STRUCTURAL CALCULATIONS
FOR
SINGLE FAMILY RESIDENTIAL REMODEL
(PLAN CHECK CORRECTIONS)

11224 Sunshine Terrace
Los Angeles, CA 91604

September 27, 2023

Prepared by:

Jeff Guh Engineering, Inc.
Civil & Structural Engineers
705 San Vicente Blvd., Santa Monica, CA 90402
Phone: 310-699-3112 FAX: 310-393-1036 Email: jg@jeffguh.com

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SECTION 1 Design Criteria and Loading

T. JEFF GUH, PH.D., S.E.
Structural Engineer
705 San Vicente Boulevard, Santa Monica, CA 90402
Phone: (310)699-3112 FAX: (310)393-1036 Email: jg@jeffguh.com

Sheet No.	1
By:	TJG
Date:	20-Feb-22
Checked:	

Project: **Sunshine Terrace Remodel**

Scope of Work

Type VB Single Family Remodel

Design Criteria

2023 LABC

Steel: **AISC 360-16**
A992 Steel with fy=50 ksi - W sections
A36 Steel with fy=36 ksi - Other sections
A307 Machine Bolts

Concrete: **ACI-318-19**
fc'=2500 psi

Wood: **NDS 2018**
DF-Larch #2 or better for 2X and 4X
DF-Larch #1 or better for 6X and bigger

Gravity Loading

Dead Load

Roof

Roofing (Shingle)	3 psf
Sheathing (5/8" Plywd)	3 psf
Framing	3 psf
Misc	1 psf
	10 psf

Ceiling

Framing	2 psf
Insulation	0.5 psf
1/2" Gypboard Ceiling	3 psf
Misc	2.5 psf
	8 psf

1F/2F Floor

Flooring	4 psf
Sheathing (3/4" Plywd)	3 psf
Framing	4 psf
Ceiling	3 psf
Miscellaneous	2 psf
	16 psf

Live Load

Roof	**20 psf**
Floor	**40 psf**

Residential Remodel

11224 Sunshine Terrace, Studio City, CA 91604, USA

Latitude, Longitude: 34.140439, -118.3743916

Date	5/23/2023, 7:49:22 AM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	2.077	MCE_R ground motion. (for 0.2 second period)
S_1	0.732	MCE_R ground motion. (for 1.0s period)
S_{MS}	2.493	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.662	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1.2	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.877	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	1.052	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	2.077	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.292	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.384	Factored deterministic acceleration value. (0.2 second)
S1RT	0.744	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.825	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.732	Factored deterministic acceleration value. (1.0 second)
PGAd	0.964	Factored deterministic acceleration value. (Peak Ground Acceleration)
PGA_{UH}	0.877	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.907	Mapped value of the risk coefficient at short periods
C_{R1}	0.902	Mapped value of the risk coefficient at a period of 1 s
C_V	1.5	Vertical coefficient

ASCE 7-16 Seismic Load Calculations

$Cs = \frac{S_{DS}}{R/I}$ Seismic Response Coefficient (12.8-2)

Cs need not exceed:

$Cs = \frac{S_{D1}}{T(R/I)}$ for $T \le T_L$ (12.8-3)

$Cs = \frac{S_{D1}*T_L}{T^2(R/I)}$ for $T > T_L$ (12.8-4)

Cs shall not be less than:

$Cs = 0.01$ (12.8-5)

$Cs = \frac{0.5*S_1}{(R/I)}$ (When S_1 greater or equal to 0.6*g; 12.8-6)

Seismic ground motion values (Section 11.4)

site class = **D** (refer to section 11.4.2)

Determine mapped acceleration parameters Ss and S1 (Figures 22-1 through 22-14)

Ss = **2.077** G parameter for the .2 sec spectral acceleration

S_1 = **0.732** G parameter for the 1 sec spectral acceleration

Adjusted spectral response accelerations (Section 11.4.3):

S_{MS} = Fa*Ss (11.4-1)

S_{M1} = Fv*S_1 (11.4-2)

Fa = **1.2** site coefficent (Table 11.4-1)

Fv = **1.424** site coefficent (Table 11.4-2)

S_{MS} = 2.492 G

S_{M1} = 1.042 G

Design Spectral Acceleration Parameters:

S_{DS} = 2/3(S_{MS}) (11.4-3)

S_{D1} = 2/3(S_{M1}) (11.4-4)

S_{DS} = 1.662 G

S_{D1} = 0.695 G

Long period transition period (Figures 22-15 through 22-20)

T_L = 8 sec (Fig 22-16)

R = response modification factor (Table 12.2-1 or 15.4-2)

R = 6.5 for structural system (Table 12.2-1 or 15.4-2) (WD PANEL)

I = occupancy importance factor determined (Section 11.2.1)

I = 1 (Table 11.5-1 and Table 1-1)

T = fundemental period of the structure (Section 12.8.2)

It is permitted to to use the approximate building period Ta for T from Section 12.8.2.1

Ta = $C_t h_n^x$ sec (12.8-7)

C_t = **0.028** (Table 12.8-2)

h_n = **10** ft (height above base to highest level of structure)

x = **0.8** (Table 12.8-2)

T = Ta = 0.177 sec

Calculate Cs:	
Cs =	**0.256**
Cs max =	**0.605**
Cs min =	**0.056**

For ASD, use v= (Cs*ρ/1.4)W

ρ= 1.3 (Redundancy Factor)

V= 0.237 W

	MWFRS Wind Loads *ASCE 7-16* *Enclosed & Partially Enclosed Buildings of All Heights*	Job No: Designer: JG Checker:
	Notes: Sunshine Remodel	Date: 5/23/2023

Basic Parameters

Risk Category	II	Table 1.5-1
Basic Wind Speed, V	110 mph	Figure 26.5-1A
Wind Directionality Factor, K_d	0.85	Table 26.6-1
Exposure Category	C	Section 26.7
Topographic Factor, K_{zt}	1.00	Section 26.8
Gust Effect Factor, G or G_f	0.836	Section 26.9
Enclosure Classification	Enclosed	Section 26.10
Internal Pressure Coefficient, GC_{pi}	+/- 0.18	Table 26.11-1
Terrain Exposure Constant, α	9.5	Table 26.9-1
Terrain Exposure Constant, z_g	900 ft	Table 26.9-1

Wall Pressure Coefficients

Windward Wall Width, B	69 ft	
Side Wall Width, L	45 ft	
L/B Ratio	0.65	
Windward Wall Coefficient, C_p	0.80	Figure 27.4-1
Leeward Wall Coefficient, C_p	-0.50	Figure 27.4-1
Side Wall Coefficient, C_p	-0.70	Figure 27.4-1

Roof Pressure Coefficients

Roof Slope, θ	36.9°	
Median Roof Height, h	24 ft	
Velocity Pressure Exposure Coef., K_h	0.94	Table 27.3-1
Velocity Pressure, q_h	24.7 psf	Equation 27.3-1
h/L Ratio	0.53	
Windward Roof Area	690 ft²	
Roof Area Within 12 ft of WW Edge	690 ft²	

Location	*Min/Max*	*Horiz Distance From Windward Edge*			
		0 ft	*12 ft*	*24 ft*	*48 ft*
Windward Roof Coefficient Normal to Ridge, C_p	Min	-0.16	-0.16	-0.16	-0.16
	Max	0.31	0.31	0.31	0.31
Leeward Roof Coefficient Normal to Ridge, C_p	Min	-0.60	-0.60	-0.60	-0.60
	Max	-0.60	-0.60	-0.60	-0.60
Roof Coefficient Parallel to Ridge, C_p	Min	-0.91	-0.91	-0.51	-0.33
	Max	-0.18	-0.18	-0.18	-0.18

Figure 27.4-1

Seismic load governs lateral design.

Structure Pressure Summary (Add Internal Pressure q_zGC_{pi} or q_hGC_{pi} as Necessary)

Height, z	K_z	q_z	*Walls*				*Roof*			Internal	
							Normal to Ridge		*Parallel*		
			WW	*LW*	*WW + LW*	*Side*	*WW*	*LW*	*to Ridge*	Positive	Negative
0 ft	0.85	22.4 psf	14.9 psf		25.3 psf					4.4 psf	
2 ft	0.85	22.4 psf	14.9 psf		25.3 psf		Min:	Min:	Min:	4.4 psf	
5 ft	0.85	22.4 psf	14.9 psf		25.3 psf		-3.3 psf	-12.4 psf	-18.8 psf	4.4 psf	
7 ft	0.85	22.4 psf	14.9 psf		25.3 psf					4.4 psf	
10 ft	0.85	22.4 psf	14.9 psf		25.3 psf					4.4 psf	
12 ft	0.85	22.4 psf	14.9 psf	-10.3 psf	25.3 psf	-14.4 psf				4.4 psf	-4.4 psf
14 ft	0.85	22.4 psf	14.9 psf		25.3 psf					4.4 psf	
17 ft	0.87	22.9 psf	15.3 psf		25.6 psf		Max:	Max:	Max:	4.4 psf	
19 ft	0.89	23.5 psf	15.7 psf		26.1 psf		6.4 psf	-12.4 psf	-3.7 psf	4.4 psf	
22 ft	0.92	24.1 psf	16.1 psf		26.5 psf					4.4 psf	
24 ft	0.94	24.7 psf	16.5 psf		26.8 psf					4.4 psf	

SECTION 2 Gravity Load Analysis

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

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Wood Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # :

Licensee :

Description : ROOF RAFTER

Material Properties

Calculations per NDS 2018, IBC 2021, CBC 2022, ASCE 7-16

Analysis Method : Allowable Stress Design
Load Combination 2021 IBC & ASCE 7-16

Wood Species : Douglas Fir - Larch
Wood Grade : No.2

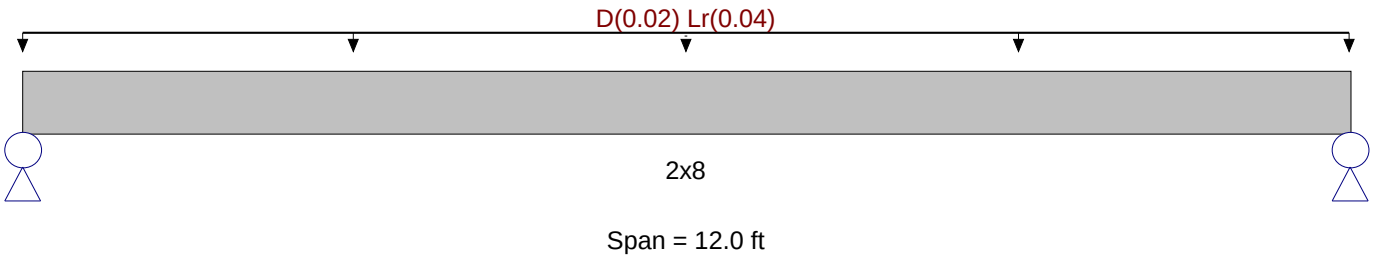
Beam Bracing : Beam is Fully Braced against lateral-torsion buckling

Fb - Tension	900.0 psi
Fb - Compr	900.0 psi
Fc - Prll	1,350.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	575.0 psi

E : Modulus of Elasticity

Ebend- xx	1,600.0 ksi
Eminbend - xx	580.0 ksi
Density	32.210 pcf

Repetitive Member Stress Increase



Applied Loads

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

Uniform Load : D = 0.010, Lr = 0.020 ksf, Tributary Width = 2.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.794 : 1	Maximum Shear Stress Ratio	=	0.248 : 1
Section used for this span		2x8	Section used for this span		2x8
fb : Actual	=	986.25 psi	fv : Actual	=	44.69 psi
FB : Allowable	=	1,242.00 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+Lr+H	Load Combination		+D+Lr+H
Location of maximum on span	=	6.000 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.247 in	Ratio =	583
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.370 in	Ratio =	388
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values: Mactual	fb-design	Fb-allow	Summary of Shear Values: Vactual	fv-design	Fv-allow
+D														
Length = 12.0 ft	1	0.265	0.083	1.000	1.200	1.150	1.000	1.000	0.36	328.75	1,242.00	0.11	14.90	180.00
+D+Lr+H					1.200	1.150	1.000	1.000						
Length = 12.0 ft	1	0.794	0.248	1.000	1.200	1.150	1.000	1.000	1.08	986.25	1,242.00	0.32	44.69	180.00
+D+0.750Lr+0.750L+H					1.200	1.150	1.000	1.000						
Length = 12.0 ft	1	0.662	0.207	1.000	1.200	1.150	1.000	1.000	0.90	821.88	1,242.00	0.27	37.24	180.00
+D+0.750Lr+0.750L+0.750W+H					1.200	1.150	1.000	1.000						
Length = 12.0 ft	1	0.662	0.207	1.000	1.200	1.150	1.000	1.000	0.90	821.88	1,242.00	0.27	37.24	180.00
+D+0.750Lr+0.750L+0.5250E+H					1.200	1.150	1.000	1.000						
Length = 12.0 ft	1	0.662	0.207	1.000	1.200	1.150	1.000	1.000	0.90	821.88	1,242.00	0.27	37.24	180.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+Lr	1	0.3702	6.060		0.0000	0.000

Wood Beam

Description : ROOF RAFTER

Vertical Reactions - Unfactored

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.360	0.360
D Only	0.120	0.120
Lr Only	0.240	0.240
D+Lr	0.360	0.360

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

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Wood Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : **Licensee :**

Description : ROOF RAFTER WITH CANTILEVER

Material Properties

Calculations per NDS 2018, IBC 2021, CBC 2022, ASCE 7-16

Analysis Method : Allowable Stress Design
Load Combination 2021 IBC & ASCE 7-16

Wood Species : Douglas Fir - Larch
Wood Grade : No.2

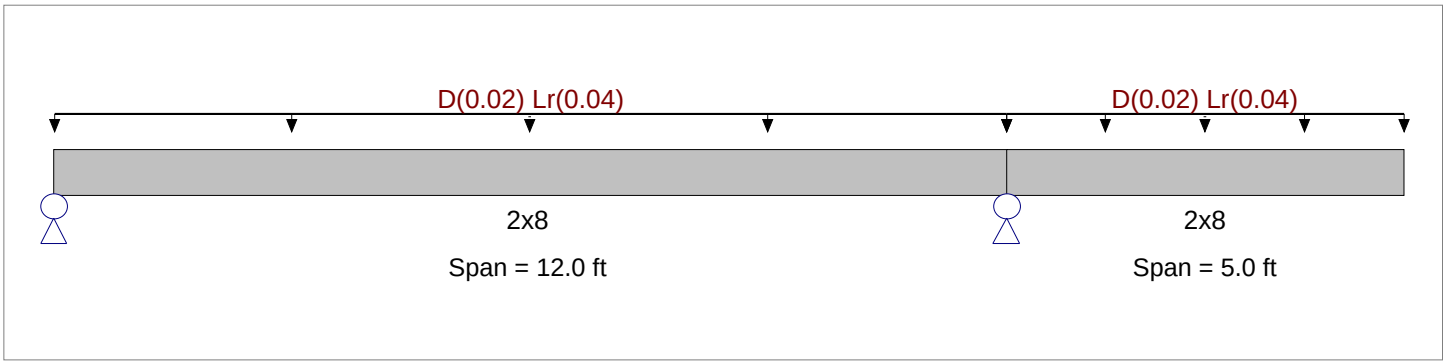
Beam Bracing : Beam is Fully Braced against lateral-torsion buckling

Fb - Tension	900.0 psi
Fb - Compr	900.0 psi
Fc - Prll	1,350.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	575.0 psi

E : Modulus of Elasticity

Ebend- xx	1,600.0 ksi
Eminbend - xx	580.0 ksi
Density	32.210 pcf

Repetitive Member Stress Increase



Applied Loads

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

Load for Span Number 1
Uniform Load : D = 0.010, Lr = 0.020 ksf, Tributary Width = 2.0 ft
Load for Span Number 2
Uniform Load : D = 0.010, Lr = 0.020 ksf, Tributary Width = 2.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.551 : 1	Maximum Shear Stress Ratio	=	0.324 : 1
Section used for this span		2x8	Section used for this span		2x8
fb : Actual	=	684.90 psi	fv : Actual	=	58.28 psi
FB : Allowable	=	1,242.00 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+Lr+H	Load Combination		+D+Lr+H
Location of maximum on span	=	12.000 ft	Location of maximum on span	=	12.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.146 in	Ratio =	984
Max Upward L+Lr+S Deflection	-0.029 in	Ratio =	4098
Max Downward Total Deflection	0.219 in	Ratio =	656
Max Upward Total Deflection	-0.044 in	Ratio =	2732

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values Mactual	fb-design	Fb-allow	Summary of Shear Values Vactual	fv-design	Fv-allow
+D														
Length = 12.0 ft	1	0.184	0.108	1.000	1.200	1.150	1.000	1.000	-0.25	228.30	1,242.00	0.14	19.43	180.00
Length = 5.0 ft	2	0.184	0.108	1.000	1.200	1.150	1.000	1.000	-0.25	228.30	1,242.00	0.09	19.43	180.00
+D+Lr+H					1.200	1.150	1.000	1.000						
Length = 12.0 ft	1	0.551	0.324	1.000	1.200	1.150	1.000	1.000	-0.75	684.90	1,242.00	0.42	58.28	180.00
Length = 5.0 ft	2	0.551	0.324	1.000	1.200	1.150	1.000	1.000	-0.75	684.90	1,242.00	0.27	58.28	180.00
+D+0.750Lr+0.750L+H					1.200	1.150	1.000	1.000						
Length = 12.0 ft	1	0.460	0.270	1.000	1.200	1.150	1.000	1.000	-0.63	570.75	1,242.00	0.35	48.56	180.00
Length = 5.0 ft	2	0.460	0.270	1.000	1.200	1.150	1.000	1.000	-0.63	570.75	1,242.00	0.22	48.56	180.00
+D+0.750Lr+0.750L+0.750W+H					1.200	1.150	1.000	1.000						
Length = 12.0 ft	1	0.460	0.270	1.000	1.200	1.150	1.000	1.000	-0.63	570.75	1,242.00	0.35	48.56	180.00
Length = 5.0 ft	2	0.460	0.270	1.000	1.200	1.150	1.000	1.000	-0.63	570.75	1,242.00	0.22	48.56	180.00

Structural Calculations
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Project Notes :

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Wood Beam

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Lic. # : **Licensee :**

Description : ROOF RAFTER WITH CANTILEVER

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values Mactual	fb-design	Fb-allow	Summary of Shear Values Vactual	fv-design	Fv-allow
+D+0.750Lr+0.750L+0.5250E+H					1.200	1.150	1.000	1.000						
Length = 12.0 ft	1	0.460	0.270	1.000	1.200	1.150	1.000	1.000	-0.63	570.75	1,242.00	0.35	48.56	180.00
Length = 5.0 ft	2	0.460	0.270	1.000	1.200	1.150	1.000	1.000	-0.63	570.75	1,242.00	0.22	48.56	180.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+Lr	1	0.2195	5.538		0.0000	0.000
	2	0.0000	5.538	D+Lr	-0.0439	5.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	0.298	0.723	
D Only	0.099	0.241	
Lr Only	0.198	0.482	
D+Lr	0.298	0.723	

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Wood Beam

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Lic. # : Licensee :

Description : RIDGE BEAM

Material Properties

Calculations per NDS 2018, IBC 2021, CBC 2022, ASCE 7-16

Analysis Method : Allowable Stress Design
Load Combination 2021 IBC & ASCE 7-16

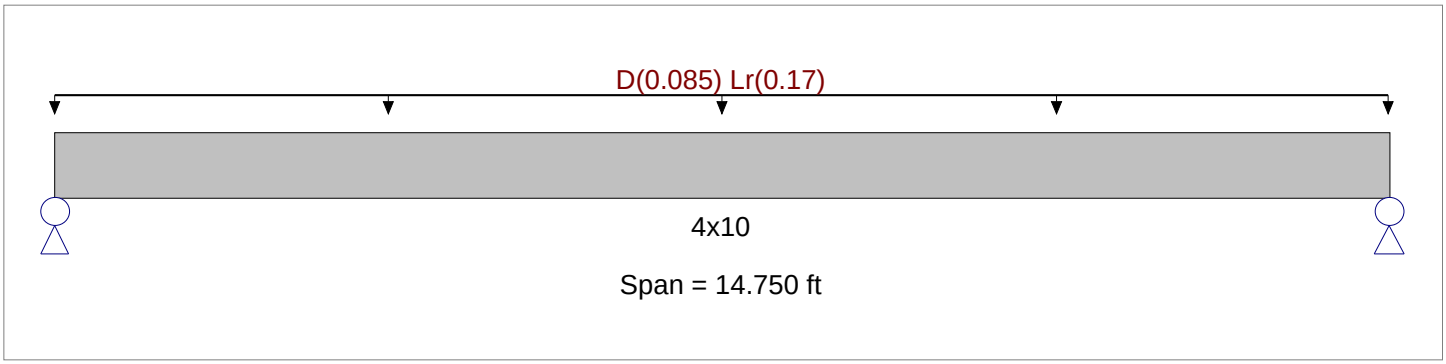
Wood Species : Douglas Fir - Larch
Wood Grade : Select structural

Beam Bracing : Completely Unbraced

Fb - Tension	1500 psi
Fb - Compr	1500 psi
Fc - Prll	1700 psi
Fc - Perp	625 psi
Fv	180 psi
Ft	1000 psi

E : Modulus of Elasticity

Ebend- xx	1900 ksi
Eminbend - xx	690 ksi
Density	32.21 pcf



Applied Loads

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

Uniform Load : D = 0.010, Lr = 0.020 ksf, Tributary Width = 8.50 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.945 : 1	Maximum Shear Stress Ratio	=	0.436 : 1
Section used for this span		4x10	Section used for this span		4x10
fb : Actual	=	1,667.31 psi	fv : Actual	=	78.42 psi
FB : Allowable	=	1,765.12 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+Lr+H	Load Combination		+D+Lr+H
Location of maximum on span	=	7.375 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.416 in	Ratio =	425
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.624 in	Ratio =	283
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values Mactual	fb-design	Fb-allow	Summary of Shear Values Vactual	fv-design	Fv-allow
+D														
Length = 14.750 ft	1	0.315	0.145	1.000	1.200	1.000	1.000	1.000	2.31	555.77	1,765.12	0.56	26.14	180.00
+D+Lr+H					1.200	1.000	1.000	1.000						
Length = 14.750 ft	1	0.945	0.436	1.000	1.200	1.000	1.000	1.000	6.93	1,667.31	1,765.12	1.69	78.42	180.00
+D+0.750Lr+0.750L+H					1.200	1.000	1.000	1.000						
Length = 14.750 ft	1	0.787	0.363	1.000	1.200	1.000	1.000	1.000	5.78	1,389.42	1,765.12	1.41	65.35	180.00
+D+0.750Lr+0.750L+0.750W+H					1.200	1.000	1.000	1.000						
Length = 14.750 ft	1	0.787	0.363	1.000	1.200	1.000	1.000	1.000	5.78	1,389.42	1,765.12	1.41	65.35	180.00
+D+0.750Lr+0.750L+0.5250E+H					1.200	1.000	1.000	1.000						
Length = 14.750 ft	1	0.787	0.363	1.000	1.200	1.000	1.000	1.000	5.78	1,389.42	1,765.12	1.41	65.35	180.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+Lr	1	0.6241	7.449		0.0000	0.000

Wood Beam

Description : RIDGE BEAM

Vertical Reactions - Unfactored

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	1.881	1.881
D Only	0.627	0.627
Lr Only	1.254	1.254
D+Lr	1.881	1.881

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

Printed: 25 MAY 2023, 8:24AM

Wood Beam

File: Z:_Work\TJG\PROJ\NPG\Contract\BLD008-11224 Sunshine\3-Doc\Calc\sunshine.ec6
ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # :

Licensee :

Description : CEILING JOIST

Material Properties

Calculations per NDS 2018, IBC 2021, CBC 2022, ASCE 7-16

Analysis Method : Allowable Stress Design
Load Combination 2021 IBC & ASCE 7-16

Wood Species : Douglas Fir - Larch
Wood Grade : Select structural

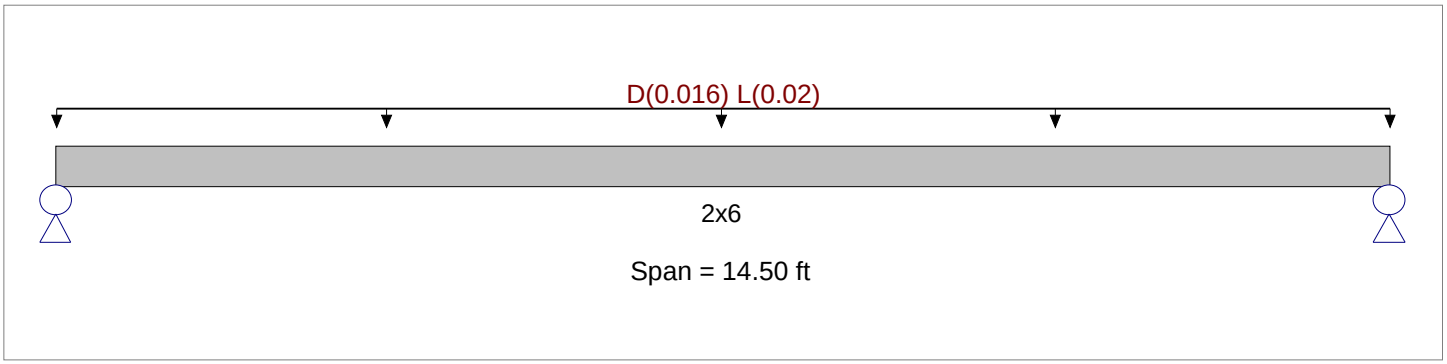
Beam Bracing : Beam is Fully Braced against lateral-torsion buckling

Fb - Tension	1500 psi
Fb - Compr	1500 psi
Fc - Prll	1700 psi
Fc - Perp	625 psi
Fv	180 psi
Ft	1000 psi

E : Modulus of Elasticity

Ebend- xx	1900 ksi
Eminbend - xx	690 ksi
Density	32.21 pcf

Repetitive Member Stress Increase



Applied Loads

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

Uniform Load : D = 0.0080, L = 0.010 ksf, Tributary Width = 2.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.669 : 1	Maximum Shear Stress Ratio	=	0.248 : 1
Section used for this span		2x6	Section used for this span		2x6
fb : Actual	=	1,501.29 psi	fv : Actual	=	44.61 psi
FB : Allowable	=	2,242.50 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	7.250 ft	Location of maximum on span	=	14.065 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.507 in	Ratio =	342
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <240
Max Downward Total Deflection	0.913 in	Ratio =	190
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values: Mactual	fb-design	Fb-allow	Summary of Shear Values: Vactual	fv-design	Fv-allow
+D														
Length = 14.50 ft	1	0.298	0.110	1.000	1.300	1.150	1.000	1.000	0.42	667.24	2,242.50	0.11	19.83	180.00
+D+L+H					1.300	1.150	1.000	1.000						
Length = 14.50 ft	1	0.669	0.248	1.000	1.300	1.150	1.000	1.000	0.95	1,501.29	2,242.50	0.25	44.61	180.00
+D+0.750Lr+0.750L+H					1.300	1.150	1.000	1.000						
Length = 14.50 ft	1	0.576	0.213	1.000	1.300	1.150	1.000	1.000	0.81	1,292.78	2,242.50	0.21	38.41	180.00
+D+0.750L+0.750S+H					1.300	1.150	1.000	1.000						
Length = 14.50 ft	1	0.576	0.213	1.000	1.300	1.150	1.000	1.000	0.81	1,292.78	2,242.50	0.21	38.41	180.00
+D+0.750Lr+0.750L+0.750W+H					1.300	1.150	1.000	1.000						
Length = 14.50 ft	1	0.576	0.213	1.000	1.300	1.150	1.000	1.000	0.81	1,292.78	2,242.50	0.21	38.41	180.00
+D+0.750L+0.750S+0.750W+H					1.300	1.150	1.000	1.000						
Length = 14.50 ft	1	0.576	0.213	1.000	1.300	1.150	1.000	1.000	0.81	1,292.78	2,242.50	0.21	38.41	180.00
+D+0.750Lr+0.750L+0.5250E+H					1.300	1.150	1.000	1.000						
Length = 14.50 ft	1	0.576	0.213	1.000	1.300	1.150	1.000	1.000	0.81	1,292.78	2,242.50	0.21	38.41	180.00
+D+0.750L+0.750S+0.5250E+H					1.300	1.150	1.000	1.000						
Length = 14.50 ft	1	0.576	0.213	1.000	1.300	1.150	1.000	1.000	0.81	1,292.78	2,242.50	0.21	38.41	180.00

Wood Beam

Description : CEILING JOIST

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L	1	0.9134	7.323		0.0000	0.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.261	0.261
D Only	0.116	0.116
L Only	0.145	0.145
D+L	0.261	0.261

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

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Wood Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : **Licensee :**

Description : CEILING BEAM C/3-D/3

Material Properties

Calculations per NDS 2018, IBC 2021, CBC 2022, ASCE 7-16

Analysis Method : Allowable Stress Design
Load Combination 2021 IBC & ASCE 7-16

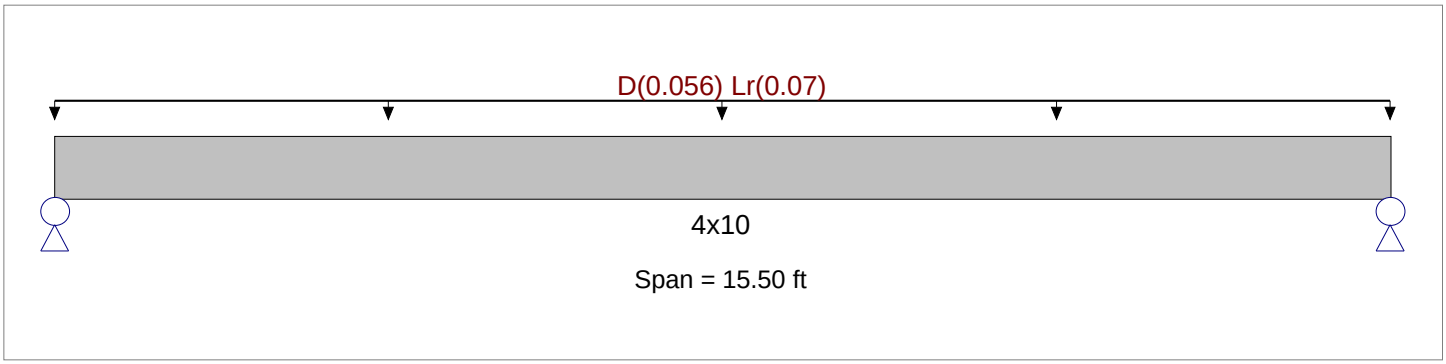
Wood Species : Douglas Fir - Larch
Wood Grade : No.2

Beam Bracing : Completely Unbraced

Fb - Tension	900 psi
Fb - Compr	900 psi
Fc - Prll	1350 psi
Fc - Perp	625 psi
Fv	180 psi
Ft	575 psi

E : Modulus of Elasticity

Ebend- xx	1600 ksi
Eminbend - xx	580 ksi
Density	32.21 pcf



Applied Loads

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

Uniform Load : D = 0.0080, Lr = 0.010 ksf, Tributary Width = 7.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.854 : 1	Maximum Shear Stress Ratio	=	0.229 : 1
Section used for this span		4x10	Section used for this span		4x10
fb : Actual	=	909.76 psi	fv : Actual	=	41.17 psi
FB : Allowable	=	1,065.55 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+Lr+H	Load Combination		+D+Lr+H
Location of maximum on span	=	7.750 ft	Location of maximum on span	=	14.803 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.248 in	Ratio =	749
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.447 in	Ratio =	416
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values Mactual	fb-design	Fb-allow	Summary of Shear Values Vactual	fv-design	Fv-allow
+D														
Length = 15.50 ft	1	0.379	0.102	1.000	1.200	1.000	1.000	1.000	1.68	404.34	1,065.55	0.39	18.30	180.00
+D+Lr+H					1.200	1.000	1.000	1.000						
Length = 15.50 ft	1	0.854	0.229	1.000	1.200	1.000	1.000	1.000	3.78	909.76	1,065.55	0.89	41.17	180.00
+D+0.750Lr+0.750L+H					1.200	1.000	1.000	1.000						
Length = 15.50 ft	1	0.735	0.197	1.000	1.200	1.000	1.000	1.000	3.26	783.40	1,065.55	0.77	35.45	180.00
+D+0.750Lr+0.750L+0.750W+H					1.200	1.000	1.000	1.000						
Length = 15.50 ft	1	0.735	0.197	1.000	1.200	1.000	1.000	1.000	3.26	783.40	1,065.55	0.77	35.45	180.00
+D+0.750Lr+0.750L+0.5250E+H					1.200	1.000	1.000	1.000						
Length = 15.50 ft	1	0.735	0.197	1.000	1.200	1.000	1.000	1.000	3.26	783.40	1,065.55	0.77	35.45	180.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+Lr	1	0.4466	7.828		0.0000	0.000

Wood Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : Licensee :

Description : CEILING BEAM C/3-D/3

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.977	0.977
D Only	0.434	0.434
Lr Only	0.543	0.543
D+Lr	0.977	0.977

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

Printed: 25 MAY 2023, 8:31AM

Wood Beam

File: Z:_Work\TJG\PROJ\NPG\Contract\BLD008-11224 Sunshine\3-Doc\Calc\sunshine.ec6
ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : Licensee :

Description : RF FRAMING HEADER

Material Properties

Calculations per NDS 2018, IBC 2021, CBC 2022, ASCE 7-16

Analysis Method : Allowable Stress Design
Load Combination 2021 IBC & ASCE 7-16

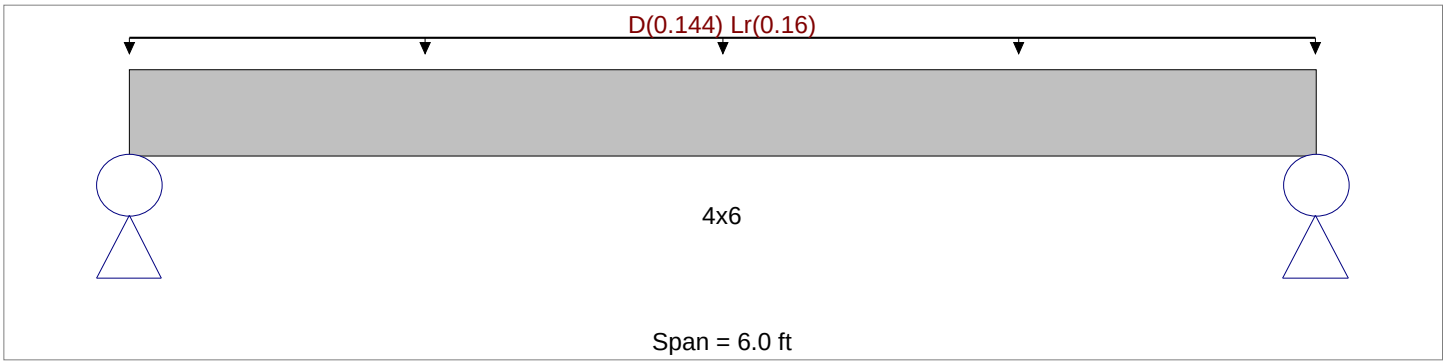
Wood Species : Douglas Fir - Larch
Wood Grade : No.2

Beam Bracing : Completely Unbraced

Fb - Tension	900.0 psi
Fb - Compr	900.0 psi
Fc - Prll	1,350.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	575.0 psi

E : Modulus of Elasticity

Ebend- xx	1,600.0 ksi
Eminbend - xx	580.0 ksi
Density	32.210 pcf



Applied Loads

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

Uniform Load : D = 0.0180, Lr = 0.020 ksf, Tributary Width = 8.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.797 : 1	Maximum Shear Stress Ratio	=	0.336 : 1
Section used for this span		4x6	Section used for this span		4x6
fb : Actual	=	930.30 psi	fv : Actual	=	60.41 psi
FB : Allowable	=	1,166.69 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+Lr+H	Load Combination		+D+Lr+H
Location of maximum on span	=	3.000 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.061 in	Ratio =	1188
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.115 in	Ratio =	625
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values Mactual	fb-design	Fb-allow	Summary of Shear Values Vactual	fv-design	Fv-allow
+D														
Length = 6.0 ft	1	0.378	0.159	1.000	1.300	1.000	1.000	1.000	0.65	440.67	1,166.69	0.37	28.61	180.00
+D+Lr+H					1.300	1.000	1.000	1.000						
Length = 6.0 ft	1	0.797	0.336	1.000	1.300	1.000	1.000	1.000	1.37	930.30	1,166.69	0.78	60.41	180.00
+D+0.750Lr+0.750L+H					1.300	1.000	1.000	1.000						
Length = 6.0 ft	1	0.692	0.291	1.000	1.300	1.000	1.000	1.000	1.19	807.90	1,166.69	0.67	52.46	180.00
+D+0.750Lr+0.750L+0.750W+H					1.300	1.000	1.000	1.000						
Length = 6.0 ft	1	0.692	0.291	1.000	1.300	1.000	1.000	1.000	1.19	807.90	1,166.69	0.67	52.46	180.00
+D+0.750Lr+0.750L+0.5250E+H					1.300	1.000	1.000	1.000						
Length = 6.0 ft	1	0.692	0.291	1.000	1.300	1.000	1.000	1.000	1.19	807.90	1,166.69	0.67	52.46	180.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+Lr	1	0.1151	3.030		0.0000	0.000

Wood Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : Licensee :

Description : RF FRAMING HEADER

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.912	0.912
D Only	0.432	0.432
Lr Only	0.480	0.480
D+Lr	0.912	0.912

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

Printed: 25 MAY 2023, 8:43AM

Wood Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : Licensee :

Description : 2F JOISTS

Material Properties

Calculations per NDS 2018, IBC 2021, CBC 2022, ASCE 7-16

Analysis Method : Allowable Stress Design
Load Combination 2021 IBC & ASCE 7-16

Wood Species : Douglas Fir - Larch
Wood Grade : No.2

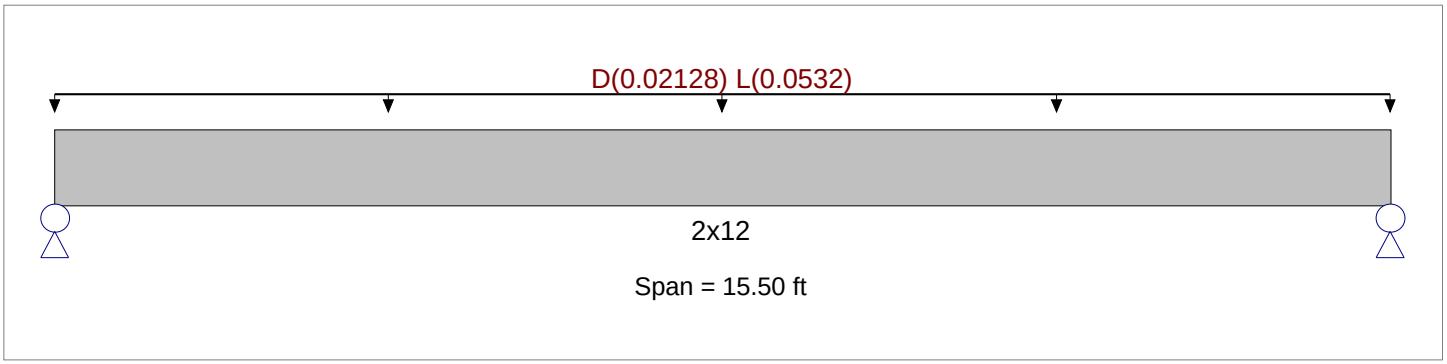
Beam Bracing : Beam is Fully Braced against lateral-torsion buckling

Fb - Tension	900.0 psi
Fb - Compr	900.0 psi
Fc - Prll	1,350.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	575.0 psi

E : Modulus of Elasticity

Ebend- xx	1,600.0 ksi
Eminbend - xx	580.0 ksi
Density	32.210 pcf

Repetitive Member Stress Increase



Applied Loads

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

Uniform Load : D = 0.0160, L = 0.040 ksf, Tributary Width = 1.330 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.820 : 1	Maximum Shear Stress Ratio	=	0.251 : 1
Section used for this span		2x12	Section used for this span		2x12
fb : Actual	=	848.30 psi	fv : Actual	=	45.15 psi
FB : Allowable	=	1,035.00 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	7.750 ft	Location of maximum on span	=	14.570 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.245 in	Ratio =	760
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.342 in	Ratio =	543
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values Mactual	fb-design	Fb-allow	Summary of Shear Values Vactual	fv-design	Fv-allow
+D														
Length = 15.50 ft	1	0.234	0.072	1.000	1.000	1.150	1.000	1.000	0.64	242.37	1,035.00	0.15	12.90	180.00
+D+L+H					1.000	1.150	1.000	1.000						
Length = 15.50 ft	1	0.820	0.251	1.000	1.000	1.150	1.000	1.000	2.24	848.30	1,035.00	0.51	45.15	180.00
+D+0.750Lr+0.750L+H					1.000	1.150	1.000	1.000						
Length = 15.50 ft	1	0.673	0.206	1.000	1.000	1.150	1.000	1.000	1.84	696.82	1,035.00	0.42	37.09	180.00
+D+0.750L+0.750S+H					1.000	1.150	1.000	1.000						
Length = 15.50 ft	1	0.673	0.206	1.000	1.000	1.150	1.000	1.000	1.84	696.82	1,035.00	0.42	37.09	180.00
+D+0.750Lr+0.750L+0.750W+H					1.000	1.150	1.000	1.000						
Length = 15.50 ft	1	0.673	0.206	1.000	1.000	1.150	1.000	1.000	1.84	696.82	1,035.00	0.42	37.09	180.00
+D+0.750L+0.750S+0.750W+H					1.000	1.150	1.000	1.000						
Length = 15.50 ft	1	0.673	0.206	1.000	1.000	1.150	1.000	1.000	1.84	696.82	1,035.00	0.42	37.09	180.00
+D+0.750Lr+0.750L+0.5250E+H					1.000	1.150	1.000	1.000						
Length = 15.50 ft	1	0.673	0.206	1.000	1.000	1.150	1.000	1.000	1.84	696.82	1,035.00	0.42	37.09	180.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.150	1.000	1.000						
Length = 15.50 ft	1	0.673	0.206	1.000	1.000	1.150	1.000	1.000	1.84	696.82	1,035.00	0.42	37.09	180.00

Wood Beam

Description : 2F JOISTS

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L	1	0.3424	7.828		0.0000	0.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.577	0.577
D Only	0.165	0.165
L Only	0.412	0.412
D+L	0.577	0.577

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

Printed: 25 MAY 2023, 8:33AM

Wood Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : **Licensee :**

Description : 2F BM F/4-F/8

Material Properties

Calculations per NDS 2018, IBC 2021, CBC 2022, ASCE 7-16

Analysis Method : Allowable Stress Design
Load Combination 2021 IBC & ASCE 7-16

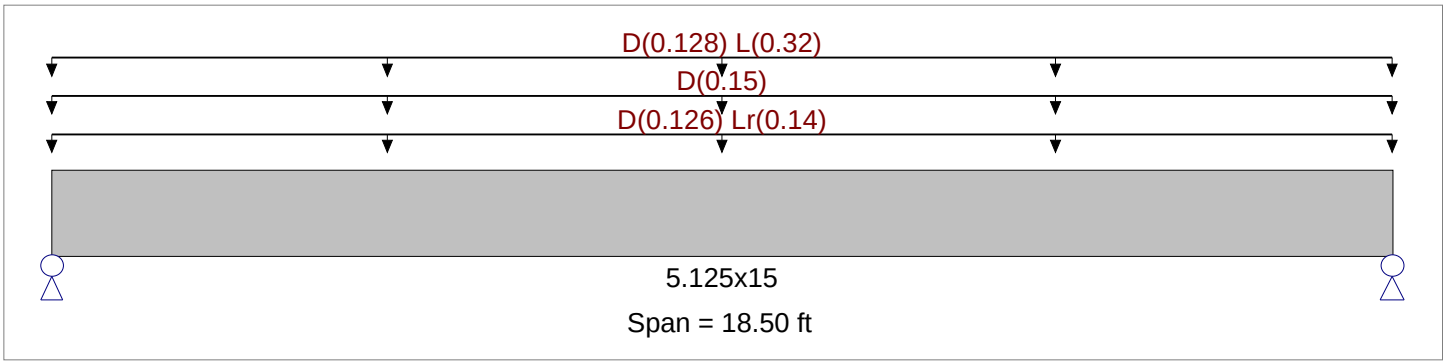
Wood Species : DF/DF
Wood Grade : 24F - V8

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

Fb - Tension	2,400.0 psi
Fb - Compr	2,400.0 psi
Fc - Prll	1,650.0 psi
Fc - Perp	650.0 psi
Fv	265.0 psi
Ft	1,100.0 psi

E : Modulus of Elasticity

Ebend- xx	1,800.0 ksi
Eminbend - xx	930.0 ksi
Ebend- yy	1,600.0 ksi
Eminbend - yy	830.0 ksi
Density	32.210 pcf



Applied Loads

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

Beam self weight calculated and added to loads
Uniform Load : D = 0.0180, Lr = 0.020 ksf, Tributary Width = 7.0 ft, (RF)
Uniform Load : D = 0.0150 ksf, Tributary Width = 10.0 ft, (WALL)
Uniform Load : D = 0.0160, L = 0.040 ksf, Tributary Width = 8.0 ft, (2F)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.861 : 1	Maximum Shear Stress Ratio	=	0.454 : 1
Section used for this span		5.125x15	Section used for this span		5.125x15
fb : Actual	=	2,046.68 psi	fv : Actual	=	120.31 psi
FB : Allowable	=	2,376.98 psi	Fv : Allowable	=	265.00 psi
Load Combination		+D+0.750Lr+0.750L+H	Load Combination		+D+0.750Lr+0.750L+H
Location of maximum on span	=	9.250 ft	Location of maximum on span	=	17.298 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.471 in	Ratio =	471
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.902 in	Ratio =	246
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values Mactual	fb-design	Fb-allow	Summary of Shear Values Vactual	fv-design	Fv-allow
+D														
Length = 18.50 ft	1	0.473	0.250	1.000	0.990	1.000	1.000	1.000	18.02	1,125.11	2,376.98	3.39	66.14	265.00
+D+L+H					0.990	1.000	1.000	1.000						
Length = 18.50 ft	1	0.833	0.439	1.000	0.990	1.000	1.000	1.000	31.71	1,979.90	2,376.98	5.96	116.39	265.00
+D+Lr+H					0.990	1.000	1.000	1.000						
Length = 18.50 ft	1	0.631	0.333	1.000	0.990	1.000	1.000	1.000	24.01	1,499.08	2,376.98	4.52	88.12	265.00
+D+0.750Lr+0.750L+H					0.990	1.000	1.000	1.000						
Length = 18.50 ft	1	0.861	0.454	1.000	0.990	1.000	1.000	1.000	32.78	2,046.68	2,376.98	6.17	120.31	265.00
+D+0.750L+0.750S+H					0.990	1.000	1.000	1.000						
Length = 18.50 ft	1	0.743	0.392	1.000	0.990	1.000	1.000	1.000	28.29	1,766.20	2,376.98	5.32	103.82	265.00
+D+0.750Lr+0.750L+0.750W+H					0.990	1.000	1.000	1.000						
Length = 18.50 ft	1	0.861	0.454	1.000	0.990	1.000	1.000	1.000	32.78	2,046.68	2,376.98	6.17	120.31	265.00
+D+0.750L+0.750S+0.750W+H					0.990	1.000	1.000	1.000						

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

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Wood Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : **Licensee :**

Description : 2F BM F/4-F/8

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values Mactual	fb-design	Fb-allow	Summary of Shear Values Vactual	fv-design	Fv-allow
Length = 18.50 ft	1	0.743	0.392	1.000	0.990	1.000	1.000	1.000	28.29	1,766.20	2,376.98	5.32	103.82	265.00
+D+0.750Lr+0.750L+0.5250E+H					0.990	1.000	1.000	1.000						
Length = 18.50 ft	1	0.861	0.454	1.000	0.990	1.000	1.000	1.000	32.78	2,046.68	2,376.98	6.17	120.31	265.00
+D+0.750L+0.750S+0.5250E+H					0.990	1.000	1.000	1.000						
Length = 18.50 ft	1	0.743	0.392	1.000	0.990	1.000	1.000	1.000	28.29	1,766.20	2,376.98	5.32	103.82	265.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L+Lr	1	0.9023	9.343		0.0000	0.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	8.151	8.151
D Only	3.896	3.896
L Only	2.960	2.960
Lr Only	1.295	1.295
L+Lr	4.255	4.255
D+Lr	5.191	5.191
D+L	6.856	6.856
D+L+Lr	8.151	8.151

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

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Wood Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : Licensee :

Description : 2F BEAM @ DISCONTINUOUS WALL

Material Properties

Calculations per NDS 2018, IBC 2021, CBC 2022, ASCE 7-16

Analysis Method : Allowable Stress Design
Load Combination 2021 IBC & ASCE 7-16

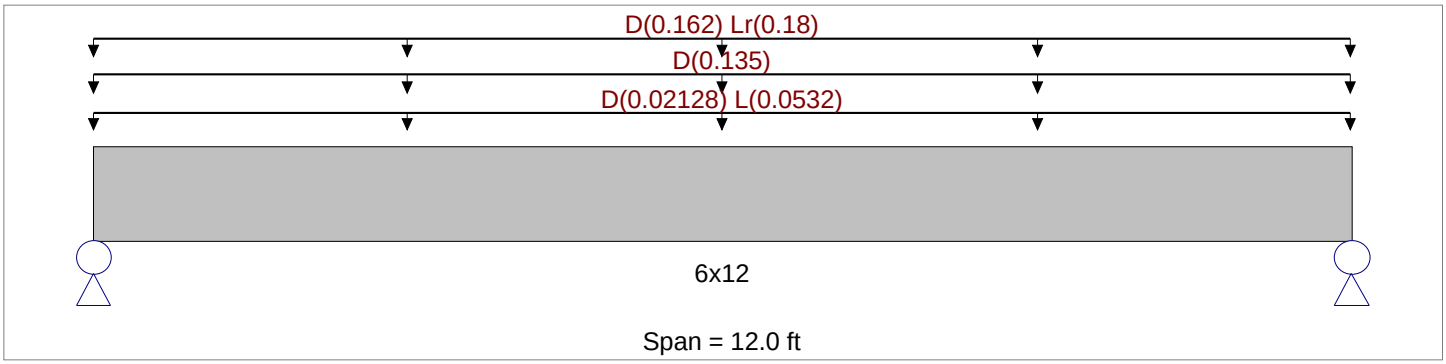
Wood Species : Douglas Fir - Larch
Wood Grade : No.1

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

Fb - Tension	1350 psi
Fb - Compr	1350 psi
Fc - Prll	925 psi
Fc - Perp	625 psi
Fv	170 psi
Ft	675 psi

E : Modulus of Elasticity

Ebend- xx	1600 ksi
Eminbend - xx	580 ksi
Density	32.21 pcf



Applied Loads

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

Uniform Load : D = 0.0160, L = 0.040 ksf, Tributary Width = 1.330 ft
Uniform Load : D = 0.0150 ksf, Tributary Width = 9.0 ft
Uniform Load : D = 0.0180, Lr = 0.020 ksf, Tributary Width = 9.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.658 : 1	Maximum Shear Stress Ratio	=	0.355 : 1
Section used for this span		6x12	Section used for this span		6x12
fb : Actual	=	887.81 psi	fv : Actual	=	60.27 psi
FB : Allowable	=	1,350.00 psi	Fv : Allowable	=	170.00 psi
Load Combination		+D+Lr+H	Load Combination		+D+Lr+H
Location of maximum on span	=	6.000 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.098 in	Ratio =	1464
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.233 in	Ratio =	619
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values Mactual	fb-design	Fb-allow	Summary of Shear Values Vactual	fv-design	Fv-allow
+D														
Length = 12.0 ft	1	0.420	0.226	1.000	1.000	1.000	1.000	1.000	5.73	567.10	1,350.00	1.62	38.50	170.00
+D+L+H					1.000	1.000	1.000	1.000						
Length = 12.0 ft	1	0.490	0.264	1.000	1.000	1.000	1.000	1.000	6.69	661.88	1,350.00	1.89	44.93	170.00
+D+Lr+H					1.000	1.000	1.000	1.000						
Length = 12.0 ft	1	0.658	0.355	1.000	1.000	1.000	1.000	1.000	8.97	887.81	1,350.00	2.54	60.27	170.00
+D+0.750Lr+0.750L+H					1.000	1.000	1.000	1.000						
Length = 12.0 ft	1	0.651	0.351	1.000	1.000	1.000	1.000	1.000	8.88	878.72	1,350.00	2.52	59.65	170.00
+D+0.750L+0.750S+H					1.000	1.000	1.000	1.000						
Length = 12.0 ft	1	0.473	0.255	1.000	1.000	1.000	1.000	1.000	6.45	638.19	1,350.00	1.83	43.32	170.00
+D+0.750Lr+0.750L+0.750W+H					1.000	1.000	1.000	1.000						
Length = 12.0 ft	1	0.651	0.351	1.000	1.000	1.000	1.000	1.000	8.88	878.72	1,350.00	2.52	59.65	170.00
+D+0.750L+0.750S+0.750W+H					1.000	1.000	1.000	1.000						
Length = 12.0 ft	1	0.473	0.255	1.000	1.000	1.000	1.000	1.000	6.45	638.19	1,350.00	1.83	43.32	170.00

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

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Wood Beam

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Description : 2F BEAM @ DISCONTINUOUS WALL

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values Mactual	fb-design	Fb-allow	Summary of Shear Values Vactual	fv-design	Fv-allow
+D+0.750Lr+0.750L+0.5250E+H					1.000	1.000	1.000	1.000						
Length = 12.0 ft	1	0.651	0.351	1.000	1.000	1.000	1.000	1.000	8.88	878.72	1,350.00	2.52	59.65	170.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.000	1.000	1.000						
Length = 12.0 ft	1	0.473	0.255	1.000	1.000	1.000	1.000	1.000	6.45	638.19	1,350.00	1.83	43.32	170.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L+Lr	1	0.2325	6.060		0.0000	0.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	3.309	3.309
D Only	1.910	1.910
L Only	0.319	0.319
Lr Only	1.080	1.080
L+Lr	1.399	1.399
D+Lr	2.990	2.990
D+L	2.229	2.229
D+L+Lr	3.309	3.309

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

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Wood Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : **Licensee :**

Description : 2F JOIST @ GYM

Material Properties

Calculations per NDS 2018, IBC 2021, CBC 2022, ASCE 7-16

Analysis Method : Allowable Stress Design
Load Combination 2021 IBC & ASCE 7-16

Wood Species : Douglas Fir - Larch
Wood Grade : Select structural

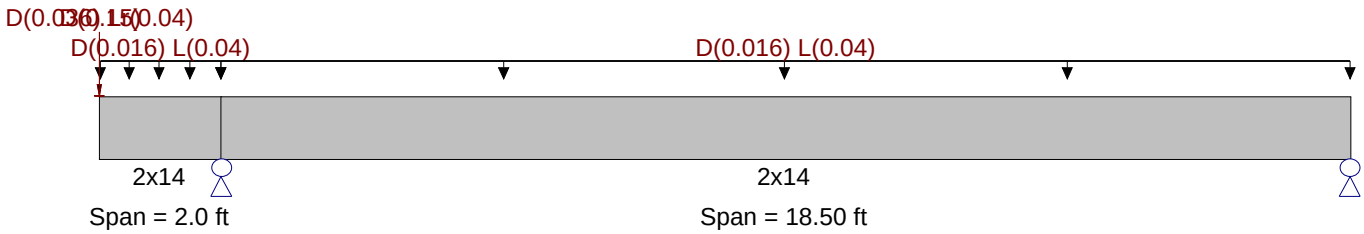
Beam Bracing : Completely Unbraced

Fb - Tension	1500 psi
Fb - Compr	1500 psi
Fc - Prll	1700 psi
Fc - Perp	625 psi
Fv	180 psi
Ft	1000 psi

E : Modulus of Elasticity

Ebend- xx	1900 ksi
Eminbend - xx	690 ksi
Density	32.21 pcf

Repetitive Member Stress Increase



Applied Loads

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

Load for Span Number 1
- Uniform Load : D = 0.0160, L = 0.040 ksf, Tributary Width = 1.0 ft, (2F)
- Point Load : D = 0.150 k @ 0.0 ft
- Point Load : D = 0.0360, Lr = 0.040 k @ 0.0 ft

Load for Span Number 2
- Uniform Load : D = 0.0160, L = 0.040 ksf, Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.957 : 1	Maximum Shear Stress Ratio	=	0.205 : 1
Section used for this span		2x14	Section used for this span		2x14
fb : Actual	=	590.51 psi	fv : Actual	=	36.86 psi
FB : Allowable	=	616.77 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	9.677 ft	Location of maximum on span	=	2.000 ft
Span # where maximum occurs	=	Span # 2	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.188 in	Ratio =	1182
Max Upward L+Lr+S Deflection	-0.063 in	Ratio =	764
Max Downward Total Deflection	0.237 in	Ratio =	934
Max Upward Total Deflection	-0.072 in	Ratio =	668

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values: Mactual	fb-design	Fb-allow	Summary of Shear Values: Vactual	fv-design	Fv-allow
+D					0.900	1.150	1.000	1.000						
Length = 2.0 ft	1	0.072	0.085	1.000	0.900	1.150	1.000	1.000	-0.40	110.46	1,525.85	0.20	15.38	180.00
Length = 18.50 ft	2	0.220	0.085	1.000	0.900	1.150	1.000	1.000	0.50	135.99	616.77	0.15	15.38	180.00
+D+L+H					0.900	1.150	1.000	1.000						
Length = 2.0 ft	1	0.087	0.205	1.000	0.900	1.150	1.000	1.000	-0.48	132.33	1,525.85	0.49	36.86	180.00
Length = 18.50 ft	2	0.957	0.205	1.000	0.900	1.150	1.000	1.000	2.16	590.51	616.77	0.49	36.86	180.00
+D+Lr+H					0.900	1.150	1.000	1.000						
Length = 2.0 ft	1	0.087	0.102	1.000	0.900	1.150	1.000	1.000	-0.48	132.33	1,525.85	0.24	18.39	180.00
Length = 18.50 ft	2	0.215	0.102	1.000	0.900	1.150	1.000	1.000	-0.48	132.33	616.77	0.16	18.39	180.00
+D+0.750Lr+0.750L+H					0.900	1.150	1.000	1.000						

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

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Wood Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : **Licensee :**

Description : 2F JOIST @ GYM

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values Mactual	fb-design	Fb-allow	Summary of Shear Values Vactual	fv-design	Fv-allow
Length = 2.0 ft	1	0.094	0.171	1.000	0.900	1.150	1.000	1.000	-0.52	143.27	1,525.85	0.41	30.79	180.00
Length = 18.50 ft	2	0.760	0.171	1.000	0.900	1.150	1.000	1.000	1.71	468.79	616.77	0.41	30.79	180.00
+D+0.750L+0.750S+H					0.900	1.150	1.000	1.000						
Length = 2.0 ft	1	0.083	0.170	1.000	0.900	1.150	1.000	1.000	-0.46	126.86	1,525.85	0.40	30.55	180.00
Length = 18.50 ft	2	0.773	0.170	1.000	0.900	1.150	1.000	1.000	1.74	476.48	616.77	0.40	30.55	180.00
+D+0.750Lr+0.750L+0.750W+H					0.900	1.150	1.000	1.000						
Length = 2.0 ft	1	0.094	0.171	1.000	0.900	1.150	1.000	1.000	-0.52	143.27	1,525.85	0.41	30.79	180.00
Length = 18.50 ft	2	0.760	0.171	1.000	0.900	1.150	1.000	1.000	1.71	468.79	616.77	0.41	30.79	180.00
+D+0.750L+0.750S+0.750W+H					0.900	1.150	1.000	1.000						
Length = 2.0 ft	1	0.083	0.170	1.000	0.900	1.150	1.000	1.000	-0.46	126.86	1,525.85	0.40	30.55	180.00
Length = 18.50 ft	2	0.773	0.170	1.000	0.900	1.150	1.000	1.000	1.74	476.48	616.77	0.40	30.55	180.00
+D+0.750Lr+0.750L+0.5250E+H					0.900	1.150	1.000	1.000						
Length = 2.0 ft	1	0.094	0.171	1.000	0.900	1.150	1.000	1.000	-0.52	143.27	1,525.85	0.41	30.79	180.00
Length = 18.50 ft	2	0.760	0.171	1.000	0.900	1.150	1.000	1.000	1.71	468.79	616.77	0.41	30.79	180.00
+D+0.750L+0.750S+0.5250E+H					0.900	1.150	1.000	1.000						
Length = 2.0 ft	1	0.083	0.170	1.000	0.900	1.150	1.000	1.000	-0.46	126.86	1,525.85	0.40	30.55	180.00
Length = 18.50 ft	2	0.773	0.170	1.000	0.900	1.150	1.000	1.000	1.74	476.48	616.77	0.40	30.55	180.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	D+L	-0.0718	0.000
D+L	2	0.2375	9.535		0.0000	0.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum		0.886	0.492
D Only		0.388	0.126
L Only		0.454	0.366
Lr Only		0.044	-0.004
L+Lr		0.499	0.361
D+Lr		0.432	0.122
D+L		0.842	0.492
D+L+Lr		0.886	0.488

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

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Wood Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : Licensee :

Description : 2F FRAMING GARAGE HEADER

Material Properties

Calculations per NDS 2018, IBC 2021, CBC 2022, ASCE 7-16

Analysis Method : Allowable Stress Design
Load Combination 2021 IBC & ASCE 7-16

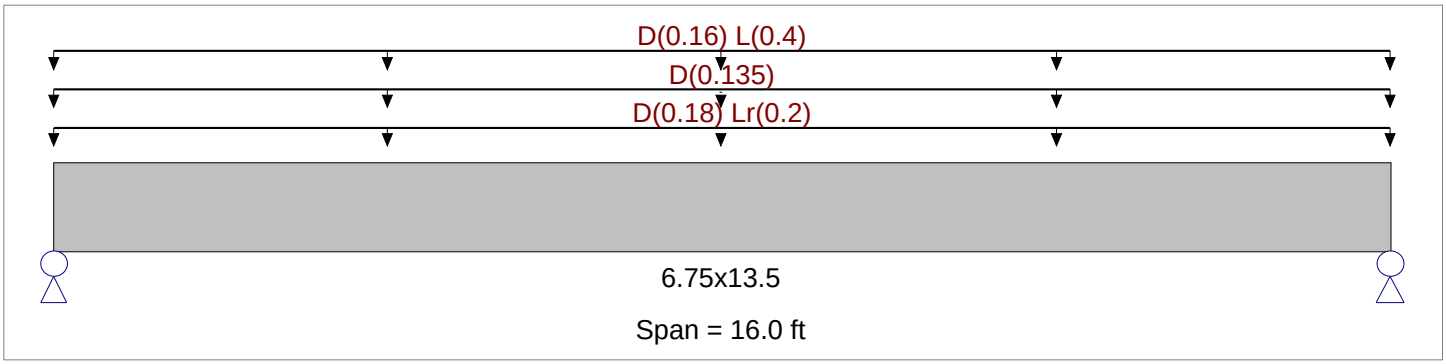
Wood Species : DF/DF
Wood Grade : 24F - V8

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

Fb - Tension	2400 psi
Fb - Compr	2400 psi
Fc - Prll	1650 psi
Fc - Perp	650 psi
Fv	265 psi
Ft	1100 psi

E : Modulus of Elasticity

Ebend- xx	1800 ksi
Eminbend - xx	930 ksi
Ebend- yy	1600 ksi
Eminbend - yy	830 ksi
Density	32.21 pcf



Applied Loads

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

Uniform Load : D = 0.0180, Lr = 0.020 ksf, Tributary Width = 10.0 ft, (RF)
Uniform Load : D = 0.0150 ksf, Tributary Width = 9.0 ft
Uniform Load : D = 0.0160, L = 0.040 ksf, Tributary Width = 10.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.731 : 1	Maximum Shear Stress Ratio	=	0.395 : 1
Section used for this span		6.75x13.5	Section used for this span		6.75x13.5
fb : Actual	=	1,732.42 psi	fv : Actual	=	104.76 psi
FB : Allowable	=	2,371.07 psi	Fv : Allowable	=	265.00 psi
Load Combination		+D+0.750Lr+0.750L+H	Load Combination		+D+0.750Lr+0.750L+H
Location of maximum on span	=	8.000 ft	Location of maximum on span	=	14.880 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.358 in	Ratio =	536
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.641 in	Ratio =	299
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values Mactual	fb-design	Fb-allow	Summary of Shear Values Vactual	fv-design	Fv-allow
+D														
Length = 16.0 ft	1	0.375	0.203	1.000	0.988	1.000	1.000	1.000	15.20	889.62	2,371.07	3.27	53.79	265.00
+D+L+H					0.988	1.000	1.000	1.000						
Length = 16.0 ft	1	0.691	0.374	1.000	0.988	1.000	1.000	1.000	28.00	1,638.77	2,371.07	6.02	99.09	265.00
+D+Lr+H					0.988	1.000	1.000	1.000						
Length = 16.0 ft	1	0.533	0.288	1.000	0.988	1.000	1.000	1.000	21.60	1,264.20	2,371.07	4.64	76.44	265.00
+D+0.750Lr+0.750L+H					0.988	1.000	1.000	1.000						
Length = 16.0 ft	1	0.731	0.395	1.000	0.988	1.000	1.000	1.000	29.60	1,732.42	2,371.07	6.36	104.76	265.00
+D+0.750L+0.750S+H					0.988	1.000	1.000	1.000						
Length = 16.0 ft	1	0.612	0.331	1.000	0.988	1.000	1.000	1.000	24.80	1,451.49	2,371.07	5.33	87.77	265.00
+D+0.750Lr+0.750L+0.750W+H					0.988	1.000	1.000	1.000						
Length = 16.0 ft	1	0.731	0.395	1.000	0.988	1.000	1.000	1.000	29.60	1,732.42	2,371.07	6.36	104.76	265.00
+D+0.750L+0.750S+0.750W+H					0.988	1.000	1.000	1.000						
Length = 16.0 ft	1	0.612	0.331	1.000	0.988	1.000	1.000	1.000	24.80	1,451.49	2,371.07	5.33	87.77	265.00

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

Printed: 25 MAY 2023, 8:52AM

Wood Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : **Licensee :**

Description : 2F FRAMING GARAGE HEADER

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values Mactual	fb-design	Fb-allow	Summary of Shear Values Vactual	fv-design	Fv-allow
+D+0.750Lr+0.750L+0.5250E+H					0.988	1.000	1.000	1.000						
Length = 16.0 ft	1	0.731	0.395	1.000	0.988	1.000	1.000	1.000	29.60	1,732.42	2,371.07	6.36	104.76	265.00
+D+0.750L+0.750S+0.5250E+H					0.988	1.000	1.000	1.000						
Length = 16.0 ft	1	0.612	0.331	1.000	0.988	1.000	1.000	1.000	24.80	1,451.49	2,371.07	5.33	87.77	265.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L+Lr	1	0.6414	8.080		0.0000	0.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	8.600	8.600
D Only	3.800	3.800
L Only	3.200	3.200
Lr Only	1.600	1.600
L+Lr	4.800	4.800
D+Lr	5.400	5.400
D+L	7.000	7.000
D+L+Lr	8.600	8.600

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

Printed: 25 MAY 2023, 5:14PM

Wood Beam

File: Z:_Work\TJG\PROJ\NPG\Contract\BLD008-11224 Sunshine\3-Doc\Calc\sunshine.ec6
ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : **Licensee :**

Description : 1F JOISTS

Material Properties

Calculations per NDS 2018, IBC 2021, CBC 2022, ASCE 7-16

Analysis Method : Allowable Stress Design
Load Combination 2021 IBC & ASCE 7-16

Wood Species : Douglas Fir - Larch
Wood Grade : No.2

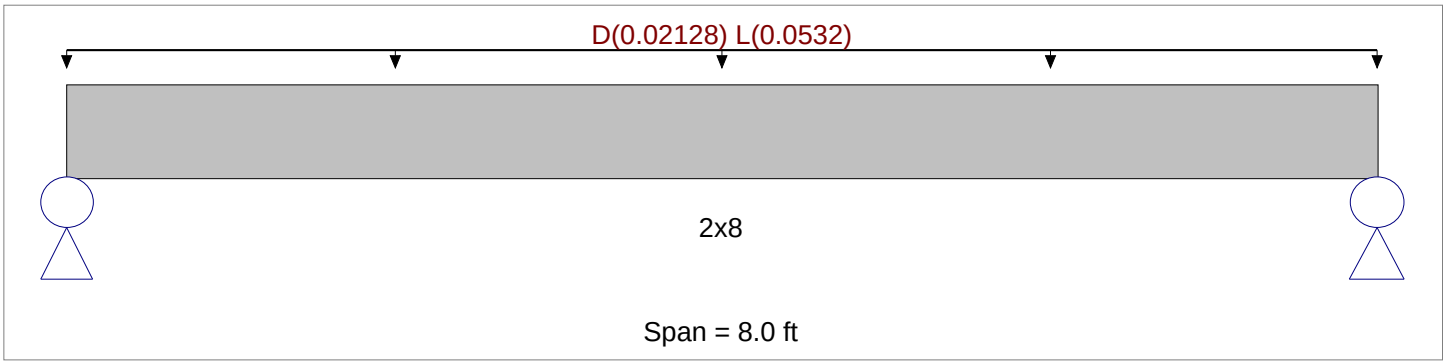
Beam Bracing : Beam is Fully Braced against lateral-torsion buckling

Fb - Tension	900.0 psi
Fb - Compr	900.0 psi
Fc - Prll	1,350.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	575.0 psi

E : Modulus of Elasticity

Ebend- xx	1,600.0 ksi
Eminbend - xx	580.0 ksi
Density	32.210 pcf

Repetitive Member Stress Increase



Applied Loads

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

Uniform Load : D = 0.0160, L = 0.040 ksf, Tributary Width = 1.330 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.438 : 1	Maximum Shear Stress Ratio	=	0.194 : 1
Section used for this span		2x8	Section used for this span		2x8
fb : Actual	=	544.12 psi	fv : Actual	=	34.93 psi
FB : Allowable	=	1,242.00 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	4.000 ft	Location of maximum on span	=	7.400 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.065 in	Ratio =	1480
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.091 in	Ratio =	1057
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values: Mactual	fb-design	Fb-allow	Summary of Shear Values: Vactual	fv-design	Fv-allow
+D														
Length = 8.0 ft	1	0.125	0.055	1.000	1.200	1.150	1.000	1.000	0.17	155.46	1,242.00	0.07	9.98	180.00
+D+L+H					1.200	1.150	1.000	1.000						
Length = 8.0 ft	1	0.438	0.194	1.000	1.200	1.150	1.000	1.000	0.60	544.12	1,242.00	0.25	34.93	180.00
+D+0.750Lr+0.750L+H					1.200	1.150	1.000	1.000						
Length = 8.0 ft	1	0.360	0.159	1.000	1.200	1.150	1.000	1.000	0.49	446.96	1,242.00	0.21	28.69	180.00
+D+0.750L+0.750S+H					1.200	1.150	1.000	1.000						
Length = 8.0 ft	1	0.360	0.159	1.000	1.200	1.150	1.000	1.000	0.49	446.96	1,242.00	0.21	28.69	180.00
+D+0.750Lr+0.750L+0.750W+H					1.200	1.150	1.000	1.000						
Length = 8.0 ft	1	0.360	0.159	1.000	1.200	1.150	1.000	1.000	0.49	446.96	1,242.00	0.21	28.69	180.00
+D+0.750L+0.750S+0.750W+H					1.200	1.150	1.000	1.000						
Length = 8.0 ft	1	0.360	0.159	1.000	1.200	1.150	1.000	1.000	0.49	446.96	1,242.00	0.21	28.69	180.00
+D+0.750Lr+0.750L+0.5250E+H					1.200	1.150	1.000	1.000						
Length = 8.0 ft	1	0.360	0.159	1.000	1.200	1.150	1.000	1.000	0.49	446.96	1,242.00	0.21	28.69	180.00
+D+0.750L+0.750S+0.5250E+H					1.200	1.150	1.000	1.000						
Length = 8.0 ft	1	0.360	0.159	1.000	1.200	1.150	1.000	1.000	0.49	446.96	1,242.00	0.21	28.69	180.00

Wood Beam

File: Z:_Work\TJG\PROJ\NPG\Contract\BLD008-11224 Sunshine\3-Doc\Calc\sunshine.ec6
ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : **Licensee :**

Description : 1F JOISTS

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L	1	0.0908	4.040		0.0000	0.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.298	0.298
D Only	0.085	0.085
L Only	0.213	0.213
D+L	0.298	0.298

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

Printed: 25 MAY 2023, 5:19PM

Wood Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : **Licensee :**

Description : 1F Beam @ Bearing Wall

Material Properties

Calculations per NDS 2018, IBC 2021, CBC 2022, ASCE 7-16

Analysis Method : Allowable Stress Design
Load Combination 2021 IBC & ASCE 7-16

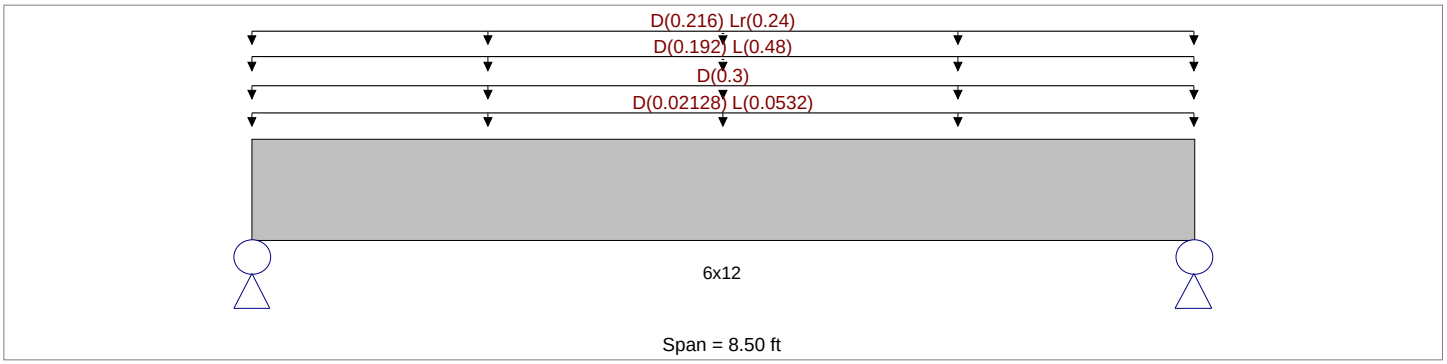
Wood Species : Douglas Fir - Larch
Wood Grade : Select structural

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

Fb - Tension	1600 psi
Fb - Compr	1600 psi
Fc - Prll	1100 psi
Fc - Perp	625 psi
Fv	170 psi
Ft	950 psi

E : Modulus of Elasticity

Ebend- xx	1600 ksi
Eminbend - xx	580 ksi
Density	32.21 pcf



Applied Loads

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

Uniform Load : D = 0.0160, L = 0.040 ksf, Tributary Width = 1.330 ft
Uniform Load : D = 0.0150 ksf, Tributary Width = 20.0 ft, (Wall)
Uniform Load : D = 0.0160, L = 0.040 ksf, Tributary Width = 12.0 ft, (2F)
Uniform Load : D = 0.0180, Lr = 0.020 ksf, Tributary Width = 12.0 ft, (RF)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.731 : 1	Maximum Shear Stress Ratio	=	0.605 : 1
Section used for this span		6x12	Section used for this span		6x12
fb : Actual	=	1,170.37 psi	fv : Actual	=	102.92 psi
FB : Allowable	=	1,600.00 psi	Fv : Allowable	=	170.00 psi
Load Combination		+D+0.750Lr+0.750L+H	Load Combination		+D+0.750Lr+0.750L+H
Location of maximum on span	=	4.250 ft	Location of maximum on span	=	7.565 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.082 in	Ratio =	1242
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.159 in	Ratio =	639
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values: Mactual	fb-design	Fb-allow	Summary of Shear Values: Vactual	fv-design	Fv-allow
+D														
Length = 8.50 ft	1	0.407	0.337	1.000	1.000	1.000	1.000	1.000	6.59	651.95	1,600.00	2.42	57.33	170.00
+D+L+H					1.000	1.000	1.000	1.000						
Length = 8.50 ft	1	0.705	0.584	1.000	1.000	1.000	1.000	1.000	11.40	1,128.62	1,600.00	4.19	99.25	170.00
+D+Lr+H					1.000	1.000	1.000	1.000						
Length = 8.50 ft	1	0.542	0.448	1.000	1.000	1.000	1.000	1.000	8.75	866.51	1,600.00	3.21	76.20	170.00
+D+0.750Lr+0.750L+H					1.000	1.000	1.000	1.000						
Length = 8.50 ft	1	0.731	0.605	1.000	1.000	1.000	1.000	1.000	11.82	1,170.37	1,600.00	4.34	102.92	170.00
+D+0.750L+0.750S+H					1.000	1.000	1.000	1.000						
Length = 8.50 ft	1	0.631	0.522	1.000	1.000	1.000	1.000	1.000	10.20	1,009.45	1,600.00	3.74	88.77	170.00
+D+0.750Lr+0.750L+0.750W+H					1.000	1.000	1.000	1.000						
Length = 8.50 ft	1	0.731	0.605	1.000	1.000	1.000	1.000	1.000	11.82	1,170.37	1,600.00	4.34	102.92	170.00
+D+0.750L+0.750S+0.750W+H					1.000	1.000	1.000	1.000						

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

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Wood Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : **Licensee :**

Description : 1F Beam @ Bearing Wall

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values Mactual	fb-design	Fb-allow	Summary of Shear Values Vactual	fv-design	Fv-allow
Length = 8.50 ft	1	0.631	0.522	1.000	1.000	1.000	1.000	1.000	10.20	1,009.45	1,600.00	3.74	88.77	170.00
+D+0.750Lr+0.750L+0.5250E+H					1.000	1.000	1.000	1.000						
Length = 8.50 ft	1	0.731	0.605	1.000	1.000	1.000	1.000	1.000	11.82	1,170.37	1,600.00	4.34	102.92	170.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.000	1.000	1.000						
Length = 8.50 ft	1	0.631	0.522	1.000	1.000	1.000	1.000	1.000	10.20	1,009.45	1,600.00	3.74	88.77	170.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L+Lr	1	0.1595	4.293		0.0000	0.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	6.386	6.386
D Only	3.099	3.099
L Only	2.266	2.266
Lr Only	1.020	1.020
L+Lr	3.286	3.286
D+Lr	4.119	4.119
D+L	5.366	5.366
D+L+Lr	6.386	6.386

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

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Wood Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # :

Licensee :

Description : Stair Stringer

Material Properties

Calculations per NDS 2018, IBC 2021, CBC 2022, ASCE 7-16

Analysis Method : Allowable Stress Design
Load Combination 2021 IBC & ASCE 7-16

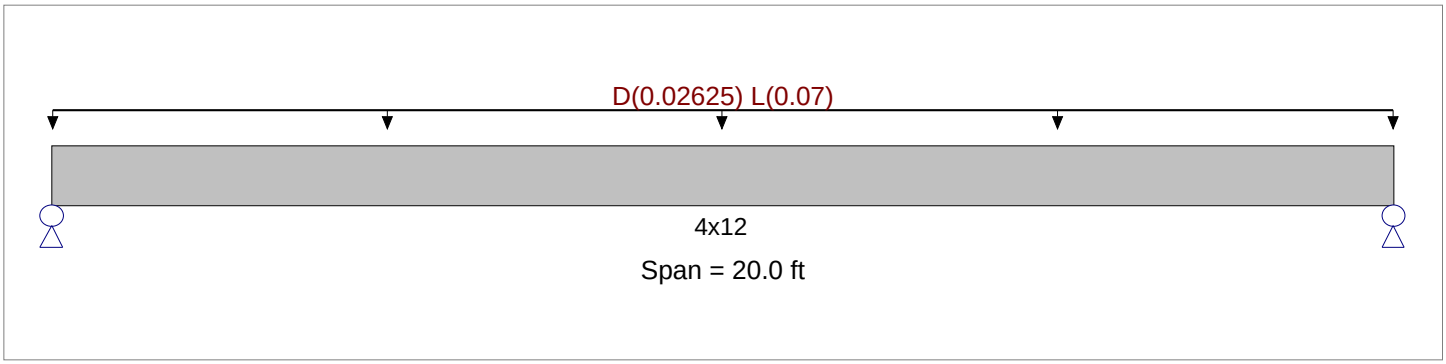
Wood Species : Douglas Fir - Larch
Wood Grade : No.2

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

Fb - Tension	900.0 psi
Fb - Compr	900.0 psi
Fc - Prll	1,350.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	575.0 psi

E : Modulus of Elasticity

Ebend- xx	1,600.0 ksi
Eminbend - xx	580.0 ksi
Density	32.210 pcf



Applied Loads

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

Uniform Load : D = 0.0150, L = 0.040 ksf, Tributary Width = 1.750 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.790 : 1	Maximum Shear Stress Ratio	=	0.185 : 1
Section used for this span		4x12	Section used for this span		4x12
fb : Actual	=	782.22 psi	fv : Actual	=	33.37 psi
FB : Allowable	=	990.00 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	10.000 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.382 in	Ratio =	627
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.526 in	Ratio =	456
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	Summary of Moment Values: Mactual	fb-design	Fb-allow	Summary of Shear Values: Vactual	fv-design	Fv-allow
+D														
Length = 20.0 ft	1	0.215	0.051	1.000	1.100	1.000	1.000	1.000	1.31	213.33	990.00	0.24	9.10	180.00
+D+L+H					1.100	1.000	1.000	1.000						
Length = 20.0 ft	1	0.790	0.185	1.000	1.100	1.000	1.000	1.000	4.81	782.22	990.00	0.88	33.37	180.00
+D+0.750Lr+0.750L+H					1.100	1.000	1.000	1.000						
Length = 20.0 ft	1	0.646	0.152	1.000	1.100	1.000	1.000	1.000	3.94	640.00	990.00	0.72	27.30	180.00
+D+0.750L+0.750S+H					1.100	1.000	1.000	1.000						
Length = 20.0 ft	1	0.646	0.152	1.000	1.100	1.000	1.000	1.000	3.94	640.00	990.00	0.72	27.30	180.00
+D+0.750Lr+0.750L+0.750W+H					1.100	1.000	1.000	1.000						
Length = 20.0 ft	1	0.646	0.152	1.000	1.100	1.000	1.000	1.000	3.94	640.00	990.00	0.72	27.30	180.00
+D+0.750L+0.750S+0.750W+H					1.100	1.000	1.000	1.000						
Length = 20.0 ft	1	0.646	0.152	1.000	1.100	1.000	1.000	1.000	3.94	640.00	990.00	0.72	27.30	180.00
+D+0.750Lr+0.750L+0.5250E+H					1.100	1.000	1.000	1.000						
Length = 20.0 ft	1	0.646	0.152	1.000	1.100	1.000	1.000	1.000	3.94	640.00	990.00	0.72	27.30	180.00
+D+0.750L+0.750S+0.5250E+H					1.100	1.000	1.000	1.000						
Length = 20.0 ft	1	0.646	0.152	1.000	1.100	1.000	1.000	1.000	3.94	640.00	990.00	0.72	27.30	180.00

Wood Beam

Description : Stair Stringer

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L	1	0.5257	10.100		0.0000	0.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.963	0.963
D Only	0.263	0.263
L Only	0.700	0.700
D+L	0.963	0.963

SECTION 3 Lateral Load Analysis

T. JEFF GUH, PH.D., S.E.
Structural Engineer
705 San Vicente Boulevard, Santa Monica, CA 90402
Phone: (310)699-3112 FAX: (310)393-1036 Email: jg@jeffguh.com

Sheet No.	
By:	
Date:	
Checked:	

Job Name: Sunshine Remodel

Seismic Load - Building Weight

				Area (s.f.)
		0	lbs	0
W(Roof) =	(18)X(69'X35')=	43470	lbs	2415
W(2F) =	(16)X(69'X35')=	38640	lbs	2415
W(Wall) =	15X210'X15' =	47250	lbs	
	Total Seismic W =	129360	lbs	
V(Base) =	0.237 X W =	**30658**	lbs	

Vertical Distribution of Seismic Force

F(top) = 0 lbs
V -F(top) = 30658 lbs

#	w (lbs)	h (ft)	wh	%	f (lbs)	Area	w (psf)
Roof	59220	19	1125180	70%	21364	2415	8.8
2F	54390	9	489510	30%	9294	2415	3.8
	0	0	0	0%	0	0	0.0
Sum	113610		1614690	100%	30658		

Diaphragm Seismic Force

V= 30658 lbs

#	w (lbs)	f(lbs)	sum(W)	sum(f)	fpx (lbs)
Roof	59220	21364	59220	21364	21364
2F	54390	9294	113610	30658	14677
	0	0			
	113610				

Roof Diaphragm Analysis

F =	Diaphragm Seismic F =	21364	lbs		
R =	End Reaction =	5341	lbs	Trib % =	25%
L =	Depth of Diaphragm =	35	ft		
fp =	Diaphragm Stress =	153	plf		

USE 15/32" Structural I Plywood Sheathing w/ 8d @ 6", 6", 12" (Edges Blocked)

Floor Diaphragm Analysis

F =	Diaphragm Seismic F =	21364	lbs (Max)		
R =	End Reaction =	5341	lbs	Trib % =	25%
L =	Depth of Diaphragm =	35	ft		
fp =	Diaphragm Stress =	153	plf		

USE 19/32" Structural I Plywood Sheathing w/ 10d @ 6", 6", 12" (Edges Blocked)

T. JEFF GUH, PH.D., S.E.
Structural Engineer
705 San Vicente Boulevard, Santa Monica, CA 90402
Phone: (310)699-3112 FAX: (310)393-1036 Email: jg@je

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SHEAR WALLS @ 2F: Grid B (E/W Load)

w = Lateral Load =	475.2	#/ft (= 8.8 psf *54')
B = Tributary Width =	9.5	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	28.5	ft
L' = Shortest Shear Panel Length =	7.0	ft
Va = Shear from Above =	0.0	# <-From Above
V = Total Shear = w*B+Va =	4514	#
v = Unit Wall Shear = V/L =	**158**	#/ft
OTMa = OTM from Above =	0	# <-FROM Above
OTM = v*L'*H + OTMa =	9979	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
		0	0
RF	18	10	180
2F	16	0	0
1F	16	0	0
Wall	15	10	150
		Total W =	330

RM = 0.6W*(L'^2/2) =	4851.00	ft-#
C = T = (OTM-RM)/L' =	**733**	#

USE **1/2" Plywd w/ 8d @ 6"(Edge) & 12"(Field) (Type 1)**
Holddown = HDU2

SHEAR WALLS @ 2F: Grid C&D (E/W Load)

w = Lateral Load =	475.2	#/ft (= 8.8 psf *54')
B = Tributary Width =	15.0	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	26.5	ft
L' = Shortest Shear Panel Length =	6.9	ft
Va = Shear from Above =	0.0	# <-From Above
V = Total Shear = w*B+Va =	7128	#
v = Unit Wall Shear = V/L =	**269**	#/ft
OTMa = OTM from Above =	0	# <-FROM Above
OTM = v*L'*H + OTMa =	16704	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
			0
RF	18	10	180
2F	16		0
1F	16	0	0
Wall	15	10	150
		Total W =	330

RM = 0.6W*(L'^2/2) =	4713.39	ft-#
C = T = (OTM-RM)/L' =	**1738**	#

USE **1/2" Plywd w/ 8d @ 4"(Edge) & 12"(Field) (Type 3)**
Holddown = HDU2

T. JEFF GUH, PH.D., S.E.
Structural Engineer
705 San Vicente Boulevard, Santa Monica, CA 90402
Phone: (310)699-3112 FAX: (310)393-1036 Email: jg@je

Sheet No.	
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SHEAR WALLS @ 2F: Grid F (E/W Load)

w = Lateral Load =	475.2	#/ft (= 8.8 psf *54')
B = Tributary Width =	15.0	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	14.0	ft
L' = Shortest Shear Panel Length =	2.0	ft
Va = Shear from Above =	0.0	# <-From Above
V = Total Shear = w*B+Va =	7128	#
v = Unit Wall Shear = V/L =	**509**	#/ft
OTMa = OTM from Above =	0	# <-FROM Above
OTM = v*L'*H + OTMa =	9165	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
		0	0
RF	18	10	180
2F	16	0	0
1F	16	0	0
Wall	15	10	150
		Total W =	330

RM = 0.6W*(L'^2/2) =	396.00	ft-#
C = T = (OTM-RM)/L' =	**4384**	#

USE **Simpson SSW21x9**
Holddown = Simpson STK

SHEAR WALLS @ 2F: Grid G (E/W Load)

w = Lateral Load =	202.4	#/ft (= 8.8 psf *23')
B = Tributary Width =	8.0	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	5.5	ft
L' = Shortest Shear Panel Length =	5.5	ft
Va = Shear from Above =	0.0	# <-From Above
V = Total Shear = w*B+Va =	1619	#
v = Unit Wall Shear = V/L =	**294**	#/ft
OTMa = OTM from Above =	0	# <-FROM Above
OTM = v*L'*H + OTMa =	14573	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
			0
RF	18	10	180
2F	16		0
1F	16	0	0
Wall	15	10	150
		Total W =	330

RM = 0.6W*(L'^2/2) =	2994.75	ft-#
C = T = (OTM-RM)/L' =	**2105**	#

USE **1/2" Plywd w/ 8d @ 4"(Edge) & 12"(Field) (Type 3)**
Holddown = HDU2

T. JEFF GUH, PH.D., S.E.
Structural Engineer
705 San Vicente Boulevard, Santa Monica, CA 90402
Phone: (310)699-3112 FAX: (310)393-1036 Email: jg@je

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SHEAR WALLS @ 2F: Grid 1&2 (N/S Load)

w = Lateral Load =	404.8	#/ft (= 8.8 psf *46')
B = Tributary Width =	5.0	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	11.0	ft
L' = Shortest Shear Panel Length =	2.0	ft
Va = Shear from Above =	0.0	# <-From Above
V = Total Shear = w*B+Va =	2024	#
v = Unit Wall Shear = V/L =	**184**	#/ft
OTMa = OTM from Above =	0	# <-FROM Above
OTM = v*L'*H + OTMa =	3312	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
		0	0
RF	18	10	180
2F	16	0	0
1F	16	0	0
Wall	15	10	150
		Total W =	330

RM = 0.6W*(L'^2/2) =	396.00	ft-#
C = T = (OTM-RM)/L' =	**1458**	#

USE **1/2" Plywd w/ 8d @ 6"(Edge) & 12"(Field) (Type 1)**
Holddown = HDU2

SHEAR WALLS @ 2F: Grid 3 (N/S Load)

w = Lateral Load =	404.8	#/ft (= 8.8 psf *46')
B = Tributary Width =	9.0	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	11.0	ft
L' = Shortest Shear Panel Length =	11.0	ft
Va = Shear from Above =	0.0	# <-From Above
V = Total Shear = w*B+Va =	3643	#
v = Unit Wall Shear = V/L =	**331**	#/ft
OTMa = OTM from Above =	0	# <-FROM Above
OTM = v*L'*H + OTMa =	32789	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
			0
RF	18	10	180
2F	16		0
1F	16	0	0
Wall	15	10	150
		Total W =	330

RM = 0.6W*(L'^2/2) =	11979.00	ft-#
C = T = (OTM-RM)/L' =	**1892**	#

USE **1/2" Plywd w/ 10d @ 4"(Edge) & 12"(Field) (Type 4)**
Holddown = HDU2

T. JEFF GUH, PH.D., S.E.
Structural Engineer
705 San Vicente Boulevard, Santa Monica, CA 90402
Phone: (310)699-3112 FAX: (310)393-1036 Email: jg@je

Sheet No.	
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SHEAR WALLS @ 2F: Grid 5 (N/S Load)

w = Lateral Load =	290.4	#/ft (= 8.8 psf *33')
B = Tributary Width =	15.0	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	11.9	ft
L' = Shortest Shear Panel Length =	11.9	ft
Va = Shear from Above =	0.0	# <-From Above
V = Total Shear = w*B+Va =	4356	#
v = Unit Wall Shear = V/L =	**366**	#/ft
OTMa = OTM from Above =	0	# <-FROM Above
OTM = v*L'*H + OTMa =	39204	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
		0	0
RF	18	10	180
2F	16	0	0
1F	16	0	0
Wall	15	10	150
		Total W =	330

RM = 0.6W*(L'^2/2) =	14019.39	ft-#
C = T = (OTM-RM)/L' =	**2116**	#

USE **1/2" Plywd w/ 8d @ 4"(Edge) & 12"(Field) (Type 3)**
Holddown = HDU2

SHEAR WALLS @ 2F: Grid 8 (N/S Load)

w = Lateral Load =	264.0	#/ft (= 8.8 psf *30')
B = Tributary Width =	17.0	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	13.0	ft
L' = Shortest Shear Panel Length =	13.0	ft
Va = Shear from Above =	0.0	# <-From Above
V = Total Shear = w*B+Va =	4488	#
v = Unit Wall Shear = V/L =	**345**	#/ft
OTMa = OTM from Above =	0	# <-FROM Above
OTM = v*L'*H + OTMa =	40392	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
			0
RF	18	10	180
2F	16		0
1F	16	0	0
Wall	15	10	150
		Total W =	330

RM = 0.6W*(L'^2/2) =	16731.00	ft-#
C = T = (OTM-RM)/L' =	**1820**	#

USE **1/2" Plywd w/ 8d @ 4"(Edge) & 12"(Field) (Type 3)**
Holddown = HDU2

T. JEFF GUH, PH.D., S.E.
Structural Engineer
705 San Vicente Boulevard, Santa Monica, CA 90402
Phone: (310)699-3112 FAX: (310)393-1036 Email: jg@je

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SHEAR WALLS @ 2F: Grid 11 (N/S Load)

w = Lateral Load =	264.0	#/ft (= 8.8 psf *30')
B = Tributary Width =	7.5	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	4.3	ft
L' = Shortest Shear Panel Length =	1.3	ft
Va = Shear from Above =	0.0	# <-From Above
V = Total Shear = w*B+Va =	1980	#
v = Unit Wall Shear = V/L =	**460**	#/ft
OTMa = OTM from Above =	0	# <-FROM Above
OTM = v*L'*H + OTMa =	5387	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
		0	0
RF	18	10	180
2F	16	0	0
1F	16	0	0
Wall	15	10	150
		Total W =	330

RM = 0.6W*(L'^2/2) =	167.31	ft-#
C = T = (OTM-RM)/L' =	**4015**	#

USE **Simpson SSW15x9**
Holddown = Simpson STK

T. JEFF GUH, PH.D., S.E.
Structural Engineer
705 San Vicente Boulevard, Santa Monica, CA 90402
Phone: (310)699-3112 FAX: (310)393-1036 Email: jg@je

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SHEAR WALLS @ 1F: Grid B (E/W Load)

w = Lateral Load =	205.2	#/ft (= 3.8 psf *54')
B = Tributary Width =	9.5	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	38.5	ft
L' = Shortest Shear Panel Length =	6.3	ft
Va = Shear from Above =	4514.0	# <-From Above
V = Total Shear = w*B+Va =	6463	#
v = Unit Wall Shear = V/L =	**168**	#/ft
OTMa = OTM from Above =	42883	# <-FROM Above
OTM = v*L'*H + OTMa =	16536	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
		0	0
RF	18	10	180
2F	16	10	160
1F	16	0	0
Wall	15	19	285
		Total W =	625

RM = 0.6W*(L'^2/2) =	7441.88	ft-#
C = T = (OTM-RM)/L' =	**1444**	#

USE **1/2" Plywd w/ 8d @ 6"(Edge) & 12"(Field) (Type 1)**
Holddown = HDU2

SHEAR WALLS @ 1F: Grid C&D (E/W Load)

w = Lateral Load =	205.2	#/ft (= 3.8 psf *54')
B = Tributary Width =	15.0	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	17.8	ft
L' = Shortest Shear Panel Length =	17.8	ft
Va = Shear from Above =	7128.0	# <-From Above
V = Total Shear = w*B+Va =	10206	#
v = Unit Wall Shear = V/L =	**573**	#/ft
OTMa = OTM from Above =	106920	# <-FROM Above
OTM = v*L'*H + OTMa =	198774	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
			0
RF	18	10	180
2F	16	10	160
1F	16	0	0
Wall	15	19	285
		Total W =	625

RM = 0.6W*(L'^2/2) =	59407.50	ft-#
C = T = (OTM-RM)/L' =	**7830**	#

USE **1/2" Plywd w/ 10d @ 2"(Edge) & 12"(Field) (Type 6)**
Holddown = HDU8

T. JEFF GUH, PH.D., S.E.
Structural Engineer
705 San Vicente Boulevard, Santa Monica, CA 90402
Phone: (310)699-3112 FAX: (310)393-1036 Email: jg@je

Sheet No.	
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SHEAR WALLS @ 1F: Grid F (E/W Load)

w = Lateral Load =	205.2	#/ft (= 3.8 psf *54')
B = Tributary Width =	15.0	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	34.2	ft
L' = Shortest Shear Panel Length =	10.2	ft
Va = Shear from Above =	7128.0	# <-From Above
V = Total Shear = w*B+Va =	10206	#
v = Unit Wall Shear = V/L =	**298**	#/ft
OTMa = OTM from Above =	106920	# <-FROM Above
OTM = v*L'*H + OTMa =	59283	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
		0	0
RF	18	10	180
2F	16	10	160
1F	16	0	0
Wall	15	19	285
		Total W =	625

RM = 0.6W*(L'^2/2) =	19507.50	ft-#
C = T = (OTM-RM)/L' =	**3900**	#

USE **1/2" Plywd w/ 8d @ 4"(Edge) & 12"(Field) (Type 3)**
Holddown = HDU5

SHEAR WALLS @ 1F: Grid H (E/W Load)

w = Lateral Load =	87.4	#/ft (= 3.8 psf *23')
B = Tributary Width =	8.0	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	19.2	ft
L' = Shortest Shear Panel Length =	19.2	ft
Va = Shear from Above =	1619.0	# <-From Above
V = Total Shear = w*B+Va =	2318	#
v = Unit Wall Shear = V/L =	**121**	#/ft
OTMa = OTM from Above =	12952	# <-FROM Above
OTM = v*L'*H + OTMa =	33816	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
			0
RF	18	10	180
2F	16	10	160
1F	16	0	0
Wall	15	19	285
		Total W =	625

RM = 0.6W*(L'^2/2) =	69120.00	ft-#
C = T = (OTM-RM)/L' =	**-1839**	#

USE **1/2" Plywd w/ 8d @ 6"(Edge) & 12"(Field) (Type 1)**
Holddown = HDU2

T. JEFF GUH, PH.D., S.E.
Structural Engineer
705 San Vicente Boulevard, Santa Monica, CA 90402
Phone: (310)699-3112 FAX: (310)393-1036 Email: jg@je

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SHEAR WALLS @ 1F: Grid 1&2 (N/S Load)

w = Lateral Load =	174.8	#/ft (= 3.8 psf *46')
B = Tributary Width =	5.0	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	12.4	ft
L' = Shortest Shear Panel Length =	2.0	ft
Va = Shear from Above =	2024.0	# <-From Above
V = Total Shear = w*B+Va =	2898	#
v = Unit Wall Shear = V/L =	**234**	#/ft
OTMa = OTM from Above =	10120	# <-FROM Above
OTM = v*L'*H + OTMa =	5839	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
		0	0
RF	18	10	180
2F	16	10	160
1F	16	0	0
Wall	15	19	285
		Total W =	625

RM = 0.6W*(L'^2/2) =	750.00	ft-#
C = T = (OTM-RM)/L' =	**2545**	#

USE **1/2" Plywd w/ 8d @ 6"(Edge) & 12"(Field) (Type 1)**
Holddown = HDU2

SHEAR WALLS @ 1F: Grid 3&4 (N/S Load)

w = Lateral Load =	174.8	#/ft (= 3.8 psf *46')
B = Tributary Width =	9.0	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	19.0	ft
L' = Shortest Shear Panel Length =	19.0	ft
Va = Shear from Above =	3643.0	# <-From Above
V = Total Shear = w*B+Va =	5216	#
v = Unit Wall Shear = V/L =	**275**	#/ft
OTMa = OTM from Above =	32787	# <-FROM Above
OTM = v*L'*H + OTMa =	79733	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
			0
RF	18	10	180
2F	16	10	160
1F	16	0	0
Wall	15	19	285
		Total W =	625

RM = 0.6W*(L'^2/2) =	67687.50	ft-#
C = T = (OTM-RM)/L' =	**634**	#

USE **1/2" Plywd w/ 8d @ 4"(Edge) & 12"(Field) (Type 3)**
Holddown = HDU2

T. JEFF GUH, PH.D., S.E.
Structural Engineer
705 San Vicente Boulevard, Santa Monica, CA 90402
Phone: (310)699-3112 FAX: (310)393-1036 Email: jg@je

Sheet No.	
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SHEAR WALLS @ 1F: Grid 5 (N/S Load)

w = Lateral Load =	125.4	#/ft (= 3.8 psf *33')
B = Tributary Width =	11.0	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	8.9	ft
L' = Shortest Shear Panel Length =	8.9	ft
Va = Shear from Above =	4356.0	# <-From Above
V = Total Shear = w*B+Va =	5735	#
v = Unit Wall Shear = V/L =	**644**	#/ft
OTMa = OTM from Above =	47916	# <-FROM Above
OTM = v*L'*H + OTMa =	99535	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
		0	0
RF	18	10	180
2F	16	10	160
1F	16	0	0
Wall	15	19	285
		Total W =	625

RM = 0.6W*(L'^2/2) =	14851.88	ft-#
C = T = (OTM-RM)/L' =	**9515**	#

USE **1/2" Plywd w/ 10d @ 2"(Edge) & 12"(Field) (Type 6)**
Holddown = HDU11

SHEAR WALLS @ 1F: Grid 8 (N/S Load)

w = Lateral Load =	114.0	#/ft (= 3.8 psf *30')
B = Tributary Width =	17.0	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	9.5	ft
L' = Shortest Shear Panel Length =	9.5	ft
Va = Shear from Above =	4488.0	# <-From Above
V = Total Shear = w*B+Va =	6426	#
v = Unit Wall Shear = V/L =	**676**	#/ft
OTMa = OTM from Above =	76296	# <-FROM Above
OTM = v*L'*H + OTMa =	134130	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
			0
RF	18	10	180
2F	16	10	160
1F	16	0	0
Wall	15	19	285
		Total W =	625

RM = 0.6W*(L'^2/2) =	16921.88	ft-#
C = T = (OTM-RM)/L' =	**12338**	#

USE **1/2" Plywd w/ 10d @ 2"(Edge) & 12"(Field) (Type 6)**
Holddown = HDU11

T. JEFF GUH, PH.D., S.E.
Structural Engineer
705 San Vicente Boulevard, Santa Monica, CA 90402
Phone: (310)699-3112 FAX: (310)393-1036 Email: jg@je

Sheet No.	
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SHEAR WALLS @ 1F: Grid 10&12 (N/S Load)

w = Lateral Load =	114.0	#/ft (= 3.8 psf *30')
B = Tributary Width =	7.5	ft
H = Location of Load Above Base =	9.0	ft
L = Total Shear Panel Length =	20.5	ft
L' = Shortest Shear Panel Length =	5.5	ft
Va = Shear from Above =	1980.0	# <-From Above
V = Total Shear = w*B+Va =	2835	#
v = Unit Wall Shear = V/L =	**138**	#/ft
OTMa = OTM from Above =	14850	# <-FROM Above
OTM = v*L'*H + OTMa =	10830	ft-# @ Shortet Wall

Reactive Weight:

	Unit Wt (#/sq ft)	* Span	=Total Wt #/ft
		0	0
RF	18	10	180
2F	16	10	160
1F	16	0	0
Wall	15	19	285
		Total W =	625

RM = 0.6W*(L'^2/2) =	5671.88	ft-#
C = T = (OTM-RM)/L' =	**938**	#

USE **1/2" Plywd w/ 8d @ 6"(Edge) & 12"(Field) (Type 1)**
Holddown = HDU2

SECTION 4 Foundation

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

Printed: 25 MAY 2023, 5:31PM

Wall Footing

File: Z:_Work\TJG\PROJ\NPG\Contract\BLD008-11224 Sunshine\3-Doc\Calc\sunshine.ec6
ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : **Licensee :**

Description : EXTERIOR WALL FOOTING

General Information

Calculations per ACI 318-08, IBC 2021, CBC 2022, ASCE 7-16

Material Properties

f'c : Concrete 28 day strength	=	2.50 ksi
fy : Rebar Yield	=	60.0 ksi
Ec : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
AutoCalc Footing Weight as DL	:	Yes

Soil Design Values

Allowable Soil Bearing	=	1.50 ksf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Increases based on footing Depth

Reference Depth below Surface	=	ft
Allow. Pressure Increase per foot of depth	=	ksf
when base footing is below	=	ft

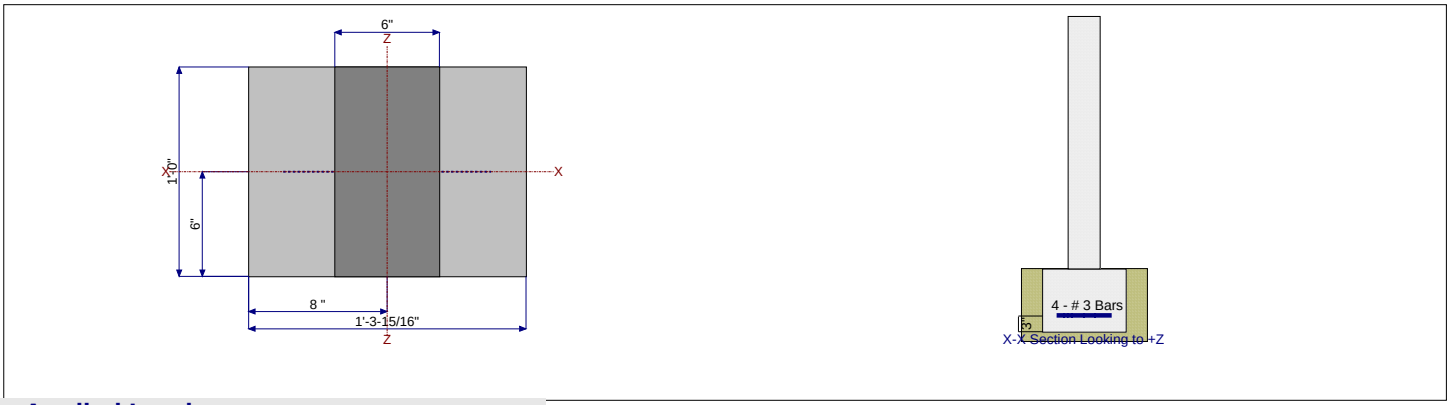
Increases based on footing Width

Allow. Pressure Increase per foot of width	=	ksf
when footing is wider than	=	ft

Dimensions

Footing Width	=	1.330 ft	Footing Thickness	=	12.0 in	Bars along X-X Axis	
Wall Thickness	=	6.0 in	Rebar Centerline to Edge of Concrete...			Bar spacing	= 12.00
Wall center offset from center of footing	=	0 in	at Bottom of footing	=	3.0 in	Reinforcing Bar Size	= # 3

Reinforcing



Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	0.80		1.0					k
OB : Overburden	=								ksf
V-x	=								k
M-zz	=								k-ft

Vx applied = in above top of footing

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9989	Soil Bearing	1.498 ksf	1.50 ksf	+D+L+H
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.04456	Z Flexure (+X)	0.1957 k-ft	4.391 k-ft	+1.20D+0.50Lr+1.60L+
PASS	0.04456	Z Flexure (-X)	0.1957 k-ft	4.391 k-ft	+1.20D+0.50Lr+1.60L+
PASS	n/a	1-way Shear (+X)	0.0 psi	75.0 psi	n/a
PASS	0.0	1-way Shear (-X)	0.0 psi	0.0 psi	n/a

Structural Calculations
Prepared by:

Title :
Dsgnr:
Project Desc.:

Job #

Project Notes :

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Wall Footing

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : **Licensee :**

Description : EXTERIOR WALL FOOTING

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc	Actual Soil Bearing Stress +Z	+Z	-X	-X	Actual / Allowable Ratio
, +D	1.50 ksf	0.0 in			0.7465 ksf	0.7465 ksf		0.498
, +D+L+H	1.50 ksf	0.0 in			1.498 ksf	1.498 ksf		0.999
, +D+0.750Lr+0.750L+H	1.50 ksf	0.0 in			1.310 ksf	1.310 ksf		0.874
, +D+0.750L+0.750S+H	1.50 ksf	0.0 in			1.310 ksf	1.310 ksf		0.874
, +D+0.750Lr+0.750L+0.750W+H	1.50 ksf	0.0 in			1.310 ksf	1.310 ksf		0.874
, +D+0.750L+0.750S+0.750W+H	1.50 ksf	0.0 in			1.310 ksf	1.310 ksf		0.874
, +D+0.750Lr+0.750L+0.5250E+H	1.50 ksf	0.0 in			1.310 ksf	1.310 ksf		0.874
, +D+0.750L+0.750S+0.5250E+H	1.50 ksf	0.0 in			1.310 ksf	1.310 ksf		0.874

Overturning Stability

Units : k-ft

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	0.1074	-X	Bottom	0.0035	Calc'd Bending	0.11	4.391	OK
, +1.40D	0.1074	+X	Bottom	0.0035	Calc'd Bending	0.11	4.391	OK
, +1.20D+0.50Lr+1.60L+1.60H	0.1957	-X	Bottom	0.0064	Calc'd Bending	0.11	4.391	OK
, +1.20D+0.50Lr+1.60L+1.60H	0.1957	+X	Bottom	0.0064	Calc'd Bending	0.11	4.391	OK
, +1.20D+1.60L+0.50S+1.60H	0.1957	-X	Bottom	0.0064	Calc'd Bending	0.11	4.391	OK
, +1.20D+1.60L+0.50S+1.60H	0.1957	+X	Bottom	0.0064	Calc'd Bending	0.11	4.391	OK
, +1.20D+1.60Lr+0.50L	0.1245	-X	Bottom	0.0041	Calc'd Bending	0.11	4.391	OK
, +1.20D+1.60Lr+0.50L	0.1245	+X	Bottom	0.0041	Calc'd Bending	0.11	4.391	OK
, +1.20D+0.50L+1.60S	0.1245	-X	Bottom	0.0041	Calc'd Bending	0.11	4.391	OK
, +1.20D+0.50L+1.60S	0.1245	+X	Bottom	0.0041	Calc'd Bending	0.11	4.391	OK
, +1.20D+0.50Lr+0.50L+1.60W	0.1245	-X	Bottom	0.0041	Calc'd Bending	0.11	4.391	OK
, +1.20D+0.50Lr+0.50L+1.60W	0.1245	+X	Bottom	0.0041	Calc'd Bending	0.11	4.391	OK
, +1.20D+0.50L+0.50S+1.60W	0.1245	-X	Bottom	0.0041	Calc'd Bending	0.11	4.391	OK
, +1.20D+0.50L+0.50S+1.60W	0.1245	+X	Bottom	0.0041	Calc'd Bending	0.11	4.391	OK
, +1.20D+0.50L+0.20S+E	0.1245	-X	Bottom	0.0041	Calc'd Bending	0.11	4.391	OK
, +1.20D+0.50L+0.20S+E	0.1245	+X	Bottom	0.0041	Calc'd Bending	0.11	4.391	OK

One Way Shear

Units : k

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50Lr+1.60L+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+1.60L+0.50S+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+1.60Lr+0.50L	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50L+1.60S	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50Lr+0.50L+1.60W	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50L+0.50S+1.60W	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50L+0.20S+E	0 psi	0 psi	0 psi	75 psi	0	OK

Structural Calculations
Prepared by:

Title :
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Project Desc.:

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General Footing

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

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Description : INTERIOR PIER FOOTING

General Information

Calculations per ACI 318-08, IBC 2021, CBC 2022, ASCE 7-16

Material Properties

f'c : Concrete 28 day strength	=	2.750	ksi
fy : Rebar Yield	=	60.0	ksi
Ec : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

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
Include Pedestal Weight as DL	:	No

Soil Design Values

Allowable Soil Bearing	=	1.50	ksf
Increase Bearing By Footing Weight	=	No	
Soil Passive Resistance (for Sliding)	=	250.0	pcf
Soil/Concrete Friction Coeff.	=	0.30	

Increases based on footing Depth

Footing base depth below soil surface	=	ft
Allowable pressure 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 maximum length or width is greater than	=	ft

Dimensions

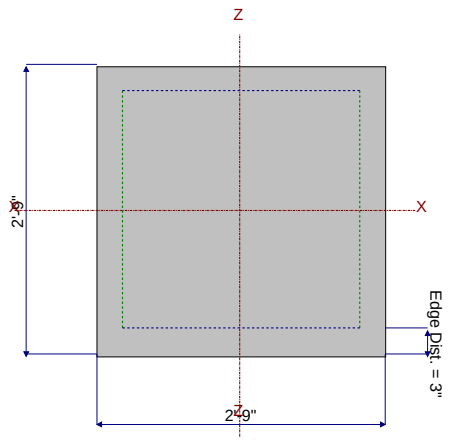
Width parallel to X-X Axis	=	2.750 ft
Length parallel to Z-Z Axis	=	2.750 ft
Footing Thickness	=	16.0 in

Pedestal dimensions...

px : parallel to X-X Axis	=	in
pz : parallel to Z-Z Axis	=	in
Height	=	in

Rebar Centerline to Edge of Concrete...

at Bottom of footing	=	3.0 in

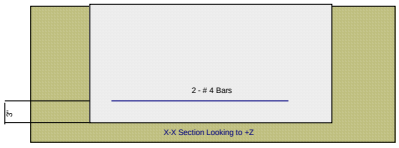


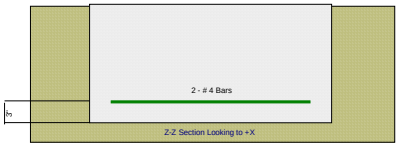
Reinforcing

Bars parallel to X-X Axis		
Number of Bars	=	2.0
Reinforcing Bar Size	=	# 4
Bars parallel to Z-Z Axis		
Number of Bars	=	2.0
Reinforcing Bar Size	=	# 4

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





Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	4.80		4.80					k
OB : Overburden	=								ksf
M-xx	=								k-ft
M-zz	=								k-ft
V-x	=								k
V-z	=								k

Structural Calculations
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General Footing

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Lic. # : **Licensee :**

Description : INTERIOR PIER FOOTING

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9753	Soil Bearing	1.463 ksf	1.50 ksf	+D+L+H
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	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.1998	Z Flexure (+X)	1.680 k-ft	8.407 k-ft	+1.20D+1.60L+0.50S+1.60H
PASS	0.1998	Z Flexure (-X)	1.680 k-ft	8.407 k-ft	+1.20D+1.60L+0.50S+1.60H
PASS	0.1998	X Flexure (+Z)	1.680 k-ft	8.407 k-ft	+1.20D+1.60L+0.50S+1.60H
PASS	0.1998	X Flexure (-Z)	1.680 k-ft	8.407 k-ft	+1.20D+1.60L+0.50S+1.60H
PASS	0.04248	1-way Shear (+X)	3.342 psi	78.661 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.04248	1-way Shear (-X)	3.342 psi	78.661 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.04248	1-way Shear (+Z)	3.342 psi	78.661 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.04248	1-way Shear (-Z)	3.342 psi	78.661 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1075	2-way Punching	16.909 psi	157.32 psi	+1.20D+0.50Lr+1.60L+1.60H

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc	Actual Soil Bearing Stress +Z	+Z	-X	-X	Actual / Allowable Ratio

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status

Footing Has NO Overturning

Sliding Stability

All units k

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

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status

Punching Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status

Structural Calculations
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Project Notes :

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Alumi Beam

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

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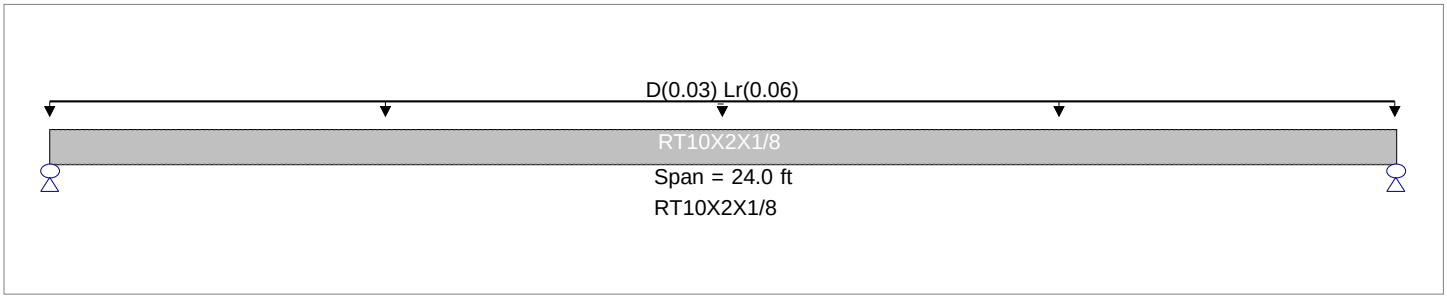
Description : Trellis Beam (Aluminum)

Material Properties

Calculations per ADM2020, IBC 2021, CBC 2022, ASCE 7-16

Analysis Method : Allowable Stress Design
Beam Bracing : Completely Unbraced
Bending Axis : Major Axis Bending
Load Combination 2021 IBC & ASCE 7-16

Fy : Alumi Yield : 35.0 ksi
E: Modulus : 10,100.0 ksi



Applied Loads

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

Uniform Load : D = 0.0050, Lr = 0.010 ksf, Tributary Width = 6.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.601 : 1	Maximum Shear Stress Ratio =	0.122 : 1
Section used for this span	RT10X2X1/8	Section used for this span	RT10X2X1/8
Mu : Applied	6.480 k-ft	Vu : Applied	1.080 k
Mn / Omega : Allowable	10.786 k-ft	Vn/Omega : Allowable	8.861 k
Load Combination	+D+Lr+H	Load Combination	+D+Lr+H
Location of maximum on span	12.000 ft	Location of maximum on span	0.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	1.568 in	Ratio =	183
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <100
Max Downward Total Deflection	2.353 in	Ratio =	122
Max Upward Total Deflection	0.000 in	Ratio =	0 <100

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	Summary of Moment Values Mmax +	Mmax -	Ma - Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
+D													
Dsgn. L = 24.00 ft	1	0.200	0.041	2.16		2.16	18.01	10.79	1.14	1.00	0.36	14.80	8.86
+D+Lr+H													
Dsgn. L = 24.00 ft	1	0.601	0.122	6.48		6.48	18.01	10.79	1.14	1.00	1.08	14.80	8.86
+D+0.750Lr+0.750L+H													
Dsgn. L = 24.00 ft	1	0.501	0.102	5.40		5.40	18.01	10.79	1.14	1.00	0.90	14.80	8.86
+D+0.750Lr+0.750L+0.750W+H													
Dsgn. L = 24.00 ft	1	0.501	0.102	5.40		5.40	18.01	10.79	1.14	1.00	0.90	14.80	8.86
+D+0.750Lr+0.750L+0.5250E+H													
Dsgn. L = 24.00 ft	1	0.501	0.102	5.40		5.40	18.01	10.79	1.14	1.00	0.90	14.80	8.86

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000		0.0000	0.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	1.080	1.080
D Only	0.360	0.360
Lr Only	0.720	0.720
D+Lr	1.080	1.080

Structural Calculations
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Alumi Column

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

Lic. # : **Licensee :**

Description : Trellis Post (Aluminum)

General Information

Calculations per ADM2020, IBC 2021, CBC 2022, ASCE 7-16

Alumi Section Name : **RT6X6X1/8**
Analysis Method : 2021 IBC & ASCE 7-16
Alumi Stress Grade
Fy : Alumi Yield 35.0 ksi
E : Elastic Bending Modulus 10,100.0 ksi
Load Combination : Allowable Stress

Overall Column Height 10.0 ft
Top & Bottom Fixity Top & Bottom Pinned

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Unbraced Length for X-X Axis buckling = 10 ft, K = 2.1
Y-Y (depth) axis : Unbraced Length for Y-Y Axis buckling = 10 ft, K = 2.1

Applied Loads

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

Column self weight included : 98.504 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 10.0 ft, D = 0.40, LR = 0.80 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.1018** : 1
Load Combination +D+Lr+H
Location of max.above base 0.0 ft
At maximum location values are . . .
Pu : Axial 1.299 k
Pn / Omega : Allowable 12.757 k
Mu-x : Applied 0.0 k-ft
Mn-x / Omega : Allowable 6.332 k-ft
Mu-y : Applied 0.0 k-ft
Mn-y / Omega : Allowable 6.332 k-ft

PASS Maximum Shear Stress Ratio = **0.0** : 1
Load Combination
Location of max.above base 0.0 ft
At maximum location values are . . .
Vu : Applied 0.0 k
Vn / Omega : Allowable 0.0 k

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

Maximum SERVICE Load Deflections . . .
Along Y-Y 0.0 in at 0.0 ft above base
for load combination :
Along X-X 0.0 in at 0.0 ft above base
for load combination :

Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
	Stress Ratio	Status	Location	Stress Ratio	Status	Location
+D	0.039	PASS	0.00 ft	0.000	PASS	0.00 ft
+D+Lr+H	0.102	PASS	0.00 ft	0.000	PASS	0.00 ft
+D+0.750Lr+0.750L+H	0.086	PASS	0.00 ft	0.000	PASS	0.00 ft
+D+0.750Lr+0.750L+0.750W+H	0.086	PASS	0.00 ft	0.000	PASS	0.00 ft
+D+0.750Lr+0.750L+0.5250E+H	0.086	PASS	0.00 ft	0.000	PASS	0.00 ft

Maximum Reactions - Unfactored

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		Y-Y Axis Reaction		Axial Reaction
	@ Base	@ Top	@ Base	@ Top	@ Base
D Only		k		k	0.499 k
Lr Only		k		k	0.800 k
D+Lr		k		k	1.299 k

Maximum Deflections for Load Combinations - Unfactored Loads

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
Lr Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
D+Lr	0.0000 in	0.000 ft	0.000 in	0.000 ft

Alumi Section Properties : RT6X6X1/8

Structural Calculations
Prepared by:

Title :
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Project Desc.:

Job #

Project Notes :

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Alumi Column

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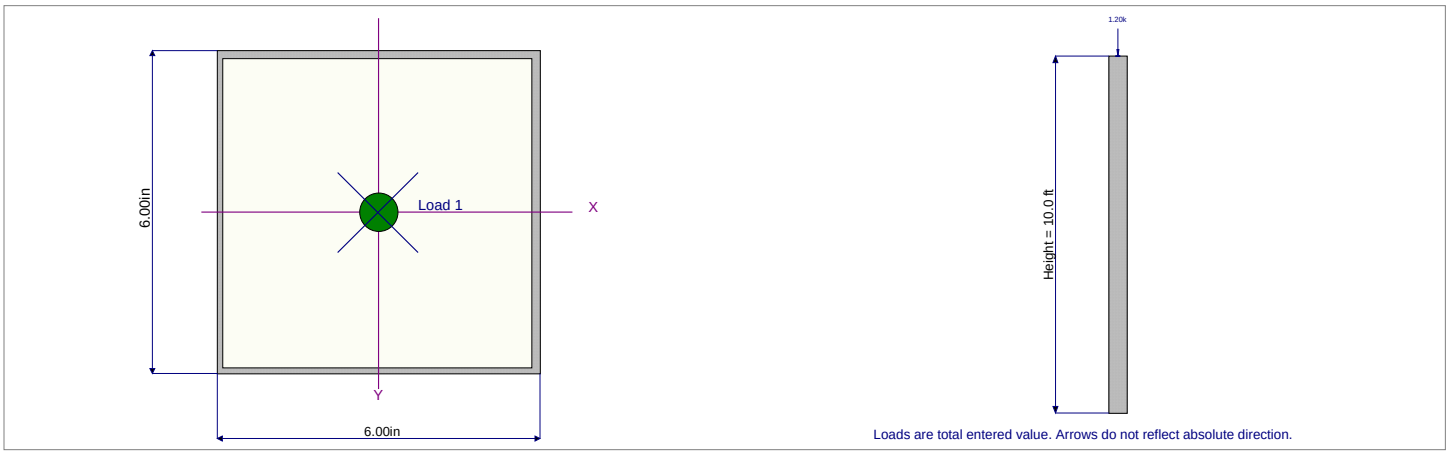
Lic. # : **Licensee :**

Description : Trellis Post (Aluminum)

Alumi Section Properties : RT6X6X1/8

Depth	=	6.000	in	I xx	=	15.50	in^4	J	=	23.900 in^4
Web Thick	=	0.000	in	S xx	=	5.15	in^3			
Flange Width	=	6.000	in	R xx	=	2.390	in			
Flange Thick	=	0.125	in							
Area	=	2.700	in^2	I yy	=	15.500	in^4			
Weight	=	9.850	plf	S yy	=	5.150	in^3			
				R yy	=	2.390	in			
Ycg	=	0.000	in							



Structural Calculations
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General Footing

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ENERCALC, INC. 1983-2011, Build:6.11.6.23, Ver:6.11.6.23

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Description : Trellis Post Slab as Footing

General Information

Calculations per ACI 318-08, IBC 2021, CBC 2022, ASCE 7-16

Material Properties

f'c : Concrete 28 day strength	=	2.50	ksi
fy : Rebar Yield	=	60.0	ksi
Ec : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

Analysis Settings

Min Steel % Bending Reinf.	=	0.00140
Min Allow % Temp Reinf.	=	0.00180
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
Include Pedestal Weight as DL	:	No

Soil Design Values

Allowable Soil Bearing	=	1.50	ksf
Increase Bearing By Footing Weight	=	No	
Soil Passive Resistance (for Sliding)	=	250.0	pcf
Soil/Concrete Friction Coeff.	=	0.350	

Increases based on footing Depth

Footing base depth below soil surface	=		ft
Allowable pressure 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 maximum length or width is greater than	=		ft

Dimensions

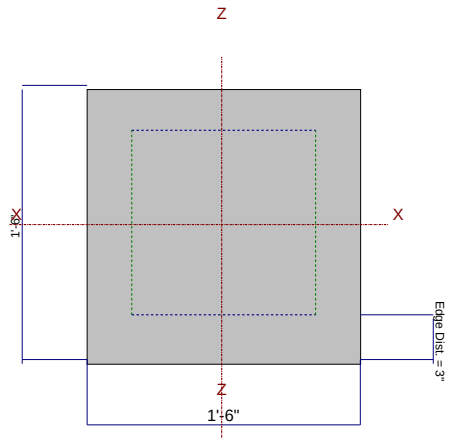
Width parallel to X-X Axis	=	1.50	ft
Length parallel to Z-Z Axis	=	1.50	ft
Footing Thickness	=	4.0	in

Pedestal dimensions...

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

Rebar Centerline to Edge of Concrete...

at Bottom of footing	=	3.0	in

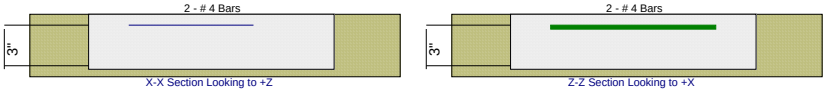


Reinforcing

Bars parallel to X-X Axis			
Number of Bars	=		2.0
Reinforcing Bar Size	=	#	4
Bars parallel to Z-Z Axis			
Number of Bars	=		2.0
Reinforcing Bar Size	=	#	4

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



Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	0.40	0.80						k
OB : Overburden	=								ksf
M-xx	=								k-ft
M-zz	=								k-ft
V-x	=						0.1330		k
V-z	=								k

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DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.3878	Soil Bearing	0.5817 ksf	1.50 ksf	+D+Lr+H
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	7.377	Overturning - Z-Z	0.03103 k-ft	0.2289 k-ft	0.6D+0.7E
PASS	1.148	Sliding - X-X	0.09310 k	0.1068 k	0.6D+0.7E
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.1187	Z Flexure (+X)	0.09778 k-ft	0.8235 k-ft	+1.20D+1.60Lr+0.80W
PASS	0.1187	Z Flexure (-X)	0.09778 k-ft	0.8235 k-ft	+1.20D+1.60Lr+0.80W
PASS	0.1187	X Flexure (+Z)	0.09778 k-ft	0.8235 k-ft	+1.20D+1.60Lr+0.80W
PASS	0.1187	X Flexure (-Z)	0.09778 k-ft	0.8235 k-ft	+1.20D+1.60Lr+0.80W
PASS	0.3650	1-way Shear (+X)	27.378 psi	75.0 psi	+1.20D+1.60Lr+0.50L
PASS	0.3650	1-way Shear (-X)	27.378 psi	75.0 psi	+1.20D+1.60Lr+0.50L
PASS	0.3650	1-way Shear (+Z)	27.378 psi	75.0 psi	+1.20D+1.60Lr+0.50L
PASS	0.3650	1-way Shear (-Z)	27.378 psi	75.0 psi	+1.20D+1.60Lr+0.50L
PASS	0.4158	2-way Punching	53.459 psi	128.57 psi	+1.20D+1.60Lr+0.50L

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc	Actual Soil Bearing Stress +Z	Actual Soil Bearing Stress +Z	Actual Soil Bearing Stress -X	Actual Soil Bearing Stress -X	Actual / Allowable Ratio

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status

Footing Has NO Overturning

Sliding Stability

All units k

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

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status

Punching Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status