

CIVIL ENGINEERING
Consulting Services

Structural Calculations Addendum

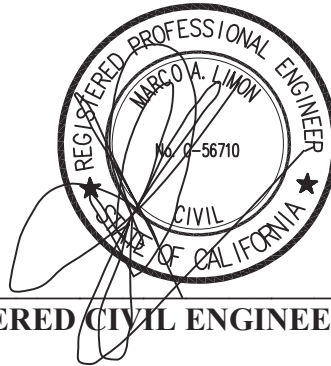
DAMM ADUs

5586 Hamill Ave.
San Diego, Ca

Prepared by:

Marco A. Limon, P.E.

July 17, 2025



REGISTERED CIVIL ENGINEER

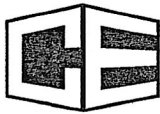
This Project has been prepared under the direction of the aforementioned Registered Civil Engineer. The engineer attests to the technical information contained herein and the engineering data and calculations upon which recommendations, conclusions and decisions are based. The engineer is not responsible for any deviations made in the field from these calculations and or the corresponding project plans.

1.0 General Notes

- 1.1 Governing Code: 2022 California Building Code
- 1.2 All work shall comply with the aforementioned building code and shall be performed in accordance with all applicable Federal, State, and Local safety codes, and ordinances.
- 1.3 The prime contractors and all subcontractors shall verify all dimensions, elevations, and site conditions before starting work and the engineer or architect shall be notified in writing immediately of any discrepancies.
- 1.4 Any conflicts and omissions between this report, specifications and/or working drawings shall be communicated to the engineer before proceeding with the work involved.
- 1.5 Working dimensions shall not be scaled from any of the plan sections, details, or sketches in this report.
- 1.6 The prime contractor and all subcontractors shall verify all headers, beams, rafters, supports and all site conditions prior to beginning work.
- 1.7 The structural calculations in this report are for the analysis and design of primary structural systems. All and any other attachments of non-structural members or elements are the responsibility of the prime contractor or its subcontractors unless noted otherwise.
- 1.8 The contract to perform structural calculations does not include any observations and or inspection. The engineer does not assume any responsibility for quality control or inspection performed by others.
- 1.9 The use of any drawings, calculations, and specifications in this report outside of this contract is strictly prohibited.

2.0 Limitations

- 2.1 The opinions and recommendations presented in this report are based upon available data provided by the client, superficial observations, and in accordance with the constructions plans prepared by others.
- 2.2 Should the owner, prime contractor, or any of its subcontractors encounter conditions different from those presented in this report or during construction, the engineer shall be notified immediately so that the engineer is able to analyze the situation.
- 2.3 The structural calculations in this report were performed in accordance with the industry standard. The engineer does not assume any responsibility for work or design done by others.



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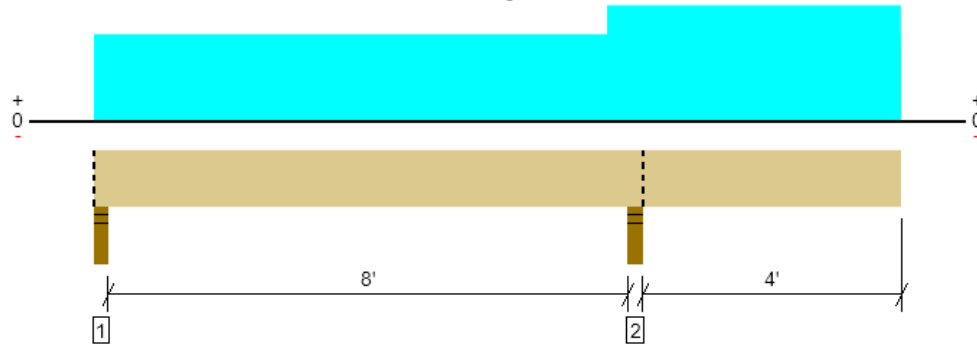
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RAFTERS

Level, Copy of Floor: Floor Joist

1 piece(s) 1 3/4" x 7 1/4" 2.0E Microllam® LVL @ 16" OC

Overall Length: 12' 7"



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	894 @ 8' 5 1/4"	3828 (3.50")	Passed (23%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	380 @ 7' 8 1/4"	2411	Passed (16%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-917 @ 8' 5 1/4"	3700	Passed (25%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.149 @ 12' 7"	0.276	Passed (2L/668)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.165 @ 12' 7"	0.415	Passed (2L/604)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	61	40	Passed	--	--

Member Length : 12' 7"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 4% increase in the moment capacity has been added to account for repetitive member usage.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.50"	87	231/-84	318	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	248	646	894	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 7" o/c	
Bottom Edge (Lu)	12' 7" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 12' 7"	16"	20.0	40.0	Default Load
2 - Uniform (PSF)	8' to 12' 6 15/16"	16"	--	20.0	

Member Notes

Floor Joists (FJ-1)

Weyerhaeuser Notes

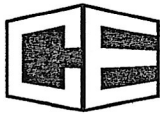
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

The product application, input design loads, dimensions and support information have been provided by Marco A. Limon

ForteWEB Software Operator	Job Notes
Marco A. Limon Civil Engineering Consulting Services (760) 235-1176 marco@engineeringconsulting.us	



7/17/2025 2:55:35 PM UTC
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LATERAL

Seismic Analysis:

DAMM ADU's

INPUT DATA

Risk Category =	II
Height h =	22 ft
Weight W =	109.87 Kips
Imp. Factor I _e =	1 (ASCE 11.5.1)
S _{DS} =	0.696 g
S ₁ =	0.312 g
S _{D1} =	0.414 g
C _t =	0.02 (ASCE 12.8-2)
R =	6.5 (ASCE 12.2.1)

Information on response spectra obtained from the USGS site:

<https://seismicmaps.org/>

Seis. Des. Cat. =	D
X =	0.75
T _a = C _t (h _n) ^x =	0.203 Sec, (ASCE 12.8.2.1)
k =	1.00 (ASCE 12.8.3)
T _L =	8.00 Sec, (ASCE Fig 22-14)
C _s = S _{DS} /(R/I _e) =	0.11 (ASCE 12.8-2)
C _s = S _{D1} /T(R/I _e) =	0.31 (ASCE 12.8-3) Max. C _s for T ≤ T _L
C _s = S _{D1} T _L /T ² (R/I _e) =	12.33 (ASCE 12.8-4) Max. C _s for T > T _L
C _s = 0.044S _{DS} I _e =	0.03 (ASCE 12.8-5) C _s Min
C _s = 0.5S ₁ /(R/I _e) =	0.02 (ASCE 12.8-6) C _s Min when S ₁ > 0.6g

$$C_s = 0.11$$

$$T. \text{ Base Shear} = 11.8 \text{ Kips (SD)}$$

$$F_{pmax} = 0.4S_{DS}IW_{PX}$$

$$F_{pmin} = 0.2S_{DS}IW_{PX}$$

Level	Level		Floor	Height	Weight	$W_x h_x^k$	C_{VX}	Lateral Force @ Each Level			Diaphragm Force			Floor	Story
No.	Name		Height	h_x	W_x			F_x	V_x	O.M.	ΣF_i	ΣW_i	F_{PX}	Area	Shear
			ft	ft	k			k	k	k-ft	k	k	k	sqft	#/sqft
2	Roof			19	60.72	1153.7	0.723	8.50			8.50	60.722	8.50	630	13.50
			10						8.50						
1	2nd			9	49.15	442.3	0.277	3.26		85.04	11.76	109.87	6.84	1286	9.15
			9						11.76						
	Ground				109.87	1596.1		11.76		123.40					

No. 2	Name Roof	Grid Line	Trib Area sqft	Wall V lbs	VW Length ft	V Req lbs/ft	OM ft-lbs	Uplift lbs	V Wall Syst.	Strap Type	Type lbs/ft	VW Req ft
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to	1	764	7366.4	20.5	359.3	73663.7	3593.4	3	MSTI48	510	14.4
2nd Floor	2	764	7366.4	19.7	373.9	73663.7	3739.3	3	MSTI48	510	14.4

Grid Line	Trib Area sqft	Wall V lbs	VW Length ft	lbs/ft	OM ft-lbs	Uplift lbs	V Wall Syst.	Strap Type	Type lbs/ft	VW Req ft
A	382	3683.2	19	193.9	36831.9	1938.5	1	MSTI48	260	14.2
B	382	3683.2	14	263.1	36831.9	2630.8	1	MSTI48	260	14.2
SW Length Req'd=				13.2 ft	Type 1 SW=	280.0 plf				
C	382	3683.2	25	147.3	36831.9	1473.3	1	MSTA24	260	14.2
D	382	3683.2	19	193.9	36831.9	1938.5	1	MSTI48	260	14.2

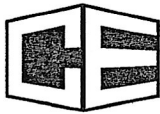
No. 2	Name 2nd Floor	Grid Line	Trib Area sqft	Wall V lbs	VW Length ft	lbs/ft	OM ft-lbs	Uplift lbs	V Wall Syst.	HD Type
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to	1	368	6087.9	20.5	297.0	54790.7	2672.7	2	HDU2 w 4x4 Post N 1/4x2.5 SDS SCREWS
Ground	1A	615	11385.0	19.8	575.0	102465.4	5175.0	4	HDU5 W 4x4 Post N 1/4x2.5 SDS SCREWS
	2	248	5303.7	19.7	269.2	47733.5	2423.0	1	HDU2 w 4x4 Post N 1/4x2.5 SDS SCREWS

Grid Line	Trib Area sqft	Wall V lbs	VW Length ft	lbs/ft	OM ft-lbs	Uplift lbs	V Wall Syst.	HD Type
A	382	6179.3	19	325.2	55614.1	2927.1	2	HDU2 w 4x4 Post N 1/4x2.5 SDS SCREWS
B	382	6179.3	25	247.2	55614.1	2224.6	1	HDU2 w 4x4 Post N 1/4x2.5 SDS SCREWS
C	382	6179.3	25	247.2	55614.1	2224.6	1	HDU2 w 4x4 Post N 1/4x2.5 SDS SCREWS
D	382	6179.3	19	325.2	55614.1	2927.1	2	HDU2 w 4x4 Post N 1/4x2.5 SDS SCREWS

Shear Wall Aspect Ratio Factor

2nd Floor		SW		Shear Wall			
Floor Ht.	Grid	Length	ASF	Capacity	Red. Cap.	Capacity Req'd	SW Adequate
10 ft	1	3.83	0.92	510.00	359.34	178.05	GOOD
				Type 3			
1st Floor							
Floor Ht.	1A	2.92	0.86	1100.00	951.20	575.00	GOOD
9 ft							
				Type 4			



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DRIFT ANALYSIS

