/12

Segment Geometry					Loading		DL Trib. Length				Wind Design Output					Seismic Design Output					Redundancy Factor	
L (ft)	Lt (ft)	hu (ft)	h/L	Ratio Factor (2L/h)	Wind (lbs)	Seismic (lbs)	Rtrib (ft)	Wtrib (ft)	Ftrib (ft)	Lo (in)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	p : 1.0	**Q : 2.5
												(Ref Load Comb.)	(ASD)		(ASD)		(Ref Load Comb.)	(ASD w/ p)		(ASD)	Hardware Used	
					(Unfactored w/o p)		(Unfactored)														Hold Downs	Nailing
Grid E																						
37.00	86.50	23.00	0.6	1.00	20140	50592	31.0	23.0	0.0	0.00	(Unfactored w/o DL)	5355	-7598	140	140	(Unfactored w/ p - no DL)	13452	321	409	409	NOT REQ'D	3/12
49.50	86.50	23.00	0.5	1.00	20140	50592	31.0	23.0	0.0	0.00	(Unfactored w/o DL)	5355	-11251	140	140	(Unfactored w/ p - no DL)	13452	-2752	409	409	NOT REQ'D	3/12

Segment Geometry					Loading		DL Trib. Length				Wind Design Output				Seismic Design Output				Redundancy Factor					
L (ft)	Lt (ft)	hu (ft)	h/L	Ratio Factor (2L/h)	Wind (lbs)	Seismic (lbs)	Rtrib (ft)	Wtrib (ft)	Ftrib (ft)	Lo (in)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	ρ : 1.0	** Ω : 2.5		
												(Ref Load Comb.)	(ASD)		(ASD)		(Ref Load Comb.)	(ASD w/ ρ)		(ASD)	Hardware Used			
					(Unfactored w/o ρ)		(Unfactored)														Hold Downs	Nailing		
Grid F																								
34.33	51.33	15.00	0.4	1.00	11992	31691	4.0	15.0	0.0	0.00	(Unfactored w/o DL)	3504	-431	140	140	(Unfactored w/ ρ - no DL)	9261	4351	432	432	HDUE5-SDS3	3/12		
17.00	51.33	20.00	1.2	1.00	11992	31691	4.0	20.0	0.0	0.00	(Unfactored w/o DL)	4673	1294	140	140	(Unfactored w/ ρ - no DL)	12348	7373	432	432	HDUE9-SDS3	3/12		

Segment Geometry					Loading		DL Trib. Length				Wind Design Output				Seismic Design Output				Redundancy Factor				
L (ft)	Lt (ft)	hu (ft)	h/L	Ratio Factor (2L/h)	Wind (lbs)	Seismic (lbs)	Rtrib (ft)	Wtrib (ft)	Ftrib (ft)	Lo (in)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	p : 1.0	**Ω : 2.5	
												(Ref Load Comb.)	(ASD)	(ASD)							Hardware Used		
					(Unfactored w/o p)		(Unfactored)																Hold Downs
Grid 1																							
10.50	66.50	13.00	1.2	1.00	18959	50592	4.0	13.0	0.0	0.00	(Unfactored w/o DL)	3706	1512	171	171	(Unfactored w/ p - no DL)	9890	6324	533	533	HDUE7-SDS3	2/12	
6.00	66.50	13.00	2.2	0.92	18959	50592	4.0	13.0	0.0	0.00	(Unfactored w/o DL)	3706	1817	171	185	(Unfactored w/ p - no DL)	9890	6581	533	577	HDUE7-SDS3	2/12	
8.00	66.50	13.00	1.6	1.00	18959	50592	4.0	13.0	0.0	0.00	(Unfactored w/o DL)	3706	1681	171	171	(Unfactored w/ p - no DL)	9890	6467	533	533	HDUE7-SDS3	2/12	
6.50	66.50	13.00	2.0	1.00	18959	50592	4.0	13.0	0.0	0.00	(Unfactored w/o DL)	3706	1783	171	171	(Unfactored w/ p - no DL)	9890	6552	533	533	HDUE7-SDS3	2/12	
9.50	66.50	13.00	1.4	1.00	18959	50592	4.0	13.0	0.0	0.00	(Unfactored w/o DL)	3706	1580	171	171	(Unfactored w/ p - no DL)	9890	6381	533	533	HDUE7-SDS3	2/12	
8.00	66.50	13.00	1.6	1.00	18959	50592	26.0	13.0	0.0	0.00	(Unfactored w/o DL)	3706	414	171	171	(Unfactored w/ p - no DL)	9890	5401	533	533	HDUE7-SDS3	2/12	
18.00	66.50	13.00	0.7	1.00	18959	50592	26.0	13.0	0.0	0.00	(Unfactored w/o DL)	3706	-1848	171	171	(Unfactored w/ p - no DL)	9890	3498	533	533	HDUE5-SDS3	2/12	

Segment Geometry					Loading		DL Trib. Length				Wind Design Output				Seismic Design Output				Redundancy Factor			
L (ft)	Lt (ft)	hu (ft)	h/L	Ratio Factor (2L/h)	Wind (lbs)	Seismic (lbs)	Rtrib (ft)	Wtrib (ft)	Ftrib (ft)	Lo (in)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	p : 1.0	**Ω : 2.5
												(Ref Load Comb.)	(ASD)		(ASD)		(Ref Load Comb.)	(ASD w/ ρ)		(ASD)	Hardware Used	
					(Unfactored w/o ρ)		(Unfactored)														Hold Downs	Nailing
Grid 4																						
109.25	#####	23.00	0.2	1.00	18959	50592	28.5	23.0	0.0	0.00	(Unfactored w/o DL)	2864	-28238	75	75	(Unfactored w/ ρ - no DL)	7643	-19853	233	233	NOT REQ'D	6/12
43.00	#####	18.00	0.4	1.00	18959	50592	4.0	18.0	0.0	0.00	(Unfactored w/o DL)	2241	-2216	75	75	(Unfactored w/ ρ - no DL)	5981	1191	233	233	HDUE3-SDS3	6/12

FROELICH CONSULTING ENGINEERS, INC.

client: Steele
project: Chiloquin Fitness
job number: 26-B224
date: 9/2/2026
by: MP


Diaphragm Loading Wind/Seismic (DIAPHRAGM 1):
Diaphragm Design Forces (ASCE7-22 Sec. 12.10.1.1 Eq. 12.10-1):

Level	w_{px} (lbs)	V_i (lbs)	$\sum V_i$ (lbs)	$\sum w_i$ (lbs)	$F_{px} = ((\sum V_i) / (\sum w_i)) * w_{px}$	Force Ratio
Roof	484688	63382	63382	484688	$F_{roof} = 63382$	1.30

w_{px} : Seismic weight tributary to the diaphragm at level "x".

V_i : The design force applied to level "i", as determined for the main force resisting system (unfactored).

Force Ratio: Ratio of diaphragm design force to MFRS design force, but not less than 1.0

Min & Max Diaphragm Loads:

$$S_{DS} = 0.680$$

$$\text{Importance Factor } (I_e) = 1.25$$

$$F_{p \min} = 0.2 * S_{DS} * I_e * w_{px} \quad (\text{Eq. 12.10-2})$$

$$F_{p \max} = 0.4 * S_{DS} * I_e * w_{px} \quad (\text{Eq. 12.10-3})$$

Level	$F_{p \min}$	$F_{p \max}$	Diaphragm Shear (Unfactored)	Diaphragm Shear (Factored)
Roof	82397	164794	$F_{roof} = 82397$ lbs	$F_{roof} = 57678$ lbs

Overstrength Factor Requirements:

One and two-family dwelling of light frame construction? **No**

$\Omega =$	2.5	ASCE7-22 Table 12.2-1
$\Omega =$	2.5	

Roof Wall Line Shear Loads & Roof Diaphragm Unit shear:

Shear Wall Lines 1-n & Diaphragm Unit Shear								$\rho =$	1.0
	Shear Wall Loads (1-n)	Wind Shear In Wall Line (lbs)	Seismic Shear In Wall Line (lbs)	Wind Shear In Wall Line (lbs)	Seismic MFRS Shear (lbs)	Seismic Diaphragm Shear (lbs)	Diaphragm Connection Length, L_{1-n} (ft)	Wind Unit Shear (plf)	Seismic Unit Shear (plf)
		Unfactored		Factored (ASD)				Factored (ASD)	
Shear Walls Supporting Uniform Load (W_x)	1	18959	31691	11375	22184	28839	110	103	262
	4	18959	31691	11375	22184	28839	110	103	262
		0	0				0		
		0	0				0		
		0	0				0		
		0	0				0		

Shear Wall Lines A-n & Diaphragm Unit Shear								$\rho =$	1.0
	Shear Wall Loads (A-n)	Wind Shear In Wall Line (lbs)	Seismic Shear In Wall Line (lbs)	Wind Shear In Wall Line (lbs)	Seismic MFRS Shear (lbs)	Seismic Diaphragm Shear Dist. (lb)	Diaphragm Connection Length, L_{A-n} (ft)	Wind Unit Shear (plf)	Seismic Unit Shear (plf)
		Unfactored		Factored (ASD)				Factored (ASD)	
Shear Walls Supporting Uniform Load (W_y)	E	11992	31691	7195.2	22183.7	28839	117	61	246
	F	11992	31691	7195.2	22183.7	28839	117	61	246
		0	0				0		
		0	0				0		
		0	0				0		
		0	0				0		

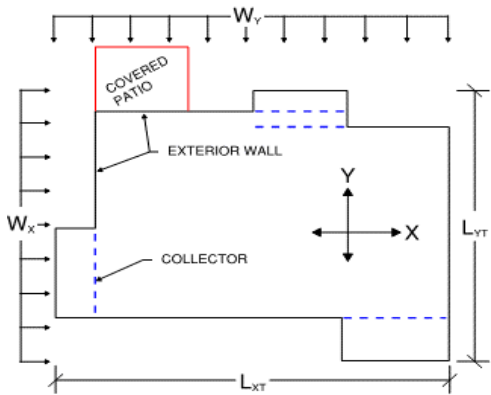
Average Uniform Diaphragm Loads (W_x & W_y):

Overall Projected Wall Width (L_{XT} & L_{YT}):

Length (L_{XT}) = 110 ft
Length (L_{YT}) = 117 ft

Factored Uniform Distributed Diaphragm Design Loads:

Uniform Wind (W_x) = 194 plf
Uniform Seismic (W_x) = 493 plf Force Ratio Controls
Uniform Wind (W_y) = 131 plf
Uniform Seismic (W_y) = 524 plf Force Ratio Controls



Double Top Plate Splice Capacity & Unit Shear Capacity:

Double Top Plate Splice Capacity:

(2) - 2x6 DF with min over lap 4 feet total w/ (12) - 0.131"x3" face nails each side of splice

0.131"x3" nail into 1.5" side plate 97 lbs, Per NDS 2024 Table 12N

Over Strength Factor, Ω = 2.5

Double top plate splice = (2) Simpson MSTC28 = 6920 lbs

Diaphragm Unit Shear Capacity:

Blocked wood structural panel diaphragm, 19/32 sheathing, 0.148"x3" nails, nominal unit shear =

895 plf

SDPWS 2021 T4.2a

Max Unblocked Diaphragm Shear, Wind = 895 / 2 448 plf

Max Unblocked Diaphragm Shear, Seismic = 895 / 2.8 320 plf

Diaphragm Design:

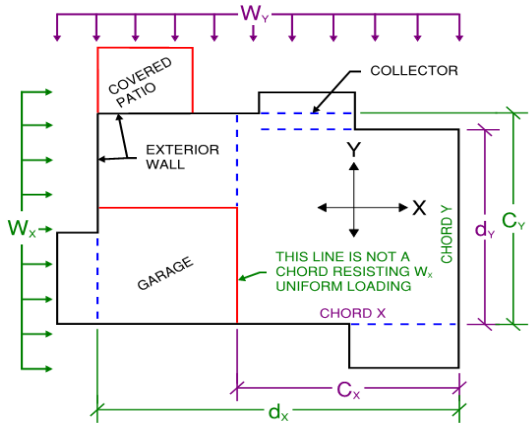
Worst Case (Chord X From W_y Loading)

Chord Length, (C_x) = 110 ft
Diaphragm Depth, (d_y) = 117 ft

Worst Case (Chord Y From W_x Loading)

Diaphragm Depth, (d_x) = 117 ft
Chord Length, (C_y) = 110 ft

Worst Chord force (X) =	6778	lbs	<	6920	lbs
Worst Chord force (Y) =	6373	lbs	<	6920	lbs
Max Unit Shear (Wind) =	103	plf	<	448	plf
Max Unit Shear (Eq) =	262	plf	<	320	plf
Max Aspect Ratio =	0.94		<	3	Unblocked



FROELICH CONSULTING ENGINEERS, INC.

client: Steele
project: Chiloquin Fitness
job number: 26-B224
date: 9/2/2026
by: MP


Diaphragm Loading Wind/Seismic (DIAPHRAGM 2):
Diaphragm Design Forces (ASCE7-22 Sec. 12.10.1.1 Eq. 12.10-1):

Level	w_{px} (lbs)	V_i (lbs)	$\sum V_i$ (lbs)	$\sum w_i$ (lbs)	$F_{px} = ((\sum V_i) / (\sum w_i)) * w_{px}$	Force Ratio
Roof	289066	37801	37801	289066	$F_{roof} = 37801$	1.30

w_{px} : Seismic weight tributary to the diaphragm at level "x".

V_i : The design force applied to level "i", as determined for the main force resisting system (unfactored).

Force Ratio: Ratio of diaphragm design force to MFRS design force, but not less than 1.0

Min & Max Diaphragm Loads:

$$S_{DS} = 0.680$$

$$\text{Importance Factor } (I_e) = 1.25$$

$$F_{p \min} = 0.2 * S_{DS} * I_e * w_{px} \quad (\text{Eq. 12.10-2})$$

$$F_{p \max} = 0.4 * S_{DS} * I_e * w_{px} \quad (\text{Eq. 12.10-3})$$

Level	$F_{p \min}$	$F_{p \max}$	Diaphragm Shear (Unfactored)	Diaphragm Shear (Factored)
Roof	49141	98282	$F_{roof} = 49141$ lbs	$F_{roof} = 34399$ lbs

Overstrength Factor Requirements:

One and two-family dwelling of light frame construction? **No**

$\Omega =$	2.5	ASCE7-22 Table 12.2-1
$\Omega =$	2.5	

Roof Wall Line Shear Loads & Roof Diaphragm Unit shear:

Shear Wall Lines 1-n & Diaphragm Unit Shear								$\rho =$	1.0
	Shear Wall Loads (1-n)	Wind Shear In Wall Line (lbs)	Seismic Shear In Wall Line (lbs)	Wind Shear In Wall Line (lbs)	Seismic MFRS Shear (lbs)	Seismic Diaphragm Shear (lbs)	Diaphragm Connection Length, L_{1-n} (ft)	Wind Unit Shear (plf)	Seismic Unit Shear (plf)
		Unfactored		Factored (ASD)				Factored (ASD)	
Shear Walls Supporting Uniform Load (W_x)	1	18959	18901	11375	13231	17200	60	190	287
	4	18959	18901	11375	13231	17200	60	190	287
		0	0				0		
		0	0				0		
		0	0				0		
		0	0				0		

Shear Wall Lines A-n & Diaphragm Unit Shear								$\rho =$	1.0
	Shear Wall Loads (A-n)	Wind Shear In Wall Line (lbs)	Seismic Shear In Wall Line (lbs)	Wind Shear In Wall Line (lbs)	Seismic MFRS Shear (lbs)	Seismic Diaphragm Shear Dist. (lb)	Diaphragm Connection Length, L_{A-n} (ft)	Wind Unit Shear (plf)	Seismic Unit Shear (plf)
		Unfactored		Factored (ASD)				Factored (ASD)	
Shear Walls Supporting Uniform Load (W_y)	E	10070	18901	6042	13230.7	17200	117	52	147
	F	10070	18901	6042	13230.7	17200	117	52	147
		0	0				0		
		0	0				0		
		0	0				0		
		0	0				0		

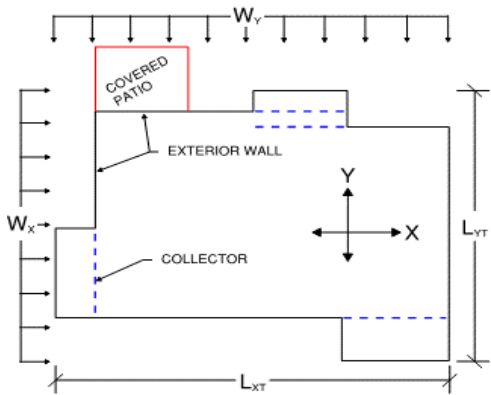
Average Uniform Diaphragm Loads (W_x & W_y):

Overall Projected Wall Width (L_{XT} & L_{YT}):

Length (L_{XT}) = 60 ft
Length (L_{YT}) = 117 ft

Factored Uniform Distributed Diaphragm Design Loads:

Uniform Wind (W_x) = 194 plf
Uniform Seismic (W_x) = 294 plf Force Ratio Controls
Uniform Wind (W_y) = 201 plf
Uniform Seismic (W_y) = 573 plf Force Ratio Controls



Double Top Plate Splice Capacity & Unit Shear Capacity:

Double Top Plate Splice Capacity:

(2) - 2x6 DF with min over lap 4 feet total w/ (12) - 0.131"x3" face nails each side of splice

0.131"x3" nail into 1.5" side plate 97 lbs, Per NDS 2024 Table 12N

Over Strength Factor, Ω = 2.5

Double top plate splice = (2) Simpson MSTC28 = 6920 lbs

Diaphragm Unit Shear Capacity:

Blocked wood structural panel diaphragm, 19/32 sheathing, 0.148"x3" nails, nominal unit shear =

895 plf

SDPWS 2021 T4.2a

Max Unblocked Diaphragm Shear, Wind = 895 / 2 448 plf

Max Unblocked Diaphragm Shear, Seismic = 895 / 2.8 320 plf

Diaphragm Design:

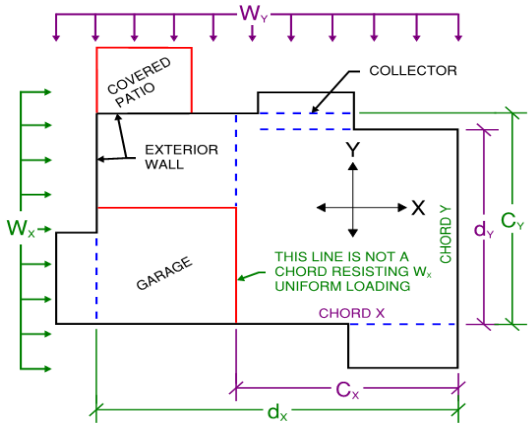
Worst Case (Chord X From W_y Loading)

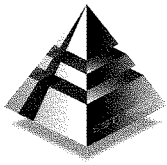
Chord Length, (C_x) = 60 ft
Diaphragm Depth, (d_y) = 117 ft

Worst Case (Chord Y From W_x Loading)

Diaphragm Depth, (d_x) = 117 ft
Chord Length, (C_y) = 60 ft

Worst Chord force (X) =	2205 lbs	<	6920 lbs
Worst Chord force (Y) =	1131 lbs	<	6920 lbs
Max Unit Shear (Wind) =	190 plf	<	448 plf
Max Unit Shear (Eq) =	287 plf	<	320 plf
Max Aspect Ratio =	0.51	<	3 Unblocked





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BY:

LATERAL ON (E) BUILDING

- NEW 6'-0" OPENING IN (E) SHEARWALL ALONG GRID (S)
- (E) SHEARWALL IS TREATED AS "PERFORATED" WITH HOLD DOWNS @ END OF WALL (GRID (A) & GRID (D))
- LENGTH = 53'-6" W/ MULTIPLE WINDOW OPENINGS
- NOTE THAT ALL WINDOW OPENINGS ALONG (E) SHEARWALL WILL BE INFILLED, SHEATHED AND NAILED PER ORIGINAL SHEAR WALL NAILING PATTERN: (3"/12") 8d
- EVEN WITH NEW 6'-0" CORRIDOR OPENING, (E) SHEARWALL CAPACITY IS INCREASED DUE TO INFILLED WINDOW OPENINGS.

∴ (E) SHEARWALL OKAY