STRUCTURAL CALCS

Yeganeh Residence
3029 62nd Ave SE
Mercer Island, WA
98040

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ATLAS CONSULTING ENGINEERS INC.

Project: Yeganeh Residence (3029 62nd Ave SE)	By: JDA
Proj No: 252-2024	Date: 05/24/24

Summary

The project consists of a new single family residence (SFR) with two above grade levels and full level basement in Mercer Island. The 4123 SF (total area, +) SFR will have a main floor deck at the west; as well as low roof deck at the upper floor and rooftop deck above.

Foundations will consist of a reinforced 8" mat slab and spread footings at the isolated exterior posts; the main floor and upper floors are framed with TJI's spanning to bearing walls (exterior and interior) and beams, while the flat roof decks are framed with conventional flat connector plate trusses. The lower floor has a slab-on grade ground floor. The lateral systems will consist of wood sheathed diaphragms and shear walls (tongue & groove plywood floor sheathing, plywood roof and wall sheathing), and Simpson StrongTie holdowns.

See pages 2 - 3 for lateral design. Site seismic variables are shown on pages 4 - 5; shearwall lengths are shown on pages 6 - 8; wind load derivation is shown on pages 9 - 10; and wind areas are shown on page 11. Seismic and wind loads were determined using ASCE 7-16 procedures. As shown on pages 2 - 3, shearwalls with 10d nails spaced at 6" o.c. (SW-6), 4" oc (SW-4), 3" oc (SW-3), 2" oc (SW-2), and 3" oc at each side (SW-33) are required. Shearwalls have been detailed to meet the ASD shearwall capacity values as listed in 1/S6.5. LTP4 and A34 clips have an ASD capacity of 540# and 550# per clip; SDS screws have an ASD capacity of 400# per screws; 5/8" and 3/4" diameter anchor bolts have an ASD capacity of 1485# and 2039# with Doug Fir plates. The required spacing of these connectors is shown in the shearwall table in the plans. Each shearwall will have a different uplift demand, as shown on pages 2 - 3. Use strapped shearwalls to minimize amount and magnitude of holdowns; see pages 10 - 17. Extend straps above and below opening a sufficient distance to ensure strap has capacity and shearwall capacity is not exceeded. Note that sheathing above and below opening is not accounted for in shearwall design, only to transfer shear forces to piers. Simpson holdowns will be used as shown in the plans, sized to ensure ASD uplift capacity. Anchorage of the HDU's into concrete were designed for worst case LRFD load when including the seismic overstrength factor. To preclude breakout, additional reinforcing hairpins are detailed to transfer shear force into new foundation walls. Where holdowns occur over a beam, ensure beam flexural/shear/bearing capacity is sufficient when including overstrength.

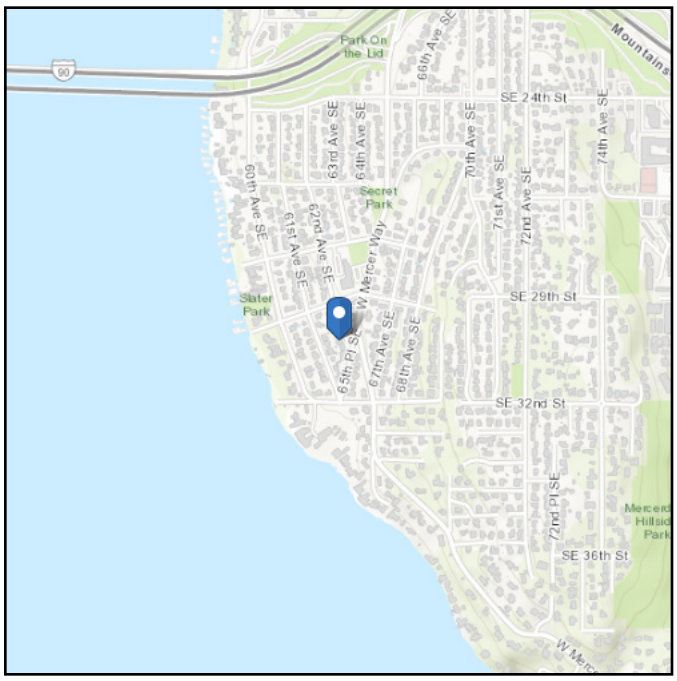
Gravity system was designed for 25 psf roof snow load + 5 psf rain surcharge, 25 psf roof dead load (to account for additional weight from roof deck or solar), 60 psf deck live load, 40 psf floor live load, 35 psf floor dead load (includes 1-1/2" gypcrete), and 15 psf deck dead load. See pages 20 -21 for framing key; and pages 22 - 75 for member designs. Uplift for each member considering 0.6D+0.6W will be resisted by straps at headers/beams; and H2.5a hurricane ties at rafters. Where applicable, post caps will be provided to resist uplift and/or increase bearing strength. Note that where applicable, overstrength seismic chord forces were considered in beam designs but not for serviceability beam deflection considerations.

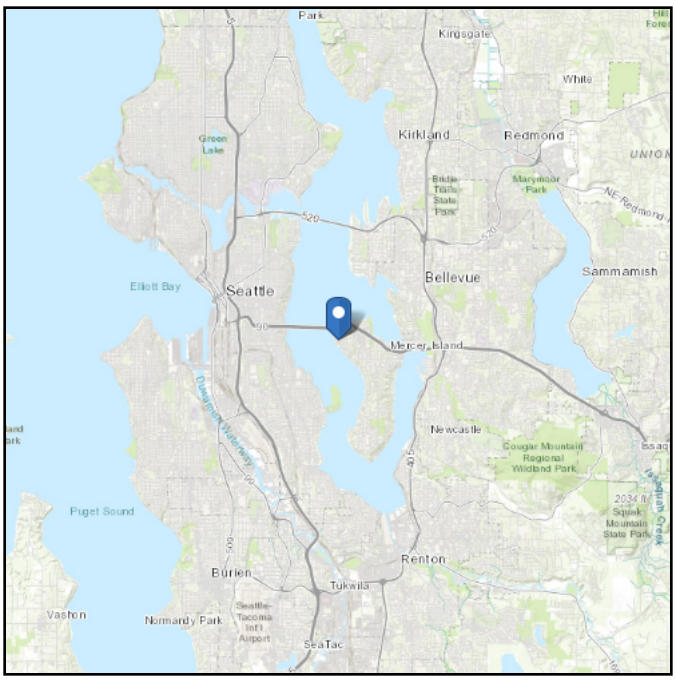
Design foundation walls for 45 psf earth pressure with 8H seismic surcharge load and weight of studwall above--see page 76 - 79 for design. Use additional bottom reinforcing in footing where retaining wall pressures necessitate a higher flexural capacity. Similarly size dowels and extend them up into the wall high enough to ensure the #5 @ 12" oc capacity of 8.56 k-ft isn't exceeded. Per ACI Table 11.6-1, provide minimum longitudinal reinforcing of 0.0012 and transverse reinforcing of 0.002 in the walls; and 0.0018 per ACI Table 7.6.1.1 in footing.

ASCE Hazards Report

Address:
3029 62nd Ave SE
Mercer Island, Washington
98040

Standard:	ASCE/SEI 7-22	**Latitude:**	47.583328
Risk Category:	II	**Longitude:**	-122.249813
Soil Class:	CD	**Elevation:**	63.723299608043156 ft (NAVD 88)





Seismic

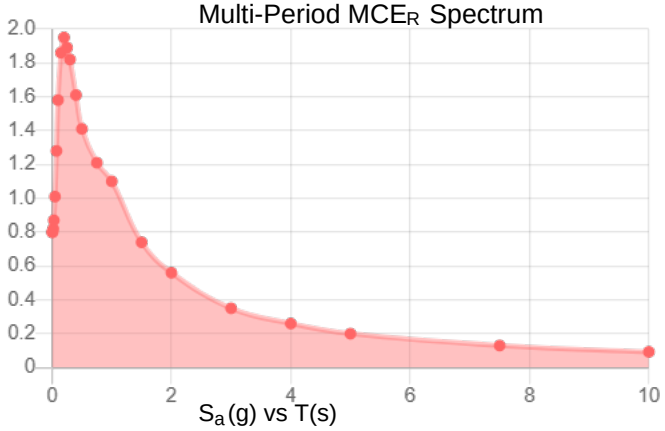
Site Soil Class: CD

Results:

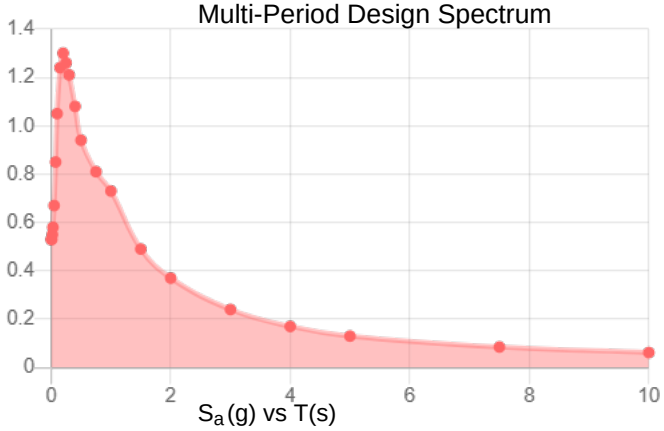
PGA_M :	0.73	T_L :	6
S_{MS} :	1.76	S_S :	1.57
S_{M1} :	1.1	S_1 :	0.64
S_{DS} :	1.17	V_{S30} :	365
S_{D1} :	0.73		

Seismic Design Category: D

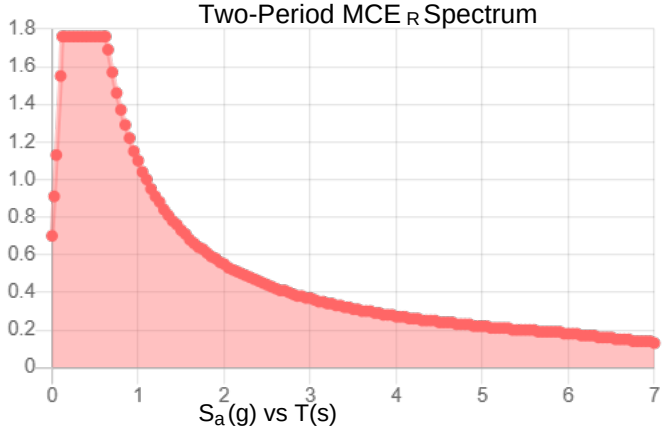
Multi-Period MCE_R Spectrum



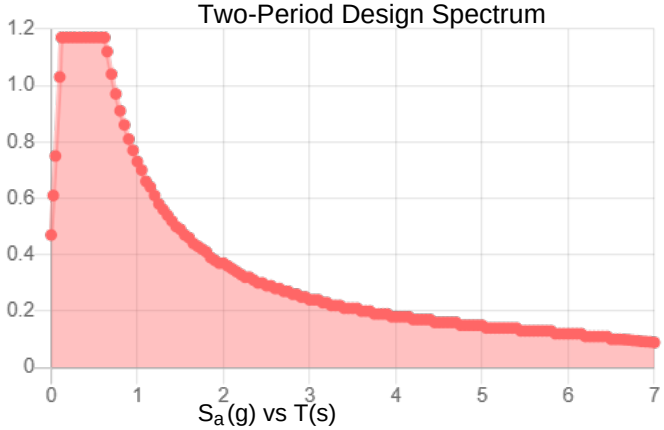
Multi-Period Design Spectrum



Two-Period MCE_R Spectrum



Two-Period Design Spectrum

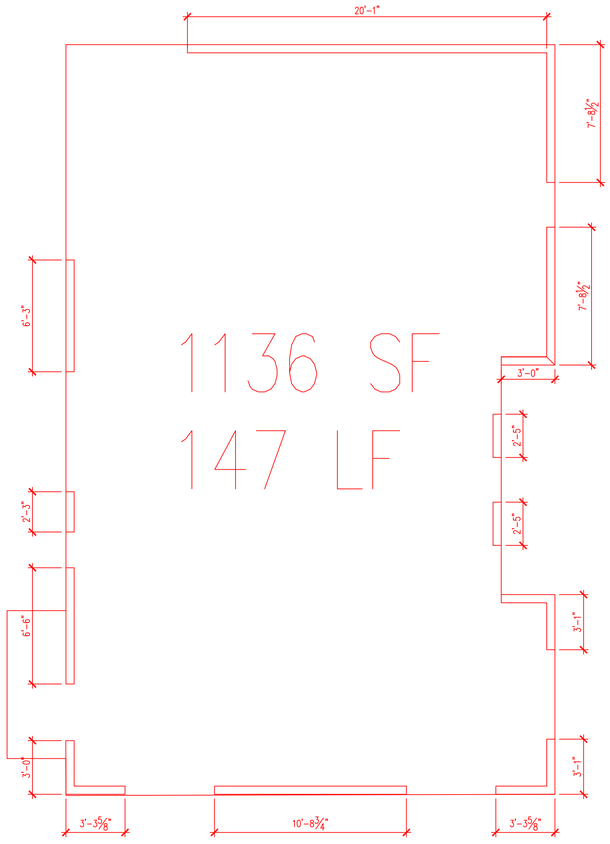


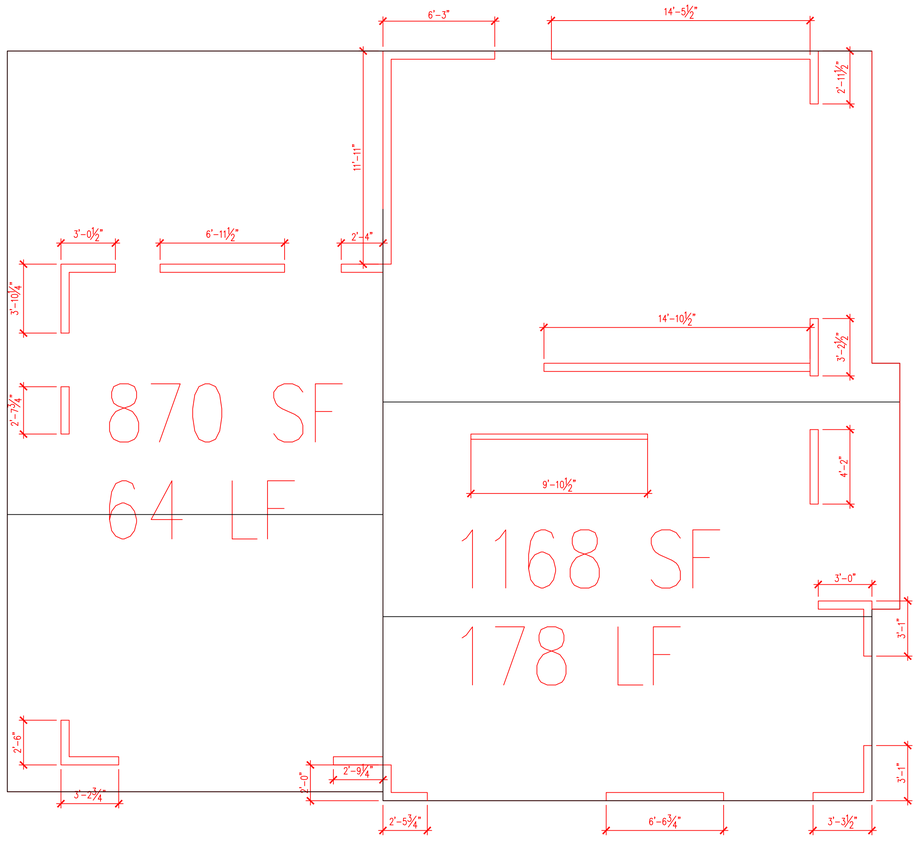
MCE_R Vertical Response Spectrum

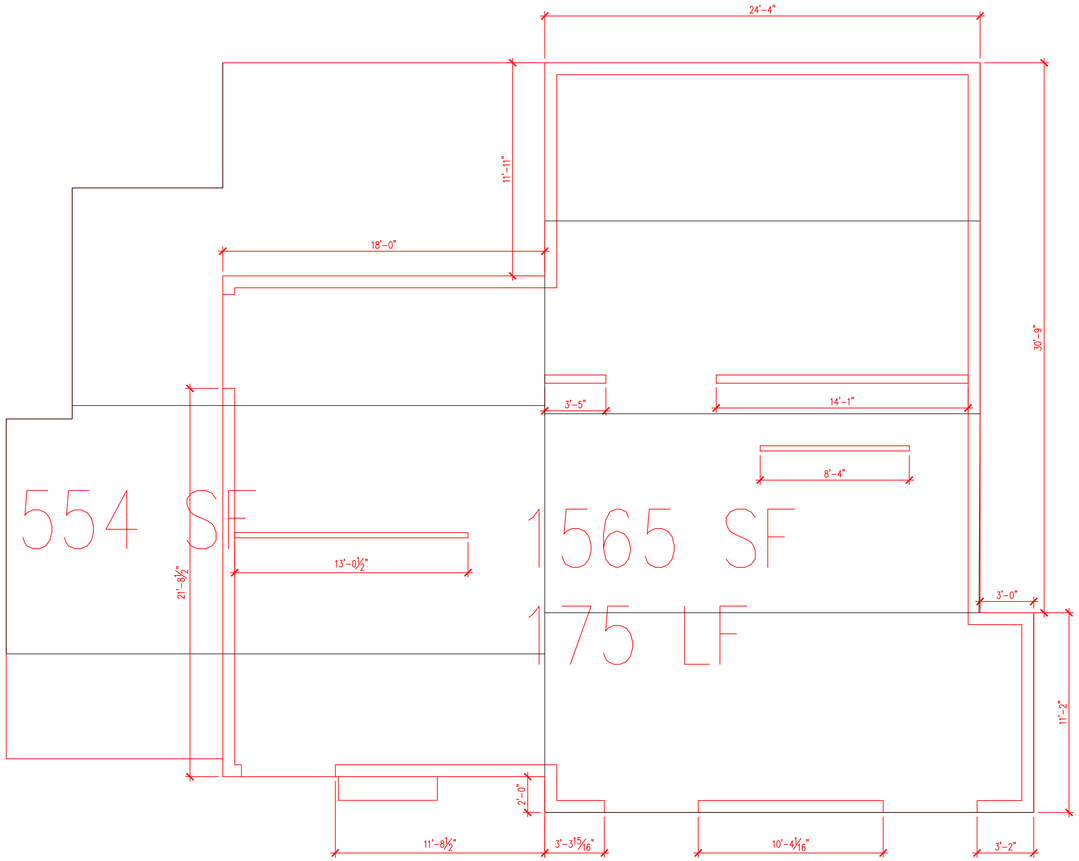
Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum

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


20'-1"
7'-8½"
7'-8½"
6'-3"
1136 SF
147 LF
3'-0"
2'-5"
2'-5"
3'-1"
2'-3"
6'-6"
3'-0"
3'-1"
3'-3⅝"
10'-8¾"
3'-3⅝"


6'-3"
14'-5½"
2'-11½"
11'-11"
3'-0½"
6'-1½"
2'-4"
3'-10¼"
14'-10½"
3'-2½"
2'-7¼"
870 SF
64 LF
9'-10½"
4'-2"
1168 SF
178 LF
3'-0"
3'-1"
2'-6"
3'-2¾"
2'-9¾"
1'-0"
2'-5¾"
6'-6¾"
3'-3½"
3'-1"

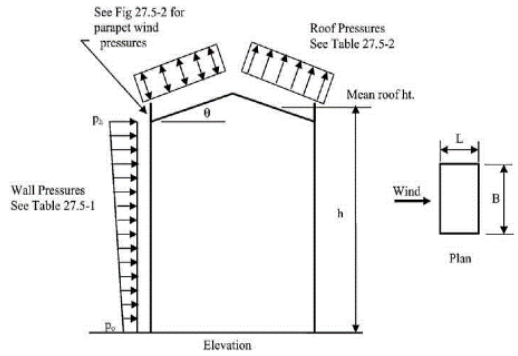

24'-4"
11'-11"
18'-0"
30'-9"
3'-5"
14'-1"
8'-4"
554 SF
1565 SF
175 LF
13'-0½"
21'-8½"
3'-0"
11'-2"
2'-0"
11'-8½"
3'-3 15/16"
10'-4 1/16"
3'-2"

3029 62nd Ave SE (Yeganeh Residence)	Designed By:	JDA	Date:	5/23/2024		
252-2024	Client:	CenterLine	Sheet:	1	of	2

ASCE 7-16 Chapter 27 Part 2: ASD MWFRS Design Pressures

Inputs		
Risk Category	II	Table 1.5-1
Wind Speed, V	110	mph
Exposure	C	Section 26.7
K_{zt}	1	-
Enclusre	Enclosed Building	Table 26.13-1
h (mean roof height)	23.08	ft
L (least dimension)	41.92	ft
B (larger dimension)	45.33	ft
L/B	0.92	
P_h	16.15	psf
p_o	15.68	psf
Zone 1	NA	psf
Zone 2	NA	psf
Zone 3	-15.53	psf
Zone 4	-14.37	psf
Zone 5	-11.34	psf
Exposure Adjustment	1	

Diagram



Note
For Application of Wind Pressures, see Tables 27.5-1 and 27.5-2

FIGURE 27.5-1 Main Wind Force Resisting System, Part 2 [$h \le 160$ ft ($h \le 48.8$ m)]: Enclosed Simple Diaphragm Buildings, Wind Pressures, Walls and Roof

Table 27.5-2 (*Continued*). Main Wind Force Resisting System, Part 2 [$h \le 160$ ft ($h \le 48.8$ m)]: Enclosed Simple Diaphragm Buildings—Wind Pressures—Roofs

Parameters for Application of Roof Pressures

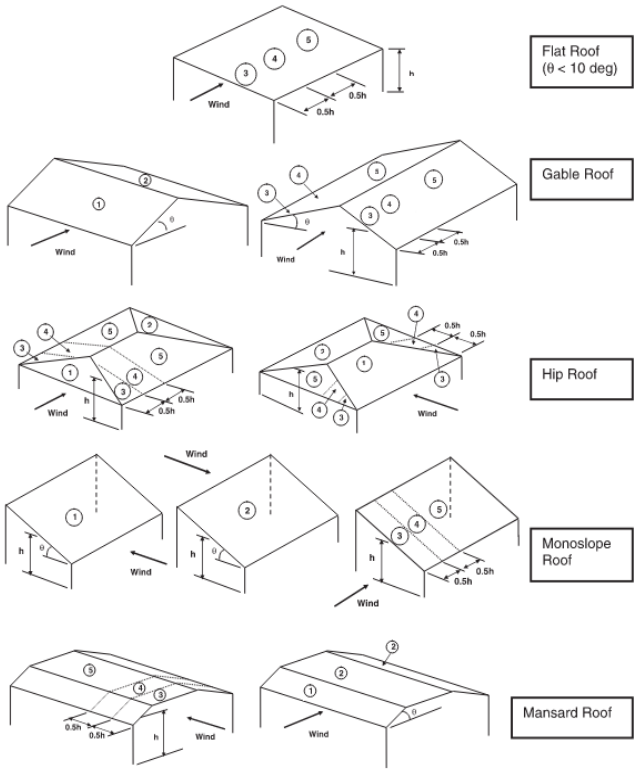


Table 27.4-1 Steps to Determine MWFRS Wind Loads for Enclosed, Simple Diaphragm Buildings, $h \le 160$ ft ($h \le 48.8$ m)

Step 1: Determine Risk Category of building; see Table 1.5-1.
Step 2: Determine the basic wind speed, V, for applicable Risk Category; see Figs. 26.5-1 and 26.5-2.
Step 3: Determine wind load parameters:
- Exposure category B, C, or D; see Section 26.7.
- Topographic factor, K_{zt}; see Section 26.8 and Fig. 26.8-1.
- Enclosure classification; see Section 26.12.

Step 4: Enter table to determine net pressures on walls at top and base of building respectively, p_{h}, p_{0}, Table 27.5-1.
Step 5: Enter table to determine net roof pressures, p_{rs}, Table 27.5-2.
Step 6: Determine topographic factor, K_{zt}, and apply factor to wall and roof pressures (if applicable); see Section 26.8.
Step 7: Apply loads to walls and roofs simultaneously.

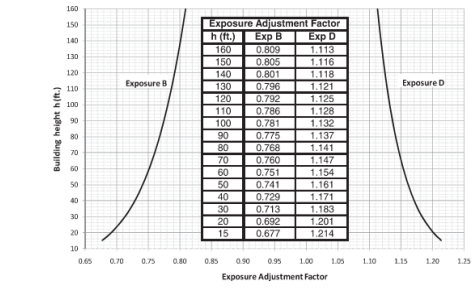
Surface Roughness B: Urban and suburban areas, wooded areas, or other terrain with numerous, closely spaced obstructions that have the size of single-family dwellings or larger.
Surface Roughness C: Open terrain with scattered obstructions that have heights generally less than 30 ft (9.1 m). This category includes flat, open country and grasslands.
Surface Roughness D: Flat, unobstructed areas and water surfaces. This category includes smooth mud flats, salt flats, and unbroken ice.

Table 27.5-1 *(Continued)*. Main Wind Force Resisting System, Part 2 [$h \le 160$ ft ($h \le 48.8$ m)]: Enclosed Simple Diaphragm Buildings—Wind Pressures—Walls

Exposure C

h (ft)	Along-wind Net Wall Pressure	V (mi/h) 110 L/B 0.5	1	2	115 L/B 0.5	1	2	120 L/B 0.5	1	2	130 L/B 0.5	1	2	140 L/B 0.5	1	2	160 L/B 0.5	1	2	180 L/B 0.5	1	2	200 L/B 0.5	1	2
160	p_h	49.2	48.7	43.7	54.5	53.8	48.3	60.0	59.3	53.3	72.2	71.1	64.1	85.8	84.3	76.1	117.4	115.0	103.9	155.4	151.8	137.2	200.2	195.0	176.2
	p_0	36.1	35.7	30.0	40.0	39.5	33.2	44.1	43.5	36.6	53.0	52.2	44.0	62.9	61.9	52.3	86.2	84.4	71.5	114.1	111.4	94.3	146.9	143.1	121.1
150	p_h	48.0	47.5	42.6	53.0	52.4	47.1	58.4	57.7	51.9	70.1	69.2	62.3	83.3	82.0	74.0	113.8	111.7	101.0	150.6	147.3	133.3	198.8	189.0	171.0
	p_0	35.5	35.2	29.6	39.3	38.8	32.7	43.3	42.8	36.1	52.0	51.3	43.3	61.7	60.7	51.4	84.3	82.8	70.2	111.5	109.1	92.7	143.5	140.0	118.9
140	p_h	46.6	46.2	41.4	51.5	51.0	45.8	56.7	56.1	50.4	68.1	67.2	60.6	80.7	79.6	71.8	110.2	108.3	98.0	145.6	142.6	129.2	187.2	182.9	165.7
	p_0	34.9	34.6	29.1	38.6	38.2	32.2	42.4	42.0	35.5	50.9	50.3	42.6	60.4	59.5	50.6	82.4	81.0	68.9	108.9	106.7	90.9	140.0	136.8	116.6
130	p_h	45.3	45.0	40.2	50.0	49.6	44.5	55.0	54.5	48.9	65.9	65.2	58.7	78.1	77.1	69.6	106.4	104.7	94.8	140.4	137.7	124.9	180.4	176.5	160.1
	p_0	34.3	34.0	28.7	37.8	37.5	31.7	41.6	41.2	34.9	49.9	49.3	41.9	59.1	58.3	49.6	80.5	79.2	67.6	106.2	104.1	89.1	136.4	133.4	114.2
120	p_h	43.9	43.6	39.0	48.5	48.1	43.1	53.3	52.8	47.4	63.8	63.1	56.8	75.4	74.6	67.3	102.6	101.1	91.5	135.1	132.7	120.5	173.3	169.8	154.3
	p_0	33.6	33.4	28.2	37.1	36.8	31.1	40.7	40.4	34.3	48.8	48.3	41.1	57.7	57.1	48.7	78.5	77.3	66.2	103.3	101.5	87.1	132.6	129.9	111.6
110	p_h	42.5	42.3	37.7	46.9	46.6	41.6	51.5	51.1	45.8	61.5	61.0	54.8	72.7	72.0	64.8	98.6	97.3	88.1	129.6	127.6	115.8	166.0	163.0	148.2
	p_0	32.9	32.8	27.7	36.3	36.1	30.6	39.9	39.6	33.6	47.7	47.3	40.3	56.3	55.8	47.6	76.4	75.4	64.7	100.4	98.8	85.1	128.6	126.3	108.9
100	p_h	41.1	40.9	36.4	45.2	45.0	40.1	49.6	49.3	44.1	59.2	58.8	52.7	69.8	69.3	62.3	94.5	93.5	84.5	123.9	122.2	111.0	158.5	155.9	141.9
	p_0	32.3	32.1	27.2	35.5	35.4	30.0	39.0	38.8	33.0	46.5	46.2	39.4	54.9	54.4	46.6	74.2	73.4	63.2	97.4	96.0	82.9	124.5	122.5	106.1
90	p_h	39.6	39.4	35.0	43.5	43.3	38.5	47.7	47.5	42.3	56.8	56.5	50.6	66.9	66.5	59.7	90.3	89.4	80.8	118.1	116.7	105.9	150.6	148.5	135.2
	p_0	31.6	31.5	26.6	34.7	34.6	29.4	38.1	37.9	32.3	45.4	45.1	38.5	53.4	53.1	45.5	72.1	71.4	61.6	94.2	93.2	80.7	120.3	118.6	103.0
80	p_h	38.0	37.9	33.5	41.8	41.6	36.9	45.8	45.6	40.5	54.4	54.2	48.3	63.9	63.6	56.9	85.9	85.3	76.8	112.0	111.0	100.5	142.6	140.9	128.1
	p_0	30.9	30.8	26.1	33.9	33.8	28.7	37.2	37.1	31.5	44.2	44.0	37.6	52.0	51.7	44.3	69.8	69.3	59.8	91.0	90.2	78.3	115.8	114.5	99.6
70	p_h	36.4	36.3	32.0	39.9	39.9	35.2	43.7	43.6	38.6	51.9	51.7	45.9	60.8	60.6	54.0	81.4	81.0	72.7	105.8	105.0	94.9	134.2	133.0	120.7
	p_0	30.2	30.1	25.5	33.1	33.1	28.1	36.3	36.2	30.8	43.0	42.9	36.6	50.5	50.3	43.1	67.5	67.2	58.0	87.8	87.1	75.7	111.3	110.3	96.3
60	p_h	34.6	34.6	30.3	38.0	38.0	33.3	41.6	41.5	36.5	49.2	49.1	43.4	57.6	57.4	50.9	76.8	76.5	68.3	99.4	98.8	88.9	125.6	124.7	112.8
	p_0	29.4	29.4	24.9	32.3	32.2	27.4	35.3	35.2	30.0	41.8	41.7	35.6	48.9	48.8	41.9	65.2	65.0	56.1	84.4	83.9	73.0	106.7	105.9	92.7
50	p_h	32.8	32.8	28.6	36.0	35.9	31.4	39.3	39.2	34.3	46.4	46.3	40.7	54.2	54.1	47.7	72.0	71.8	63.7	92.7	92.4	82.5	116.7	116.1	104.4
	p_0	28.7	28.6	24.3	31.4	31.4	26.7	34.3	34.3	29.2	40.5	40.5	34.6	47.4	47.3	40.5	62.9	62.7	54.2	81.0	80.7	70.2	101.9	101.4	88.8
40	p_h	30.8	30.8	26.7	33.7	33.7	29.3	36.8	36.8	32.0	43.4	43.4	37.8	50.6	50.5	44.2	66.9	66.8	58.8	85.8	85.6	75.8	107.4	107.1	95.5
	p_0	[redacted]	[redacted]	23.6	30.5	30.5	25.9	33.3	33.2	28.3	39.2	39.2	33.5	45.7	45.7	39.2	60.4	60.3	52.1	77.5	77.3	67.2	97.1	96.8	84.6
30	p_h	[redacted]	[redacted]	24.6	31.2	31.2	27.0	34.1	34.1	29.5	40.1	40.1	34.8	46.7	46.6	40.5	61.4	61.4	53.6	78.4	78.3	68.8	97.8	97.6	86.1
	p_0	[redacted]	[redacted]	22.9	29.4	29.4	25.1	32.1	32.1	27.4	37.8	37.8	32.4	44.0	43.9	37.7	57.9	57.8	49.9	73.9	73.8	64.0	92.1	91.9	80.2
20	p_h	[redacted]	[redacted]	22.6	28.6	28.6	24.7	31.2	31.2	26.9	36.7	36.7	31.7	42.6	42.6	36.9	55.9	55.9	48.5	71.1	71.1	61.9	88.2	88.2	77.0
	p_0	[redacted]	[redacted]	22.2	28.3	28.3	24.3	30.8	30.8	26.5	36.2	36.2	31.2	42.1	42.1	36.3	55.2	55.1	47.7	70.1	70.1	60.9	87.1	87.0	75.8
15	p_h	25.2	25.2	21.8	27.6	27.6	23.8	30.0	30.0	26.0	35.3	35.3	30.6	41.0	41.0	35.5	53.7	53.7	46.6	68.1	68.1	59.3	84.4	84.4	73.6
	p_0	25.2	25.2	21.8	27.6	27.6	23.8	30.0	30.0	26.0	35.3	35.3	30.6	41.0	41.0	35.5	53.7	53.7	46.6	68.1	68.1	59.3	84.4	84.4	73.6

Exposure Adjustment Factor, Exposures B and D



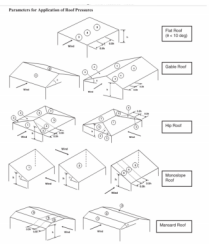
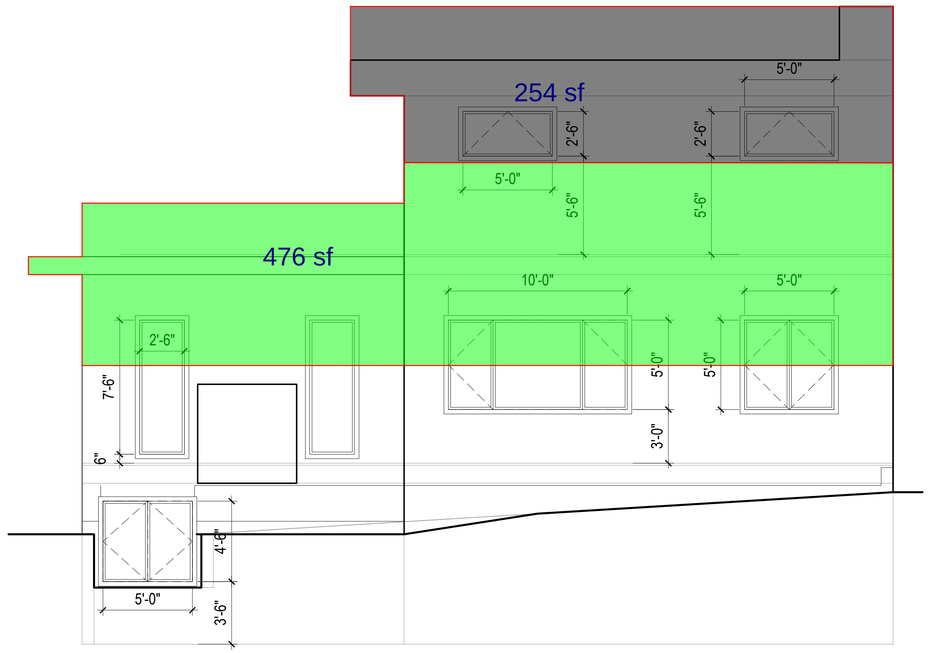


Table 27.5-2 *(Continued)*. Main Wind Force Resisting System, Part 2 [$h \le 160$ ft ($h \le 48.8$ m)]: Enclosed Simple Diaphragm Buildings—Wind Pressures—Roofs
Exposure C: $h = 50$–70 ft, $V = 110$–120 mi/h

h (ft)	Roof Slope	Load Case	V (mi/h) 110 Zone 1	2	3	115 Zone 1	2	3	120 Zone 1	2	3
70	Flat < 2:12 (9.46°)	1	NA	NA	−32.8	−29.2	−24.0	NA	NA	−35.8	−31.9	−26.2	NA	NA	−39.0	−34.8	−28.5
		2	NA	NA	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0
	3:12 (14.0°)	1	−32.1	−21.9	−32.8	−29.2	−24.0	−35.1	−25.5	−35.8	−31.9	−26.2	−38.3	−26.0	−39.0	−34.8	−28.5
		2	4.6	−6.5	0.0	0.0	0.0	5.1	−7.1	0.0	0.0	0.0	5.5	−7.8	0.0	0.0	0.0
	4:12 (18.4°)	1	−26.4	−21.3	−32.8	−29.2	−24.0	−28.9	−23.3	−35.8	−31.9	−26.2	−31.5	−25.4	−39.0	−34.8	−28.5
		2	9.2	−9.4	0.0	0.0	0.0	10.0	−10.2	0.0	0.0	0.0	10.9	−11.1	0.0	0.0	0.0
	5:12 (22.6°)	1	−21.2	−21.3	−32.8	−29.2	−24.0	−23.2	−23.3	−35.8	−31.9	−26.2	−25.2	−25.4	−39.0	−34.8	−28.5
		2	12.7	−10.2	0.0	0.0	0.0	13.3	−11.1	0.0	0.0	0.0	14.5	−12.1	0.0	0.0	0.0
	6:12 (26.6°)	1	−17.0	−21.3	−32.8	−29.2	−24.0	−18.6	−23.3	−35.8	−31.9	−26.2	−20.3	−25.4	−39.0	−34.8	−28.5
		2	13.4	−10.2	0.0	0.0	0.0	14.7	−11.1	0.0	0.0	0.0	16.0	−12.1	0.0	0.0	0.0
	9:12 (36.9°)	1	−9.9	−21.3	−32.8	−29.2	−24.0	−10.8	−23.3	−35.8	−31.9	−26.2	−11.7	−25.4	−39.0	−34.8	−28.5
		2	16.1	−10.2	0.0	0.0	0.0	17.6	−11.1	0.0	0.0	0.0	19.1	−12.1	0.0	0.0	0.0
	12:12 (45.0°)	1	−5.6	−21.3	−32.8	−29.2	−24.0	−6.1	−23.3	−35.8	−31.9	−26.2	−6.6	−25.4	−39.0	−34.8	−28.5
		2	16.1	−10.2	0.0	0.0	0.0	17.6	−11.1	0.0	0.0	0.0	19.1	−12.1	0.0	0.0	0.0
60	Flat < 2:12 (9.46°)	1	NA	NA	−31.7	−28.3	−23.2	NA	NA	−34.7	−30.9	−25.3	NA	NA	−37.8	−33.7	−27.6
		2	NA	NA	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0
	3:12 (14.0°)	1	−31.1	−21.2	−31.7	−28.3	−23.2	−34.0	−24.5	−34.7	−30.9	−25.3	−37.0	−25.2	−37.8	−33.7	−27.6
		2	4.5	−6.3	0.0	0.0	0.0	4.9	−6.9	0.0	0.0	0.0	5.3	−7.5	0.0	0.0	0.0
	4:12 (18.4°)	1	−25.6	−20.6	−31.7	−28.3	−23.2	−28.0	−22.6	−34.7	−30.9	−25.3	−30.4	−24.6	−37.8	−33.7	−27.6
		2	8.9	−9.1	0.0	0.0	0.0	9.7	−9.9	0.0	0.0	0.0	10.5	−10.8	0.0	0.0	0.0
	5:12 (22.6°)	1	−20.5	−20.6	−31.7	−28.3	−23.2	−22.4	−22.6	−34.7	−30.9	−25.3	−24.4	−24.6	−37.8	−33.7	−27.6
		2	11.8	−9.9	0.0	0.0	0.0	12.9	−10.8	0.0	0.0	0.0	14.0	−11.8	0.0	0.0	0.0
	6:12 (26.6°)	1	−16.5	−20.6	−31.7	−28.3	−23.2	−18.0	−22.6	−34.7	−30.9	−25.3	−19.6	−24.6	−37.8	−33.7	−27.6
		2	13.0	−9.9	0.0	0.0	0.0	14.2	−10.8	0.0	0.0	0.0	15.5	−11.8	0.0	0.0	0.0
	9:12 (36.9°)	1	−9.5	−20.6	−31.7	−28.3	−23.2	−10.4	−22.6	−34.7	−30.9	−25.3	−11.4	−24.6	−37.8	−33.7	−27.6
		2	15.6	−9.9	0.0	0.0	0.0	17.0	−10.8	0.0	0.0	0.0	18.5	−11.8	0.0	0.0	0.0
	12:12 (45.0°)	1	−5.4	−20.6	−31.7	−28.3	−23.2	−5.9	−22.6	−34.7	−30.9	−25.3	−6.4	−24.6	−37.8	−33.7	−27.6
		2	15.6	−9.9	0.0	0.0	0.0	17.0	−10.8	0.0	0.0	0.0	18.5	−11.8	0.0	0.0	0.0
50	Flat < 2:12 (9.46°)	1	NA	NA	−30.5	−27.2	−22.3	NA	NA	−33.4	−29.7	−24.4	NA	NA	−36.3	−32.4	−26.6
		2	NA	NA	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0
	3:12 (14.0°)	1	−30.0	−20.4	−30.5	−27.2	−22.3	−32.7	−23.6	−33.4	−29.7	−24.4	−35.6	−24.2	−36.3	−32.4	−26.6
		2	4.3	−6.1	0.0	0.0	0.0	4.7	−6.6	0.0	0.0	0.0	5.1	−7.2	0.0	0.0	0.0
	4:12 (18.4°)	1	−24.6	−19.9	−30.5	−27.2	−22.3	−26.9	−21.7	−33.4	−29.7	−24.4	−29.3	−23.6	−36.3	−32.4	−26.6
		2	8.5	−8.7	0.0	0.0	0.0	9.3	−9.5	0.0	0.0	0.0	10.1	−10.4	0.0	0.0	0.0
	5:12 (22.6°)	1	−19.8	−19.9	−30.5	−27.2	−22.3	−21.6	−21.7	−33.4	−29.7	−24.4	−23.5	−23.6	−36.3	−32.4	−26.6
		2	11.3	−9.5	0.0	0.0	0.0	12.4	−10.4	0.0	0.0	0.0	13.5	−11.3	0.0	0.0	0.0
	6:12 (26.6°)	1	−15.9	−19.9	−30.5	−27.2	−22.3	−17.3	−21.7	−33.4	−29.7	−24.4	−18.9	−23.6	−36.3	−32.4	−26.6
		2	12.5	−9.5	0.0	0.0	0.0	13.7	−10.4	0.0	0.0	0.0	14.9	−11.3	0.0	0.0	0.0
	9:12 (36.9°)	1	−9.2	−19.9	−30.5	−27.2	−22.3	−10.0	−21.7	−33.4	−29.7	−24.4	−10.9	−23.6	−36.3	−32.4	−26.6
		2	15.0	−9.5	0.0	0.0	0.0	16.4	−10.4	0.0	0.0	0.0	17.8	−11.3	0.0	0.0	0.0
	12:12 (45.0°)	1	−5.2	−19.9	−30.5	−27.2	−22.3	−5.7	−21.7	−33.4	−29.7	−24.4	−6.2	−23.6	−36.3	−32.4	−26.6
		2	15.0	−9.5	0.0	0.0	0.0	16.4	−10.4	0.0	0.0	0.0	17.8	−11.3	0.0	0.0	0.0

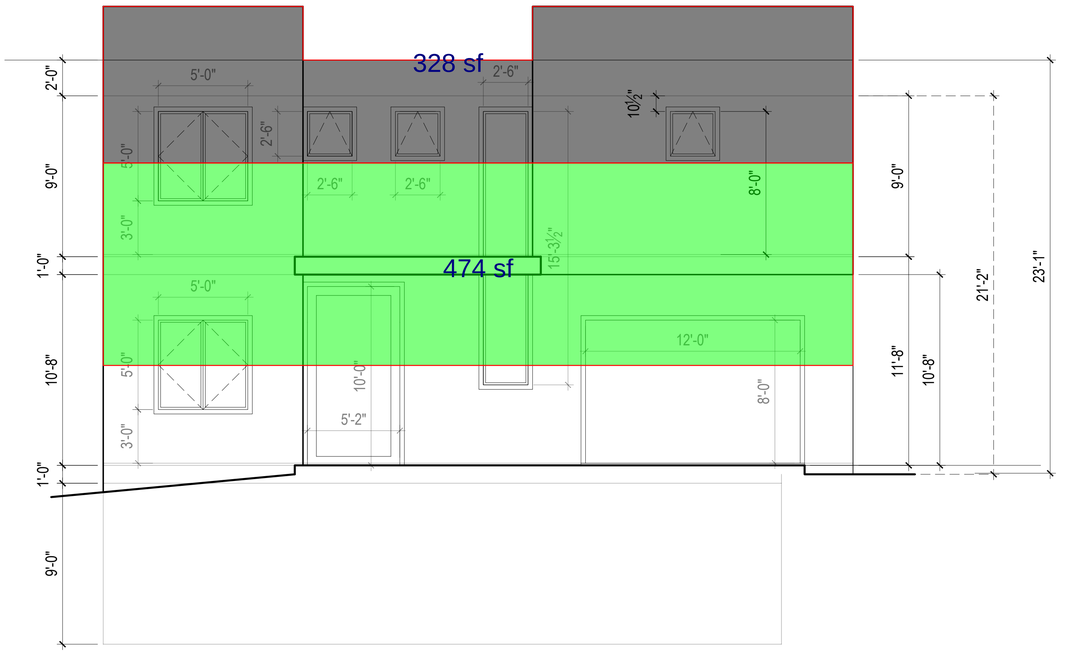
Table 27.5-2 *(Continued)*. Main Wind Force Resisting System, Part 2 [$h \le 160$ ft ($h \le 48.8$ m)]: Enclosed Simple Diaphragm Buildings—Wind Pressures—Roofs
Exposure C: $h = 20$–40 ft, $V = 110$–120 mi/h

h (ft)	Roof Slope	Load Case	V (mi/h) 110 Zone 1	2	3	4	5	115 Zone 1	2	3	4	5	120 Zone 1	2	3	4	5
40	Flat < 2:12 (9.46°)	1	NA	NA	−29.1	−26.0	−21.3	NA	NA	−31.8	−28.4	−23.3	NA	NA	−34.7	−30.9	−25.3
		2	NA	NA	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0
	3:12 (14.0°)	1	−28.6	−19.4	−29.1	−26.0	−21.3	−31.2	−22.5	−31.8	−28.4	−23.3	−34.0	−23.1	−34.7	−30.9	−25.3
		2	4.1	−5.8	0.0	0.0	0.0	4.5	−6.3	0.0	0.0	0.0	4.9	−6.9	0.0	0.0	0.0
	4:12 (18.4°)	1	−23.5	−19.0	−29.1	−26.0	−21.3	−25.7	−20.7	−31.8	−28.4	−23.3	−28.0	−22.6	−34.7	−30.9	−25.3
		2	8.1	−8.3	0.0	0.0	0.0	8.9	−9.1	0.0	0.0	0.0	9.7	−9.9	0.0	0.0	0.0
	5:12 (22.6°)	1	−18.8	−19.0	−29.1	−26.0	−21.3	−20.6	−20.7	−31.8	−28.4	−23.3	−22.4	−22.6	−34.7	−30.9	−25.3
		2	10.8	−9.1	0.0	0.0	0.0	11.8	−9.9	0.0	0.0	0.0	12.9	−10.8	0.0	0.0	0.0
	6:12 (26.6°)	1	−15.1	−19.0	−29.1	−26.0	−21.3	−16.5	−20.7	−31.8	−28.4	−23.3	−18.0	−22.6	−34.7	−30.9	−25.3
		2	12.0	−9.1	0.0	0.0	0.0	13.1	−9.9	0.0	0.0	0.0	14.2	−10.8	0.0	0.0	0.0
	9:12 (36.9°)	1	−8.8	−19.0	−29.1	−26.0	−21.3	−9.6	−20.7	−31.8	−28.4	−23.3	−10.4	−22.6	−34.7	−30.9	−25.3
		2	14.3	−9.1	0.0	0.0	0.0	15.6	−9.9	0.0	0.0	0.0	17.0	−10.8	0.0	0.0	0.0
	12:12 (45.0°)	1	−4.9	−19.0	−29.1	−26.0	−21.3	−5.4	−20.7	−31.8	−28.4	−23.3	−5.9	−22.6	−34.7	−30.9	−25.3
		2	14.3	−9.1	0.0	0.0	0.0	15.6	−9.9	0.0	0.0	0.0	17.0	−10.8	0.0	0.0	0.0
30	Flat < 2:12 (9.46°)	1	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	NA	NA	−30.0	−26.7	−21.9	NA	NA	−32.6	−29.1	−23.9
		2	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	NA	NA	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0
	3:12 (14.0°)	1	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	−29.4	−21.2	−30.0	−26.7	−21.9	−32.0	−21.8	−32.6	−29.1	−23.9
		2	3.9	−5.5	0.0	0.0	0.0	4.2	−6.0	0.0	0.0	0.0	4.6	−6.5	0.0	0.0	0.0
	4:12 (18.4°)	1	−22.1	−17.8	−27.4	−24.4	−20.0	−24.2	−19.5	−30.0	−26.7	−21.9	−26.3	−21.2	−32.6	−29.1	−23.9
		2	7.7	−7.8	0.0	0.0	0.0	8.4	−8.6	0.0	0.0	0.0	9.1	−9.3	0.0	0.0	0.0
	5:12 (22.6°)	1	−17.7	−17.8	−27.4	−24.4	−20.0	−19.4	−19.5	−30.0	−26.7	−21.9	−21.1	−21.2	−32.6	−29.1	−23.9
		2	10.2	−8.5	0.0	0.0	0.0	11.1	−9.3	0.0	0.0	0.0	12.1	−10.2	0.0	0.0	0.0
	6:12 (26.6°)	1	−14.3	−17.8	−27.4	−24.4	−20.0	−15.6	−19.5	−30.0	−26.7	−21.9	−17.0	−21.2	−32.6	−29.1	−23.9
		2	11.3	−8.5	0.0	0.0	0.0	12.3	−9.3	0.0	0.0	0.0	13.4	−10.2	0.0	0.0	0.0
	9:12 (36.9°)	1	−8.3	−17.8	−27.4	−24.4	−20.0	−9.0	−19.5	−30.0	−26.7	−21.9	−9.8	−21.2	−32.6	−29.1	−23.9
		2	13.4	−8.5	0.0	0.0	0.0	14.7	−9.3	0.0	0.0	0.0	16.0	−10.2	0.0	0.0	0.0
	12:12 (45.0°)	1	−4.7	−17.8	−27.4	−24.4	−20.0	−5.1	−19.5	−30.0	−26.7	−21.9	−5.5	−21.2	−32.6	−29.1	−23.9
		2	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	14.7	−9.3	0.0	0.0	0.0	16.0	−10.2	0.0	0.0	0.0
20	Flat < 2:12 (9.46°)	1	NA	NA	−25.2	−22.4	−18.4	NA	NA	−27.5	−24.5	−20.1	NA	NA	−30.0	−26.7	−21.9
		2	NA	NA	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0
	3:12 (14.0°)	1	−24.7	−18.8	−25.2	−22.4	−18.4	−27.0	−19.4	−27.5	−24.5	−20.1	−29.4	−20.0	−30.0	−26.7	−21.9
		2	3.6	−5.0	0.0	0.0	0.0	3.9	−5.5	0.0	0.0	0.0	4.2	−6.0	0.0	0.0	0.0
	4:12 (18.4°)	1	−20.3	−16.4	−25.2	−22.4	−18.4	−22.2	−17.9	−27.5	−24.5	−20.1	−24.2	−19.5	−30.0	−26.7	−21.9
		2	7.0	−7.2	0.0	0.0	0.0	7.7	−7.9	0.0	0.0	0.0	8.4	−8.6	0.0	0.0	0.0
	5:12 (22.6°)	1	−16.3	−16.4	−25.2	−22.4	−18.4	−17.8	−17.9	−27.5	−24.5	−20.1	−19.4	−19.5	−30.0	−26.7	−21.9
		2	9.4	−7.8	0.0	0.0	0.0	10.2	−8.6	0.0	0.0	0.0	11.1	−9.3	0.0	0.0	0.0
	6:12 (26.6°)	1	−13.1	−16.4	−25.2	−22.4	−18.4	−14.3	−17.9	−27.5	−24.5	−20.1	−15.6	−19.5	−30.0	−26.7	−21.9
		2	10.3	−7.8	0.0	0.0	0.0	11.3	−8.6	0.0	0.0	0.0	12.3	−9.3	0.0	0.0	0.0
	9:12 (36.9°)	1	−7.6	−16.4	−25.2	−22.4	−18.4	−8.3	−17.9	−27.5	−24.5	−20.1	−9.0	−19.5	−30.0	−26.7	−21.9
		2	12.3	−7.8	0.0	0.0	0.0	13.5	−8.6	0.0	0.0	0.0	14.7	−9.3	0.0	0.0	0.0
	12:12 (45.0°)	1	−4.3	−16.4	−25.2	−22.4	−18.4	−4.7	−17.9	−27.5	−24.5	−20.1	−5.1	−19.5	−30.0	−26.7	−21.9
		2	12.3	−7.8	0.0	0.0	0.0	13.5	−8.6	0.0	0.0	0.0	14.7	−9.3	0.0	0.0	0.0



SOUTH ELEVATION

1/4" = 1'-0"

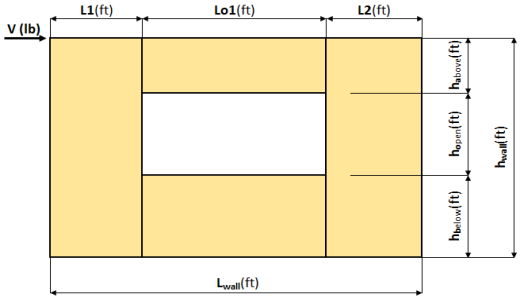


EAST ELEVATION

1/4" = 1'-0"

Project Information

Code:	2018 IBC	**Date:**	
Designer:	JDA		
Client:	CenterLine		
Project:	3029 62nd Ave SE (Yeganeh Residence)		
Wall Line:	West 2 (Upper to Roof)		



Shear Wall Calculation Variables

V	2338 lbf	Opening 1	
L1	2.25 ft	h_a	0.58 ft
L2	6.50 ft	h_o	2.00 ft
h_{wall}	8.33 ft	h_b	5.75 ft
L_{wall}	10.75 ft	Lo1	2.00 ft

Adj. Factor Method =		2bs/h
Wall Pier Aspect Ratio		Adj. Factor
P1=h_o/L1=	0.89	N/A
P2=h_o/L2=	0.31	N/A

1. Hold-down forces: $H = Vh_{wall}/L_{wall}$ 1812 lbf

2. Unit shear above + below opening

First opening: va1 = vb1 = H/(h_a+h_b) = 286 plf

3. Total boundary force above + below openings

First opening: O1 = va1 x (Lo1) = 572 lbf

4. Corner forces

F1 = O1(L1)/(L1+L2) = 147 lbf

F2 = O1(L2)/(L1+L2) = 425 lbf

5. Tributary length of openings

T1 = (L1*Lo1)/(L1+L2) = 0.51 ft

T2 = (L2*Lo1)/(L1+L2) = 1.49 ft

6. Unit shear beside opening

v1 = (V/L)(L1+T1)/L1 = 267 plf

v2 = (V/L)(T2+L2)/L2 = 267 plf

Check v1*L1+v2*L2=V? 2338 lbf **OK**

7. Resistance to corner forces

R1 = v1*L1 = 601 lbf

R2 = v2*L2 = 1737 lbf

8. Difference corner force + resistance

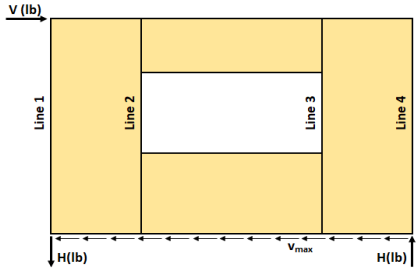
R1-F1 = 454 lbf

R2-F2 = 1312 lbf

9. Unit shear in corner zones

vc1 = (R1-F1)/L1 = 202 plf

vc2 = (R2-F2)/L2 = 202 plf



Check Summary of Shear Values for One Opening

Line 1: vc1(h_a+h_b)+v1(h_o)=H?		1278	534	1812 lbf
Line 2: va1(h_a+h_b)-vc1(h_a+h_b)-v1(h_o)=0?	1812	1278	534	0
Line 3: va1(h_a+h_b)-vc2(h_a+h_b)-v1(h_o)=0?	1812	1278	534	0
Line 4: vc2(h_a+h_b)+v2(h_o)=H?		1278	534	1812 lbf

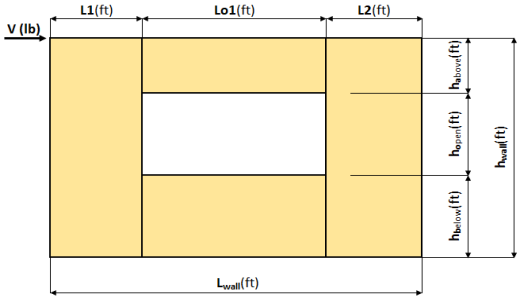
Design Summary*

Req. Sheathing Capacity	286 plf	**4-Term Deflection**	0.467 in.	**3-Term Deflection**	0.465 in.
Req. Strap Force	425 lbf	**4-Term Story Drift %**	0.019 %	**3-Term Story Drift %**	0.019 %
Req. HD Force (H)	1812 lbf				
Req. Shear Wall Anchorage Force (v_{max})	217 plf				

***The Design Summary assumes that the shear wall is designed as blocked.**

Project Information

Code:	2018 IBC	**Date:**	
Designer:	JDA		
Client:	CenterLine		
Project:	3029 62nd Ave SE (Yeganeh Residence)		
Wall Line:	East (Upper to Roof) 1		



Shear Wall Calculation Variables

V	2772 lbf	Opening 1	
L1	7.71 ft	h_a	0.88 ft
L2	7.71 ft	h_o	2.50 ft
h_{wall}	8.88 ft	h_b	5.50 ft
L_{wall}	17.92 ft	Lo1	2.50 ft

Adj. Factor Method =		2bs/h
Wall Pier Aspect Ratio		Adj. Factor
P1=h_o/L1=	0.32	N/A
P2=h_o/L2=	0.32	N/A

1. Hold-down forces: $H = Vh_{wall}/L_{wall}$ 1373 lbf

2. Unit shear above + below opening

First opening: va1 = vb1 = H/(h_a+h_b) = 215 plf

3. Total boundary force above + below openings

First opening: O1 = va1 x (Lo1) = 538 lbf

4. Corner forces

F1 = O1(L1)/(L1+L2) = 269 lbf

F2 = O1(L2)/(L1+L2) = 269 lbf

5. Tributary length of openings

T1 = (L1*Lo1)/(L1+L2) = 1.25 ft

T2 = (L2*Lo1)/(L1+L2) = 1.25 ft

6. Unit shear beside opening

v1 = (V/L)(L1+T1)/L1 = 180 plf

v2 = (V/L)(T2+L2)/L2 = 180 plf

Check v1*L1+v2*L2=V? 2772 lbf **OK**

7. Resistance to corner forces

R1 = v1*L1 = 1386 lbf

R2 = v2*L2 = 1386 lbf

8. Difference corner force + resistance

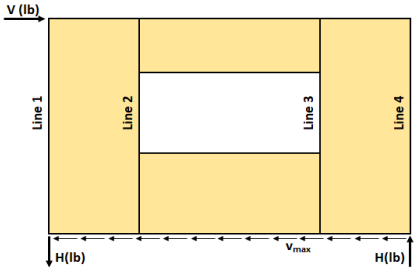
R1-F1 = 1117 lbf

R2-F2 = 1117 lbf

9. Unit shear in corner zones

vc1 = (R1-F1)/L1 = 145 plf

vc2 = (R2-F2)/L2 = 145 plf



Check Summary of Shear Values for One Opening

Line 1: vc1(h_a+h_b)+v1(h_o)=H?		923	449	1373 lbf
Line 2: va1(h_a+h_b)-vc1(h_a+h_b)-v1(h_o)=0?	1373	923	449	0
Line 3: va1(h_a+h_b)-vc2(h_a+h_b)-v1(h_o)=0?	1373	923	449	0
Line 4: vc2(h_a+h_b)+v2(h_o)=H?		923	449	1373 lbf

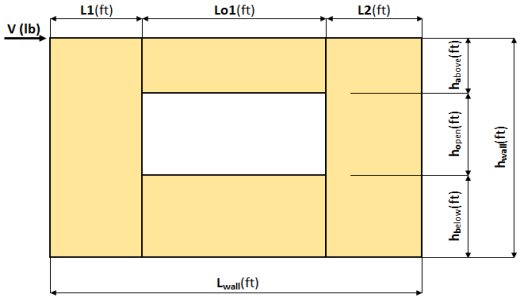
Design Summary*

Req. Sheathing Capacity	215 plf	**4-Term Deflection**	0.226 in.	**3-Term Deflection**	0.263 in.
Req. Strap Force	269 lbf	**4-Term Story Drift %**	0.008 %	**3-Term Story Drift %**	0.010 %
Req. HD Force (H)	1373 lbf				
Req. Shear Wall Anchorage Force (v_{max})	155 plf				

***The Design Summary assumes that the shear wall is designed as blocked.**

Project Information

Code:	2018 IBC	**Date:**	
Designer:	JDA		
Client:	CenterLine		
Project:	3029 62nd Ave SE (Yeganeh Residence)		
Wall Line:	East (Upper to Roof) 2		



Shear Wall Calculation Variables

V	853 lbf	Opening 1	
L1	2.42 ft	h_a	0.88 ft
L2	2.42 ft	h_o	2.50 ft
h_{wall}	8.88 ft	h_b	5.50 ft
L_{wall}	6.83 ft	Lo1	1.99 ft

Adj. Factor Method =		2bs/h
Wall Pier Aspect Ratio		Adj. Factor
P1=h_o/L1=	1.03	N/A
P2=h_o/L2=	1.03	N/A

1. Hold-down forces: $H = Vh_{wall}/L_{wall}$ 1108 lbf

2. Unit shear above + below opening

First opening: va1 = vb1 = H/(h_a+h_b) = 174 plf

3. Total boundary force above + below openings

First opening: O1 = va1 x (Lo1) = 346 lbf

4. Corner forces

F1 = O1(L1)/(L1+L2) = 173 lbf

F2 = O1(L2)/(L1+L2) = 173 lbf

5. Tributary length of openings

T1 = (L1*Lo1)/(L1+L2) = 1.00 ft

T2 = (L2*Lo1)/(L1+L2) = 1.00 ft

6. Unit shear beside opening

v1 = (V/L)(L1+T1)/L1 = 176 plf

v2 = (V/L)(T2+L2)/L2 = 176 plf

Check v1*L1+v2*L2=V? 853 lbf **OK**

7. Resistance to corner forces

R1 = v1*L1 = 427 lbf

R2 = v2*L2 = 427 lbf

8. Difference corner force + resistance

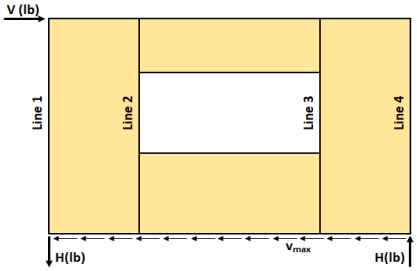
R1-F1 = 254 lbf

R2-F2 = 254 lbf

9. Unit shear in corner zones

vc1 = (R1-F1)/L1 = 105 plf

vc2 = (R2-F2)/L2 = 105 plf



Check Summary of Shear Values for One Opening

Line 1: vc1(h_a+h_b)+v1(h_o)=H?		668	441	1108 lbf
Line 2: va1(h_a+h_b)-vc1(h_a+h_b)-v1(h_o)=0?	1108	668	441	0
Line 3: va1(h_a+h_b)-vc2(h_a+h_b)-v1(h_o)=0?	1108	668	441	0
Line 4: vc2(h_a+h_b)+v2(h_o)=H?		668	441	1108 lbf

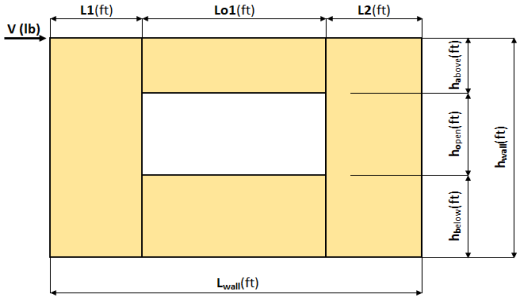
Design Summary*

Req. Sheathing Capacity	176 plf	**4-Term Deflection**	0.598 in.	**3-Term Deflection**	0.636 in.
Req. Strap Force	173 lbf	**4-Term Story Drift %**	0.022 %	**3-Term Story Drift %**	0.024 %
Req. HD Force (H)	1108 lbf				
Req. Shear Wall Anchorage Force (v_{max})	125 plf				

***The Design Summary assumes that the shear wall is designed as blocked.**

Project Information

Code:	2018 IBC	**Date:**	
Designer:	JDA		
Client:	CenterLine		
Project:	3029 62nd Ave SE (Yeganeh Residence)		
Wall Line:	East (Upper to Roof) 3		



Shear Wall Calculation Variables

V	1089 lbf	Opening 1	
L1	3.08 ft	h_a	0.88 ft
L2	3.08 ft	h_o	5.00 ft
h_{wall}	8.88 ft	h_b	3.00 ft
L_{wall}	11.16 ft	Lo1	5.00 ft

Adj. Factor Method =		2bs/h
Wall Pier Aspect Ratio		Adj. Factor
P1=h_o/L1=	1.62	N/A
P2=h_o/L2=	1.62	N/A

1. Hold-down forces: $H = Vh_{wall}/L_{wall}$ 866 lbf

2. Unit shear above + below opening

First opening: va1 = vb1 = H/(h_a+h_b) = 223 plf

3. Total boundary force above + below openings

First opening: O1 = va1 x (Lo1) = 1117 lbf

4. Corner forces

F1 = O1(L1)/(L1+L2) = 559 lbf

F2 = O1(L2)/(L1+L2) = 559 lbf

5. Tributary length of openings

T1 = (L1*Lo1)/(L1+L2) = 2.50 ft

T2 = (L2*Lo1)/(L1+L2) = 2.50 ft

6. Unit shear beside opening

v1 = (V/L)(L1+T1)/L1 = 177 plf

v2 = (V/L)(T2+L2)/L2 = 177 plf

Check v1*L1+v2*L2=V? 1089 lbf **OK**

7. Resistance to corner forces

R1 = v1*L1 = 545 lbf

R2 = v2*L2 = 545 lbf

8. Difference corner force + resistance

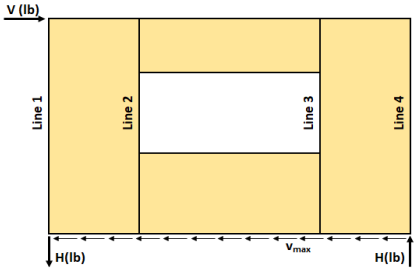
R1-F1 = -14 lbf

R2-F2 = -14 lbf

9. Unit shear in corner zones

vc1 = (R1-F1)/L1 = -5 plf

vc2 = (R2-F2)/L2 = -5 plf



Check Summary of Shear Values for One Opening

Line 1: vc1(h_a+h_b)+v1(h_o)=H?		-18	884	866 lbf
Line 2: va1(h_a+h_b)-vc1(h_a+h_b)-v1(h_o)=0?	866	-18	884	0
Line 3: va1(h_a+h_b)-vc2(h_a+h_b)-v1(h_o)=0?	866	-18	884	0
Line 4: vc2(h_a+h_b)+v2(h_o)=H?		-18	884	866 lbf

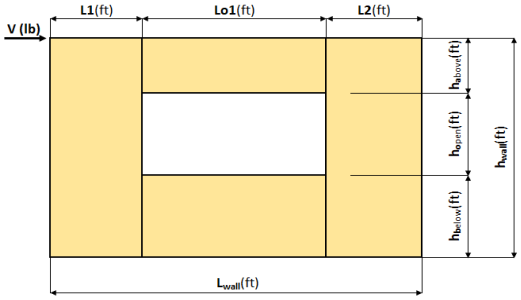
Design Summary*

Req. Sheathing Capacity	223 plf	**4-Term Deflection**	0.749 in.	**3-Term Deflection**	0.794 in.
Req. Strap Force	559 lbf	**4-Term Story Drift %**	0.028 %	**3-Term Story Drift %**	0.030 %
Req. HD Force (H)	866 lbf				
Req. Shear Wall Anchorage Force (v_{max})	98 plf				

***The Design Summary assumes that the shear wall is designed as blocked.**

Project Information

Code:	2018 IBC	**Date:**	
Designer:	JDA		
Client:	CenterLine		
Project:	3029 62nd Ave SE (Yeganeh Residence)		
Wall Line:	West 1 (Main to Upper)		



Shear Wall Calculation Variables

V	2225 lbf	Opening 1		Adj. Factor Method =	2bs/h
L1	3.85 ft	h_a	2.54 ft	Wall Pier Aspect Ratio	Adj. Factor
L2	2.65 ft	h_o	5.00 ft	P1=h_o/L1= 1.30	N/A
h_{wall}	10.54 ft	h_b	3.00 ft	P2=h_o/L2= 1.89	N/A
L_{wall}	9.50 ft	Lo1	3.00 ft		

1. Hold-down forces: H = Vh_{wall}/L_{wall} 2469 lbf

2. Unit shear above + below opening

First opening: va1 = vb1 = H/(h_a+h_b) = 446 plf

3. Total boundary force above + below openings

First opening: O1 = va1 x (Lo1) = 1337 lbf

4. Corner forces

F1 = O1(L1)/(L1+L2) = 792 lbf

F2 = O1(L2)/(L1+L2) = 545 lbf

5. Tributary length of openings

T1 = (L1*Lo1)/(L1+L2) = 1.78 ft

T2 = (L2*Lo1)/(L1+L2) = 1.22 ft

6. Unit shear beside opening

v1 = (V/L)(L1+T1)/L1 = 342 plf

v2 = (V/L)(T2+L2)/L2 = 342 plf

Check v1*L1+v2*L2=V? 2225 lbf **OK**

7. Resistance to corner forces

R1 = v1*L1 = 1318 lbf

R2 = v2*L2 = 907 lbf

8. Difference corner force + resistance

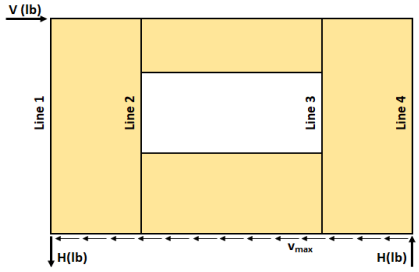
R1-F1 = 526 lbf

R2-F2 = 362 lbf

9. Unit shear in corner zones

vc1 = (R1-F1)/L1 = 137 plf

vc2 = (R2-F2)/L2 = 137 plf



Check Summary of Shear Values for One Opening

Line 1: vc1(h_a+h_b)+v1(h_o)=H?		757	1712	2469 lbf
Line 2: va1(h_a+h_b)-vc1(h_a+h_b)-v1(h_o)=0?	2469	757	1712	0
Line 3: va1(h_a+h_b)-vc2(h_a+h_b)-v1(h_o)=0?	2469	757	1712	0
Line 4: vc2(h_a+h_b)+v2(h_o)=H?		757	1712	2469 lbf

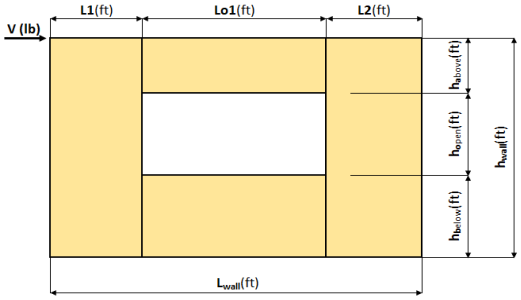
Design Summary*

Req. Sheathing Capacity	446 plf	**4-Term Deflection**	1.169 in.	**3-Term Deflection**	1.031 in.
Req. Strap Force	792 lbf	**4-Term Story Drift %**	0.037 %	**3-Term Story Drift %**	0.033 %
Req. HD Force (H)	2469 lbf				
Req. Shear Wall Anchorage Force (v_{max})	234 plf				

***The Design Summary assumes that the shear wall is designed as blocked.**

Project Information

Code:	2018 IBC	**Date:**	
Designer:	JDA		
Client:	CenterLine		
Project:	3029 62nd Ave SE (Yeganeh Residence)		
Wall Line:	East (Main to Upper)		



Shear Wall Calculation Variables

V	3300 lbf	Opening 1	
L1	3.08 ft	h_a	2.54 ft
L2	3.08 ft	h_o	5.00 ft
h_{wall}	10.54 ft	h_b	3.00 ft
L_{wall}	9.50 ft	Lo1	3.34 ft

Adj. Factor Method =		2bs/h
Wall Pier Aspect Ratio		Adj. Factor
P1=h_o/L1=	1.62	N/A
P2=h_o/L2=	1.62	N/A

1. Hold-down forces: H = Vh_{wall}/L_{wall} 3662 lbf

2. Unit shear above + below opening

First opening: va1 = vb1 = H/(h_a+h_b) = 661 plf

3. Total boundary force above + below openings

First opening: O1 = va1 x (Lo1) = 2207 lbf

4. Corner forces

F1 = O1(L1)/(L1+L2) = 1104 lbf
F2 = O1(L2)/(L1+L2) = 1104 lbf

5. Tributary length of openings

T1 = (L1*Lo1)/(L1+L2) = 1.67 ft
T2 = (L2*Lo1)/(L1+L2) = 1.67 ft

6. Unit shear beside opening

v1 = (V/L)(L1+T1)/L1 = 536 plf
v2 = (V/L)(T2+L2)/L2 = 536 plf
Check v1*L1+v2*L2=V? 3300 lbf **OK**

7. Resistance to corner forces

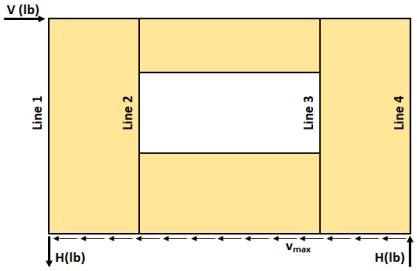
R1 = v1*L1 = 1650 lbf
R2 = v2*L2 = 1650 lbf

8. Difference corner force + resistance

R1-F1 = 546 lbf
R2-F2 = 546 lbf

9. Unit shear in corner zones

vc1 = (R1-F1)/L1 = 177 plf
vc2 = (R2-F2)/L2 = 177 plf



Check Summary of Shear Values for One Opening

Line 1: vc1(h_a+h_b)+v1(h_o)=H?		983	2679	3662 lbf
Line 2: va1(h_a+h_b)-vc1(h_a+h_b)-v1(h_o)=0?	3662	983	2679	0
Line 3: va1(h_a+h_b)-vc2(h_a+h_b)-v1(h_o)=0?	3662	983	2679	0
Line 4: vc2(h_a+h_b)+v2(h_o)=H?		983	2679	3662 lbf

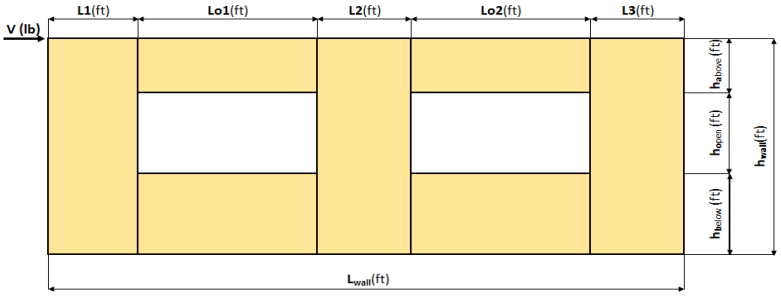
Design Summary*

Req. Sheathing Capacity	661 plf	**4-Term Deflection**	2.404 in.	**3-Term Deflection**	1.312 in.
Req. Strap Force	1104 lbf	**4-Term Story Drift %**	0.076 %	**3-Term Story Drift %**	0.041 %
Req. HD Force (H)	3662 lbf				
Req. Shear Wall Anchorage Force (v_{max})	347 plf				

***The Design Summary assumes that the shear wall is designed as blocked.**

Project Information

Code:	2018 IBC	**Date:**	5/23/2024
Designer:	JDA		
Client:	CenterLine		
Project:	3029 62nd Ave SE (Yeganeh Residence)		
Wall Line:	South (Upper to Roof)		



Shear Wall Calculation Variables

V	4665 lbf		Opening 1		Opening 2	Adj. Factor Method =	2bs/h
L1	3.25 ft	h_a1	0.88 ft	h_a2	0.88 ft	Wall Pier Aspect Ratio	Adj. Factor
L2	10.67 ft	h_o1	2.50 ft	h_o2	2.50 ft	P1=h_o/L1= 0.77	N/A
L3	3.25 ft	h_b1	5.50 ft	h_b2	5.50 ft	P2=h_o/L2= 0.23	N/A
h_{wall}	8.88 ft	Lo1	5.00 ft	Lo2	5.00 ft	P3=h_o/L3= 0.77	N/A
L_{wall}	27.17 ft						

1. Hold-down forces: H = Vh_{wall}/L_{wall} 1524 lbf

2. Unit shear above + below opening

First opening: va1 = vb1 = H/(h_a1+h_b1) = 239 plf

Second opening: va2 = vb2 = H/(h_a2+h_b2) = 239 plf

3. Total boundary force above + below openings

First opening: O1 = va1 x (Lo1) = 1195 lbf

Second opening: O2 = va2 x (Lo2) = 1195 lbf

4. Corner forces

F1 = O1(L1)/(L1+L2) = 279 lbf

F2 = O1(L2)/(L1+L2) = 916 lbf

F3 = O2(L2)/(L2+L3) = 916 lbf

F4 = O2(L3)/(L2+L3) = 279 lbf

5. Tributary length of openings

T1 = (L1*Lo1)/(L1+L2) = 1.17 ft

T2 = (L2*Lo1)/(L1+L2) = 3.83 ft

T3 = (L2*Lo2)/(L2+L3) = 3.83 ft

T4 = (L3*Lo2)/(L2+L3) = 1.17 ft

6. Unit shear beside opening

v1 = (V/L)(L1+T1)/L1 = 233 plf

v2 = (V/L)(T2+L2+T3)/L2 = 295 plf

v3 = (V/L)(T4+L3)/L3 = 233 plf

Check v1*L1+v2*L2+v3*L3=V? 4665 lbf **OK**

7. Resistance to corner forces

R1 = v1*L1 = 758 lbf

R2 = v2*L2 = 3148 lbf

R3 = v3*L3 = 758 lbf

8. Difference corner force + resistance

R1-F1 = 479 lbf

R2-F2-F3 = 1316 lbf

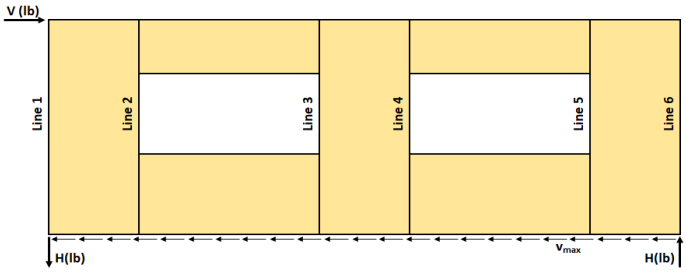
R3-F4 = 479 lbf

9. Unit shear in corner zones

vc1 = (R1-F1)/L1 = 148 plf

vc2 = (R2-F2-F3)/L2 = 123 plf

vc3 = (R3-F4)/L3 = 148 plf



Check Summary of Shear Values for Two Openings

Line 1: vc1(h_a1+h_b1)+v1(h_o1)=H?		940	583	1524 lbf
Line 2: va1(h_a1+h_b1)-vc1(h_a1+h_b1)-v1(h_o1)=0?	1524	940	583	0
Line 3: vc2(h_a1+h_b1)+v2(h_o1)-va1(h_a1+h_b1)=0?	786	738	1524	0
Line 4: va2(h_a2+h_b2)-v2(h_o2)-vc2(h_a2+h_b2)=0?	1524	738	786	0
Line 5: va2(h_a2+h_b2)-vc3(h_a2+h_b2)-v3(h_o2)=0?	1524	940	583	0
Line 6: vc3(h_a2+h_b2)+ v3(h_o2) = H?		940	583	1524 lbf

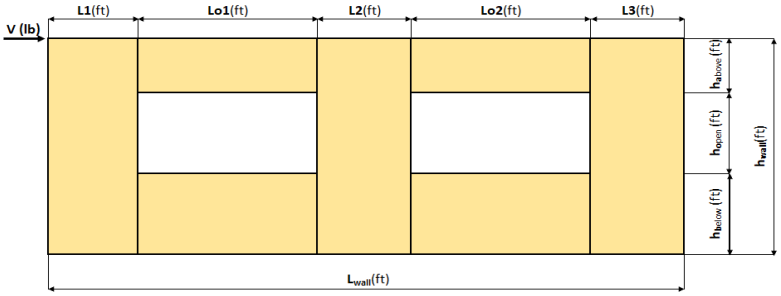
Design Summary*

Req. Sheathing Capacity	295 plf	**4-Term Deflection**	0.401 in.	**3-Term Deflection**	0.410 in.
Req. Strap Force	916 lbf	**4-Term Story Drift %**	0.015 %	**3-Term Story Drift %**	0.015 %
Req. HD Force	1524 lbf				
Req. Shear Wall Anchorage Force	172 plf				

***The Design Summary assumes that the shear wall is designed as blocked.**

Project Information

Code:	2018 IBC	**Date:**	5/23/2024
Designer:	JDA		
Client:	CenterLine		
Project:	3029 62nd Ave SE (Yeganeh Residence)		
Wall Line:	South (Upper to Roof)		



Shear Wall Calculation Variables

V	6199 lbf		Opening 1		Opening 2	Adj. Factor Method =	2bs/h
L1	2.48 ft	h_a1	2.54 ft	h_a2	2.54 ft	Wall Pier Aspect Ratio	Adj. Factor
L2	6.56 ft	h_o1	2.50 ft	h_o2	2.50 ft	P1=h_o/L1= 1.01	N/A
L3	3.29 ft	h_b1	3.00 ft	h_b2	3.00 ft	P2=h_o/L2= 0.38	N/A
h_{wall}	8.04 ft	Lo1	10.00 ft	Lo2	5.00 ft	P3=h_o/L3= 0.76	N/A
L_{wall}	27.33 ft						

1. Hold-down forces: H = Vh_{wall}/L_{wall} 1824 lbf

2. Unit shear above + below opening

First opening: va1 = vb1 = H/(h_a1+h_b1) = 329 plf

Second opening: va2 = vb2 = H/(h_a2+h_b2) = 329 plf

3. Total boundary force above + below openings

First opening: O1 = va1 x (Lo1) = 3291 lbf

Second opening: O2 = va2 x (Lo2) = 1646 lbf

4. Corner forces

F1 = O1(L1)/(L1+L2) = 903 lbf

F2 = O1(L2)/(L1+L2) = 2388 lbf

F3 = O2(L2)/(L2+L3) = 1096 lbf

F4 = O2(L3)/(L2+L3) = 550 lbf

5. Tributary length of openings

T1 = (L1*Lo1)/(L1+L2) = 2.74 ft

T2 = (L2*Lo1)/(L1+L2) = 7.26 ft

T3 = (L2*Lo2)/(L2+L3) = 3.33 ft

T4 = (L3*Lo2)/(L2+L3) = 1.67 ft

6. Unit shear beside opening

v1 = (V/L)(L1+T1)/L1 = 478 plf

v2 = (V/L)(T2+L2+T3)/L2 = 593 plf

v3 = (V/L)(T4+L3)/L3 = 342 plf

Check v1*L1+v2*L2+v3*L3=V? 6199 lbf **OK**

7. Resistance to corner forces

R1 = v1*L1 = 1185 lbf

R2 = v2*L2 = 3889 lbf

R3 = v3*L3 = 1125 lbf

8. Difference corner force + resistance

R1-F1 = 282 lbf

R2-F2-F3 = 405 lbf

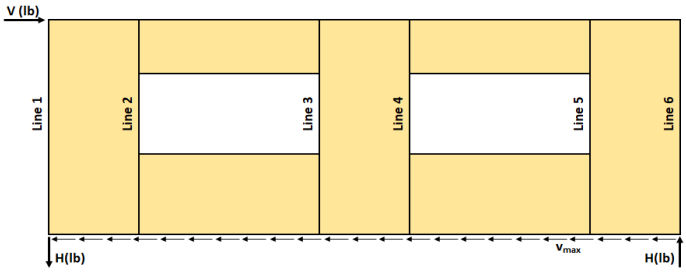
R3-F4 = 575 lbf

9. Unit shear in corner zones

vc1 = (R1-F1)/L1 = 114 plf

vc2 = (R2-F2-F3)/L2 = 62 plf

vc3 = (R3-F4)/L3 = 175 plf



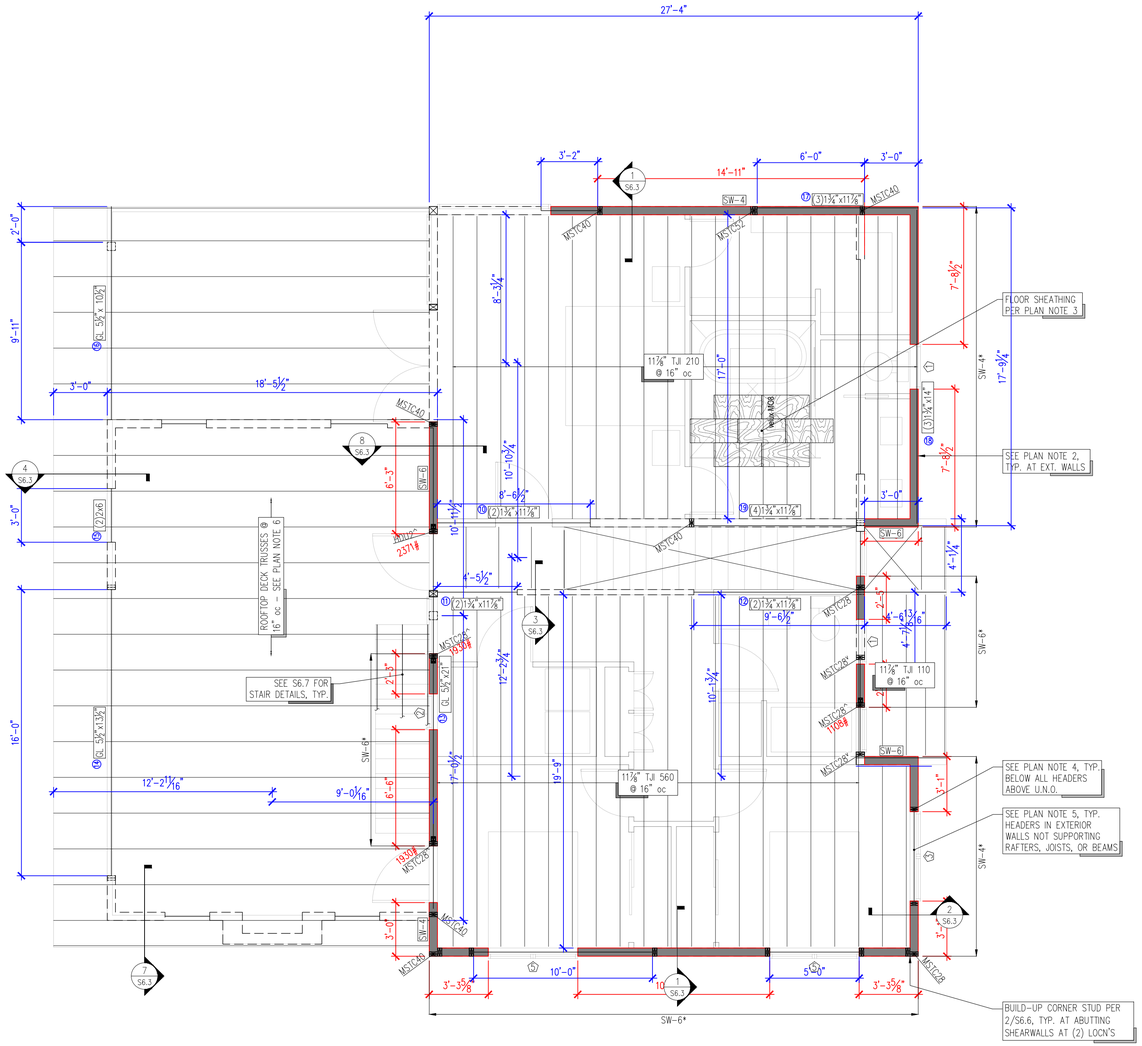
Check Summary of Shear Values for Two Openings

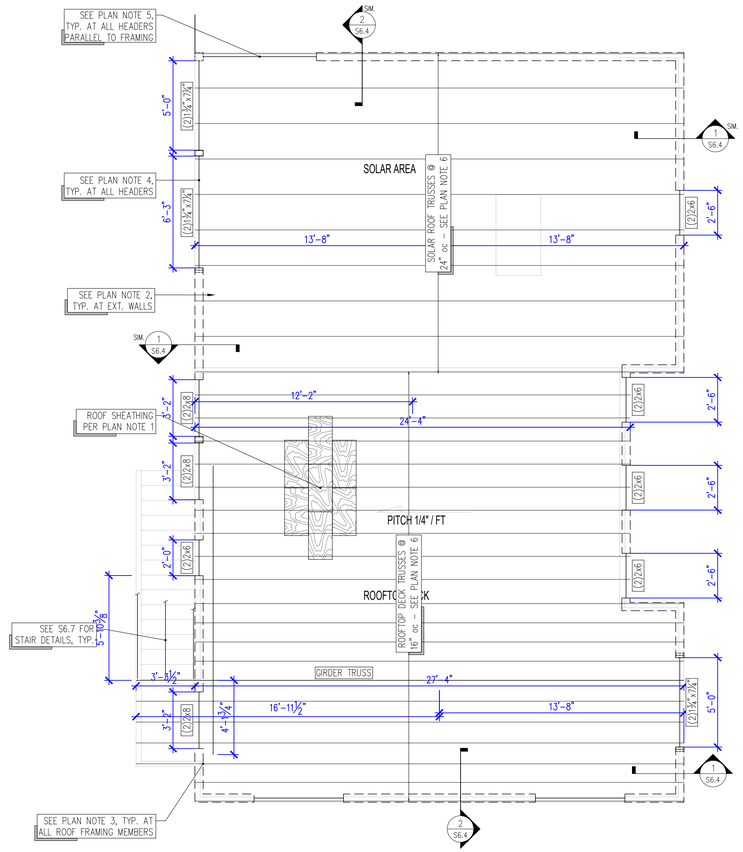
Line 1: vc1(h_a1+h_b1)+v1(h_o1)=H?		630	1194	1824 lbf
Line 2: va1(h_a1+h_b1)-vc1(h_a1+h_b1)-v1(h_o1)=0?	1824	630	1194	0
Line 3: vc2(h_a1+h_b1)+v2(h_o1)-va1(h_a1+h_b1)=0?	342	1482	1824	0
Line 4: va2(h_a2+h_b2)-v2(h_o2)-vc2(h_a2+h_b2)=0?	1824	1482	342	0
Line 5: va2(h_a2+h_b2)-vc3(h_a2+h_b2)-v3(h_o2)=0?	1824	969	855	0
Line 6: vc3(h_a2+h_b2)+ v3(h_o2) = H?		969	855	1824 lbf

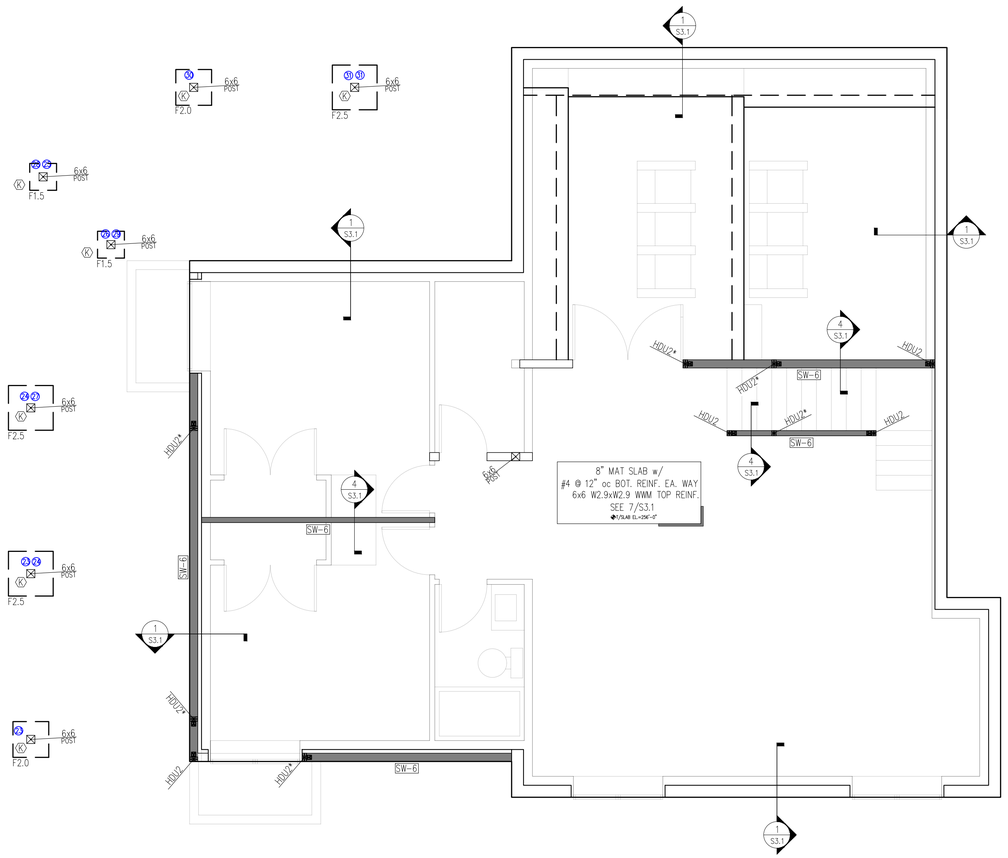
Design Summary*

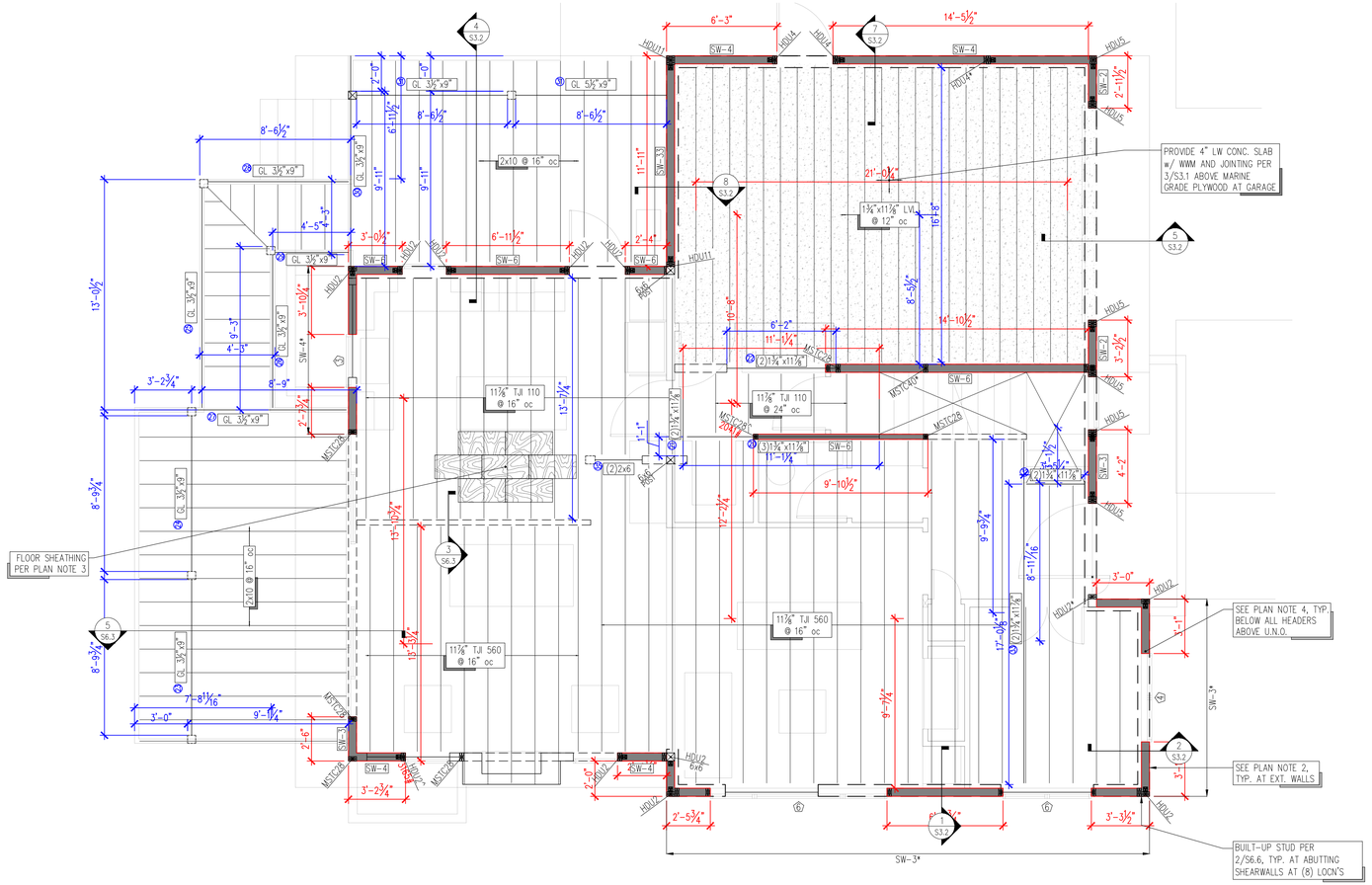
Req. Sheathing Capacity	593 plf	**4-Term Deflection**	1.325 in.	**3-Term Deflection**	0.826 in.
Req. Strap Force	2388 lbf	**4-Term Story Drift %**	0.055 %	**3-Term Story Drift %**	0.034 %
Req. HD Force	1824 lbf				
Req. Shear Wall Anchorage Force	227 plf				

***The Design Summary assumes that the shear wall is designed as blocked.**


27'-4"
3'-2"
14'-11"
6'-0"
3'-0"
SW-4
MSTC40
MSTC52
MSTC28
(3)1¾"x11⅞"
FLOOR SHEATHING PER PLAN NOTE 3
11⅞" TJI 210 @ 16" oc
17'-0"
8'-¾"
7'-8½"
17'-9¼"
SW-4*
(3)1¾"x14"
SEE PLAN NOTE 2, TYP. AT EXT. WALLS
SW-6
SW-5
6'-3"
8'-6½"
10'-10½"
10'-11½"
(2)1¾"x11⅞"
(4)1¾"x11⅞"
3'-0"
4'-1¾"
4'-5½"
2'-5"
4'-6 13/16"
4'-7½"
9'-6½"
SW-6*
11⅞" TJI 110 @ 16" oc
11⅞" TJI 560 @ 16" oc
19'-9"
19'-0"
10'-1¾"
12'-2¾"
SEE S6.7 FOR STAIR DETAILS, TYP.
SW-6*
12'-2 1/16"
9'-0 1/16"
6'-6"
3'-0"
10'-0"
5'-0"
3'-3⅝"
SW-6*
SEE PLAN NOTE 4, TYP. BELOW ALL HEADERS ABOVE U.N.O.
SEE PLAN NOTE 5, TYP. HEADERS IN EXTERIOR WALLS NOT SUPPORTING RAFTERS, JOISTS, OR BEAMS
BUILD-UP CORNER STUD PER 2/S6.6, TYP. AT ABUTTING SHEARWALLS AT (2) LOCN'S
ROOFTOP DECK TRUSSES @ 16" oc - SEE PLAN NOTE 6
(2)2x6
(2)2x8
GL 5¼"x10½"
GL 5¼"x13½"
GL 5¼"x22½"
2'-0"
9'-11"
3'-0"
16'-0"


SEE PLAN NOTE 5, TYP. AT ALL HEADERS PARALLEL TO FRAMING
SEE PLAN NOTE 4, TYP. AT ALL HEADERS
SEE PLAN NOTE 2, TYP. AT EXT. WALLS
ROOF SHEATHING PER PLAN NOTE 1
SOLAR AREA
SOLAR ROOF TRUSSES @ 24" oc - SEE PLAN NOTE 6
ROOFTOP DECK TRUSSES @ 16" oc - SEE PLAN NOTE 6
PITCH 1/4" / FT
ROOFTOP DECK
GIRDER TRUSS
SEE S6.7 FOR STAIR DETAILS, TYP.
SEE PLAN NOTE 3, TYP. AT ALL ROOF FRAMING MEMBERS
(2)1¾"x7¼"
(2)1¾"x9¼"
(2)2x6
(2)2x8
5'-0"
6'-3"
3'-2"
4'-2"
2'-0"
3'-1½"
4'-3¾"
13'-8"
13'-8"
12'-2"
24'-4"
16'-11½"
27'-4"
2'-6"
SIM
S6.4
S6.3

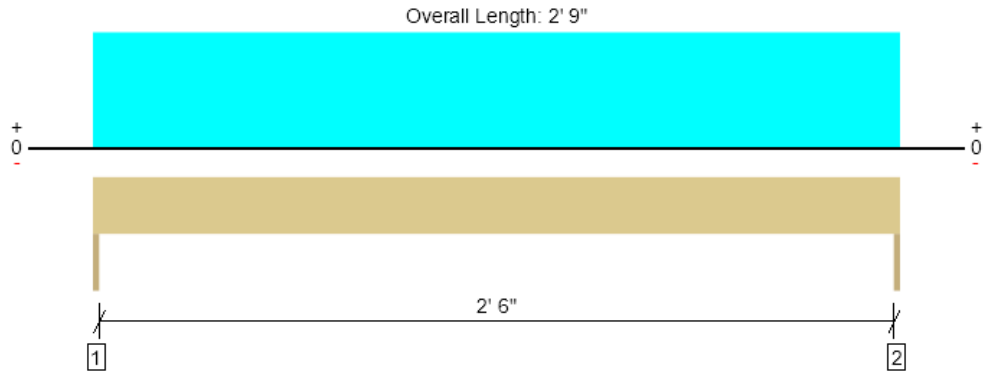

8" MAT SLAB w/
#4 @ 12" oc BOT. REINF. EA. WAY
6x6 W2.9xW2.9 WWM TOP REINF.
SEE 7/S3.1
TOS/SLAB EL=256'-0"
SW-6
HDU2*
6x6 POST
F2.0
F2.5
F1.5


PROVIDE 4" LW CONC. SLAB w/ WWM AND JOINTING PER 3/S3.1 ABOVE MARINE GRADE PLYWOOD AT GARAGE
FLOOR SHEATHING PER PLAN NOTE 3
SEE PLAN NOTE 4, TYP. BELOW ALL HEADERS ABOVE U.N.O.
SEE PLAN NOTE 2, TYP. AT EXT. WALLS
BUILT-UP STUD PER 2/S6.6, TYP. AT ABUTTING SHEARWALLS AT (8) LOCN'S
11⅞" TJI 110 @ 16" oc
11⅞" TJI 110 @ 24" oc
11⅞" TJI 560 @ 16" oc
1¾"x11⅞" LVL @ 12" oc
2x10 @ 16" oc
GL 3½"x9"
SW-6
SW-4
SW-3*
SW-2
HDU2
HDU4
HDU5
HDU11
MSTC28
MSTC40
SDS25212

Roof			
Member Name	Results (Max UTIL %)	Current Solution	Comments
2'-6" Hdr	Passed (75% M)	2 piece(s) 2 x 6 DF No.2	
6'-3" Hdr	Passed (87% ΔL)	2 piece(s) 1 3/4" x 7 1/4" 2.0E Microllam® LVL	
5' Hdr	Passed (57% M)	2 piece(s) 1 3/4" x 7 1/4" 2.0E Microllam® LVL	
3'-2" Hdr	Passed (69% R)	2 piece(s) 2 x 8 DF No.2	
3'-2" Hdr (cant)	Passed (96% R)	2 piece(s) 2 x 8 DF No.2	
1	Passed (96% ΔL)	2 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
Free Standing Post	Passed (91% f_c)	1 piece(s) 5 1/4" x 7" 1.8E Parallam® PSL	
Upper Floor			
Member Name	Results (Max UTIL %)	Current Solution	Comments
Floor: Joist (17'-0")	Passed (97% M)	1 piece(s) 11 7/8" TJI® 210 @ 16" OC	
Cant Deck: Joist	Passed (95% ΔL)	1 piece(s) 11 7/8" TJI® 360 @ 16" OC	
10	Passed (57% R)	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
11	Passed (67% R)	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
12	Passed (56% R)	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
13	Passed (101% R)	1 piece(s) 5 1/2" x 21" 24F-V4 DF Glulam	
13 (w/ overstrength)	Passed (101% R)	1 piece(s) 5 1/2" x 21" 24F-V4 DF Glulam	
14	Passed (101% M+)	1 piece(s) 5 1/2" x 13 1/2" 24F-V4 DF Glulam	
15	Passed (86% M)	2 piece(s) 2 x 6 DF No.2	
16	Passed (75% ΔL)	1 piece(s) 5 1/2" x 10 1/2" 24F-V4 DF Glulam	
17	Failed (98% ΔT)	3 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	An excessive uplift of -3237 lbs at support located at 1 1/2" failed this product.
18	Passed (100% R)	3 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
19	Failed (88% ΔT)	3 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	An excessive uplift of -2590 lbs at support located at 0" failed this product.
10' Hdr	Passed (66% M)	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
5' Hdr	Passed (62% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
3.5' Hdr	Passed (85% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
5'-2" Hdr w/ chord	Passed (49% R)	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
5'-2" Hdr w/ chord & overstrength	Passed (54% R)	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	

Main Floor			
Member Name	Results (Max UTIL %)	Current Solution	Comments
Garage Joists	Passed (51% R)	1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL @ 16" OC	
Floor: Joist (19'-9")	Passed (59% R)	1 piece(s) 14" TJI® 560 @ 16" OC	
Floor: Joist (13'-4")	Passed (91% M)	1 piece(s) 14" TJI® 110 @ 24" OC	
Deck Joists	Passed (46% M)	1 piece(s) 2 x 10 DF No.2 @ 16" OC	
Deck Joists	Passed (59% M)	1 piece(s) 2 x 10 DF No.2 @ 16" OC	
20	Passed (100% R)	3 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
20 (w/ overstrength)	Passed (100% R)	3 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
21	Passed (100% R)	2 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
22	Passed (72% R)	2 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
23	Passed (72% M+)	1 piece(s) 3 1/2" x 9" 24F-V4 DF Glulam	
24	Passed (72% M+)	1 piece(s) 3 1/2" x 9" 24F-V4 DF Glulam	
25	Passed (48% ΔL)	1 piece(s) 3 1/2" x 9" 24F-V4 DF Glulam	
26	Passed (20% M+)	1 piece(s) 3 1/2" x 9" 24F-V4 DF Glulam	
27	Passed (42% R)	1 piece(s) 3 1/2" x 9" 24F-V4 DF Glulam	
28	Passed (22% R)	1 piece(s) 3 1/2" x 9" 24F-V4 DF Glulam	
29	Passed (11% R)	1 piece(s) 3 1/2" x 9" 24F-V4 DF Glulam	
30	Passed (35% M+)	1 piece(s) 3 1/2" x 9" 24F-V4 DF Glulam	
31	Passed (61% M+)	1 piece(s) 3 1/2" x 9" 24F-V4 DF Glulam	
32	Passed (79% R)	1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
33	Passed (81% R)	1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
5'-3" Hdr	Passed (62% R)	1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
5'-3" Hdr (w/overstrength)	Passed (50% R)	2 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	

Roof, 2'-6" Hdr
2 piece(s) 2 x 6 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1744 @ 0	2813 (1.50")	Passed (62%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	923 @ 7"	1980	Passed (47%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1102 @ 1' 4 1/2"	1475	Passed (75%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.018 @ 1' 4 1/2"	0.092	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.025 @ 1' 4 1/2"	0.138	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 2' 9"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Trimmer - DF	1.50"	1.50"	1.50"	476	1127	564	1744	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	476	1127	564	1744	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 9" o/c	
Bottom Edge (Lu)	2' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 2' 9"	N/A	4.2	--	--	
1 - Uniform (PSF)	0 to 2' 9"	13' 8"	25.0	60.0	30.0	Default Load

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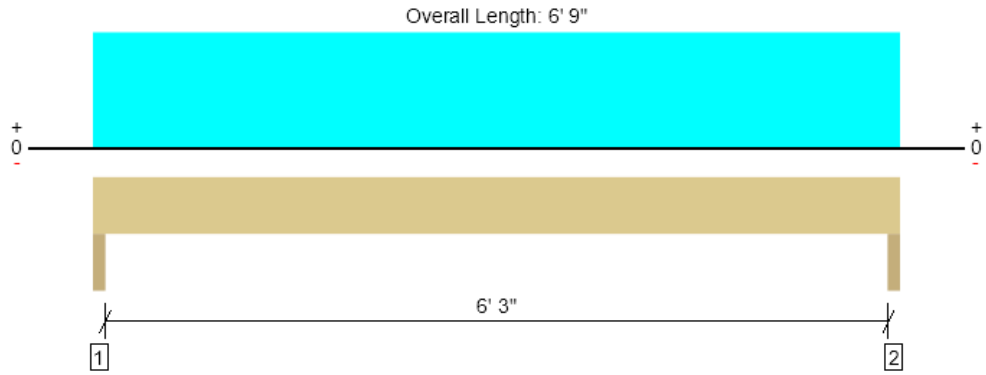
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Roof, 6'-3" Hdr

2 piece(s) 1 3/4" x 7 1/4" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4292 @ 1 1/2"	7875 (3.00")	Passed (54%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2947 @ 10 1/4"	4821	Passed (61%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	6175 @ 3' 4 1/2"	7115	Passed (87%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.189 @ 3' 4 1/2"	0.217	Passed (L/413)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.260 @ 3' 4 1/2"	0.313	Passed (L/300)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 6' 9"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (5/16").
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Trimmer - DF	3.00"	3.00"	1.63"	1178	2767	1384	4292	None
2 - Trimmer - DF	3.00"	3.00"	1.63"	1178	2767	1384	4292	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 9" o/c	
Bottom Edge (Lu)	6' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 6' 9"	N/A	7.4	--	--	
1 - Uniform (PSF)	0 to 6' 9"	13' 8"	25.0	60.0	30.0	Default Load

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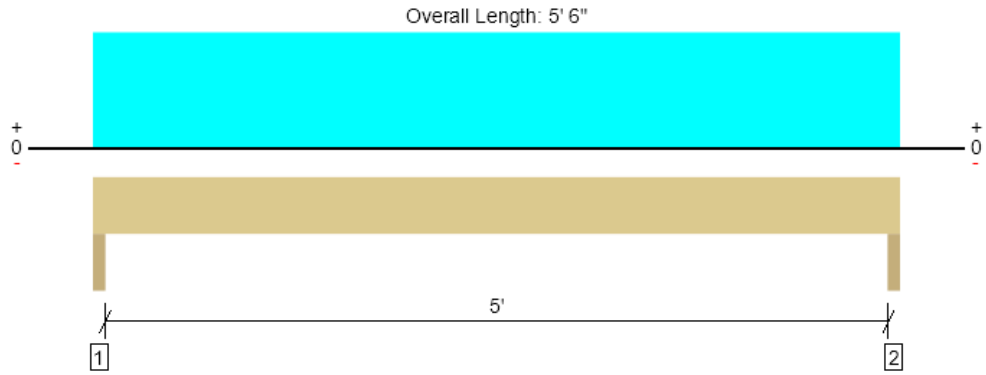
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Roof, 5' Hdr

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



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3497 @ 1 1/2"	7875 (3.00")	Passed (44%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2216 @ 10 1/4"	4821	Passed (46%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4028 @ 2' 9"	7115	Passed (57%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.085 @ 2' 9"	0.175	Passed (L/738)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.118 @ 2' 9"	0.262	Passed (L/535)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 5' 6"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Trimmer - DF	3.00"	3.00"	1.50"	960	2255	1127	3497	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	960	2255	1127	3497	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 6" o/c	
Bottom Edge (Lu)	5' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 6"	N/A	7.4	--	--	
1 - Uniform (PSF)	0 to 5' 6"	13' 8"	25.0	60.0	30.0	Default Load

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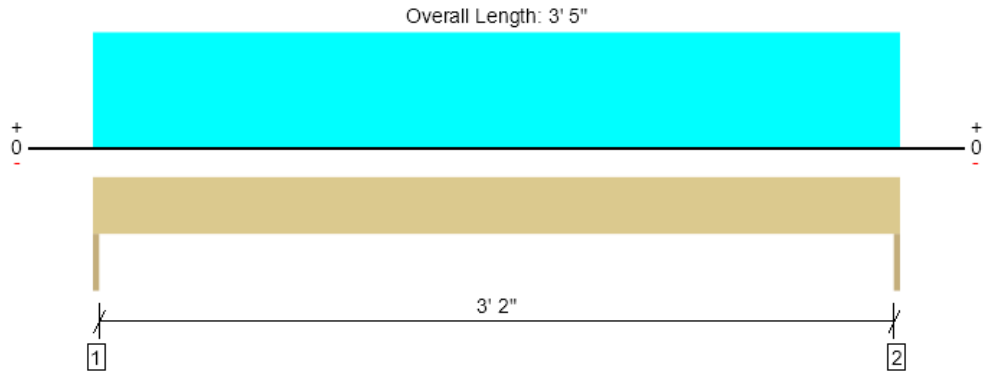
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Roof, 3'-2" Hdr
2 piece(s) 2 x 8 DF No.2



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1932 @ 0	2813 (1.50")	Passed (69%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1018 @ 8 3/4"	2610	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1517 @ 1' 8 1/2"	2365	Passed (64%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.017 @ 1' 8 1/2"	0.114	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.023 @ 1' 8 1/2"	0.171	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 3' 5"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Trimmer - DF	1.50"	1.50"	1.50"	529	1247	624	1932	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	529	1247	624	1932	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 5" o/c	
Bottom Edge (Lu)	3' 5" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 5"	N/A	5.5	--	--	
1 - Uniform (PSF)	0 to 3' 5"	12' 2"	25.0	60.0	30.0	Default Load

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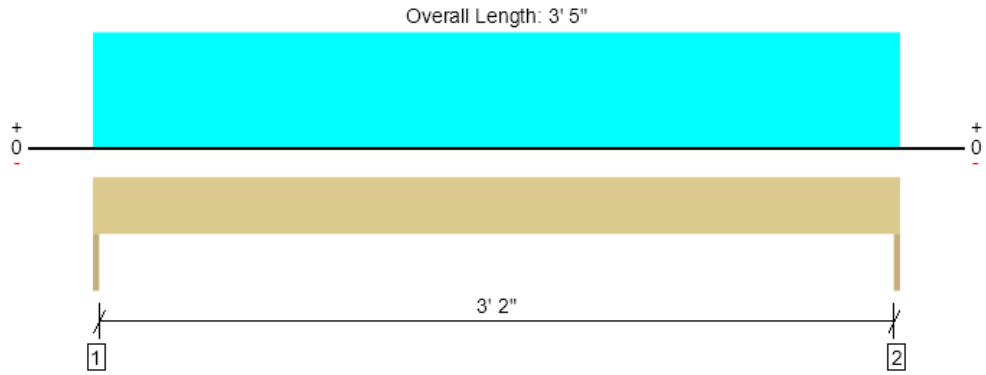
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Roof, 3'-2" Hdr (cant)
2 piece(s) 2 x 8 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2689 @ 0	2813 (1.50")	Passed (96%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1417 @ 8 3/4"	2610	Passed (54%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2112 @ 1' 8 1/2"	2365	Passed (89%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.023 @ 1' 8 1/2"	0.114	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.032 @ 1' 8 1/2"	0.171	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 3' 5"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Trimmer - DF	1.50"	1.50"	1.50"	734	1738	869	2689	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	734	1738	869	2689	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 5" o/c	
Bottom Edge (Lu)	3' 5" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 5"	N/A	5.5	--	--	
1 - Uniform (PSF)	0 to 3' 5"	16' 11 1/2"	25.0	60.0	30.0	Default Load

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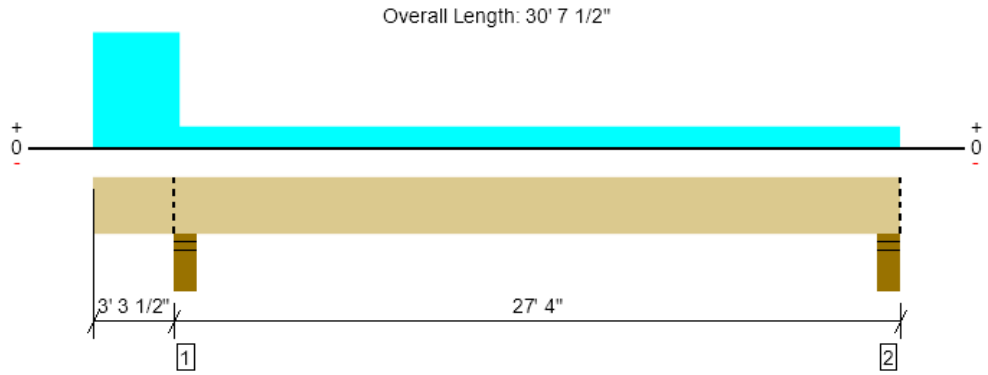
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Roof, 1

2 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4269 @ 3' 6 1/4"	12031 (5.50")	Passed (35%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1675 @ 4' 11"	9310	Passed (18%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	10841 @ 17' 3 1/16"	24258	Passed (45%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.645 @ 16' 11 3/4"	0.669	Passed (L/498)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.941 @ 17' 7/8"	1.339	Passed (L/342)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)

Member Length : 30' 7 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/480) and TL (2L/240).
- Upward deflection on left cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Stud wall - DF	5.50"	5.50"	1.95"	1333	2610	1305	4269	Blocking
2 - Stud wall - DF	5.50"	5.50"	1.50"	609	1097/-100	524	1825	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)	14' 10" o/c	
Bottom Edge (Lu)	30' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 30' 7 1/2"	N/A	14.3	--	--	
1 - Uniform (PSF)	0 to 30' 7 1/2" (Top)	1' 4"	25.0	60.0	30.0	Default Load
2 - Uniform (PSF)	0 to 3' 3 1/2" (Top)	5' 10 3/8"	25.0	60.0	30.0	Default Load

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Roof, Free Standing Post

1 piece(s) 5 1/4" x 7" 1.8E Parallam® PSL

Post Height: 10' 6 1/2"

Drawing is Conceptual

Design Results	Actual	Allowed	Result	LDF	Load: Combination [Load Group]
Slenderness	24	50	Passed (48%)	--	--
Compression (lbs)	39851	43651	Passed (91%)	1.00	1.0 D + 1.0 L [1]
Base Bearing (lbs)	39851	1091475	Passed (4%)	--	1.0 D + 1.0 L [1]
Bending/Compression	N/A	1	Passed (N/A)	--	N/A

- Input axial load eccentricity for the design is zero
- Applicable calculations are based on NDS.

Supports	Type	Material
Base	Beam	Steel

Max Unbraced Length	Comments
Full Member Length	No bracing assumed.

Member Type : Free Standing Post
Building Code : IBC 2021
Design Methodology : ASD

Vertical Load	Dead (0.90)	Floor Live (1.00)	Seismic (1.60)	Comments
1 - Point (lb)	15269	24582	1602/-1602	Linked from: 13, Support 2

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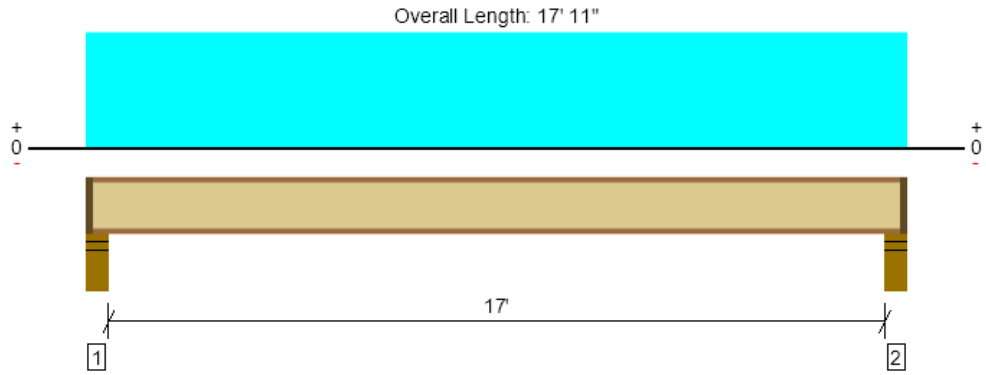
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper Floor, Floor: Joist (17'-0")
1 piece(s) 11 7/8" TJI® 210 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	881 @ 4 1/2"	1460 (3.50")	Passed (60%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	850 @ 5 1/2"	1655	Passed (51%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3684 @ 8' 11 1/2"	3795	Passed (97%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.304 @ 8' 11 1/2"	0.429	Passed (L/677)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.571 @ 8' 11 1/2"	0.858	Passed (L/361)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	42	40	Passed	--	--

Member Length : 17' 7 1/2"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 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	5.50"	3.75"	1.75"	418	478	896	1 3/4" Rim Board
2 - Stud wall - DF	5.50"	3.75"	1.75"	418	478	896	1 3/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 8" o/c	
Bottom Edge (Lu)	17' 8" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 17' 11"	16"	35.0	40.0	Default Load

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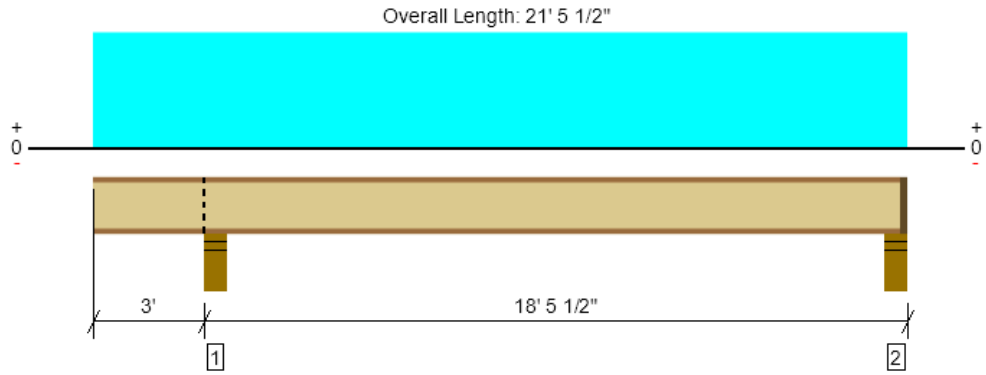
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Upper Floor, Cant Deck: Joist
1 piece(s) 11 7/8" TJI® 360 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1028 @ 21' 1"	1505 (3.50")	Passed (68%)	1.00	1.0 D + 1.0 L (Alt Spans)
Shear (lbs)	993 @ 21'	1705	Passed (58%)	1.00	1.0 D + 1.0 L (Alt Spans)
Moment (Ft-lbs)	4429 @ 12' 2 7/8"	6180	Passed (72%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.425 @ 12' 1 7/8"	0.446	Passed (L/504)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.591 @ 12' 2 1/4"	0.893	Passed (L/363)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	44	40	Passed	--	--

Member Length : 21' 3 3/4"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/480) and TL (2L/240).
- Upward deflection on left cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 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	5.50"	5.50"	3.50"	415	996	1411	Blocking
2 - Stud wall - DF	5.50"	3.75"	1.75"	300	744/-12	1045	1 3/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- 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)	4' 4" o/c	
Bottom Edge (Lu)	9' 7" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 21' 5 1/2"	16"	25.0	60.0	Default Load

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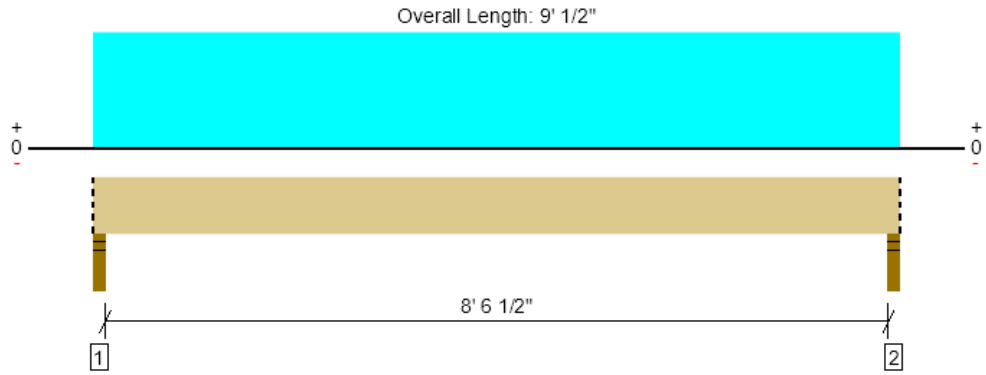
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper Floor, 10

2 piece(s) 1 3/4" x 11 7/8" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3756 @ 1 1/2"	6563 (3.00")	Passed (57%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2726 @ 1' 2 7/8"	7897	Passed (35%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	8028 @ 4' 6 1/4"	17848	Passed (45%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.072 @ 4' 6 1/4"	0.220	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.137 @ 4' 6 1/4"	0.440	Passed (L/772)	--	1.0 D + 1.0 L (All Spans)

Member Length : 9' 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	3.00"	3.00"	1.72"	1782	1974	3756	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.72"	1782	1974	3756	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)	9' 1" o/c	
Bottom Edge (Lu)	9' 1" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 9' 1/2"	N/A	12.1	--	
1 - Uniform (PSF)	0 to 9' 1/2" (Top)	10' 11"	35.0	40.0	Default Load

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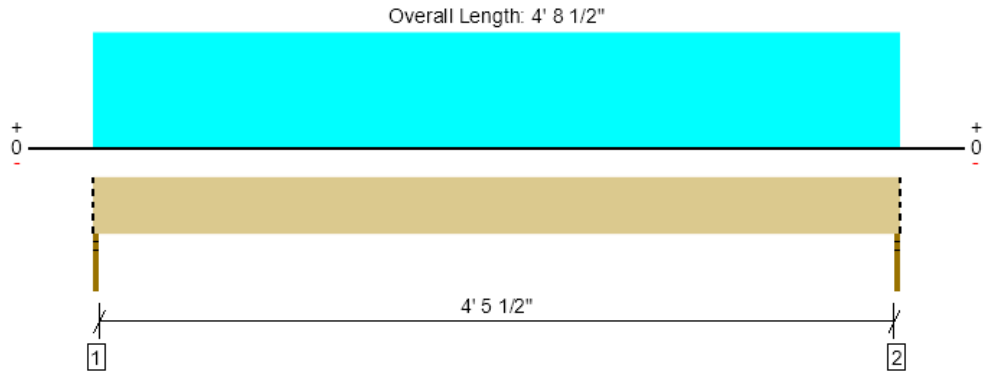
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper Floor, 11

2 piece(s) 1 3/4" x 11 7/8" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2191 @ 0	3281 (1.50")	Passed (67%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1154 @ 1' 1 3/8"	7897	Passed (15%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2579 @ 2' 4 1/4"	17848	Passed (14%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.009 @ 2' 4 1/4"	0.118	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.018 @ 2' 4 1/4"	0.235	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 4' 8 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	1.50"	1.50"	1.50"	1038	1154	2191	Blocking
2 - Stud wall - DF	1.50"	1.50"	1.50"	1038	1154	2191	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)	4' 9" o/c	
Bottom Edge (Lu)	4' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 4' 8 1/2"	N/A	12.1	--	
1 - Uniform (PSF)	0 to 4' 8 1/2" (Top)	12' 3"	35.0	40.0	Default Load

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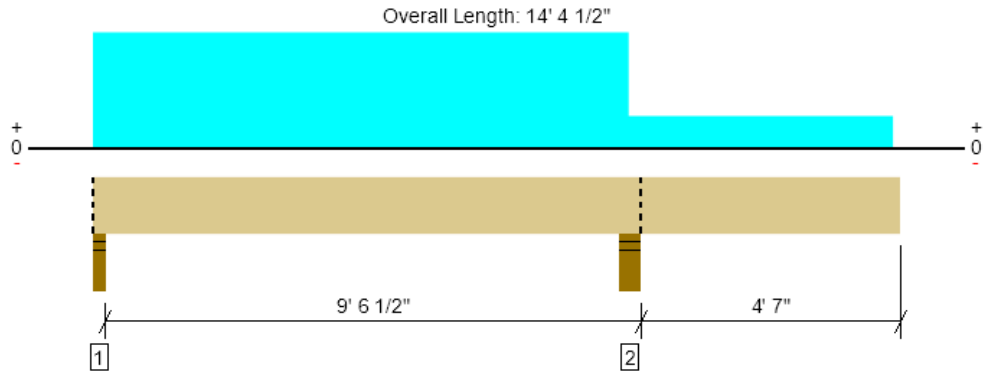
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper Floor, 12

2 piece(s) 1 3/4" x 11 7/8" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3656 @ 1 1/2"	6563 (3.00")	Passed (56%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2808 @ 8' 4 1/8"	7897	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	8175 @ 4' 8 5/8"	17848	Passed (46%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.087 @ 4' 10 1/8"	0.236	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.157 @ 4' 9 9/16"	0.472	Passed (L/724)	--	1.0 D + 1.0 L (All Spans)

Member Length : 14' 4 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/480) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Stud wall - DF	3.00"	3.00"	1.67"	1686	1970	-163	3656	Blocking
2 - Stud wall - DF	5.50"	5.50"	1.95"	2219	1919	819	4273	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)	14' 5" o/c	
Bottom Edge (Lu)	14' 5" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 14' 4 1/2"	N/A	12.1	--	--	
1 - Uniform (PSF)	0 to 9' 6 1/2" (Top)	10' 2"	35.0	40.0	-	Default Load
2 - Uniform (PSF)	9' 6 1/2" to 14' 3" (Top)	4' 8"	15.0	-	30.0	Default Load

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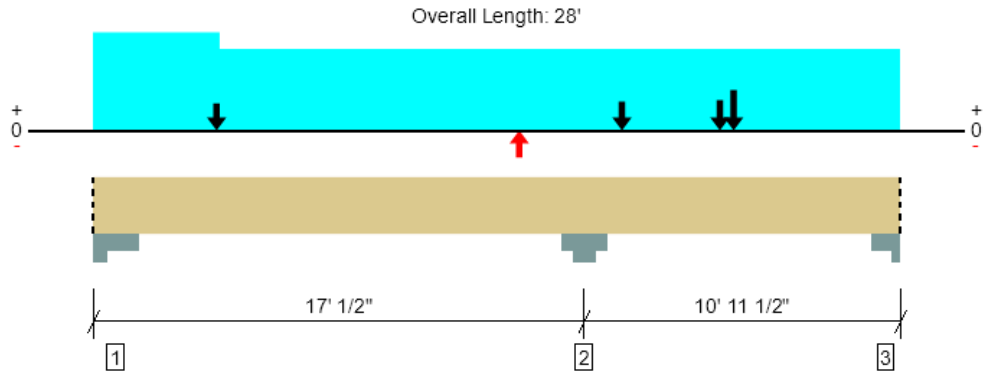
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Upper Floor, 13

1 piece(s) 5 1/2" x 21" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	39852 @ 17' 1/2"	39325 (11.00")	Passed (101%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	15592 @ 14' 10"	20405	Passed (76%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	46822 @ 7' 4 13/16"	79394	Passed (59%)	1.00	1.0 D + 1.0 L (Alt Spans)
Neg Moment (Ft-lbs)	-56150 @ 17' 1/2"	62322	Passed (90%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.172 @ 8' 3 11/16"	0.406	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.252 @ 8' 2 1/4"	0.813	Passed (L/775)	--	1.0 D + 1.0 L (Alt Spans)

Member Length : 28'
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume/size factor of 0.98 that was calculated using length L = 13' 4 15/16".
- Critical negative moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 7' 3 5/16".
- 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	Floor Live	Seismic	Factored	
1 - Column Cap - steel	11.00"	11.00"	4.69"	5892	10872/-547	1257/-1257	16764	Blocking
2 - Column Cap - steel	11.00"	11.00"	11.15"	15269	24582	1602/-1602	39852	None
3 - Column Cap - steel	7.00"	7.00"	3.02"	3290	7523/-2478	900/-900	10812	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)	28' o/c	
Bottom Edge (Lu)	28' o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 28'	N/A	28.1	--	--	
1 - Uniform (PSF)	0 to 28' (Top)	9'	35.0	60.0	-	Default Load
2 - Uniform (PSF)	0 to 4' 4 3/4" (Front)	16' 11 1/2"	25.0	60.0	-	
3 - Uniform (PSF)	4' 4 3/4" to 28' (Front)	12' 2"	25.0	60.0	-	
4 - Uniform (PSF)	0 to 28' (Front)	8' 10 1/2"	12.0	-	-	
5 - Point (lb)	18' 4 1/4" (Front)	N/A	1038	1154	-	Linked from: 11, Support 1
6 - Point (lb)	22' 2 3/4" (Front)	N/A	1782	1974	-	Linked from: 10, Support 1
7 - Point (lb)	4' 3 1/2" (Front)	N/A	-	-	1930	
8 - Point (lb)	14' 9 1/2" (Front)	N/A	-	-	-1930	
9 - Point (lb)	21' 9" (Front)	N/A	-	-	2371	

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

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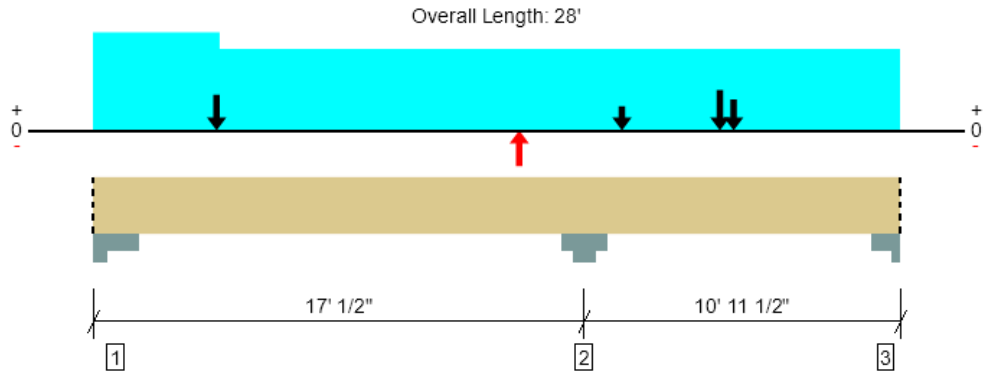
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper Floor, 13 (w/ overstrength)
1 piece(s) 5 1/2" x 21" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	39852 @ 17' 1/2"	39325 (11.00")	Passed (101%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	15592 @ 14' 10"	20405	Passed (76%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	46822 @ 7' 4 13/16"	79394	Passed (59%)	1.00	1.0 D + 1.0 L (Alt Spans)
Neg Moment (Ft-lbs)	-56150 @ 17' 1/2"	62322	Passed (90%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.172 @ 8' 3 11/16"	0.406	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.252 @ 8' 2 1/4"	0.813	Passed (L/775)	--	1.0 D + 1.0 L (Alt Spans)

Member Length : 28'
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume/size factor of 0.98 that was calculated using length L = 13' 4 15/16".
- Critical negative moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 7' 3 5/16".
- 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	Floor Live	Seismic	Factored	
1 - Column Cap - steel	11.00"	11.00"	4.69"	5892	10872/-547	3142/-3142	16764	Blocking
2 - Column Cap - steel	11.00"	11.00"	11.15"	15269	24582	4005/-4005	39852	None
3 - Column Cap - steel	7.00"	7.00"	3.02"	3290	7523/-2478	2250/-2250	10812	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)	28' o/c	
Bottom Edge (Lu)	28' o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 28'	N/A	28.1	--	--	
1 - Uniform (PSF)	0 to 28' (Top)	9'	35.0	60.0	-	Default Load
2 - Uniform (PSF)	0 to 4' 4 3/4" (Front)	16' 11 1/2"	25.0	60.0	-	
3 - Uniform (PSF)	4' 4 3/4" to 28' (Front)	12' 2"	25.0	60.0	-	
4 - Uniform (PSF)	0 to 28' (Front)	8' 10 1/2"	12.0	-	-	
5 - Point (lb)	18' 4 1/4" (Front)	N/A	1038	1154	-	Linked from: 11, Support 1
6 - Point (lb)	22' 2 3/4" (Front)	N/A	1782	1974	-	Linked from: 10, Support 1
7 - Point (lb)	4' 3 1/2" (Front)	N/A	-	-	4825	chord force of 1930
8 - Point (lb)	14' 9 1/2" (Front)	N/A	-	-	-4825	chord force of 1930
9 - Point (lb)	21' 9" (Front)	N/A	-	-	5928	chord force of 2371

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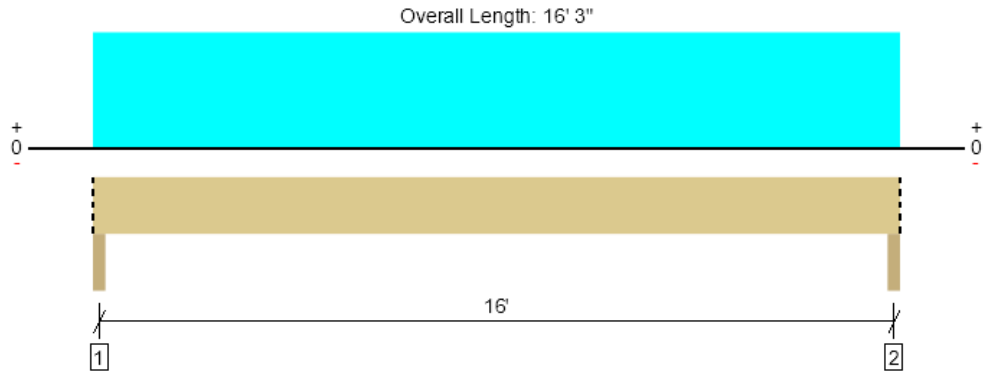
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper Floor, 14

1 piece(s) 5 1/2" x 13 1/2" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	8592 @ 1 1/2"	10725 (3.00")	Passed (80%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	7138 @ 1' 4 1/2"	13118	Passed (54%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	33841 @ 8' 1 1/2"	33413	Passed (101%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.533 @ 8' 1 1/2"	0.533	Passed (L/360)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.768 @ 8' 1 1/2"	0.800	Passed (L/250)	--	1.0 D + 1.0 L (All Spans)

Member Length : 16' 3"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 16'.
- 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	Floor Live	Factored	
1 - Column - DF	3.00"	3.00"	2.40"	2631	5962	8592	Blocking
2 - Column - DF	3.00"	3.00"	2.40"	2631	5962	8592	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)	6" o/c	
Bottom Edge (Lu)	16' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 16' 3"	N/A	18.0	--	
1 - Uniform (PSF)	0 to 16' 3" (Front)	12' 2 3/4"	25.0	60.0	Default Load

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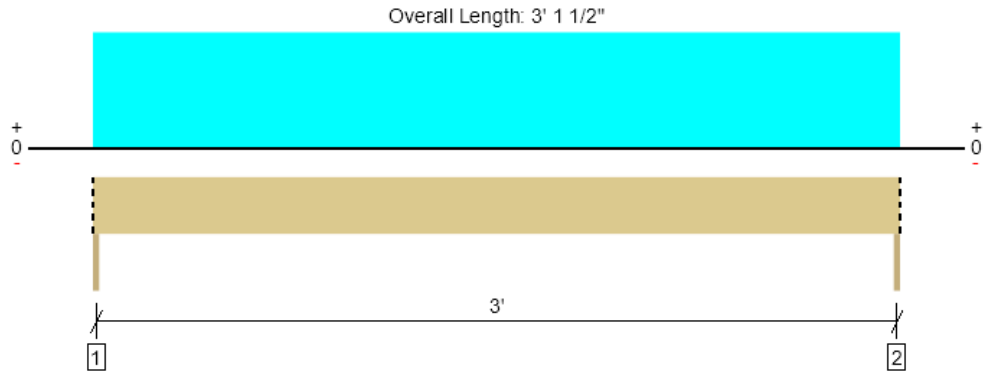
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Upper Floor, 15
2 piece(s) 2 x 6 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1631 @ 0	2813 (1.50")	Passed (58%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1022 @ 7"	1980	Passed (52%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1274 @ 1' 6 3/4"	1475	Passed (86%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.024 @ 1' 6 3/4"	0.104	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.034 @ 1' 6 3/4"	0.156	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 3' 1 1/2"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Column - DF	1.50"	1.50"	1.50"	484	1146	1631	Blocking
2 - Column - DF	1.50"	1.50"	1.50"	484	1146	1631	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)	3' 2" o/c	
Bottom Edge (Lu)	3' 2" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 3' 1 1/2"	N/A	4.2	--	
1 - Uniform (PSF)	0 to 3' 1 1/2" (Front)	12' 2 3/4"	25.0	60.0	Default Load

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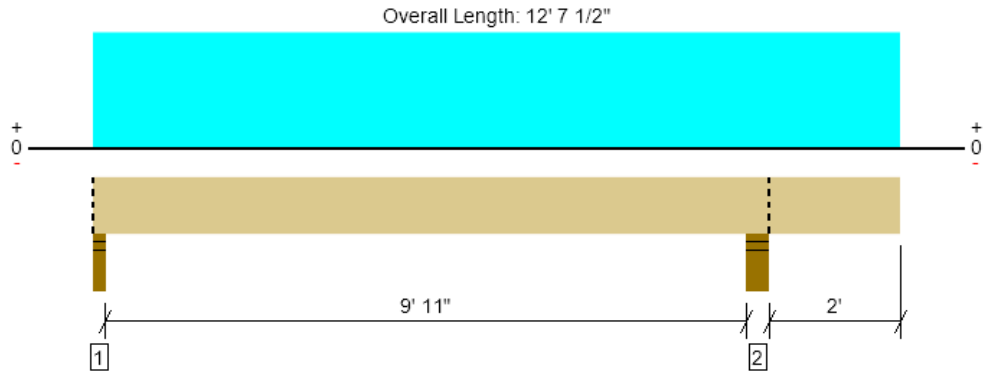
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper Floor, 16

1 piece(s) 5 1/2" x 10 1/2" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5465 @ 1 1/2"	10313 (3.00")	Passed (53%)	--	1.0 D + 1.0 L (Alt Spans)
Shear (lbs)	4502 @ 9' 3 1/2"	10203	Passed (44%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	13498 @ 5' 2 1/4"	20213	Passed (67%)	1.00	1.0 D + 1.0 L (Alt Spans)
Neg Moment (Ft-lbs)	-2618 @ 10' 4 3/4"	15580	Passed (17%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.192 @ 5' 3 1/8"	0.257	Passed (L/641)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.267 @ 5' 2 13/16"	0.514	Passed (L/462)	--	1.0 D + 1.0 L (Alt Spans)

Member Length : 12' 7 1/2"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/480) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 10' 1 1/2".
- Critical negative moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 2' 8 9/16".
- 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	Floor Live	Factored	
1 - Stud wall - DF	3.00"	3.00"	1.59"	1605	3860/-177	5465	Blocking
2 - Stud wall - DF	5.50"	5.50"	2.33"	2432	5581	8014	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' 8" o/c	
Bottom Edge (Lu)	12' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 12' 7 1/2"	N/A	14.0	--	
1 - Uniform (PSF)	0 to 12' 7 1/2" (Top)	12' 2 3/4"	25.0	60.0	Default Load

Member Notes

(converted from: Floor Flush Beam)

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

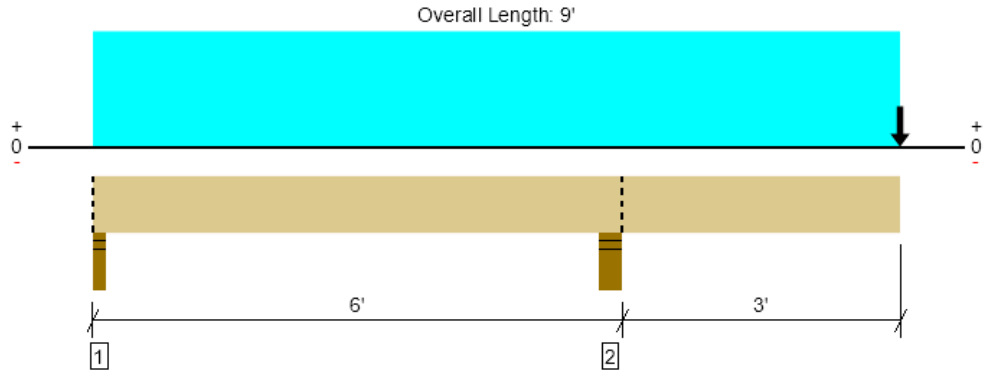
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Upper Floor, 17

3 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL

An excessive uplift of -3237 lbs at support located at 1 1/2" failed this product.



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	14933 @ 5' 9 1/4"	18047 (5.50")	Passed (83%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	7958 @ 6' 11 7/8"	13622	Passed (58%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-25167 @ 5' 9 1/4"	30788	Passed (82%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.157 @ 9'	0.200	Passed (2L/494)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.316 @ 9'	0.323	Passed (2L/246)	--	1.0 D + 1.0 S (All Spans)

Member Length : 9'
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Stud wall - DF	3.00"	3.00"	1.50"	-1119	975/-581	-2118	-3237	Blocking
2 - Stud wall - DF	5.50"	5.50"	4.55"	8268	3065	5821	14933	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)	9' o/c	
Bottom Edge (Lu)	9' o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9'	N/A	18.2	--	--	
1 - Uniform (PSF)	0 to 9' (Top)	8' 3 1/4"	35.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 9' (Top)	8' 10 1/2"	12.0	-	-	Default Load
3 - Point (lb)	9' (Front)	N/A	3422	482	3703	Linked from: 18, Support 1

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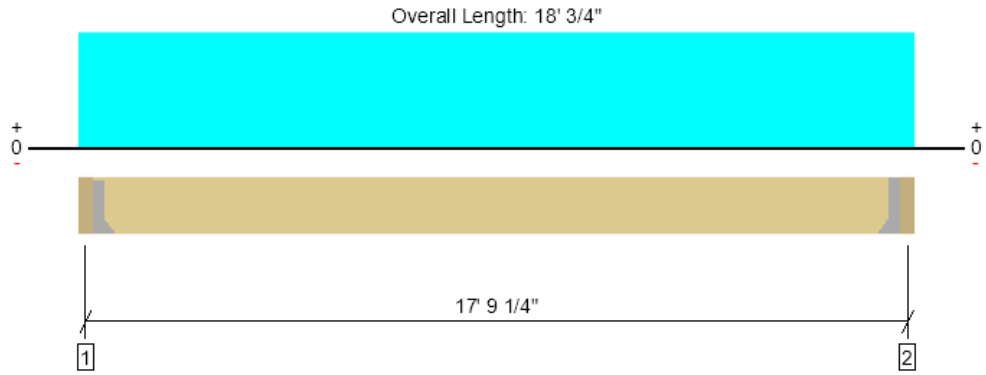
Upper Floor, 18

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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	6901 @ 3 1/2"	6901 (1.75")	Passed (100%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	5980 @ 1' 5 1/2"	16060	Passed (37%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	30155 @ 9' 3/8"	41846	Passed (72%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.383 @ 9' 3/8"	0.437	Passed (L/547)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.738 @ 9' 3/8"	0.874	Passed (L/284)	--	1.0 D + 1.0 S (All Spans)

Member Length : 17' 5 3/4"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Hanger on 14" LVL beam	3.50"	Hanger[1]	1.75"	3422	482	3703	7125	See note [1]
2 - Hanger on 14" LVL beam	3.50"	Hanger[1]	1.75"	3422	482	3703	7125	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 6" o/c	
Bottom Edge (Lu)	17' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HGUS5.50/10	4.00"	N/A	46-10d	16-10d	
2 - Face Mount Hanger	HGUS5.50/10	4.00"	N/A	46-10d	16-10d	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 17' 9 1/4"	N/A	21.5	--	--	
1 - Uniform (PSF)	0 to 18' 3/4" (Top)	1' 4"	35.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 18' 3/4" (Front)	13' 8"	15.0	-	30.0	
3 - Uniform (PSF)	0 to 18' 3/4" (Top)	8' 10 1/2"	12.0	-	-	

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

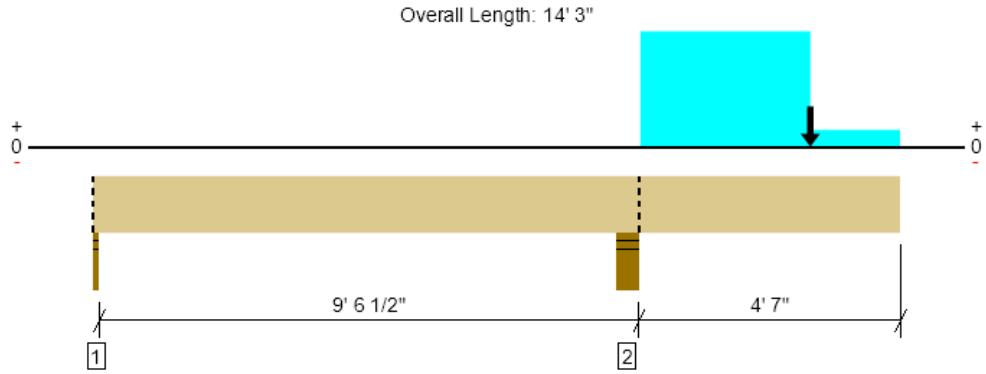
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Upper Floor, 19

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

An excessive uplift of -2590 lbs at support located at 0" failed this product.



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	11174 @ 9' 5 1/4"	18047 (5.50")	Passed (62%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	7892 @ 10' 10"	16060	Passed (49%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-25396 @ 9' 5 1/4"	41846	Passed (61%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.208 @ 14' 3"	0.321	Passed (2L/556)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.423 @ 14' 3"	0.481	Passed (2L/274)	--	1.0 D + 1.0 S (All Spans)

Member Length : 14' 3"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
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.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Stud wall - DF	1.50"	1.50"	1.50"	-1281	-352	-1309	-2590	Blocking
2 - Stud wall - DF	5.50"	5.50"	3.41"	5950	1854	5111	11174	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)	14' 3" o/c	
Bottom Edge (Lu)	12' 4" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 14' 3"	N/A	21.5	--	--	
1 - Uniform (PSF)	9' 8" to 12' 8" (Top)	8' 6"	35.0	40.0	-	Default Load
2 - Uniform (PSF)	12' 8" to 14' 3" (Top)	2' 1"	15.0	-	30.0	Default Load
3 - Point (lb)	12' 8" (Front)	N/A	3422	482	3703	Linked from: 18, Support 1

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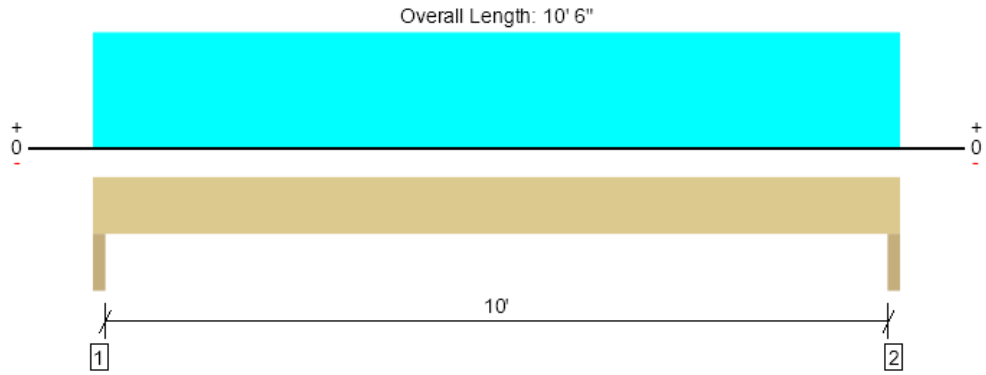
Upper Floor, 10' Hdr

2 piece(s) 1 3/4" x 11 7/8" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4700 @ 1 1/2"	7875 (3.00")	Passed (60%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	3590 @ 1' 2 7/8"	7897	Passed (45%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	11757 @ 5' 3"	17848	Passed (66%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.120 @ 5' 3"	0.342	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.260 @ 5' 3"	0.512	Passed (L/473)	--	1.0 D + 1.0 L (All Spans)

Member Length : 10' 6"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Trimmer - DF	3.00"	3.00"	1.79"	2530	2170	4700	None
2 - Trimmer - DF	3.00"	3.00"	1.79"	2530	2170	4700	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 6" o/c	
Bottom Edge (Lu)	10' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 10' 6"	N/A	12.1	--	
1 - Uniform (PSF)	0 to 10' 6"	10' 4"	35.0	40.0	Default Load
2 - Uniform (PSF)	0 to 10' 6"	9'	12.0	-	

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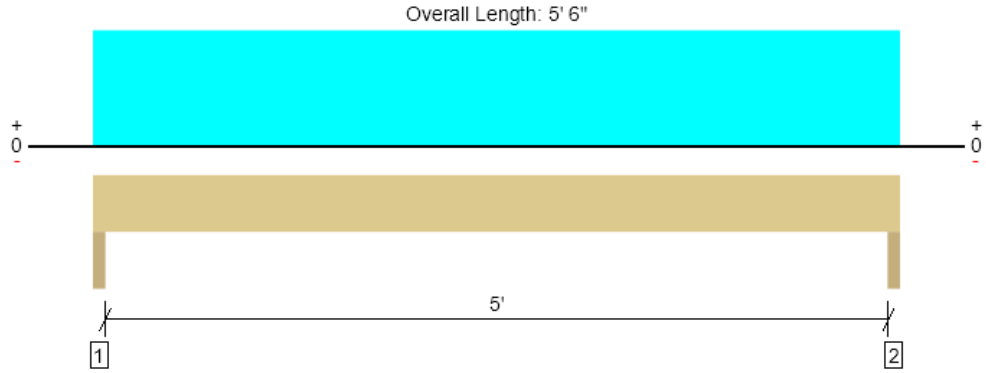
Upper Floor, 5' Hdr

1 piece(s) 1 3/4" x 11 7/8" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2445 @ 1 1/2"	3938 (3.00")	Passed (62%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1343 @ 1' 2 7/8"	3948	Passed (34%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3063 @ 2' 9"	8924	Passed (34%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.022 @ 2' 9"	0.175	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.048 @ 2' 9"	0.262	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 5' 6"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Trimmer - DF	3.00"	3.00"	1.86"	1308	1137	2445	None
2 - Trimmer - DF	3.00"	3.00"	1.86"	1308	1137	2445	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 6" o/c	
Bottom Edge (Lu)	5' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 5' 6"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 5' 6"	10' 4"	35.0	40.0	Default Load
2 - Uniform (PSF)	0 to 5' 6"	9'	12.0	-	

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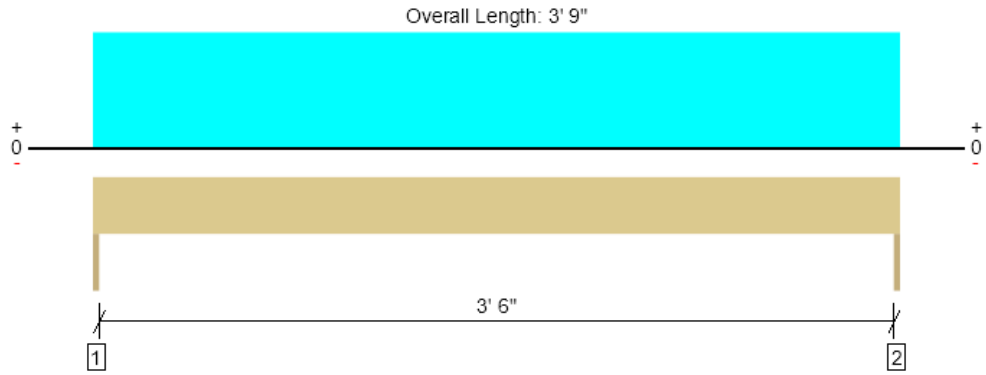
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Upper Floor, 3.5' Hdr

1 piece(s) 1 3/4" x 11 7/8" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1667 @ 0	1969 (1.50")	Passed (85%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	676 @ 1' 1 3/8"	3948	Passed (17%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1563 @ 1' 10 1/2"	8924	Passed (18%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.008 @ 1' 10 1/2"	0.125	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.017 @ 1' 10 1/2"	0.188	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 3' 9"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Trimmer - DF	1.50"	1.50"	1.50"	892	775	1667	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	892	775	1667	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 9" o/c	
Bottom Edge (Lu)	3' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 3' 9"	N/A	6.1	--	
1 - Uniform (PSF)	0 to 3' 9"	10' 4"	35.0	40.0	Default Load
2 - Uniform (PSF)	0 to 3' 9"	9'	12.0	-	

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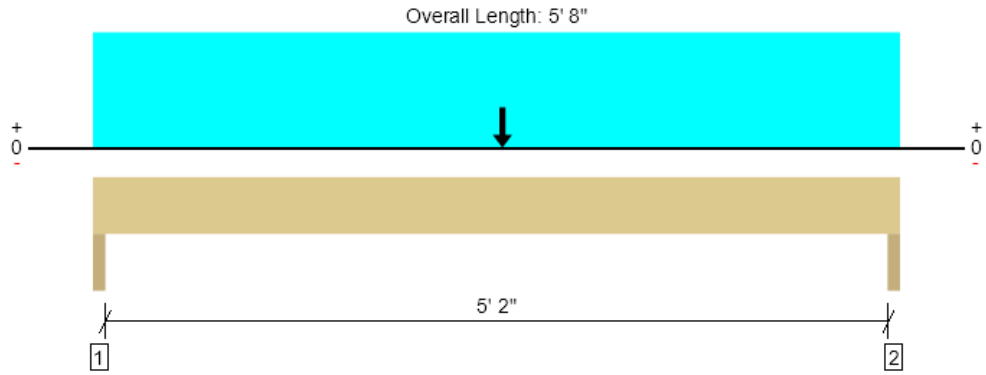
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Upper Floor, 5'-2" Hdr w/ chord
2 piece(s) 1 3/4" x 11 7/8" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3825 @ 5' 6 1/2"	7875 (3.00")	Passed (49%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1840 @ 1' 2 7/8"	7897	Passed (23%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4234 @ 2' 10"	17848	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.025 @ 2' 9 15/16"	0.181	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.037 @ 2' 9 15/16"	0.271	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 5' 8"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Seismic	Factored	
1 - Trimmer - DF	3.00"	3.00"	1.50"	1202	2068	1034	545/-545	3816	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	1202	2068	1034	563/-563	3825	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 8" o/c	
Bottom Edge (Lu)	5' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 5' 8"	N/A	12.1	--	--	--	
1 - Uniform (PSF)	0 to 5' 8"	12' 2"	25.0	60.0	30.0	-	Default Load
2 - Uniform (PSF)	0 to 5' 8"	9'	12.0	-	-	-	
3 - Point (lb)	2' 10 1/2"	N/A	-	-	-	1108	

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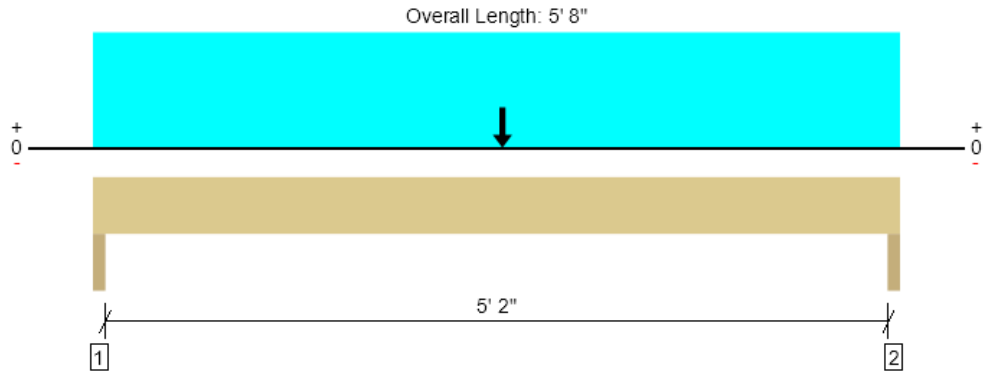
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Upper Floor, 5'-2" Hdr w/ chord & overstrength
2 piece(s) 1 3/4" x 11 7/8" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4268 @ 5' 6 1/2"	7875 (3.00")	Passed (54%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1840 @ 1' 2 7/8"	7897	Passed (23%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4234 @ 2' 10"	17848	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.025 @ 2' 9 15/16"	0.181	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.037 @ 2' 9 15/16"	0.271	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 5' 8"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- -233 lbs uplift at support located at 1 1/2". Strapping or other restraint may be required.
- -263 lbs uplift at support located at 5' 6 1/2". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Seismic	Factored	
1 - Trimmer - DF	3.00"	3.00"	1.62"	1202	2068	1034	1364/-1364	4245/-233	None
2 - Trimmer - DF	3.00"	3.00"	1.63"	1202	2068	1034	1406/-1406	4268/-263	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 8" o/c	
Bottom Edge (Lu)	5' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 5' 8"	N/A	12.1	--	--	--	
1 - Uniform (PSF)	0 to 5' 8"	12' 2"	25.0	60.0	30.0	-	Default Load
2 - Uniform (PSF)	0 to 5' 8"	9'	12.0	-	-	-	
3 - Point (lb)	2' 10 1/2"	N/A	-	-	-	2770	chord 1108

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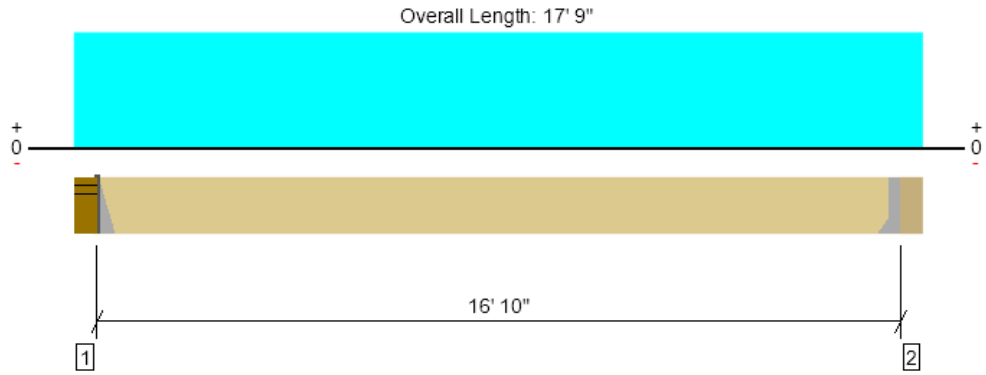
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Floor, Garage Joists

1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1010 @ 5 1/2"	1969 (1.50")	Passed (51%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	870 @ 1' 7 1/2"	4655	Passed (19%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4250 @ 8' 10 1/2"	12614	Passed (34%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.119 @ 8' 10 1/2"	0.421	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.268 @ 8' 10 1/2"	0.842	Passed (L/753)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	56	40	Passed	--	--

Member Length : 16' 10"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/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 - Hanger on DF studWall	5.50"	Hanger[1]	1.50"	592	473	1065	See note [1]
2 - Hanger on 14" DF beam	5.50"	Hanger[1]	1.50"	592	473	1065	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 5" o/c	
Bottom Edge (Lu)	16' 10" o/c	

- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Top Mount Hanger	MIT1.81/14	2.50"	4-10d	4-10d	2-10dx1.5	
2 - Face Mount Hanger	IUS1.81/11.88	2.00"	N/A	10-10d	2-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 17' 9"	16"	50.0	40.0	Default Load

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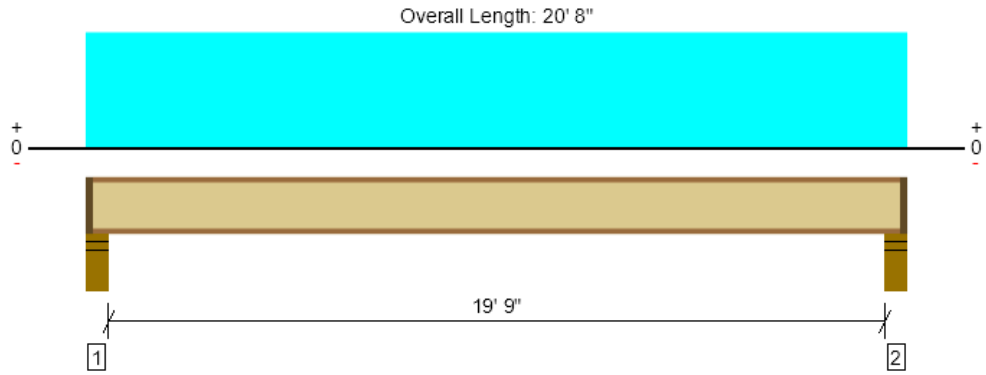
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Floor, Floor: Joist (19'-9")
1 piece(s) 14" TJI® 560 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1019 @ 4 1/2"	1725 (3.50")	Passed (59%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	988 @ 5 1/2"	2390	Passed (41%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4958 @ 10' 4"	11275	Passed (44%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.216 @ 10' 4"	0.498	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.404 @ 10' 4"	0.996	Passed (L/591)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	50	40	Passed	--	--

Member Length : 20' 4 1/2"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 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	5.50"	3.75"	1.75"	482	551	1033	1 3/4" Rim Board
2 - Stud wall - DF	5.50"	3.75"	1.75"	482	551	1033	1 3/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 9" o/c	
Bottom Edge (Lu)	20' 5" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 20' 8"	16"	35.0	40.0	Default Load

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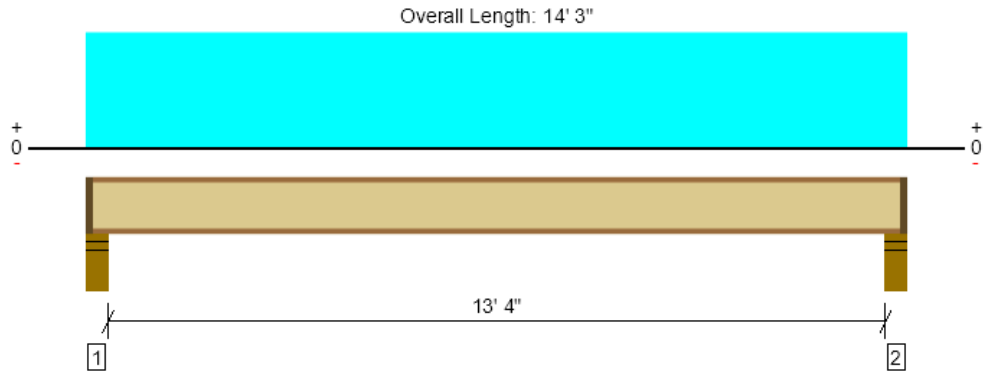
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main Floor, Floor: Joist (13'-4")
1 piece(s) 14" TJI® 110 @ 24" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1047 @ 4 1/2"	1375 (3.50")	Passed (76%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1000 @ 5 1/2"	1860	Passed (54%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3417 @ 7' 1 1/2"	3740	Passed (91%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.144 @ 7' 1 1/2"	0.338	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.270 @ 7' 1 1/2"	0.675	Passed (L/600)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	50	40	Passed	--	--

Member Length : 13' 11 1/2"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 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	5.50"	3.75"	2.27"	499	570	1069	1 3/4" Rim Board
2 - Stud wall - DF	5.50"	3.75"	2.27"	499	570	1069	1 3/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 3" o/c	
Bottom Edge (Lu)	14' o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 14' 3"	24"	35.0	40.0	Default Load

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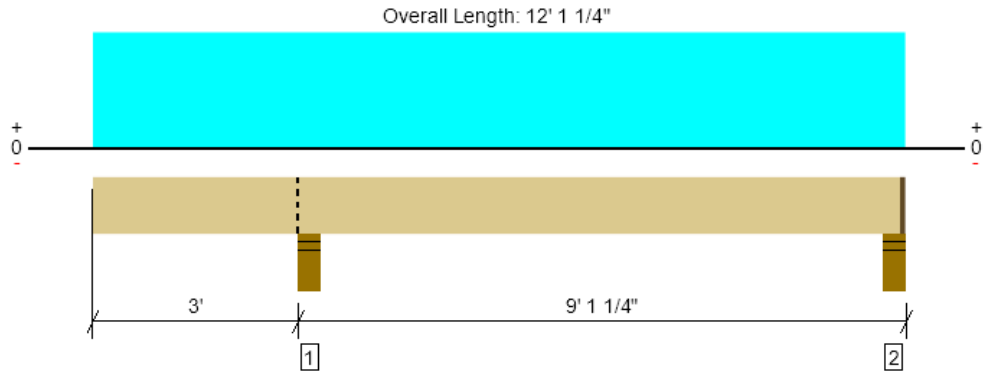
Main Floor, Deck Joists
1 piece(s) 2 x 10 DF No.2 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	917 @ 3' 2 3/4"	5156 (5.50")	Passed (18%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	438 @ 4' 2 3/4"	1665	Passed (26%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	938 @ 7' 7 15/16"	2029	Passed (46%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.059 @ 7' 5 3/4"	0.213	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.076 @ 7' 6 7/16"	0.425	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 12'
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/480) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	5.50"	5.50"	1.50"	270	647	917	Blocking
2 - Stud wall - DF	5.50"	4.25"	1.50"	134	370/-41	504	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- 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' o/c	
Bottom Edge (Lu)	12' o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 12' 1 1/4"	16"	25.0	60.0	Default Load

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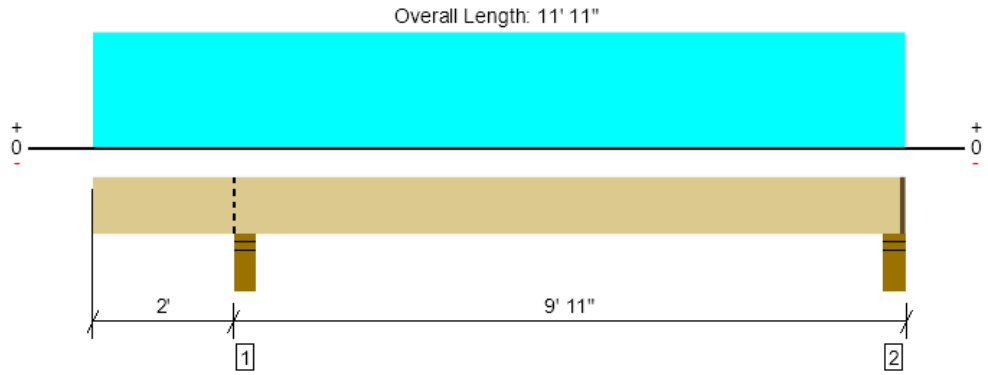
Main Floor, Deck Joists
1 piece(s) 2 x 10 DF No.2 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	811 @ 2' 2 3/4"	5156 (5.50")	Passed (16%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	445 @ 3' 2 3/4"	1665	Passed (27%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1188 @ 6' 11 9/16"	2029	Passed (59%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.086 @ 6' 10 5/8"	0.233	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.116 @ 6' 10 15/16"	0.466	Passed (L/961)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 11' 9 3/4"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/480) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	5.50"	5.50"	1.50"	238	572	811	Blocking
2 - Stud wall - DF	5.50"	4.25"	1.50"	159	403/-13	561	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- 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)	10' 9" o/c	
Bottom Edge (Lu)	11' 10" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 11' 11"	16"	25.0	60.0	Default Load

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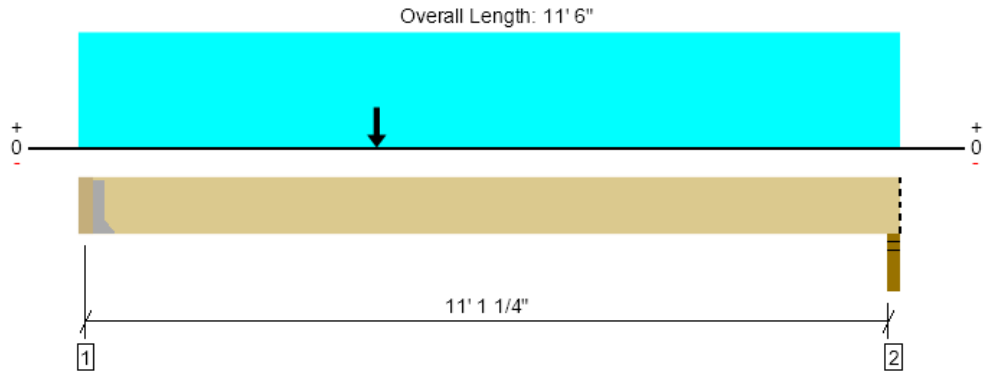
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Floor, 20

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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	9115 @ 3 1/2"	9115 (2.31")	Passed (100%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	7196 @ 1' 5 1/2"	13965	Passed (52%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	25256 @ 5' 10"	36387	Passed (69%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.132 @ 5' 10 1/16"	0.277	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.272 @ 5' 10 1/16"	0.554	Passed (L/489)	--	1.0 D + 1.0 L (All Spans)

Member Length : 11' 2 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Wind	Factored	
1 - Hanger on 14" DF beam	3.50"	Hanger[1]	2.31"	4932	4657	1335	9588	See note [1]
2 - Stud wall - DF	3.00"	3.00"	2.84"	4797	4524	706	9321	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	11' 3" o/c	
Bottom Edge (Lu)	11' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HGUS5.50/12	4.00"	N/A	56-10d	20-10d	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Wind (1.60)	Comments
0 - Self Weight (PLF)	3 1/2" to 11' 6"	N/A	21.5	--	--	
1 - Uniform (PSF)	0 to 11' 6" (Top)	9' 9 3/4"	35.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 11' 6" (Top)	10' 1 3/4"	35.0	40.0	-	Default Load
3 - Uniform (PSF)	0 to 11' 6" (Front)	10' 6 1/2"	12.0	-	-	
4 - Point (lb)	4' 1 1/2" (Front)	N/A	-	-	2041	chord force

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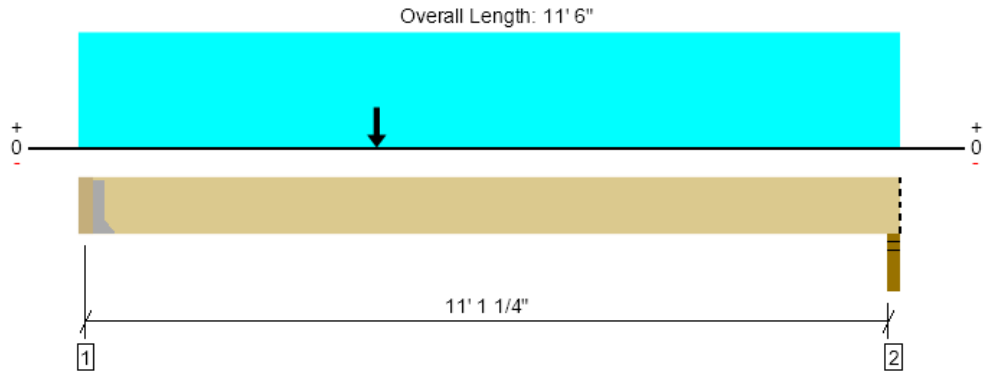
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Floor, 20 (w/ overstrength)
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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	9511 @ 3 1/2"	9511 (2.42")	Passed (100%)	--	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Shear (lbs)	7196 @ 1' 5 1/2"	13965	Passed (52%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	25256 @ 5' 10"	36387	Passed (69%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.147 @ 5' 8 3/16"	0.277	Passed (L/904)	--	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Total Load Defl. (in)	0.287 @ 5' 9 1/8"	0.554	Passed (L/463)	--	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)

Member Length : 11' 2 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Wind	Factored	
1 - Hanger on 14" DF beam	3.50"	Hanger[1]	2.42"	4932	4657	3338	9926	See note [1]
2 - Stud wall - DF	3.00"	3.00"	2.84"	4797	4524	1765	9321	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	11' 3" o/c	
Bottom Edge (Lu)	11' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HGUS5.50/12	4.00"	N/A	56-10d	20-10d	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Wind (1.60)	Comments
0 - Self Weight (PLF)	3 1/2" to 11' 6"	N/A	21.5	--	--	
1 - Uniform (PSF)	0 to 11' 6" (Top)	9' 9 3/4"	35.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 11' 6" (Top)	10' 1 3/4"	35.0	40.0	-	Default Load
3 - Uniform (PSF)	0 to 11' 6" (Front)	10' 6 1/2"	12.0	-	-	
4 - Point (lb)	4' 1 1/2" (Front)	N/A	-	-	5103	chord force

Weyerhaeuser Notes

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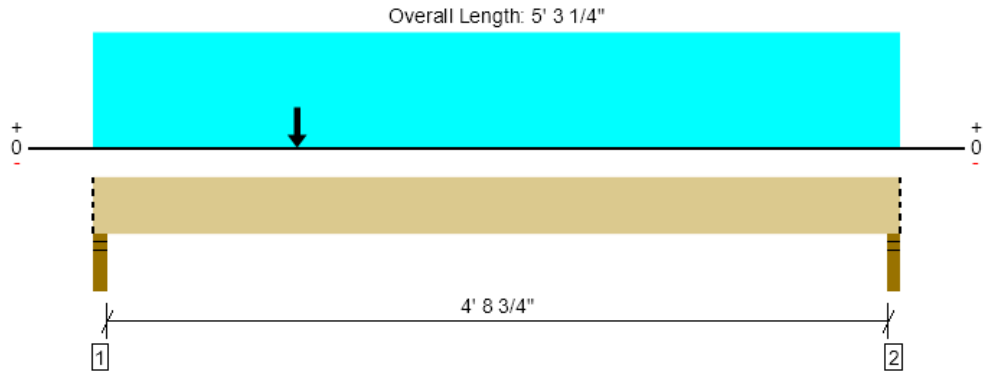
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main Floor, 21

2 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	7646 @ 2"	7656 (3.50")	Passed (100%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	6692 @ 1' 5 1/2"	9310	Passed (72%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	8820 @ 1' 4"	24258	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.017 @ 1' 4"	0.124	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.035 @ 1' 4"	0.249	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 5' 3 1/4"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Wind	Factored	
1 - Stud wall - DF	3.50"	3.50"	3.50"	3938	3707	1022	7646	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	1315	1231	313	2546	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)	5' 3" o/c	
Bottom Edge (Lu)	5' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Wind (1.60)	Comments
0 - Self Weight (PLF)	0 to 5' 3 1/4"	N/A	14.3	--	--	
1 - Uniform (PSF)	0 to 5' 3 1/4" (Top)	1' 4"	35.0	40.0	-	Default Load
2 - Point (lb)	1' 4" (Front)	N/A	4932	4657	1335	Linked from: 20, Support 1

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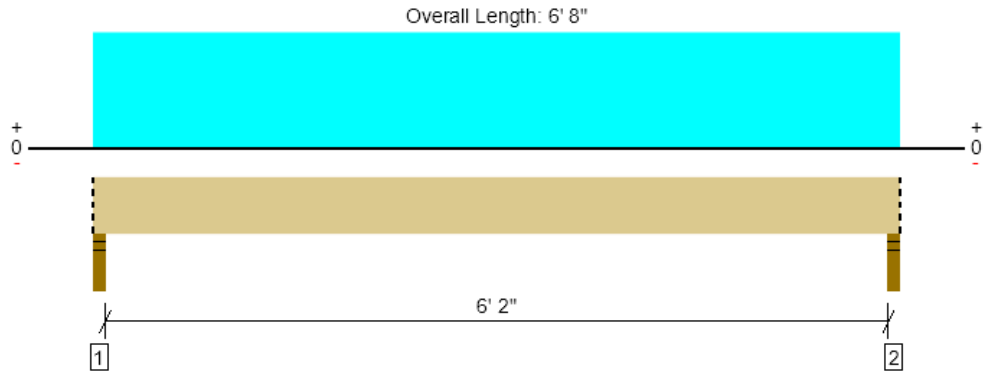
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Floor, 22

2 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4704 @ 1 1/2"	6563 (3.00")	Passed (72%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2705 @ 1' 5"	9310	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	7263 @ 3' 4"	24258	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.024 @ 3' 4"	0.160	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.051 @ 3' 4"	0.321	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 6' 8"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	3.00"	3.00"	2.15"	2445	2258	4704	Blocking
2 - Stud wall - DF	3.00"	3.00"	2.15"	2445	2258	4704	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)	6' 8" o/c	
Bottom Edge (Lu)	6' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 6' 8"	N/A	14.3	--	
1 - Uniform (PSF)	0 to 6' 8" (Top)	8' 5 1/4"	35.0	40.0	Default Load
2 - Uniform (PSF)	0 to 6' 8" (Top)	8' 6"	35.0	40.0	Default Load
3 - Uniform (PSF)	0 to 6' 8" (Front)	10' 6 1/2"	12.0	-	

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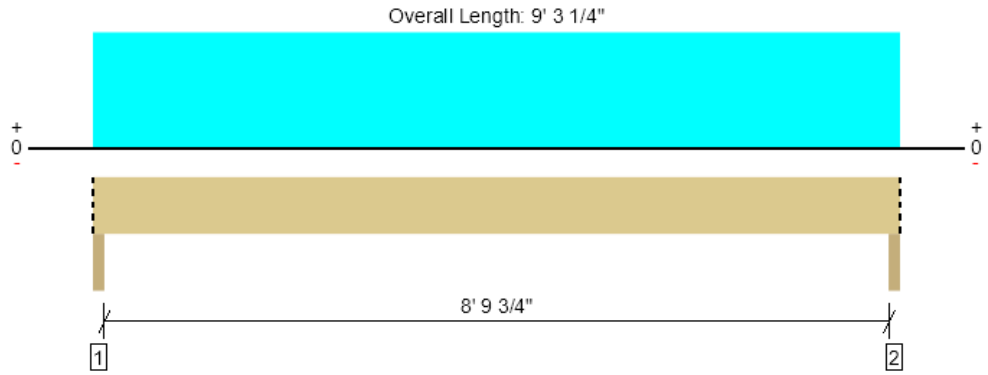
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Floor, 23

1 piece(s) 3 1/2" x 9" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3089 @ 1 1/4"	6256 (2.75")	Passed (49%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2437 @ 11 3/4"	5565	Passed (44%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	6841 @ 4' 7 5/8"	9450	Passed (72%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.184 @ 4' 7 5/8"	0.302	Passed (L/590)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.264 @ 4' 7 5/8"	0.453	Passed (L/412)	--	1.0 D + 1.0 L (All Spans)

Member Length : 9' 3 1/4"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 9' 3/4".
- 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	Floor Live	Factored	
1 - Column - DF	2.75"	2.75"	1.50"	934	2155	3089	Blocking
2 - Column - DF	2.75"	2.75"	1.50"	934	2155	3089	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)	9' 3" o/c	
Bottom Edge (Lu)	9' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 9' 3 1/4"	N/A	7.7	--	
1 - Uniform (PSF)	0 to 9' 3 1/4" (Front)	7' 9"	25.0	60.0	Default Load

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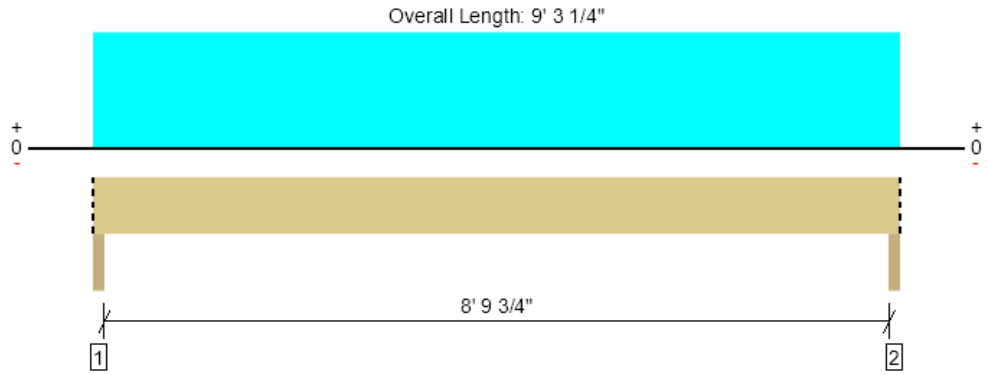
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Floor, 24

1 piece(s) 3 1/2" x 9" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3089 @ 1 1/4"	6256 (2.75")	Passed (49%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2437 @ 11 3/4"	5565	Passed (44%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	6841 @ 4' 7 5/8"	9450	Passed (72%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.184 @ 4' 7 5/8"	0.302	Passed (L/590)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.264 @ 4' 7 5/8"	0.453	Passed (L/412)	--	1.0 D + 1.0 L (All Spans)

Member Length : 9' 3 1/4"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 9' 3/4".
- 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	Floor Live	Factored	
1 - Column - DF	2.75"	2.75"	1.50"	934	2155	3089	Blocking
2 - Column - DF	2.75"	2.75"	1.50"	934	2155	3089	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)	9' 3" o/c	
Bottom Edge (Lu)	9' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 9' 3 1/4"	N/A	7.7	--	
1 - Uniform (PSF)	0 to 9' 3 1/4" (Front)	7' 9"	25.0	60.0	Default Load

Weyerhaeuser Notes

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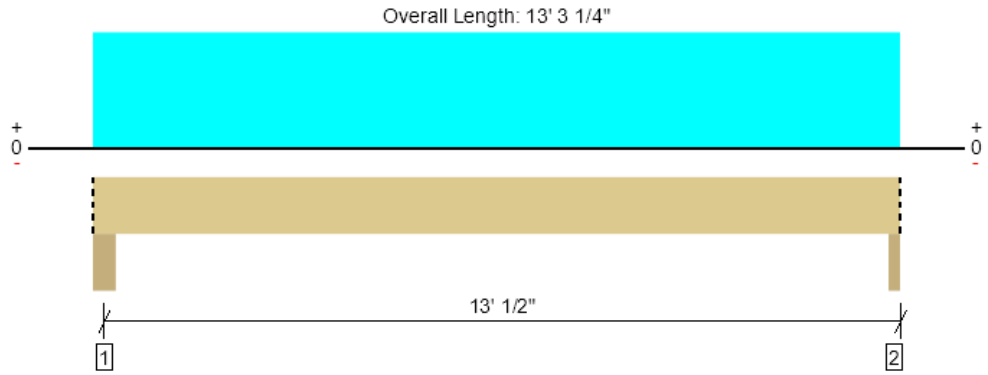
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Floor, 25

1 piece(s) 3 1/2" x 9" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1228 @ 13' 2"	6256 (2.75")	Passed (20%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1043 @ 1' 2 1/2"	5565	Passed (19%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	3876 @ 6' 9"	9450	Passed (41%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.203 @ 6' 9"	0.428	Passed (L/757)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.300 @ 6' 9"	0.642	Passed (L/513)	--	1.0 D + 1.0 L (All Spans)

Member Length : 13' 3 1/4"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 12' 10".
- 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	Floor Live	Factored	
1 - Column - DF	5.50"	5.50"	1.50"	410	861	1271	Blocking
2 - Column - DF	2.75"	2.75"	1.50"	396	831	1228	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)	13' 3" o/c	
Bottom Edge (Lu)	13' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 13' 3 1/4"	N/A	7.7	--	
1 - Uniform (PSF)	0 to 13' 3 1/4" (Front)	2' 1 1/2"	25.0	60.0	Default Load

Weyerhaeuser Notes

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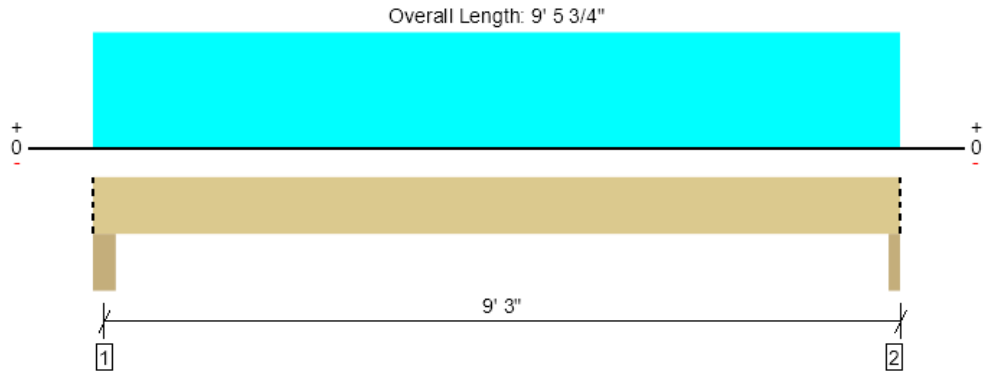
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Floor, 26

1 piece(s) 3 1/2" x 9" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	871 @ 9' 4 1/2"	6256 (2.75")	Passed (14%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	686 @ 1' 2 1/2"	5565	Passed (12%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	1924 @ 4' 10 1/4"	9450	Passed (20%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.050 @ 4' 10 1/4"	0.301	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.074 @ 4' 10 1/4"	0.452	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 9' 5 3/4"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 9' 1/2".
- 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	Floor Live	Factored	
1 - Column - DF	5.50"	5.50"	1.50"	295	619	914	Blocking
2 - Column - DF	2.75"	2.75"	1.50"	281	590	871	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)	9' 6" o/c	
Bottom Edge (Lu)	9' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 9' 5 3/4"	N/A	7.7	--	
1 - Uniform (PSF)	0 to 9' 5 3/4" (Front)	2' 1 1/2"	25.0	60.0	Default Load

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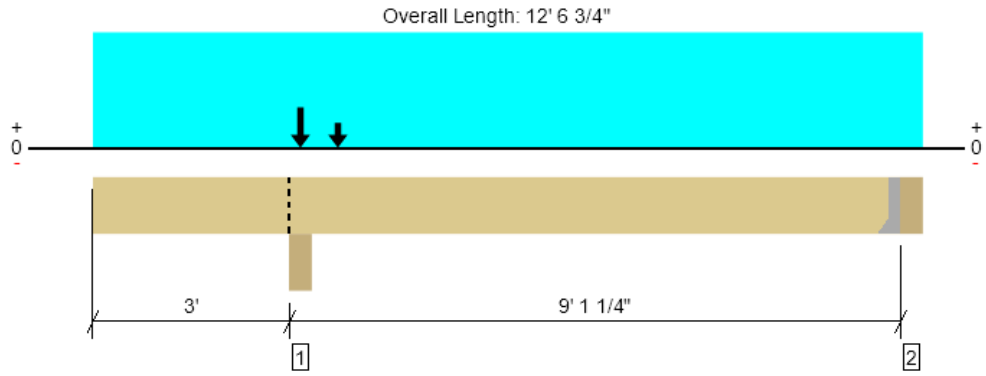
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Floor, 27

1 piece(s) 3 1/2" x 9" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5275 @ 3' 2 3/4"	12513 (5.50")	Passed (42%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1050 @ 4' 2 1/2"	5565	Passed (19%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	1470 @ 7' 2 1/8"	9450	Passed (16%)	1.00	1.0 D + 1.0 L (Alt Spans)
Neg Moment (Ft-lbs)	-631 @ 3' 2 3/4"	7284	Passed (9%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.040 @ 7' 6 1/16"	0.296	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.056 @ 7' 6 5/8"	0.444	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)

Member Length : 12' 1 1/4"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
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.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 8' 9".
- Critical negative moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 3' 7".
- 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	Floor Live	Factored	
1 - Column - DF	5.50"	5.50"	2.32"	1655	3620	5275	Blocking
2 - Hanger on 9" DF beam	5.50"	Hanger[1]	1.50"	200	448/-10	648	See note [1]

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 1" o/c	
Bottom Edge (Lu)	12' 1" o/c	

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LUS48	2.00"	N/A	6-10dx1.5	4-10d	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 12' 1 1/4"	N/A	7.7	--	
1 - Uniform (PSF)	0 to 12' 6 3/4" (Front)	1' 4"	25.0	60.0	Default Load
2 - Point (lb)	3' 9 3/4" (Front)	N/A	410	861	Linked from: 25, Support 1
3 - Point (lb)	3' 2 3/4" (Front)	N/A	934	2155	Linked from: 24, Support 1

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

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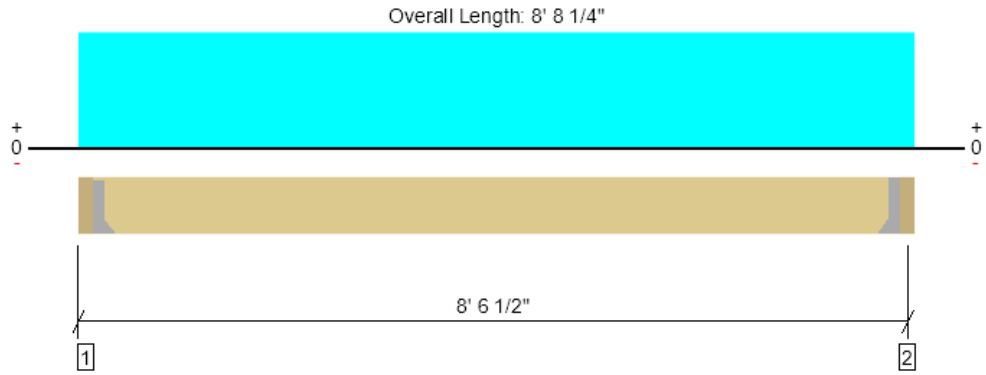
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main Floor, 28

1 piece(s) 3 1/2" x 9" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	763 @ 3 1/2"	3413 (1.50")	Passed (22%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	622 @ 1' 1/2"	5565	Passed (11%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	1546 @ 4' 4 1/8"	9450	Passed (16%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.032 @ 4' 4 1/8"	0.270	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.048 @ 4' 4 1/8"	0.405	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 8' 1 1/4"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 8' 1 1/4".
- 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	Floor Live	Factored	
1 - Hanger on 9" DF beam	3.50"	Hanger[1]	1.50"	262	554	816	See note [1]
2 - Hanger on 9" DF beam	3.50"	Hanger[1]	1.50"	262	554	816	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 1" o/c	
Bottom Edge (Lu)	8' 1" o/c	

- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS48	2.00"	N/A	6-10dx1.5	4-10d	
2 - Face Mount Hanger	LUS48	2.00"	N/A	6-10dx1.5	4-10d	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	3 1/2" to 8' 4 3/4"	N/A	7.7	--	
1 - Uniform (PSF)	0 to 8' 8 1/4" (Front)	2' 1 1/2"	25.0	60.0	Default Load

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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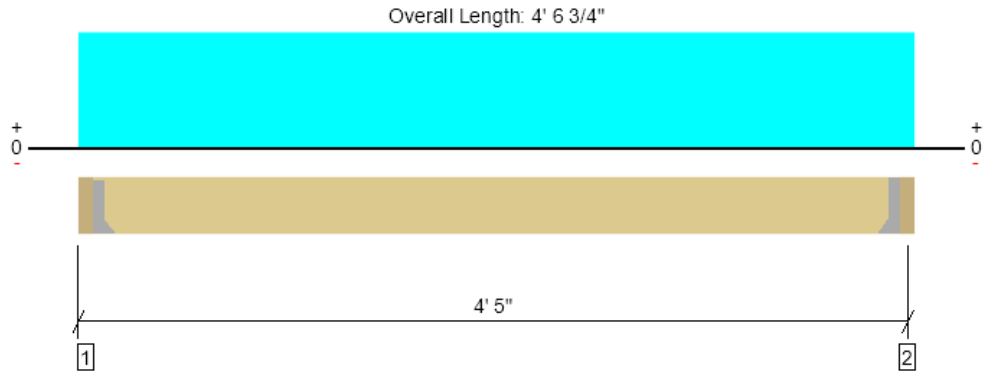
Weyerhaeuser

Main Floor, 29

1 piece(s) 3 1/2" x 9" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	375 @ 3 1/2"	3413 (1.50")	Passed (11%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	233 @ 1' 1/2"	5565	Passed (4%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	373 @ 2' 3 3/8"	9450	Passed (4%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.002 @ 2' 3 3/8"	0.133	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.003 @ 2' 3 3/8"	0.199	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 3' 11 3/4"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 3' 11 3/4".
- 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	Floor Live	Factored	
1 - Hanger on 9" DF beam	3.50"	Hanger[1]	1.50"	136	291	427	See note [1]
2 - Hanger on 9" DF beam	3.50"	Hanger[1]	1.50"	136	291	427	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' o/c	
Bottom Edge (Lu)	4' o/c	

- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS48	2.00"	N/A	6-10dx1.5	4-10d	
2 - Face Mount Hanger	LUS48	2.00"	N/A	6-10dx1.5	4-10d	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	3 1/2" to 4' 3 1/4"	N/A	7.7	--	
1 - Uniform (PSF)	0 to 4' 6 3/4" (Front)	2' 1 1/2"	25.0	60.0	Default Load

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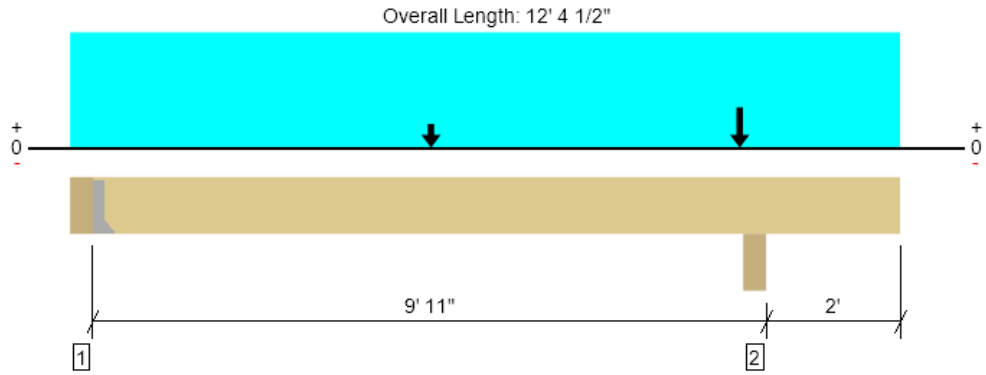
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Floor, 30

1 piece(s) 3 1/2" x 9" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4123 @ 10' 1 3/4"	12031 (5.50")	Passed (34%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	902 @ 9' 2"	5565	Passed (16%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	3345 @ 5' 3"	9450	Passed (35%)	1.00	1.0 D + 1.0 L (Alt Spans)
Neg Moment (Ft-lbs)	-301 @ 10' 1 3/4"	7284	Passed (4%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.089 @ 5' 3 9/16"	0.323	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.130 @ 5' 3 3/8"	0.484	Passed (L/896)	--	1.0 D + 1.0 L (Alt Spans)

Member Length : 11' 11"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
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.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 9' 7".
- Critical negative moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 2' 6 3/8".
- 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	Floor Live	Factored	
1 - Hanger on 9" DF beam	5.50"	Hanger[1]	1.50"	336	704	1040	See note [1]
2 - Beam - DF	5.50"	5.50"	1.88"	1289	2834	4123	None

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	11' 11" o/c	
Bottom Edge (Lu)	11' 11" o/c	

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS48	2.00"	N/A	6-10d	4-10d	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	5 1/2" to 12' 4 1/2"	N/A	7.7	--	
1 - Uniform (PSF)	0 to 12' 4 1/2" (Front)	1' 4"	25.0	60.0	
2 - Point (lb)	5' 3" (Front)	N/A	262	554	Linked from: 28, Support 2
3 - Point (lb)	9' 11" (Front)	N/A	859	1974	Linked from: 31, Support 1

ForteWEB Software Operator	Job Notes
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Weyerhaeuser

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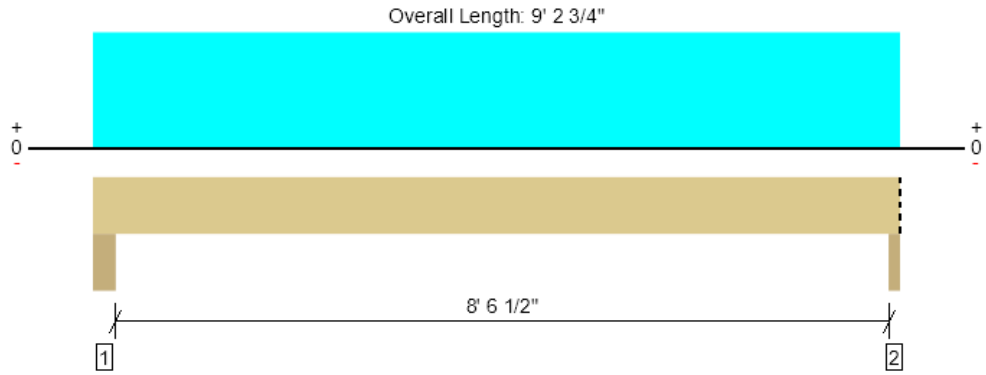
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main Floor, 31

1 piece(s) 3 1/2" x 9" 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2696 @ 9' 1 1/2"	6256 (2.75")	Passed (43%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2109 @ 1' 2 1/2"	5565	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	5788 @ 4' 8 3/4"	9450	Passed (61%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.147 @ 4' 8 3/4"	0.293	Passed (L/719)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.210 @ 4' 8 3/4"	0.440	Passed (L/501)	--	1.0 D + 1.0 L (All Spans)

Member Length : 9' 2 3/4"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 8' 9 1/2".
- 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	Floor Live	Factored	
1 - Column - DF	5.50"	5.50"	1.50"	859	1974	2833	None
2 - Column - DF	2.75"	2.75"	1.50"	817	1879	2696	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)	9' 3" o/c	
Bottom Edge (Lu)	9' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 9' 2 3/4"	N/A	7.7	--	
1 - Uniform (PSF)	0 to 9' 2 3/4" (Front)	6' 11 1/2"	25.0	60.0	

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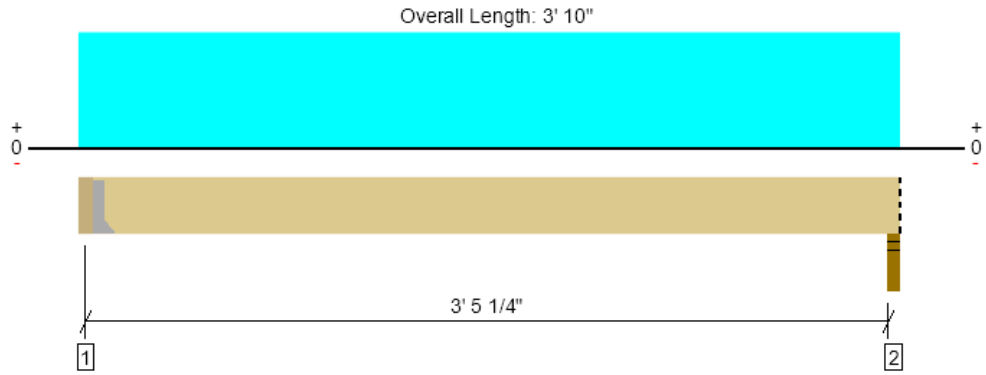
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Floor, 32

1 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1560 @ 3 1/2"	1969 (1.50")	Passed (79%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	495 @ 1' 5 1/2"	4655	Passed (11%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1333 @ 2'	12129	Passed (11%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.005 @ 2'	0.085	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.010 @ 2'	0.171	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 3' 6 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 14" DF beam	3.50"	Hanger[1]	1.50"	858	967	1825	See note [1]
2 - Stud wall - DF	3.00"	3.00"	1.53"	788	886	1675	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 7" o/c	
Bottom Edge (Lu)	3' 7" o/c	

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/14	2.00"	N/A	14-10d	2-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	3 1/2" to 3' 10"	N/A	7.2	--	
1 - Uniform (PSF)	0 to 3' 10" (Top)	8' 11 1/2"	35.0	40.0	Default Load
2 - Uniform (PSF)	0 to 3' 10" (Top)	3' 1 1/2"	35.0	40.0	Default Load

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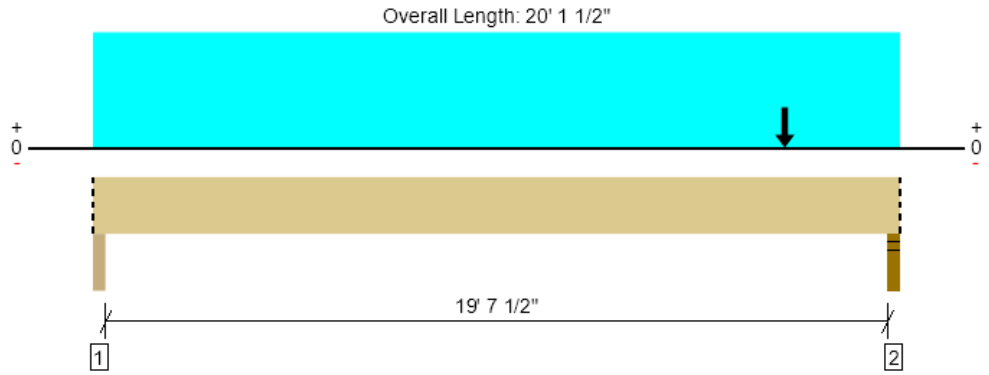
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Floor, 33

1 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2651 @ 20'	3281 (3.00")	Passed (81%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2499 @ 18' 8 1/2"	4655	Passed (54%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	8097 @ 12' 5"	12129	Passed (67%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.392 @ 10' 6 13/16"	0.497	Passed (L/608)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.770 @ 10' 6 9/16"	0.994	Passed (L/310)	--	1.0 D + 1.0 L (All Spans)

Member Length : 20' 1 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Beam - DF	3.00"	3.00"	1.50"	660	670	1331	Blocking
2 - Stud wall - DF	3.00"	3.00"	2.42"	1281	1370	2651	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)	5' 8" o/c	
Bottom Edge (Lu)	20' 2" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 20' 1 1/2"	N/A	7.2	--	
1 - Uniform (PSF)	0 to 20' 1 1/2" (Top)	1' 4"	35.0	40.0	Default Load
2 - Point (lb)	17' 3" (Front)	N/A	858	967	Linked from: 32, Support 1

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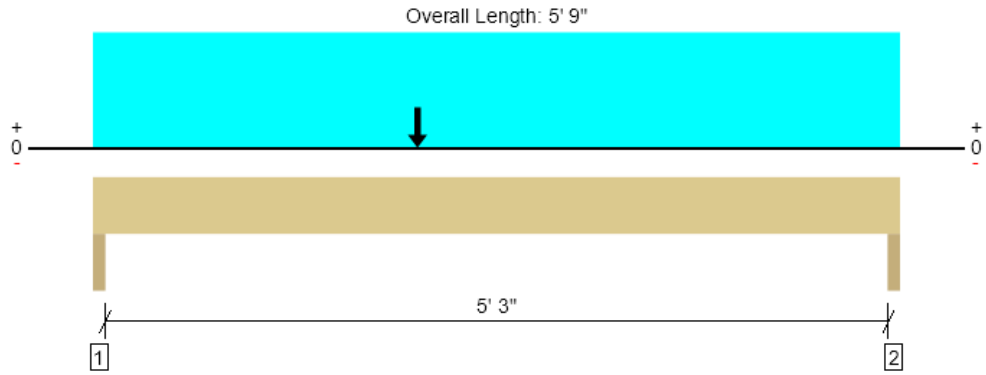
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main Floor, 5'-3" Hdr

1 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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2441 @ 1 1/2"	3938 (3.00")	Passed (62%)	--	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Shear (lbs)	1662 @ 1' 5"	7448	Passed (22%)	1.60	1.0 D + 0.6 W (All Spans)
Moment (Ft-lbs)	3871 @ 2' 3 3/4"	19407	Passed (20%)	1.60	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Live Load Defl. (in)	0.027 @ 2' 3 3/4"	0.183	Passed (L/999+)	--	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Total Load Defl. (in)	0.041 @ 2' 9 15/16"	0.275	Passed (L/999+)	--	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)

Member Length : 5' 9"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Wind	Factored	
1 - Trimmer - DF	3.00"	3.00"	1.86"	1022	748	1906	2441	None
2 - Trimmer - DF	3.00"	3.00"	1.64"	1022	748	1259	2149	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 9" o/c	
Bottom Edge (Lu)	5' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Wind (1.60)	Comments
0 - Self Weight (PLF)	0 to 5' 9"	N/A	7.2	--	--	
1 - Uniform (PSF)	0 to 5' 9"	6' 6"	35.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 5' 9"	10' 7/8"	12.0	-	-	
3 - Point (lb)	2' 3 3/4"	N/A	-	-	3165	

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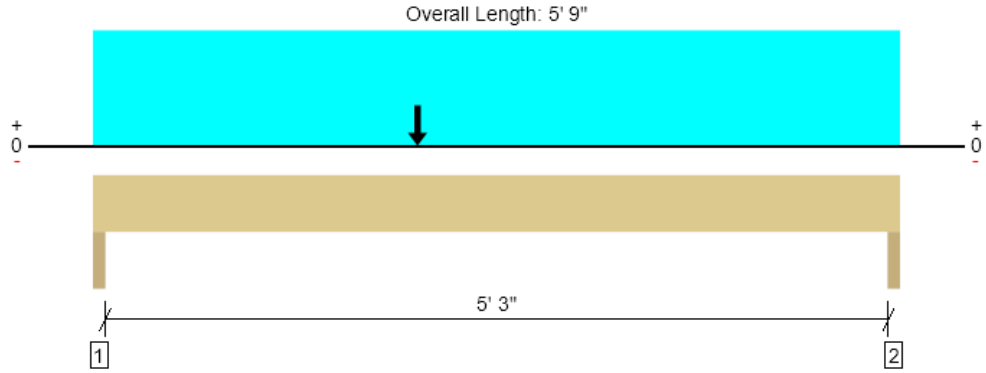
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Floor, 5'-3" Hdr (w/overstrength)
2 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3902 @ 1 1/2"	7875 (3.00")	Passed (50%)	--	1.0 D + 0.6 W (All Spans)
Shear (lbs)	3388 @ 1' 5"	14896	Passed (23%)	1.60	1.0 D + 0.6 W (All Spans)
Moment (Ft-lbs)	7569 @ 2' 3 3/4"	38813	Passed (20%)	1.60	1.0 D + 0.6 W (All Spans)
Live Load Defl. (in)	0.031 @ 2' 3 3/4"	0.183	Passed (L/999+)	--	1.0 D + 0.6 W (All Spans)
Total Load Defl. (in)	0.039 @ 2' 3 3/4"	0.275	Passed (L/999+)	--	1.0 D + 0.6 W (All Spans)

Member Length : 5' 9"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Wind	Factored	
1 - Trimmer - DF	3.00"	3.00"	1.50"	1043	748	4766	3902	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	1043	748	3147	3020	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 9" o/c	
Bottom Edge (Lu)	5' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Wind (1.60)	Comments
0 - Self Weight (PLF)	0 to 5' 9"	N/A	14.3	--	--	
1 - Uniform (PSF)	0 to 5' 9"	6' 6"	35.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 5' 9"	10' 7/8"	12.0	-	-	
3 - Point (lb)	2' 3 3/4"	N/A	-	-	7913	chord w/ overstrength

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ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

CANTILEVER RETAINING WALL EXTERNAL STABILITY

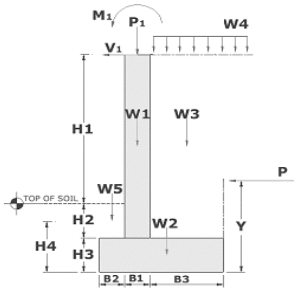
SOIL DATA

w	120	(pcf)	soil unit weight
phi	35	(deg)	soil internal angle of friction
del	0	(deg)	surface angle incline
	0.35		coeff. friction w/Concrete
	0.819		cosine(phi)
	1.000		cosine(del)
Ca	0.375	*45 psf*	coeff. of active pressure
Cp	2.917	*350 psf*	coeff. of passive pressure

Coeff. Friction			
Unit Weight	Int Friction	w. Conc	Soil
110-120	33-40	0.5-0.6	Sand or gravel, no fines
120-130	25-35	0.4-0.5	Sand or gravel, w/ fines
110-120	23-30	0.3-0.4	Silty sand, high clay
100-120	25-35	0.2-0.4	Medium or stiff clay
90-110	20-25	0.2-0.3	Soft clay, silt

WALL GEOMETRY

H1	10	(ft)	soil retained
H2	0	(ft)	soil depth above toe
H3	0.6666667	(ft)	footing thickness
H4	0.6666667	(ft)	passive pressure soil depth
B1	0.6666667	(ft)	wall width
B2	11.5	(ft)	toe width
B3	0	(ft)	heel width
H	10.666667	(ft)	total height
B	12.166667	(ft)	total base
	150	(pcf)	concrete unit weight



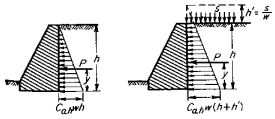
EXTERNAL LOADS

$P_{applied}$	268	(lb/ft)
$V_{applied}$	560	(lb/ft)
$M_{applied}$	2800	(lb-ft / ft)
Surcharge	0	(psf)

LOAD CALCULATIONS

lateral soil force and overturning moment

H_{prime}	0.00	(ft)	converted surcharge
Y	3.56	(ft)	distance to soil load resultant
P	2560	(lbs)	soil load resultant
	9110	(lb-ft)	Mo, soil + surcharge
	2800	(lb-ft)	Mo, external load
	11,910	(lb-ft)	total overturning Moment

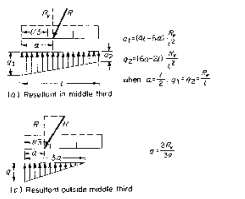


wall restoring forces

component	weight (#)	arm (ft)	moment (#-ft)
w1 (concrete)	1000	11.83	11833
w2 (concrete)	1217	6.08	7401
w3 (heel soil)	0	12.17	0
w4 (surcharge)	0	12.17	0
w5 (toe soil)	0	5.75	0
P applied	268	11.83	3171
vert. force	2,485	moment	22,406

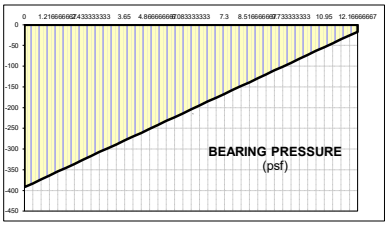
lateral sliding resistance

78	(lb)	passive pressure sliding resistance
870	(lb)	soil friction force
948	(lb)	total sliding resistance



STABILITY FACTOR OF SAFETY CHECKS

	1		F.S. overturning
	0.01		F.S. sliding
overturning	1.88	OK	Mr / Mo
sliding	0.28	OK	(PP+F)/(Ph+V)



SOIL BEARING

a	4.22	(ft)	distance to resultant
	4.06' to 8.11'		middle third of footing
q1	392	(psf)	bearing pressure @ toe
q2	17	(psf)	bearing pressure @ heel

FACTORED (1.6) STEM LOAD FORCES

10	(ft)	H1 + H2
3.33	(ft)	line of action (above base)
2250	(lbs)	P (arm only)
2250	(lbs)	Ph (arm only)
16.0	(kip-ft)	Mu (arm moment)

FACTORED (1.6) FOOTING LOADS

30.4	(kip-ft)	Mu @ Toe (Bot Reinf)
0.0	(kip-ft)	Mu @ Heel (Bot Reinf)
4.14	(kip)	Vu @ Toe
0.01	(kip)	Vu @ Heel

Footing

ØVc	6,831	8" thick
As	1.64	#7 @ 5" oc
a	2.4118	
ØMn	35.38	k-ft
	0.2	#4 @ 12" oc
	0.0020833	Reinf. Ratio
	0.0170833	Reinf. Ratio

Wall

ØVc	6,831	8" thick
As	0.72	#7 @ 10" oc
a	1.0588	
ØMn	17.72	k-ft
	0.0075	Reinf. Ratio

LRFD soil	60	psf @ Wall interface	60	psf @ Wall interface	
	627	'psf @ Toe	27	'psf @ Heel	
691	# in Toe @	5.75 ft from Wall	15	# in Heel	0 ft from Wall
3450	# in Toe @	7.666666667 ft from Wall			

Table 24.4.3.2—Minimum ratios of deformed shrinkage and temperature reinforcement area to gross concrete area

Reinforcement type	f_y, psi	Minimum reinforcement ratio	
Deformed bars	< 60,000	0.0020	
Deformed bars or welded wire reinforcement	≥ 60,000	Greater of:	$\frac{0.0018 \times 60{,}000}{f_y}$
			0.0014

Table 11.6.1—Minimum reinforcement for walls with in-plane $V_u \le 0.5\phi V_c$

Wall type	Type of nonprestressed reinforcement	Bar/wire size	f_y, psi	Minimum longitudinal[B], ρ_l	Minimum transverse, ρ_t
Cast-in-place	Deformed bars	≤ No. 5	≥ 60,000	0.0012	0.0020
			< 60,000	0.0015	0.0025
		> No. 5	Any	0.0015	0.0025
	Welded-wire reinforcement	≤ W31 or D31	Any	0.0012	0.0020
Precast[21]	Deformed bars or welded-wire reinforcement	Any	Any	0.0010	0.0010

[B]Prestressed walls with an average effective compressive stress of at least 225 psi need not meet the requirement for minimum longitudinal reinforcement ρ_l.

[21]In one-way precast, prestressed walls not wider than 12 ft and not mechanically connected to cause restraint in the transverse direction, the minimum reinforcement requirement in the direction normal to the flexural reinforcement need not be satisfied.

CANTILEVER RETAINING WALL EXTERNAL STABILITY

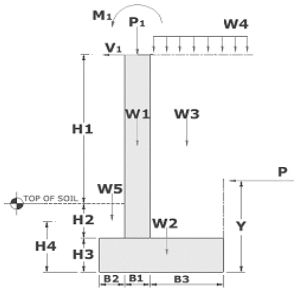
SOIL DATA

w	120	(pcf)	soil unit weight
phi	35	(deg)	soil internal angle of friction
del	0	(deg)	surface angle incline
	0.35		coeff. friction w/Concrete
	0.819		cosine(phi)
	1.000		cosine(del)
Ca	0.375	*45 psf*	coeff. of active pressure
Cp	2.917	*350 psf*	coeff. of passive pressure

Coeff. Friction			
Unit Weight	Int Friction	w. Conc	Soil
110-120	33-40	0.5-0.6	Sand or gravel, no fines
120-130	25-35	0.4-0.5	Sand or gravel, w/ fines
110-120	23-30	0.3-0.4	Silty sand, high clay
100-120	25-35	0.2-0.4	Medium or stiff clay
90-110	20-25	0.2-0.3	Soft clay, silt

WALL GEOMETRY

H1	9	(ft)	soil retained
H2	0	(ft)	soil depth above toe
H3	0.6666667	(ft)	footing thickness
H4	0.6666667	(ft)	passive pressure soil depth
B1	0.6666667	(ft)	wall width
B2	9.25	(ft)	toe width
B3	0	(ft)	heel width
H	9.6666667	(ft)	total height
B	9.9166667	(ft)	total base
	150	(pcf)	concrete unit weight



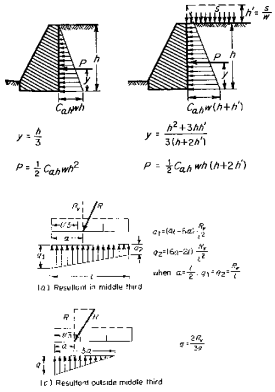
EXTERNAL LOADS

$P_{applied}$	268	(lb/ft)
$V_{applied}$	453.6	(lb/ft)
$M_{applied}$	2041.2	(lb-ft / ft)
Surcharge	0	(psf)

LOAD CALCULATIONS

lateral soil force and overturning moment

H_{prime}	0.00	(ft)	converted surcharge
Y	3.22	(ft)	distance to soil load resultant
P	2103	(lbs)	soil load resultant
	6770	(lb-ft)	Mo, soil + surcharge
	2041.2	(lb-ft)	Mo, external load
	8,810	(lb-ft)	total overturning Moment



wall restoring forces

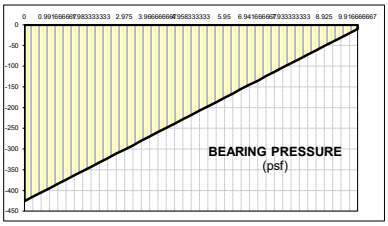
component	weight (#)	arm (ft)	moment (#-ft)
w1 (concrete)	900	9.58	8625
w2 (concrete)	992	4.96	4917
w3 (heel soil)	0	9.92	0
w4 (surcharge)	0	9.92	0
w5 (toe soil)	0	4.63	0
P applied	268	9.58	2568
vert. force	2,160	moment	16,110

lateral sliding resistance

78	(lb)	passive pressure sliding resistance
756	(lb)	soil friction force
834	(lb)	total sliding resistance

STABILITY FACTOR OF SAFETY CHECKS

	1		F.S. overturning
	0.01		F.S. sliding
overturning	1.83	OK	Mr / Mo
sliding	0.30	OK	(PP+F)/(Ph+V)



SOIL BEARING

a	3.38	(ft)	distance to resultant
	3.31' to 6.61'		middle third of footing
q1	426	(psf)	bearing pressure @ toe
q2	10	(psf)	bearing pressure @ heel

FACTORED (1.6) STEM LOAD FORCES

9	(ft)	H1 + H2
3.00	(ft)	line of action (above base)
1823	(lbs)	P (arm only)
1823	(lbs)	Ph (arm only)
11.7	(kip-ft)	Mu (arm moment)

FACTORED (1.6) FOOTING LOADS

21.6	(kip-ft)	Mu @ Toe (Bot Reinf)
0.0	(kip-ft)	Mu @ Heel (Bot Reinf)
3.64	(kip)	Vu @ Toe
0.01	(kip)	Vu @ Heel

Footing

ØVc	6,831	8" thick
As	1.256	#6 @ 5" oc
a	1.8471	
ØMn	28.69	k-ft
	0.2	#4 @ 12" oc
	0.0020833	Reinf. Ratio
	0.0130833	Reinf. Ratio

Wall

ØVc	6,831	8" thick
As	0.528	#6 @ 10" oc
a	0.7765	
ØMn	13.33	k-ft
	0.0055	Reinf. Ratio

LRFD soil

61	psf @ Wall interface	61	psf @ Wall interface
682	'psf @ Toe	16	'psf @ Heel
562	# in Toe @ 4.625 ft from Wall	7	# in Heel 0 ft from Wall
3078	# in Toe @ 6.166666667 ft from Wall		

Table 24.4.3.2—Minimum ratios of deformed shrinkage and temperature reinforcement area to gross concrete area

Reinforcement type	f_y, psi	Minimum reinforcement ratio	
Deformed bars	< 60,000	0.0020	
Deformed bars or welded wire reinforcement	≥ 60,000	Greater of:	$\frac{0.0018 \times 60{,}000}{f_y}$
			0.0014

Table 11.6.1—Minimum reinforcement for walls with in-plane $V_u \le 0.5\phi V_c$

Wall type	Type of nonprestressed reinforcement	Bar/wire size	f_y, psi	Minimum longitudinal[1], ρ_l	Minimum transverse, ρ_t
Cast-in-place	Deformed bars	≤ No. 5	≥ 60,000	0.0012	0.0020
			< 60,000	0.0015	0.0025
		> No. 5	Any	0.0015	0.0025
	Welded-wire reinforcement	≤ W31 or D31	Any	0.0012	0.0020
Precast[2]	Deformed bars or welded-wire reinforcement	Any	Any	0.0010	0.0010

[1]Prestressed walls with an average effective compressive stress of at least 225 psi need not meet the requirement for minimum longitudinal reinforcement ρ_l.

[2]In one-way precast, prestressed walls not wider than 12 ft and not mechanically connected to cause restraint in the transverse direction, the minimum reinforcement requirement in the direction normal to the flexural reinforcement need not be satisfied.

CANTILEVER RETAINING WALL EXTERNAL STABILITY

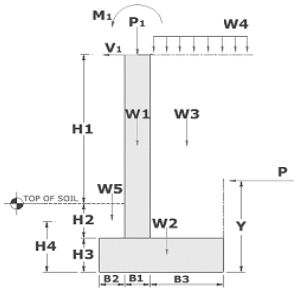
SOIL DATA

w	120	(pcf)	soil unit weight
phi	35	(deg)	soil internal angle of friction
del	0	(deg)	surface angle incline
	0.35		coeff. friction w/Concrete
	0.819		cosine(phi)
	1.000		cosine(del)
Ca	0.375	*45 psf*	coeff. of active pressure
Cp	2.917	*350 psf*	coeff. of passive pressure

Coeff. Friction			
Unit Weight	Int Friction	w. Conc	Soil
110-120	33-40	0.5-0.6	Sand or gravel, no fines
120-130	25-35	0.4-0.5	Sand or gravel, w/ fines
110-120	23-30	0.3-0.4	Silty sand, high clay
100-120	25-35	0.2-0.4	Medium or stiff clay
90-110	20-25	0.2-0.3	Soft clay, silt

WALL GEOMETRY

H1	7	(ft)	soil retained
H2	0	(ft)	soil depth above toe
H3	0.6666667	(ft)	footing thickness
H4	0.6666667	(ft)	passive pressure soil depth
B1	0.6666667	(ft)	wall width
B2	6	(ft)	toe width
B3	0	(ft)	heel width
H	7.6666667	(ft)	total height
B	6.6666667	(ft)	total base
	150	(pcf)	concrete unit weight



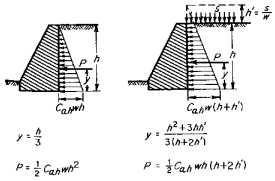
EXTERNAL LOADS

$P_{applied}$	268	(lb/ft)
$V_{applied}$	274.4	(lb/ft)
$M_{applied}$	960.4	(lb-ft / ft)
Surcharge	0	(psf)

LOAD CALCULATIONS

lateral soil force and overturning moment

H_{prime}	0.00	(ft)	converted surcharge
Y	2.56	(ft)	distance to soil load resultant
P	1323	(lbs)	soil load resultant
	3390	(lb-ft)	Mo, soil + surcharge
	960.4	(lb-ft)	Mo, external load
	4,350	(lb-ft)	total overturning Moment

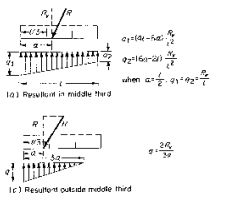


wall restoring forces

component	weight (#)	arm (ft)	moment (#-ft)
w1 (concrete)	700	6.33	4433
w2 (concrete)	667	3.33	2222
w3 (heel soil)	0	6.67	0
w4 (surcharge)	0	6.67	0
w5 (toe soil)	0	3.00	0
P applied	268	6.33	1697
vert. force	1,635	moment	8,353

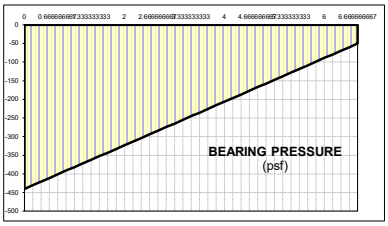
lateral sliding resistance

78	(lb)	passive pressure sliding resistance
572	(lb)	soil friction force
650	(lb)	total sliding resistance



STABILITY FACTOR OF SAFETY CHECKS

	1		F.S. overturning
	0.01		F.S. sliding
overturning	1.92	OK	Mr / Mo
sliding	0.38	OK	(PP+F)/(Ph+V)



SOIL BEARING

a	2.45	(ft)	distance to resultant
	2.22' to 4.44'		middle third of footing
q1	440	(psf)	bearing pressure @ toe
q2	50	(psf)	bearing pressure @ heel

FACTORED (1.6) STEM LOAD FORCES

7	(ft)	H1 + H2
2.33	(ft)	line of action (above base)
1103	(lbs)	P (arm only)
1103	(lbs)	Ph (arm only)
5.5	(kip-ft)	Mu (arm moment)

FACTORED (1.6) FOOTING LOADS

10.1	(kip-ft)	Mu @ Toe (Bot Reinf)
0.0	(kip-ft)	Mu @ Heel (Bot Reinf)
2.73	(kip)	Vu @ Toe
0.05	(kip)	Vu @ Heel

Footing

ØVc	6,831	8" thick
As	0.51	#5 @ 12" oc
a	0.7500	
ØMn	12.91	k-ft
	0.2	#4 @ 12" oc
	0.0020833	Reinf. Ratio
	0.0053125	Reinf. Ratio

Wall

ØVc	6,831	8" thick
As	0.31	¥5 @ 12" oc
a	0.4559	
ØMn	8.05	k-ft
	0.003229	Reinf. Ratio

LRFD soil	142	psf @ Wall interface	142	psf @ Wall interface	
	704	'psf @ Toe	80	'psf @ Heel	
854	# in Toe @	3 ft from Wall	49	# in Heel	0 ft from Wall
1872	# in Toe @	4 ft from Wall			

Table 24.4.3.2—Minimum ratios of deformed shrinkage and temperature reinforcement area to gross concrete area

Reinforcement type	f_y, psi	Minimum reinforcement ratio	
Deformed bars	< 60,000	0.0020	
Deformed bars or welded wire reinforcement	≥ 60,000	Greater of:	$\frac{0.0018 \times 60{,}000}{f_y}$
			0.0014

Table 11.6.1—Minimum reinforcement for walls with in-plane $V_u \le 0.5\phi V_c$

Wall type	Type of nonprestressed reinforcement	Bar/wire size	f_y, psi	Minimum longitudinal[B], ρ_l	Minimum transverse, ρ_t
Cast-in-place	Deformed bars	≤ No. 5	≥ 60,000	0.0012	0.0020
			< 60,000	0.0015	0.0025
		> No. 5	Any	0.0015	0.0025
	Welded-wire reinforcement	≤ W31 or D31	Any	0.0012	0.0020
Precast[C]	Deformed bars or welded-wire reinforcement	Any	Any	0.0010	0.0010

[B]Prestressed walls with an average effective compressive stress of at least 225 psi need not meet the requirement for minimum longitudinal reinforcement ρ_l.

[C]In one-way precast, prestressed walls not wider than 12 ft and not mechanically connected to cause restraint in the transverse direction, the minimum reinforcement requirement in the direction normal to the flexural reinforcement need not be satisfied.

CANTILEVER RETAINING WALL EXTERNAL STABILITY

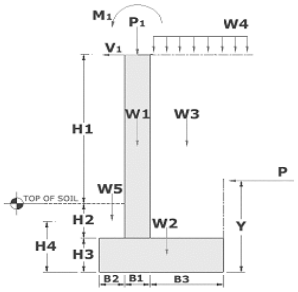
SOIL DATA

w	120	(pcf)	soil unit weight
phi	35	(deg)	soil internal angle of friction
del	0	(deg)	surface angle incline
	0.35		coeff. friction w/Concrete
	0.819		cosine(phi)
	1.000		cosine(del)
Ca	0.375	*45 psf*	coeff. of active pressure
Cp	2.917	*350 psf*	coeff. of passive pressure

Coeff. Friction			
Unit Weight	Int Friction	w. Conc	Soil
110-120	33-40	0.5-0.6	Sand or gravel, no fines
120-130	25-35	0.4-0.5	Sand or gravel, w/ fines
110-120	23-30	0.3-0.4	Silty sand, high clay
100-120	25-35	0.2-0.4	Medium or stiff clay
90-110	20-25	0.2-0.3	Soft clay, silt

WALL GEOMETRY

H1	5	(ft)	soil retained
H2	0	(ft)	soil depth above toe
H3	0.6666667	(ft)	footing thickness
H4	0.6666667	(ft)	passive pressure soil depth
B1	0.6666667	(ft)	wall width
B2	3	(ft)	toe width
B3	0	(ft)	heel width
H	5.6666667	(ft)	total height
B	3.6666667	(ft)	total base
	150	(pcf)	concrete unit weight



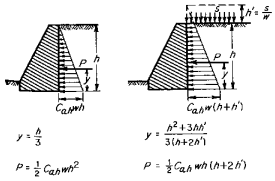
EXTERNAL LOADS

$P_{applied}$	268	(lb/ft)
$V_{applied}$	140	(lb/ft)
$M_{applied}$	350	(lb-ft / ft)
Surcharge	0	(psf)

LOAD CALCULATIONS

lateral soil force and overturning moment

H_{prime}	0.00	(ft)	converted surcharge
Y	1.89	(ft)	distance to soil load resultant
P	723	(lbs)	soil load resultant
	1370	(lb-ft)	Mo, soil + surcharge
	350	(lb-ft)	Mo, external load
	1,720	(lb-ft)	total overturning Moment

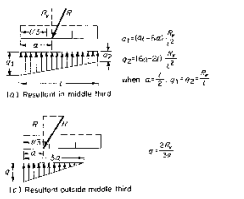


wall restoring forces

component	weight (#)	arm (ft)	moment (#-ft)
w1 (concrete)	500	3.33	1667
w2 (concrete)	367	1.83	672
w3 (heel soil)	0	3.67	0
w4 (surcharge)	0	3.67	0
w5 (toe soil)	0	1.50	0
P applied	268	3.33	893
vert. force	1,135	moment	3,232

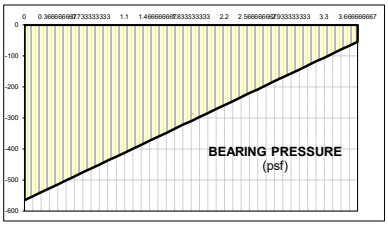
lateral sliding resistance

78	(lb)	passive pressure sliding resistance
397	(lb)	soil friction force
475	(lb)	total sliding resistance



STABILITY FACTOR OF SAFETY CHECKS

	1		F.S. overturning
	0.01		F.S. sliding
overturning	1.88	OK	Mr / Mo
sliding	0.51	OK	(PP+F)/(Ph+V)



SOIL BEARING

a	1.33	(ft)	distance to resultant
	1.22' to 2.44'		middle third of footing
q1	564	(psf)	bearing pressure @ toe
q2	55	(psf)	bearing pressure @ heel

FACTORED (1.6) STEM LOAD FORCES

5	(ft)	H1 + H2
1.67	(ft)	line of action (above base)
563	(lbs)	P (arm only)
563	(lbs)	Ph (arm only)
2.0	(kip-ft)	Mu (arm moment)

FACTORED (1.6) FOOTING LOADS

3.5	(kip-ft)	Mu @ Toe (Bot Reinf)
0.0	(kip-ft)	Mu @ Heel (Bot Reinf)
1.93	(kip)	Vu @ Toe
0.04	(kip)	Vu @ Heel

Footing

ØVc	6,831	8" thick
As	0.2	#5 @ 12" oc
a	0.2941	
ØMn	5.27	k-ft
	0.2	#4 @ 12" oc
	0.0020833	Reinf. Ratio
	0.0020833	Reinf. Ratio

Wall

ØVc	6,831	8" thick
As	0.31	¥5 @ 12" oc
a	0.4559	
ØMn	8.05	k-ft
	0.003229	Reinf. Ratio

LRFD soil

236 psf @ Wall interface
902 'psf @ Toe

708 # in Toe @ 1.5 ft from Wall
1222 # in Toe @ 2 ft from Wall

236 psf @ Wall interface
88 'psf @ Heel

38 # in Heel 0 ft from Wall

Table 24.4.3.2—Minimum ratios of deformed shrinkage and temperature reinforcement area to gross concrete area

Reinforcement type	f_y, psi	Minimum reinforcement ratio	
Deformed bars	< 60,000	0.0020	
Deformed bars or welded wire reinforcement	≥ 60,000	Greater of:	$\frac{0.0018\times60{,}000}{f_y}$
			0.0014

Table 11.6.1—Minimum reinforcement for walls with in-plane $V_u \le 0.5\phi V_c$

Wall type	Type of nonprestressed reinforcement	Bar/wire size	f_y, psi	Minimum longitudinal[1], ρ_l	Minimum transverse, ρ_t
Cast-in-place	Deformed bars	≤ No. 5	≥ 60,000	0.0012	0.0020
			< 60,000	0.0015	0.0025
		> No. 5	Any	0.0015	0.0025
	Welded-wire reinforcement	≤ W31 or D31	Any	0.0012	0.0020
Precast[2]	Deformed bars or welded-wire reinforcement	Any	Any	0.0010	0.0010

[1]Prestressed walls with an average effective compressive stress of at least 225 psi need not meet the requirement for minimum longitudinal reinforcement ρ_l.

[2]In one-way precast, prestressed walls not wider than 12 ft and not mechanically connected to cause restraint in the transverse direction, the minimum reinforcement requirement in the direction normal to the flexural reinforcement need not be satisfied.