STRUCTURAL CALCULATIONS

Project:
Pagnani Building Addition
2321 N 400 E
Tooele, UT 84074

Project Number: T1869G

Prepared For:
Robert Pagnani
7497 Belmont Court
Stansbury Park, UT 84074

Date:
July 2026

Prepared By:
Finau Kolomalu, EIT

Reviewed By:
Jacob M. Clegg, PE



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THE STANDARD IN ENGINEERING

Project: Pagnani Building Addition
By: Finau Kolomalu, EIT
Date: July 2026

Project No.: T1869G
Checked By: JMC

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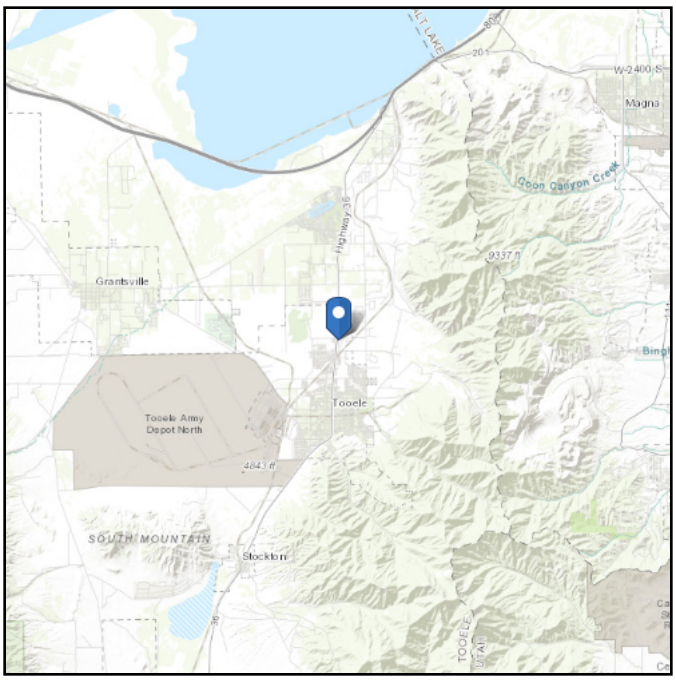
ASCE Hazards Report

Address:
2321 N 400 E
Tooele, Utah
84074

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

Latitude: 40.571521
Longitude: -112.29445
Elevation: 4691.404157362461 ft (NAVD 88)





Wind

Results:

Wind Speed	102 Vmph
10-year MRI	73 Vmph
25-year MRI	79 Vmph
50-year MRI	84 Vmph
100-year MRI	88 Vmph
300-year MRI	96 Vmph
700-year MRI	102 Vmph
1,700-year MRI	109 Vmph
3,000-year MRI	113 Vmph
10,000-year MRI	122 Vmph
100,000-year MRI	139 Vmph
1,000,000-year MRI	156 Vmph

Data Source: ASCE/SEI 7-22, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Mon Jul 06 2026

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-22 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years). Values for 10-year MRI, 25-year MRI, 50-year MRI and 100-year MRI are Service Level wind speeds, all other wind speeds are Ultimate wind speeds.

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

Seismic

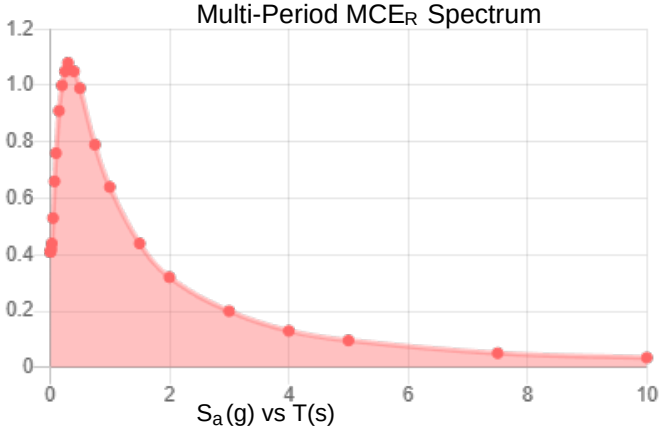
Site Soil Class: Default

Results:

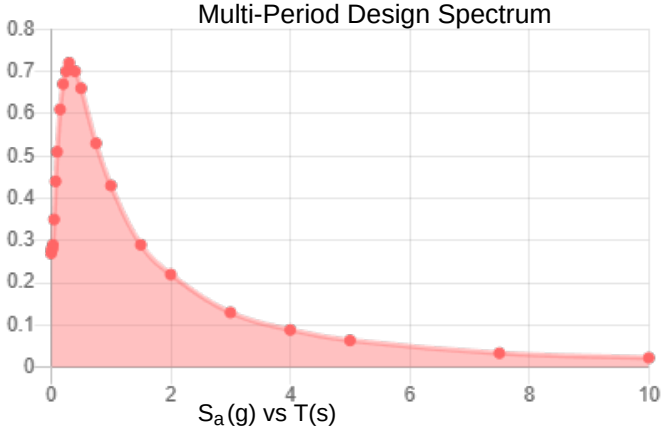
PGA_M :	0.38	T_L :	8
S_{MS} :	0.98	S_S :	0.78
S_{M1} :	0.64	S_1 :	0.25
S_{DS} :	0.65	V_{S30} :	260
S_{D1} :	0.43		

Seismic Design Category: D

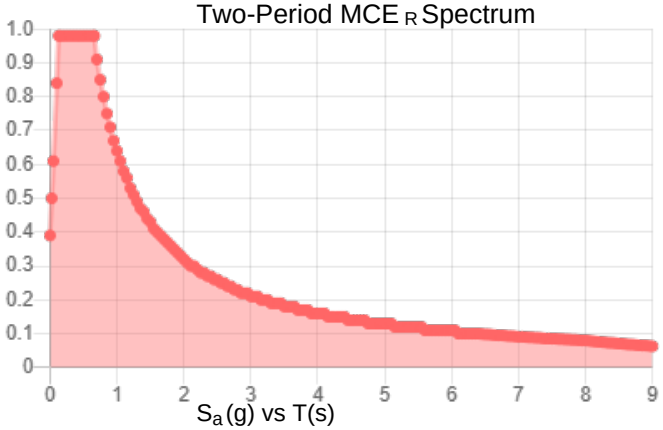
Multi-Period MCE_R Spectrum



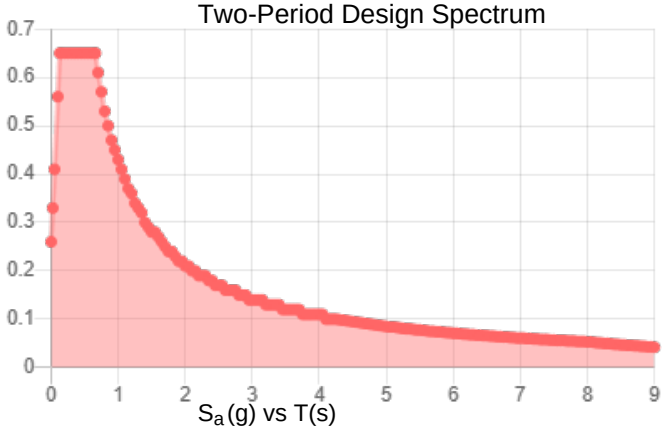
Multi-Period Design Spectrum



Two-Period MCE_R Spectrum



Two-Period Design Spectrum



MCE_R Vertical Response Spectrum

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

Design Vertical Response Spectrum

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

Data Accessed: **Mon Jul 06 2026**

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

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Snow

Results:

Ground Snow Load, p_g :	45 lb/ft^2
20-year MRI Value:	15.85 lb/ft^2
Winter Wind Parameter:	0.25
Mapped Elevation:	4688.2 ft
Data Source:	ASCE/SEI 7-22, Figures 7.6-1 and 7.6-2 A-D
Date Accessed:	Mon Jul 06 2026

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

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

Ground Snow Loads for IRC only, $p_{g(asd)}$: 31.5 lb/ft^2

Rain

Results:

15-minute Precipitation Intensity:	4.01 in./h
60-minute Precipitation Intensity:	1.67 in./h
Data Source:	NOAA National Weather Service, Precipitation Frequency Data Server, Atlas 14(https://www.nws.noaa.gov/oh/hdsc/)
Date Accessed:	Mon Jul 06 2026

The ASCE Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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Project:	Pagnani Building Addition	Project No.:	T1869G
By:	Finau Kolomalu, EIT	Checked By:	JMC
Date:	July 2026		

GENERAL PROJECT INFORMATION

Client: **Robert Pagnani**

Project: **Pagnani Building Addition**

Project Address: **2321 N 400 E**
Tooele, UT 84074

Latitude:	40.572	North (Approximate)
Longitude:	-112.294	West (Approximate)
Elevation above Sea Level:	4,691	ft

PROJECT DESCRIPTION

Provide structural calculations for an office addition.

GENERAL DESIGN CRITERIA

Structure Type:	Wood	Building Height, h_n (ft)	18
Design Code:	2024 IBC	Number of Stories	1
Risk Category:	II	Light-frame Construction?	Yes

DESIGN LOADS & SERVICEABILITY REQUIREMENTS

Dead Loads:

-Roof DL:

Total Roof DL: **20** **psf**

-Floor DL:

Total Floor DL: **12** **psf**

-Wall DL:

Exterior Walls:	24	psf
Interior Bearing Walls:	15	psf

Live Loads:

Roof Live:	20	psf

Rain Loads:

Rain Intensity, I (in/hr):	1.7	

Snow Loads:

Surface Roughness Category:	C	
Roof Exposure:	Partially Exposed	
Thermal Condition:	All other structures	
Roof Surface:	Non-Slippery (Rough)	
Obstructed?	No	
Roof Pitch:	0.5	/12
Roof Angle, θ:	2.4	
Ground Snow Load, p_g:	45	psf
Winter Wind Parameter, W_2:	0.25	
Exposure Factor, C_e:	1.00	
R_{roof}:	50	
Thermal Factor, C_t:	1.19	
Slope Factor, C_s:	1.00	
Minimum Roof Snow Load, p_m:	30	psf
Flat Roof Snow Load, p_f:	**37**	**psf (Balanced)**
Sloped Roof Snow Load, p_s:	**37**	**psf (Balanced)**
Seismic Snow Load, $p_{f,seismic}$:	**0**	**psf**

Wind Loads:

Basic Wind Speed, V:	102	mph (3-second gust)
ASD Wind Speed, V_{asd}:	80	mph (3-second gust)
Exposure:	C	

Seismic Loads:

S_S, S_{MS}:	0.78	0.98	g
S_1, S_{M1}:	0.25	0.64	g
Site Soil Class:	Default		
Sufficient Soil Properties Known?	Yes		
Importance Factor, I_E:	1.00		

Deflection Limits:

		Total Load	Live Load
Roof:	L /	240	360
Floor:	L /	360	480
Horizontal:	L /	--	240

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Project: Pagnani Building Addition | Project No.: T1869G
By: Finau Kolomalu, EIT | Checked By: JMC
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FOUNDATION CRITERIA & SPECIFICATIONS

Geotechnical Report:

Company:	GSH Geotechnical, Inc.
Date:	4/15/2015
Report / Project Number:	1263-003-15
Contact:	(801) 685-9190

Allowable Bearing Pressure:	4,000	psf	6000psf ok for 48" and wider
Allowable Bearing Increase for Wind & Seismic Loads:	1.33		

	Static Loading	Increase for Dynamic Loading	
Passive Pressure:	300		pcf
Active Pressure:	30		pcf
At Rest Pressure:	90		pcf

Coefficient of Friction, μ: 0.45

Foundation Type:

Footing Type:	Concrete Spread Footing
Min. Depth to Frost:	30 in

MATERIAL SPECIFICATIONS

CONCRETE & REINFORCING STEEL SPECIFICATIONS:

Concrete Strength, f'_c:

Footings:	3,000	psi (As allowed by Utah State Code Amendment)
Concrete Walls:	4,500	psi (Buried foundation walls can be 3000 psi as allowed by Utah State Code Amendment)
Grade Beams:	4,000	psi
Slab on Grade:	4,000	psi
Bearing/Shear Walls:	4,000	psi

Deformed Reinforcing Bars: ASTM A615 Grade 60
ASTM A706 Grade 60 Weldable Rebar is to be used where welds are specified on contract documents

Welded Wire Fabric: ASTM A185 - Flat sheets, not rolls

WOOD FRAMING SPECIFICATIONS

Unless noted otherwise, the following species and grades of lumber shall be used.

Sawn Lumber:

Species:	Douglas Fir-Larch (North)
2x4 studs up to 8'-0" long:	Grade #2
2x4 studs over 8'-0" long:	Grade #2
Other studs:	Grade #2
Posts:	Grade #1
Joists:	Grade #2
Beams:	Grade #2
Headers:	Grade #2
Subpurlins:	Grade #2
Purlins:	Grade #2

Glue Laminated Beams:

Species:	Douglas Fir-Larch (North)
Simple Spans:	24F-V4
Continuous Spans:	24F-V8

Sheathing:	APA Rated OSB
Framing Hardware:	Simpson Strong-Tie Connectors
Structural Nails:	Common Wire Type (unless noted otherwise)
Bolts in Wood:	ASTM A307

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SNOW DRIFT ANALYSIS - DRIFTS AT PARAPETS

CHAPTER 7, ASCE 7-22 — *IBC 2024 / ASCE 7-22*

Design Parameters

Surface Roughness Category	C	
Roof Exposure	Partially Exposed	
Thermal Conditions	All other structures	
Roof Surface	Non-Slippery (Rough)	
Obstructed?	No	
Roof Pitch	0.5	/12
Roof Angle, θ	2.4	
Obstruction Type	Parapet	
Snow Drift Analysis Required?	Yes	

Ground Snow Load, p_g (psf)	45	*ASCE Hazards Website*	Snow Density, γ (pcf)	19.9	*Equation 7.7-1*
Exposure Factor, C_e	1.00	*Table 7.3-1*	Balanced Snow Load Height, h_b (ft)	1.89	*p_f / γ*
Thermal Factor, C_t	1.19	*Table 7.3-2&3*	Parapet Height, h (ft)	2.5	
R_{roof}:	50		Roof Projection Clear Distance (ft)	N/A	
Slope Factor, C_s:	1.00	*Figure 7.4-1*	Length of Roof, L_L (ft)	76.0	*Section 7.8*
Flat Roof Snow Load, p_f (psf)	37	*Equation 7.3-1*	Winter Wind Parameter, W_2	0.25	*ASCE Hazards Website*
Sloped Snow Load, p_s (psf):	37	*Equation 7.4-1*			

Snow Drift Analysis

Drift Height, h_d (ft)	1.45	*Figure 7-9*
h_c (ft)	0.61	*$h_r - h_b$*
Design Drift Height, h_d (ft)	1.45	*Section 7.7.1*
Design Drift Width, w (ft)	**11.58**	*Section 7.7.1*
Maximum Drift Surcharge Load, p_d (psf)	**28.72**	*Section 7.7.1*

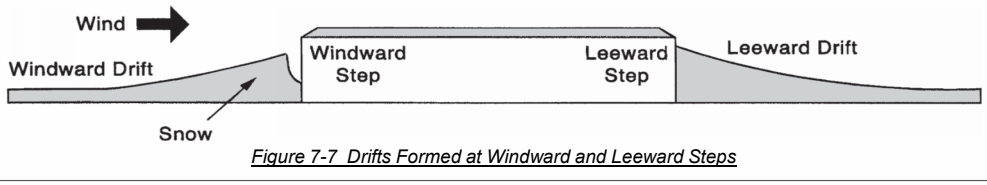


Figure 7-7 Drifts Formed at Windward and Leeward Steps

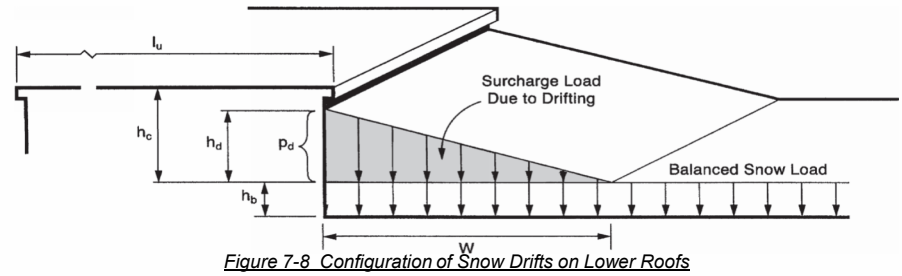


Figure 7-8 Configuration of Snow Drifts on Lower Roofs

Project:	Pagnani Building Addition	Project No.:	T1869G
By:	Finau Kolomalu, EIT	Checked By:	JMC
Date:	July 2026		

SNOW DRIFT ANALYSIS - DRIFTS AT PARAPETS

CHAPTER 7, ASCE 7-22 — *IBC 2024 / ASCE 7-22*

Design Parameters

Surface Roughness Category	C	
Roof Exposure	Partially Exposed	
Thermal Conditions	All other structures	
Roof Surface	Non-Slippery (Rough)	
Obstructed?	No	
Roof Pitch	0.5	/12
Roof Angle, θ	2.4	
Obstruction Type	Parapet	
Snow Drift Analysis Required?	Yes	

Ground Snow Load, p_g (psf)	45	*ASCE Hazards Website*	Snow Density, γ (pcf)	19.9	*Equation 7.7-1*
Exposure Factor, C_e	1.00	*Table 7.3-1*	Balanced Snow Load Height, h_b (ft)	1.89	*p_f / γ*
Thermal Factor, C_t	1.19	*Table 7.3-2&3*	Parapet Height, h (ft)	2.5	
R_{roof}:	50		Roof Projection Clear Distance (ft)	N/A	
Slope Factor, C_s:	1.00	*Figure 7.4-1*	Length of Roof, L_L (ft)	37.0	*Section 7.8*
Flat Roof Snow Load, p_f (psf)	37	*Equation 7.3-1*	Winter Wind Parameter, W_2	0.25	*ASCE Hazards Website*
Sloped Snow Load, p_s (psf):	37	*Equation 7.4-1*			

Snow Drift Analysis

Drift Height, h_d (ft)	1.12	*Figure 7-9*
h_c (ft)	0.61	*$h_r - h_b$*
Design Drift Height, h_d (ft)	1.12	*Section 7.7.1*
Design Drift Width, w (ft)	**9.00**	*Section 7.7.1*
Maximum Drift Surcharge Load, p_d (psf)	**22.33**	*Section 7.7.1*

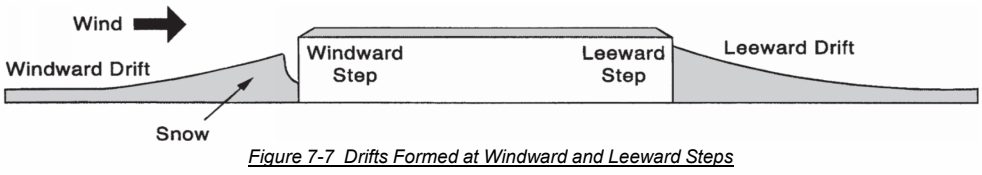


Figure 7-7 Drifts Formed at Windward and Leeward Steps

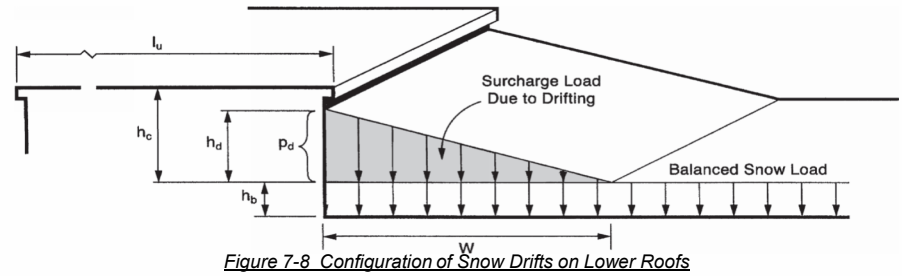


Figure 7-8 Configuration of Snow Drifts on Lower Roofs

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Project: Pagnani Building Addition | Project No.: T1869G
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Date: July 2026

SEISMIC FORCE ANALYSIS - STRUCTURAL IRREGULARITIES

CHAPTER 12, TABLE 12.3-1 & 12.3-2 — *IBC 2024 / ASCE 7-22*

Horizontal Irregularities			
Type	Description	Applicable	Not Applicable
1	**Torsional Irregularity**: Torsional irregularity, defined to exist where either: • More than 75% of any story's lateral strength below the diaphragm is provided at or on one side of the center of mass, or • The Torsional Irregularity Ratio (TIR) exceeds 1.2. The story lateral strength is the total strength of all seismic-resisting elements sharing the story shear for the direction under consideration.		**X**
2	**Reentrant Corner Irregularity**: Reentrant corner irregularity, defined to exist where both plan projections of the structure beyond a reentrant corner are greater than 20% of the plan dimension of the structure in the given direction.		**X**
3	**Diaphragm Discontinuity Irregularity**: Diaphragm discontinuity irregularity, defined to exist where there is a diaphragm with an abrupt discontinuity or variation in stiffness, including one that has a cutout or open area greater than 25% of the gross enclosed diaphragm area, or a change in effective diaphragm stiffness of more than 50% from one story to the next.		**X**
4	**Out-of-Plane Offset Irregularity**: Out-of-plane offset irregularity, defined to exist where there is a discontinuity in a lateral force-resistance path, such as an out-of-plane offset of at least one of the vertical elements.		**X**
5	**Nonparallel System Irregularity**: Nonparallel system irregularity, defined to exist where vertical lateral force-resisting elements are not parallel to the major orthogonal axes of the seismic force-resisting system.		**X**

Horizontal Torsional Irregularity (TIR)			
>1.2	Inclusion of accidental torsion in nonbuilding structures not similar to buildings		**X**
	Mass offset in Nonlinear Response History analysis		
	Irregularities in Seismically Isolated Buildings		
	Applicability of Equivalent Lateral Force Procedure for structures with damping systems		
	Use of 3D analytical model		
	Use of orthogonal load combinations		
	Inclusion of amplified accidental torsion		
	Story drift for purpose of comparing to drift limits, computing P-Delta, and checking deformation compatibility must be computed at the edge with the largest drift.		
	Amplification of design force for collectors, their connections, and connections of diaphragms to collectors or vertical elements of the seismic force-resisting system (SFRS)		
>1.4	Minimum seismic base shear for strutures with damping systems		**X**
	Increased structural height limits not allowed for certain systems		
	Use of orthogonal load combinations		
	Include accidental torsion		
>1.4 in both directions	Criteria for setting redundancy factor = 1.3		**X**
>1.6	Restrictions on use mass offset for accidental torsion in Modal Response Spectrum analysis		**X**

Δ_{max}	2	*in*
Δ_{avg}	2	*in*
TIR	1.0	$\Delta_{max}/\Delta_{avg}$

Vertical Irregularities			
Type	Description	Applicable	Not Applicable
1a	**Stiffness-Soft Story Irregularity**: Stiffness-soft story irregularity is defined to exist where there is a story in which the lateral stiffness is less than 70% of that in the story above or, where there are at least three stories above, less than 80% of the average stiffness of the three stories above.		**X**
1b	**Stiffness-Extreme Soft Story Irregularity**: Stiffness-extreme soft story irregularity is defined to exist where there is a story in which the lateral stiffness is less than 60% of that in the story above or, where there are at least three stories above, less than 70% of the average stiffness of the three stories above.		**X**
2	**Vertical Geometric Irregularity**: Vertical geometric irregularity is defined to exist where the horizontal dimension of the seismic force-resisting system in any story is more than 130% of that in an adjacent story.		**X**
3	**In-Plane Discontinuity in Vertical Lateral Force-Resisting Element Irregularity**: In-plane discontinuity in vertical lateral force-resisting elements irregularity is defined to exist where there is an in-plane offset of a vertical seismic force-resisting element resulting in overturning demands on supporting structural elements.		**X**
4a	**Discontinuity in Lateral Strength–Weak Story Irregularity**: Discontinuity in lateral strength–weak story irregularity is defined to exist where the story lateral strength is less than that in the story above. The story lateral strength is the total lateral strength of all seismic force-resisting system elements resisting the story shear for the direction under consideration.		**X**
4b	**Discontinuity in Lateral Strength–Extreme Weak Story Irregularity**: Discontinuity in lateral strength–extreme weak story irregularity is defined to exist where the story lateral strength is less than 65% of that in the story above. The story lateral strength is the total lateral strength of all seismic force-resisting system elements resisting the story shear for the direction under consideration.		**X**

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Date: July 2026

SEISMIC FORCE ANALYSIS - REDUNDANCY FACTOR

CHAPTER 12.3.4.2, ASCE 7-22 | *IBC 2024 / ASCE 7-22*

North-South Direction

For structures assigned to Seismic Design Category D, E, or F, ρ shall equal 1.3 unless one of the following two conditions is met, whereby ρ is permitted to be taken as 1.0:

Check List

a) Each story resisting more than 35% of the base shear in the direction of interest shall comply with the following: Removal of an individual braced frame, loss of moment resistance at the beam-to-column connections at both ends of a single beam, removal of a shear wall with a height-to-width ratio greater than 1.0, or collector connections thereto, or loss of moment resistance at the base of any single cantilever column would not result in more than a 35% reduction in story strength, nor does the resulting system have a Type 1 Horizontal Irregularity with a TIR > 1.4, and there remains at least two bays of seismic force-resisting framing on each side of the center of mass.

NO

b) The structure does not have any Horizontal Irregularities in the direction of interest at all levels, and the seismic force-resisting system shall consist of at least two bays of seismic force-resisting perimeter framing on each side of the structure at each story resisting more than 35% of the base shear. (A shear wall bay is defined as the length of the wall divided by the story height (rounded down).

YES

NOTE: ONLY ONE CASE NEED APPLY FOR ρ TO BE 1.0.

ρ = 1.0

East-West Direction

For structures assigned to Seismic Design Category D, E, or F, ρ shall equal 1.3 unless one of the following two conditions is met, whereby ρ is permitted to be taken as 1.0:

Check List

a) Each story resisting more than 35% of the base shear in the direction of interest shall comply with the following: Removal of an individual braced frame, loss of moment resistance at the beam-to-column connections at both ends of a single beam, removal of a shear wall with a height-to-width ratio greater than 1.0, or collector connections thereto, or loss of moment resistance at the base of any single cantilever column would not result in more than a 35% reduction in story strength, nor does the resulting system have a Type 1 Horizontal Irregularity with a TIR > 1.4, and there remains at least two bays of seismic force-resisting framing on each side of the center of mass.

NO

b) The structure does not have any Horizontal Irregularities in the direction of interest at all levels, and the seismic force-resisting system shall consist of at least two bays of seismic force-resisting perimeter framing on each side of the structure at each story resisting more than 35% of the base shear. (A shear wall bay is defined as the length of the wall divided by the story height (rounded down).

YES

NOTE: ONLY ONE CASE NEED APPLY FOR ρ TO BE 1.0.

ρ = 1.0

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SEISMIC FORCE ANALYSIS - EQUIVALENT LATERAL FORCE PROCEDURE (MULTI-PERIOD)

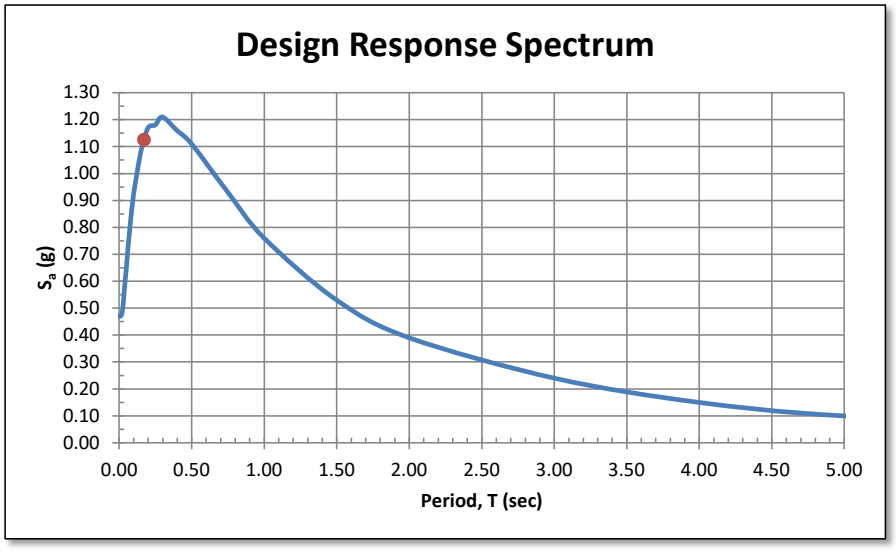
CHAPTER 12, ASCE 7-22 — *IBC 2024 / ASCE 7-22*

Design Parameters

Risk Category	II	*Table 1604.5*	Structure Type	All other structural systems	
Importance Factor, I_E	1.00	*Table 1.5-2*	T_0 (sec)	0.131	*Section 11.4.5.2*
Sufficient Soil Properties Known?	Yes		T_S (sec)	0.653	*Section 11.4.5.2*
S_S (g)	0.780	*Mapped*	T_L (sec)	8	*Section 11.4.5.2*
S_1 (g)	0.250	*Mapped*	S_a (g)	1.125	*2/3(MCE$_R$)*
Site Class	Default	*Geotech Report*	C_t	0.02	*Table 12.8-2*
S_{MS} (g)	0.980	*Mapped*	x	0.75	*Table 12.8-2*
S_{M1} (g)	0.640	*Mapped*	T_a (sec)	0.175	*Equation 12.8-8*
S_{DS} (g)	0.653	*2/3(S_{MS})*	Response Modification Factor, R	6.5	*Table 12.2-1*
S_{D1} (g)	0.427	*2/3(S_{M1})*	Overstrength Factor, Ω_0	2.5	*Table 12.2-1*
Seismic Design Category	D	*Table 11.6-1&2*	$C_{S,Calculated}$	0.173	*Equation 12.8-3*
Building Height, h_n (ft)	18		$C_{S\ MIN}$	0.010	*Equation 12.8-6 & 12.8-7*
Number of Stories	1		**C_S**	**0.173**	*Section 12.8.1.1*
Light-frame Construction?	Yes				

Vertical Distribution of Seismic Forces

Component	Unit Weight (psf)	Area (ft^2)	Weight, w_i (kips)	Elevation, h_i (ft)	$w_i h_i^k$ (kip-ft)	F_i (kips)	$0.7F_i$ (kips)
Roof Level:			-		-	-	-
Roof	20	5,712	114.23	15	1,713.50	20.10	14.07
N & S Elevation Walls	24	745	17.88	12	214.56	2.52	1.76
E & W Elevation Walls	24	767	18.40	12	220.80	2.59	1.81
Parapet N & S	24	447	10.73	18	193.10	2.27	1.59
Parapet E & W	24	460	11.04	18	198.72	2.33	1.63
			-		-	-	-
Existing Roof	20	9,440	188.80	15	2,832.00	33.22	23.25
Existing Walls	24	708	16.99	12	203.90	2.39	1.67
		Σw_i	378	$\Sigma w_i h_i^k$	5,577	**V_x (kips)**	**65.41**
Notes:				k	1	$0.7V_x$ (kips)	45.79



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Project: Pagnani Building Addition | Project No.: T1869G
By: Finau Kolomalu, EIT | Checked By: JMC
Date: July 2026

WIND FORCE ANALYSIS - DIRECTIONAL PROCEDURE

CHAPTER 27 (PART 1), ASCE 7-22 — *IBC 2024 / ASCE 7-22*

Design Parameters

Basic Wind Speed, V (mph)	102	*Section 26.5*	K_{zt} Factor Applicable?	No	
Exposure Category	C	*Section 26.7*	Height of Hill or Ridge, H (ft)	N/A	*Table 26.8-1*
Ground Elevation (ft)	4,691		L_h (ft)	N/A	*Table 26.8-1*
Enclosure Classification	Enclosed	*Section 26.2*	H / L_h	0.00	
Positive / Negative?	Positive		x (ft)	N/A	*Table 26.8-1*
Internal Press. Coef., GC_{pi}	0.18	*Table 26.13-1*	Horizontal Attenuation, μ	N/A	*Table 26.8-1*
Mean Roof Height, h (ft)	18		Height Attenuation, γ	N/A	*Table 26.8-1*
Building Length, L (ft)	74.5		K_1 / (H / L_h)	N/A	*Table 26.8-1*
Building Width, B (ft)	192.5		K_1	0.00	*Table 26.8-1*
L/B	0.39		K_2	0.00	*Table 26.8-1*
h/L	0.24		K_3	0.00	*Table 26.8-1*
Roof Pitch	0.5	/12	Topographic Factor, K_{zt} at h	1.00	*Section 26.8*
Roof Angle, θ	2.4		Wind Directionality Factor, K_d	0.85	*Section 26.6*
Terrain Constant, α	9.8	*Table 26.11-1*	Ground Elevation Factor, K_e	0.84	*Section 26.9*
Terrain Constant, z_g (ft)	2460	*Table 26.11-1*	Gust Effect Factor, G	0.85	*Section 26.11*
Exposure Coefficient, K_h	0.883	*Table 26.10-1*	**Velocity Pressure, q_h (psf)**	**19.85**	*Equation 26.10-1*

MWFRS Wind Pressure Analysis

				Pressure Coefficients, C_p	*Walls*			*Parapets*	
					Windward	Leeward	Side	Windward	Leeward
					0.80	-0.50	-0.70	1.50	-1.00
Surface Mark	Surface Type	z (ft)	K_z	q_z (psf)	Wind Pressure, p (psf)				
Parapet	Parapet	18	0.883	19.9	-	-	-	25.31	-16.88
Top of Main	Wall	12	0.851	19.1	8.02	-9.95	-12.71	-	-

Roof Type	Pressure Coefficients, C_p	*Roof*						
		Not Applicable for Roof Angle		Normal to Ridge for θ < 10° and Parallel to Ridge for all θ				Windward Overhang
Flat		Windward	Leeward	0 to h/2	h/2 to h	h to 2h	> 2h	
		-0.70	-0.30	-0.90	-0.90	-0.50	-0.30	
		-0.18	-0.30	-0.18	-0.18	-0.18	-0.18	0.80
Surface Mark	Surface Type	Wind Pressure, p (psf)						
Parapet	Parapet	-	-	-	-	-	-	-
Top of Main	Wall	-	-	-	-	-	-	-

Surface Forces

North-South, Positive Internal Pressure

Surface Mark	Surface Type	Windward or Leeward Surface?	Projected Horizontal Pressure, p (psf)	Tributary Height (ft)	Unit Force (plf)	Surface Width, W (ft)	Force (kips)
Parapet	Parapet	Both	42.19	3	105.5	37	3.9
Top of Main	Wall	Both	17.97	9	161.7	37	6.0
3			-		-		-
4			-		-		-
5			-		-		-
6			-		-		-

Total Design Base Shear

LRFD V_x (kips)	ASD $0.6V_x$ (kips)
10.0	**6.0**

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Project: Pagnani Building Addition | Project No.: T1869G
By: Finau Kolomalu, EIT | Checked By: JMC
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WIND FORCE ANALYSIS - DIRECTIONAL PROCEDURE

CHAPTER 27 (PART 1), ASCE 7-22 — *IBC 2024 / ASCE 7-22*

Design Parameters

Basic Wind Speed, V (mph)	102	*Section 26.5*	K_{zt} Factor Applicable?	No	
Exposure Category	C	*Section 26.7*	Height of Hill or Ridge, H (ft)	N/A	*Table 26.8-1*
Ground Elevation (ft)	4,691		L_h (ft)	N/A	*Table 26.8-1*
Enclosure Classification	Enclosed	*Section 26.2*	H / L_h	0.00	
Positive / Negative?	Positive		x (ft)	N/A	*Table 26.8-1*
Internal Press. Coef., GC_{pi}	0.18	*Table 26.13-1*	Horizontal Attenuation, μ	N/A	*Table 26.8-1*
Mean Roof Height, h (ft)	18		Height Attenuation, γ	N/A	*Table 26.8-1*
Building Length, L (ft)	192.5		K_1 / (H / L_h)	N/A	*Table 26.8-1*
Building Width, B (ft)	74.5		K_1	0.00	*Table 26.8-1*
L/B	2.58		K_2	0.00	*Table 26.8-1*
h/L	0.09		K_3	0.00	*Table 26.8-1*
Roof Pitch	0.5	/12	Topographic Factor, K_{zt} at h	1.00	*Section 26.8*
Roof Angle, θ	2.4		Wind Directionality Factor, K_d	0.85	*Section 26.6*
Terrain Constant, α	9.8	*Table 26.11-1*	Ground Elevation Factor, K_e	0.84	*Section 26.9*
Terrain Constant, z_g (ft)	2460	*Table 26.11-1*	Gust Effect Factor, G	0.85	*Section 26.11*
Exposure Coefficient, K_h	0.883	*Table 26.10-1*	**Velocity Pressure, q_h (psf)**	**19.85**	*Equation 26.10-1*

MWFRS Wind Pressure Analysis

				Pressure Coefficients, C_p	*Walls*			*Parapets*	
					Windward	Leeward	Side	Windward	Leeward
					0.80	-0.27	-0.70	1.50	-1.00
Surface Mark	Surface Type	z (ft)	K_z	q_z (psf)	Wind Pressure, p (psf)				
Parapet	Parapet	18	0.883	19.9	-	-	-	25.31	-16.88
Top of Main	Wall	12	0.851	19.1	8.02	-6.78	-12.71	-	-
Existing	Wall	12	0.851	19.1	8.02	-6.78	-12.71	-	-
4			-	-	-	-	-	-	-
5			-	-	-	-	-	-	-
6			-	-	-	-	-	-	-

Roof Type	Pressure Coefficients, C_p	*Roof*						
		Not Applicable for Roof Angle		Normal to Ridge for θ < 10° and Parallel to Ridge for all θ				Windward Overhang
Flat		Windward	Leeward	0 to h/2	h/2 to h	h to 2h	> 2h	
		-0.70	-0.30	-0.90	-0.90	-0.50	-0.30	
		-0.18	-0.30	-0.18	-0.18	-0.18	-0.18	0.80
Surface Mark	Surface Type	Wind Pressure, p (psf)						
Parapet	Parapet	-	-	-	-	-	-	-
Top of Main	Wall	-	-	-	-	-	-	-

Surface Forces

East-West, Positive Internal Pressure

Surface Mark	Surface Type	Windward or Leeward Surface?	Projected Horizontal Pressure, p (psf)	Tributary Height (ft)	Unit Force (plf)	Surface Width, W (ft)	Force (kips)		
Parapet	Parapet	Both	42.19	3	105.5	75	7.9		
Top of Main	Wall	Both	16.00	9	144.0	75	10.7	Total Design Base Shear	
Existing	Wall	Both	16.00	9	144.0	118	17.0		
4			-		-		-	LRFD	ASD
5			-		-		-	V_x (kips)	$0.6V_x$ (kips)
6			-		-		-	**35.6**	**21.3**

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Project: Pagnani Building Addition | Project No.: T1869G
By: Finau Kolomalu, EIT | Checked By: JMC
Date: July 2026

WIND FORCE ANALYSIS - COMPONENTS & CLADDING

CHAPTER 30, ASCE 7-22 — *IBC 2024 / ASCE 7-22*

Design Parameters

Basic Wind Speed, V (mph)	102	*Section 26.5*	K_{zt} Factor Applicable?	No	
Exposure Category	C	*Section 26.7*	Height of Hill or Ridge, H (ft)	N/A	*Table 26.8-1*
Ground Elevation (ft)	4,691		L_h (ft)	N/A	*Table 26.8-1*
Enclosure Classification	Enclosed	*Section 26.2*	H / L_h	0.00	
Positive / Negative?	Positive		x (ft)	N/A	*Table 26.8-1*
Internal Press. Coef., GC_{pi}	0.18	*Table 26.13-1*	Horizontal Attenuation, μ	N/A	*Table 26.8-1*
Mean Roof Height, h (ft)	18		Height Attenuation, γ	N/A	*Table 26.8-1*
Building Length, L (ft)	74.5		K_1 / (H / L_h)	N/A	*Table 26.8-1*
Building Width, B (ft)	192.5		K_1	0.00	*Table 26.8-1*
h/B	0.24		K_2	0.00	*Table 26.8-1*
Roof Type	Flat		K_3	0.00	*Table 26.8-1*
Roof Pitch	0.5	/12	Topographic Factor, K_{zt} at h	1.00	*Section 26.8*
Roof Angle, θ	2.4		Wind Directionality Factor, K_d	0.85	*Section 26.6*
Is there a Parapet?	Yes		Ground Elevation Factor, K_e	0.84	*Section 26.9*
Parapet Height, h_p (ft)	2.5		**Velocity Pressure, q_h (psf)**	**19.85**	*Equation 26.10-1*
Terrain Constant, α	9.8	*Table 26.11-1*	Exposure Coefficient, K_p	0.907	*Table 26.10-1*
Terrain Constant, z_g (ft)	2460	*Table 26.11-1*	Topographic Factor, K_{zt} at h_p	1.00	*Section 26.8*
Exposure Coefficient, K_h	0.883	*Table 26.10-1*	**Velocity Pressure, q_p (psf)**	**20.39**	*Equation 26.10-1*

External Pressure Coefficients, GC_p

Location		Effective Wind Area (ft^2)				
		< 10	20	50	100	>500
Walls	Zone 5: Within 8-ft of building corner	-1.3	-1.2	-1.0	-0.9	-0.7
	Zone 4: All other areas	-1.0	-0.9	-0.9	-0.8	-0.7
	Zone 4 & 5: Positive Pressures	0.9	0.9	0.8	0.7	0.6
Roof	Zone 3: L-shape (11-ft leg lengths & 4-ft leg thickness) at buildi	-3.2	-2.9	-2.5	-2.2	-1.4
	Zone 2: Within 11-ft of building edge	-2.3	-2.2	-2.0	-1.8	-1.4
	Zone 1: Between 11-ft & 22-ft of building edge	-1.7	-1.6	-1.4	-1.3	-1.0
	Zone 1': Roof field starting 22-ft away from building edge	-0.9	-0.9	-0.9	-0.9	-0.4
	Zone 1', 1, 2 & 3: Positive Pressures	0.3	0.3	0.3	0.2	0.2
	N/A	-	-	-	-	-

Component & Cladding Design Wind Pressure

Location			Effective Wind Area (ft^2)				
			< 10	20	50	100	>500
Walls	Zone 5: Within 8-ft of building corner		-24.3	-22.8	-20.5	-19.0	-16.0
	Zone 4: All other areas		-19.7	-19.0	-18.2	-17.1	-16.0
	Zone 4 & 5: Positive Pressures		16.0	16.0	16.0	16.0	16.0
Roof	Zone 3: L-shape (11-ft leg lengths & 4-ft leg thickness) at buildi		-57.0	-52.0	-44.4	-39.3	-26.7
	Zone 2: Within 11-ft of building edge		-41.9	-39.3	-35.9	-33.4	-26.7
	Zone 1: Between 11-ft & 22-ft of building edge		-31.7	-30.0	-26.7	-25.0	-19.9
	Zone 1': Roof field starting 22-ft away from building edge		-18.2	-18.2	-18.2	-18.2	-16.0
	Zone 1', 1, 2 & 3: Positive Pressures		16.0	16.0	16.0	16.0	16.0
	N/A		-	-	-	-	-
Parapets	Within 11-ft of building corner	A	71.1	65.1	56.5	50.1	35.2
		B	-37.4	-35.1	-32.0	-29.2	-23.4
	All other areas	A	55.5	52.1	47.8	44.1	35.2
		B	-32.8	-31.2	-29.6	-27.3	-23.4

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Project: Pagnani Building Addition
By: Finau Kolomalu, EIT
Date: July 2026

Project No.: T1869G
Checked By: JMC

SHEAR WALL SCHEDULE

CHAPTER 4.3, AWC SDPWS-2021 *IBC 2024 / ASCE 7-22*

Mark	Nailing Requirements (in)		Notes	V_{allow} (8) Seismic (plf)	V_{allow} (8) Wind (plf)	Sole Plate Nailing (10,11 & 13) (Sole Plate to Top plate)
	Edge	Field				
SW1	6	12	1,2,3	261	365	16d common @ 7" o.c.
SW2	4	12	1,2,3	350	490	16d common @ 5" o.c.
SW3	4	12	1,2,3,4	380	533	16d common @ 4" o.c.
SW4	3	12	1,2,3,4	489	685	(2) 16d common @ 7" o.c.
SW5	2	12	1,2,3,4	639	895	(2) 16d common @ 5" o.c.
SW6	2	12	1,3,4,6	770	1078	(2) 16d common @ 4" o.c.
SW7	3	12	1,2,3,4,5	979	1370	(2) SDS screws @ 9" o.c.
SW8	2	12	1,2,3,4,5,11	1279	1790	(2) SDS screws @ 7" o.c.
SW9	2	12	1,3,4,5,6,11	1539	2155	(2) SDS screws @ 6" o.c.
SW10	2	12	1,3,4,5,7,11	1739	2435	(3) SDS screws @ 8" o.c.

Notes:
1. 16 inch o.c. max stud spacing or panels applied with the long dimension across the studs per AF&PA SDPWS table 4.3A note 2.
2. 7/16" APA rated sheathing panel with 8d common or galvanized box nails.
3. Block all edges.
4. 3" nominal framing at abutting panel edges (AF&PA SDPWS 4.3.7.1.5.c)
5. Sheathing applied to both sides of wall
6. 15/32" APA rated sheathing with 10d common or galvanized box nails
7. 15/32" APA Structural I rated sheathing with 10d common or galvanized box nails
8. Allowable shear values per AF&PA SDPWS table 4.3A.
9. For all walls, provide hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper nails at preservative-treated and fire-retardant-treated wood locations.
10. SDS to penetrate 2 1/2" min. into top plate. SDWS screws to penetrate 2" into rim board.
11. SDWS screw capacity used assumes worst case values into LVL or LSL Rimboard.
12. Where panels are applied to both faces of the wall and nail spacing is less than 6" on center on either side offset panel joints to different framing members.
13. If (2) SDWS or (3) SDWS screws are required on the sole plate nailing a 3 1/2" 1.55E TimberStrand LSL Rimboard must be used. Rim Application: SDWS screws require 5/8" edge and 6" end distance. 6" min. spacing between SDWS screws. Stagger all rows. Double Top Plate Appl.:SDS screws require 1" edge and 3" end distance. 3" min. spacing between SDS screws. Stagger all rows. Equally space rows from center line of rimboard or top plate.

STAPLE EQUIVALENCY CHART

Staple Type	Stapling Requirements		V_{allow} (8) Seismic (plf)	Equivalent to Nailed Shearwall designated above:	V_{allow} (8) Wind (plf)	Equivalent to Nailed Shearwall designated above:
	Edge	Field				
16 Gage 1 1/2" Staples	6"	6"	155	NONE	215	NONE
	4"	6"	230	NONE	320	NONE
	3"	6"	310	SW1	435	SW1
	2"	6"	395	SW2 and SW3	555	SW2 and SW3

Notes:
1. Minimum staple penetration into main member is 1".
2. Staples shall have a minimum crown width of 7/16".
3. Install staple crown parallel to the long dimension of the framing member.
4. Where staple spacing is 2" or less, framing at adjoining panel edges shall be 3" nominal.
5. Provide 3/8" distance from panel edge to staple.
6. Table valid for shearwalls only.
7. Provide hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper staples at perservative-treated and fire-retardant- treated wood locations.
8. Allowable shear values per ICC-ES Evaluation Report ESR-1539 and IBC 2024 Table 2306.3(1).
9. Allowable shear values shown are based on 7/16" nominal sheathing thickness.

Abutting Panel Edge (2) 2x Stitch Nailing Requirements (Alternate Option to Shear Wall Schedule Requirements)

Mark	Abutting Edge Size	Stitch Nailing Requirements			
		Nail Size	# of Rows	Spacing (in)	Comments
SW1	2x	-	-	-	-
SW2	2x	-	-	-	-
SW3	(2) 2x	0.148" x 3"	2	10	Stagger Rows
SW4	(2) 2x	0.148" x 3"	2	9	Stagger Rows
SW5	(2) 2x	0.148" x 3"	2	6	Stagger Rows
SW6	(2) 2x	0.148" x 3"	2	5	Stagger Rows
SW7	(2) 2x	0.148" x 3"	2	9	Stagger Rows & Stagger Panel Edges Vertically and Horizontally each side
SW8	(2) 2x	0.148" x 3"	2	6	Stagger Rows & Stagger Panel Edges Vertically and Horizontally each side
SW9	(2) 2x	0.148" x 3"	2	5	Stagger Rows & Stagger Panel Edges Vertically and Horizontally each side
SW10	(2) 2x	0.148" x 3"	2	5	Stagger Rows & Stagger Panel Edges Vertically and Horizontally each side

Notes:

1. Framer is to ensure blocking/ studs do not split. If splitting occurs blocking/ studs must be removed and replaced.
2. For SW-7, SW-8, SW-9, and SW-10 ensure that panel edges are staggered vertically & horizontally so that panel edge nailing does not occur on the same member.
3. All other requirements remain the same as outlined in the Shearwall Schedule.

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Project: Pagnani Building Addition
By: Finau Kolomalu, EIT
Date: July 2026

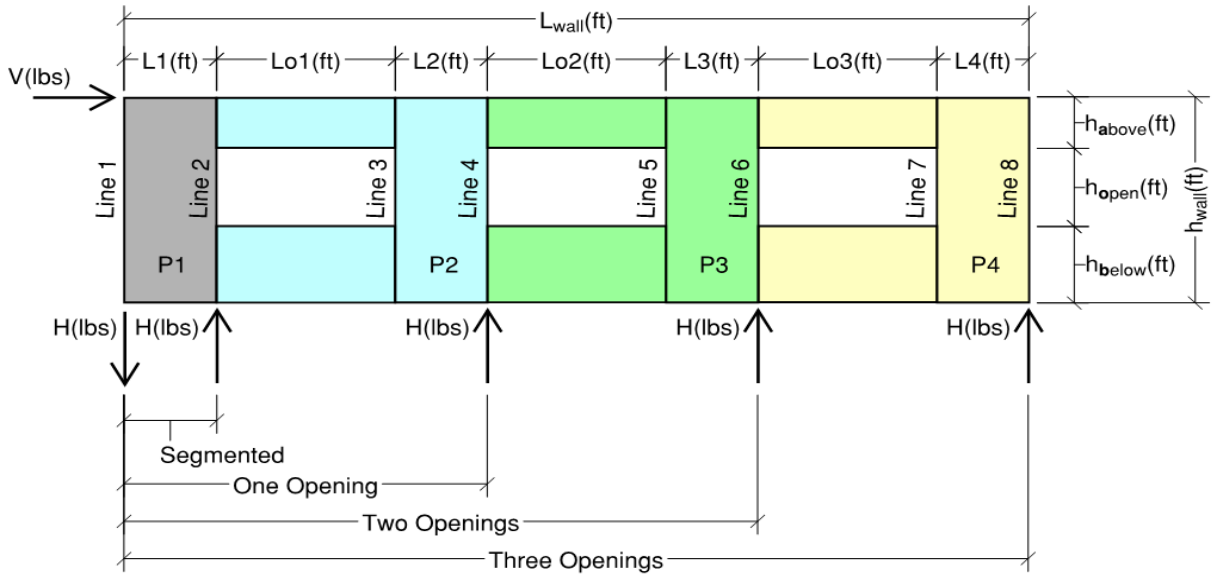
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SINGLE-STORY WOOD SHEAR WALLS

CHAPTER 4.3, AWC SDPWS-2021 *IBC 2024 / ASCE 7-22*

NOTES:
1. Typically when seismic is found to govern wind loads will not be checked here. However, if wind loads are found to govern both wind and seismic need to be checked in order to account for the difference in shearwall capacities.
2. ASD loads are to be entered here.
3. PSW is defined as Perforated Shear Wall. Sheathing above and below the opening shall have nailing as required for the PSW.
4. This spreadsheet limits the aspect ratio for a PSW to 2:1 max since the exception in section 4.3.5.5.1 is used. Max wall height is 20 ft.
5. Shear capacity of a PSW is capped at 870 plf ASD Seismic and 1217 plf ASD for Wind for single or double sided walls.
6. Designer is responsible for PSW sill plate anchorage per 4.3.6.4.2.1. The anchorage is not calculated here.
7. FTAO is defined as a Force Transfer Around Openings shear wall.
8. FTAO wall peir lengths shall not be less than 2'-0".
9. For FTAO analysis the Effective Length column is computed based on the sum of each peir multiplied by their respective aspect ratio reduction.
10. Wind and seismic uplift loads are reported as negative for compression and positive for tension.

S_{DS}=	0.65
I_e=	1.00
C_d=	4



Grid B
1st Floor

Wind Force on Wall Line: 2,986 lbs (ASD)
Seismic Force on Wall Line: 8,708 lbs (ASD)

Wall ID	# of Walls	SEG or PSW or FTAO	Wall Segment and Opening Lengths							Length (ft)	Wall Height (ft)	Proportions of Wall Height			H:W Ratio	Aspect Ratio Reduct.	Effective Length (2b/h)*L	Co, PSW Reduct.
			L1 (ft)	Lo1 (ft)	L2 (ft)	Lo2 (ft)	L3 (ft)	Lo3 (ft)	L4 (ft)			ha (ft)	ho (ft)	hb (ft)				
1	2	SEG	9.00							9.00	10.00			10.0	1.11	1.00	9.00	1.00
2	1	SEG	12.00							12.00	10.00			10.0	0.83	1.00	12.00	1.00
3	1	SEG	10.00							10.00	10.00			10.0	1.00	1.00	10.00	1.00

Grid G
1st Floor

Wind Force on Wall Line: 2,986 lbs (ASD)
Seismic Force on Wall Line: 8,708 lbs (ASD)

Wall ID	# of Walls	SEG or PSW or FTAO	Wall Segment and Opening Lengths							Length (ft)	Wall Height (ft)	Proportions of Wall Height			H:W Ratio	Aspect Ratio Reduct.	Effective Length (2b/h)*L	Co, PSW Reduct.
			L1 (ft)	Lo1 (ft)	L2 (ft)	Lo2 (ft)	L3 (ft)	Lo3 (ft)	L4 (ft)			ha (ft)	ho (ft)	hb (ft)				
1	3	SEG	5.00							5.00	10.00			10.0	2.00	1.00	5.00	1.00
2	1	SEG	12.00							12.00	10.00			10.0	0.83	1.00	12.00	1.00

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Project No.: T1869G
Checked By: JMC

CHAPTER 4.3, AWC SDPWS-2021 *IBC 2024 / ASCE 7-22*

Grid B
1st Floor

Wall ID	Total Length (ft)	Uniform DL (plf)	Wind Uplift (lb)	Seismic Uplift (lb)	FTAO Strap Force	Req'd FTAO Strap	Wind Shear (plf)	Seismic Shear (plf)	Use Shear Wall	Holdown Type	Holdown Required	Allowable Story Drift Seismic (in)	Shear Wall Drift Seismic (in)	Wind Deflection Limit (in)	Shear Wall Deflection Wind (in)
1	18.00	360	-234	1405	NA	NA	75	218	**SW1**	Concrete Rod	**H-1**	2.400	1.135	0.667	0.021
2	12.00	360	-565	1109	NA	NA	75	218	**SW1**	Concrete Rod	**H-1**	2.400	1.058	0.667	0.015
3	10.00	360	-345	1305	NA	NA	75	218	**SW1**	Concrete Rod	**H-1**	2.400	1.104	0.667	0.019

Anchor Bolt Size (inches): 5/8
Anchor Bolt Designation: **AB32**

Grid G
1st Floor

Wall ID	Total Length (ft)	Uniform DL (plf)	Wind Uplift (lb)	Seismic Uplift (lb)	FTAO Strap Force	Req'd FTAO Strap	Wind Shear (plf)	Seismic Shear (plf)	Use Shear Wall	Holdown Type	Holdown Required	Allowable Story Drift Seismic (in)	Shear Wall Drift Seismic (in)	Wind Deflection Limit (in)	Shear Wall Deflection Wind (in)
1	15.00	360	606	2965	NA	NA	111	323	**SW2**	Concrete Rod	**H-1**	2.400	1.811	0.667	0.073
2	12.00	360	-196	2188	NA	NA	111	323	**SW2**	Concrete Rod	**H-1**	2.400	1.318	0.667	0.034

Anchor Bolt Size (inches): 5/8
Anchor Bolt Designation: **AB32**

ENSIGN
THE STANDARD IN ENGINEERING

Project: Pagnani Building Addition
By: Finau Kolomalu, EIT
Date: July 2026

Project No.: T1869G
Checked By: JMC

Grid 1
1st Floor

Wind Force on Wall Line: 5,576 lbs (ASD)
Seismic Force on Wall Line: 8,757 lbs (ASD)

Wall ID	# of Walls	SEG or PSW or FTAO	Wall Segment and Opening Lengths							Length (ft)	Wall Height (ft)	Proportions of Wall Height			H:W Ratio	Aspect Ratio Reduct.	Effective Length (2b/h)*L	Co, PSW Reduct.
			L1 (ft)	Lo1 (ft)	L2 (ft)	Lo2 (ft)	L3 (ft)	Lo3 (ft)	L4 (ft)			ha (ft)	ho (ft)	hb (ft)				
1	1	FTAO	13.50	5.00	10.00	5.00	12.00	5.00	8.00	FTAO	10.00	1.00	6.00	3.0	0.75	FTAO	43.50	1.00

Grid 8
1st Floor

Wind Force on Wall Line: 5,576 lbs (ASD)
Seismic Force on Wall Line: 8,757 lbs (ASD)

Wall ID	# of Walls	SEG or PSW or FTAO	Wall Segment and Opening Lengths							Length (ft)	Wall Height (ft)	Proportions of Wall Height			H:W Ratio	Aspect Ratio Reduct.	Effective Length (2b/h)*L	Co, PSW Reduct.
			L1 (ft)	Lo1 (ft)	L2 (ft)	Lo2 (ft)	L3 (ft)	Lo3 (ft)	L4 (ft)			ha (ft)	ho (ft)	hb (ft)				
1	1	FTAO	20.00	5.00	10.00	5.00	11.50	5.00	8.50	FTAO	10.00	1.00	6.00	3.0	0.71	FTAO	50.00	1.00

Grid 2 - Eixsiting Wall Check
1st Floor

Wind Force on Wall Line: 10,673 lbs (ASD)
Seismic Force on Wall Line: 12,464 lbs (ASD)

Wall ID	# of Walls	SEG or PSW or FTAO	Wall Segment and Opening Lengths							Length (ft)	Wall Height (ft)	Proportions of Wall Height			H:W Ratio	Aspect Ratio Reduct.	Effective Length (2b/h)*L	Co, PSW Reduct.
			L1 (ft)	Lo1 (ft)	L2 (ft)	Lo2 (ft)	L3 (ft)	Lo3 (ft)	L4 (ft)			ha (ft)	ho (ft)	hb (ft)				
1	1	SEG	47.00							47.00	12.00			12.0	0.26	1.00	47.00	1.00

Existing Wall - OK

Grid 7 - Existing Wall Check
1st Floor

Wind Force on Wall Line: 10,673 lbs (ASD)
Seismic Force on Wall Line: 12,464 lbs (ASD)

Wall ID	# of Walls	SEG or PSW or FTAO	Wall Segment and Opening Lengths							Length (ft)	Wall Height (ft)	Proportions of Wall Height			H:W Ratio	Aspect Ratio Reduct.	Effective Length (2b/h)*L	Co, PSW Reduct.
			L1 (ft)	Lo1 (ft)	L2 (ft)	Lo2 (ft)	L3 (ft)	Lo3 (ft)	L4 (ft)			ha (ft)	ho (ft)	hb (ft)				
1	1	SEG	76.00							76.00	12.00			12.0	0.16	1.00	76.00	1.00

Existing Wall - OK

ENSIGN
THE STANDARD IN ENGINEERING

Project: Pagnani Building Addition
By: Finau Kolomalu, EIT
Date: July 2026

Project No.: T1869G
Checked By: JMC

Grid 1

1st Floor

Wall ID	Total Length (ft)	Uniform DL (plf)	Wind Uplift (lb)	Seismic Uplift (lb)	FTAO Strap Force	Req'd FTAO Strap	Wind Shear (plf)	Seismic Shear (plf)	Use Shear Wall	Holdown Type	Holdown Required	Allowable Story Drift Seismic (in)	Shear Wall Drift Seismic (in)	Wind Deflection Limit (in)	Shear Wall Deflection Wind (in)
1	43.50	360	-5396	-3880	1123	CS16	141	221	**SW1**	Concrete Rod	**None Required**	2.400	0.650	0.667	0.042

Anchor Bolt Size (inches): 5/8
Anchor Bolt Designation: **AB32**

Grid 8

1st Floor

Wall ID	Total Length (ft)	Uniform DL (plf)	Wind Uplift (lb)	Seismic Uplift (lb)	FTAO Strap Force	Req'd FTAO Strap	Wind Shear (plf)	Seismic Shear (plf)	Use Shear Wall	Holdown Type	Holdown Required	Allowable Story Drift Seismic (in)	Shear Wall Drift Seismic (in)	Wind Deflection Limit (in)	Shear Wall Deflection Wind (in)
1	50.00	360	-6194	-4626	1123	CS16	127	200	**SW1**	Concrete Rod	**None Required**	2.400	0.507	0.667	0.035

Anchor Bolt Size (inches): 5/8
Anchor Bolt Designation: **AB32**

Grid 2 - Eixsiting Wall Check

1st Floor

Wall ID	Total Length (ft)	Uniform DL (plf)	Wind Uplift (lb)	Seismic Uplift (lb)	FTAO Strap Force	Req'd FTAO Strap	Wind Shear (plf)	Seismic Shear (plf)	Use Shear Wall	Holdown Type	Holdown Required	Allowable Story Drift Seismic (in)	Shear Wall Drift Seismic (in)	Wind Deflection Limit (in)	Shear Wall Deflection Wind (in)
1	47.00	360	-2368	-1128	NA	NA	227	265	**SW2**	Concrete Rod	**None Required**	2.880	0.934	0.800	0.105

Anchor Bolt Size (inches): 5/8
Anchor Bolt Designation: **AB32**

Grid 7 - Existing Wall Check

1st Floor

Wall ID	Total Length (ft)	Uniform DL (plf)	Wind Uplift (lb)	Seismic Uplift (lb)	FTAO Strap Force	Req'd FTAO Strap	Wind Shear (plf)	Seismic Shear (plf)	Use Shear Wall	Holdown Type	Holdown Required	Allowable Story Drift Seismic (in)	Shear Wall Drift Seismic (in)	Wind Deflection Limit (in)	Shear Wall Deflection Wind (in)
1	76.00	360	-6551	-5011	NA	NA	140	164	**SW1**	Concrete Rod	**None Required**	2.880	0.630	0.800	0.067

Anchor Bolt Size (inches): 5/8
Anchor Bolt Designation: **AB32**

ENSIGN
THE STANDARD IN ENGINEERING

Project: Pagnani Building Addition
By: Finau Kolomalu, EIT
Date: July 2026

Project No.: T1869G
Checked By: JMC

HOLDOWN & VERTICAL STRAP SCHEDULE

IBC 2024 / ASCE 7-22

HOLDOWN INTO CONCRETE								
Mark	Anchor	Wind or Seismic Capacity (LBS)	Rod Diameter	Min. Post Size	Min. Embed Depth in Footing	Edge Distance	Post Grade	
H-1	HTT4 w/ (18) 10dx1½ nails	3610	5/8"	3" x 3 1/2"	5"	9"	DF #2	
H-2	HTT5 w/ (26) 10d nails	4670	5/8"	3" x 3 1/2"	5"	9"	DF #2	
H-3	HDUE5 - (10) SDS3	5375	5/8"	3" x 3 1/2"	5"	9"	DF #2	
H-4	HDUE7 - (13) SDS3	6675	5/8"	3" x 3 1/2"	5"	9"	DF #2	*
H-5	HDUE9 - (16) SDS3.5	9390	7/8"	4 1/2" x 3 1/2"	6"	10 1/2"	DF #2	
H-6	HDUE13 - (23) SDS3.5	12950	1"	7 1/4" x 3 1/2"	8"	13 1/2"	DF #2	
H-7	HDUE17 - (28) SDS4.5	16040	1"	5 1/2" x 3 1/2"	9 1/2"	16"	DF #2	
H-8	HDUE17 - (28) SDS4.5	17565	1"	5 1/2" x 5 1/2"	9 1/2"	16"	DF #2	*
H-9	HD19 (1 1/8") & (5) 1" Bolts	16735	1 1/8"	5 1/2" x 5 1/2"	12 1/2"	19"	DF #1	
H-10	HD19 (1 1/4") & (5) 1" Bolts	19070	1 1/4"	5 1/2" x 5 1/2"	14 1/2"	22"	DF #1	

*Governed by anchor capacity

Notes:

All anchors are Simpson Strong-Tie. Install per manufacturer's specifications.
All capacities shown are ASD. All min. post sizes are based on 9 ft max nominal top plate heights. For 8ft use 7.25" for H-7&8, T-7&8 and 4x10 for H-9&10, T-9&10.
Use 4" end distance at foundation blockouts.
CS and CMST straps are specified with: strap type - total # of of 10d nails required - end length required onto the studs. CMSTC16 Strap uses 16d Sinker Nails.
Provide 1/2" X 1 3/4" X 1 3/4" plate washer for 5/8" dia. anchors, 1/2" X 2 1/2" X 2 1/2" plate washer for 7/8" dia. anchors, 5/8" X 3" X 2 3/4" plate washer for 1" dia. anchors, 5/8" X 3 1/2" X 3 1/4" plate washer for 1 1/8" dia. anchors, and 3/4" X 3 1/2" X 3 1/2" plate washer for 1 1/4" dia. anchors. Provide nut top & bot.
For stem wall applications use SABR 5/8" x 24" embed 18" min. in wall for HTT4, HTT5, HDUE5 holdowns. HDUE9 may use SABR 7/8" x 2" at midwall embed 24" min.
Ensure that the Min. Edge distances are met for all anchors in concrete.
Min. anchor bolt strength is ASTM F-1554 GRADE 36 U.N.O.
LSTHD's and STHD's assume 8" stemwalls minimum.

ANCHOR BOLTS

2024 NDS Table 12E

1/2" Diameter Anchor Bolts		
Mark	Bolt Spacing	Capacifty (plf)
AB32	32"	384
AB24	24"	512
AB16	16"	768
AB12	12"	1024
AB8	8"	1536

5/8" Diameter Anchor Bolts		
Mark	Bolt Spacing	Capacifty (plf)
AB32	32"	552
AB24	24"	736
AB16	16"	1104
AB12	12"	1472
AB8	8"	2208

Notes:
7" minimum embedment depth on all anchor bolts.
3" x 3" x 0.229" plate washers on all anchor bolts. 1/2" away from sheathing.
(2) anchor bolts min. per shear wall.
Anchors are located a minimum of 1 3/4" away from the edge of concrete
Anchor bolts are to be located 15 anchor diameters away from a concrete edge that is perpendicular to the sill plate.
Sill plate is 2x or 3x minimum. (Capacities shown here are based on a 2x sill plate)

Project:	Pagnani Building Addition	Project No.:	T1869G
By:	Finau Kolomalu, EIT	Checked By:	JMC
Date:	July 2026		

REDUNDANCY FACTOR

CHAPTER 12.3.4.2, ASCE 7-22 *IBC 2024 / ASCE 7-22*

For structures assigned to Seismic Design Category D, E, or F, ρ shall equal 1.3 unless one of the following two conditions is met, whereby ρ is permitted to be taken as 1.0:

	Check List
a) Each story resisting more than 35% of the base shear in the direction of interest shall comply with the following: Removal of a shearwall with a height-to-width ratio greater than 1.0 within any story, or collector connections thereto, would not result in more than a 33% reduction in story strength, nor does the resulting system have an extreme torsional irregularity (horizontal structural irregularity Type 1b).	YES
b) Structures that are regular in plan at all levels provided that the seismic force-resisting systems consist of at least two bays of seismic force-resisting perimeter framing on each side of the structure in each orthogonal direction at each story resisting more than 35% of the base shear. The number of bays for a shear wall shall be calculated as two times the length of shear wall divided by the story height for light framed construction.	NO

NOTE: ONLY ONE CASE NEED APPLY FOR ρ TO BE 1.0.

ρ = 1.0

ENSIGN
THE STANDARD IN ENGINEERING

Project: Pagnani Building Addition
By: Finau Kolomalu, EIT
Date: July 2026

Project No.: T1869G
Checked By: JMC

FOOTINGS

ACI 318-19 *IBC 2024 / ASCE 7-22*

Assumed Bearing Capacity: 4000 psf

Location =	Typ.		
Roof =	988	0	plf
Floor =	0	0	plf
Wall =	432	0	plf
Fdtn =	300	0	plf
Total =	1720	0	plf
Width =	5.2	0.0	in
Mark =	**FC2.0**		

Spot Footing:

Roof =	6460	lbs
Snow =	11951	lbs
	18411	lbs

Max Load =	16000	25000	36000	49000	64000	81000	lbs
Area =	4.0	6.3	9.0	12.3	16.0	20.3	ft^2
Side =	24.0	30.0	36.0	42.0	48.0	54.0	in
Mark =	**FS2.0**	**FS2.5**	**FS3.0**	**FS3.5**	**FS4.0**	**FS4.5**	

Footing Schedule

Mark	Type	Dimensions (Inches)			Reinforcement	
		Thickness	Length	Width	Longitudinal	Transverse
FC1.7	Cont.	10	cont.	20	(2) #5	-
FC2.0	Cont.	12	cont.	24	(2) #5	-
FC2.5	Cont.	12	cont.	30	(3) #5	-
FC3.0	Cont.	12	cont.	36	(4) #5	-
FS2.0	Spot	12	24	24	(3) #5	(3) #5
FS2.5	Spot	12	30	30	(3) #5	(3) #5
FS3.0	Spot	12	36	36	(4) #5	(4) #5
FS3.5	Spot	12	42	42	(4) #5	(4) #5
FS4.0	Spot	12	48	48	(5) #5	(5) #5
FS4.5	Spot	12	54	54	(5) #5	(5) #5
FS5.0	Spot	12	60	60	(6) #5	(6) #5
FS5.5	Spot	12	66	66	(6) #5	(6) #5

Notes: Use grade 60 rebar.
All footings must be placed below frost depth unless otherwise noted on plans

ENSIGN
THE STANDARD IN ENGINEERING

Project: Pagnani Building Addition
By: Finau Kolomalu, EIT
Date: July 2026

Project No.: T1869G
Checked By: JMC

STANDARD FOUNDATION WALLS

ACI 318-19 *IBC 2024 / ASCE 7-22*

Foundation Schedule			Horizontal Reinforcement		Vertical Reinforcement	
Mark	Wall Height	Thickness	Size	Spacing	Size	Spacing
Typ.	4'	8"	#4	18"	#4	24"
Typ.	8'	8"	#4	18"	#4	24"
Typ.	9'	8"	#4	18"	#4	16"
Typ.	10'	8"	#4	18"	#5	12"

Notes: Wall height refers to final grade difference through the wall. Total height of wall may be higher due to footing drop for frost protection or native soil bearing as long as wall is backfilled such that the grade difference does not exceed the wall height at any time during construction.
ALL REBAR TO BE GRADE 60.
Place vertical bars in the center of wall.
Extend vertical bars from the footing to within 3" of the top of wall.
Provide #4 dowel with standard hook in the footing to match the vertical rebar.
Extend vertical leg of dowel 24" min. into wall.
Place (1) #4 horizontally within 4" of top and bottom of wall.
Provide corner reinforcing so as to lap 24" min.
Provide (2) #4 above, (1) #4 each side, and (1) #4 below all openings.
Place steel within 2" of openings & extend 24" min. beyond edge of opening.
Vertical bars around openings may terminate 3" from top of wall.

Project:	Pagnani Building Addition	Project No.:	T1869G
By:	Finau Kolomalu, EIT	Checked By:	JMC
Date:	July 2026		

ROOF FRAMING

NDS 2024 EDITION *IBC 2024 / ASCE 7-22*

Roof Trusses:

Use pre-engineered trusses @ 24" o.c.
Provide truss blocking as shown on plans and per manufacturer's specifications.
All truss connection hardware to be designed by the truss manufacturer.
Provide full depth blocking at all bearing locations with (1) A35 clip to top plate per block U.N.O.
Nail through sheathing with 8d common @ 4" o.c. into blocking U.N.O.
Provide "H1" clips at both ends of every truss U.N.O.

Roof Beams:

See attached beam calculations.

Roof Sheathing:

Provide 5/8" or thicker 24/16 APA rated panel.
Nail with 8d common at 6" o.c. at panel edge and 12" o.c. in the field.
Provide 'H' clips at all unsupported edges.
Provide 1/8" gap between panels at time of installation.

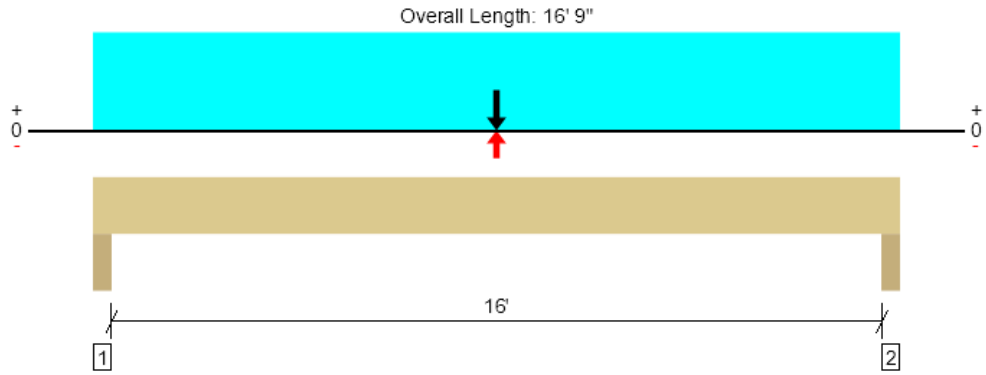
Roof			
Member Name	**Results (Max UTIL %)**	**Current Solution**	**Comments**
Entrance Headers	Passed (77% M+)	1 piece(s) 5 1/8" x 18" 24F-V4 DF Glulam	
Entrance Headers	Passed (95% M)	3 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
Side Headers	Passed (70% R)	3 piece(s) 2 x 10 DF No.2	
Through Door Header @ 2	Passed (85% R)	3 piece(s) 2 x 10 DF No.2	
B-C Girder @ 7.5	Passed (31% R)	1 piece(s) 8 3/4" x 18" 24F-V4 DF Glulam	
C-D Girder @ 7.5	Passed (29% R)	1 piece(s) 8 3/4" x 18" 24F-V4 DF Glulam	
F-G Girder @ 7.5	Passed (35% R)	1 piece(s) 8 3/4" x 18" 24F-V4 DF Glulam	
E-F Girder @ 1.5, TYP.	Passed (51% R)	1 piece(s) 8 3/4" x 18" 24F-V4 DF Glulam	
Free Standing Post	Passed (39% B/C)	1 piece(s) 8 x 8 DF No.1	
Wall: Stud	Passed (32% B/C)	1 piece(s) 2 x 6 DF No.2 @ 16" OC	

ForteWEB Software Operator	Job Notes
Finau Kolomalu Ensign Engineering (608) 642-8655 fkolomalu@ensignutah.com	

Weyerhaeuser

Roof, Entrance Headers

1 piece(s) 5 1/8" x 18" 24F-V4 DF Glulam



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)	7283 @ 3"	14991 (4.50")	Passed (49%)	--	1.0 D + 0.7 S (All Spans)
Shear (lbs)	6521 @ 1' 10 1/2"	18742	Passed (35%)	1.15	1.0 D + 0.7 S (All Spans)
Pos Moment (Ft-lbs)	44935 @ 8' 4 1/2"	58569	Passed (77%)	1.15	1.0 D + 0.7 S (All Spans)
Live Load Defl. (in)	0.145 @ 8' 4 1/2"	0.325	Passed (L/999+)	--	1.0 D + 0.7 S (All Spans)
Total Load Defl. (in)	0.410 @ 8' 4 1/2"	0.813	Passed (L/476)	--	1.0 D + 0.7 S (All Spans)

Member Length : 16' 9"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2024
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Volume factor of 0.99 was calculated for positive bending using length L = 16' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				
	Total	Available	Required	Dead	Snow	Wind	Factored	Accessories
1 - Trimmer - DF	4.50"	4.50"	2.19"	5183	3001	-2604	7283	None
2 - Trimmer - DF	4.50"	4.50"	2.19"	5183	3001	-2604	7283	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Wind (1.60)	Comments
0 - Self Weight (PLF)	0 to 16' 9"	N/A	22.4	--	--	
1 - Uniform (PSF)	0 to 16' 9"	8'	48.0	--	--	Wall
2 - Point (lb)	8' 4 1/2"	N/A	3558	6001	-5207	Linked from: B-C Girder @ 1.5, Support 1

Weyerhaeuser Notes

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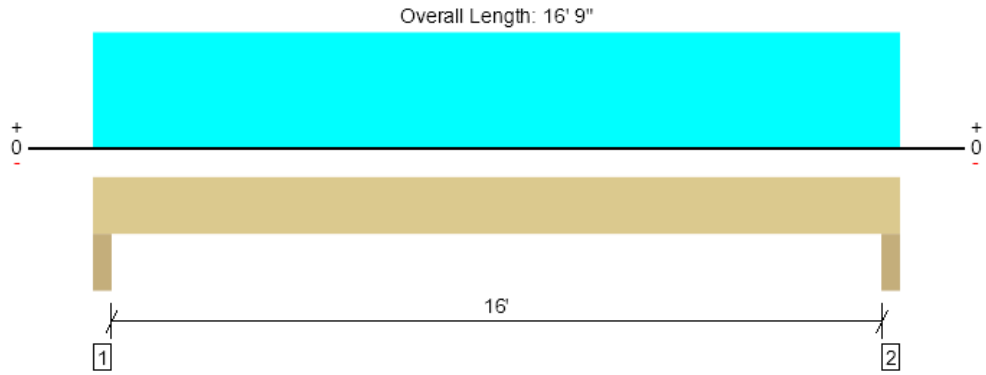
The product application, input design loads, dimensions and support information have been provided by F. Kolomalu

MEMBER REPORT

PASSED

Roof, Entrance Headers

3 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL



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)	5059 @ 3"	17719 (4.50")	Passed (29%)	--	1.0 D + 0.7 S (All Spans)
Shear (lbs)	4128 @ 1' 6 1/2"	16060	Passed (26%)	1.15	1.0 D + 0.7 S (All Spans)
Moment (Ft-lbs)	19938 @ 8' 4 1/2"	21026	Passed (95%)	1.15	1.0 D + 0.7 S (All Spans)
Live Load Defl. (in)	0.098 @ 8' 4 1/2"	0.325	Passed (L/999+)	--	1.0 D + 0.7 S (All Spans)
Total Load Defl. (in)	0.426 @ 8' 4 1/2"	0.813	Passed (L/458)	--	1.0 D + 0.7 S (All Spans)

- Deflection criteria: LL (L/600) and TL (L/240).

Member Length : 16' 9"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2024
Design Methodology : ASD

Supports	Bearing Length			Loads to Supports (lbs)			
	Total	Available	Required	Dead	Snow	Factored	Accessories
1 - Trimmer - DF	4.50"	4.50"	1.50"	3898	1658	5059	None
2 - Trimmer - DF	4.50"	4.50"	1.50"	3898	1658	5059	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 16' 9"	N/A	21.5	--	
1 - Uniform (PSF)	0 to 16' 9"	8'	48.0	--	Wall
2 - Uniform (PSF)	0 to 16' 9"	3'	20.0	66.0	Roof + Drift

Weyerhaeuser Notes

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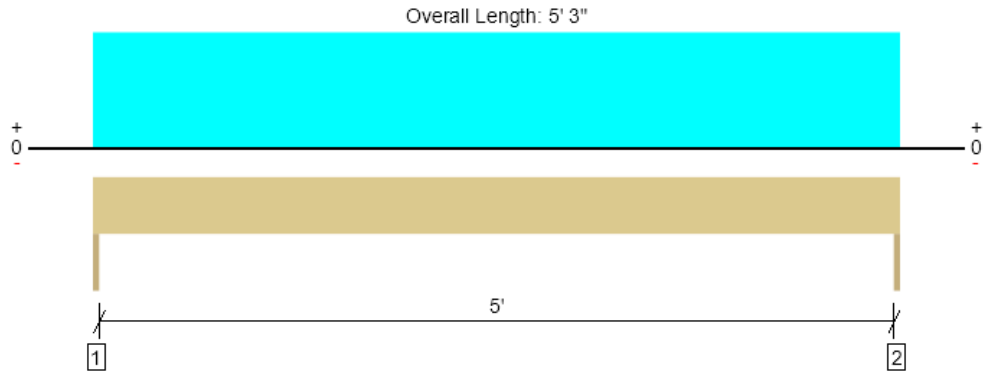
The product application, input design loads, dimensions and support information have been provided by F. Kolomalu

MEMBER REPORT

PASSED

Roof, Side Headers

3 piece(s) 2 x 10 DF No.2



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)	2939 @ 0	4219 (1.50")	Passed (70%)	--	1.0 D + 0.7 S (All Spans)
Shear (lbs)	1936 @ 10 3/4"	5744	Passed (34%)	1.15	1.0 D + 0.7 S (All Spans)
Moment (Ft-lbs)	3857 @ 2' 7 1/2"	5887	Passed (66%)	1.15	1.0 D + 0.7 S (All Spans)
Live Load Defl. (in)	0.016 @ 2' 7 1/2"	0.105	Passed (L/999+)	--	1.0 D + 0.7 S (All Spans)
Total Load Defl. (in)	0.040 @ 2' 7 1/2"	0.262	Passed (L/999+)	--	1.0 D + 0.7 S (All Spans)

Member Length : 5' 3"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2024
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Allowed moment has been multiplied by 0.97 for the beam stability factor and 1.10 for the volume/size factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			
	Total	Available	Required	Dead	Snow	Factored	Accessories
1 - Trimmer - DF	1.50"	1.50"	1.50"	1786	1646	2939	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	1786	1646	2939	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 3"	N/A	10.6	--	
1 - Uniform (PSF)	0 to 5' 3"	9' 6"	20.0	66.0	Roof+Drift
2 - Uniform (PSF)	0 to 5' 3"	10'	48.0	--	Wall

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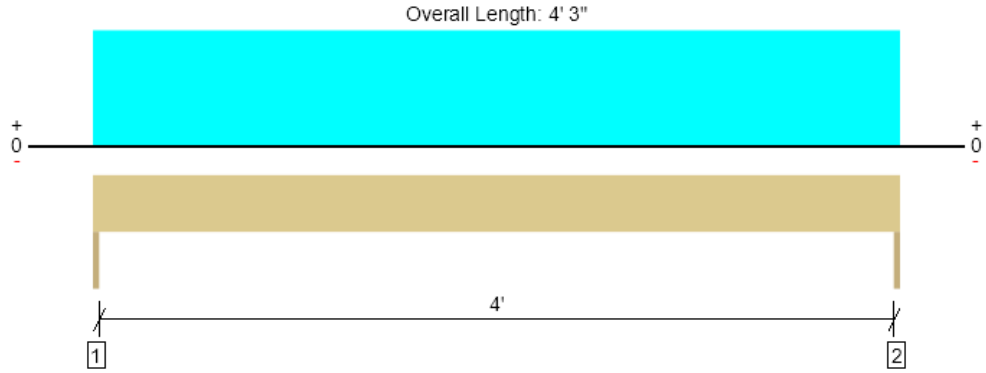
The product application, input design loads, dimensions and support information have been provided by F. Kolomalu

MEMBER REPORT

PASSED

Roof, Through Door Header @ 2

3 piece(s) 2 x 10 DF No.2



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)	3575 @ 0	4219 (1.50")	Passed (85%)	--	1.0 D + 0.7 S (All Spans)
Shear (lbs)	2068 @ 10 3/4"	5744	Passed (36%)	1.15	1.0 D + 0.7 S (All Spans)
Moment (Ft-lbs)	3798 @ 2' 1 1/2"	5941	Passed (64%)	1.15	1.0 D + 0.7 S (All Spans)
Live Load Defl. (in)	0.013 @ 2' 1 1/2"	0.085	Passed (L/999+)	--	1.0 D + 0.7 S (All Spans)
Total Load Defl. (in)	0.026 @ 2' 1 1/2"	0.213	Passed (L/999+)	--	1.0 D + 0.7 S (All Spans)

Member Length : 4' 3"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2024
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Allowed moment has been multiplied by 0.98 for the beam stability factor and 1.10 for the volume/size factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			
	Total	Available	Required	Dead	Snow	Factored	Accessories
1 - Trimmer - DF	1.50"	1.50"	1.50"	1807	2525	3575	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	1807	2525	3575	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 4' 3"	N/A	10.6	--	
1 - Uniform (PSF)	0 to 4' 3"	18'	20.0	66.0	Roof+Drift
2 - Uniform (PSF)	0 to 4' 3"	10'	48.0	--	Wall

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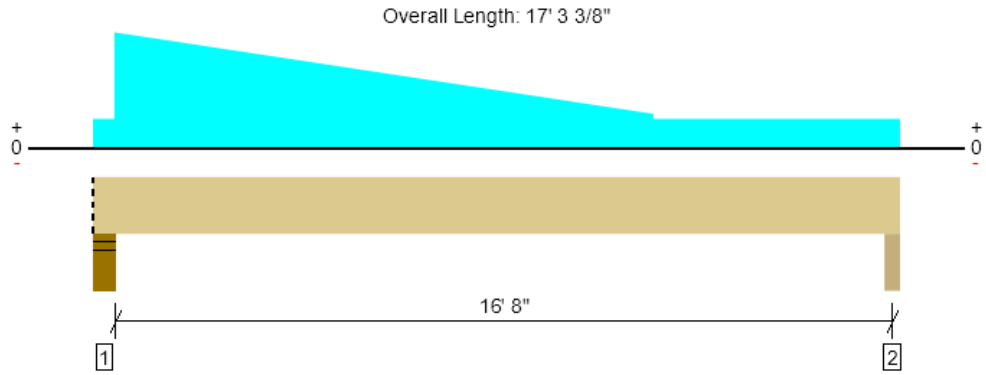
The product application, input design loads, dimensions and support information have been provided by F. Kolomalu

MEMBER REPORT

PASSED

Roof, B-C Girder @ 7.5

1 piece(s) 8 3/4" x 18" 24F-V4 DF Glulam



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)	6509 @ 17' 1 1/8"	21328 (3.75")	Passed (31%)	--	1.0 D + 0.7 S (All Spans)
Shear (lbs)	9028 @ 1' 11 1/2"	31999	Passed (28%)	1.15	1.0 D + 0.7 S (All Spans)
Pos Moment (Ft-lbs)	28892 @ 8' 3 11/16"	101177	Passed (29%)	1.15	1.0 D + 0.7 S (All Spans)
Neg Moment (Ft-lbs)	-3988 @ 8' 8 9/16"	108509	Passed (4%)	1.60	0.6 D + 0.6 W (All Spans)
Live Load Defl. (in)	0.096 @ 8' 6 3/8"	0.559	Passed (L/999+)	--	1.0 D + 0.7 S (All Spans)
Total Load Defl. (in)	0.191 @ 8' 7 7/16"	0.838	Passed (L/999+)	--	1.0 D + 0.7 S (All Spans)

Member Length : 17' 3 3/8"
System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2024
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Volume factor of 0.93 was calculated for positive bending using length L = 16' 9 1/8".
- Volume factor of 0.93 was calculated for negative bending using length L = 16' 9 1/8".
- -990 lbs uplift at support located at 4". Strapping or other restraint may be required.
- -973 lbs uplift at support located at 17' 1 1/8". Strapping or other restraint may be required.
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Snow	Wind	Factored	
1 - Stud wall - DF	5.50"	5.50"	1.50"	3558	6001	-5207	7758/-990	Blocking
2 - Column - DF	3.75"	3.75"	1.50"	3498	4302	-5120	6509/-973	None

- 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)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Wind (1.60)	Comments
0 - Self Weight (PLF)	0 to 17' 3 3/8"	N/A	38.3	--	--	
1 - Uniform (PSF)	0 to 17' 3 3/8" (Top)	18' 6"	20.0	22.0	--	Roof
2 - Tapered (PSF)	5 1/2" to 12' (Top)	18' 6" to 0	--	29.0	--	Drift
3 - Tapered (PLF)	5 1/2" to 12' (Front)	N/A	--	0.0 to 30.0	--	Drift from Sides
4 - Uniform (PSF)	0 to 17' 3 3/8" (Front)	18' 6"	--	--	-32.3	Wind Uplift

- Side loads are assumed to not induce cross-grain tension.

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The product application, input design loads, dimensions and support information have been provided by F. Kolomalu

ForteWEB Software Operator	Job Notes
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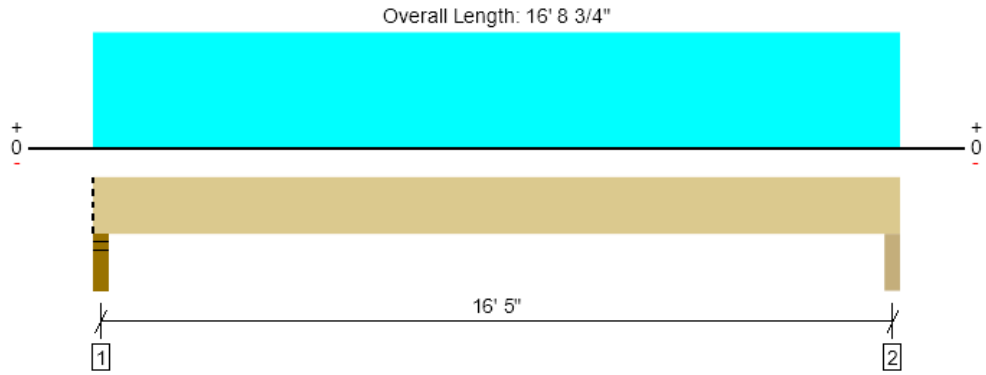
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MEMBER REPORT

Roof, C-D Girder @ 7.5

1 piece(s) 8 3/4" x 18" 24F-V4 DF Glulam



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)	5974 @ 2 1/4"	20508 (3.75")	Passed (29%)	--	1.0 D + 0.7 S (All Spans)
Shear (lbs)	4679 @ 1' 9 3/4"	31999	Passed (15%)	1.15	1.0 D + 0.7 S (All Spans)
Pos Moment (Ft-lbs)	23877 @ 8' 4 3/8"	101426	Passed (24%)	1.15	1.0 D + 0.7 S (All Spans)
Neg Moment (Ft-lbs)	-3797 @ 8' 4 3/8"	108775	Passed (3%)	1.60	0.6 D + 0.6 W (All Spans)
Live Load Defl. (in)	0.064 @ 8' 4 3/8"	0.545	Passed (L/999+)	--	1.0 D + 0.7 S (All Spans)
Total Load Defl. (in)	0.150 @ 8' 4 3/8"	0.818	Passed (L/999+)	--	1.0 D + 0.7 S (All Spans)

Member Length : 16' 8 3/4"
System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2024
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Volume factor of 0.93 was calculated for positive bending using length L = 16' 4 1/4".
- Volume factor of 0.93 was calculated for negative bending using length L = 16' 4 1/4".
- -950 lbs uplift at support located at 2 1/4". Strapping or other restraint may be required.
- -950 lbs uplift at support located at 16' 6 1/2". Strapping or other restraint may be required.
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Snow	Wind	Factored	
1 - Stud wall - DF	3.75"	3.75"	1.50"	3415	3655	-4998	5974/-950	Blocking
2 - Column - DF	3.75"	3.75"	1.50"	3415	3655	-4998	5974/-950	None

- 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)	Continuous	
Bottom Edge (Lu)	All Bearing Points	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Wind (1.60)	Comments
0 - Self Weight (PLF)	0 to 16' 8 3/4"	N/A	38.3	--	--	
1 - Uniform (PSF)	0 to 16' 8 3/4" (Top)	18' 6"	20.0	22.0	--	Roof
2 - Uniform (PLF)	0 to 16' 8 3/4" (Top)	N/A	--	30.0	--	Drift from Sides
3 - Uniform (PSF)	0 to 16' 8 3/4" (Front)	18' 6"	--	--	-32.3	Wind Uplift

- Side loads are assumed to not induce cross-grain tension.

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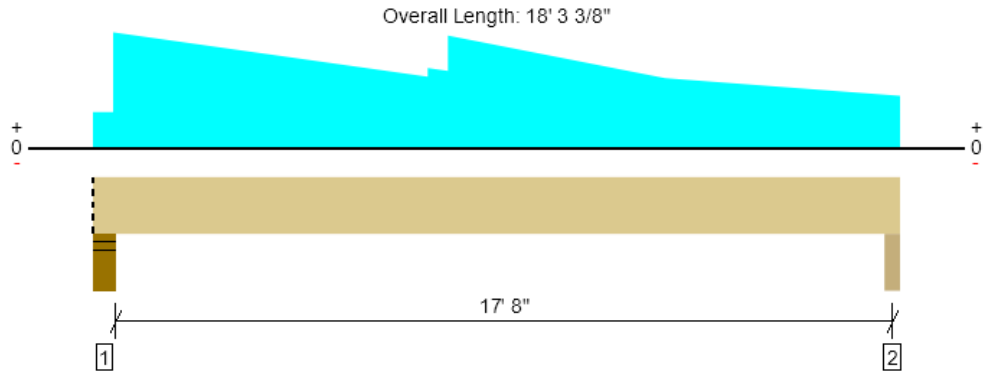
ForteWEB Software Operator	Job Notes
Finau Kolomalu Ensign Engineering (608) 642-8655 fkolomalu@ensignutah.com	

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MEMBER REPORT

Roof, F-G Girder @ 7.5

1 piece(s) 8 3/4" x 18" 24F-V4 DF Glulam



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)	7560 @ 18' 1 1/8"	21328 (3.75")	Passed (35%)	--	1.0 D + 0.7 S (All Spans)
Shear (lbs)	7551 @ 1' 11 1/2"	31999	Passed (24%)	1.15	1.0 D + 0.7 S (All Spans)
Pos Moment (Ft-lbs)	33652 @ 9' 4"	100593	Passed (33%)	1.15	1.0 D + 0.7 S (All Spans)
Neg Moment (Ft-lbs)	-4006 @ 9' 8 5/16"	107882	Passed (4%)	1.60	0.6 D + 0.6 W (All Spans)
Live Load Defl. (in)	0.139 @ 9' 2 1/4"	0.592	Passed (L/999+)	--	1.0 D + 0.7 S (All Spans)
Total Load Defl. (in)	0.248 @ 9' 2 13/16"	0.888	Passed (L/861)	--	1.0 D + 0.7 S (All Spans)

Member Length : 18' 3 3/8"
System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2024
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Volume factor of 0.93 was calculated for positive bending using length L = 17' 9 1/8".
- Volume factor of 0.93 was calculated for negative bending using length L = 17' 9 1/8".
- -821 lbs uplift at support located at 4". Strapping or other restraint may be required.
- -975 lbs uplift at support located at 18' 1 1/8". Strapping or other restraint may be required.
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Snow	Wind	Factored	
1 - Stud wall - DF	5.50"	5.50"	1.50"	3151	6302	-4520	7563/-821	Blocking
2 - Column - DF	3.75"	3.75"	1.50"	3554	5722	-5179	7560/-975	None

- 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)	Continuous	
Bottom Edge (Lu)	All Bearing Points	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Wind (1.60)	Comments
0 - Self Weight (PLF)	0 to 18' 3 3/8"	N/A	38.3	--	--	
1 - Uniform (PSF)	0 to 7' 7" (Top)	13' 6"	20.0	22.0	--	Roof
2 - Uniform (PSF)	7' 7" to 18' 3 3/8" (Top)	18' 6"	20.0	22.0	--	Roof
3 - Uniform (PSF)	0 to 7' 7" (Front)	13' 6"	--	--	-32.3	Wind Uplift
4 - Uniform (PSF)	7' 7" to 18' 3 3/8" (Front)	18' 6"	--	--	-32.3	Wind Uplift
5 - Tapered (PSF)	5 1/2" to 8' 1/2" (Front)	13' 6" to 5' 6"	--	33.0	--	
6 - Tapered (PSF)	8' 1/2" to 12' 11 1/2" (Front)	11' 6" to 4' 3"	--	33.0	--	
7 - Tapered (PSF)	12' 11 1/2" to 18' 3 3/8" (Front)	4' 3" to 1' 3"	--	33.0	--	
8 - Uniform (PLF)	0 to 18' 3 3/8" (Front)	N/A	--	70.0	--	

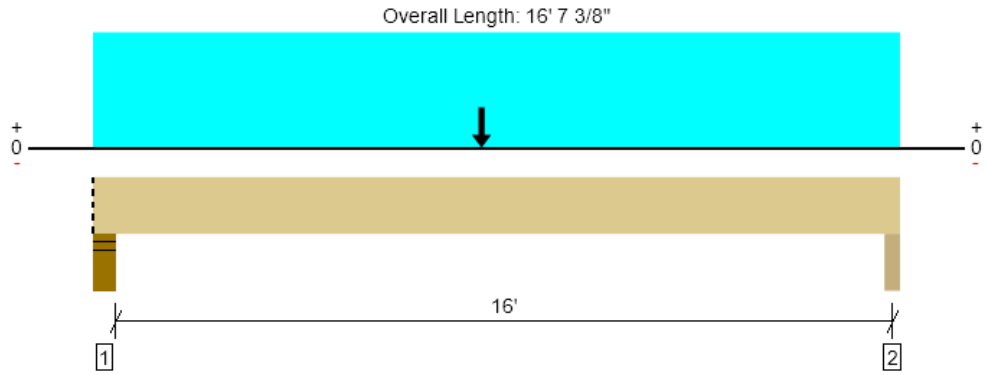
- Side loads are assumed to not induce cross-grain tension.

ForteWEB Software Operator	Job Notes
Finau Kolomalu Ensign Engineering (608) 642-8655 fkolomalu@ensignutah.com	

Weyerhaeuser

Roof, E-F Girder @ 1.5, TYP.

1 piece(s) 8 3/4" x 18" 24F-V4 DF Glulam



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)	10982 @ 16' 5 1/8"	21328 (3.75")	Passed (51%)	--	1.0 D + 0.7 S (All Spans)
Shear (lbs)	8664 @ 1' 11 1/2"	31999	Passed (27%)	1.15	1.0 D + 0.7 S (All Spans)
Pos Moment (Ft-lbs)	44491 @ 8' 1 11/16"	101589	Passed (44%)	1.15	1.0 D + 0.7 S (All Spans)
Neg Moment (Ft-lbs)	-2448 @ 9' 11 9/16"	108950	Passed (2%)	1.60	0.6 D + 0.6 W (All Spans)
Live Load Defl. (in)	0.173 @ 8' 4 9/16"	0.536	Passed (L/999+)	--	1.0 D + 0.7 S (All Spans)
Total Load Defl. (in)	0.268 @ 8' 4 1/2"	0.805	Passed (L/720)	--	1.0 D + 0.7 S (All Spans)

Member Length : 16' 7 3/8"
System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2024
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Volume factor of 0.93 was calculated for positive bending using length L = 16' 1 1/8".
- Volume factor of 0.93 was calculated for negative bending using length L = 16' 1 1/8".
- -778 lbs uplift at support located at 4". Strapping or other restraint may be required.
- -780 lbs uplift at support located at 16' 5 1/8". Strapping or other restraint may be required.
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Snow	Wind	Factored	
1 - Stud wall - DF	5.50"	5.50"	2.05"	3846	10509	-5143	11202/-778	Blocking
2 - Column - DF	3.75"	3.75"	1.93"	3754	10326	-5053	10982/-780	None

- 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)	Continuous	
Bottom Edge (Lu)	All Bearing Points	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Wind (1.60)	Comments
0 - Self Weight (PLF)	0 to 16' 7 3/8"	N/A	38.3	--	--	
1 - Uniform (PSF)	0 to 16' 7 3/8" (Top)	19'	20.0	66.0	--	Roof
2 - Uniform (PSF)	0 to 16' 7 3/8" (Front)	19'	--	--	-32.3	Wind Uplift
3 - Point (lb)	8' (Front)	N/A	650	--	--	RTU

- Side loads are assumed to not induce cross-grain tension.

Weyerhaeuser Notes

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The product application, input design loads, dimensions and support information have been provided by F. Kolomalu

ForteWEB Software Operator	Job Notes
Finau Kolomalu Ensign Engineering (608) 642-8655 fkolomalu@ensignutah.com	

Weyerhaeuser

MEMBER REPORT

PASSED

Roof, Free Standing Post

1 piece(s) 8 x 8 DF No.1

Post Height: 12'



Drawing is Conceptual

Design Results	Actual	Allowed	Result	LDF	Load: Combination
Slenderness	19	50	Passed (38%)	--	--
Compression (lbs)	15858	47220	Passed (34%)	1.15	1.0 D + 0.7 S
Base Bearing (lbs)	15858	1670625	Passed (1%)	--	1.0 D + 0.7 S
Bending/Compression	0.39	1	Passed (39%)	1.15	1.0 D + 0.7 S

- Input axial load eccentricity for this design is 16.67% of applicable member side dimension.
- Applicable calculations are based on NDS.

Supports	Type	Material
Base	Plate	Steel

Max Unbraced Length	Comments
Full Member Length	No bracing assumed.

Member Type : Free Standing Post
Building Code : IBC 2024
Design Methodology : ASD

Vertical Load	Dead (0.90)	Snow (1.15)	Comments
1 - Point (lb)	7000	12654	Roof

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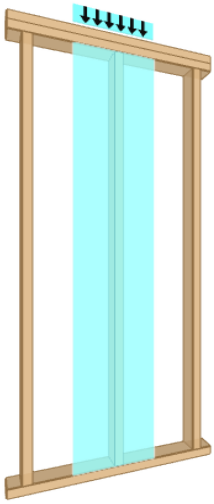
MEMBER REPORT

PASSED

Roof, Wall: Stud

1 piece(s) 2 x 6 DF No.2 @ 16" OC

Wall Height: 12' Member Height: 11' 7 1/2" O. C. Spacing: 16.00"



Drawing is Conceptual

Design Results	Actual	Allowed	Result	LDF	Load: Combination
Slenderness	25	50	Passed (51%)	--	--
Compression (lbs)	612	5432	Passed (11%)	1.15	1.0 D + 0.7 S
Plate Bearing (lbs)	612	6445	Passed (9%)	--	1.0 D + 0.7 S
Lateral Reaction (lbs)	134	--	--	1.60	1.0 D + 0.6 W
Lateral Shear (lbs)	123	1584	Passed (8%)	1.60	1.0 D + 0.6 W
Lateral Moment (ft-lbs)	388 @ mid-span	1342	Passed (29%)	1.60	1.0 D + 0.6 W
Total Deflection (in)	0.21 @ mid-span	1.16	Passed (L/671)	--	1.0 D + 0.6 W
Bending/Compression	0.32	1	Passed (32%)	1.60	1.0 D + 0.6 W

- Wall deflection criteria: TL (L/120)
- Input axial load eccentricity for this design is 16.67% of applicable member side dimension.
- Applicable calculations are based on NDS.
- A bearing area factor of 1.25 has been applied to base plate bearing capacity.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.

Supports	Type	Material
Top	Dbl 2X	Douglas Fir-Larch
Base	2X	Douglas Fir-Larch

System : Wall
Member Type : Stud
Building Code : IBC 2024
Design Methodology : ASD

Max Unbraced Length	Comments
1'	

Lateral Connections

Supports	Connector	Type/Model	Quantity	Connector Nailing
Top	Nails	8d (0.113" x 2 1/2") (Toe)	2	N/A
Base	Nails	8d (0.113" x 2 1/2") (Toe)	2	N/A

- Nailed connection at the top of the member is assumed to be nailed through the bottom 2x plate prior to placement of the top 2x of the double top plate assembly.

Vertical Load	Spacing	Dead (0.90)	Roof Live (1.25)	Snow (1.15)	Comments
1 - Point (PLF)	16.00"	200.0	200.0	370.0	Roof

Lateral Load	Location	Spacing	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	16.00"	28.7	

- ASCE/SEI 7 Sec. 30.4: Exposure Category (C), Mean Roof Height (15' 6"), Topographic Factor (1.0), Wind Directionality Factor (0.85), Basic Wind Speed (115), Risk Category(II), Wind Zone (4), GCpi (+/- 0.18), Effective Wind Area determined using full member span and trib. width.
- IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

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