STRUCTURAL CALCS

Kumar Residence
4034 85th Ave SE
Mercer Island, WA

Javid Abdi, PE, SE
6810 NE 149th St.
Kenmore, WA – 98028
Atlas.CSE@gmail.com
206-427-7233

ATLAS CONSULTING ENGINEERS INC.

Project:	Kumar Residence (4034 85th Ave SE)	By:	JDA
Proj No:	187-2020	Date:	8/4/2021

Summary

The project consists of a new three-story single-family residence located at the above address. The 2400 SF partial daylit lower floor will serve as an ADU and garage space. The ADU will have dual access to the patio space at the northeast quadrant, while garage access is located at the southwest quadrant. The 2350 SF main floor will include a porch at the west main entrance, an outdoor kitchen at the southeast quadrant, and large windows/operable doors at the exterior. The 2000 SF upper floor will house four bedrooms, a balcony at the west, and open deck over the outdoor kitchen space below.

The residence will be comprised of the following: reinforced concrete strip and spread footings; wood framed TJI floors supported on interior and exterior wood framed load bearing walls, beams, and posts at each level; and pre-engineered connector plate flat joist truss roof. The lateral systems will consist of wood sheathed diaphragms and shear walls (tongue & groove plywood floor sheathing, OSB roof and wall sheathing), and Simpson StrongTie holdowns.

See pages 4 - 6 for lateral design. Site seismic variables are shown on page 7; shear wall line tributary areas shown on pages 7 - 9; wind areas shown on page 10; and wind load derivation shown on pages 11 - 17. Seismic and wind loads were determined using ASCE 7-16 procedures, and a Kzt = 1.3 taken from Mercer Island topography map. As shown on pages 4-6, shearwalls with 10d nails spaced at 6" o.c. (SW-6), 4" oc (SW-4), 3" o.c. (SW-3), and 2" o.c. (SW-2) 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 4 - 6. 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.

Gravity system was designed for 25 psf roof snow load, 20 psf roof dead load, 40 psf floor live load, 60 psf deck live load, and 36 psf floor dead load. See pages 18 -20 for framing key; and pages 21 - 96 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 and trusses. Note that where applicable, overstrength seismic chord forces were considered in beam designs but not for serviceability beam deflection considerations.

Size footings and walls for an allowable soil pressure = 2,000 psf; lateral earth pressure (restrained/unrestrained) = 45 pcf; passive earth pressure = 320 pcf; seismic surcharge = 8h psf (uniform); and coefficient of friction = 0.35. 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.

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R	6.5		*ASCE 7-16 Table 12.2-1*
Ω_o	2.5		
C_d	4		
V	41.6	Kips	= CsW ~ ASCE 7-16 (12.8-1)
C_s	0.174		
	0.174		= Sds / (R/Ie) ~ ASCE 7-16 (12.8-2)
	0.366		< Sd1 / T(R/Ie) ~ if T<TL, ASCE 7-16 (12.8-3)
	-		< Sd1TL / T2(R/Ie) ~ if T>TL, ASCE 7-16 (12.8-3)
	0.050		>0.044Sdsle ~ ASCE 7-16 (12.8-5)
	0.01		>0.01 ~ ASCE 7-16 (12.8-5)
	-		>0.5S1 / (R/Ie) ~ if S1>0.6g, ASCE 7-16 (12.8-6)
W	239	Kips	
I_e	1		ATC Hazard
F_v	1.892		Table 11.4-2 and Section 11.4.8 Exception
F_a	1.2		ATC Hazard
S_S	1.414	g	ATC Hazard
S_1	0.492	g	ATC Hazard
S_{mS}	1.697	g	ATC Hazard
S_{m1}	0.930864	g	= $F_v S_1$ ~ ASCE 7-16 (11.4-1)
S_{ds}	1.131	g	ATC Hazard
S_{d1}	0.620576	g	= 2/3 S_{m1} ~ ASCE 7-16 (11.4-4)
S_{DC}	D		
T_a	0.261	seconds	= Cthnx ~ ASCE 7-16 (12.8-7)
C_t	0.02		*ASCE 7-16 Table 12.8-2*
h_n	30.75	feet	
x	0.75		*ASCE 7-16 Table 12.8-2*
T_L	6	seconds	USGS Seismic Values
T_S	0.549	seconds	= S_{d1} /S_{ds}, ASCE 7-16 (11.4-3)
$1.5T_S$	0.823	seconds	

EXCEPTION: A ground motion hazard analysis is not required for structures other than seismically isolated structures and structures with damping systems where:

1. Structures on Site Class E sites with S_S greater than or equal to 1.0, provided the site coefficient F_a is taken as equal to that of Site Class C.
2. Structures on Site Class D sites with S_1 greater than or equal to 0.2, provided the value of the seismic response coefficient C_s is determined by Eq. (12.8-2) for values of $T \le 1.5T_s$ and taken as equal to 1.5 times the value computed in accordance with either Eq. (12.8-3) for $T_L \ge T > 1.5T_s$ or Eq. (12.8-4) for $T > T_L$.
3. Structures on Site Class E sites with S_1 greater than or equal to 0.2, provided that T is less than or equal to T_s and the equivalent static force procedure is used for design.

Table 11.4-2 Long-Period Site Coefficient, F_v

Site Class	Mapped Risk-Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameter at 1-s Period					
	$S_1 \le 0.1$	$S_1 = 0.2$	$S_1 = 0.3$	$S_1 = 0.4$	$S_1 = 0.5$	$S_1 \ge 0.6$
A	0.8	0.8	0.8	0.8	0.8	0.8
B	0.8	0.8	0.8	0.8	0.8	0.8
C	1.5	1.5	1.5	1.5	1.5	1.4
D	2.4	2.2[a]	2.0[a]	1.9[a]	1.8[a]	1.7[a]
E	4.2	See Section 11.4.8	See Section 11.4.8	See Section 11.4.8	See Section 11.4.8	See Section 11.4.8
F	See Section 11.4.8	See Section 11.4.8	See Section 11.4.8	See Section 11.4.8	See Section 11.4.8	See Section 11.4.8

Note: Use straight-line interpolation for intermediate values of S_1.
[a]Also, see requirements for site-specific ground motions in Section 11.4.8.

$$\delta_{sw} = \frac{8vh^3}{EAb} + \frac{vh}{1000G_a} + \frac{h\Delta_a}{b} \qquad (4.3\text{-}1)$$

where:

b = shear wall length, ft

Δ_a = total vertical elongation of wall anchorage system (including fastener slip, device elongation, rod elongation, etc.) at the induced unit shear in the shear wall, in.

E = modulus of elasticity of end posts, psi

A = area of end post cross-section, $in.^2$

G_a = apparent shear wall shear stiffness from nail slip and panel shear deformation, kips/in. (from Column A, Tables 4.3A, 4.3B, 4.3C, or 4.3D)

h = shear wall height, ft

v = induced unit shear, lbs/ft

δ_{sw} = maximum shear wall deflection determined by elastic analysis, in.

Story	*Weight* (Kips)	*Height* (ft)	*Wh* (Kip-ft)	C_{vx} *(Wh/∑Wh)*	F_{xE}, *Kips* ($C_{vx}V$)	$\sum F_{xE}$, *Kips* *LRFD*	F_{xE}, *Kips* ($C_{vx}V$)	$\sum F_{xE}$, *Kips* ***ASD***	F_{xW}, *Kips* *South ASD*	F_{xW}, *Kips* *West ASD*
Roof	42.33	30.75	1,302	0.29	*12.0*	*12.0*	*8.413*	***8.413***	*4.868*	*8.430*
Upper	101.68	21.75	2,212	0.49	*20.4*	*32.4*	*14.294*	***22.708***	*10.066*	*10.796*
Main	94.85	10.42	988	0.22	*9.1*	*41.6*	*6.386*	***29.094***	*6.956*	*9.305*
∑W	238.86									

UP-to-DOWN RUNNING WALLS

Upper - to - Roof

			SEISMIC			WIND			GRAVITY LOADING (plf)							Holdown		Deflection			
	%	Length (ft)	# in Wall	PLF	Chord F (#)	# in Wall	PLF	Chord F (#)	Wall W (#)	Snow	Dead	Live	Uplift	Comp	Anchorage	Shearwall Type			$\delta_{bending}$	δ_{shear}	$\delta_{anchorage}$	δ_{SW}
N	21.6%	14.71	1,817			1,051										*9 ft*						
443	100.0%	22.00	1,817	83	743	1,051	48	430	2,376	0	0	0	345	2,246	2,035	6 OK	LTT19	OK	0.002	0.076	0.000	0.078
	20.1%	2.96	366	124		211	71									6 OK						
	38.0%	5.58	690	124		399	71									6 OK						
	41.9%	6.17	762	124		441	71									6 OK						
MN	24.9%	13.13	2,092			1,210										*9 ft*						
510	100.0%	13.13	2,092	159	1,435	1,210	92	830	1,418	0	0	0	1,197	2,331	4,754	6 OK	MSTC28	OK	0.006	0.146	0.005	0.157
MS	29.1%	20.63	2,445			1,415										*9 ft*						
596	36.4%	7.50	889	119	1,067	514	69	617	810	0	0	0	931	1,579	3,599	6 OK	HDU2	OK	0.007	0.109	0.106	0.222
	63.6%	13.13	1,556	119	1,067	900	69	617	1,418	0	0	0	829	1,963	3,440	6 OK	MSTC28	OK	0.004	0.109	0.003	0.116
S	24.5%	23.42	2,059			1,191										*9 ft*						
502	100.0%	36.50	2,059	56	508	1,191	33	294	3,942	0	0	0	0	3,001	785	6 OK	None	OK	0.001	0.052	0.000	0.053
	8.2%	1.92	169	88		98	51									6 OK						
	11.4%	2.67	235	88		136	51									6 OK						
	34.2%	8.00	704	88		407	51									6 OK						
	17.1%	4.00	352	88		204	51									6 OK						
	29.2%	6.83	601	88		348	51									6 OK						

Main - to - Upper

				SEISMIC			WIND			GRAVITY LOADING (plf)									Deflection			
	%	Length (ft)	# in Wall	PLF	Chord F (#)	# in Wall	PLF	Chord F (#)	Wall W (#)	Snow	Dead	Live	Uplift	Comp	Anchorage	Shearwall Type		Holdown	$\delta_{bending}$	δ_{shear}	$\delta_{anchorage}$	δ_{SW}
N	9.8%	9.96	3,223			2,041										*10 ft*						
297	100.0%	18.00	3,223	179	1,791	2,041	113	1,134	2,160	0	0	0	1,429	3,157	5,831	4 OK	MSTC40	OK	0.005	0.135	0.004	0.144
	30.1%	3.00	971	324		615	205									4 OK						
	46.9%	4.67	1,510	324		957										4 OK						
	23.0%	2.29	742	324		470										4 OK						
EN	27.8%	18.67	5,793			5,062										*10 ft*						
840	20.1%	3.75	1,164	310	3,103	1,017	271	2,712	450	0	0	0	3,028	3,388	10,966	4 OK	HDU2	OK	0.039	0.235	0.235	0.508
	47.3%	8.83	2,741	310	3,103	2,395	271	2,712	1,060	0	0	0	2,926	3,774	10,807	4 OK	HDU2	OK	0.016	0.235	0.040	0.291
	32.6%	6.08	1,888	310	3,103	1,650	271	2,712	730	0	0	0	2,981	3,565	10,893	4 OK	HDU2	OK	0.024	0.235	0.058	0.316
MN	10.1%	13.08	3,540			2,230										*10 ft*						
306	100.0%	13.08	3,540	271	2,706	2,230	170	1,705	1,570	0	0	0	2,443	3,699	9,255	*6 OK*	MSTC40	OK	0.010	0.249	0.005	0.264
MS	24.2%	13.08	5,910			3,854										*10 ft*						
732	100.0%	13.08	3,540	271	2,706	2,230	170	1,705	1,570	0	0	0	2,443	3,699	9,255	*6 OK*	MSTC40	OK	0.010	0.249	0.005	0.264
ES	4.0%	5.92	577			504										*10 ft*						
122	100.0%	5.92	3,540	598	5,984	2,230	377	3,770	710	0	0	0	5,865	6,433	21,186	*3 OK*	HDU8	OK	0.031	0.405	0.191	0.627
S	23.9%	24.00	5,481			3,601										*10 ft*						
723	24.7%	5.92	873	148	1,475	550	93	929	710	0	0	0	1,356	1,924	5,083	*6 OK*	HDU2	OK	0.012	0.135	0.000	0.147
	11.7%	2.81	415	148	1,475	261	93	929	338	0	0	0	1,419	1,689	5,180	*6 OK*	HDU2	OK	0.024	0.135	0.313	0.473
	20.6%	4.94	728	148	1,475	459	93	929	593	0	0	0	1,376	1,850	5,114	*6 OK*	HDU2	OK	0.014	0.135	0.107	0.256
	43.1%	10.33	1,524	148	1,475	960	93	929	1,240	0	0	0	1,267	2,259	4,945	*6 OK*	HDU2	OK	0.007	0.135	0.051	0.193

Lower - to - Main

				SEISMIC			WIND			GRAVITY LOADING (plf)									Deflection			
	%	Length (ft)	# in Wall	PLF	Chord F (#)	# in Wall	PLF	Chord F (#)	Wall W (#)	Snow	Dead	Live	Uplift	Comp	Anchorage	Shearwall Type		Holdown	$\delta_{bending}$	δ_{shear}	$\delta_{anchorage}$	δ_{SW}
N	11.5%	16.00	3,955			2,839										*9 ft*						
270	100.0%	22.19	3,955	178	1,604	2,839	128	1,152	2,396	0	0	0	1,203	3,120	5,105	6 OK	HDU4	OK	0.004	0.164	0.046	0.214
	18.5%	2.96	731	247		525	177									6 OK						
	11.2%	1.79	443	247		318	177									6 OK						
	11.2%	1.79	443	247		318	177									6 OK						
	59.1%	9.46	2,338	247		1,678	177									6 OK						
Ena	4.4%	3.08	1,447			1,326										*9 ft*						
104	100.0%	3.08	1,447	469	4,225	1,326	430	3,869	703	0	0	0	4,107	4,670	14,906	3 OK	HDU4	OK	0.071	0.318	0.333	0.721
Enb	17.5%	9.42	5,748			5,264										*9 ft*						
413	100.0%	9.42	5,748	610	5,494	5,264	559	5,031	1,469	0	0	0	5,248	6,423	19,238	2 OK	HDU5	OK	0.020	0.341	0.110	0.471
MN	15.9%	14.08	4,555			3,336										*9 ft*						
374	50.3%	7.08	2,291	323	2,911	1,678	237	2,132	765	0	0	0	2,783	3,395	10,197	*4 OK*	HDU2	OK	0.021	0.245	0.112	0.378
	49.7%	7.00	2,264	323	2,911	1,658	237	2,132	756	0	0	0	2,784	3,389	10,199	*4 OK*	HDU2	OK	0.022	0.245	0.050	0.316
MS	27.1%	18.58	7,643			5,743										*9 ft*						
639	51.1%	9.50	2,329	245	2,206	1,705	179	1,615					2,206	2,206	7,879	*6 OK*	HDU2	OK	0.012	0.225	0.083	0.321
	48.9%	9.08	2,226	245	2,206	1,630	179	1,615	981	0	0	0	2,042	2,826	7,623	*6 OK*	HDU2	OK	0.013	0.225	0.058	0.296
	21.5%	4.00	980	245	2,206	718	179	1,615	432	0	0	0	2,134	2,479	7,766	*6 OK*	HDU2	OK	0.029	0.225	0.132	0.386
S	23.5%		6,984			5,238																
554																						

LEFT-to-RIGHT RUNNING WALLS

Upper - to - Roof

				SEISMIC			WIND			GRAVITY LOADING (plf)									Deflection			
	%	Length (ft)	# in Wall	PLF	Chord F (#)	# in Wall	PLF	Chord F (#)	Wall W (#)	Snow	Dead	Live	Uplift	Comp	Anchorage	Shearwall Type		Holdown	$\delta_{bending}$	δ_{shear}	$\delta_{anchorage}$	δ_{SW}
1	13.2%	18.00	1,107			1,109										*9 ft*						
270	100.0%	18.00	1,107	62	554	1,109	62	555	1,944	0	0	0	228	1,783	1,470	*6 OK*	MSTC28	OK	0.002	0.056	0.004	0.062
2	50.0%	18.10	4,211			4,219										*9*						
1027		30.00	3,707	124	1,112	3,714	124	1,114	3,240	0	0	0	569	3,161	3,127	6 *OK*	MSTC28	OK	0.002	0.113	0.002	0.118
	21.2%	3.83	892	233		893	233									*6 OK*						
	42.5%	7.69	1,788	233		1,792	233									*6 OK*						
	24.4%	4.42	1,027	233		1,029	233									*6 OK*						
	12.0%	2.17	504	233	2,093	505	233	2,097	234	0	0	0	2,054	2,241	7,415	*4 OK*	MSTC40	OK	0.050	0.176	0.020	0.246
3	36.8%	38.92	3,096			3,102										*9*						
755		30.00	1,823	61	547	1,826	61	548	3,240	0	0	0	4	2,596	1,108	6 *OK*	MSTC28	OK	0.001	0.056	0.002	0.059
	18.2%	7.08	563	80		565	80									*6 OK*						
	30.8%	12.00	955	80		956	80									*6 OK*						
	9.9%	3.83	305	80		306	80									*6 OK*						

	6.4%	2.50	199	80	716	199	80	717	270	0	0	0	671	887	2,486	*6 OK*	MSTC28	OK	0.015	0.073	0.017	0.105
	6.4%	2.50	199	80	716	199	80	717	270	0	0	0	671	887	2,486	*6 OK*	MSTC28	OK	0.015	0.073	0.017	0.105
		13.50	875	65	583	877	65	584	1,458	0	0	0	339	1,505	1,703	6 *OK*	MSTC28	OK	0.002	0.060	0.003	0.065
	7.3%	2.83	225	80		226	80									*6 OK*						
	21.0%	8.17	650	80		651	80									*6 OK*						

Main - to - Upper

				SEISMIC		WIND		GRAVITY LOADING (plf)											Deflection			
	%	Length (ft)	# in Wall	PLF	Chord F (#)	# in Wall	PLF	Chord F (#)	Wall W (#)	Snow	Dead	Live	Uplift	Comp	Anchorage	Shearwall Type	Holdown		$\delta_{bending}$	δ_{shear}	$\delta_{anchorage}$	δ_{SW}
0.3	6.6%	12.83	6,260			4,931										*10 ft*						
205	100.0%	12.83	6,260	488	4,878	4,931	384	3,842	1,540	0	0	0	4,620	5,852	17,020	3 OK	HDU5	OK	0.012	0.330	0.090	0.432
1	26.2%	7.88	4,854			3,939										*10 ft*						
815	35.4%	2.79	1,721	616	6,164	1,396	500	5,002	335	0	0	0	6,108	6,376	21,927	2 OK	HDU8	OK	0.069	0.345	0.405	0.818
	26.5%	2.08	1,284	616	6,164	1,042	500	5,002	250	0	0	0	6,122	6,322	21,949	2 OK	HDU8	OK	0.092	0.345	0.108	0.545
	38.1%	3.00	1,849	616	6,164	1,501	500	5,002	360	0	0	0	6,104	6,392	21,920	2 OK	HDU8	OK	0.064	0.345	0.075	0.484
2	41.2%	25.17	10,096			8,664										*10 ft*						
1280	27.5%	11.00	2,775	252	2,522	2,381	216	2,165	1,320	0	0	0	2,301	3,357	8,664	3 OK	HDU2	OK	0.011	0.171	0.080	0.261
	8.9%	2.25	903	401		775	344									*3 OK*						
	18.5%	4.67	1,872	401		1,607	344									*3 OK*						
	35.8%	9.00	3,610	401	4,012	3,098	344	3,443	1,080	0	0	0	3,831	4,695	14,045	4 OK	HDU4	OK	0.021	0.303	0.038	0.362
	36.8%	9.25	3,711	401	4,012	3,184	344	3,443	1,110	0	0	0	3,826	4,714	14,038	4 OK	HDU4	OK	0.020	0.303	0.049	0.373
3	15.8%	21.00	4,279			3,731										*10 ft*						
491	100.0%	27.00	4,279	158	1,585	3,731	138	1,382	3,240	0	0	0	1,042	3,634	4,815	6 OK	MSTC28	OK	0.003	0.146	0.003	0.151
	33.0%	6.94	1,414	204		1,232	178									*6 OK*						
	17.0%	3.56	726	204		633	178									*6 OK*						
	17.0%	3.56	726	204		633	178									*6 OK*						
	33.0%	6.94	1,414	204		1,232	178									*6 OK*						
318	10.2%	11.67	2,536	217	2,380	1,330	114	684	840	0	0	0	2,239	2,911	8,281	4 OK	HDU2	OK	0.009	0.164	0.075	0.249
	50.0%	2.83	1,268	448		665	235									*4 OK*						
	50.0%	2.83	1,268	448		665	235									*4 OK*						

Lower - to - Main

				SEISMIC		WIND		GRAVITY LOADING (plf)											Deflection			
	%	Length (ft)	# in Wall	PLF	Chord F (#)	# in Wall	PLF	Chord F (#)	Wall W (#)	Snow	Dead	Live	Uplift	Comp	Anchorage	Shearwall Type	Holdown		$\delta_{bending}$	δ_{shear}	$\delta_{anchorage}$	δ_{SW}
1	18.0%	41.25	6,004			5,614										*9 ft*						
412	100.0%	41.25	6,004	146	1,310	5,614	136	1,225	4,455	0	0	0	563	4,127	3,516	6 OK	HDU2	OK	0.002	0.134	0.019	0.155
2	50.0%	41.25	13,287			4,650										*9 ft*						
1144	6.1%	2.50	805	322	2,899	282	113	1,015	270	0	0	0	2,854	3,070	10,283	4 OK	HDU2	OK	0.060	0.244	0.317	0.621
	24.2%	10.00	3,221	322	2,899	1,127	113	1,015	1,080	0	0	0	2,718	3,582	10,072	4 OK	HDU2	OK	0.015	0.244	0.035	0.294
	18.6%	7.67	2,470	322	2,899	864	113	1,015	828	0	0	0	2,760	3,423	10,138	4 OK	HDU2	OK	0.020	0.244	0.046	0.309
	51.1%	21.08	6,791	322	2,899	2,377	113	1,015	2,277	0	0	0	2,518	4,339	9,760	4 OK	HDU2	OK	0.007	0.244	0.017	0.267
3	32.0%	33.83	13,714			2,980										*9 ft*						
733	14.8%	5.00	2,027	405	3,648	440	88	793	540	0	0	0	3,558	3,990	12,888	4 OK	HDU4	OK	0.038	0.307	0.205	0.550
	10.6%	3.58	1,452	405	3,648	316	88	793	387	0	0	0	3,583	3,893	12,928	4 OK	HDU4	OK	0.053	0.307	0.127	0.487
	22.9%	7.75	3,141	405	3,648	683	88	793	837	0	0	0	3,508	4,177	12,811	4 OK	HDU4	OK	0.024	0.307	0.059	0.390
	34.0%	11.50	4,661	405	3,648	1,013	88	793	1,242	0	0	0	3,440	4,434	12,705	4 OK	HDU4	OK	0.016	0.307	0.040	0.363
	11.8%	4.00	1,621	405	3,648	352	88	793	432	0	0	0	3,576	3,921	12,916	4 OK	HDU4	OK	0.047	0.307	0.114	0.468
	5.9%	2.00	811	405	3,648	176	88	793	216	0	0	0	3,612	3,785	12,973	3 OK	HDU4	OK	0.095	0.274	0.228	0.597

Hazards by Location

Search Information

Address:	4034 85th Ave SE, Mercer Island, WA 98040, USA
Coordinates:	47.5734906, -122.2252591
Elevation:	326 ft
Timestamp:	2021-07-26T04:34:38.783Z
Hazard Type:	Seismic
Reference Document:	ASCE7-16
Risk Category:	II
Site Class:	D-default

Basic Parameters

Name	Value	Description
S_S	1.414	MCE_R ground motion (period=0.2s)
S_1	0.492	MCE_R ground motion (period=1.0s)
S_{MS}	1.697	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	1.131	Numeric seismic design value at 0.2s SA
S_{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8

Additional Information

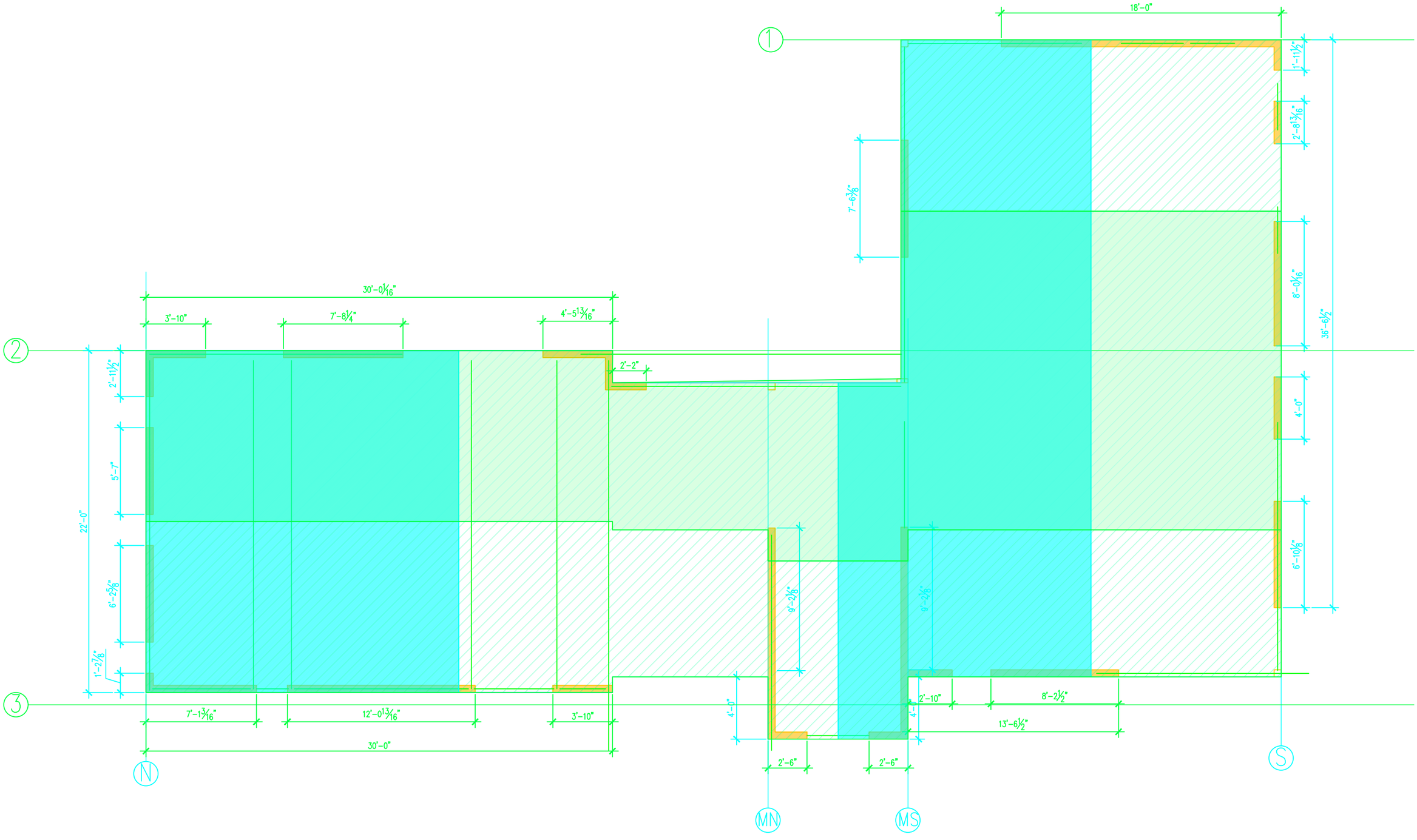
Name	Value	Description
SDC	* null	Seismic design category
F_a	1.2	Site amplification factor at 0.2s
F_v	* null	Site amplification factor at 1.0s
CR_S	0.902	Coefficient of risk (0.2s)
CR_1	0.897	Coefficient of risk (1.0s)
PGA	0.605	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.726	Site modified peak ground acceleration
T_L	6	Long-period transition period (s)
SsRT	1.414	Probabilistic risk-targeted ground motion (0.2s)
SsUH	1.567	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	3.618	Factored deterministic acceleration value (0.2s)
S1RT	0.492	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.548	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	1.445	Factored deterministic acceleration value (1.0s)
PGAd	1.233	Factored deterministic acceleration value (PGA)

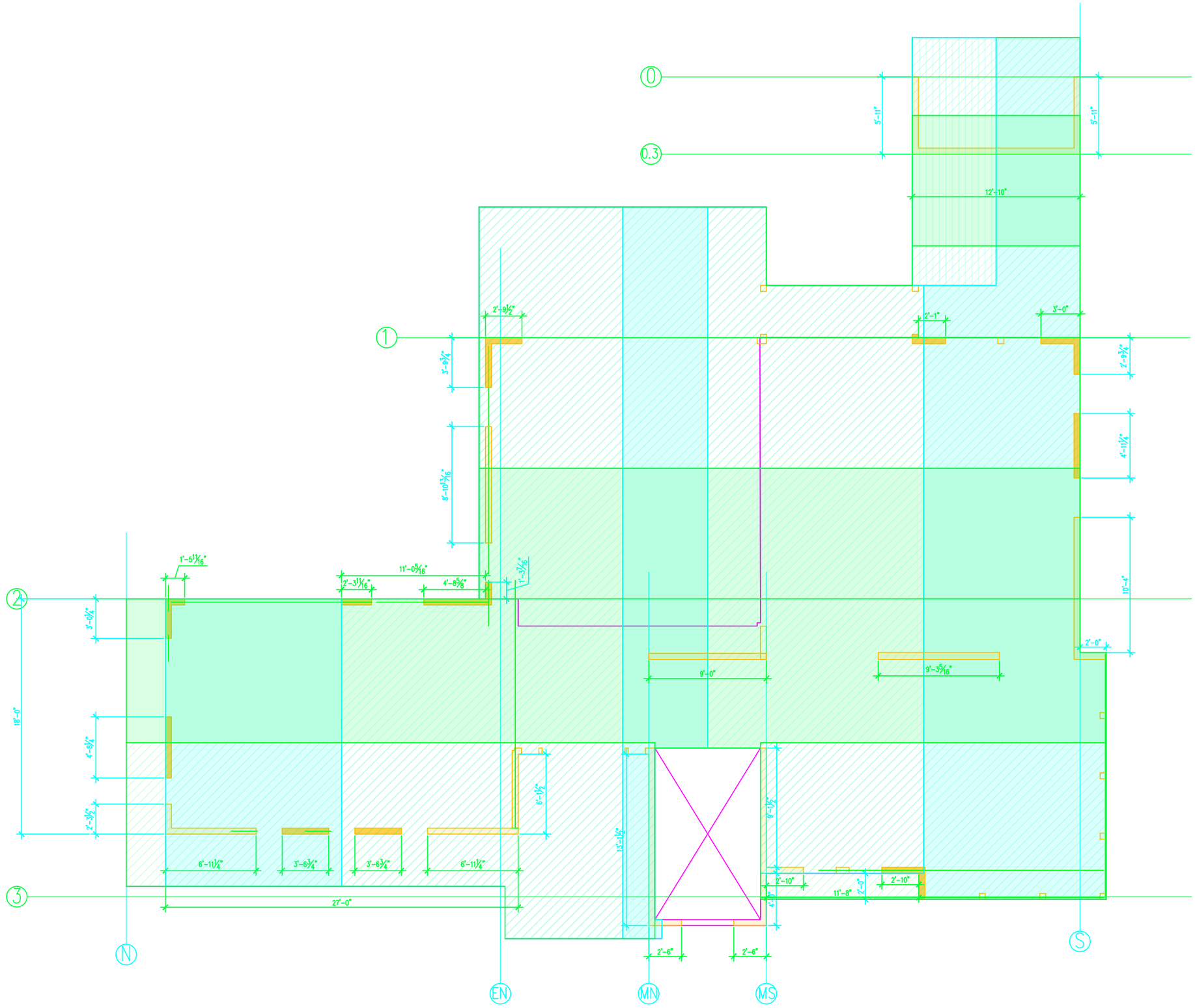
* See Section 11.4.8

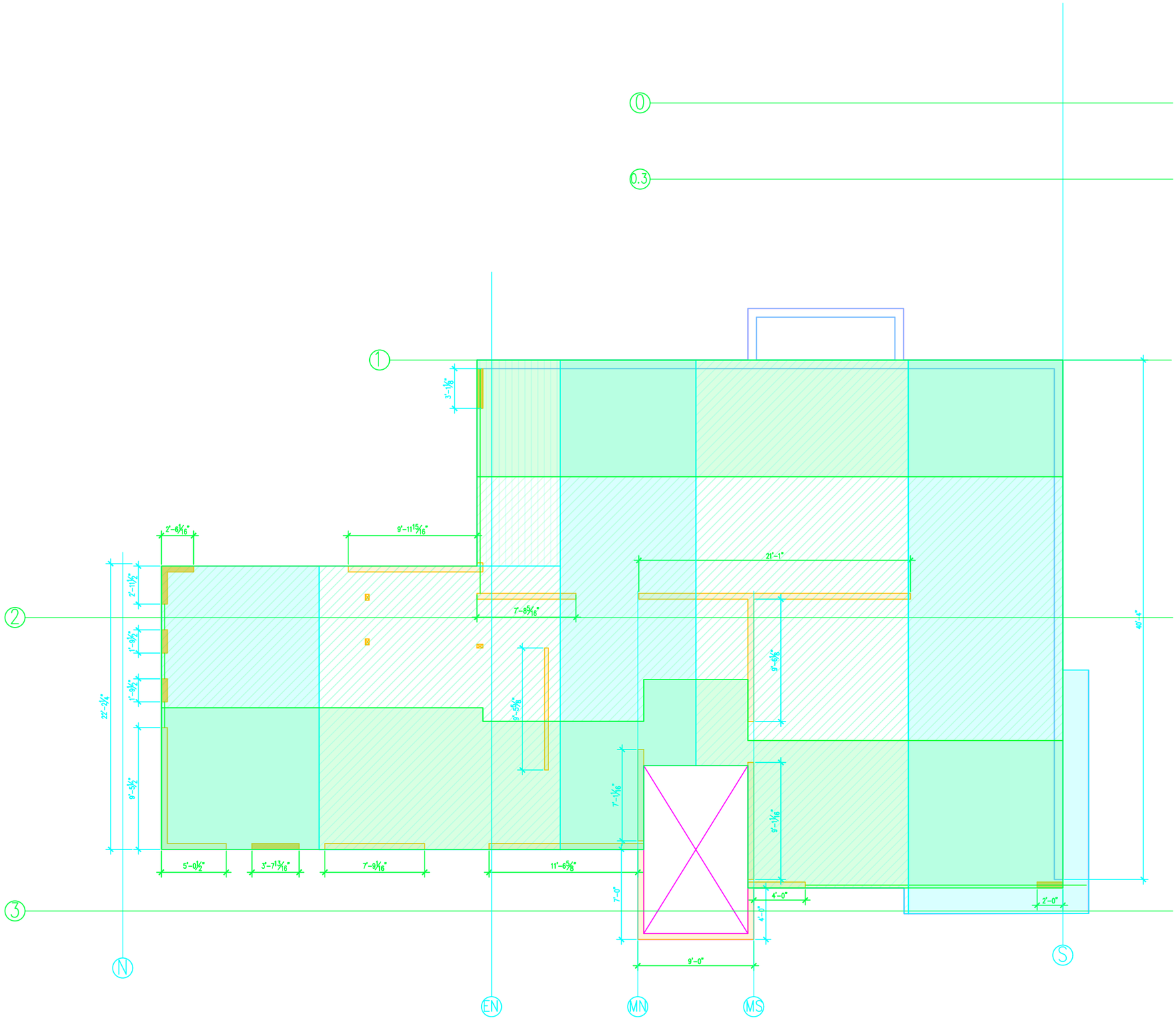
The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.


1
2
3
N
MN
MS
S
18'-0"
1'-11½"
2'-8 13/16"
7'-6 3/8"
8'-0 1/16"
4'-0"
36'-6½"
6'-10 1/8"
30'-0 1/16"
3'-10"
7'-8 1/4"
4'-5 13/16"
2'-2"
2'-11½"
22'-0"
5'-7"
6'-2 5/8"
1'-2 7/8"
9'-2 1/8"
9'-2 1/6"
4'-0"
2'-10"
4'-0"
8'-2½"
13'-6½"
2'-6"
2'-6"
7'-1 3/16"
12'-0 13/16"
3'-10"
30'-0"


0
0.3
1
2
3
N
EN
MN
MS
S
5'-11"
5'-11"
12'-10"
2'-9½"
2'-1"
3'-0"
3'-9¾"
2'-9¾"
8'-10³⁄₁₆"
4'-11¼"
10'-4"
1'-5¹¹⁄₁₆"
11'-0⁵⁄₁₆"
2'-3¹¹⁄₁₆"
4'-8⅝"
1'-3¹⁄₁₆"
3'-0¼"
18'-0"
4'-8¾"
2'-3½"
6'-1½"
6'-11¼"
3'-6¾"
3'-6¾"
6'-11¼"
27'-0"
13'-1½"
9'-1½"
2'-0"
9'-0"
9'-3⁵⁄₁₆"
2'-10"
11'-8"
2'-0"
2'-10"
4"
2'-6"
2'-6"


0
0.3
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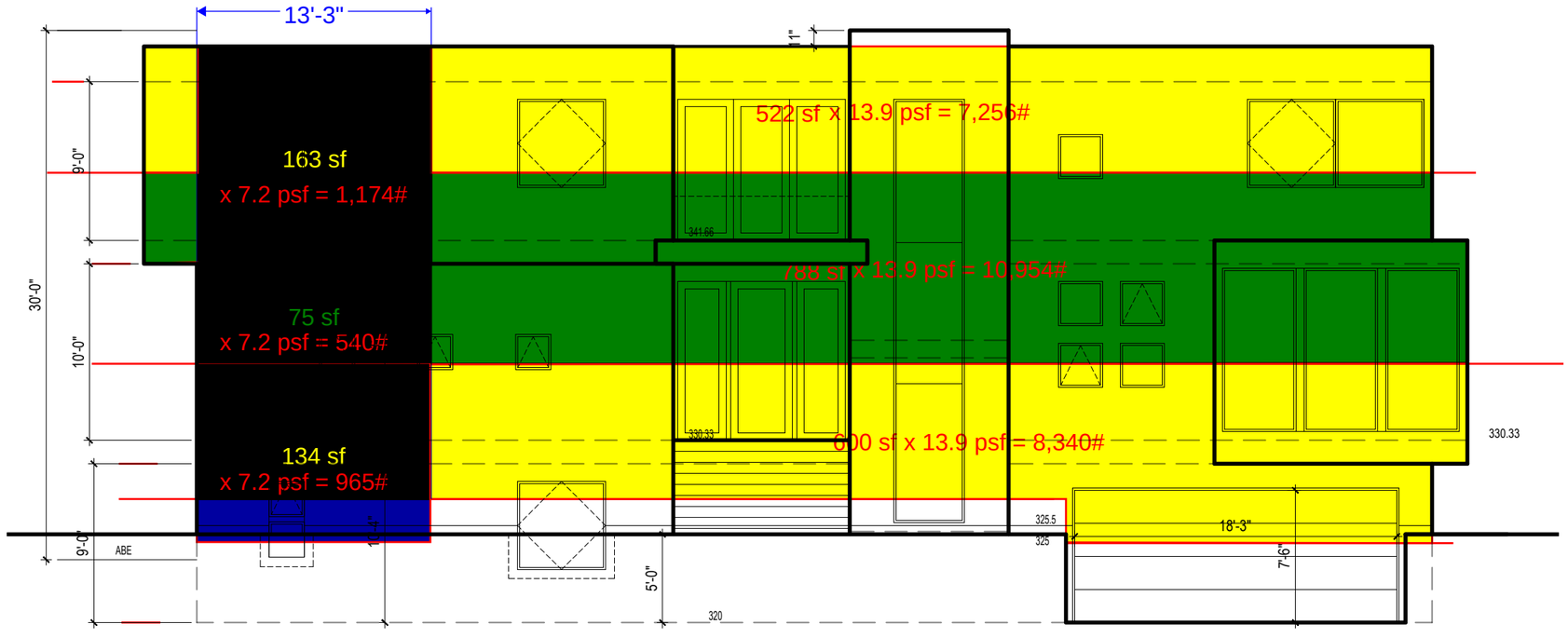
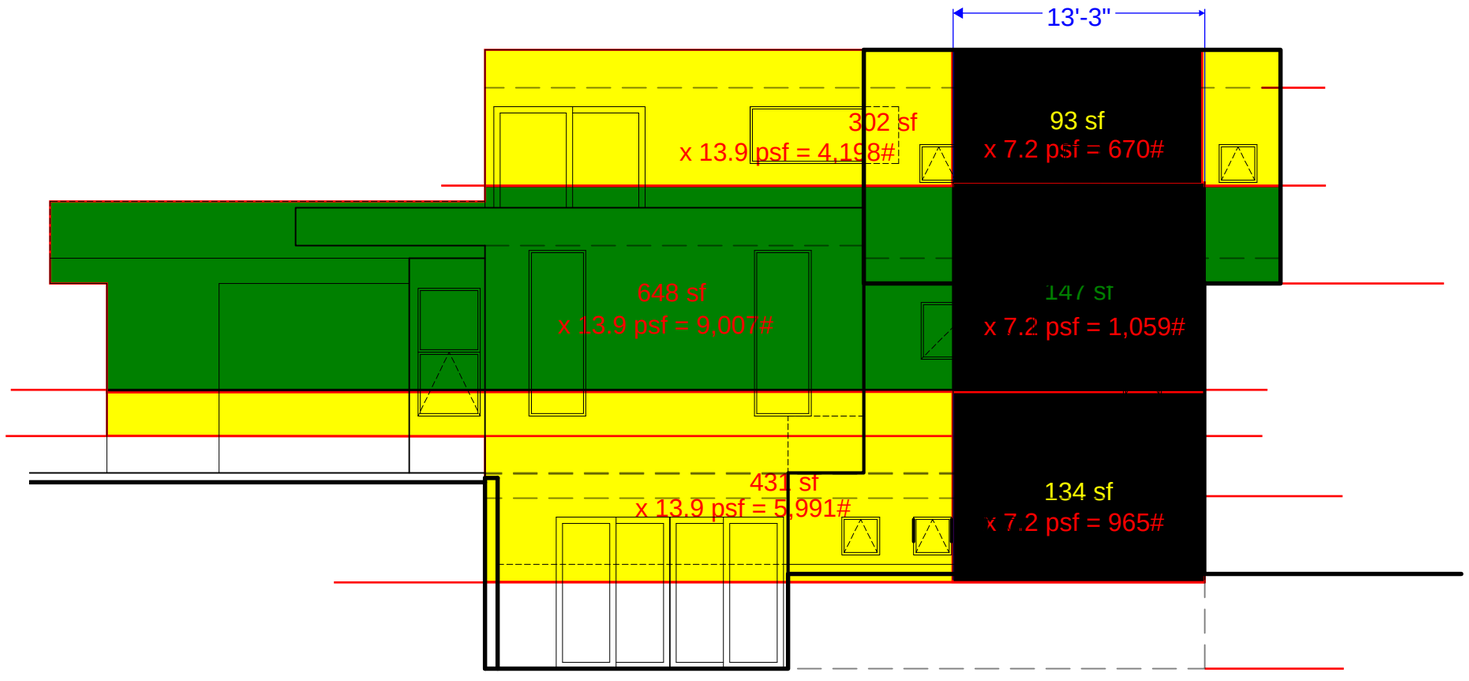
S
3'-1⅛"
2'-6¾6"
9'-11¹⁵⁄16"
21'-1"
7'-8⁵⁄16"
40'-6"
2'-11½"
1'-9½"
1'-9½"
22'-3½"
9'-3½"
9'-5⅝"
9'-6½"
7'-1¹⁄16"
9'-1¹⁄16"
5'-0½"
3'-7¹³⁄16"
7'-9¹⁄16"
11'-6⅝"
7'-0"
4'-0"
4'-3"
2'-0"
9'-0"



WEST ELEVATION

1/4" = 1'-0"



NORTH ELEVATION

1/4" = 1'-0"

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JOB TITLE 4034 85th Ave SE

JOB NO. 187-2021 **SHEET NO.**
CALCULATED BY JDA **DATE** 8/4/21
CHECKED BY **DATE**

www.struware.com

Code Search

Code: ASCE 7 - 10

Occupancy:

Occupancy Group = R Residential

Risk Category & Importance Factors:

Risk Category =	II	
Wind factor =	1.00	use 0.60 NOTE: Output will be nominal wind pressures
Snow factor =	1.00	
Seismic factor =	1.00	

Type of Construction:

Fire Rating:

Roof =	0.0 hr
Floor =	0.0 hr

Building Geometry:

Roof angle (θ)	0.25 / 12	1.2 deg
Building length (L)	73.0 ft	
Least width (B)	66.0 ft	
Mean Roof Ht (h)	30.0 ft	
Parapet ht above grd	0.0 ft	
Minimum parapet ht	0.0 ft	

Live Loads:

Roof	0 to 200 sf:	20 psf	use 25.0 psf
	200 to 600 sf:	25 psf	
	over 600 sf:	25 psf	

Floor:

Typical Floor	40 psf
Partitions	N/A
Partitions	N/A
Partitions	N/A
Partitions	N/A

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Wind Loads : ASCE 7- 10

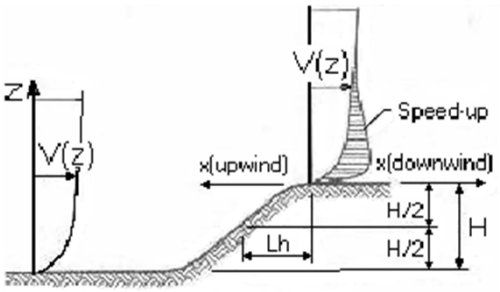
Ultimate Wind Speed	110 mph
Nominal Wind Speed	85.2 mph
Risk Category	II
Exposure Category	C
Enclosure Classif.	Enclosed Building
Internal pressure	+/-0.18
Directionality (Kd)	0.85
Kh case 1	0.982
Kh case 2	0.982
Type of roof	Monoslope

Topographic Factor (Kzt)

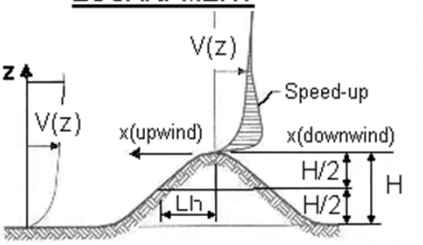
Topography		2D Escarpment
Hill Height	(H)	0.0 ft
Half Hill Length (Lh)		39.4 ft
Actual H/Lh	=	0.00
Use H/Lh	=	0.00
Modified Lh	=	39.4 ft
From top of crest: x =		0.0 ft
Bldg up/down wind?		upwind

H< 15ft;exp C
∴ Kzt=1.0

H/Lh= 0.00	K_1 =	0.000	
x/Lh = 0.00	K_2 =	1.000	
z/Lh = 0.76	K_3 =	0.149	
At Mean Roof Ht:			
$Kzt = (1+K_1K_2K_3)^2$ =		1.00	use 1.30



ESCARPMENT



2D RIDGE or 3D AXISYMMETRICAL HILL

Gust Effect Factor

h =	30.0 ft
B =	66.0 ft
/z (0.6h) =	18.0 ft

Flexible structure if natural frequency < 1 Hz (T > 1 second).
However, if building h/B < 4 then probably rigid structure (rule of thumb).
h/B = 0.45 Rigid structure

G = 0.85 Using rigid structure default

Rigid Structure

$\bar{e}$ =	0.20	
ℓ =	500 ft	
z_{min} =	15 ft	
c =	0.20	
g_Q, g_v =	3.4	
L_z =	442.9 ft	
Q =	0.90	
I_z =	0.22	
G =	0.87	use G = 0.85

Flexible or Dynamically Sensitive Structure

Natural Frequency (η_1) =	0.0 Hz				
Damping ratio (β) =	0				
/b =	0.65				
/α =	0.15				
Vz =	95.5				
N_1 =	0.00				
R_n =	0.000				
R_h =	28.282	η =	0.000	h =	30.0 ft
R_B =	28.282	η =	0.000		
R_L =	28.282	η =	0.000		
g_R =	0.000				
R =	0.000				
G =	0.000				

Enclosure Classification

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Test for Enclosed Building: A building that does not qualify as open or partially enclosed.

Test for Open Building: All walls are at least 80% open.
Ao ≥ 0.8Ag

Test for Partially Enclosed Building:

	Input			Test	
Ao	0.0	sf	Ao ≥ 1.1Aoi	YES	
Ag	0.0	sf	Ao > 4' or 0.01Ag	NO	
Aoi	0.0	sf	Aoi / Agi ≤ 0.20	NO	Building is NOT
Agi	0.0	sf			Partially Enclosed

Conditions to qualify as Partially Enclosed Building. Must satisfy all of the following:
Ao ≥ 1.1Aoi
Ao > smaller of 4' or 0.01 Ag
Aoi / Agi ≤ 0.20
Where:
Ao = the total area of openings in a wall that receives positive external pressure.
Ag = the gross area of that wall in which Ao is identified.
Aoi = the sum of the areas of openings in the building envelope (walls and roof) not including Ao.
Agi = the sum of the gross surface areas of the building envelope (walls and roof) not including Ag.

Reduction Factor for large volume partially enclosed buildings (Ri) :

If the partially enclosed building contains a single room that is unpartitioned , the internal pressure coefficient may be multiplied by the reduction factor Ri.

Total area of all wall & roof openings (Aog): 0 sf
Unpartitioned internal volume (Vi) : 0 cf
Ri = 1.00

Altitude adjustment to constant 0.00256 (caution - see code) :

Altitude = 0 feet
Constant = 0.00256
Average Air Density = 0.0765 lbm/ft^3

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Wind Loads - MWFRS h≤60' (Low-rise Buildings) Enclosed/partially enclosed only

Kz = Kh (case 1) = 0.98
Base pressure (qh) = **20.2 psf**
GCpi = +/-0.18

Edge Strip (a) = 6.6 ft
End Zone (2a) = 13.2 ft
Zone 2 length = 33.0 ft

Wind Pressure Coefficients

	CASE A				CASE B		
Surface	GCpf	θ = 1.2 deg w/-GCpi	w/+GCpi		GCpf	w/-GCpi	w/+GCpi
1	0.40	0.58	0.22		-0.45	-0.27	-0.63
2	-0.69	-0.51	-0.87		-0.69	-0.51	-0.87
3	-0.37	-0.19	-0.55		-0.37	-0.19	-0.55
4	-0.29	-0.11	-0.47		-0.45	-0.27	-0.63
5					0.40	0.58	0.22
6					-0.29	-0.11	-0.47
1E	0.61	0.79	0.43		-0.48	-0.30	-0.66
2E	-1.07	-0.89	-1.25		-1.07	-0.89	-1.25
3E	-0.53	-0.35	-0.71		-0.53	-0.35	-0.71
4E	-0.43	-0.25	-0.61		-0.48	-0.30	-0.66
5E					0.61	0.79	0.43
6E					-0.43	-0.25	-0.61

Nominal Wind Surface Pressures (psf)

1		11.7	4.4		-5.4	-12.7
2		-10.3	-17.6		-10.3	-17.6
3		-3.8	-11.1		-3.8	-11.1
4		-2.2	-9.5		-5.4	-12.7
5					11.7	4.4
6					-2.2	-9.5
1E		15.9	8.7		-6.1	-13.3
2E		-18.0	-25.2		-18.0	-25.2
3E		-7.1	-14.3		-7.1	-14.3
4E		-5.0	-12.3		-6.1	-13.3
5E					15.9	8.7
6E					-5.0	-12.3

Parapet

Windward parapet = 0.0 psf (GCpn = +1.5)
Leeward parapet = 0.0 psf (GCpn = -1.0)

Windward roof overhangs = 14.1 psf (upward) add to windward roof pressure

Horizontal MWFRS Simple Diaphragm Pressures (psf)

Transverse direction (normal to L)

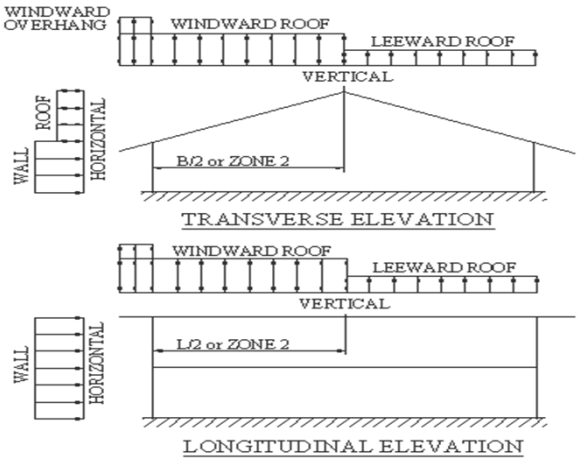
Interior Zone: Wall 13.9 psf
Roof -6.5 psf **
End Zone: Wall 21.0 psf
Roof -10.9 psf **

Longitudinal direction (parallel to L)

Interior Zone: Wall 13.9 psf
End Zone: Wall 21.0 psf

** NOTE: Total horiz force shall not be less than that determined by neglecting roof forces (except for MWFRS moment frames).

The code requires the MWFRS be designed for a min ultimate force of 16 psf multiplied by the wall area plus an 8 psf force applied to the vertical projection of the roof.



Location of MWFRS Wind Pressure Zones

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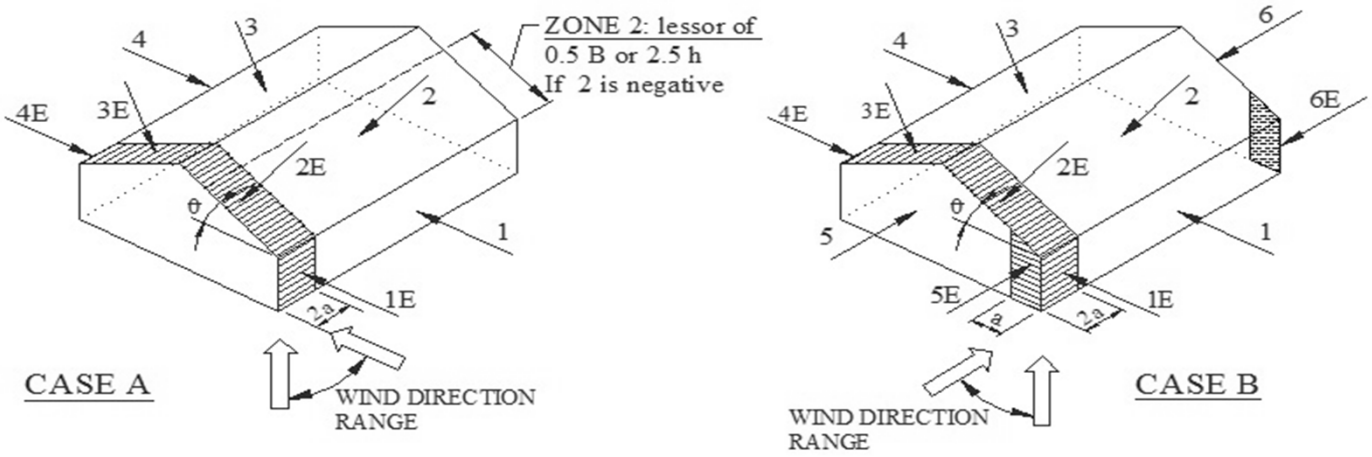
JOB NO.	187-2021	**SHEET NO.**	
CALCULATED BY	JDA	**DATE**	8/4/21
CHECKED BY		**DATE**	



NOTE: Torsional loads are 25% of zones 1 - 6. See code for loading diagram.

ASCE 7 -99 and ASCE 7-10 (& later)

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Nominal Wind Pressures

Wind Loads - Components & Cladding : h <= 60'

Kh (case 1) =	0.98	h =	30.0 ft
Base pressure (qh) =	**20.2 psf**	a =	6.6 ft
Minimum parapet ht =	0.0 ft	GCpi =	+/-0.18
Roof Angle (θ) =	1.2 deg		
Type of roof =	Monoslope		

Roof

	GCp +/- GCpi			Surface Pressure (psf)			**User input**	
Area	10 sf	50 sf	100 sf	10 sf	50 sf	100 sf	10 sf	147 sf
Negative Zone 1	-1.18	-1.11	-1.08	-23.8	-22.4	-21.8	-23.8	-21.8
Negative Zone 2	-1.98	-1.49	-1.28	-39.9	-30.1	-25.8	-39.9	-25.8
Negative Zone 3	-2.98	-1.79	-1.28	-60.1	-36.1	-25.8	-60.1	-25.8
Positive All Zones	0.48	0.41	0.38	10.0	10.0	10.0	10.0	10.0
Overhang Zone 1&2	-1.70	-1.63	-1.60	-34.3	-32.9	-32.3	-34.3	-29.9
Overhang Zone 3	-2.80	-1.40	-0.80	-56.5	-28.3	-16.1	-56.5	-16.1

Overhang pressures in the table above assume an internal pressure coefficient (Gcpi) of 0.0
Overhang soffit pressure equals adjacent wall pressure reduced by internal pressure of 3.6 psf

Parapet

qp = 0.0 psf

CASE A = pressure towards building (pos)
CASE B = pressure away from bldg (neg)

	Surface Pressure (psf)			**User input**
Solid Parapet Pressure	10 sf	100 sf	500 sf	40 sf
CASE A : Interior zone:	0.0	0.0	0.0	0.0
Corner zone:	0.0	0.0	0.0	0.0
CASE B : Interior zone:	0.0	0.0	0.0	0.0
Corner zone:	0.0	0.0	0.0	0.0

Walls

	GCp +/- GCpi			Surface Pressure (psf)			**User input**	
Area	10 sf	100 sf	500 sf	10 sf	100 sf	500 sf	50 sf	91 sf
Negative Zone 4	-1.17	-1.01	-0.90	-23.6	-20.4	-18.2	-21.4	-20.5
Negative Zone 5	-1.44	-1.12	-0.90	-29.0	-22.6	-18.2	-24.6	-22.9
Positive Zone 4 & 5	1.08	0.92	0.81	21.8	18.6	16.3	19.5	18.7

Note: GCp reduced by 10% due to roof angle <= 10 deg.

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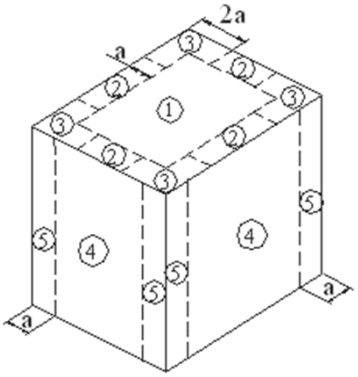
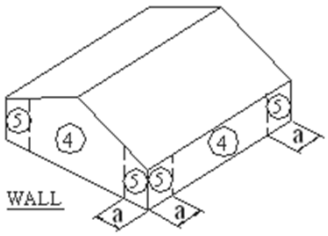
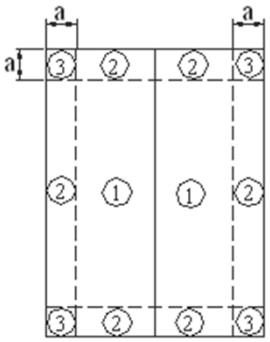
Location of C&C Wind Pressure Zones



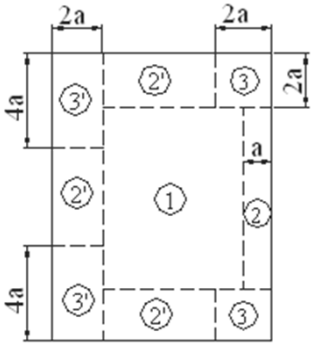
Roofs w/ θ ≤ 10°
and all walls
h > 60'



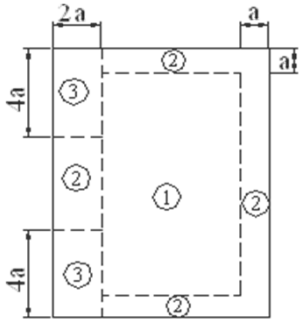
Walls h ≤ 60'
& alt design h<90'



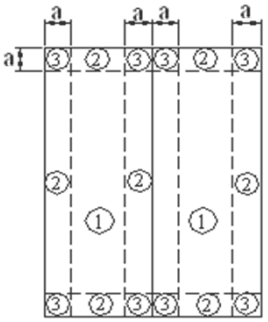
Gable, Sawtooth and
Multispan Gable θ ≤ 7 degrees &
Monoslope ≤ 3 degrees
h ≤ 60' & alt design h<90'



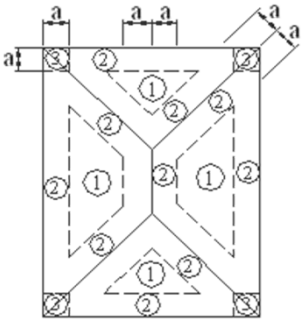
Monoslope roofs
3° < θ ≤ 10°
h ≤ 60' & alt design h<90'



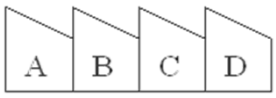
Monoslope roofs
10° < θ ≤ 30°
h ≤ 60' & alt design h<90'

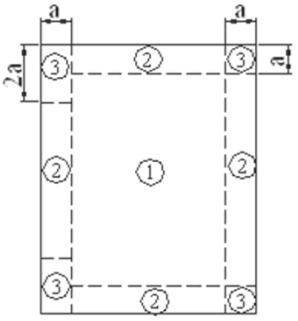


Multispan Gable &
Gable 7° < θ ≤ 45°

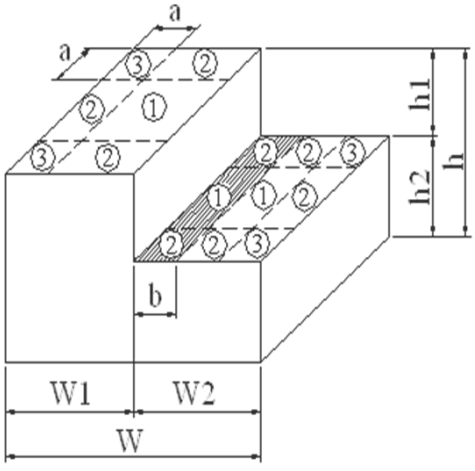


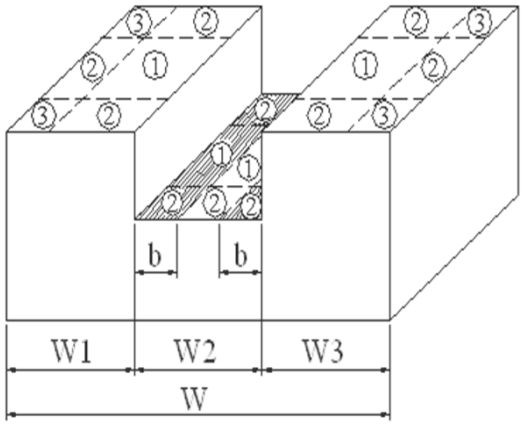
Hip 7° < θ ≤ 27°



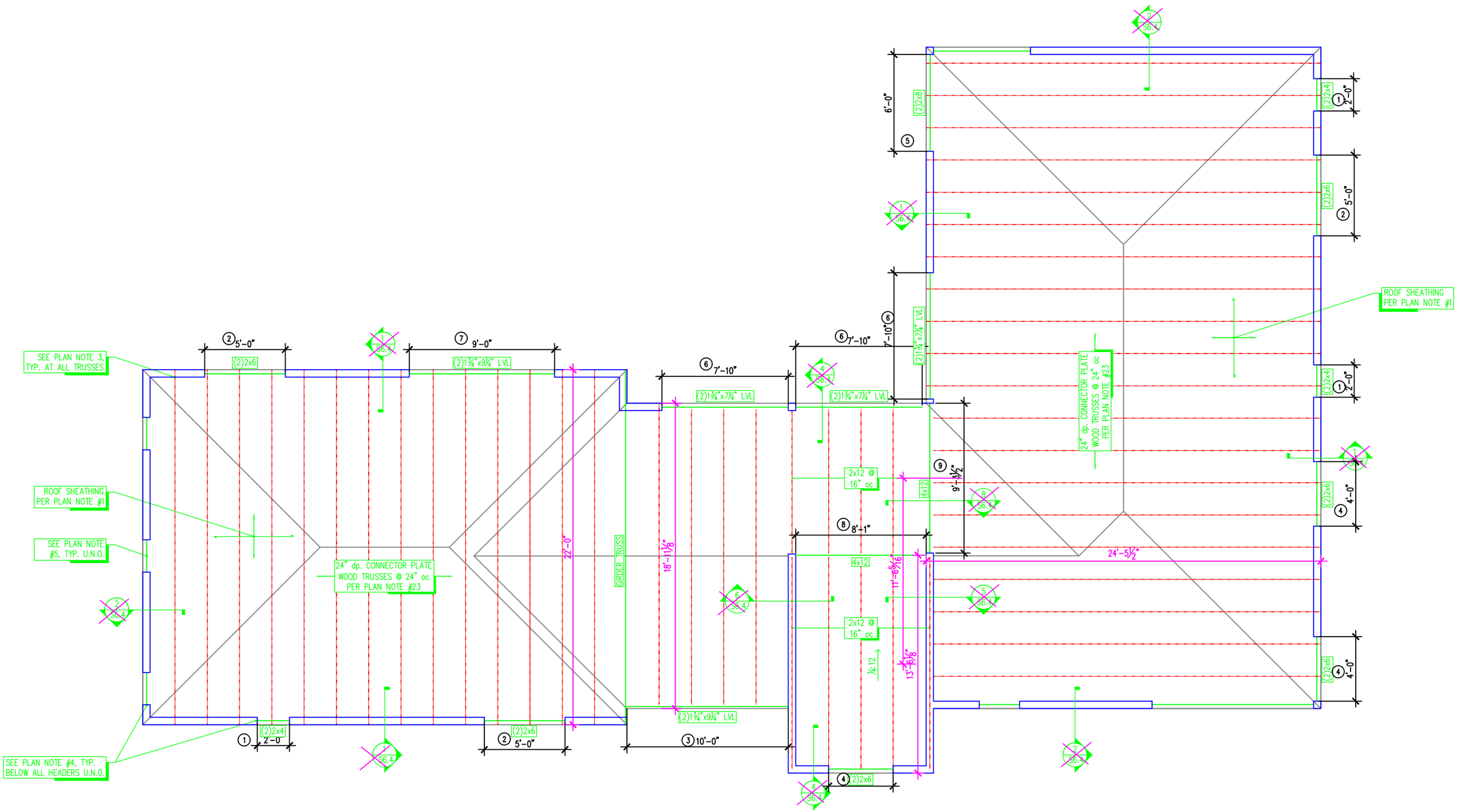


Sawtooth 10° < θ ≤ 45°
h ≤ 60' & alt design h<90'





Stepped roofs θ ≤ 3°
h ≤ 60' & alt design h<90'



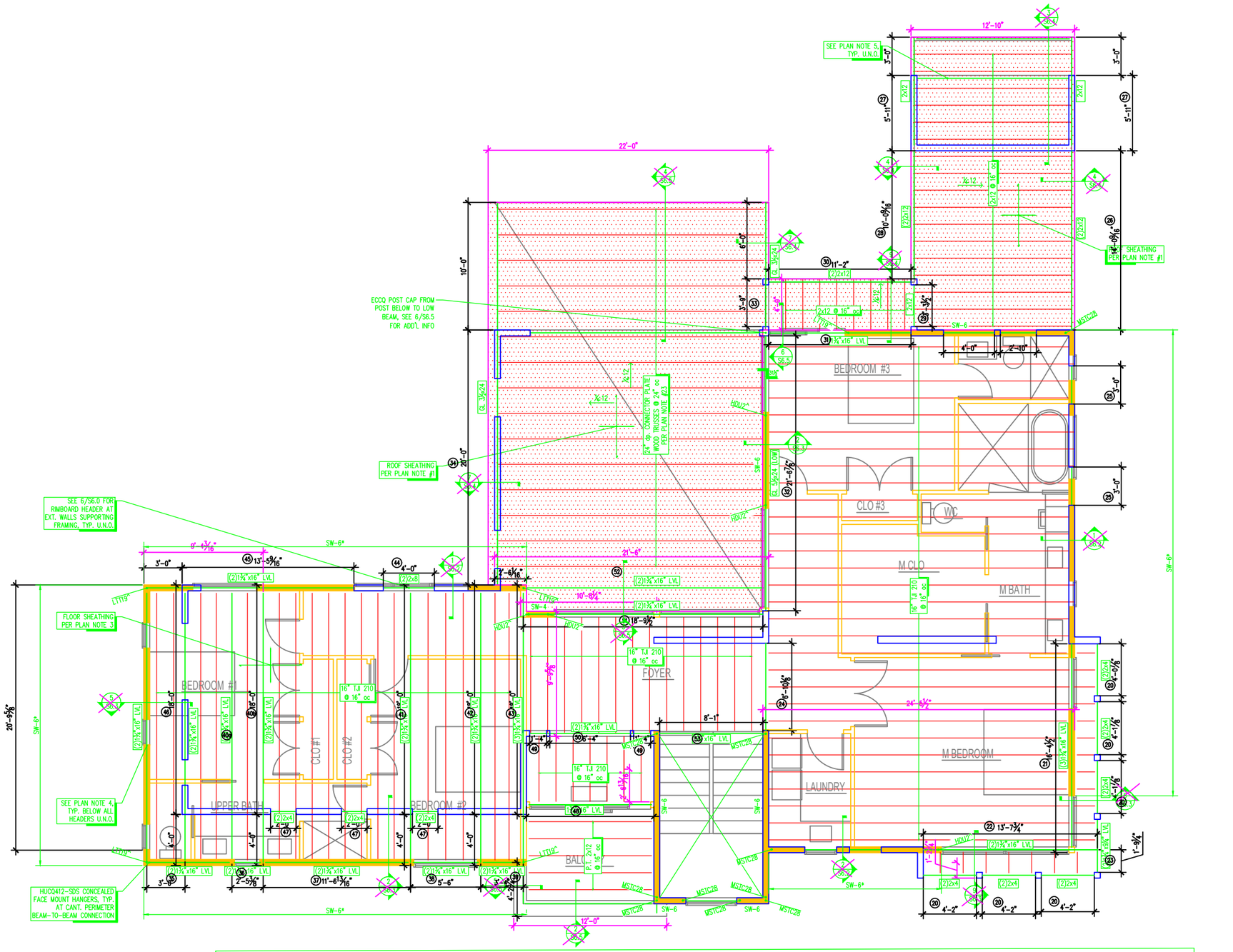
ROOF PLAN NOTES

1. ROOF SHEATHING SHALL CONSIST OF ⅝" SHEATHING (PANEL SPAN RATING 32/16) NAILED AT ALL FRAMED PANEL EDGES, DIAPHRAGM BOUNDARIES, BLOCKING, AND SHEAR WALLS w/ 10d @ 6" oc; AND AT ALL INTERMEDIATE SUPPORTS w/ 10d @ 12" oc (SEE 3/S6.1). NAIL SHEATHING TO ALL STRUTS AND SHEAR WALLS BELOW w/ TWO ROWS OF 10d @ 6" oc (STAGGER ROWS).
2. DASHED WALLS AND SHEARWALLS SHOWN IN PLAN ARE BELOW ROOF FRAMING ELEVATION (i.e. FROM UPPER FLOOR TO UNDERSIDE OF ROOF DECK).
3. PROVIDE H2.5A HURRICANE TIES AT END OF ALL JOISTS.
4. ALL HEADERS SHALL HAVE A MINIMUM OF POSTS PER 4/S6.0 AT NON-LOAD BEARING EXTERIOR WALLS, AND PER 6/S6.0 AT LOAD BEARING EXTERIOR WALLS.
5. HEADERS IN EXTERIOR WALLS NOT SUPPORTING RAFTERS, JOISTS, OR BEAMS SHALL BE PER DETAIL 4/S6.0 U.N.O. IN PLAN.

1/S2.4 ROOF FRAMING PLAN

1/4" = 1'-0"

NORTH



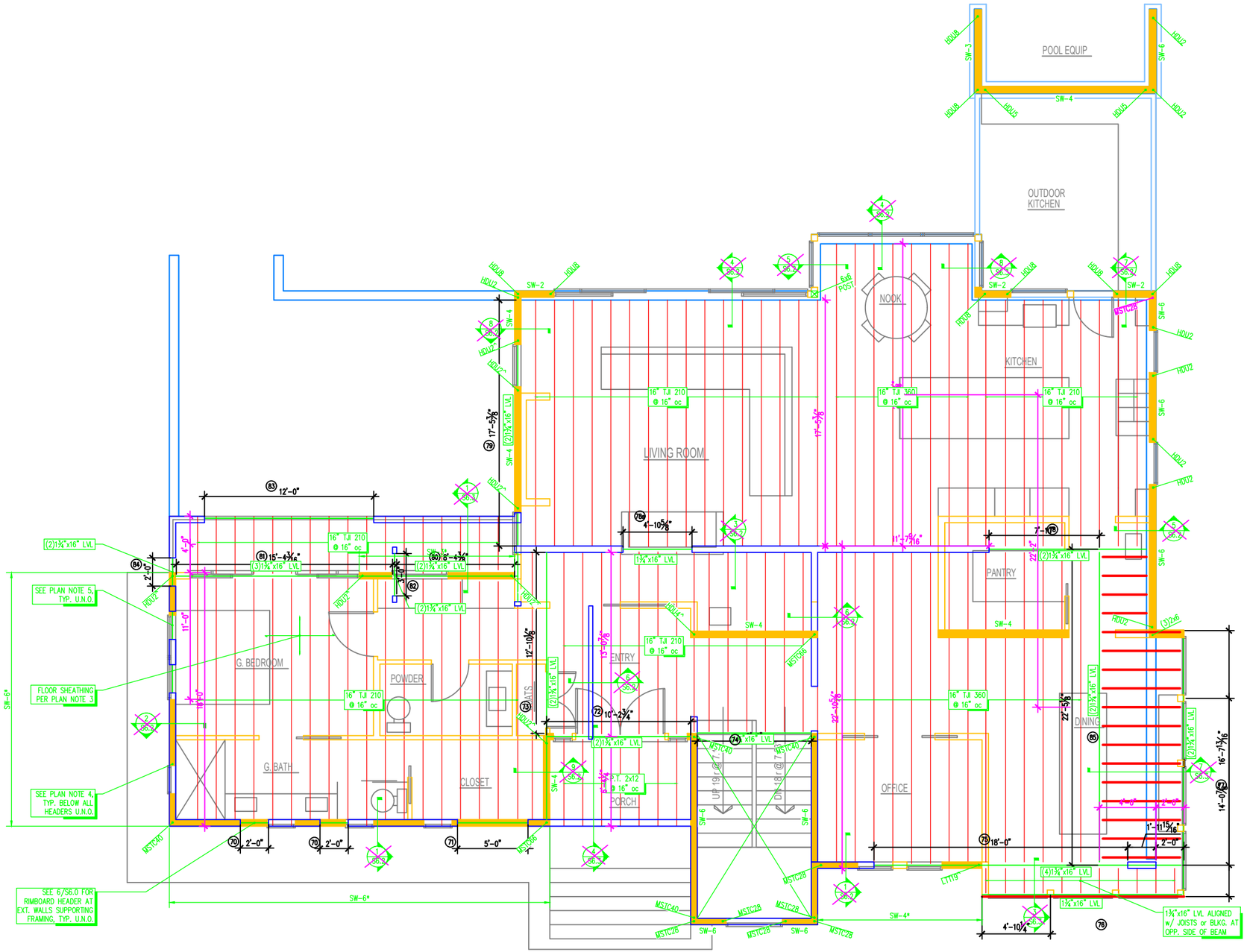
UPPER FLOOR PLAN NOTES

1. SOLID WALLS AND SHEARWALLS SHOWN IN PLAN ARE ABOVE UPPER FLOOR LEVEL (FROM UPPER FLOOR TO UNDERSIDE OF ROOF). DASHED WALLS SHOWN IN PLAN ARE BELOW UPPER FLOOR FRAMING ELEVATION (FROM MAIN FLOOR TO UPPER FLOOR).
2. EXTERIOR STUDWALLS SHALL BE 2x6 STUDS @ 24" oc (MAX). SEE ARCHITECTURAL FOR INTERIOR STUDWALLS. SEE 6/6.1, 5/S6.1, AND 2/S6.1 FOR ALLOWABLE HOLES & NOTCHES IN STUDWALL STUDS AND TOP & BOTTOM PLATES.
3. FLOOR SHEATHING SHALL CONSIST OF ¾" T&G SHEATHING (PANEL SPAN RATING 48/24). NAIL SHEATHING AT ALL FRAMED PANEL EDGES, DIAPHRAGM BOUNDARIES, BLOCKING, AND SHEAR WALLS w/ 10d @ 6" oc; AND AT ALL INTERMEDIATE SUPPORTS w/ 10d @ 12" oc (SEE 3/S6.1). NAIL SHEATHING TO ALL STRUTS AND SHEAR WALLS BELOW w/ TWO ROWS OF 10d @ 6" oc (STAGGER ROWS). GLUE SHEATHING AT ALL SUPPORTS w/ ADHESIVE CONFORMING TO ASTM SPECIFICATION D3498.
4. ALL HEADERS ABOVE (SEE 1/S2.4) SHALL HAVE A MINIMUM NUMBER OF POSTS PER 4/S6.0 AT NON-LOAD BEARING EXTERIOR WALLS, AND PER 6/S6.0 AT LOAD BEARING EXTERIOR WALLS
5. HEADERS IN EXTERIOR WALLS NOT SUPPORTING RAFTERS, JOISTS, OR BEAMS SHALL BE PER DETAIL 4/S6.0 U.N.O. IN PLAN.

1 S2.3 UPPER FLOOR FRAMING PLAN

1/4" = 1'-0"

NORTH



MAIN FLOOR PLAN NOTES

1. SOLID WALLS AND SHEARWALLS SHOWN IN PLAN ARE ABOVE MAIN FLOOR LEVEL (FROM MAIN FLOOR TO UNDERSIDE OF UPPER FLOOR). DASHED WALLS SHOWN IN PLAN ARE BELOW MAIN FLOOR FRAMING ELEVATION (FROM LOWER FLOOR TO MAIN FLOOR).
2. EXTERIOR STUDWALLS SHALL BE 2x6 STUDS @ 24" oc (MAX). SEE ARCHITECTURAL FOR INTERIOR STUDWALLS. SEE 6/6.1, 5/S6.1, AND 2/S6.1 FOR ALLOWABLE HOLES & NOTCHES IN STUDWALL STUDS AND TOP & BOTTOM PLATES.
3. FLOOR SHEATHING SHALL CONSIST OF ¾" T&G SHEATHING (PANEL SPAN RATING 48/24). NAIL SHEATHING AT ALL FRAMED PANEL EDGES, DIAPHRAGM BOUNDARIES, BLOCKING, AND SHEAR WALLS w/ 10d @ 6" oc; AND AT ALL INTERMEDIATE SUPPORTS w/ 10d @ 12" oc (SEE 3/S6.1). NAIL SHEATHING TO ALL STRUTS AND SHEAR WALLS BELOW w/ TWO ROWS OF 10d @ 6" oc (STAGGER ROWS). GLUE SHEATHING AT ALL SUPPORTS w/ ADHESIVE CONFORMING TO ASTM SPECIFICATION D3498.
4. ALL HEADERS ABOVE (SEE 1/S2.3) SHALL HAVE A MINIMUM NUMBER OF POSTS PER 4/S6.0 AT NON-LOAD BEARING EXTERIOR WALLS, AND PER 6/S6.0 AT LOAD BEARING EXTERIOR WALLS
5. HEADERS IN EXTERIOR WALLS NOT SUPPORTING RAFTERS, JOISTS, OR BEAMS SHALL BE PER DETAIL 4/S6.0 U.N.O. IN PLAN.

1 / S2.2 MAIN FLOOR FRAMING PLAN

1/4" = 1'-0"

NORTH

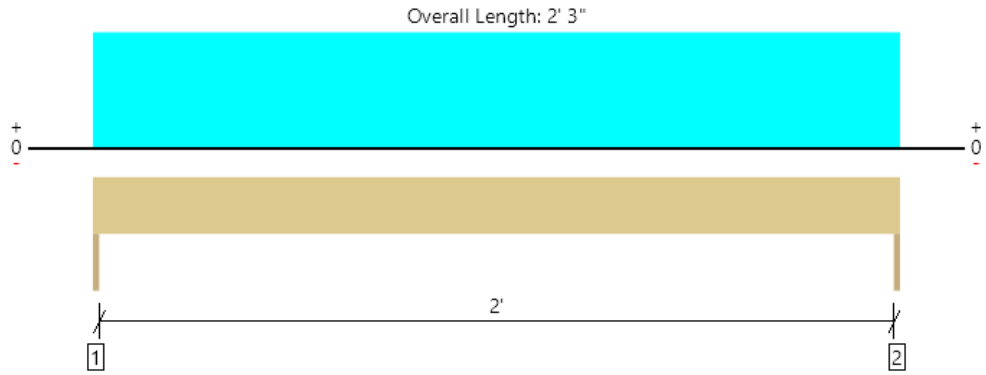
Roof			
Member Name	Results	Current Solution	Comments
1	Passed	2 piece(s) 2 x 4 DF No.1	
2	Passed	2 piece(s) 2 x 6 DF No.1	
3	Passed	1 piece(s) 1 3/4" x 9 1/4" 2.0E Microllam® LVL	
4	Passed	2 piece(s) 2 x 6 DF No.1	
5	Passed	2 piece(s) 2 x 8 DF No.1	
6	Passed	2 piece(s) 1 3/4" x 7 1/4" 2.0E Microllam® LVL	
7	Passed	2 piece(s) 1 3/4" x 9 1/4" 2.0E Microllam® LVL	
8	Passed	1 piece(s) 4 x 12 DF No.1	
9	Passed	1 piece(s) 4 x 12 DF No.1	

Upper			
Member Name	Results	Current Solution	Comments
Cant Floor: Joist	Passed	1 piece(s) 16" TJI® 210 @ 24" OC	Cantilever Reinforcement (PB1) Required
20	Passed	2 piece(s) 2 x 4 DF No.1	
21	Passed	3 piece(s) 1 1/2" x 20" 1.3E TimberStrand® LSL	
22	Passed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
23	Passed	2 piece(s) 1 3/4" x 9 1/4" 2.0E Microllam® LVL	
26	Passed	2 piece(s) 2 x 12 DF No.1	
27	Passed	1 piece(s) 2 x 12 DF No.1	
28	Passed	2 piece(s) 2 x 12 DF No.1	
29	Passed	1 piece(s) 2 x 12 DF No.1	
30	Passed	2 piece(s) 2 x 6 DF No.1	
31	Passed	1 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
32	Passed	1 piece(s) 5 1/2" x 24" 24F-V4 DF Glulam	
33	Failed ok	1 piece(s) 3 1/2" x 10 1/2" 24F-V4 DF Glulam	An excessive uplift of -1585 lbs at support located at 1 1/2" failed this product.
34	Failed ok	1 piece(s) 3 1/2" x 24" 24F-V4 DF Glulam	Right cantilever exceeds the maximum braced cantilever length of 7'.
35	Passed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
36	Passed	1 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
37	Passed	1 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
38	Passed	1 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
39	Passed	1 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
40a	Passed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
40b	Failed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
41	Failed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
42	Passed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
43	Failed ok	3 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	Left cantilever exceeds the maximum braced cantilever length of 7'.
44	Passed	2 piece(s) 2 x 8 DF No.1	
45	Passed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
46	Failed ok	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	An excessive uplift of -1099 lbs at support located at 21' 9 3/4" failed this product.
47	Passed	2 piece(s) 2 x 4 DF No.1	
48	Passed	1 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
49	Passed	1 piece(s) 2 x 4 DF No.1	
50	Passed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
51	Passed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
52	Passed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
53	Passed	1 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	

Main			
Member Name	Results	Current Solution	Comments
18' Floor Joist	Failed	1 piece(s) 16" TJI® 210 @ 24" OC	
23' Floor Joist	Passed	1 piece(s) 16" TJI® 360 @ 16" OC	
Short Cant Joists	Passed	1 piece(s) 16" TJI® 210 @ 24" OC	
70	Passed	1 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
71	Passed	1 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
72	Failed ok	1 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	Multiple Failures/Errors
73	Failed ok	1 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	Multiple Failures/Errors
74	Passed	1 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
76	Passed	1 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
77	Failed ok	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	Support 1 failed reaction check due to insufficient bearing capacity.
78	Passed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
78s	Passed	1 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
79	Passed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
80	Passed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
81	Passed	3 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
82	Passed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
83	Passed	1 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
84	Passed	2 piece(s) 1 3/4" x 11 7/8" 1.55E TimberStrand® LSL	
85	Passed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
86	Passed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	

Roof, 1

2 piece(s) 2 x 4 DF No.1



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)	623 @ 0	2813 (1.50")	Passed (22%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	392 @ 5"	1449	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	351 @ 1' 1 1/2"	880	Passed (40%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.010 @ 1' 1 1/2"	0.075	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.018 @ 1' 1 1/2"	0.112	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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	Snow	Total	
1 - Trimmer - DF	1.50"	1.50"	1.50"	279	345	624	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	279	345	624	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 3" o/c	
Bottom Edge (Lu)	2' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 2' 3"	N/A	2.7	--	
1 - Uniform (PSF)	0 to 2' 3"	12' 3"	20.0	25.0	Default Load

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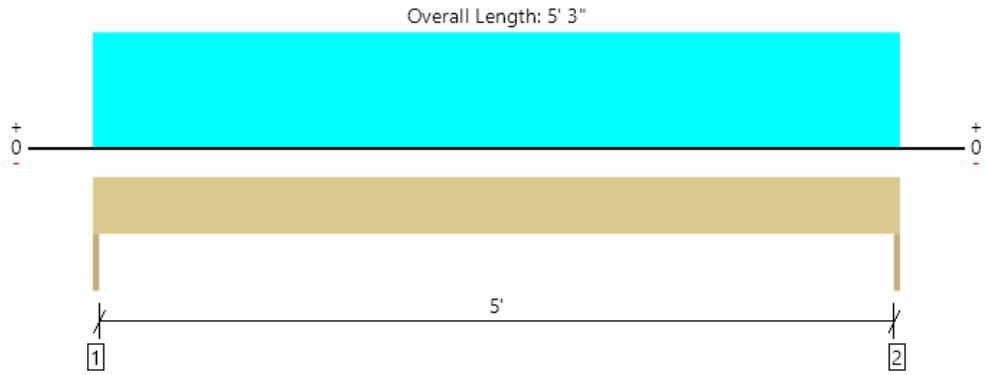
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Roof, 2

2 piece(s) 2 x 6 DF No.1



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)	1458 @ 0	2813 (1.50")	Passed (52%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1134 @ 7"	2277	Passed (50%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1914 @ 2' 7 1/2"	1884	Passed (102%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.074 @ 2' 7 1/2"	0.175	Passed (L/851)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.134 @ 2' 7 1/2"	0.262	Passed (L/469)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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	Snow	Total	
1 - Trimmer - DF	1.50"	1.50"	1.50"	654	804	1458	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	654	804	1458	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6" o/c	
Bottom Edge (Lu)	5' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 3"	N/A	4.2	--	
1 - Uniform (PSF)	0 to 5' 3"	12' 3"	20.0	25.0	Default Load

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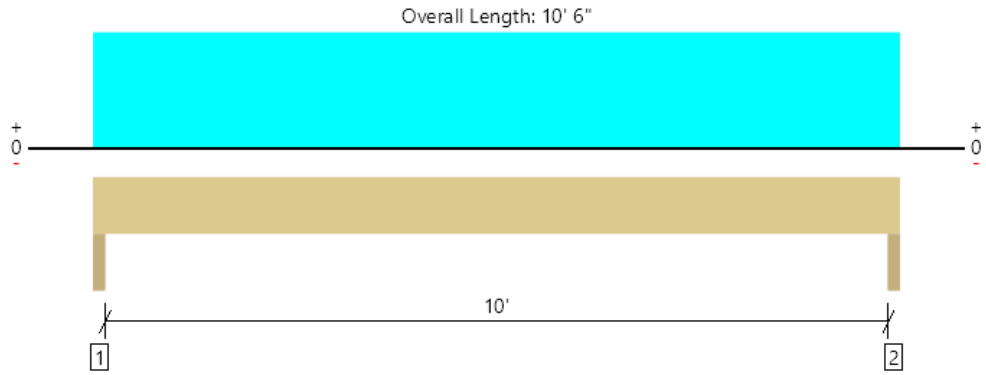
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Roof, 3

1 piece(s) 1 3/4" x 9 1/4" 2.0E Microllam® LVL



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)	2269 @ 1 1/2"	3938 (3.00")	Passed (58%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1828 @ 1' 1/4"	3537	Passed (52%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5677 @ 5' 3"	6442	Passed (88%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.278 @ 5' 3"	0.342	Passed (L/443)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.505 @ 5' 3"	0.512	Passed (L/243)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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	Snow	Total	
1 - Trimmer - DF	3.00"	3.00"	1.73"	1023	1247	2270	None
2 - Trimmer - DF	3.00"	3.00"	1.73"	1023	1247	2270	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 4" 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)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 10' 6"	N/A	4.7	--	
1 - Uniform (PSF)	0 to 10' 6"	9' 6"	20.0	25.0	Default Load

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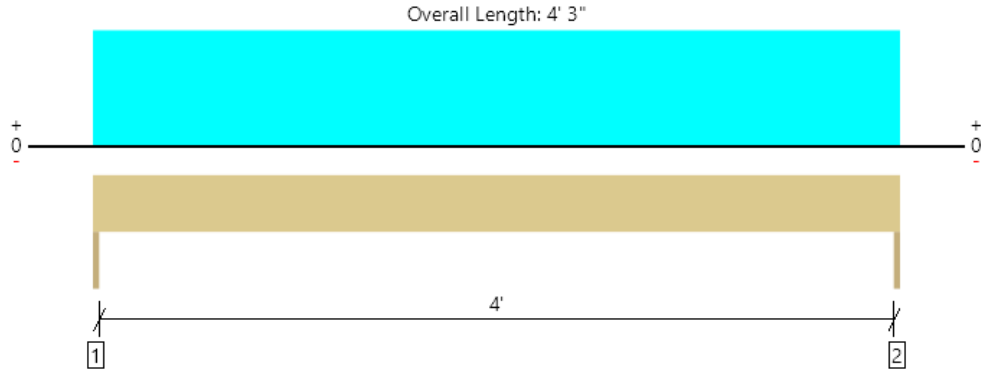
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Roof, 4

2 piece(s) 2 x 6 DF No.1



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)	1180 @ 0	2813 (1.50")	Passed (42%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	856 @ 7"	2277	Passed (38%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1254 @ 2' 1 1/2"	1884	Passed (67%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.032 @ 2' 1 1/2"	0.142	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.058 @ 2' 1 1/2"	0.213	Passed (L/884)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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	Snow	Total	
1 - Trimmer - DF	1.50"	1.50"	1.50"	530	651	1181	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	530	651	1181	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 3" o/c	
Bottom Edge (Lu)	4' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 4' 3"	N/A	4.2	--	
1 - Uniform (PSF)	0 to 4' 3"	12' 3"	20.0	25.0	Default Load

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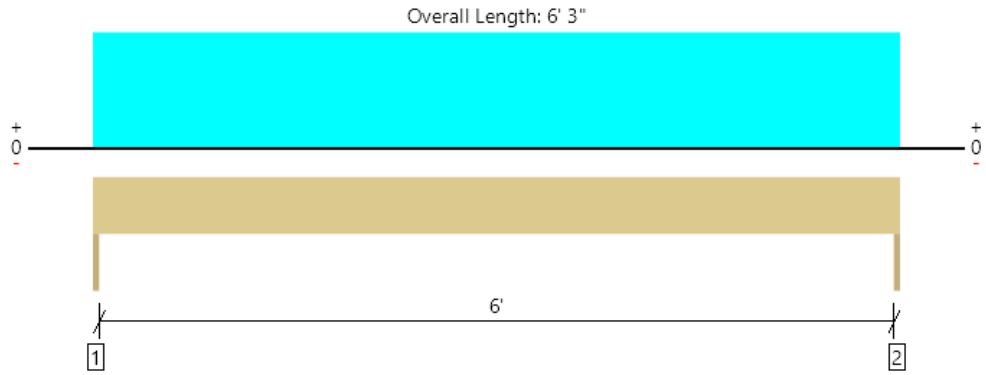
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Roof, 5

2 piece(s) 2 x 8 DF No.1



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)	1740 @ 0	2813 (1.50")	Passed (62%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1334 @ 8 3/4"	3002	Passed (44%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2719 @ 3' 1 1/2"	3022	Passed (90%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.065 @ 3' 1 1/2"	0.208	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.118 @ 3' 1 1/2"	0.313	Passed (L/635)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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	Snow	Total	
1 - Trimmer - DF	1.50"	1.50"	1.50"	783	957	1740	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	783	957	1740	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 3" o/c	
Bottom Edge (Lu)	6' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 6' 3"	N/A	5.5	--	
1 - Uniform (PSF)	0 to 6' 3"	12' 3"	20.0	25.0	Default Load

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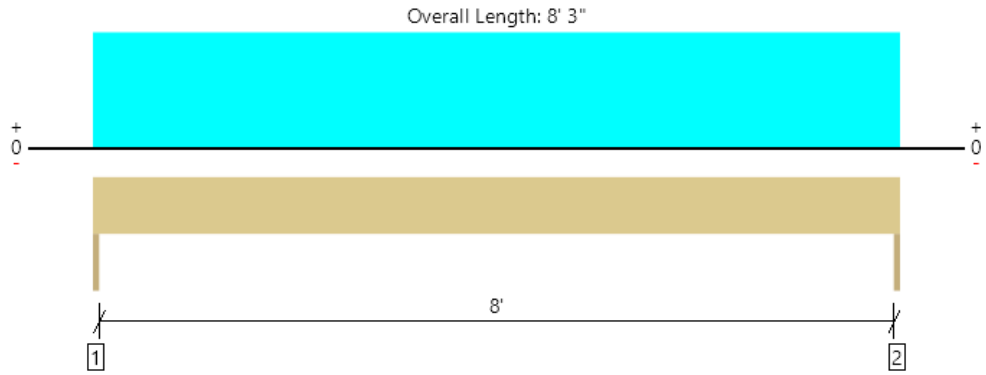
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Roof, 6

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



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)	2305 @ 0	3938 (1.50")	Passed (59%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1897 @ 8 3/4"	5544	Passed (34%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4753 @ 4' 1 1/2"	8182	Passed (58%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.155 @ 4' 1 1/2"	0.275	Passed (L/637)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.284 @ 4' 1 1/2"	0.313	Passed (L/349)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/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	Snow	Total	
1 - Trimmer - DF	1.50"	1.50"	1.50"	1041	1263	2304	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	1041	1263	2304	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 8' 3"	N/A	7.4	--	
1 - Uniform (PSF)	0 to 8' 3"	12' 3"	20.0	25.0	Default Load

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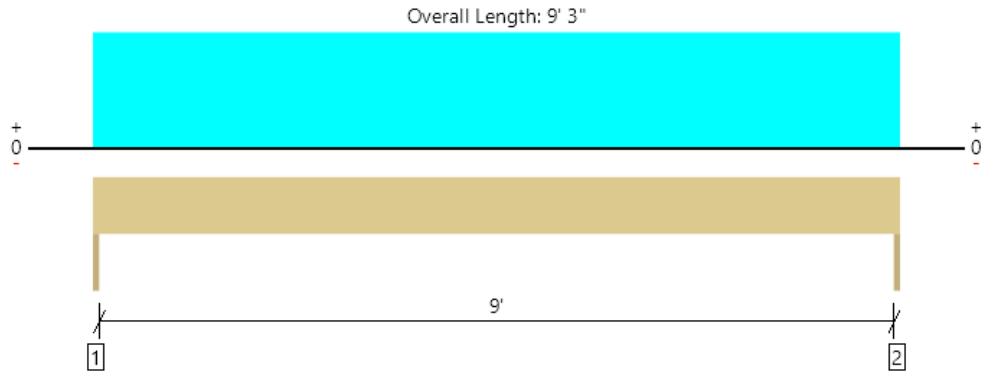
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Roof, 7

2 piece(s) 1 3/4" x 9 1/4" 2.0E Microllam® LVL



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)	2593 @ 0	3938 (1.50")	Passed (66%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2091 @ 10 3/4"	7074	Passed (30%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5997 @ 4' 7 1/2"	12884	Passed (47%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.121 @ 4' 7 1/2"	0.308	Passed (L/918)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.221 @ 4' 7 1/2"	0.463	Passed (L/501)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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	Snow	Total	
1 - Trimmer - DF	1.50"	1.50"	1.50"	1177	1416	2593	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	1177	1416	2593	None

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	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 3"	N/A	9.4	--	
1 - Uniform (PSF)	0 to 9' 3"	12' 3"	20.0	25.0	Default Load

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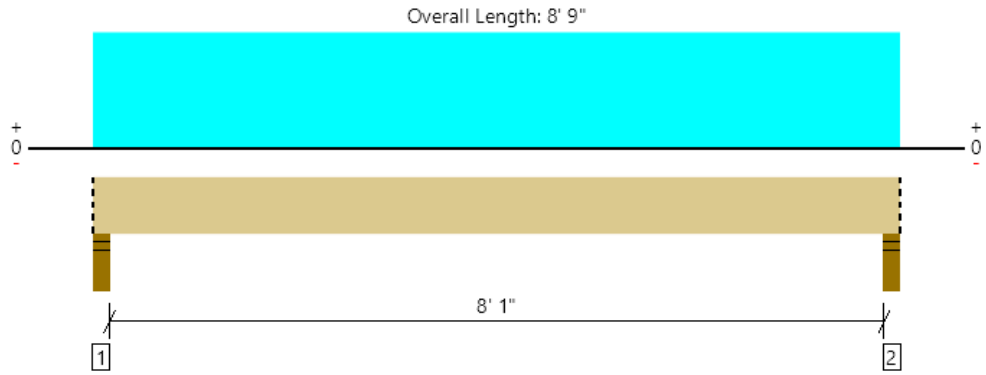
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Roof, 8
1 piece(s) 4 x 12 DF No.1



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)	2324 @ 2 1/2"	8750 (4.00")	Passed (27%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1649 @ 1' 3 1/4"	5434	Passed (30%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4612 @ 4' 4 1/2"	7783	Passed (59%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.045 @ 4' 4 1/2"	0.417	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.082 @ 4' 4 1/2"	0.556	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- 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	Snow	Total	
1 - Stud wall - DF	4.00"	4.00"	1.50"	1057	1267	2324	Blocking
2 - Stud wall - DF	4.00"	4.00"	1.50"	1057	1267	2324	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)	8' 9" o/c	
Bottom Edge (Lu)	8' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 8' 9"	N/A	10.0	--	
1 - Uniform (PSF)	0 to 8' 9" (Top)	11' 7"	20.0	25.0	Default Load

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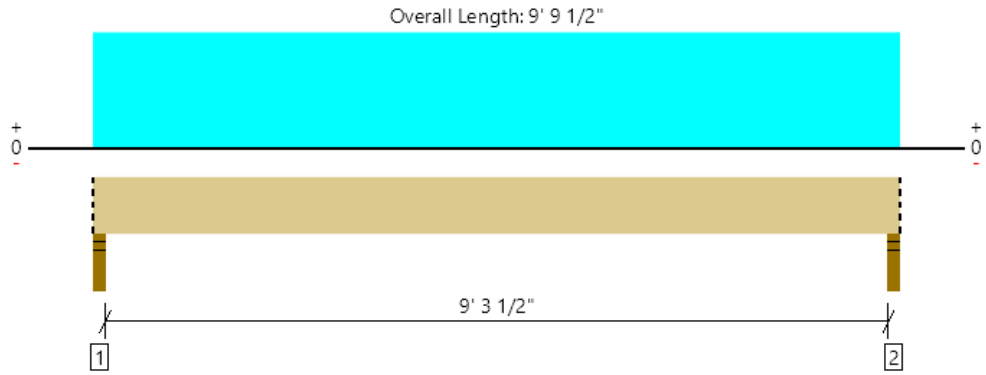
Roof, 9

1 piece(s) 4 x 12 DF No.1



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)	3042 @ 1 1/2"	6563 (3.00")	Passed (46%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2304 @ 1' 2 1/4"	5434	Passed (42%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	7070 @ 4' 10 3/4"	7783	Passed (91%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.090 @ 4' 10 3/4"	0.477	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.164 @ 4' 10 3/4"	0.636	Passed (L/698)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- 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	Snow	Total	
1 - Stud wall - DF	3.00"	3.00"	1.50"	1379	1663	3042	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	1379	1663	3042	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' 10" o/c	
Bottom Edge (Lu)	9' 10" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 9 1/2"	N/A	10.0	--	
1 - Uniform (PSF)	0 to 9' 9 1/2" (Top)	12' 3"	20.0	25.0	Default Load
2 - Uniform (PSF)	0 to 9' 9 1/2" (Top)	1' 4"	20.0	25.0	Default Load

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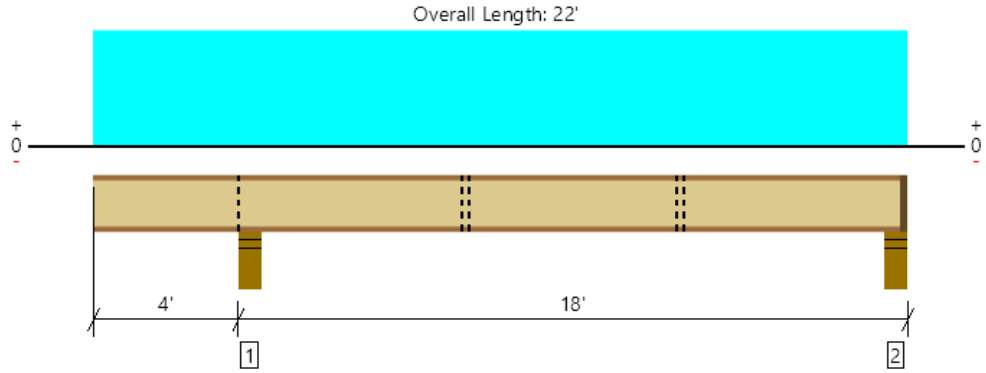
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Upper, Cant Floor: Joist

1 piece(s) 16" TJI® 210 @ 24" OC



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)	1135 @ 21' 7 1/2"	1460 (3.50")	Passed (78%)	1.00	1.0 D + 1.0 L (Alt Spans)
Shear (lbs)	1094 @ 21' 6 1/2"	2190	Passed (50%)	1.00	1.0 D + 1.0 L (Alt Spans)
Moment (Ft-lbs)	4696 @ 13' 1 1/2"	5140	Passed (91%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.247 @ 12' 11 1/8"	0.435	Passed (L/846)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.383 @ 12' 11 15/16"	0.870	Passed (L/546)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	45	40	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
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 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.
- Permanent bracing at third points In the back span or a direct applied ceiling over the entire back span length is required at the Left end of the member. See literature detail (PB1) For clarification.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	5.50"	5.50"	3.50"	672	1075	1747	Blocking
2 - Stud wall - DF	5.50"	3.75"	2.25"	428	726/-29	1154/-29	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)	3' 10" o/c	
Bottom Edge (Lu)	8' 2" 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 22'	24"	25.0	40.0	Default Load

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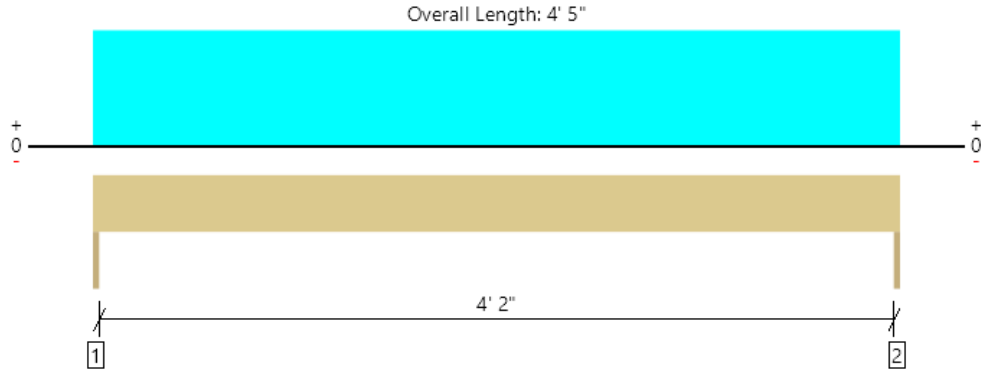
Upper, 20
2 piece(s) 2 x 4 DF No.1



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)	128 @ 0	2813 (1.50")	Passed (5%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	104 @ 5"	1449	Passed (7%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	141 @ 2' 2 1/2"	880	Passed (16%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.014 @ 2' 2 1/2"	0.147	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.027 @ 2' 2 1/2"	0.221	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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	Snow	Total	
1 - Trimmer - DF	1.50"	1.50"	1.50"	60	68	128	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	60	68	128	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 5" o/c	
Bottom Edge (Lu)	4' 5" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 4' 5"	N/A	2.7	--	
1 - Uniform (PSF)	0 to 4' 5"	1' 2 3/4"	20.0	25.0	Default Load

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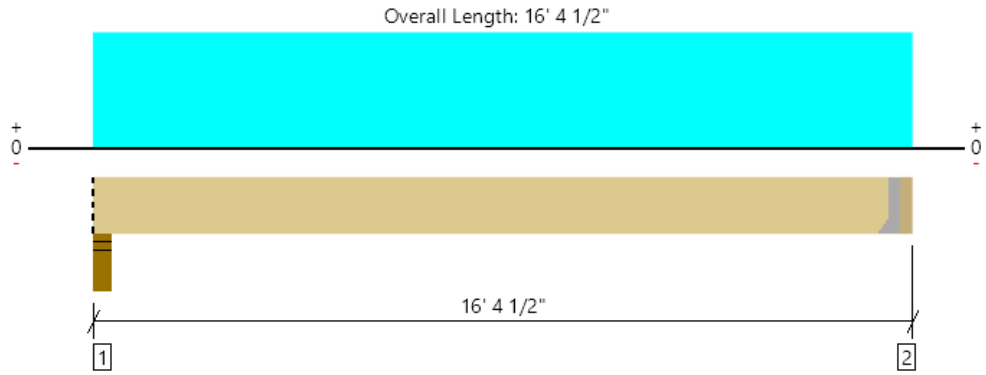
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 21

3 piece(s) 1 1/2" x 20" 1.3E TimberStrand® LSL



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)	8829 @ 16' 1 1/2"	8829 (2.76")	Passed (100%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	6975 @ 14' 5 1/2"	25500	Passed (27%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	35038 @ 8' 2 1/4"	40549	Passed (86%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.210 @ 8' 2 1/4"	0.397	Passed (L/909)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.477 @ 8' 2 1/4"	0.794	Passed (L/400)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	4.50"	4.50"	3.24"	5102	4005	252	9359	Blocking
2 - Hanger on 20" DF beam	3.00"	Hanger[1]	2.76"	5095	4005	252	9352	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)	3' 11" o/c	
Bottom Edge (Lu)	16' 2" 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	Connector not found	N/A	N/A	N/A	N/A	

- 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)	0 to 16' 1 1/2"	N/A	26.3	--	--	
1 - Uniform (PSF)	0 to 16' 4 1/2" (Top)	1' 2 3/4"	20.0	-	25.0	Default Load
2 - Uniform (PSF)	0 to 16' 4 1/2" (Top)	12' 2 3/4"	36.0	40.0	-	Default Load
3 - Uniform (PSF)	0 to 16' 4 1/2" (Top)	11'	12.0	-	-	Default Load

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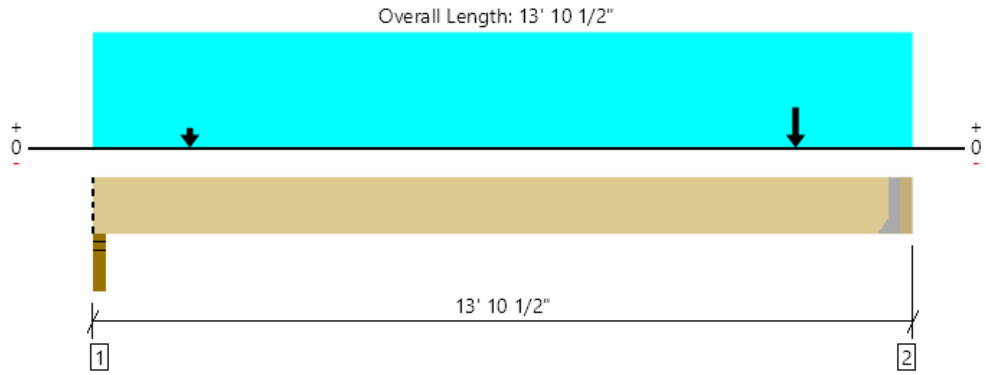
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 22

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



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)	9102 @ 13' 7 1/2"	9102 (3.47")	Passed (100%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	8871 @ 12' 3 1/2"	10640	Passed (83%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	15480 @ 11' 10 3/4"	31114	Passed (50%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.067 @ 7' 5 15/16"	0.338	Passed (L/999+)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.211 @ 7' 5 1/8"	0.675	Passed (L/769)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Seismic	Total	
1 - Stud wall - DF	3.00"	3.00"	1.50"	1841	513	244	886/-886	3484/-886	Blocking
2 - Hanger on 16" DF beam	3.00"	Hanger[1]	3.47"	5649	3492	435	114/-114	9690/-114	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)	11' 6" o/c	
Bottom Edge (Lu)	13' 8" 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	HGU3.63/11-SDS	5.25"	N/A	36-SDS25212	24-SDS25212	

- 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)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 13' 7 1/2"	N/A	16.3	--	--	--	
1 - Uniform (PSF)	0 to 13' 10 1/2" (Top)	1' 2 3/4"	20.0	-	25.0	-	Default Load
2 - Point (lb)	1' 8" (Top)	N/A	-	-	-	1000	# w/ 2.5 overstrength
3 - Uniform (PSF)	0 to 13' 10 1/2" (Top)	11'	12.0	-	-	-	Default Load
4 - Point (lb)	11' 10 3/4" (Front)	N/A	5095	4005	252	-	Linked from: 21, Support 2

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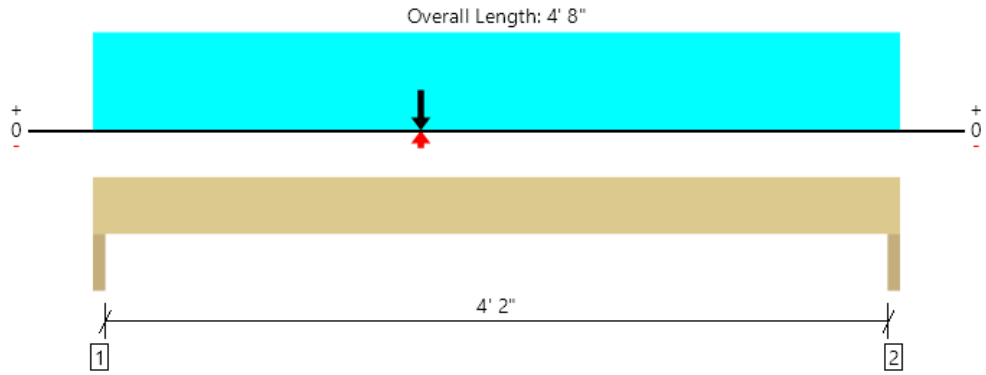
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 23

2 piece(s) 1 3/4" x 9 1/4" 2.0E Microllam® LVL



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) [Group]
Member Reaction (lbs)	5555 @ 1 1/2"	7875 (3.00")	Passed (71%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	5521 @ 1' 1/4"	6151	Passed (90%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	9777 @ 1' 10 3/4"	11204	Passed (87%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.035 @ 1' 10 3/4"	0.147	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.092 @ 1' 10 3/4"	0.221	Passed (L/576)	--	1.0 D + 1.0 L (All Spans) [1]

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Trimmer - DF	3.00"	3.00"	2.12"	3463	2092	332	68/-68	5955/-68	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	2344	1400	246	46/-46	4036/-46	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 8" o/c	
Bottom Edge (Lu)	4' 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 4' 8"	N/A	9.4	--	--	--	
1 - Uniform (PSF)	0 to 4' 8"	1' 2 3/4"	20.0	-	25.0	-	Default Load
2 - Point (lb)	1' 10 3/4"	N/A	5649	3492	435	114/-114	Linked from: 22, Support 2

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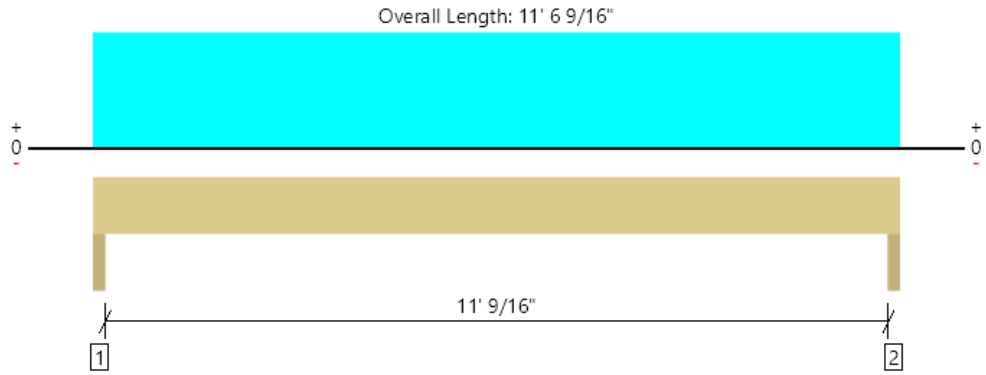
Upper, 26

2 piece(s) 2 x 12 DF No.1



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)	1717 @ 1 1/2"	5625 (3.00")	Passed (31%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1364 @ 1' 2 1/4"	4658	Passed (29%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4743 @ 5' 9 1/4"	6064	Passed (78%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.097 @ 5' 9 1/4"	0.377	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.180 @ 5' 9 1/4"	0.565	Passed (L/753)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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	Snow	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	790	926	1716	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	790	926	1716	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 8" o/c	
Bottom Edge (Lu)	11' 7" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 11' 6 9/16"	N/A	8.6	--	
1 - Uniform (PSF)	0 to 11' 6 9/16"	6' 5"	20.0	25.0	Default Load

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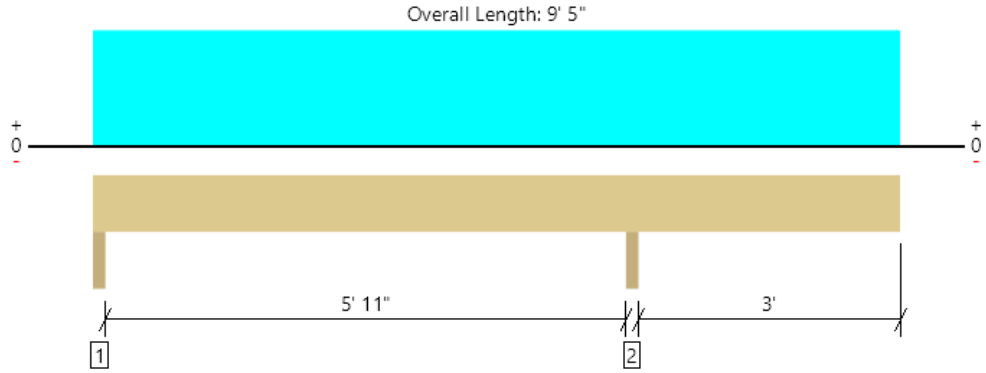
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 27
1 piece(s) 2 x 12 DF No.1



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)	2051 @ 6' 3 1/2"	2813 (3.00")	Passed (73%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	824 @ 5' 2 3/4"	2329	Passed (35%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-1431 @ 6' 3 1/2"	3032	Passed (47%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.026 @ 9' 5"	0.208	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.035 @ 9' 5"	0.313	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	321	451	772	None
2 - Trimmer - DF	3.00"	3.00"	2.19"	928	1123	2051	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 5"	N/A	4.3	--	
1 - Uniform (PSF)	0 to 9' 5"	6' 5"	20.0	25.0	Default Load

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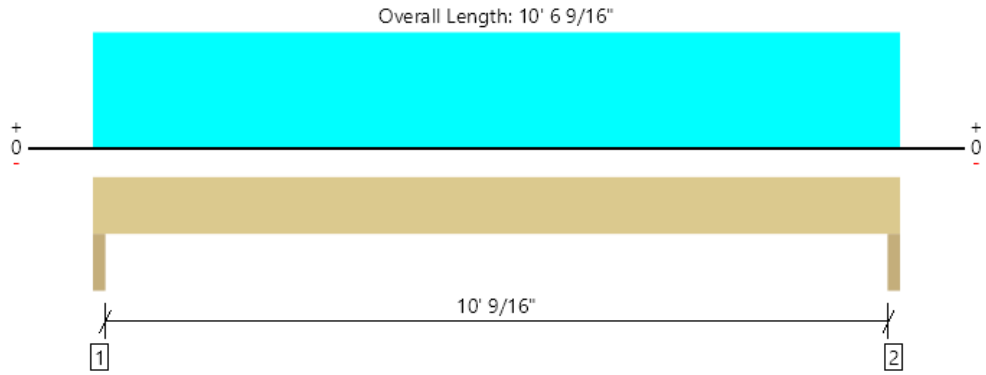
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 28

2 piece(s) 2 x 12 DF No.1



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)	1568 @ 1 1/2"	5625 (3.00")	Passed (28%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1215 @ 1' 2 1/4"	4658	Passed (26%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3941 @ 5' 3 1/4"	6064	Passed (65%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.067 @ 5' 3 5/16"	0.343	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.124 @ 5' 3 1/4"	0.515	Passed (L/994)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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	Snow	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	722	846	1568	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	722	846	1568	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 7" o/c	
Bottom Edge (Lu)	10' 7" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 10' 6 9/16"	N/A	8.6	--	
1 - Uniform (PSF)	0 to 10' 6 9/16"	6' 5"	20.0	25.0	Default Load

Weyerhaeuser Notes

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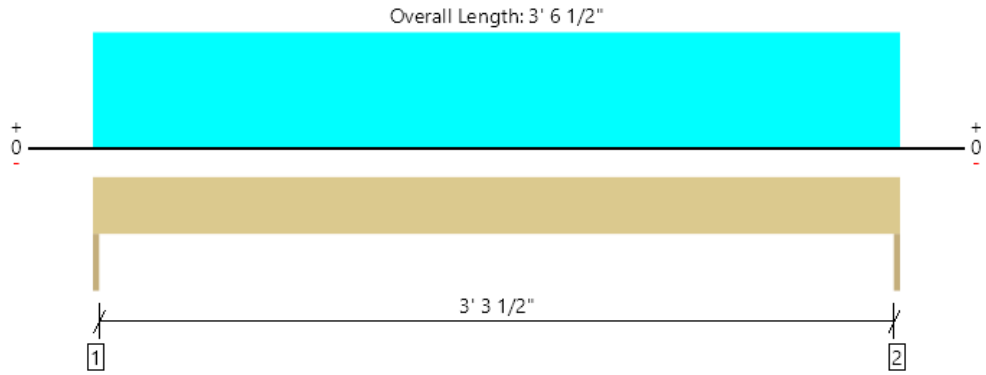
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 29

1 piece(s) 2 x 12 DF No.1



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)	519 @ 0	1406 (1.50")	Passed (37%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	208 @ 1' 3/4"	2329	Passed (9%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	459 @ 1' 9 1/4"	3032	Passed (15%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.002 @ 1' 9 1/4"	0.118	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.003 @ 1' 9 1/4"	0.177	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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	Snow	Total	
1 - Trimmer - DF	1.50"	1.50"	1.50"	235	284	519	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	235	284	519	None

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.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 6 1/2"	N/A	4.3	--	
1 - Uniform (PSF)	0 to 3' 6 1/2"	6' 5"	20.0	25.0	Default Load

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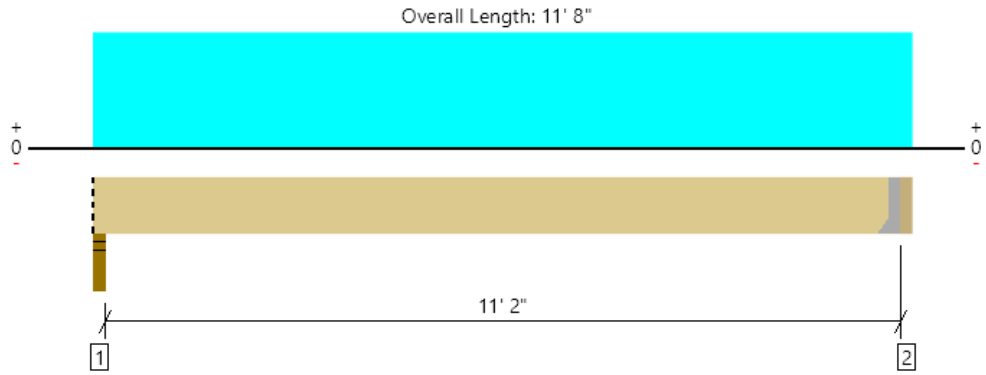
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 30
2 piece(s) 2 x 6 DF No.1



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)	532 @ 11' 5"	2813 (1.50")	Passed (19%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	489 @ 10' 11 1/2"	2277	Passed (21%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1501 @ 5' 9 1/4"	1884	Passed (80%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.259 @ 5' 9 1/4"	0.282	Passed (L/524)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.487 @ 5' 9 1/4"	0.565	Passed (L/278)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) 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	Snow	Total	
1 - Stud wall - DF	3.00"	3.00"	1.50"	255	289	544	Blocking
2 - Hanger on 5 1/2" DF beam	3.00"	Hanger[1]	1.50"	259	295	554	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)	11' 5" o/c	
Bottom Edge (Lu)	11' 5" 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	LUS26-2	2.00"	N/A	4-10dx1.5	3-10d	

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 11' 5"	N/A	4.2	--	
1 - Uniform (PSF)	0 to 11' 8" (Top)	2'	20.0	25.0	Default Load

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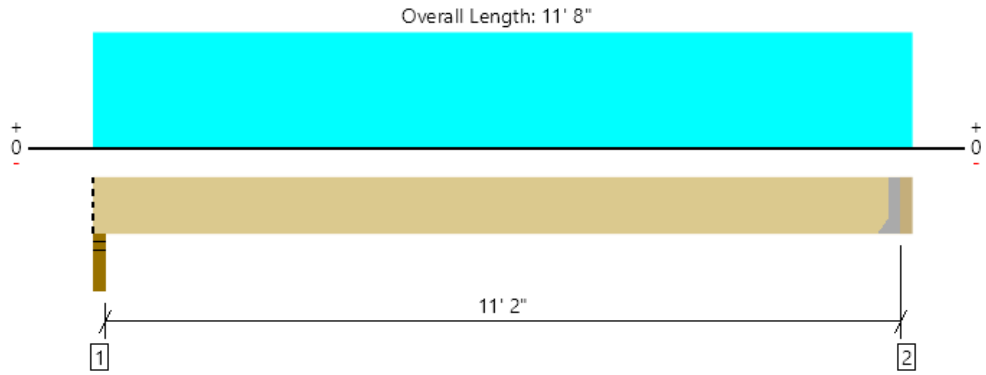
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 31

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



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)	1726 @ 11' 5"	1969 (1.50")	Passed (88%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1214 @ 10' 1"	5320	Passed (23%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4487 @ 5' 9 1/4"	15557	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.029 @ 5' 9 1/4"	0.282	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.114 @ 5' 9 1/4"	0.565	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	3.00"	3.00"	1.61"	1317	308	289	1914	Blocking
2 - Hanger on 16" DF beam	3.00"	Hanger[1]	1.50"	1343	314	295	1952	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)	11' 5" o/c	
Bottom Edge (Lu)	11' 5" 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	Connector not found	N/A	N/A	N/A	N/A	

- 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)	0 to 11' 5"	N/A	8.2	--	--	
1 - Uniform (PSF)	0 to 11' 8" (Top)	2'	20.0	-	25.0	Default Load
2 - Uniform (PSF)	0 to 11' 8" (Top)	11'	12.0	-	-	Default Load
3 - Uniform (PSF)	0 to 11' 8" (Top)	1' 4"	36.0	40.0	-	Default Load

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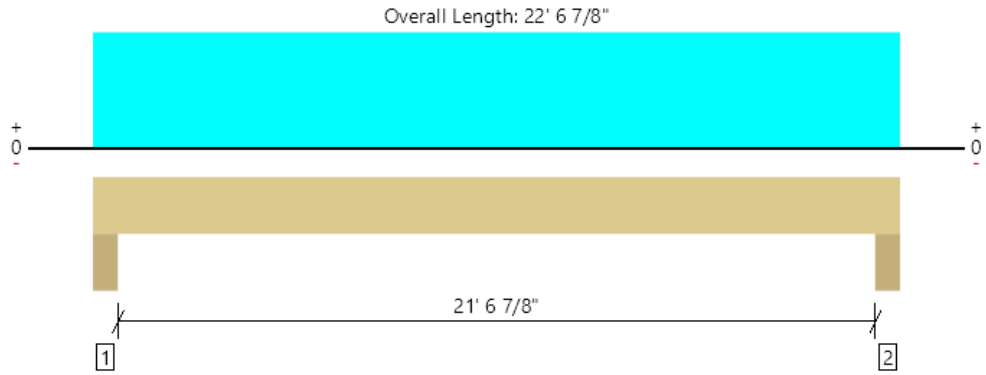
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 32

1 piece(s) 5 1/2" x 24" 24F-V4 DF Glulam



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)	21122 @ 4 1/2"	20625 (6.00")	Passed (102%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	16443 @ 2' 6"	26818	Passed (61%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Pos Moment (Ft-lbs)	111407 @ 11' 3 7/16"	112079	Passed (99%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.359 @ 11' 3 7/16"	0.727	Passed (L/729)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.837 @ 11' 3 7/16"	1.091	Passed (L/313)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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 factor of 0.92 that was calculated using length L = 21' 9 7/8".
- 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	Snow	Total	
1 - Plate - DF	6.00"	6.00"	6.14"	12065	5521	6554	24140	None
2 - Plate - DF	6.00"	6.00"	6.14"	12065	5521	6554	24140	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 3" o/c	
Bottom Edge (Lu)	22' 7" 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 22' 6 7/8"	N/A	32.1	--	--	
1 - Uniform (PSF)	0 to 22' 6 7/8"	11'	20.0	-	25.0	Default Load
2 - Uniform (PSF)	0 to 22' 6 7/8"	12' 2 3/4"	36.0	40.0	-	Default Load
3 - Uniform (PSF)	0 to 22' 6 7/8"	12' 2 3/4"	20.0	-	25.0	Default Load
4 - Uniform (PSF)	0 to 22' 6 7/8"	11'	12.0	-	-	Default Load

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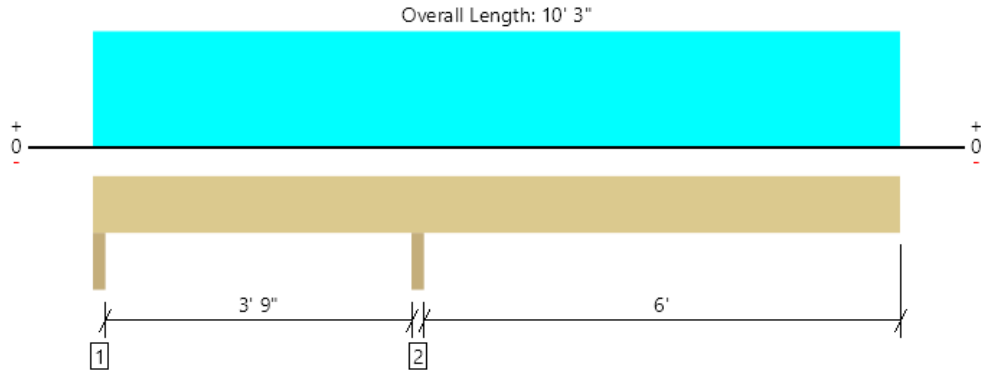
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 33
1 piece(s) 3 1/2" x 10 1/2" 24F-V4 DF Glulam

An excessive uplift of -1585 lbs at support located at 1 1/2" failed this product. ok, detail for uplift



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)	6458 @ 4' 1 1/2"	6563 (3.00")	Passed (98%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2867 @ 3' 1 1/2"	7466	Passed (38%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	0 @ N/A	N/A	Passed (N/A)	--	N/A
Neg Moment (Ft-lbs)	-9454 @ 4' 1 1/2"	11402	Passed (83%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.251 @ 10' 3"	0.408	Passed (2L/586)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.455 @ 10' 3"	0.613	Passed (2L/324)	--	1.0 D + 1.0 S (Alt Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Right cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical negative moment adjusted by a volume factor of 1.00 that was calculated using length L = 10' 1 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	Snow	Total	
1 - Plate - DF	3.00"	3.00"	1.50"	-587	-997	-1584	None
2 - Plate - DF	3.00"	3.00"	2.95"	2934	3524	6458	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 3" o/c	
Bottom Edge (Lu)	10' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 10' 3"	N/A	8.9	--	
1 - Uniform (PSF)	0 to 10' 3"	11'	20.0	25.0	Default Load

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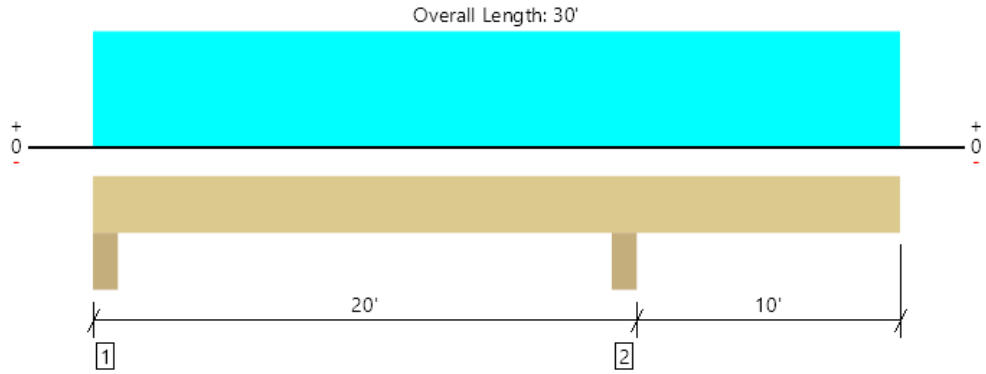
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Upper, 34

1 piece(s) 3 1/2" x 24" 24F-V4 DF Glulam

Right cantilever exceeds the maximum braced cantilever length of 7'. ok



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)	11675 @ 19' 9"	13125 (6.00")	Passed (89%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	5231 @ 17' 6"	17066	Passed (31%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	15279 @ 8' 7/8"	77268	Passed (20%)	1.15	1.0 D + 1.0 S (Alt Spans)
Neg Moment (Ft-lbs)	-27078 @ 19' 9"	44067	Passed (61%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.216 @ 30'	0.683	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.317 @ 30'	1.025	Passed (2L/778)	--	1.0 D + 1.0 S (Alt Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Right cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Moment capacity over cantilever support 2 has been reduced by 25% to lessen the effects of buckling.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 15' 4 13/16".
- Critical negative moment adjusted by a volume factor of 0.99 that was calculated using length L = 17' 7 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	Snow	Total	
1 - Plate - DF	6.00"	6.00"	1.90"	1768	2394	4162	None
2 - Plate - DF	6.00"	6.00"	5.34"	5446	6228	11674	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	30' o/c	
Bottom Edge (Lu)	25' 5" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 30'	N/A	20.4	--	
1 - Uniform (PSF)	0 to 30'	11'	20.0	25.0	Default Load

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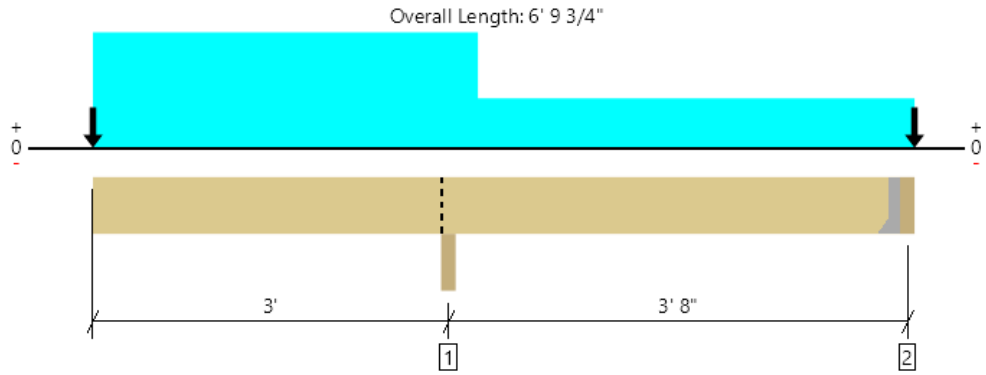
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 35

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



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)	7723 @ 3'	7656 (3.50")	Passed (101%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1832 @ 1' 6 1/4"	10640	Passed (17%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-5420 @ 3'	31114	Passed (17%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.025 @ 0	0.200	Passed (2L/999+)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.045 @ 0	0.300	Passed (2L/999+)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (Alt Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/0.2") and TL (2L/240).
- Left cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- -785 lbs uplift at support located at 6' 6 1/4". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Seismic	Total	
1 - Beam - DF	3.50"	3.50"	3.53"	4014	1988	1661	1852/-1852	9515/-1852	Blocking
2 - Hanger on 16" DF beam	3.50"	Hanger[1]	1.50"	-222	4/-562	389/-29	1000/-1000	1393/-1813	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)	6' 6" o/c	
Bottom Edge (Lu)	6' 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
2 - Face Mount Hanger	HGU3.63/11-SDS	5.25"	N/A	36-SDS25212	24-SDS25212	

- 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)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 6' 6 1/4"	N/A	16.3	--	--	--	
1 - Uniform (PSF)	0 to 3' 3" (Top)	11'	36.0	40.0	-	-	Default Load
2 - Point (lb)	0 (Top)	N/A	-	-	-	1000	# chord force w/2.5 overstrength
3 - Point (lb)	6' 9 3/4" (Top)	N/A	-	-	-	1000	# chord force w/2.5 overstrength
4 - Uniform (PSF)	0 to 6' 9 3/4" (Top)	11'	12.0	-	-	-	
5 - Uniform (PSF)	0 to 6' 9 3/4" (Top)	11'	20.0	-	25.0	-	

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

Weyerhaeuser

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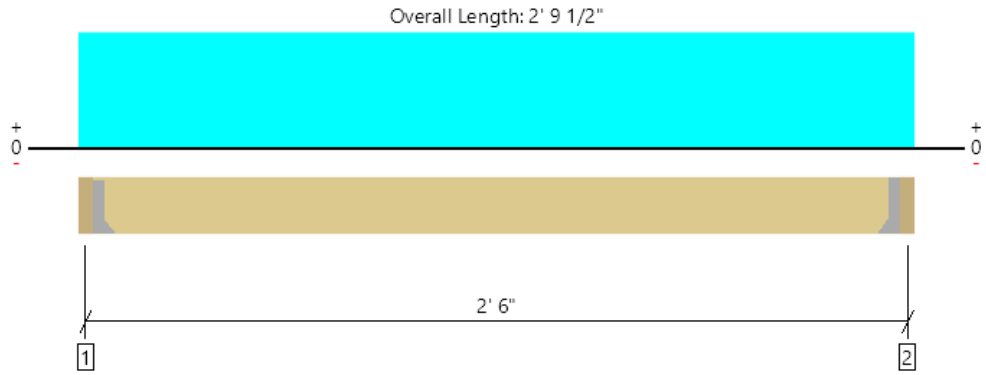
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 36

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



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)	701 @ 3 1/2"	1969 (1.50")	Passed (36%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	146 @ 1' 7 1/2"	6118	Passed (2%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	387 @ 1' 4 3/4"	17891	Passed (2%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.001 @ 1' 4 3/4"	0.055	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.002 @ 1' 4 3/4"	0.110	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Snow	Total	
1 - Hanger on 16" DF beam	3.50"	Hanger[1]	1.50"	500	384	884	See note [1]
2 - Hanger on 16" DF beam	3.50"	Hanger[1]	1.50"	500	384	884	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)	2' 3" o/c	
Bottom Edge (Lu)	2' 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	Connector not found	N/A	N/A	N/A	N/A	
2 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 2' 6"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 2' 9 1/2" (Top)	11'	12.0	-	
2 - Uniform (PSF)	0 to 2' 9 1/2" (Top)	11'	20.0	25.0	

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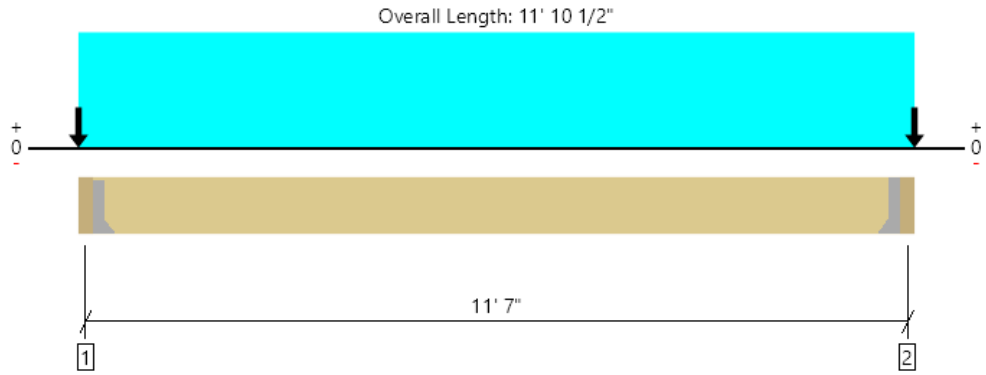
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 37

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



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)	3586 @ 3 1/2"	3586 (2.73")	Passed (100%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2739 @ 1' 7 1/2"	6118	Passed (45%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	10124 @ 5' 11 1/4"	17891	Passed (57%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.102 @ 5' 11 1/4"	0.282	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.236 @ 5' 11 1/4"	0.565	Passed (L/574)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Snow	Seismic	Total	
1 - Hanger on 16" DF beam	3.50"	Hanger[1]	2.73"	2136	1633	100/-100	3869/-100	See note [1]
2 - Hanger on 16" DF beam	3.50"	Hanger[1]	2.73"	2136	1633	100/-100	3869/-100	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)	5' 3" o/c	
Bottom Edge (Lu)	11' 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	Connector not found	N/A	N/A	N/A	N/A	
2 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	3 1/2" to 11' 7"	N/A	8.2	--	--	
1 - Uniform (PSF)	0 to 11' 10 1/2" (Top)	11'	12.0	-	-	
2 - Uniform (PSF)	0 to 11' 10 1/2" (Top)	11'	20.0	25.0	-	
3 - Point (lb)	0 (Top)	N/A	-	-	100	# chord force w/2.5 overstrength
4 - Point (lb)	11' 10 1/2" (Top)	N/A	-	-	100	# chord force w/2.5 overstrength

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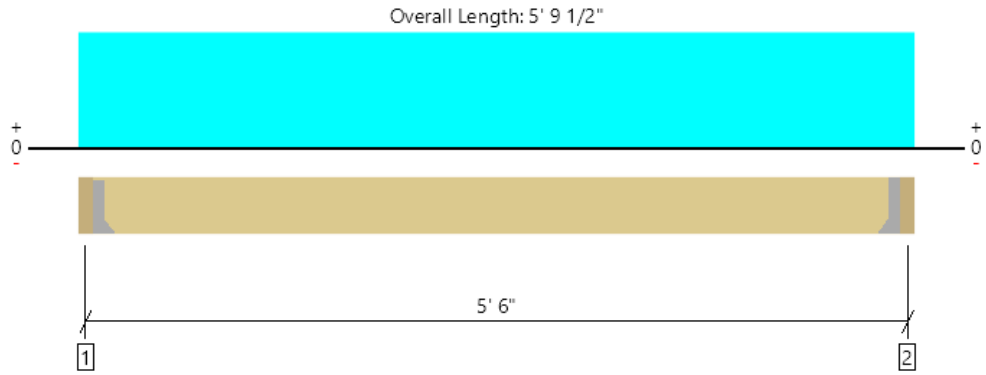
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 38

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



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)	1654 @ 3 1/2"	1969 (1.50")	Passed (84%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	807 @ 1' 7 1/2"	6118	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2154 @ 2' 10 3/4"	17891	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.008 @ 2' 10 3/4"	0.130	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.018 @ 2' 10 3/4"	0.260	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Snow	Total	
1 - Hanger on 16" DF beam	3.50"	Hanger[1]	1.50"	1041	796	1837	See note [1]
2 - Hanger on 16" DF beam	3.50"	Hanger[1]	1.50"	1041	796	1837	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)	5' 3" o/c	
Bottom Edge (Lu)	5' 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	Connector not found	N/A	N/A	N/A	N/A	
2 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 5' 6"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 5' 9 1/2" (Top)	11'	12.0	-	
2 - Uniform (PSF)	0 to 5' 9 1/2" (Top)	11'	20.0	25.0	

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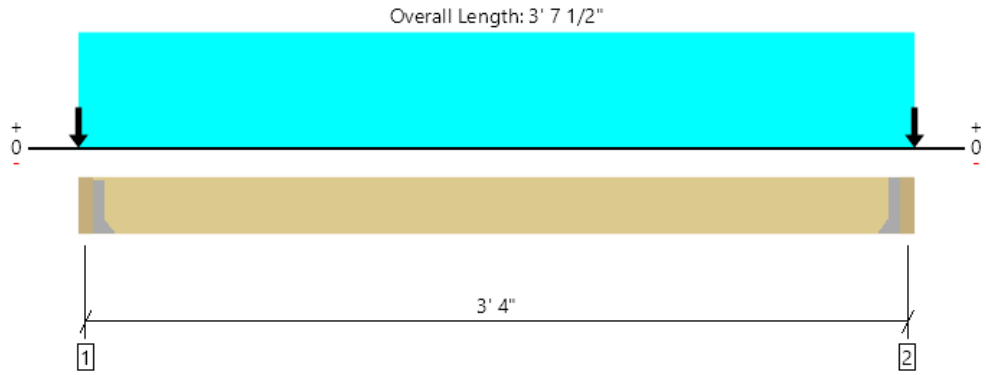
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 39

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



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)	966 @ 3 1/2"	1969 (1.50")	Passed (49%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	119 @ 1' 7 1/2"	6118	Passed (2%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	735 @ 1' 9 3/4"	17891	Passed (4%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.002 @ 1' 9 3/4"	0.076	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.004 @ 1' 9 3/4"	0.152	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Snow	Seismic	Total	
1 - Hanger on 16" DF beam	3.50"	Hanger[1]	1.50"	651	498	100/-100	1249/-100	See note [1]
2 - Hanger on 16" DF beam	3.50"	Hanger[1]	1.50"	651	498	100/-100	1249/-100	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)	3' 1" o/c	
Bottom Edge (Lu)	3' 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	Connector not found	N/A	N/A	N/A	N/A	
2 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	3 1/2" to 3' 4"	N/A	8.2	--	--	
1 - Uniform (PSF)	0 to 3' 7 1/2" (Top)	11'	12.0	-	-	
2 - Uniform (PSF)	0 to 3' 7 1/2" (Top)	11'	20.0	25.0	-	
3 - Point (lb)	0 (Top)	N/A	-	-	100	# chord force w/2.5 overstrength
4 - Point (lb)	3' 7 1/2" (Top)	N/A	-	-	100	# chord force w/2.5 overstrength

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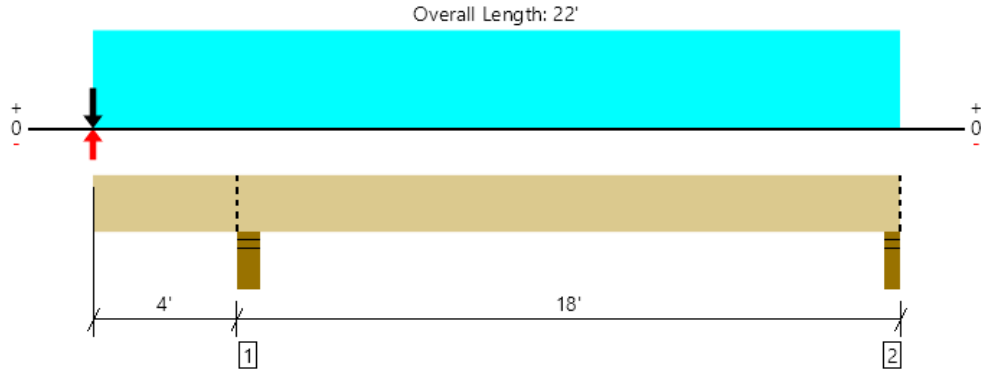
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 40a

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



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) [Group]
Member Reaction (lbs)	3131 @ 4' 2 3/4"	12031 (5.50")	Passed (26%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	1223 @ 2' 8"	12236	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Moment (Ft-lbs)	4622 @ 12' 11 3/8"	31114	Passed (15%)	1.00	1.0 D + 1.0 L (All Spans) [3]
Live Load Defl. (in)	0.122 @ 0	0.211	Passed (2L/832)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (Alt Spans) [1]
Total Load Defl. (in)	0.119 @ 0	0.423	Passed (2L/850)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (Alt Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Seismic	Total	
1 - Stud wall - DF	5.50"	5.50"	1.50"	1215	727/-444	959	1241/-1241	4142/-1685	Blocking
2 - Stud wall - DF	3.75"	3.75"	1.50"	478	587/-28	-186	241/-241	1306/-455	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)	22' o/c	
Bottom Edge (Lu)	22' 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)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 22'	N/A	16.3	--	--	--	
1 - Uniform (PSF)	0 to 22' (Top)	1' 4"	36.0	40.0	-	-	Default Load
2 - Point (lb)	0 (Back)	N/A	500	-	384	-	Linked from: 36, Support 1
3 - Point (lb)	0 (Front)	N/A	-222	4/-562	389/-29	1000/-1000	Linked from: 35, Support 2

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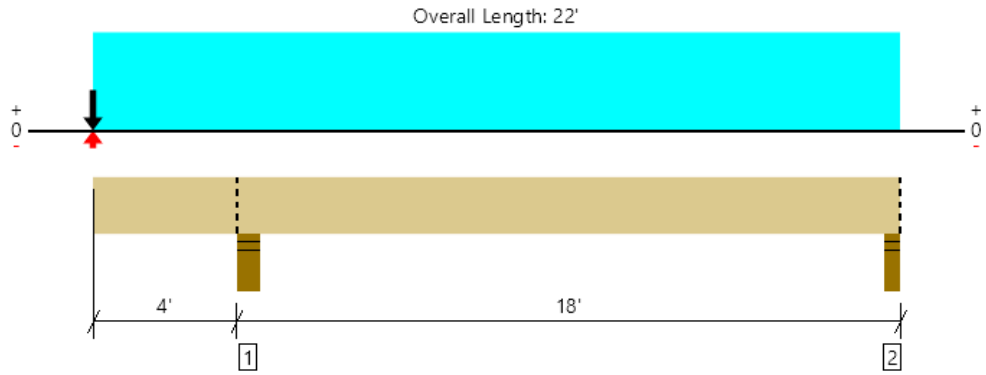
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 40b

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



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) [Group]
Member Reaction (lbs)	6643 @ 4' 2 3/4"	12031 (5.50")	Passed (55%)	--	1.0 D + 1.0 S (All Spans) [1]
Shear (lbs)	4825 @ 2' 8"	12236	Passed (39%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Moment (Ft-lbs)	-20254 @ 4' 2 3/4"	35781	Passed (57%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Live Load Defl. (in)	0.207 @ 0	0.211	Passed (2L/490)	--	1.0 D + 1.0 S (All Spans) [1]
Total Load Defl. (in)	0.447 @ 0	0.423	Failed (2L/228)	--	1.0 D + 1.0 S (All Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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.
- -574 lbs uplift at support located at 21' 9 3/4". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Seismic	Total	
1 - Stud wall - DF	5.50"	5.50"	3.04"	4140	722	2502	124/-124	7488/-124	Blocking
2 - Stud wall - DF	3.75"	3.75"	1.50"	-89	479/-27	-485	24/-24	503/-625	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)	22' o/c	
Bottom Edge (Lu)	8' 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)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 22'	N/A	16.3	--	--	--	
1 - Uniform (PSF)	0 to 22' (Top)	1' 4"	36.0	40.0	-	-	Default Load
2 - Point (lb)	0 (Back)	N/A	500	-	384	-	Linked from: 36, Support 2
3 - Point (lb)	0 (Front)	N/A	2136	-	1633	100/-100	Linked from: 37, Support 1

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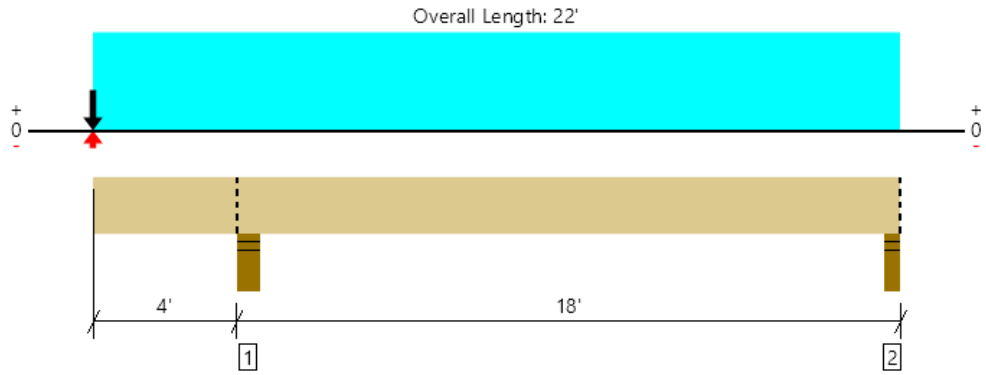
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 41

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



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) [Group]
Member Reaction (lbs)	7825 @ 4' 2 3/4"	12031 (5.50")	Passed (65%)	--	1.0 D + 1.0 S (All Spans) [1]
Shear (lbs)	5778 @ 2' 8"	12236	Passed (47%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Moment (Ft-lbs)	-24284 @ 4' 2 3/4"	35781	Passed (68%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Live Load Defl. (in)	0.250 @ 0	0.211	Failed (2L/406)	--	1.0 D + 1.0 S (All Spans) [1]
Total Load Defl. (in)	0.545 @ 0	0.423	Failed (2L/186)	--	1.0 D + 1.0 S (All Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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.
- -803 lbs uplift at support located at 21' 9 3/4". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Seismic	Total	
1 - Stud wall - DF	5.50"	5.50"	3.58"	4812	722	3013	124/-124	8671/-124	Blocking
2 - Stud wall - DF	3.75"	3.75"	1.50"	-219	479/-27	-584	24/-24	503/-854	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)	22' 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)	Snow (1.15)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 22'	N/A	16.3	--	--	--	
1 - Uniform (PSF)	0 to 22' (Top)	1' 4"	36.0	40.0	-	-	Default Load
2 - Point (lb)	0 (Front)	N/A	2136	-	1633	100/-100	Linked from: 37, Support 2
3 - Point (lb)	0 (Front)	N/A	1041	-	796	-	Linked from: 38, Support 1

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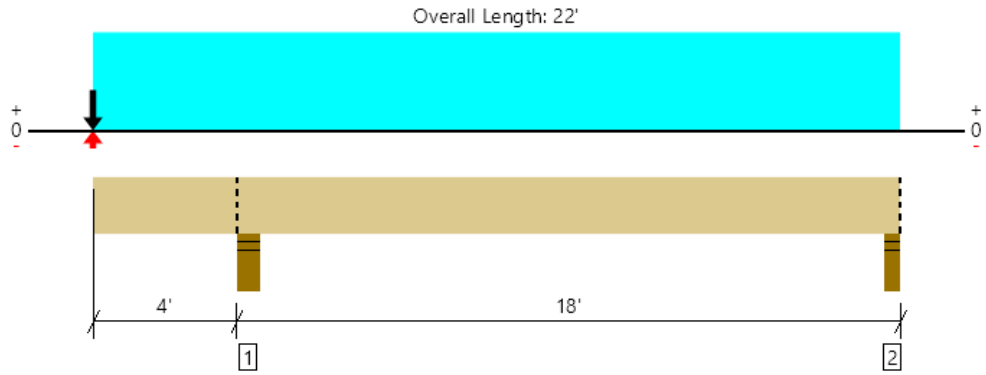
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 42

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



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) [Group]
Member Reaction (lbs)	4780 @ 4' 2 3/4"	12031 (5.50")	Passed (40%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	3158 @ 2' 8"	12236	Passed (26%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Moment (Ft-lbs)	-13204 @ 4' 2 3/4"	35781	Passed (37%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Live Load Defl. (in)	0.133 @ 0	0.211	Passed (2L/764)	--	1.0 D + 1.0 S (All Spans) [1]
Total Load Defl. (in)	0.276 @ 0	0.423	Passed (2L/368)	--	1.0 D + 1.0 S (All Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Seismic	Total	
1 - Stud wall - DF	5.50"	5.50"	2.18"	2969	722	1605	124/-124	5420/-124	Blocking
2 - Stud wall - DF	3.75"	3.75"	1.50"	138	479/-27	-311	24/-24	641/-362	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)	22' o/c	
Bottom Edge (Lu)	14' 3" 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)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 22'	N/A	16.3	--	--	--	
1 - Uniform (PSF)	0 to 22' (Top)	1' 4"	36.0	40.0	-	-	Default Load
2 - Point (lb)	0 (Front)	N/A	1041	-	796	-	Linked from: 38, Support 2
3 - Point (lb)	0 (Front)	N/A	651	-	498	100/-100	Linked from: 39, Support 1

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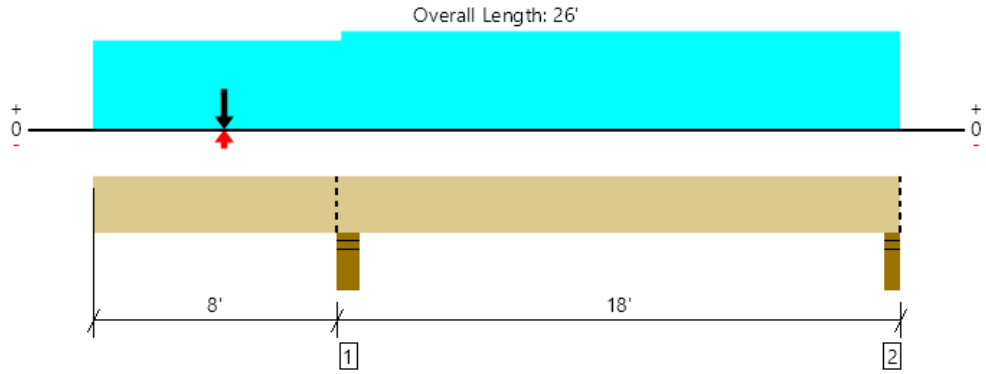
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 43

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

Left cantilever exceeds the maximum braced cantilever length of 7'. ok



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) [Group]
Member Reaction (lbs)	11383 @ 8' 2 3/4"	18047 (5.50")	Passed (63%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	5408 @ 9' 9 1/2"	15960	Passed (34%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	-20703 @ 8' 2 3/4"	35003	Passed (59%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.400 @ 0	0.411	Passed (2L/494)	--	1.0 D + 1.0 L (Alt Spans) [1]
Total Load Defl. (in)	0.496 @ 0	0.823	Passed (2L/398)	--	1.0 D + 1.0 L (Alt Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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.
- Moment capacity over cantilever support 1 has been reduced by 25% to lessen the effects of buckling.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Seismic	Total	
1 - Stud wall - DF	5.50"	5.50"	3.47"	4322	7061	611	123/-123	12117/-123	Blocking
2 - Stud wall - DF	3.75"	3.75"	1.50"	1298	3472/-693	-113	23/-23	4793/-829	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)	20' 7" o/c	
Bottom Edge (Lu)	18' 3" 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)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 26'	N/A	24.5	--	--	--	
1 - Uniform (PSF)	8' to 26' (Front)	8"	36.0	40.0	-	-	Default Load
2 - Point (lb)	4' 2 3/4" (Front)	N/A	651	-	498	100/-100	Linked from: 39, Support 2
3 - Uniform (PSF)	0 to 26' (Back)	6'	25.0	60.0	-	-	Default Load

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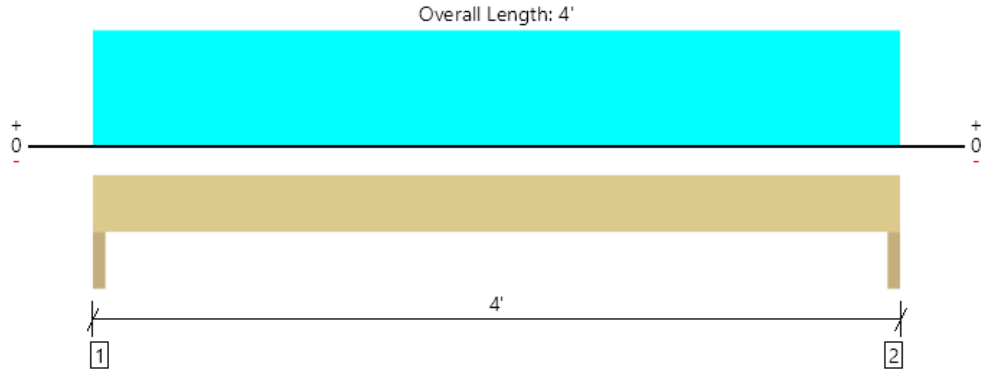
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 44
2 piece(s) 2 x 8 DF No.1



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)	2580 @ 1 1/2"	5625 (3.00")	Passed (46%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1368 @ 10 1/4"	2610	Passed (52%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2098 @ 2'	2628	Passed (80%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.015 @ 2'	0.125	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.035 @ 2'	0.188	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Plate - DF	3.00"	3.00"	1.50"	1507	880	550	2937	None
2 - Plate - DF	3.00"	3.00"	1.50"	1507	880	550	2937	None

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.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 4'	N/A	5.5	--	--	
1 - Uniform (PSF)	0 to 4'	11'	20.0	-	25.0	Default Load
2 - Uniform (PSF)	0 to 4'	11'	36.0	40.0	-	Default Load
3 - Uniform (PSF)	0 to 4'	11'	12.0	-	-	Default Load

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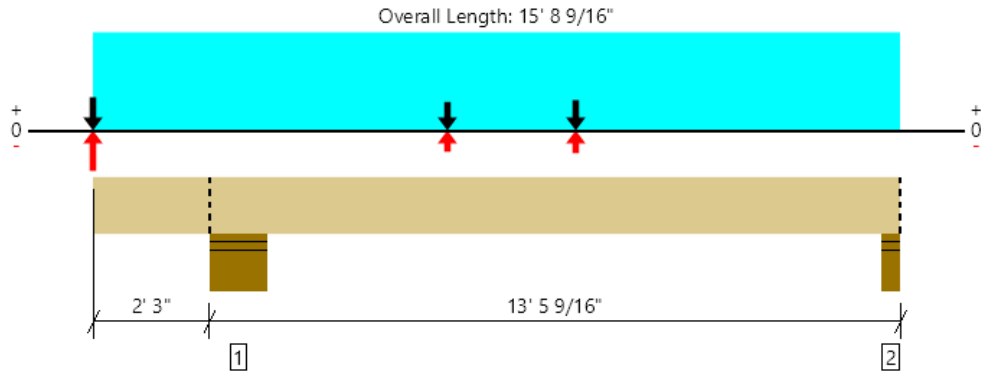
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 45

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



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) [Group]
Member Reaction (lbs)	8819 @ 15' 5 9/16"	9844 (4.50")	Passed (90%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (Alt Spans) [5]
Shear (lbs)	6602 @ 4' 9"	10640	Passed (62%)	1.00	1.0 D + 1.0 L (All Spans) [5]
Moment (Ft-lbs)	26426 @ 9' 1 11/16"	31114	Passed (85%)	1.00	1.0 D + 1.0 L (Alt Spans) [5]
Live Load Defl. (in)	0.174 @ 9' 1 5/8"	0.316	Passed (L/870)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (Alt Spans) [5]
Total Load Defl. (in)	0.386 @ 9' 1 7/8"	0.632	Passed (L/393)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (Alt Spans) [5]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Seismic	Total	
1 - Stud wall - DF	14.00"	14.00"	5.97"	7002	5379	1755	1643/-1643	15779/-1643	Blocking
2 - Stud wall - DF	4.50"	4.50"	4.03"	4977	3327/-247	1496	731/-731	10531/-978	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' 1" o/c	
Bottom Edge (Lu)	15' 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)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 15' 8 9/16"	N/A	16.3	--	--	--	
1 - Uniform (PSF)	0 to 15' 8 9/16" (Top)	11'	36.0	40.0	-	-	Default Load
2 - Uniform (PSF)	0 to 15' 8 9/16" (Top)	11'	20.0	-	25.0	-	Default Load
3 - Uniform (PSF)	0 to 15' 8 9/16" (Top)	11'	12.0	-	-	-	Default Load
4 - Point (lb)	9' 4 13/16" (Front)	N/A	-	-	-	1000	# chord force w/2.5 overstrength
5 - Point (lb)	6' 10 13/16" (Front)	N/A	478	587/-28	-186	241/-241	Linked from: 40a, Support 2
6 - Point (lb)	9' 4 13/16" (Front)	N/A	-89	479/-27	-485	24/-24	Linked from: 40b, Support 2
7 - Point (lb)	0 (Front)	N/A	-421	479/-505	-400	1342/-1342	Linked from: 46, Support 2

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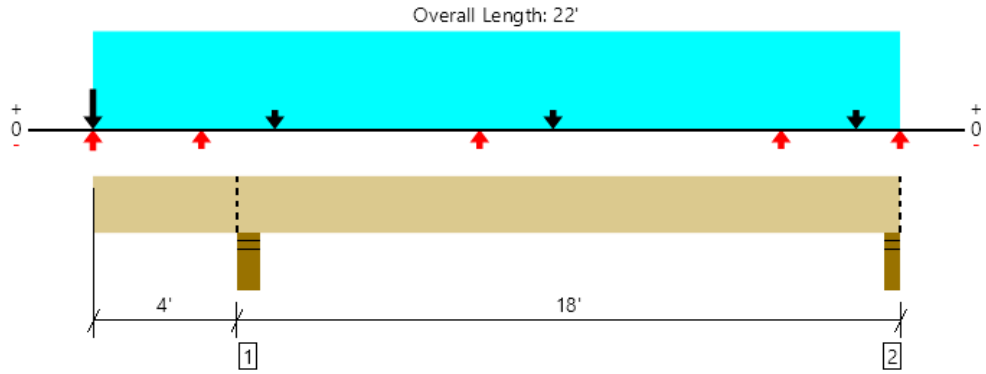
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 46

ok, detail for uplift

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

An excessive uplift of -1099 lbs at support located at 21' 9 3/4" failed this product. ok, detail for uplift



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) [Group]
Member Reaction (lbs)	11463 @ 4' 2 3/4"	12031 (5.50")	Passed (95%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	6316 @ 2' 8"	10640	Passed (59%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	-26436 @ 4' 2 3/4"	31114	Passed (85%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.429 @ 0	0.211	Failed (2L/236)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (Alt Spans) [1]
Total Load Defl. (in)	0.810 @ 0	0.423	Failed (2L/126)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (Alt Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Seismic	Total	
1 - Stud wall - DF	5.50"	5.50"	5.24"	5850	3188	2061	3194/-3194	14293/-3194	Blocking
2 - Stud wall - DF	3.75"	3.75"	1.50"	-421	479/-505	-400	1342/-1342	1821/-2668	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)	22' o/c	
Bottom Edge (Lu)	4' 11" 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)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 22'	N/A	16.3	--	--	--	
1 - Uniform (PSF)	0 to 22' (Top)	1' 4"	36.0	40.0	-	-	Default Load
2 - Point (lb)	0 (Front)	N/A	-	-	-	1000	# chord force w/2.5 overstrength
3 - Point (lb)	2' 11 1/2" (Front)	N/A	-	-	-	-1000	# chord force w/2.5 overstrength
4 - Point (lb)	4' 11 1/2" (Front)	N/A	-	-	-	1000	# chord force w/2.5 overstrength
5 - Point (lb)	10' 6 1/2" (Front)	N/A	-	-	-	-1000	# chord force w/2.5 overstrength
6 - Point (lb)	12' 6 1/2" (Front)	N/A	-	-	-	1000	# chord force w/2.5 overstrength
7 - Point (lb)	18' 9 1/8" (Front)	N/A	-	-	-	-1000	# chord force w/2.5 overstrength
8 - Point (lb)	20' 9 5/8" (Front)	N/A	-	-	-	1000	# chord force w/2.5 overstrength
9 - Point (lb)	22' (Front)	N/A	-	-	-	-1000	# chord force w/2.5 overstrength
10 - Point (lb)	0 (Front)	N/A	4014	1988	1661	1852/-1852	Linked from: 35, Support 1

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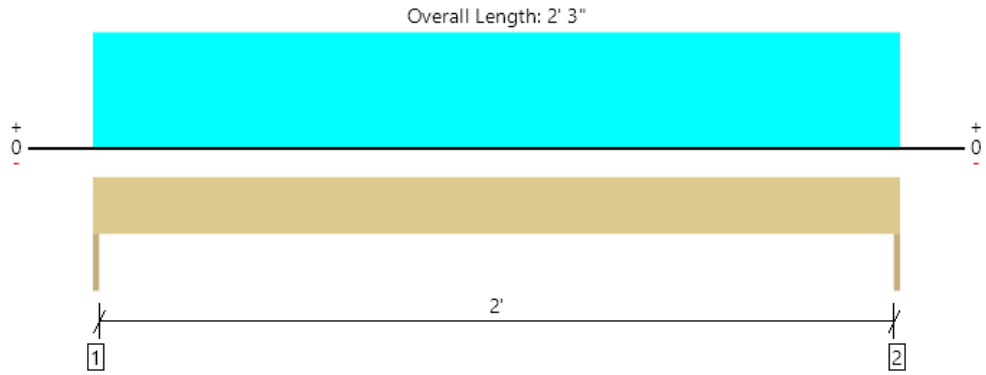
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 47
2 piece(s) 2 x 4 DF No.1



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)	986 @ 0	2813 (1.50")	Passed (35%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	621 @ 5"	1260	Passed (49%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	554 @ 1' 1 1/2"	766	Passed (72%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.017 @ 1' 1 1/2"	0.075	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.028 @ 1' 1 1/2"	0.112	Passed (L/974)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Trimmer - DF	1.50"	1.50"	1.50"	381	605	986	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	381	605	986	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 3" o/c	
Bottom Edge (Lu)	2' 3" 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 2' 3"	N/A	2.7	--	
1 - Uniform (PLF)	0 to 2' 3"	N/A	336.0	537.5	Linked from: Cant Floor: Joist, Support 1

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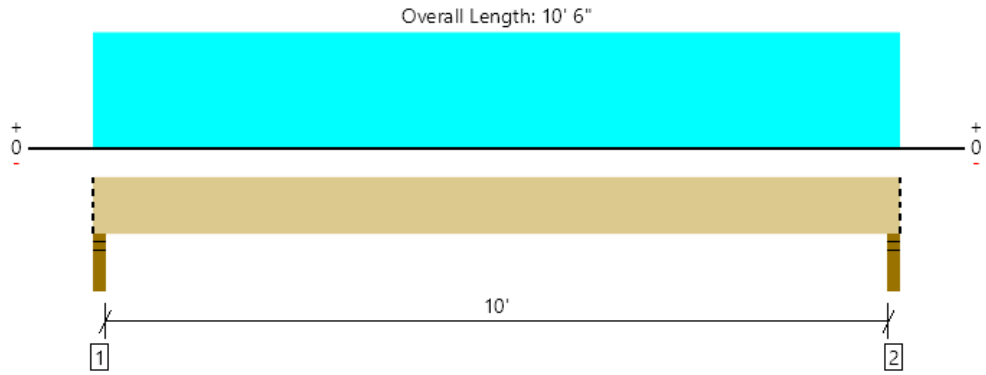
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 48

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



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)	1746 @ 1 1/2"	3281 (3.00")	Passed (53%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1219 @ 1' 7"	5320	Passed (23%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4367 @ 5' 3"	15557	Passed (28%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.048 @ 5' 3"	0.256	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.087 @ 5' 3"	0.512	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	3.00"	3.00"	1.60"	783	963	1746	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.60"	783	963	1746	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)	10' 6" o/c	
Bottom Edge (Lu)	10' 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 10' 6"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 10' 6" (Top)	2' 7"	36.0	40.0	Default Load
2 - Uniform (PSF)	0 to 10' 6" (Top)	1' 4"	36.0	60.0	Default Load

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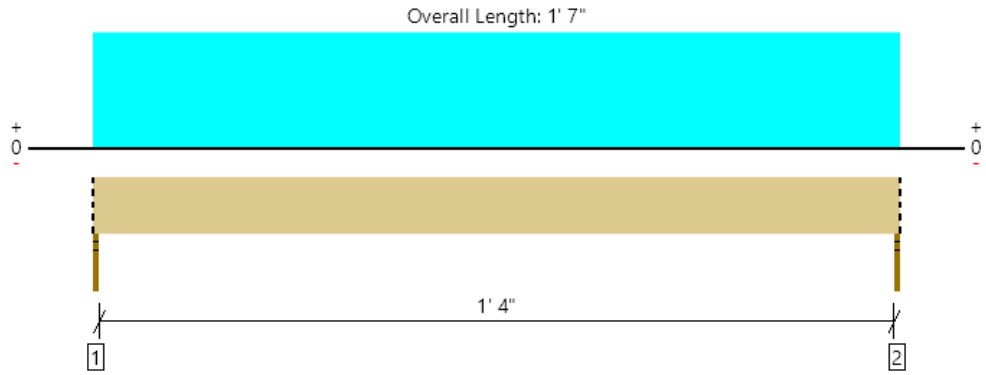
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 49
1 piece(s) 2 x 4 DF No.1



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)	452 @ 0	1406 (1.50")	Passed (32%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	214 @ 5"	630	Passed (34%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	179 @ 9 1/2"	383	Passed (47%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.005 @ 9 1/2"	0.040	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.009 @ 9 1/2"	0.079	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) 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	Total	
1 - Stud wall - DF	1.50"	1.50"	1.50"	215	238	453	Blocking
2 - Stud wall - DF	1.50"	1.50"	1.50"	215	238	453	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)	1' 7" o/c	
Bottom Edge (Lu)	1' 7" 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 1' 7"	N/A	1.3	--	
1 - Uniform (PSF)	0 to 1' 7" (Top)	2' 7"	36.0	40.0	Default Load
2 - Uniform (PSF)	0 to 1' 7" (Top)	4' 11"	36.0	40.0	Default Load

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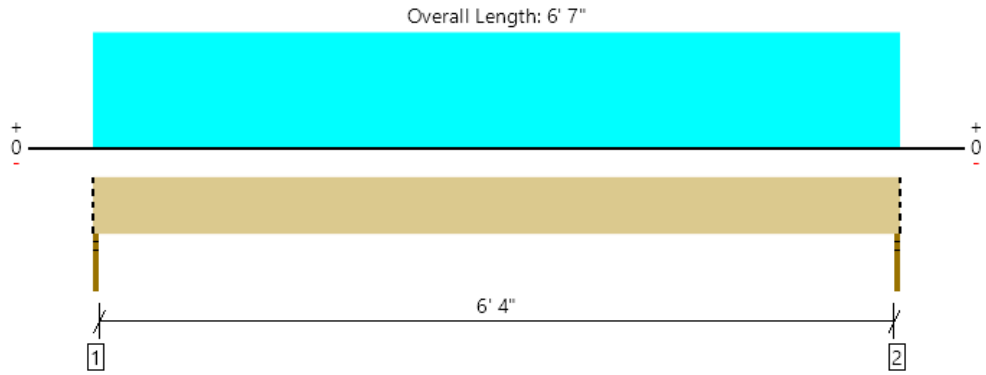
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 50

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



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)	1930 @ 0	3281 (1.50")	Passed (59%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1075 @ 1' 5 1/2"	10640	Passed (10%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3176 @ 3' 3 1/2"	31114	Passed (10%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.009 @ 3' 3 1/2"	0.165	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.017 @ 3' 3 1/2"	0.329	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	1.50"	1.50"	1.50"	943	988	1931	Blocking
2 - Stud wall - DF	1.50"	1.50"	1.50"	943	988	1931	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' 7" o/c	
Bottom Edge (Lu)	6' 7" 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' 7"	N/A	16.3	--	
1 - Uniform (PSF)	0 to 6' 7" (Top)	2' 7"	36.0	40.0	Default Load
2 - Uniform (PSF)	0 to 6' 7" (Top)	4' 11"	36.0	40.0	Default Load

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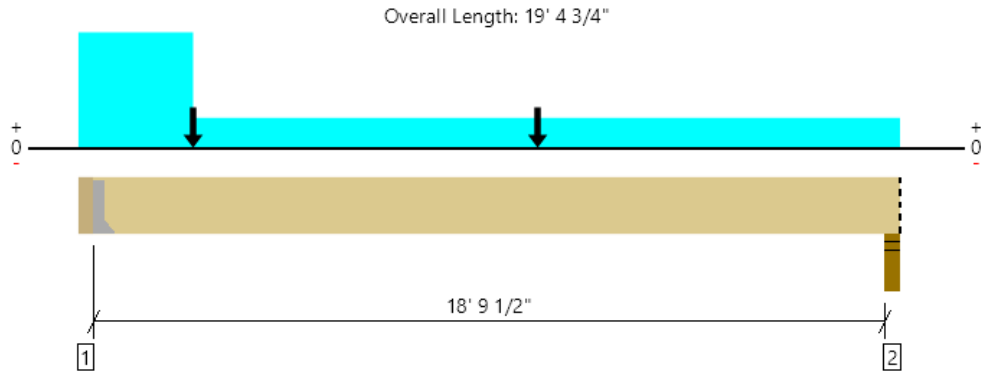
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Upper, 51

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



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)	8747 @ 3 1/2"	8747 (3.33")	Passed (100%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	6764 @ 1' 7 1/2"	12236	Passed (55%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	30126 @ 10' 8 1/4"	35781	Passed (84%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.385 @ 9' 7 11/16"	0.473	Passed (L/589)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.856 @ 9' 7 11/16"	0.946	Passed (L/265)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Hanger on 16" DF beam	3.50"	Hanger[1]	3.33"	5125	2811	2590	10526	See note [1]
2 - Stud wall - DF	3.75"	3.75"	2.41"	2916	1949	1206	6071	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)	4' 8" o/c	
Bottom Edge (Lu)	19' 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	HGU3.63/11-SDS	5.25"	N/A	36-SDS25212	24-SDS25212	

- 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 19' 4 3/4"	N/A	16.3	--	--	
1 - Uniform (PSF)	0 to 19' 4 3/4" (Top)	1' 4"	20.0	-	25.0	Default Load
2 - Uniform (PSF)	0 to 19' 4 3/4" (Top)	4' 11"	36.0	40.0	-	Default Load
3 - Uniform (PSF)	0 to 2' 7 1/2" (Top)	11'	12.0	-	-	Default Load
4 - Uniform (PSF)	0 to 2' 7 1/2" (Top)	9'	36.0	40.0	-	Default Load
5 - Uniform (PSF)	0 to 2' 7 1/2" (Top)	9' 6"	20.0	-	25.0	Default Load
6 - Point (lb)	2' 7 1/2" (Top)	N/A	1041	-	1263	Linked from: 6, Support 1
7 - Point (lb)	10' 8 1/4" (Top)	N/A	1041	-	1263	Linked from: 6, Support 2

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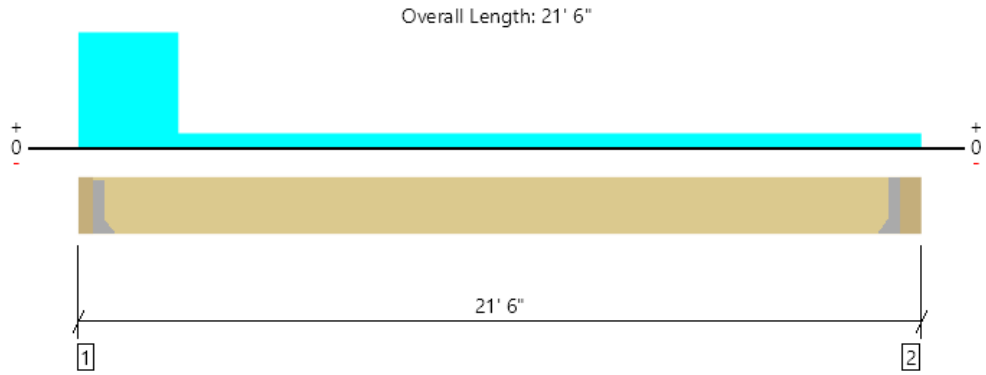
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper, 52

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



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)	2419 @ 3 1/2"	3938 (1.50")	Passed (61%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1441 @ 1' 7 1/2"	12236	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6534 @ 9' 11 7/8"	35781	Passed (18%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.107 @ 10' 6"	0.520	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.230 @ 10' 5 7/8"	1.039	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Snow	Total	
1 - Hanger on 16" DF beam	3.50"	Hanger[1]	1.50"	1438	1191	2629	See note [1]
2 - Hanger on 16" DF beam	5.13"	Hanger[1]	1.50"	644	573	1217	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)	20' 9" o/c	
Bottom Edge (Lu)	20' 9" 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	HGU3.63/11-SDS	5.25"	N/A	36-SDS25212	24-SDS25212	
2 - Face Mount Hanger	HGU3.63/11-SDS	5.25"	N/A	36-SDS25212	24-SDS25212	

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 21' 7/8"	N/A	16.3	--	
1 - Uniform (PSF)	0 to 21' 6" (Top)	2'	20.0	25.0	Default Load
2 - Uniform (PSF)	0 to 2' 6 1/16" (Top)	11'	12.0	-	Default Load
3 - Uniform (PSF)	0 to 2' 6 1/16" (Top)	11'	20.0	25.0	Default Load

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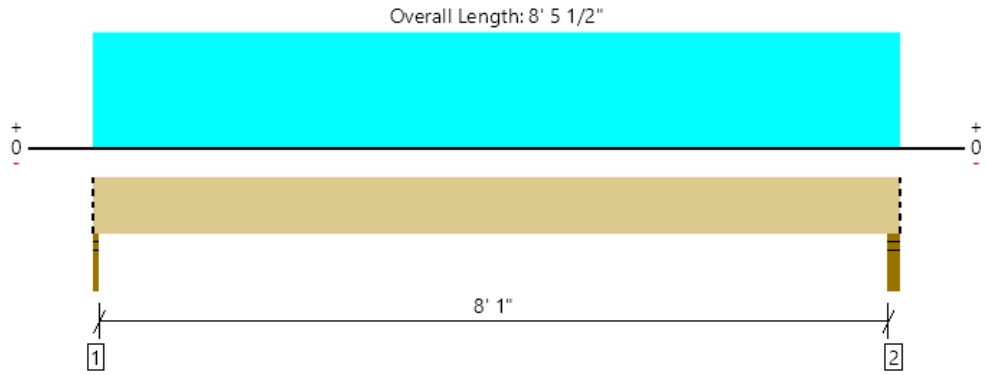
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper, 53

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



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)	1591 @ 0	1641 (1.50")	Passed (97%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1034 @ 1' 5 1/2"	5320	Passed (19%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3315 @ 4' 2"	15557	Passed (21%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.025 @ 4' 2"	0.208	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.048 @ 4' 2"	0.417	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	1.50"	1.50"	1.50"	772	819	1591	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	795	844	1639	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)	8' 6" o/c	
Bottom Edge (Lu)	8' 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 8' 5 1/2"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 8' 5 1/2" (Top)	4' 11"	36.0	40.0	Default Load

Weyerhaeuser Notes

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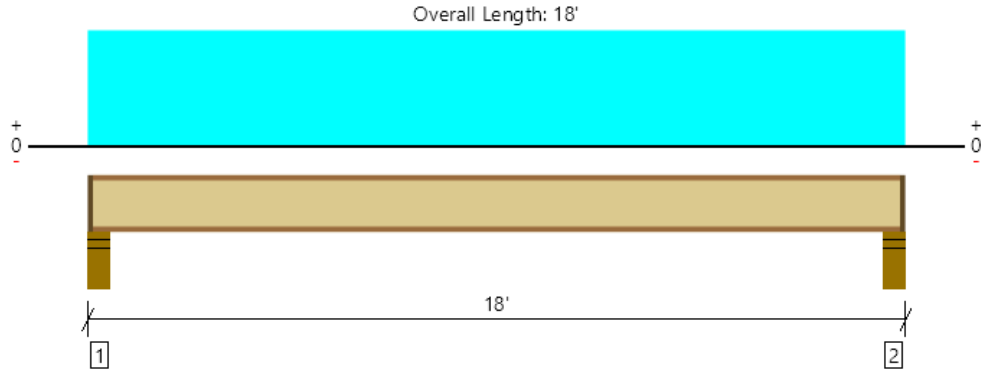
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main, 18' Floor Joist
1 piece(s) 16" TJI® 210 @ 24" OC



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)	1352 @ 4 1/2"	1460 (3.50")	Passed (93%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1298 @ 5 1/2"	2190	Passed (59%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	5654 @ 9'	5140	Failed (110%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.239 @ 9'	0.431	Passed (L/865)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.454 @ 9'	0.863	Passed (L/456)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	45	40	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	5.50"	4.25"	3.09"	648	720	1368	1 1/4" Rim Board
2 - Stud wall - DF	5.50"	4.25"	3.09"	648	720	1368	1 1/4" 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)	6" o/c	
Bottom Edge (Lu)	17' 10" 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 18'	24"	36.0	40.0	Default Load

Weyerhaeuser Notes

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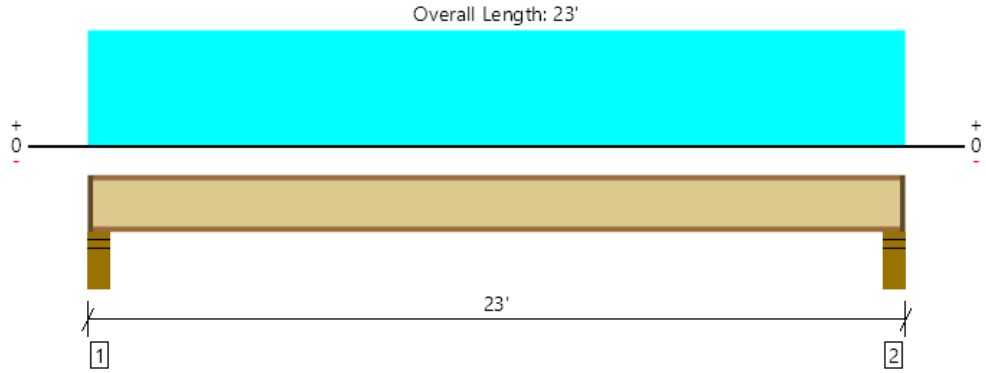
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main, 23' Floor Joist
1 piece(s) 16" TJI® 360 @ 16" OC



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)	1155 @ 4 1/2"	1505 (3.50")	Passed (77%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1119 @ 5 1/2"	2190	Passed (51%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	6271 @ 11' 6"	8405	Passed (75%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.347 @ 11' 6"	0.556	Passed (L/769)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.660 @ 11' 6"	1.112	Passed (L/405)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	41	40	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	5.50"	4.25"	2.06"	552	613	1165	1 1/4" Rim Board
2 - Stud wall - DF	5.50"	4.25"	2.06"	552	613	1165	1 1/4" 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)	4' 3" o/c	
Bottom Edge (Lu)	22' 10" 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 23'	16"	36.0	40.0	Default Load

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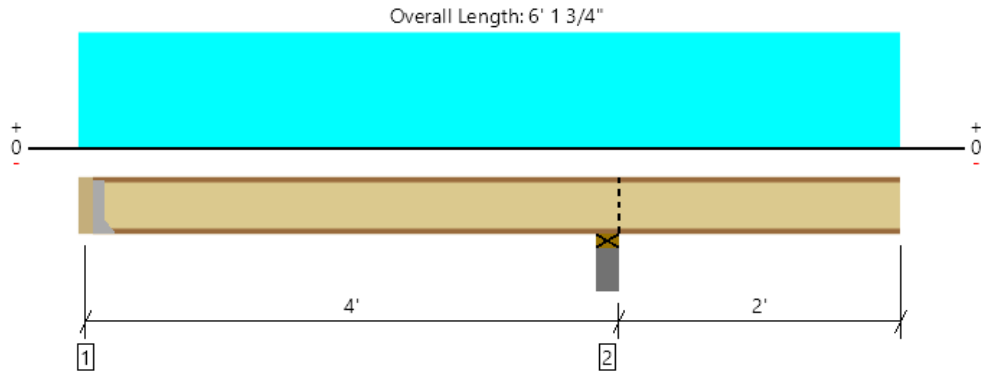
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main, Short Cant Joists
1 piece(s) 16" TJI® 210 @ 24" OC



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)	719 @ 3' 11"	2565 (5.25")	Passed (28%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	313 @ 3' 8 1/4"	2190	Passed (14%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-378 @ 3' 11"	5140	Passed (7%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.002 @ 2' 1 1/4"	0.091	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.008 @ 6' 1 3/4"	0.223	Passed (2L/999+)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	70	40	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/480) and TL (2L/240).
- Right cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- 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	Total	
1 - Hanger on 16" DF beam	3.50"	Hanger[1]	1.75" / - [2]	102	168/-31	270/-31	See note [1]
2 - Plate on concrete - DF	5.50"	5.50"	3.50"	340	378	718	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.
- [2] Required Bearing Length / Required Bearing Length with Web Stiffeners

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

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- 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	Connector not found	N/A	N/A	N/A	N/A	

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

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 6' 1 3/4"	24"	36.0	40.0	Default Load

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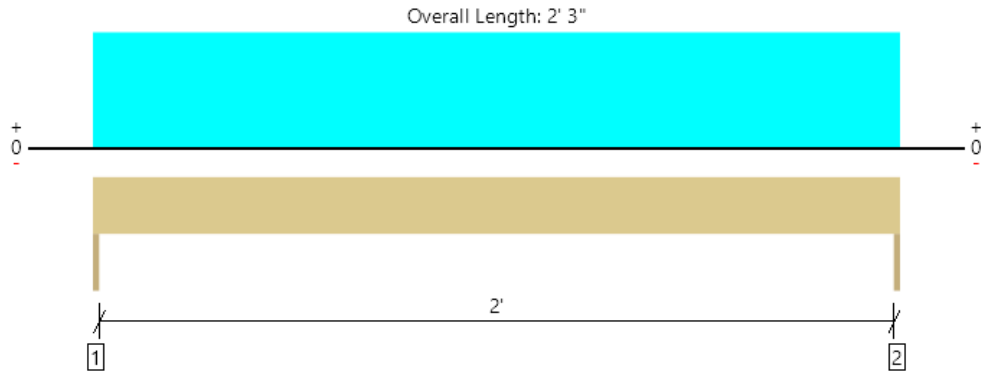
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main, 70

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



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)	779 @ 0	1969 (1.50")	Passed (40%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	231 @ 1' 5 1/2"	5320	Passed (4%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	438 @ 1' 1 1/2"	15557	Passed (3%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.001 @ 1' 1 1/2"	0.075	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.002 @ 1' 1 1/2"	0.112	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Trimmer - DF	1.50"	1.50"	1.50"	374	405	779	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	374	405	779	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 3" o/c	
Bottom Edge (Lu)	2' 3" 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 2' 3"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 2' 3"	9'	36.0	40.0	Default Load

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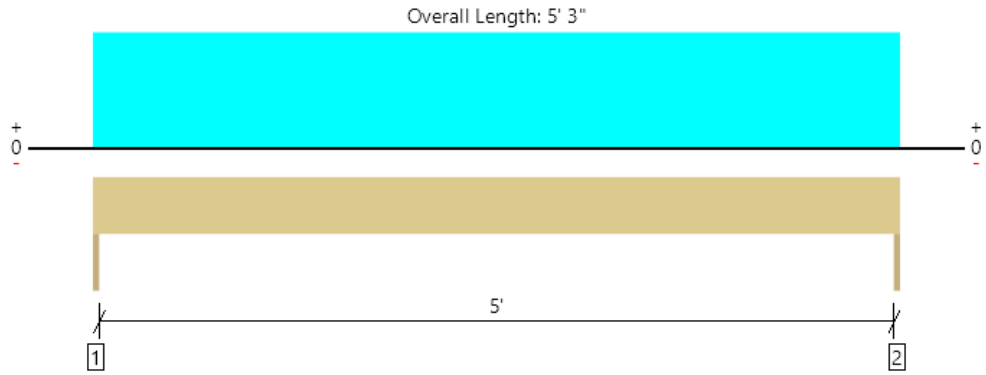
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main, 71

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



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)	1817 @ 0	1969 (1.50")	Passed (92%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	808 @ 1' 5 1/2"	5320	Passed (15%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2385 @ 2' 7 1/2"	15557	Passed (15%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.010 @ 2' 7 1/2"	0.175	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.020 @ 2' 7 1/2"	0.262	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Trimmer - DF	1.50"	1.50"	1.50"	872	945	1817	None
2 - Trimmer - DF	1.50"	1.50"	1.50"	872	945	1817	None

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	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 5' 3"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 5' 3"	9'	36.0	40.0	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

MEMBER REPORT

FAILED

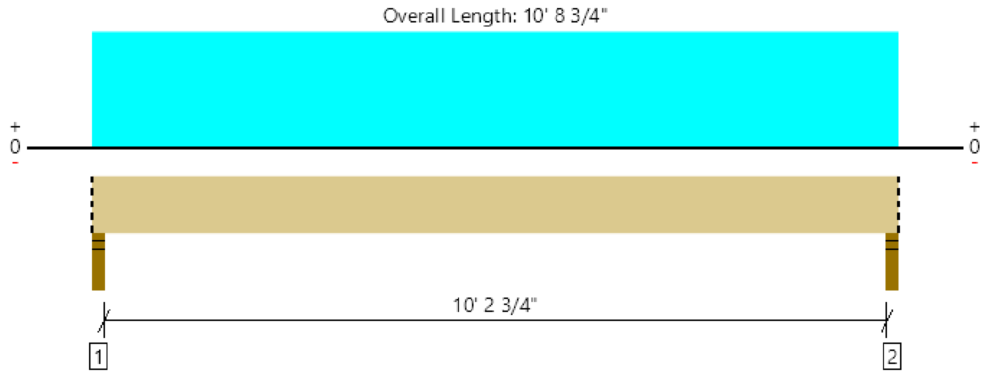
ok, use (3)2x posts

Main, 72

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

Support 1 failed reaction check due to insufficient bearing capacity.
Support 2 failed reaction check due to insufficient bearing capacity.

ok, use (3)2x posts



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)	4172 @ 1 1/2"	3281 (3.00")	Failed (127%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2941 @ 1' 7"	5320	Passed (55%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	10675 @ 5' 4 3/8"	15557	Passed (69%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.129 @ 5' 4 3/8"	0.262	Passed (L/978)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.221 @ 5' 4 3/8"	0.524	Passed (L/570)	--	1.0 D + 1.0 L (All Spans)

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

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	3.00"	3.00"	3.81"	1740	2432	4172	Blocking
2 - Stud wall - DF	3.00"	3.00"	3.81"	1740	2432	4172	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)	10' 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 10' 8 3/4"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 10' 8 3/4" (Top)	6' 7"	36.0	40.0	Default Load
2 - Uniform (PSF)	0 to 10' 8 3/4" (Top)	3' 2"	25.0	60.0	Default Load

Weyerhaeuser Notes

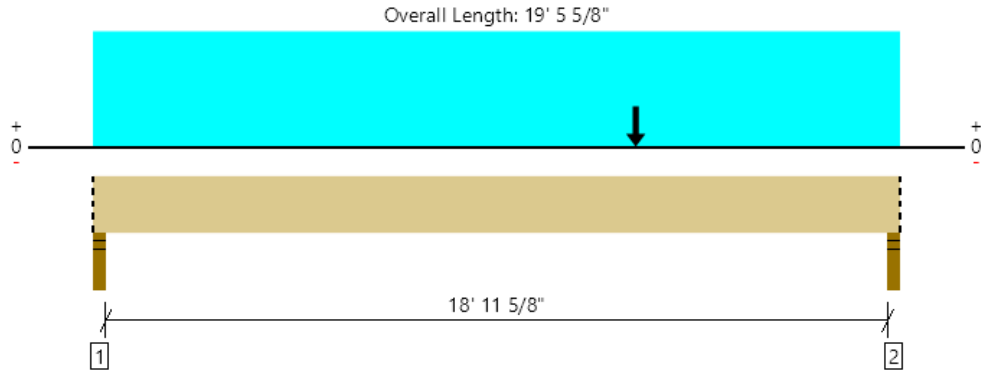
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Main, 73

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

Support 1 failed reaction check due to insufficient bearing capacity.

Support 2 failed reaction check due to insufficient bearing capacity.



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)	3686 @ 1 1/2"	3281 (3.00")	Failed (112%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	3087 @ 1' 7"	5320	Passed (58%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	17483 @ 9' 8 13/16"	15557	Failed (112%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.671 @ 9' 8 13/16"	0.480	Failed (L/343)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	1.045 @ 9' 8 13/16"	0.961	Failed (L/221)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Seismic	Total	
1 - Stud wall - DF	3.00"	3.00"	3.37"	1317	2369	325/-325	4011/-325	Blocking
2 - Stud wall - DF	3.00"	3.00"	3.37"	1317	2369	675/-675	4361/-675	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)	19' 6" 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 19' 5 5/8"	N/A	8.2	--	--	
1 - Uniform (PSF)	0 to 19' 5 5/8" (Top)	1' 4"	36.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 19' 5 5/8" (Top)	3' 2"	25.0	60.0	-	Default Load
3 - Point (lb)	13' 1 1/8" (Top)	N/A	-	-	1000	_# chord force w/2.5 overstrength

Weyerhaeuser Notes

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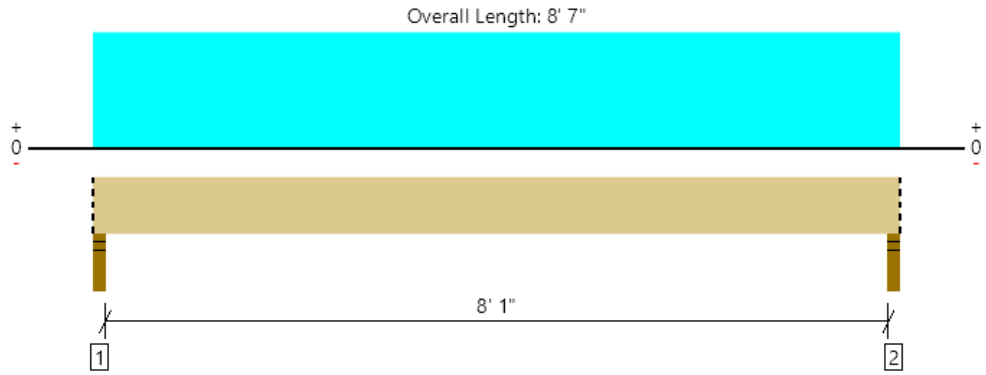
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main, 74

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



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)	2182 @ 1 1/2"	3281 (3.00")	Passed (67%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1377 @ 1' 7"	5320	Passed (26%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4414 @ 4' 3 1/2"	15557	Passed (28%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.033 @ 4' 3 1/2"	0.208	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.064 @ 4' 3 1/2"	0.417	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	3.00"	3.00"	2.00"	1052	1130	2182	Blocking
2 - Stud wall - DF	3.00"	3.00"	2.00"	1052	1130	2182	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)	8' 7" o/c	
Bottom Edge (Lu)	8' 7" 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 8' 7"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 8' 7" (Top)	6' 7"	36.0	40.0	Default Load

Weyerhaeuser Notes

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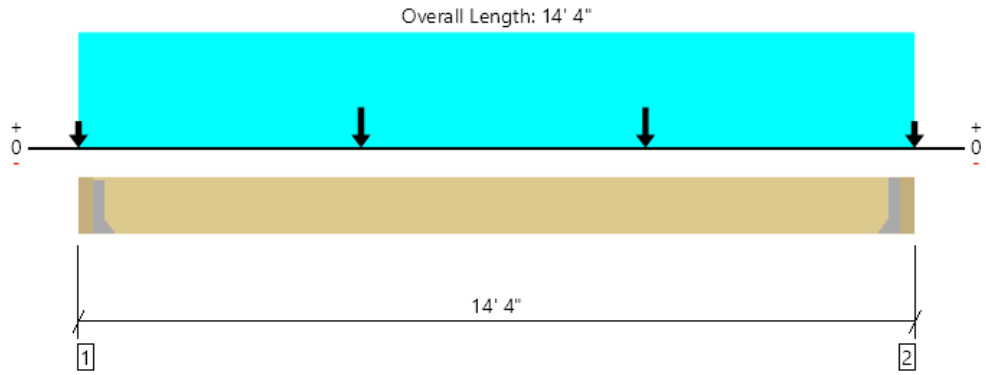
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main, 76

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



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)	788 @ 14' 1/2"	1969 (1.50")	Passed (40%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	637 @ 12' 8 1/2"	5320	Passed (12%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2729 @ 7' 1 3/4"	15557	Passed (18%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.041 @ 7' 2 1/16"	0.344	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.096 @ 7' 2 1/16"	0.688	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Hanger on 16" DF beam	3.50"	Hanger[1]	1.50"	522	320	202	1044	See note [1]
2 - Hanger on 16" DF beam	3.50"	Hanger[1]	1.50"	526	320	206	1052	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)	13' 9" o/c	
Bottom Edge (Lu)	13' 9" 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	Connector not found	N/A	N/A	N/A	N/A	
2 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	

- 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 14' 1/2"	N/A	8.2	--	--	
1 - Uniform (PSF)	0 to 14' 4" (Top)	1' 1 3/8"	36.0	40.0	-	Default Load
2 - Point (lb)	0 (Top)	N/A	60	-	68	Linked from: 20, Support 2
3 - Point (lb)	4' 10 1/4" (Top)	N/A	60	-	68	Linked from: 20, Support 2
4 - Point (lb)	4' 10 1/4" (Top)	N/A	60	-	68	Linked from: 20, Support 1
5 - Point (lb)	9' 8 1/2" (Front)	N/A	60	-	68	Linked from: 20, Support 2
6 - Point (lb)	9' 8 1/2" (Front)	N/A	60	-	68	Linked from: 20, Support 1
7 - Point (lb)	14' 4" (Front)	N/A	60	-	68	Linked from: 20, Support 2

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

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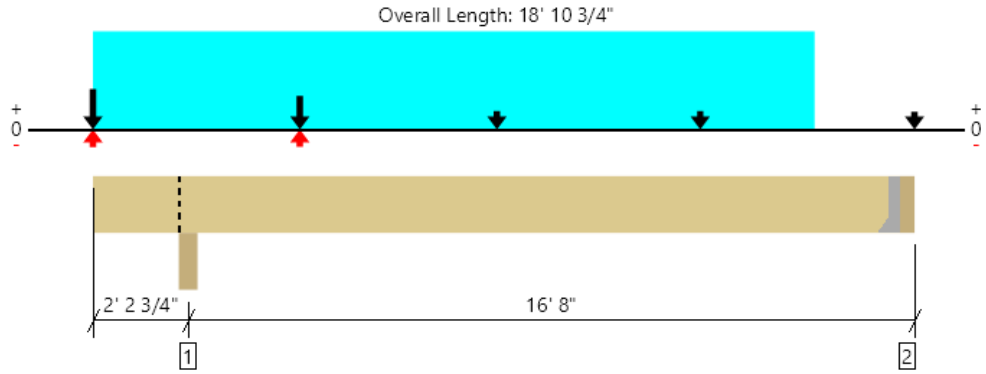
Main, 77
2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL

Support 1 failed reaction check due to insufficient bearing capacity. ok, use correct hanger



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) [Group]
Member Reaction (lbs)	13534 @ 2' 2 3/4"	9844 (4.50")	Failed (137%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	6571 @ 3' 9"	10640	Passed (62%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	13869 @ 9' 11 5/8"	31114	Passed (45%)	1.00	1.0 D + 1.0 L (Alt Spans) [1]
Live Load Defl. (in)	0.183 @ 10' 1 3/8"	0.409	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans) [1]
Total Load Defl. (in)	0.314 @ 10' 4 5/16"	0.819	Passed (L/626)	--	1.0 D + 1.0 L (Alt Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Seismic	Total	
1 - Beam - DF	4.50"	4.50"	6.19"	8005	5529	755	116/-116	14405/-116	Blocking
2 - Hanger on 16" DF beam	3.50"	Hanger[1]	1.50"	1300	1426/-313	254	9/-9	2989/-322	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)	13' 3" o/c	
Bottom Edge (Lu)	14' 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	HGU3.63/11-SDS	5.25"	N/A	36-SDS25212	24-SDS25212	

- 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)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 18' 7 1/4"	N/A	16.3	--	--	--	
1 - Uniform (PLF)	0 to 16' 8" (Front)	N/A	170.0	189.0	-	-	Linked from: Short Cant Joists, Support 2
2 - Point (lb)	4' 10 1/8" (Front)	N/A	60	-	68	-	Linked from: 20, Support 1
3 - Point (lb)	9' 5 1/2" (Front)	N/A	60	-	68	-	Linked from: 20, Support 2
4 - Point (lb)	9' 5 1/2" (Front)	N/A	60	-	68	-	Linked from: 20, Support 1
5 - Point (lb)	14' 7/8" (Front)	N/A	60	-	68	-	Linked from: 20, Support 2
6 - Point (lb)	14' 7/8" (Front)	N/A	60	-	68	-	Linked from: 20, Support 1
7 - Point (lb)	18' 10 3/4" (Front)	N/A	60	-	68	-	Linked from: 20, Support 2
8 - Point (lb)	0 (Front)	N/A	3463	2092	332	68/-68	Linked from: 23, Support 1
9 - Point (lb)	4' 10 1/8" (Front)	N/A	2344	1400	246	46/-46	Linked from: 23, Support 2

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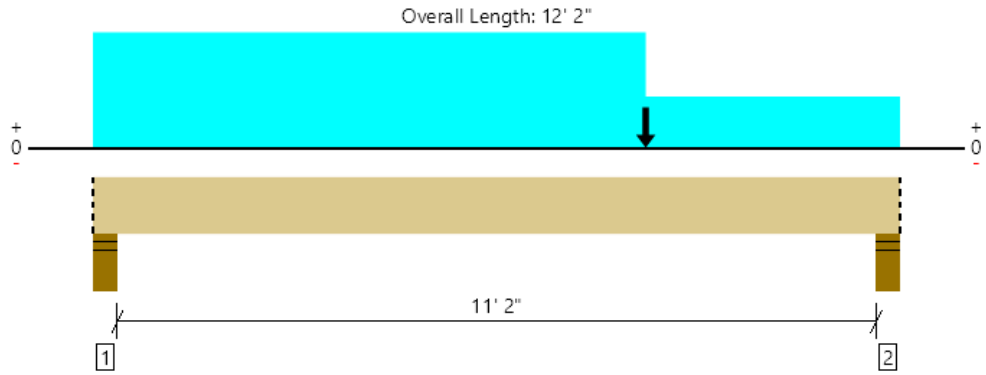
Main, 78

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



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)	9865 @ 4 1/2"	13125 (6.00")	Passed (75%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	7335 @ 10' 4"	10640	Passed (69%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	27753 @ 6' 4 1/4"	31114	Passed (89%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.172 @ 6' 1 3/8"	0.285	Passed (L/796)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.328 @ 6' 1 3/8"	0.571	Passed (L/417)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	6.00"	6.00"	4.51"	4712	5153	9865	Blocking
2 - Stud wall - DF	6.00"	6.00"	3.94"	4105	4515	8620	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' 7" o/c	
Bottom Edge (Lu)	12' 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 12' 2"	N/A	16.3	--	
1 - Uniform (PSF)	0 to 12' 2" (Front)	9'	36.0	40.0	
2 - Point (lb)	8' 4" (Front)	N/A	1312	1550	Linked from: 85, Support 1
3 - Uniform (PSF)	0 to 8' 4" (Front)	11' 2 9/16"	36.0	40.0	

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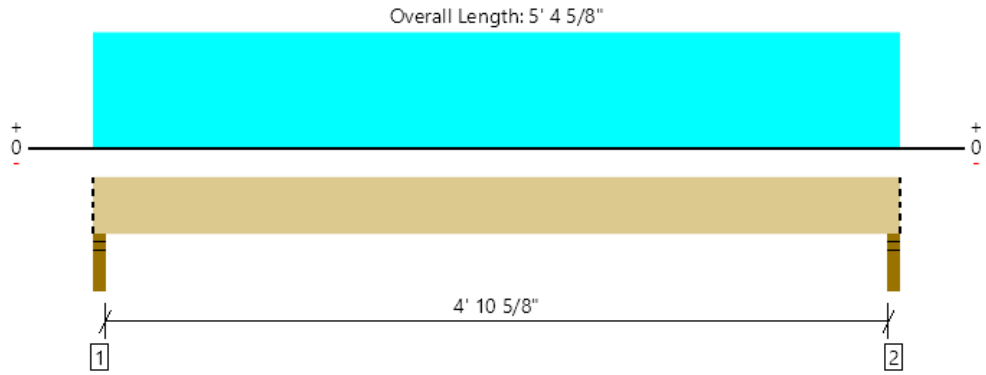
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main, 78s

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



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)	3239 @ 1 1/2"	3281 (3.00")	Passed (99%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1334 @ 1' 7"	5320	Passed (25%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3965 @ 2' 8 5/16"	15557	Passed (25%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.017 @ 2' 8 5/16"	0.128	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.032 @ 2' 8 5/16"	0.257	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	3.00"	3.00"	2.96"	1546	1693	3239	Blocking
2 - Stud wall - DF	3.00"	3.00"	2.96"	1546	1693	3239	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' 5" o/c	
Bottom Edge (Lu)	5' 5" 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 5' 4 5/8"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 5' 4 5/8" (Front)	15' 8 5/8"	36.0	40.0	

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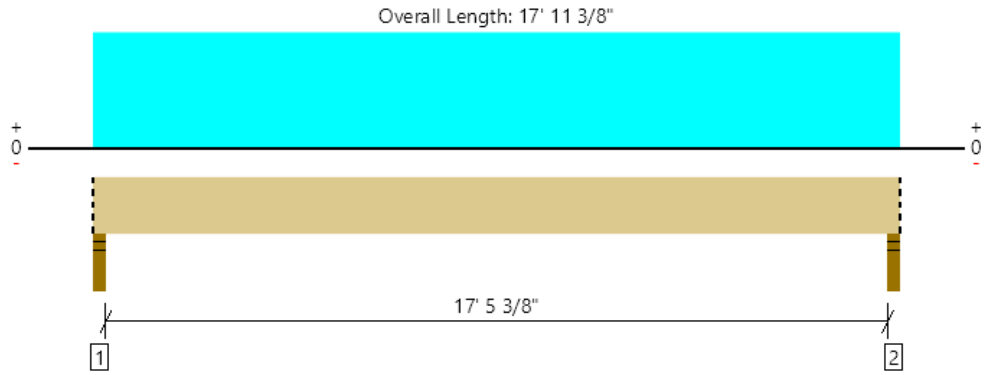
Weyerhaeuser

Main, 79

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



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)	6204 @ 1 1/2"	6563 (3.00")	Passed (95%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	5110 @ 1' 7"	12236	Passed (42%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	27069 @ 8' 11 11/16"	35781	Passed (76%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.276 @ 8' 11 11/16"	0.442	Passed (L/769)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.694 @ 8' 11 11/16"	0.885	Passed (L/306)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	3.00"	3.00"	2.84"	3737	479	2468	6684	Blocking
2 - Stud wall - DF	3.00"	3.00"	2.84"	3737	479	2468	6684	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' 9" o/c	
Bottom Edge (Lu)	17' 11" 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 17' 11 3/8"	N/A	16.3	--	--	
1 - Uniform (PSF)	0 to 17' 11 3/8" (Front)	1' 4"	36.0	40.0	-	
2 - Uniform (PSF)	0 to 17' 11 3/8" (Front)	11'	12.0	-	-	
3 - Uniform (PSF)	0 to 17' 11 3/8" (Front)	11'	20.0	-	25.0	

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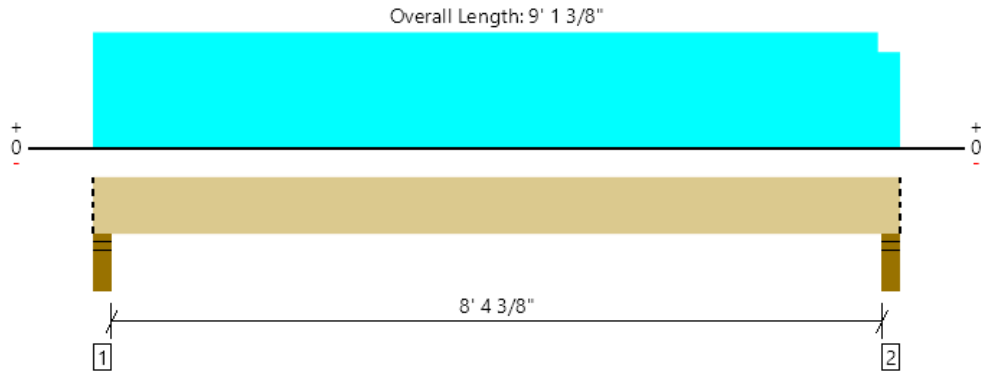
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main, 80

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



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) [Group]
Member Reaction (lbs)	7115 @ 3"	9844 (4.50")	Passed (72%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	4448 @ 1' 8 1/2"	10640	Passed (42%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	14484 @ 4' 6 11/16"	31114	Passed (47%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.057 @ 4' 6 11/16"	0.215	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.111 @ 4' 6 11/16"	0.431	Passed (L/933)	--	1.0 D + 1.0 L (All Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	4.50"	4.50"	3.25"	3456	3660	7116	Blocking
2 - Stud wall - DF	4.50"	4.50"	3.19"	3402	3569	6971	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 3/8"	N/A	16.3	--	
1 - Uniform (PSF)	0 to 9' 1 3/8" (Front)	11'	12.0	-	
2 - Uniform (PSF)	0 to 9' 1 3/8" (Front)	11'	36.0	40.0	
3 - Uniform (PLF)	0 to 8' 10 3/8" (Top)	N/A	214.0	363.0/-14.5	Linked from: Cant Floor: Joist, Support 2

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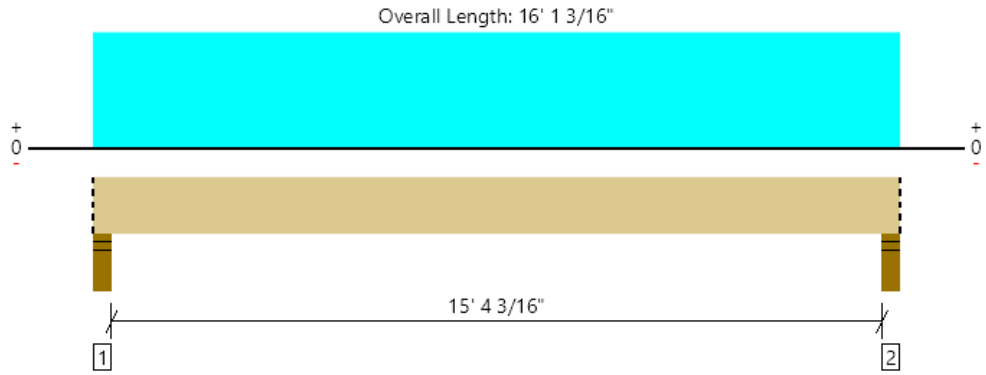
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main, 81

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



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) [Group]
Member Reaction (lbs)	12634 @ 3"	14766 (4.50")	Passed (86%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	9952 @ 1' 8 1/2"	15960	Passed (62%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	47738 @ 8' 5/8"	46671	Passed (102%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.332 @ 8' 5/8"	0.390	Passed (L/564)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.649 @ 8' 5/8"	0.780	Passed (L/288)	--	1.0 D + 1.0 L (All Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	4.50"	4.50"	3.85"	6170	6464	12634	Blocking
2 - Stud wall - DF	4.50"	4.50"	3.85"	6170	6464	12634	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' 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 16' 1 3/16"	N/A	24.5	--	
1 - Uniform (PSF)	0 to 16' 1 3/16" (Front)	11'	12.0	-	
2 - Uniform (PSF)	0 to 16' 1 3/16" (Front)	11'	36.0	40.0	
3 - Uniform (PLF)	0 to 16' 1 3/16" (Top)	N/A	214.0	363.0/-14.5	Linked from: Cant Floor: Joist, Support 2

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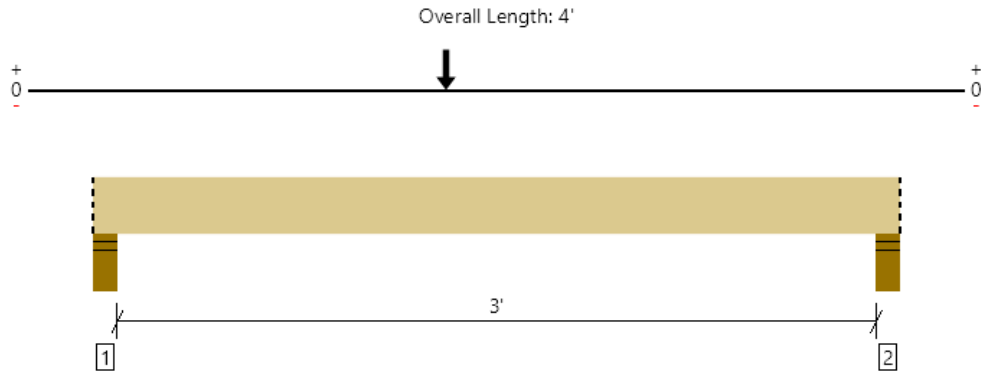
Main, 82

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



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)	11427 @ 4 1/2"	13125 (6.00")	Passed (87%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	10163 @ 1' 10"	10640	Passed (96%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	15688 @ 1' 9"	31114	Passed (50%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.022 @ 1' 9"	0.081	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.042 @ 1' 9"	0.162	Passed (L/928)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	6.00"	6.00"	5.22"	5586	5841	11427	Blocking
2 - Stud wall - DF	6.00"	6.00"	3.83"	4105	4283	8388	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' o/c	
Bottom Edge (Lu)	4' 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'	N/A	16.3	--	
1 - Point (lb)	1' 9" (Front)	N/A	3456	3660	Linked from: 80, Support 1
2 - Point (lb)	1' 9" (Front)	N/A	6170	6464	Linked from: 81, Support 1

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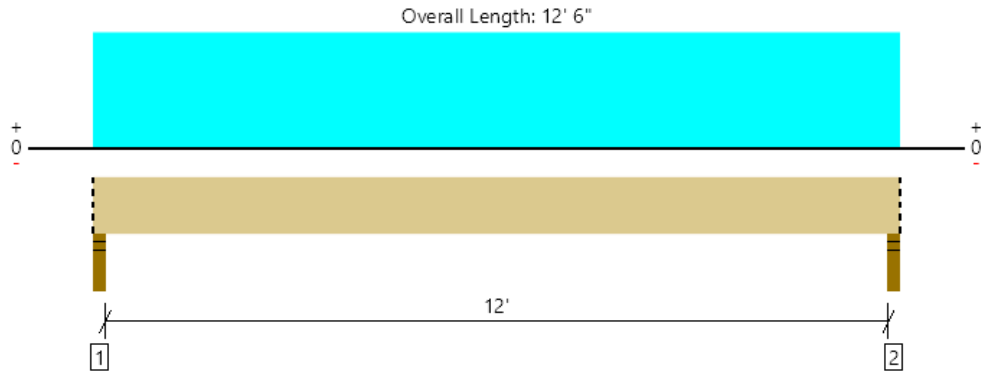
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main, 83

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



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)	1001 @ 1 1/2"	3281 (3.00")	Passed (31%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	747 @ 1' 7"	5320	Passed (14%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3004 @ 6' 3"	15557	Passed (19%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.040 @ 6' 3"	0.306	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.080 @ 6' 3"	0.613	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	3.00"	3.00"	1.50"	501	500	1001	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	501	500	1001	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' 6" o/c	
Bottom Edge (Lu)	12' 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 12' 6"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 12' 6" (Front)	2'	36.0	40.0	

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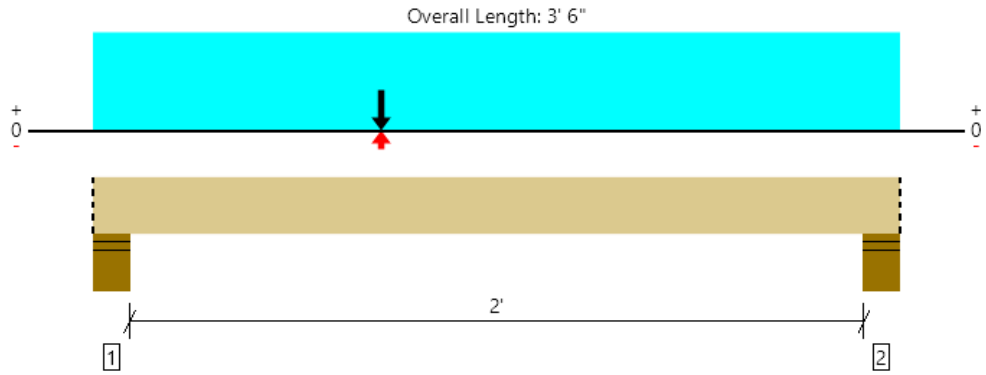
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main, 84

2 piece(s) 1 3/4" x 11 7/8" 1.55E TimberStrand® LSL



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) [Group]
Member Reaction (lbs)	18355 @ 7 1/2"	19688 (9.00")	Passed (93%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	6950 @ 1' 9 1/8"	8590	Passed (81%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	11375 @ 1' 3"	15953	Passed (71%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.023 @ 1' 3"	0.056	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.050 @ 1' 3"	0.112	Passed (L/545)	--	1.0 D + 1.0 L (All Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Seismic	Total	
1 - Stud wall - DF	9.00"	9.00"	8.39"	9662	8693	1268	1187/-1187	20810/-1187	Blocking
2 - Stud wall - DF	9.00"	9.00"	3.31"	3808	3430	488	456/-456	8182/-456	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' 6" o/c	
Bottom Edge (Lu)	3' 6" 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)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 3' 6"	N/A	13.0	--	--	--	
1 - Uniform (PSF)	0 to 3' 6" (Front)	2'	36.0	40.0	-	-	
2 - Point (lb)	1' 3" (Front)	N/A	6170	6464	-	-	Linked from: 81, Support 1
3 - Point (lb)	1' 3" (Front)	N/A	7002	5379	1755	1643/-1643	Linked from: 45, Support 1

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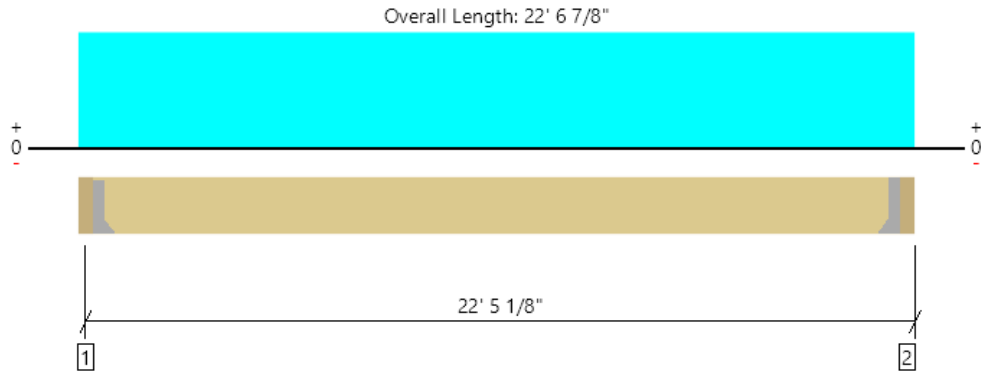
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main, 85

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



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) [Group]
Member Reaction (lbs)	2793 @ 3 1/2"	3938 (1.50")	Passed (71%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	2454 @ 1' 7 1/2"	10640	Passed (23%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	15352 @ 11' 3 7/16"	31114	Passed (49%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.319 @ 11' 3 7/16"	0.550	Passed (L/826)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.591 @ 11' 3 7/16"	1.099	Passed (L/447)	--	1.0 D + 1.0 L (All Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Hanger on 16" DF beam	3.50"	Hanger[1]	1.50"	1312	1550	2862	See note [1]
2 - Hanger on 16" DF beam	3.50"	Hanger[1]	1.50"	1312	1550	2862	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)	11' 8" o/c	
Bottom Edge (Lu)	22' 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	HGU3.63/11-SDS	5.25"	N/A	36-SDS25212	24-SDS25212	
2 - Face Mount Hanger	HGU3.63/11-SDS	5.25"	N/A	36-SDS25212	24-SDS25212	

- 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 22' 3 3/8"	N/A	16.3	--	
1 - Uniform (PLF)	0 to 22' 6 7/8" (Front)	N/A	51.0	84.0/-15.5	Linked from: Short Cant Joists, Support 1
2 - Uniform (PSF)	0 to 22' 6 7/8" (Top)	1' 4"	37.0	40.0	

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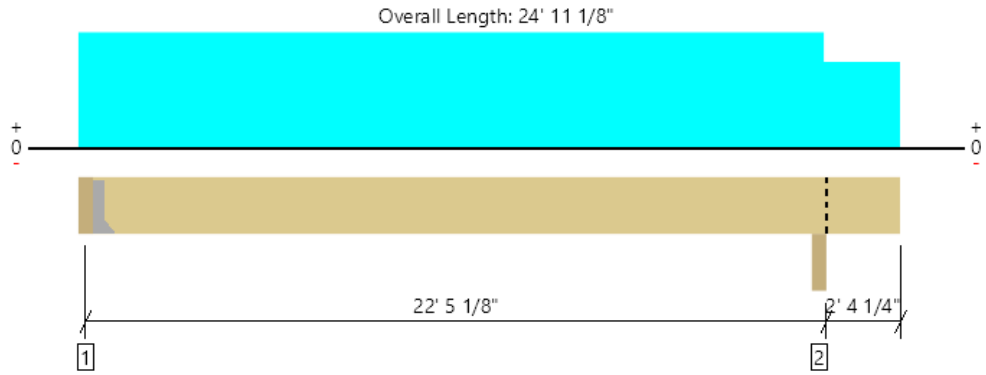
Weyerhaeuser

Main, 86

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



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) [Group]
Member Reaction (lbs)	2802 @ 3 1/2"	3938 (1.50")	Passed (71%)	--	1.0 D + 1.0 L (Alt Spans) [1]
Shear (lbs)	2463 @ 1' 7 1/2"	10640	Passed (23%)	1.00	1.0 D + 1.0 L (Alt Spans) [1]
Moment (Ft-lbs)	15454 @ 11' 3 7/8"	31114	Passed (50%)	1.00	1.0 D + 1.0 L (Alt Spans) [1]
Live Load Defl. (in)	0.328 @ 11' 4 5/16"	0.553	Passed (L/810)	--	1.0 D + 1.0 L (Alt Spans) [1]
Total Load Defl. (in)	0.602 @ 11' 4 3/16"	1.107	Passed (L/441)	--	1.0 D + 1.0 L (Alt Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Hanger on 16" DF beam	3.50"	Hanger[1]	1.50"	1311	1560/-12	2871/-12	See note [1]
2 - Beam - DF	3.50"	3.50"	1.50"	1472	1673	3145	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' 6" o/c	
Bottom Edge (Lu)	24' 8" 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	HGU3.63/11-SDS	5.25"	N/A	36-SDS25212	24-SDS25212	

- 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 24' 11 1/8"	N/A	16.3	--	
1 - Uniform (PLF)	0 to 22' 6 7/8" (Front)	N/A	51.0	84.0/-15.5	Linked from: Short Cant Joists, Support 1
2 - Uniform (PSF)	0 to 24' 11 1/8" (Top)	1' 4"	37.0	40.0	

Weyerhaeuser Notes

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

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

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

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