

C-004348-2025 (887 E
COLUMBIA AVE Pomona, CA
91767)

STRUCTURAL CALCULATIONS

FOR
NEW DETACHED ADU
AT
883 E COLUMBIA AVE, POMONA, CA



08/27/2025

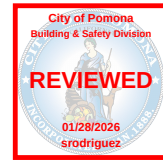


Table of Content

Gravity Design

- | | |
|---------------------------------|-------|
| 1. Unit Weights..... | p. 03 |
| 2. Building Framing Design..... | p. 04 |

Lateral Force Design

- | | |
|----------------------------|-------|
| 3. Seismic Maps..... | p. 07 |
| 4. Base Shear..... | p. 10 |
| 5. Seismic Mass..... | p. 11 |
| 6. Shear Wall Design | p. 12 |

Foundation Design

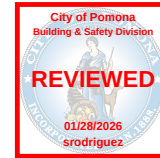
- | | |
|-------------------------|-------|
| Foundation Design | p. 14 |
|-------------------------|-------|

Supplemental Materials

- | | |
|--|-------|
| 7. Enercalc Outout for Gravity Design..... | p. 15 |
|--|-------|

Roof

Roofing per arch	3	psf
Plywood	1.5	psf
Roof rafters	2.2	psf
Misc	1.3	psf
Total DL:	8.0	psf
Roof LL:	20.0	psf



Ceiling

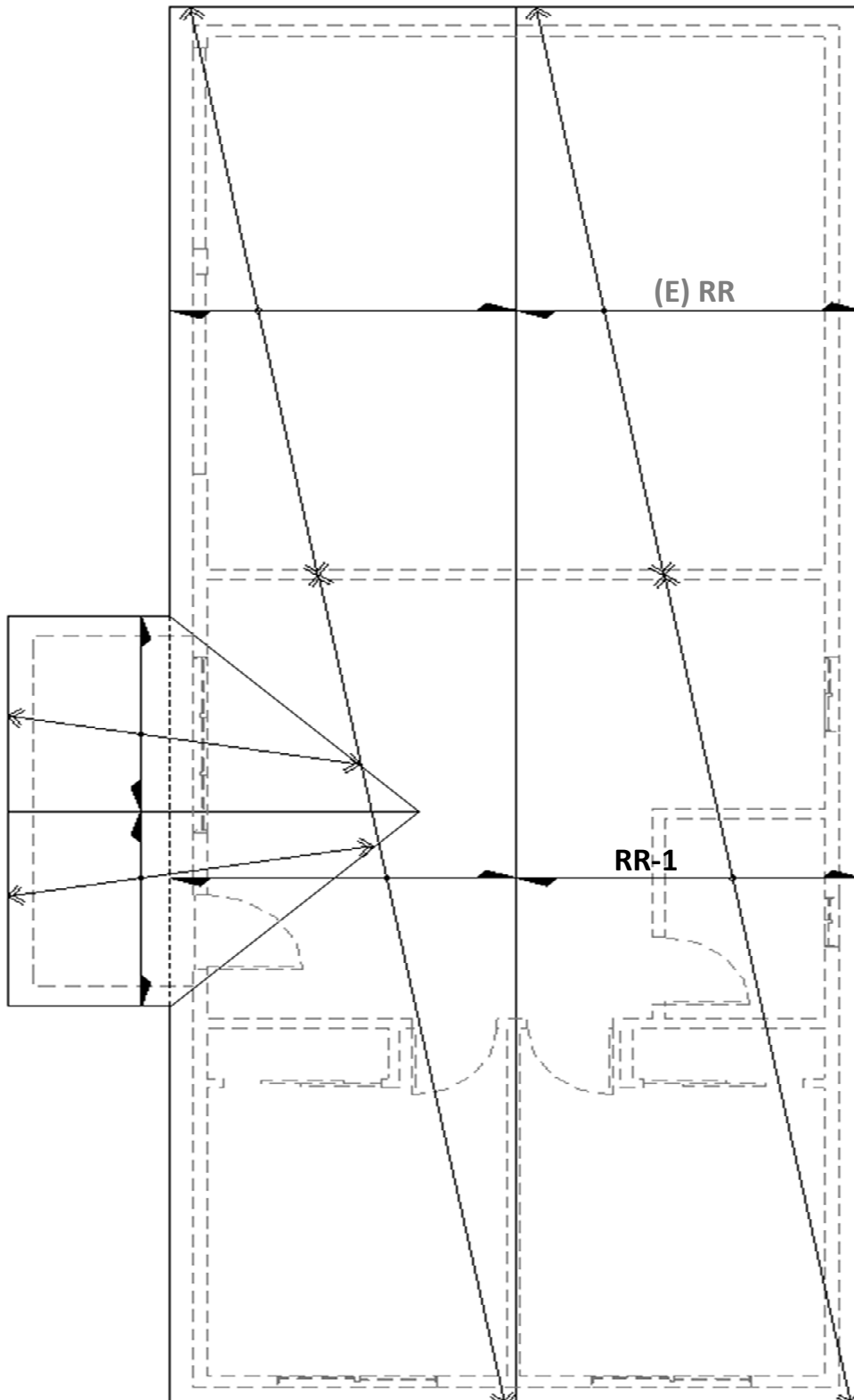
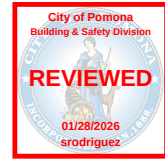
Ceiling Joits	2.2	psf
Gypsum board 1/2"	2.2	psf
Insulation R30	1.2	psf
Misc	1.4	psf
Total DL	7.0	psf
Ceiling LL	10.0	psf

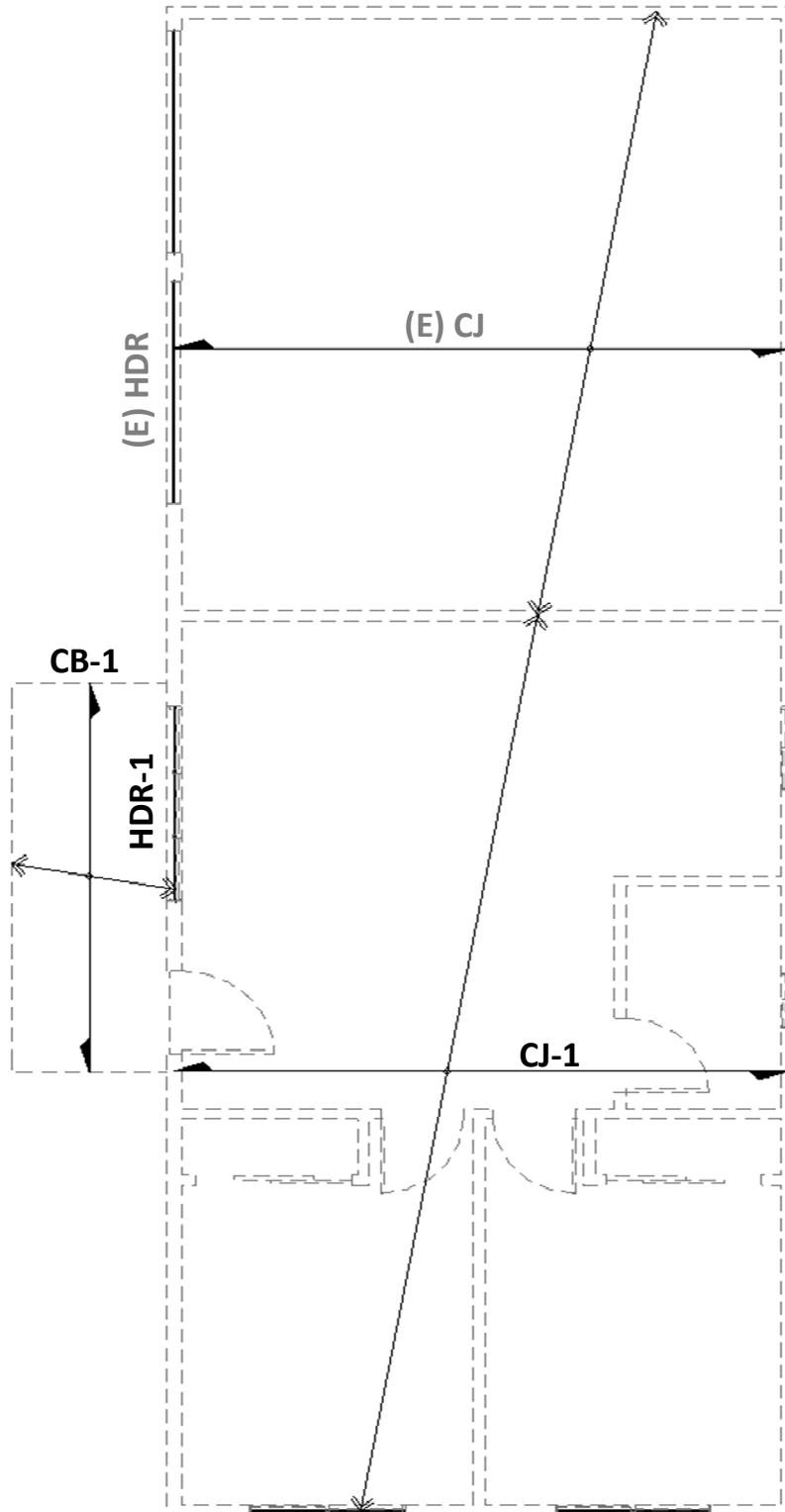
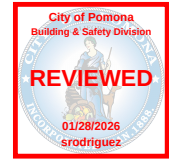
Exterior Walls

Stucco	9	psf
Plywood	1.5	psf
2x6 @ 16" O.C.	1.7	psf
Insulation R13	2.2	psf
Gypsum board 1/2"	2.2	psf
Misc.	0.4	psf
Total DL:	17.0	psf

Interior Walls

Gypsum board 1/2"	2.2	psf
2x4 @ 16" O.C.	1.1	psf
Gypsum board 1/2"	2.2	psf
Misc.	1.5	psf
Total DL:	7.0	psf





CB-1

$L = 5.25\text{ft}$

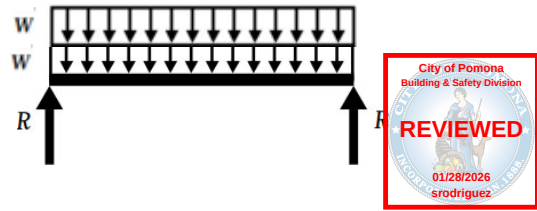
$\omega = (8+20)\text{psf} \times 7.75\text{ft}$

$\omega = (7+10)\text{psf} \times 6.75\text{ft}$

Try: 4x6 DF#1

$D/C = 0.404$ **OK**

$\Delta = L/1078$ **OK**



CJ-1

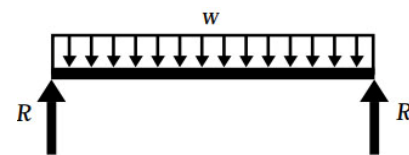
$L = 19.75\text{ft}$

$\omega = (7+10)\text{psf} \times 1.33\text{ft}$

Try: 2x8 DF#1

$D/C = 0.762$ **OK**

$\Delta = L/246$ **OK**



RR-1

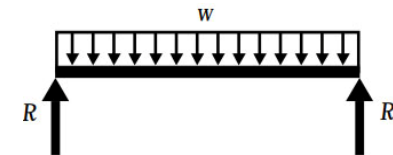
$L = 10.83\text{ft}$

$\omega = (8+20)\text{psf} \times 1.33\text{ft}$

Try: 2x6 DF#1

$D/C = 0.464$ **OK**

$\Delta = L/396$ **OK**



HDR-1

$L = 7\text{ft}$

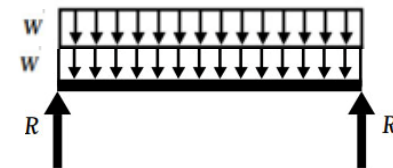
$\omega = (8+20)\text{psf} \times 10.83\text{ft}$

$\omega = (7+10)\text{psf} \times 9.85\text{ft}$

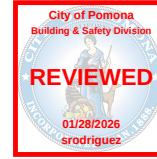
Try: 4x8 DF#1

$D/C = 0.578$ **OK**

$\Delta = L/745$ **OK**



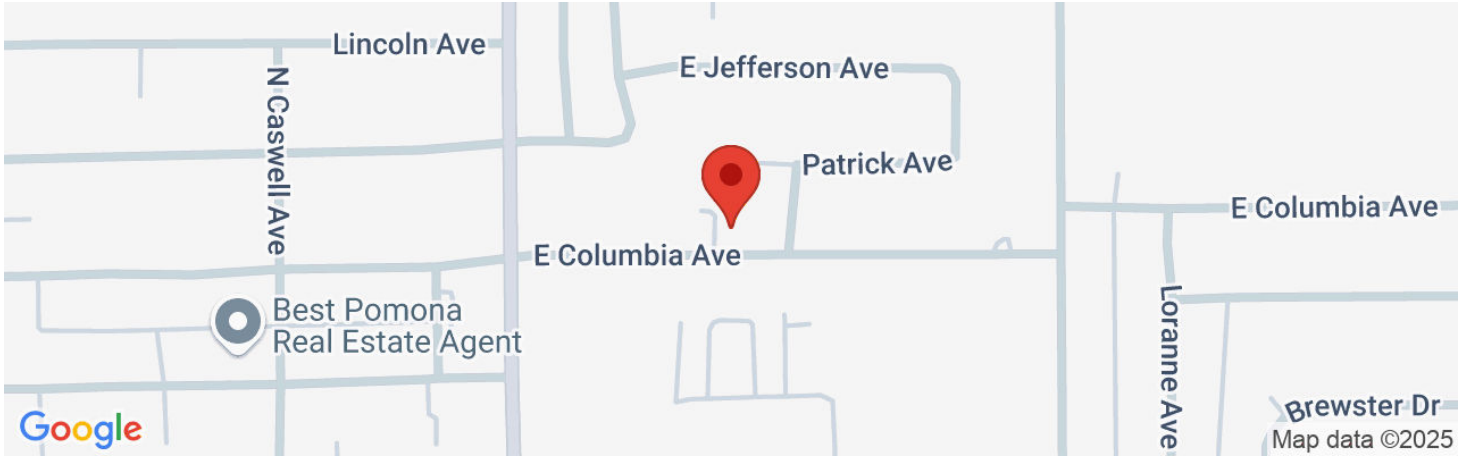
Announcement
ASCE 7-22 is now available.



OSHPD

883 E Columbia Ave, Pomona, CA 91767, USA

Latitude, Longitude: 34.0689456, -117.7346003

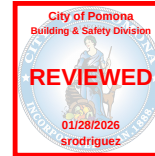


Date	7/30/2025, 9:34:13 AM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	1.725	MCE_R ground motion. (for 0.2 second period)
S_1	0.633	MCE_R ground motion. (for 1.0s period)
S_{MS}	2.07	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.38	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

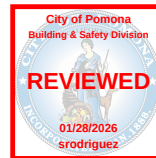
Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1.2	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.736	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.884	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
S_{sRT}	1.725	Probabilistic risk-targeted ground motion. (0.2 second)
S_{sUH}	1.875	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
S_{sD}	2.001	Factored deterministic acceleration value. (0.2 second)
S_{1RT}	0.633	Probabilistic risk-targeted ground motion. (1.0 second)
S_{1UH}	0.696	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S_{1D}	0.651	Factored deterministic acceleration value. (1.0 second)
$PGAd$	0.82	Factored deterministic acceleration value. (Peak Ground Acceleration)

Type	Value	Description
PGA_{UH}	0.736	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.92	Mapped value of the risk coefficient at short periods
C_{R1}	0.909	Mapped value of the risk coefficient at a period of 1 s
C_V	1.445	Vertical coefficient

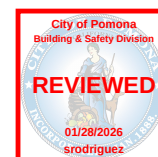


DISCLAIMER

While the information presented on this website is believed to be correct, SEAOC / OSHPD and its sponsors and contributors assume no responsibility or liability for its accuracy. The material presented in this web application should not be used or relied upon for any specific application without competent examination and verification of its accuracy, suitability and applicability by engineers or other licensed professionals. SEAOC / OSHPD do not intend that the use of this information replace the sound judgment of such competent professionals, having experience and knowledge in the field of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the results of the seismic data provided by this website. Users of the information from this website assume all liability arising from such use. Use of the output of this website does not imply approval by the governing building code bodies responsible for building code approval and interpretation for the building site described by latitude/longitude location in the search results of this website.



$S_5 =$	1,725	
$S_1 =$	0,633	
Site Class =	D	
Occupancy Category =	I or II	(Table 1-1)
R =	6,5	(Table 12.2-1)
$h_n =$	14,3	ft, height above base (§12.8.2.1)
Lateral System =	All other structural systems	(Table 12.8-2)



Importance Factor = 1 (Table 11.5-1)

$F_a = 1,200$ (Table 11.4-1) ASCE 7-16

$F_v = 1,700$ (Table 11.4-2) ASCE 7-16

$S_{MS} = 2,070$ $F_a S_5$, (11.4-1)

$S_{M1} = 1,076$ $F_v S_1$, (11.4-2)

$S_{DS} = 1,380$ $2/3 S_{MS}$, (11.4-3)

$S_{D1} = 0,717$ $2/3 S_{M1}$, (11.4-4)

$T_0 = 0,104$ $0.2 S_{D1} / S_{DS}$

$T_5 = 0,520$ S_{D1} / S_{DS}

$T_L = 8$ (Table 22-16)

Seismic Design Category = D (Table 11.6-1)

$T_a = 0,147$ $C_t h_n^x$, (12.8-7)

Increase For Eq.12.8-3 and 12.8-4 1,00 $T < 1.5T_s$, No Increase For Site Class D per 11.8.2 Exception 2

$C_s = 0,212$ $S_{DS} / (R/I)$, (12.8-2)

$C_{smax} = 0,750$ $S_{D1} / [T(R/I)]$ for $T < T_L$, (12.8-3)

$C_{smax} = 40,82$ $S_{D1} T_L / [T^2(R/I)]$ for $T > T_L$, (12.8-4)

$C_{smin} = 0,01$ (12.8-5)

$C_{smin} = 0,05$ $0.5 S_1 / (R/I)$ for $S_1 \geq 0.6g$, (12.8-6)

$V = 0,212$ $C_s W$, (12.8-1)

$\rho = 1,3$ redundancy factor per §12.3.4.2

$\rho V = 0,276$ W



883 E Columbia Ave, Pomona, CA 91767, USA

Seismic Mass

Page: _____

Date: _____

By: NS

Roof	8,0	psf
Area	1290,0	sq. ft.
Seismic Mass	10320,0	lbs

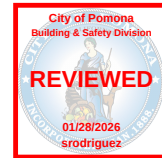
Ceiling	7,0	psf
Area	1169,0	sq. ft.
Seismic Mass	8183,0	lbs

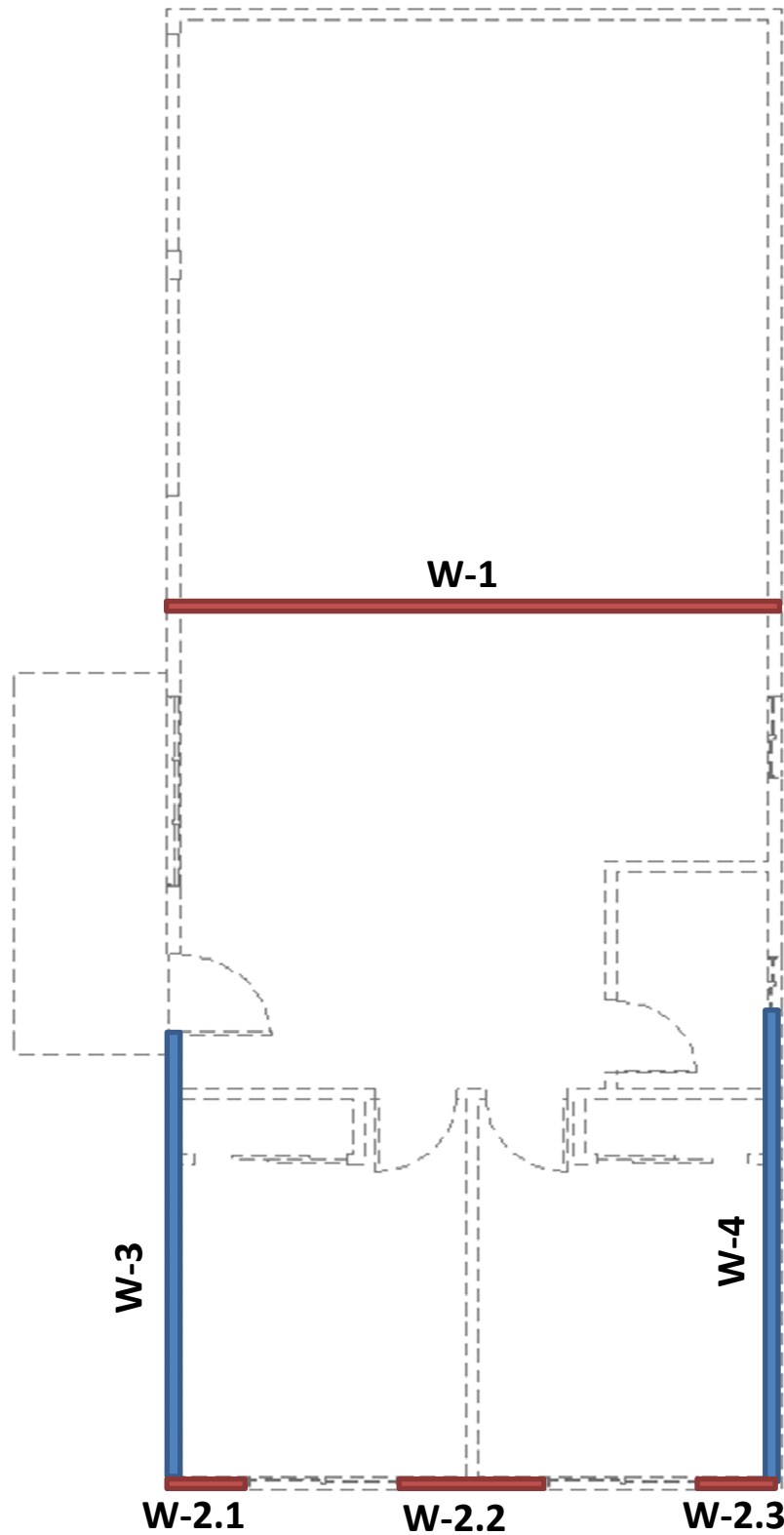
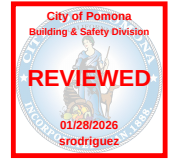
Exterior Walls	17,0	psf
Length	74,9	ft
Height/2	4,0	ft
Seismic Mass	5093,2	lbs

Interior	7,0	psf
Length	83,8	ft
Height/2	4,0	ft
Seismic Mass	2347,0	lbs

Total Mass	25943,2	lbs
-------------------	----------------	------------

Shear (0.276 W)	7160,3	lbs	or	5,6	psf
------------------------	---------------	------------	----	-----	-----





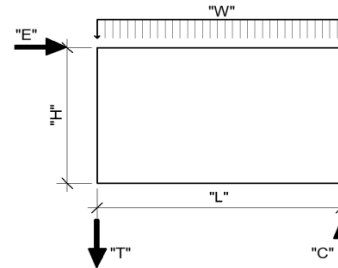
Roof Shear (psf) = 5,6

 $S_{DS} = 1,38$

Equations

 $E = \text{Trib. Area} \cdot \text{Base Shear (psf)}$
 $V_{ASD} = 0.7 \cdot E / L$
 $w = \text{wall self weight+roof/ceiling}$
 $OTM = E \cdot H \quad RM = w \cdot L^2 / 2$
 $T/C = [0.7 \cdot OTM - (0.6 - 0.14 \cdot S_{DS}) RM] / [L - 0.5 \text{ft}]$

Force Diagram



Shear Wall Summary

	Trib (ft ²)	E (lbs)	H (ft)	L (ft)	V_{ASD} (plf)	w (plf)	OTM (lb-ft)	RM (lb-ft)	T/C (lbs)	Tag	HDU Tag
W-1	439	2458	8	20,25	85	71	19667	14557	397	Δ1	HDU2
W-2.1*	439	644	8	2,75	156	151	5151	571	1499	Δ1	HDU2
W-2.2	439	1171	8	5	164	151	9365	1888	1286	Δ1	HDU2
W-2.3*	439	644	8	2,75	138	151	5151	571	1499	Δ1	HDU2
W-3	550	3080	8	16,6	130	258	24640	35498	174	Δ1	HDU2
W-4	550	3080	8	17,6	123	258	24640	39903	59	Δ1	HDU2

NOTE:

Demands for the shear walls marked with * were increased (devided) by the factor of 1.25-0.125h/b
[NDS 4.3.4.2]: Following factors were applied: W-2.1;W-2.3 = 0.89.

Holddown Values

	Tag	ASD (lbs)	75%
A	HDU2	3075	2306
B	HDU4	4565	3424
C	HDU5	5645	4234
D	HDU8	7870	5903

Shear Wall Values

ID	ASD (plf)
Δ1	310
Δ2	510

Dead Load

	Load psf		Span ft.		
Roof	8	x	10,8	=	87 plf
Ceiling	7	x	9,75	=	68 plf
Wall	17	x	8	=	136 plf
Total:					291 plf

Live Load

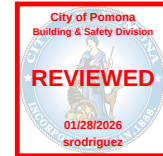
	Load psf		Span ft.		
Roof	20	x	10,8	=	216,6 plf
Ceiling	10	x	9,75	=	97,5 plf
Total:					314 plf

Footings depth: 24 in

Footings weight: 24 in / 12 in/ft · 150 pcf = 300 psf

 $q_s = 1500$ psf (per CBC)

 $q_e = 1500$ - $q_s = 1200$ psf

Required width: $(DL + LL) / q_e = 6,0499$ min, in


Use 12"x24" deep footing W/(4)#4 Top and Bottom



883 E Columbia Ave, Pomona, CA 91767, USA

Post Foundation Design

Page: _____

Date: _____

By: NS

Dead Load

Total: 530 lbs

Footing depth: 24 in

Footing weight: 24 in / 12 in/ft · 150 pcf =

$q_s = 1500$ psf (per CBC)

$q_e = 1500$ - $q_s = 1200$ psf

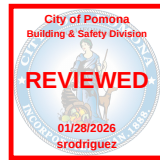
Required area: $(DL + LL) / q_e = 1,26667$ min, sf.

Required width: 13,5056 min, in.

Live Load

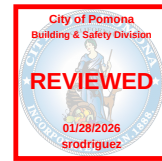
Total: 990 lbs

300 psf



Use 24"x24"x24" deep footing w/ (5) #4 top and Bottom Each way

Project Title:
Engineer:
Project ID:
Project Descr:



Wood Beam

Project File: 883 E Columbia Ave, Pomona, CA.ec6

LIC# : KW-06015220, Build:20.25.05.28

SAA Structural Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: CB-1

CODE REFERENCES

Calculations per NDS 2018, IBC 2021

Load Combination Set : ASCE 7-22 / IBC 2024

Material Properties

Analysis Method : Allowable Stress Design

Load Combination : ASCE 7-22 / IBC 2024

Wood Species : Douglas Fir-Larch

Wood Grade : No.1

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

Fb + 1,000.0 psi

Fb - 1,000.0 psi

Fc - Prll 1,500.0 psi

Fc - Perp 625.0 psi

Fv 180.0 psi

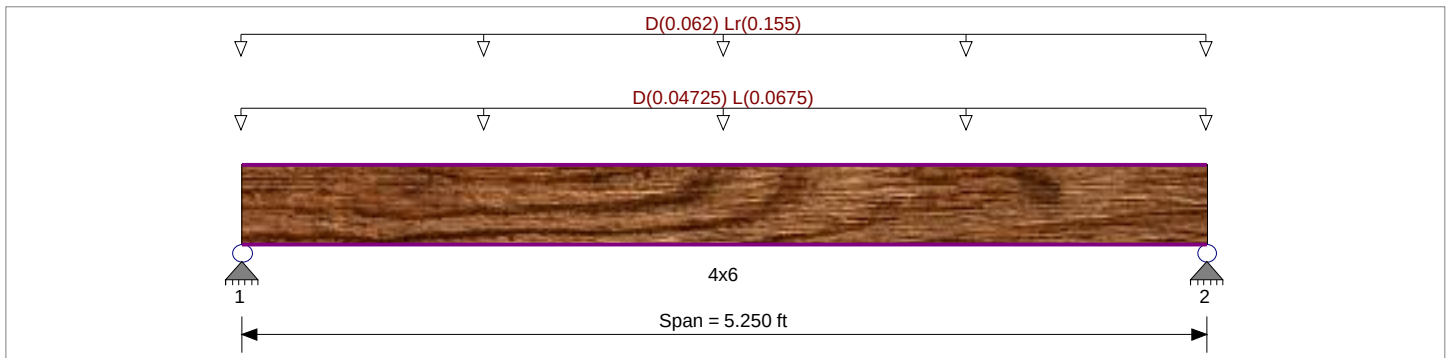
Ft 675.0 psi

E : Modulus of Elasticity

Ebend- xx 1,700.0 ksi

Eminbend - xx 620.0 ksi

Density 31.210pcf



Applied Loads

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

Beam self weight calculated and added to loading

Uniform Load : D = 0.0070, L = 0.010 ksf, Tributary Width = 6.750 ft, (Ceiling)

Uniform Load : D = 0.0080, Lr = 0.020 ksf, Tributary Width = 7.750 ft, (Roof)

DESIGN SUMMARY

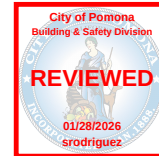
Design OK

Maximum Bending Stress Ratio	=	0.404	1	Maximum Shear Stress Ratio	=	0.212	1
Section used for this span		4x6		Section used for this span		4x6	
fb: Actual	=	656.73psi		fv: Actual	=	47.71 psi	
F'b	=	1,625.00psi		F'v	=	225.00 psi	
Load Combination		+D+0.750Lr+0.750L		Load Combination		+D+0.750Lr+0.750L	
Location of maximum on span	=	2.625ft		Location of maximum on span	=	0.000 ft	
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
Maximum Deflection							
Max Downward Transient Deflection	0.032 in	Ratio =	1950 >=360	Span: 1 : Lr Only			
Max Upward Transient Deflection	0 in	Ratio =	0 <360	n/a			
Max Downward Total Deflection	0.058 in	Ratio =	1078 >=180	Span: 1 : +D+0.750Lr+0.750L			
Max Upward Total Deflection	0 in	Ratio =	0 <180	n/a			

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CLx	C _F	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 5.250 ft	1	0.227	0.119	0.90	1.00	1.00	1.00	1.300	1.00	1.00	1.00	0.39	265.7	1,170.0	0.25	19.3	162.0
+D+L					1.00	1.00	1.00	1.300	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 5.250 ft	1	0.326	0.171	1.00	1.00	1.00	1.00	1.300	1.00	1.00	1.00	0.62	423.9	1,300.0	0.40	30.8	180.0
+D+Lr					1.00	1.00	1.00	1.300	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 5.250 ft	1	0.387	0.203	1.25	1.00	1.00	1.00	1.300	1.00	1.00	1.00	0.92	628.9	1,625.0	0.59	45.7	225.0
+D+0.750Lr+0.750L					1.00	1.00	1.00	1.300	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 5.250 ft	1	0.404	0.212	1.25	1.00	1.00	1.00	1.300	1.00	1.00	1.00	0.97	656.7	1,625.0	0.61	47.7	225.0

Project Title:
 Engineer:
 Project ID:
 Project Descr:



Wood Beam

Project File: 883 E Columbia Ave, Pomona, CA.ec6

LIC# : KW-06015220, Build:20.25.05.28

SAA Structural Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: CB-1

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values		
			M	V	CD	CM	C _t	CLx	C _F	C _{fu}	C _i	C _r	M	fb	F ^b	V	fv	F ^v
+D+0.750L						1.00	1.00	1.00	1.300	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 5.250 ft	1		0.257	0.135	1.15	1.00	1.00	1.00	1.300	1.00	1.00	1.00	0.57	384.4	1,495.0	0.36	27.9	207.0
+0.60D						1.00	1.00	1.00	1.300	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 5.250 ft	1		0.077	0.040	1.60	1.00	1.00	1.00	1.300	1.00	1.00	1.00	0.23	159.4	2,080.0	0.15	11.6	288.0

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	+D+0.750Lr+0.750L	0.0584	2.644		0.0000	0.000

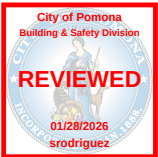
Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	0.736	0.736
Max Upward from Load Combinations	0.736	0.736
Max Upward from Load Cases	0.407	0.407
D Only	0.298	0.298
+D+L	0.475	0.475
+D+Lr	0.705	0.705
+D+0.750Lr+0.750L	0.736	0.736
+D+0.750L	0.431	0.431
+0.60D	0.179	0.179
Lr Only	0.407	0.407
L Only	0.177	0.177

Project Title:
Engineer:
Project ID:
Project Descr:



Wood Beam

Project File: 8918 Parrot Ave.ec6

LIC#: KW-06015220, Build:20.25.05.28

SAA Structural Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: CJ-1

CODE REFERENCES

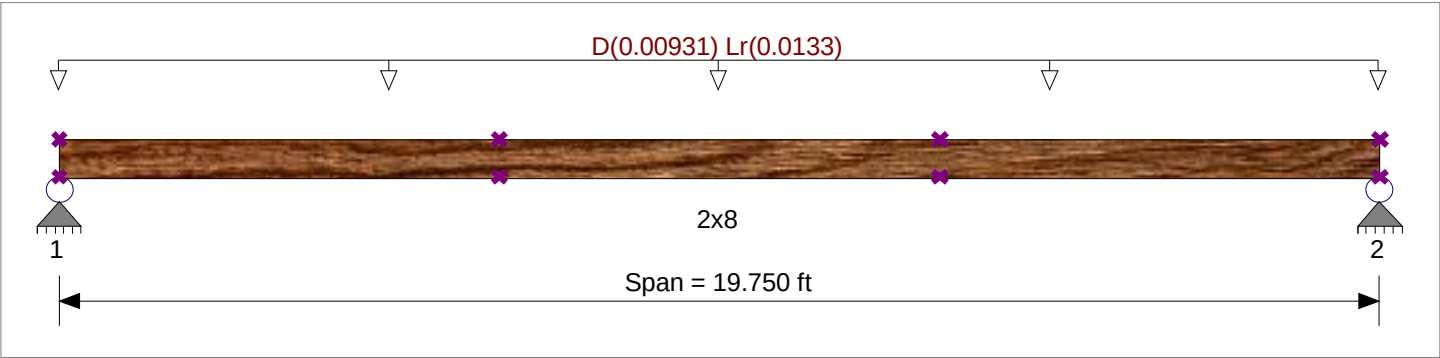
Calculations per NDS 2018, IBC 2021
Load Combination Set : ASCE 7-22 / IBC 2024

Material Properties

Analysis Method : Allowable Stress Design	Fb + 1,000.0 psi	E : Modulus of Elasticity
Load Combination : ASCE 7-22 / IBC 2024	Fb - 1,000.0 psi	Ebend- xx 1,700.0ksi
	Fc - Prll 1,500.0 psi	Eminbend - xx 620.0ksi
Wood Species : Douglas Fir-Larch	Fc - Perp 625.0 psi	
Wood Grade : No.1	Fv 180.0 psi	
	Ft 675.0 psi	Density 31.210pcf
Beam Bracing : Beam bracing is defined Beam-by-Beam		Repetitive Member Stress Increase

Unbraced Lengths

Span # 1, Braced @ 1/3 Points



Applied Loads

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

Beam self weight NOT internally calculated and added
Uniform Load : D = 0.0070, Lr = 0.010 ksf, Tributary Width = 1.330 ft, (Ceiling)

DESIGN SUMMARY

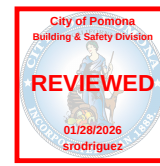
Design OK

Maximum Bending Stress Ratio	=	0.762	1	Maximum Shear Stress Ratio	=	0.129	1
Section used for this span		2x8		Section used for this span		2x8	
fb: Actual	=	1,006.72psi		fv: Actual	=	29.00 psi	
F'b	=	1,321.98psi		F'v	=	225.00 psi	
Load Combination				Load Combination			
			+D+Lr				+D+Lr
Location of maximum on span	=	9.875ft		Location of maximum on span	=	19.173 ft	
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
Maximum Deflection							
Max Downward Transient Deflection	0.566 in	Ratio =	419 >=360	Span: 1 : Lr Only			
Max Upward Transient Deflection	0 in	Ratio =	0 <360	n/a			
Max Downward Total Deflection	0.961 in	Ratio =	246 >=180	Span: 1 : +D+Lr			
Max Upward Total Deflection	0 in	Ratio =	0 <180	n/a			

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CLx	C _F	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
D Only																	
Length = 6.559 ft	1	0.334	0.074	0.90	1.00	1.00	0.89	1.200	1.00	1.00	1.15	0.40	367.8	1,102.6	0.09	11.9	162.0
Length = 6.559 ft	1	0.376	0.026	0.90	1.00	1.00	0.89	1.200	1.00	1.00	1.15	0.45	414.5	1,102.6	0.03	4.3	162.0
Length = 6.631 ft	1	0.336	0.074	0.90	1.00	1.00	0.89	1.200	1.00	1.00	1.15	0.40	369.8	1,099.7	0.09	11.9	162.0
+D+Lr																	
Length = 6.559 ft	1	0.676	0.129	1.25	1.00	1.00	0.77	1.200	1.00	1.00	1.15	0.98	893.2	1,322.0	0.21	29.0	225.0
Length = 6.559 ft	1	0.762	0.046	1.25	1.00	1.00	0.77	1.200	1.00	1.00	1.15	1.10	1,006.7	1,322.0	0.07	10.3	225.0

Project Title:
 Engineer:
 Project ID:
 Project Descr:



Wood Beam

Project File: 8918 Parrot Ave.ec6

LIC# : KW-06015220, Build:20.25.05.28

SAA Structural Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: CJ-1

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values		
			M	V	CD	CM	C _t	CLx	C _F	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
Length = 6.631 ft		1	0.683	0.129	1.25	1.00	1.00	0.76	1.200	1.00	1.00	1.15	0.98	898.1	1,314.2	0.21	29.0	225.0
+D+0.750Lr						1.00	1.00	0.76	1.200	1.00	1.00	1.15			0.0	0.00	0.0	0.0
Length = 6.559 ft		1	0.576	0.110	1.25	1.00	1.00	0.77	1.200	1.00	1.00	1.15	0.83	761.9	1,322.0	0.18	24.7	225.0
Length = 6.559 ft		1	0.650	0.039	1.25	1.00	1.00	0.77	1.200	1.00	1.00	1.15	0.94	858.7	1,322.0	0.06	8.8	225.0
Length = 6.631 ft		1	0.583	0.110	1.25	1.00	1.00	0.76	1.200	1.00	1.00	1.15	0.84	766.0	1,314.2	0.18	24.7	225.0
+0.60D						1.00	1.00	0.76	1.200	1.00	1.00	1.15			0.0	0.00	0.0	0.0
Length = 6.559 ft		1	0.156	0.025	1.60	1.00	1.00	0.64	1.200	1.00	1.00	1.15	0.24	220.7	1,413.2	0.05	7.2	288.0
Length = 6.559 ft		1	0.176	0.009	1.60	1.00	1.00	0.64	1.200	1.00	1.00	1.15	0.27	248.7	1,413.2	0.02	2.6	288.0
Length = 6.631 ft		1	0.158	0.025	1.60	1.00	1.00	0.64	1.200	1.00	1.00	1.15	0.24	221.9	1,402.4	0.05	7.2	288.0

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	+D+Lr	0.9614	9.947		0.0000	0.000

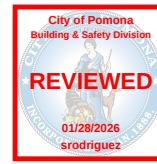
Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	0.223	0.223
Max Upward from Load Combinations	0.223	0.223
Max Upward from Load Cases	0.131	0.131
D Only	0.092	0.092
+D+Lr	0.223	0.223
+D+0.750Lr	0.190	0.190
+0.60D	0.055	0.055
Lr Only	0.131	0.131

Project Title:
Engineer:
Project ID:
Project Descr:



Wood Beam

Project File: 8918 Parrot Ave.ec6

LIC# : KW-06015220, Build:20.25.05.28

SAA Structural Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: RR-1

CODE REFERENCES

Calculations per NDS 2018, IBC 2021

Load Combination Set : ASCE 7-22 / IBC 2024

Material Properties

Analysis Method : Allowable Stress Design

Load Combination : ASCE 7-22 / IBC 2024

Wood Species : Douglas Fir-Larch

Wood Grade : No.1

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

Fb + 1000 psi

Fb - 1000 psi

Fc - Prll 1500 psi

Fc - Perp 625 psi

Fv 180 psi

Ft 675 psi

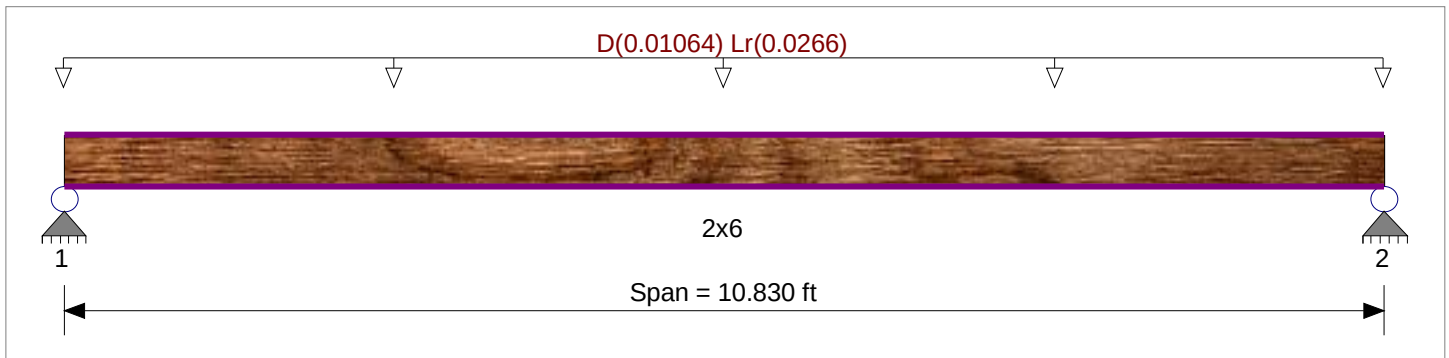
E : Modulus of Elasticity

Ebend- xx 1700ksi

Eminbend - xx 620ksi

Density 31.21pcf

Repetitive Member Stress Increase



Applied Loads

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

Beam self weight NOT internally calculated and added

Uniform Load : D = 0.0080, Lr = 0.020 ksf, Tributary Width = 1.330 ft, (Roof)

DESIGN SUMMARY

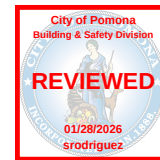
Design OK

Maximum Bending Stress Ratio	=	0.464 1	Maximum Shear Stress Ratio	=	0.150 : 1
Section used for this span		2x6	Section used for this span		2x6
fb: Actual	=	866.35psi	fv: Actual	=	33.72 psi
F'b	=	1,868.75psi	F'v	=	225.00 psi
Load Combination			Load Combination		
Location of maximum on span	=	5.415ft	Location of maximum on span	=	10.395 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection	0.234 in	Ratio = 554 >=360	Span: 1 : Lr Only		
Max Upward Transient Deflection	0 in	Ratio = 0 <360	n/a		
Max Downward Total Deflection	0.328 in	Ratio = 396 >=180	Span: 1 : +D+Lr		
Max Upward Total Deflection	0 in	Ratio = 0 <180	n/a		

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CLx	C _F	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 10.830 ft	1	0.184	0.059	0.90	1.00	1.00	1.00	1.300	1.00	1.00	1.15	0.16	247.5	1,345.5	0.05	9.6	162.0
+D+Lr					1.00	1.00	1.00	1.300	1.00	1.00	1.15			0.0	0.00	0.0	0.0
Length = 10.830 ft	1	0.464	0.150	1.25	1.00	1.00	1.00	1.300	1.00	1.00	1.15	0.55	866.3	1,868.8	0.19	33.7	225.0
+D+0.750Lr					1.00	1.00	1.00	1.300	1.00	1.00	1.15			0.0	0.00	0.0	0.0
Length = 10.830 ft	1	0.381	0.123	1.25	1.00	1.00	1.00	1.300	1.00	1.00	1.15	0.45	711.6	1,868.8	0.15	27.7	225.0
+0.60D					1.00	1.00	1.00	1.300	1.00	1.00	1.15			0.0	0.00	0.0	0.0
Length = 10.830 ft	1	0.062	0.020	1.60	1.00	1.00	1.00	1.300	1.00	1.00	1.15	0.09	148.5	2,392.0	0.03	5.8	288.0

Project Title:
 Engineer:
 Project ID:
 Project Descr:



Wood Beam

Project File: 8918 Parrot Ave.ec6

LIC# : KW-06015220, Build:20.25.05.28

SAA Structural Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: RR-1

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	+D+Lr	0.3279	5.455		0.0000	0.000

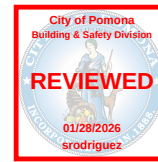
Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	0.202	0.202
Max Upward from Load Combinations	0.202	0.202
Max Upward from Load Cases	0.144	0.144
D Only	0.058	0.058
+D+Lr	0.202	0.202
+D+0.750Lr	0.166	0.166
+0.60D	0.035	0.035
Lr Only	0.144	0.144

Project Title:
Engineer:
Project ID:
Project Descr:



Wood Beam

Project File: 8918 Parrot Ave.ec6

LIC# : KW-06015220, Build:20.25.05.28

SAA Structural Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: HDR-1

CODE REFERENCES

Calculations per NDS 2018, IBC 2021

Load Combination Set : ASCE 7-22 / IBC 2024

Material Properties

Analysis Method : Allowable Stress Design

Load Combination : ASCE 7-22 / IBC 2024

Wood Species : Douglas Fir-Larch

Wood Grade : No.1

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

Fb + 1000 psi

Fb - 1000 psi

Fc - Prll 1500 psi

Fc - Perp 625 psi

Fv 180 psi

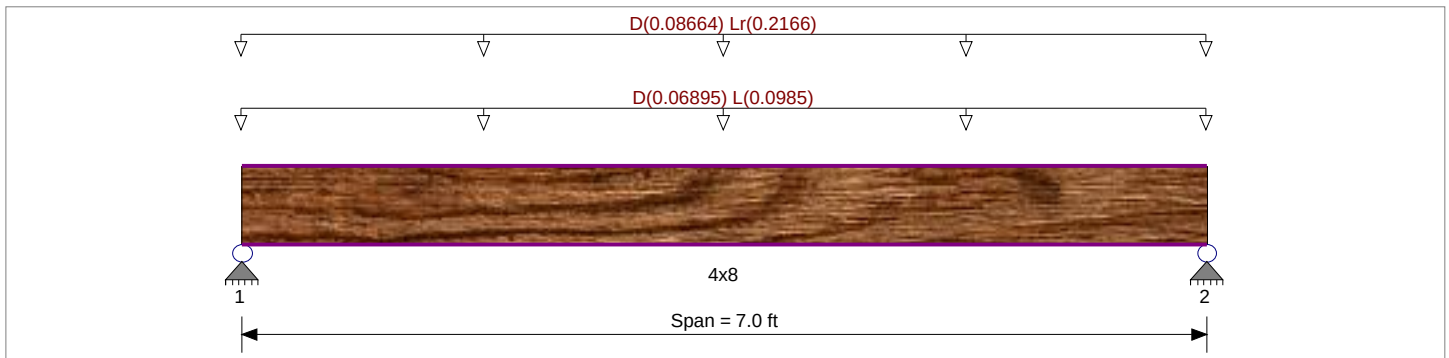
Ft 675 psi

E : Modulus of Elasticity

Ebend- xx 1700ksi

Eminbend - xx 620ksi

Density 31.21pcf



Applied Loads

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

Beam self weight NOT internally calculated and added

Uniform Load : D = 0.0070, L = 0.010 ksf, Tributary Width = 9.850 ft, (CEILING)

Uniform Load : D = 0.0080, Lr = 0.020 ksf, Tributary Width = 10.830 ft, (ROOF)

DESIGN SUMMARY

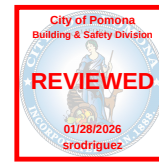
Design OK

Maximum Bending Stress Ratio	=	0.578 1	Maximum Shear Stress Ratio	=	0.300 : 1
Section used for this span		4x8	Section used for this span		4x8
fb: Actual	=	939.48psi	fv: Actual	=	67.47 psi
F'b	=	1,625.00psi	F'v	=	225.00 psi
Load Combination		+D+0.750Lr+0.750L	Load Combination		+D+0.750Lr+0.750L
Location of maximum on span	=	3.500ft	Location of maximum on span	=	6.412 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection	0.062 in	Ratio = 1348 >=360	Span: 1 : Lr Only		n/a
Max Upward Transient Deflection	0 in	Ratio = 0 <360			n/a
Max Downward Total Deflection	0.113 in	Ratio = 745 >=180	Span: 1 : +D+0.750Lr+0.750L		n/a
Max Upward Total Deflection	0 in	Ratio = 0 <180			n/a

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CLx	C _F	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
D Only														0.0			
Length = 7.0 ft	1	0.319	0.165	0.90	1.00	1.00	1.00	1.300	1.00	1.00	1.00	0.95	373.0	1,170.0	0.45	26.8	162.0
+D+L														0.0			
Length = 7.0 ft	1	0.469	0.243	1.00	1.00	1.00	1.00	1.300	1.00	1.00	1.00	1.56	609.1	1,300.0	0.74	43.7	180.0
+D+Lr														0.0			
Length = 7.0 ft	1	0.549	0.285	1.25	1.00	1.00	1.00	1.300	1.00	1.00	1.00	2.28	892.2	1,625.0	1.08	64.1	225.0
+D+0.750Lr+0.750L														0.0			
Length = 7.0 ft	1	0.578	0.300	1.25	1.00	1.00	1.00	1.300	1.00	1.00	1.00	2.40	939.5	1,625.0	1.14	67.5	225.0

Project Title:
 Engineer:
 Project ID:
 Project Descr:



Wood Beam

Project File: 8918 Parrot Ave.ec6

LIC# : KW-06015220, Build:20.25.05.28

SAA Structural Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: HDR-1

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values		
			M	V	CD	CM	C _t	CLx	C _F	C _{fu}	C _i	C _r	M	fb	F ^b	V	f _v	F ^v
+D+0.750L						1.00	1.00	1.00	1.300	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 7.0 ft		1	0.368	0.191	1.15	1.00	1.00	1.00	1.300	1.00	1.00	1.00	1.41	550.1	1,495.0	0.67	39.5	207.0
+0.60D						1.00	1.00	1.00	1.300	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 7.0 ft		1	0.108	0.056	1.60	1.00	1.00	1.00	1.300	1.00	1.00	1.00	0.57	223.8	2,080.0	0.27	16.1	288.0

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	+D+0.750Lr+0.750L	0.1127	3.526		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	1.372	1.372
Max Upward from Load Combinations	1.372	1.372
Max Upward from Load Cases	0.758	0.758
D Only	0.545	0.545
+D+L	0.889	0.889
+D+Lr	1.303	1.303
+D+0.750Lr+0.750L	1.372	1.372
+D+0.750L	0.803	0.803
+0.60D	0.327	0.327
Lr Only	0.758	0.758
L Only	0.345	0.345