STRUCTURAL CALCULATIONS

Upper House
4276 East Mercer Way
Mercer Island, WA - 98040

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ATLAS CONSULTING ENGINEERS INC.

Project:	4720 East Mercer Way	By:	JDA
Proj No:	165-2020	Date:	2/12/2021

Summary
The project consists of a new single-family residence located at the above address. The existing lot consists of a primarily southeast facing moderate to steep sloping site, with an overall elevation drop of 70 feet. This lot will be/has been subdivided to create an 'upper' and 'lower' lot which will each have a new single-family home. This project concerns the new structure at the upper lot.

The new three-story residence consists of a 1988 SF lower floor at elevation 104.83'; a 2280 SF main floor and 570 SF garage at elevation 115.5'; and a 501 SF upper floor at elevation 126.0'. The structure will be set into the sloped site, with exterior stairs and lower deck at the southwest.

The residence will be comprised of the following: reinforced concrete strip and spread footings; concrete slab-on-grade garage space; wood framed TJI floors supported on interior and exterior wood framed load bearing walls, beams, and posts at each level; and connector plate wood trusses, dimensional lumber, and TJI's framing the stepped roofs. 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 2 - 3 for lateral design. Site seismic variables are shown on page 4; wind load derivation shown on pages 5 - 11; wind areas shown on pages 12 - 13; and shear wall line tributary areas shown on pages 14 - 19. Seismic and wind loads were determined using ASCE 7-16 procedures. As shown on pages 2-3, shearwalls with 8d nails spaced at 6" o.c. (SW-6), 4" oc (SW-4), 3" o.c. (SW-3), 2" o.c. (SW-2), and 4" oc each side (SW-44) are required. Shearwalls have been detailed to meet the ASD shearwall capacity values as listed in 1/S6.5. LTP4 and A34 clips have an ASD capacity of 540# and 550# per clip; SDS screws have an ASD capacity of 400# per screws; 5/8" and 3/4" diameter anchor bolts have an ASD capacity of 1485# and 2039# with doug fir plates. The required spacing of these connectors is shown in the shearwall table in the plans. Each shearwall will have a different uplift demand, as shown on pages 2 - 3. 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 the 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 20 psf floor dead load. See pages 20 -23 for framing key; and pages 24 - 98 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.

Size footings and walls for an allowable soil pressure = 2,000 psf; lateral earth pressure (restrained/unrestrained) = 40/30 pcf or 60/50 pcf with sloped earth against wall no steeper than 2H:1V; passive earth pressure = 350 pcf; and seismic surcharge = 8h psf (uniform); coefficient of friction = 0.35. See wall dn footing designs beginning on page 99.

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R	6.5		ASCE 7-16 Table 12.2-1
Ω_o	2.5		
C_d	4		
V	42.0	Kips	= CsW ~ ASCE 7-16 (12.8-1)
C_s	0.147		
	0.147		= Sds / (R/Ie) ~ ASCE 7-16 (12.8-2)
	0.410		< 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)
	0.042		>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	286	Kips	
I_e	1		USGS Seismic Values
S_{ds}	0.953	g	USGS Seismic Values
S_{d1}	0.5952	g	USGS Seismic Values
S_S	1.43	g	USGS Seismic Values
S_1	0.496	g	USGS Seismic Values
S_{DC}	D		USGS Seismic Values
T_a	0.224	seconds	= Cthnx ~ ASCE 7-16 (12.8-7)
C_t	0.02		ASCE 7-16 Table 12.8-2
h_n	25.00	feet	
x	0.75		ASCE 7-16 Table 12.8-2
T_L	6	seconds	USGS Seismic Values
T_S	0.624554	seconds	< Sd1 /Sds, ASCE 7-16 (11.4-7)
$1.5T_S$	0.937	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.

Story	Weight (Kips)	Height (ft)	Wh (Kip-ft)	C_{vx} (Wh/∑Wh)	F_{xE}, Kips (C_{vx} V)	∑F_{xE}, Kips LRFD	F_{xE}, Kips (C_{vx} V)	∑F_{xE}, Kips ASD	∑F_{xW}, Kips South ASD	∑F_{xW}, Kips East ASD	∑F_{xW}, Kips North ASD	∑F_{xW}, Kips West ASD
Upper Roof	16.70	29.08	486	0.11	4.6	4.6	3.187	**3.187**	1.974	1.358	7.904	5.238
Upper Floor	142.82	19.67	2,809	0.63	26.3	30.9	18.432	**21.619**	10.633	8.625	7.904	5.238
and Low Roof												
Main Floor	126.68	9.33	1,182	0.26	11.1	42.0	7.755	**29.4**	22.779	15.589	16.877	12.208
∑W	286.20											

NORTH-to-SOUTH RUNNING WALLS

Low Roof -to- Upper Roof

	%	Length (ft)	# in Wall	SEISMIC PLF	Chord F (#)	# in Wall	WIND PLF	Chord F (#)	Wall W (#)	GRAVITY LOADING (plf) Snow	Dead	Live	Uplift	Comp	Anchorage	8.166667 ft		
3.5	50.0%	8.83	1,594			987												
304	100.0%	8.83	1,594	180	1,473	987	112	913	902	0	0	0	1,263	1,984	4,942	6 OK	MSTC52	OK
4	2.0%	2.54	63			39												
12	100.0%	2.54	63	25	202	39	15	125	259	0	0	0	142	349		6 OK	MSTC28	OK
5	48.0%	14.21	1,531			948												
292	100.0%	14.21	1,531	108	880	948	67	545	1,450	0	0	0	541	1,702		6 OK	MSTC40	OK

Main Floor - to- Low Roof

	%	Length (ft)	# in Wall	SEISMIC PLF	Chord F (#)	# in Wall	WIND PLF	Chord F (#)	Wall W (#)	GRAVITY LOADING (plf) Snow	Dead	Live	Uplift	Comp	Anchorage	9 ft		
1	2.4%	6.58	448			259												
87	100.0%	6.58	448	68	613	259	39	354	741	50	40	0	379	1,078	1,833	6 OK	MSTC28	OK
2	15.1%	7.04	2,778			1,603												
539	46.7%	3.29	1,299	395	6,115	749	228	3,528	370	0	0	0	6,029	6,325	21,709	3 OK	MSTC66	OK
	53.3%	3.75	1,479	395	3,551	854	228	2,048	422	0	0	0	3,452	3,790	12,532	3 OK	MSTC52	OK
3	24.9%	6.92	4,582			2,643												
889	100.0%	6.92	4,582	662	5,962	2,643	382	3,440	778	50	40	0	5,716	6,449	20,920	44 OK	MSTC66	OK
3.5	2.9%	3.46	2,119			303												
102	100.0%	3.46	2,119	613	5,515	303	88	789	389	50	40	0	6,655	7,765	24,452	44 OK	HDU11	OK
													5,392	5,781	19,510		HDU5	OK
4	26.4%	24.50	4,929			2,807												
944	10.2%	2.50	503	201	1,810	286	115	1,031	281	50	40	0	1,722	2,015	6,331	6 OK	MSTC40	OK
	30.4%	7.46	1,500	201	1,810	855	115	1,031	839	50	40	0	1,545	2,331	6,063	6 OK	MSTC40	OK
	59.4%	14.54	2,925	201	1,810	1,666	115	1,031	1,636	50	40	0	1,293	2,783	5,679	6 OK	MSTC28	OK
5	10.5%	8.21	3,464			1,115												
375	33.0%	2.71	1,143	422	3,798	368	136	1,223	305	50	40	0	3,701	4,016	13,416	2 OK	MSTC52	OK
	67.0%	5.50	2,321	422	3,798	747	136	1,223	619	50	40	0	3,602	4,194	13,265	3 OK	MSTC52	OK
5.5	12.2%	22.54	2,247			1,296												
436	100.0%	22.54	2,247	100	897	1,296	58	518	2,536	50	40	0	95	2,380	1,985	6 OK	MSTC28	OK
6	5.7%	18.54	1,051			607												
204	100.0%	18.54	1,051	57	510	607	33	294	2,086	50	40	0	0	1,738	820	6 OK	MSTC28	OK

Low Floor - to- Main Floor

	%	Length (ft)	# in Wall	SEISMIC PLF	Chord F (#)	# in Wall	WIND PLF	Chord F (#)	Wall W (#)	GRAVITY LOADING (plf) Snow	Dead	Live	Uplift	Comp	Anchorage	9.333333 ft		
1	3.9%	11.83	754			898												
106	66.2%	7.83	499	64	595	594	76	708	914	0	0	0	434	1,165	1,800	6 OK	HDU2	OK
	33.8%	4.00	255	64	595	304	76	708	467	0	0	0	568	942	1,959	6 OK	HDU2	OK
2	23.9%	22.00	4,632			5,447												
643	100.0%	22.00	4,632	211	1,965	5,447	248	2,311	2,567	0	0	0	7,570	3,594	27,817	6 OK	HDU8	OK
3	30.0%	9.17	6,909			6,836												
807	100.0%	9.17	6,909	754	7,035	6,836	746	6,961	1,069	0	0	0	6,786	7,641	24,746	44 OK	HDU8	OK
3.5	3.8%	6.92	2,413			864												
102	75.5%	6.92	1,821	263	2,457	652	94	880	807	0	0	0	2,269	2,915	8,490	4 OK	HDU2	OK
4	19.4%	13.92	6,431			4,413												
521	18.0%	2.50	1,155	462	4,313	793	317	2,960	292	0	0	0	4,245	4,478	15,300	2 OK	HDU4	OK
													5,967	6,493	21,631		HDU8	OK
	49.7%	6.92	3,196	462	4,313	2,194	317	2,960	807	0	0	0	4,125	4,770	15,117	2 OK	HDU4	OK
													5,670	7,102	21,180		HDU8	OK
	32.3%	4.50	2,079	462	4,313	1,427	317	2,960	525	0	0	0	4,191	4,611	15,217	2 OK	HDU4	OK
													5,484	7,393	20,897		HDU5	OK
5	16.5%	23.17	5,870			3,770												
445	42.1%	9.75	2,471	253	2,365	1,587	163	1,519	1,138	0	0	0	2,100	3,010	8,043	6 OK	HDU2	OK
	34.2%	7.92	2,006	253	2,365	1,288	163	1,519	924	0	0	0	2,150	2,888	8,119	6 OK	HDU2	OK
													5,851	6,904	21,535		HDU8	OK
	23.7%	5.50	1,394	253	2,365	895	163	1,519	642	0	0	0	2,215	2,729	8,219	6 OK	HDU2	OK
													5,817	6,922	21,484		HDU8	OK
6	6.2%	22.00	2,657			1,415												
167	100.0%	22.00	2,657	121	1,127	1,415	64	600	2,567	0	0	0	528	2,582	3,115	6 OK	HDU2	OK
													528	4,319	3,935		HDU2	OK

EAST-to-WEST RUNNING WALLS

Upper -to- Roof

				SEISMIC			WIND	GRAVITY LOADING (plf)										
3,187	%	Length (ft)	# in Wall	PLF	Chord F (#)	# in Wall	PLF	Chord F (#)	Wall W (#)	Snow	Dead	Live	Uplift	Comp	Anchorage	*8.166667 ft*		
A	36.0%	24.08	1,148			489												
219	22.7%	5.46	260	48	389	111	20	166	557	206	165	0	49	1,087	873	6 OK	MSTC28	OK
	77.3%	18.63	888	48	389	378	20	166	1,901	178	142	0				6 OK	MSTC28	OK
B	64.0%	4.58	2,039			869												
389	100.0%	4.58	2,039	445	3,633	869	190	1,548	468	353	282	0	3,223	4,218	12,352	3 OK	HDU5	OK

Main -to- Upper

				SEISMIC			WIND	GRAVITY LOADING (plf)										
21,619	%	Length (ft)	# in Wall	PLF	Chord F (#)	# in Wall	PLF	Chord F (#)	Wall W (#)	Snow	Dead	Live	Uplift	Comp	Anchorage	*9 ft*		
A	30.0%	47.92	6,681			2,589												
1072	12.2%	5.83	813	139	1,255	315	54	486	656	206	289	0	709	1,954	3,652	6 OK	HDU2	OK
	6.8%	3.25	453	139	1,255	176	54	486	366	0	0	0	1,170	1,462	4,352	6 OK	HDU2	OK
	6.8%	3.25	453	139	1,255	176	54	486	366	0	0	0	1,170	1,462	4,352	6 OK	HDU2	OK
	6.1%	2.92	407	139	1,255	158	54	486	328	354	496	0	841	2,195	3,852	6 OK	HDU2	OK
	10.8%	5.17	720	139	1,255	279	54	486	581	354	496	0	522	2,334	3,367	6 OK	HDU2	OK
	10.4%	5.00	697	139	1,255	270	54	486	563	0	0	0	1,173	2,661	5,155	6 OK	HDU2	OK
	39.5%	18.92	2,638	139	1,255	1,022	54	486	2,128	323	452	0	0	3,086	694	6 OK	HDU2	OK
	7.5%	3.58	500	139	1,255	194	54	486	403	269	376	0	846	1,977	3,861	6 OK	MSTC28	OK
B	31.0%	19.67	7,753			2,674												
1107	33.9%	6.67	2,628	394	3,548	906	136	1,224	750	156	219	0	3,033	4,221	11,888	3 OK	MSTC52	OK
	66.1%	13.00	5,125	394	3,548	1,767	136	1,224	1,463	340	475	0	1,765	4,916	9,960	3 OK	MSTC40	OK
	20.8%	4.08	1,610	394	3,548	555	136	1,224	459	283	397	0	3,063	4,258	11,934	3 OK	MSTC52	OK
	76.7%	15.08	5,946	394	3,548	2,051	136	1,224	1,697	340	475	0	1,479	5,048	9,526	3 OK	MSTC40	OK
C	27.9%	22.79	5,136			2,403	105											
995	14.3%	3.25	732	225	2,028	343	105	949	366	29	41	0	1,912	2,281	7,066	6 OK	MSTC40	OK
	12.2%	2.79	629	225	2,028	294	105	949	314	29	41	0	1,928	2,252	7,091	4 OK	MSTC40	OK
	12.1%	2.75	620	225	2,028	290	105	949	309	221	309	0	1,757	2,554	6,831	4 OK	MSTC40	OK
	13.9%	3.17	714	225	2,028	334	105	949	356	277	388	0	1,658	2,670	6,681	6 OK	MSTC40	OK
	13.2%	3.00	676	225	2,028	316	105	949	338	233	327	0	1,721	2,589	6,775	6 OK	MSTC40	OK
	15.7%	3.58	807	225	2,028	378	105	949	403	233	327	0	1,661	2,627	6,685	6 OK	MSTC40	OK
	8.4%	1.92	432	225	2,028	202	105	949	216	325	455	0	1,774	2,666	6,857	4 OK	MSTC40	OK
	10.2%	2.33	526	225	2,028	246	105	949	263	83	117	0	1,903	2,309	7,053	4 OK	MSTC40	OK
0	11.1%	25.33	2,049			959												
397	100.0%	25.33	2,049	81	728	959	38	748	2,850	116	163	0	0	2,527	127	6 OK	MSTC28	OK

Hazards by Location

Search Information

Address:	4720 E Mercer Way, Mercer Island, WA 98040, USA
Coordinates:	47.5607181, -122.2120168
Elevation:	105 ft
Timestamp:	2021-01-31T01:58:43.202Z
Hazard Type:	Seismic
Reference Document:	ASCE7-16
Risk Category:	II
Site Class:	D

Basic Parameters

Name	Value	Description
S_S	1.43	MCE_R ground motion (period=0.2s)
S_1	0.496	MCE_R ground motion (period=1.0s)
S_{MS}	1.43	Site-modified spectral acceleration value
S_{M1} 0.893	~~null~~	Site-modified spectral acceleration value
S_{DS}	0.953	Numeric seismic design value at 0.2s SA
S_{D1} 0.5952	~~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	Site amplification factor at 0.2s
F_v 1.8	~~* null~~	Site amplification factor at 1.0s
CR_S	0.902	Coefficient of risk (0.2s)
CR_1	0.898	Coefficient of risk (1.0s)
PGA	0.612	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	0.673	Site modified peak ground acceleration
T_L	6	Long-period transition period (s)
T_s 0.625		
SsRT	1.43	Probabilistic risk-targeted ground motion (0.2s)
SsUH	1.585	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	3.987	Factored deterministic acceleration value (0.2s)
S1RT	0.496	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.553	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	1.559	Factored deterministic acceleration value (1.0s)
PGAd	1.341	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.

Atlas Consulting SE, Inc.
6810 NE 149th St
Kenmore, WA
206-427-7233

JOB TITLE 4720 E Mercer Way

JOB NO. 165-2020 **SHEET NO.**
CALCULATED BY JDA **DATE** 2/12/21
CHECKED BY **DATE**

Code Search

Code: ASCE 7 - 10

Occupancy:

Occupancy Group = R Residential

Risk Category & Importance Factors:

Risk Category =	II
Wind factor =	1.00
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)	42.0 ft	
Least width (B)	31.0 ft	
Mean Roof Ht (h)	29.1 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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JOB TITLE 4720 E Mercer Way

JOB NO. 165-2020 **SHEET NO.**
CALCULATED BY JDA **DATE** 2/12/21
CHECKED BY **DATE**

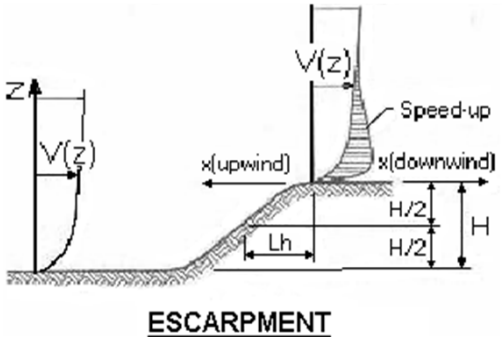
Wind Loads : ASCE 7- 10

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	0.976
Kh case 2	0.976
Type of roof	Monoslope

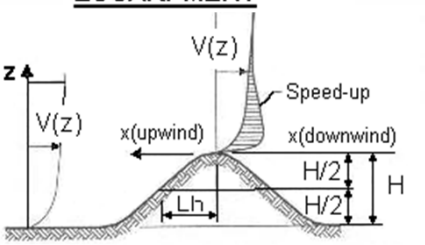
Topographic Factor (Kzt)

Topography		2D Escarpment
Hill Height	(H)	20.2 ft
Half Hill Length (Lh)		39.4 ft
Actual H/Lh	=	0.51
Use H/Lh	=	0.50
Modified Lh	=	40.3 ft
From top of crest: x =		0.0 ft
Bldg up/down wind?		upwind

H/Lh= 0.50	K_1 =	0.425
x/Lh = 0.00	K_2 =	1.000
z/Lh = 0.72	K_3 =	0.165
At Mean Roof Ht:		
	Kzt = $(1+K_1K_2K_3)^2$ =	1.15



ESCARPMENT



2D RIDGE or 3D AXISYMMETRICAL HILL

Gust Effect Factor

h =	29.1 ft
B =	31.0 ft
/z (0.6h) =	17.4 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 = 0.94 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 =	440.2 ft	
Q =	0.92	
I_z =	0.22	
G =	0.88	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 =	95.1				
N_1 =	0.00				
R_n =	0.000				
R_h =	28.282	η =	0.000	h =	29.1 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

Atlas Consulting SE, Inc.
6810 NE 149th St
Kenmore, WA
206-427-7233

JOB TITLE 4720 E Mercer Way

JOB NO. 165-2020 **SHEET NO.**
CALCULATED BY JDA **DATE** 2/12/21
CHECKED BY **DATE**

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) = **29.4 psf**
GCpi = +/-0.18

Edge Strip (a) = 3.1 ft
End Zone (2a) = 6.2 ft
Zone 2 length = 15.5 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

Ultimate Wind Surface Pressures (psf)

1		17.1	6.5		-7.9	-18.5
2		-15.0	-25.6		-15.0	-25.6
3		-5.6	-16.2		-5.6	-16.2
4		-3.2	-13.8		-7.9	-18.5
5					17.1	6.5
6					-3.2	-13.8
1E		23.2	12.7		-8.8	-19.4
2E		-26.2	-36.8		-26.2	-36.8
3E		-10.3	-20.9		-10.3	-20.9
4E		-7.4	-17.9		-8.8	-19.4
5E					23.2	12.7
6E					-7.4	-17.9

Parapet

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

Windward roof overhangs = 20.6 psf (upward) add to windward roof pressure

Horizontal MWFRS Simple Diaphragm Pressures (psf)

Transverse direction (normal to L)

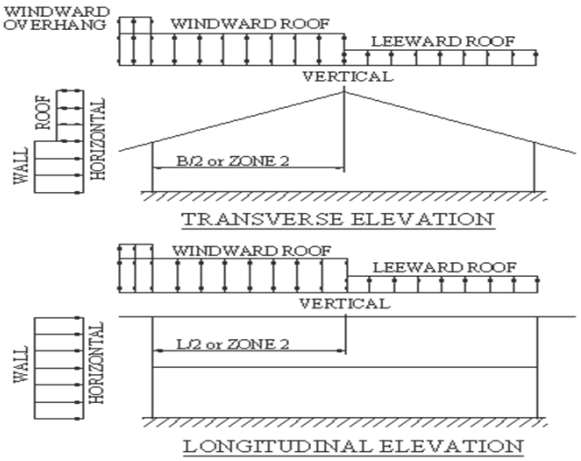
Interior Zone: Wall 20.3 psf
Roof -9.4 psf **
End Zone: Wall 30.6 psf
Roof -15.9 psf **

Longitudinal direction (parallel to L)

Interior Zone: Wall 20.3 psf
End Zone: Wall 30.6 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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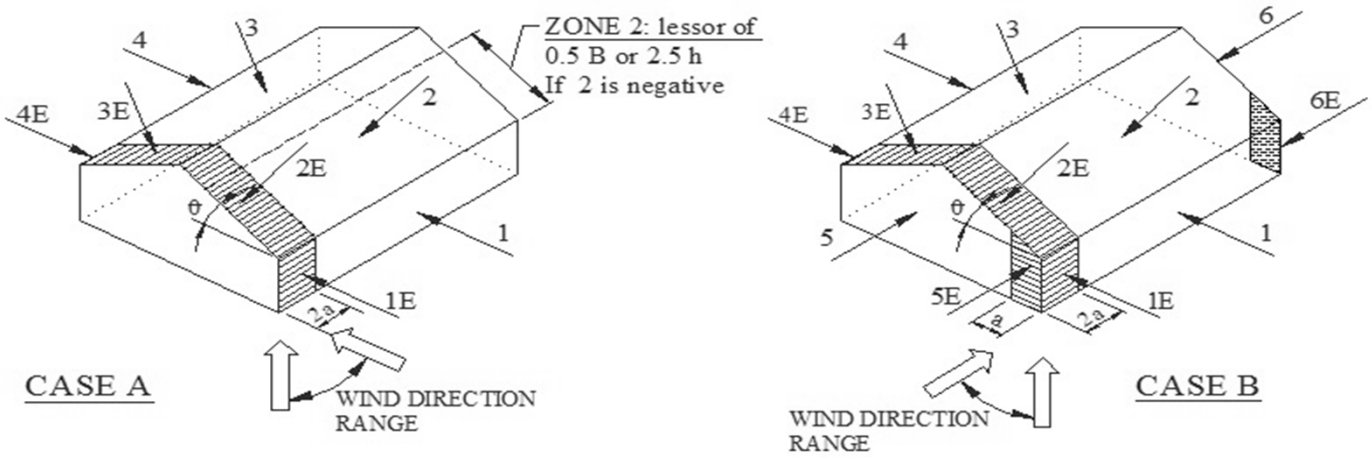

NOTE: Torsional loads are 25% of zones 1 - 6. See code for loading diagram.

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

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Ultimate Wind Pressures

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

Kh (case 1) =	0.98	h =	29.1 ft
Base pressure (qh) =	**29.4 psf**	a =	3.1 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	-34.7	-32.7	-31.8	-34.7	-31.8
Negative Zone 2	-1.98	-1.49	-1.28	-58.3	-43.9	-37.7	-58.3	-37.7
Negative Zone 3	-2.98	-1.79	-1.28	-87.7	-52.7	-37.7	-87.7	-37.7
Positive All Zones	0.48	0.41	0.38	16.0	16.0	16.0	16.0	16.0
Overhang Zone 1&2	-1.70	-1.63	-1.60	-50.0	-48.0	-47.1	-50.0	-43.6
Overhang Zone 3	-2.80	-1.40	-0.80	-82.4	-41.2	-23.5	-82.4	-23.5

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 5.3 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	-34.4	-29.7	-26.5	-31.2	-29.9
Negative Zone 5	-1.44	-1.12	-0.90	-42.4	-33.0	-26.5	-35.8	-33.4
Positive Zone 4 & 5	1.08	0.92	0.81	31.8	27.1	23.8	28.5	27.3

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

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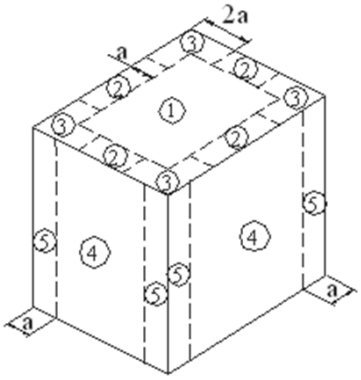
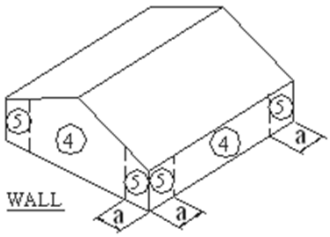
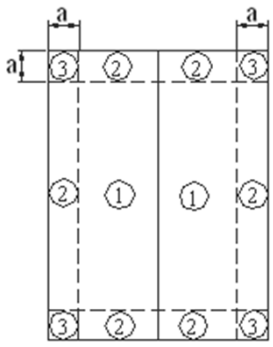
Location of C&C Wind Pressure Zones



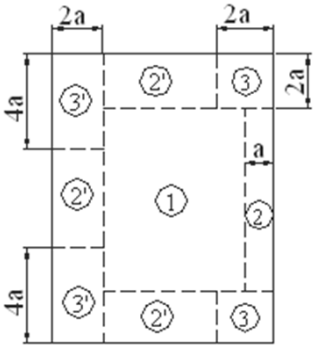
Roofs w/ θ ≤ 10°
and all walls
h > 60'



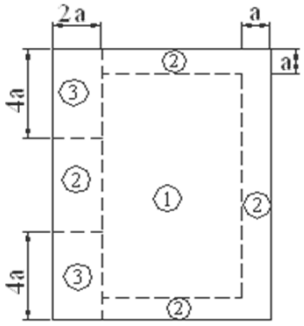
Walls h ≤ 60'
& alt design h<90'



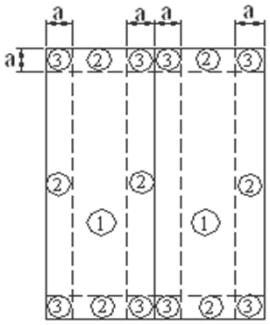
Gable, Sawtooth and
Multispan Gable θ ≤ 7 degrees &
Monoslope ≤ 3 degrees
h ≤ 60' & alt design h<90'



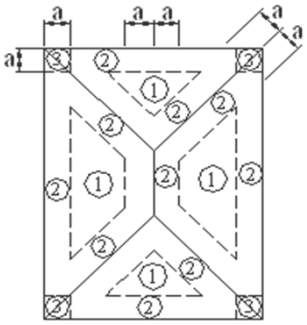
Monoslope roofs
3° < θ ≤ 10°
h ≤ 60' & alt design h<90'



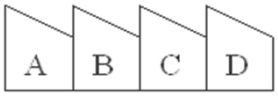
Monoslope roofs
10° < θ ≤ 30°
h ≤ 60' & alt design h<90'

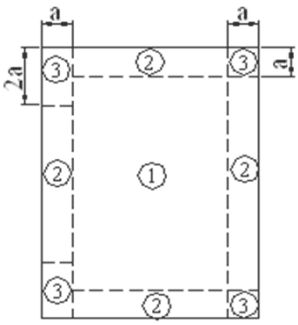


Multispan Gable &
Gable 7° < θ ≤ 45°

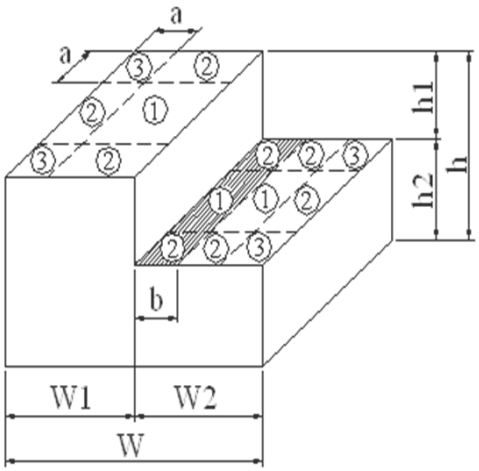


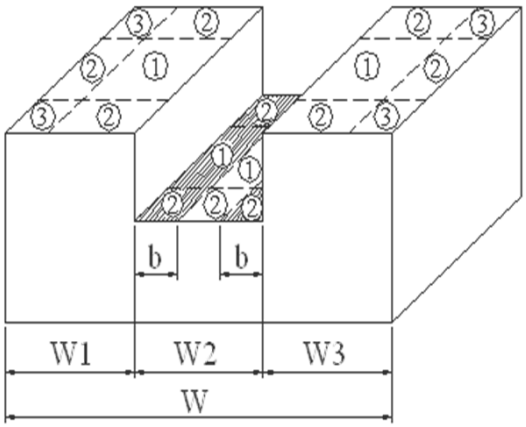
Hip 7° < θ ≤ 27°



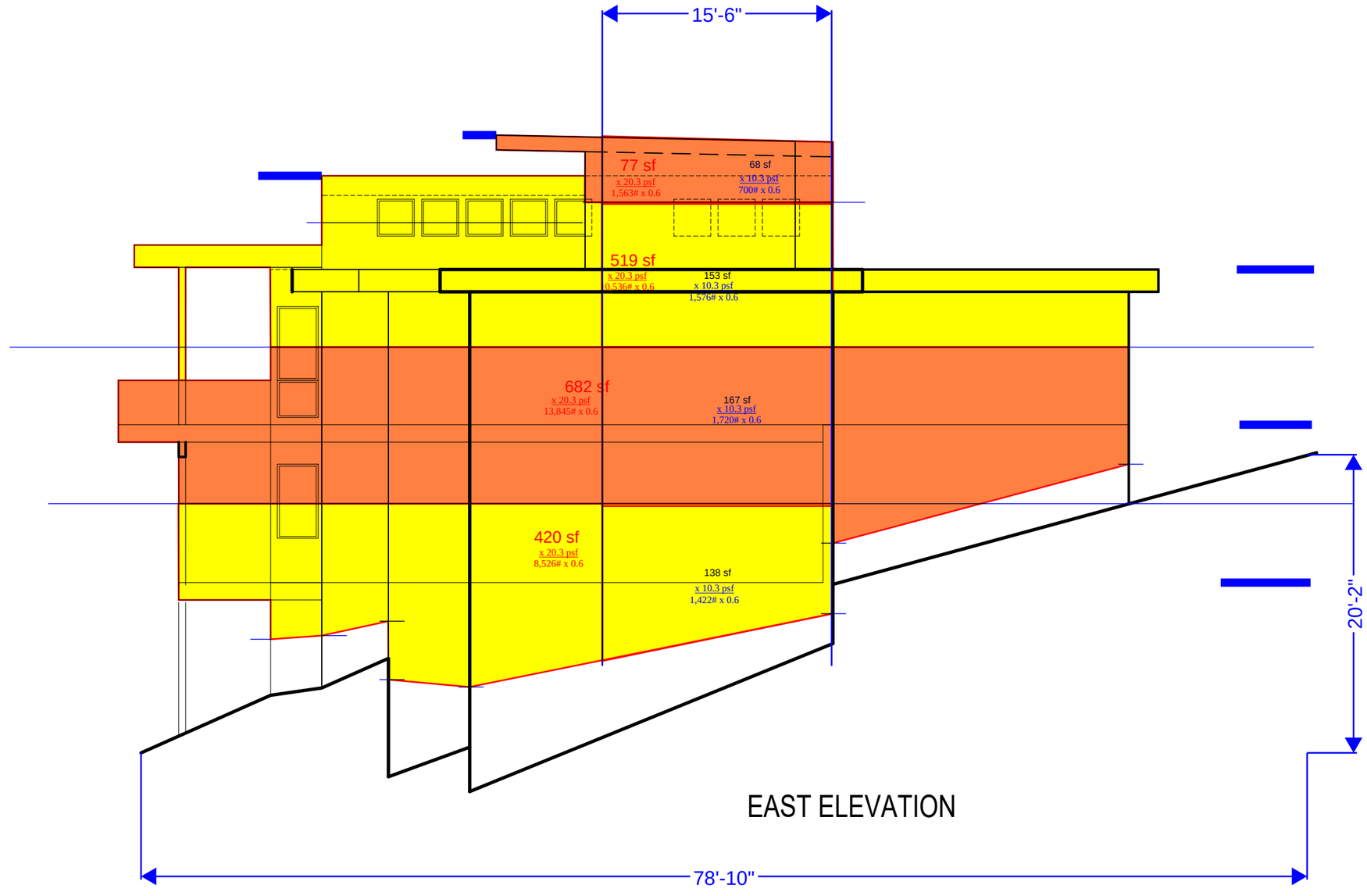


Sawtooth 10° < θ ≤ 45°
h ≤ 60' & alt design h<90'

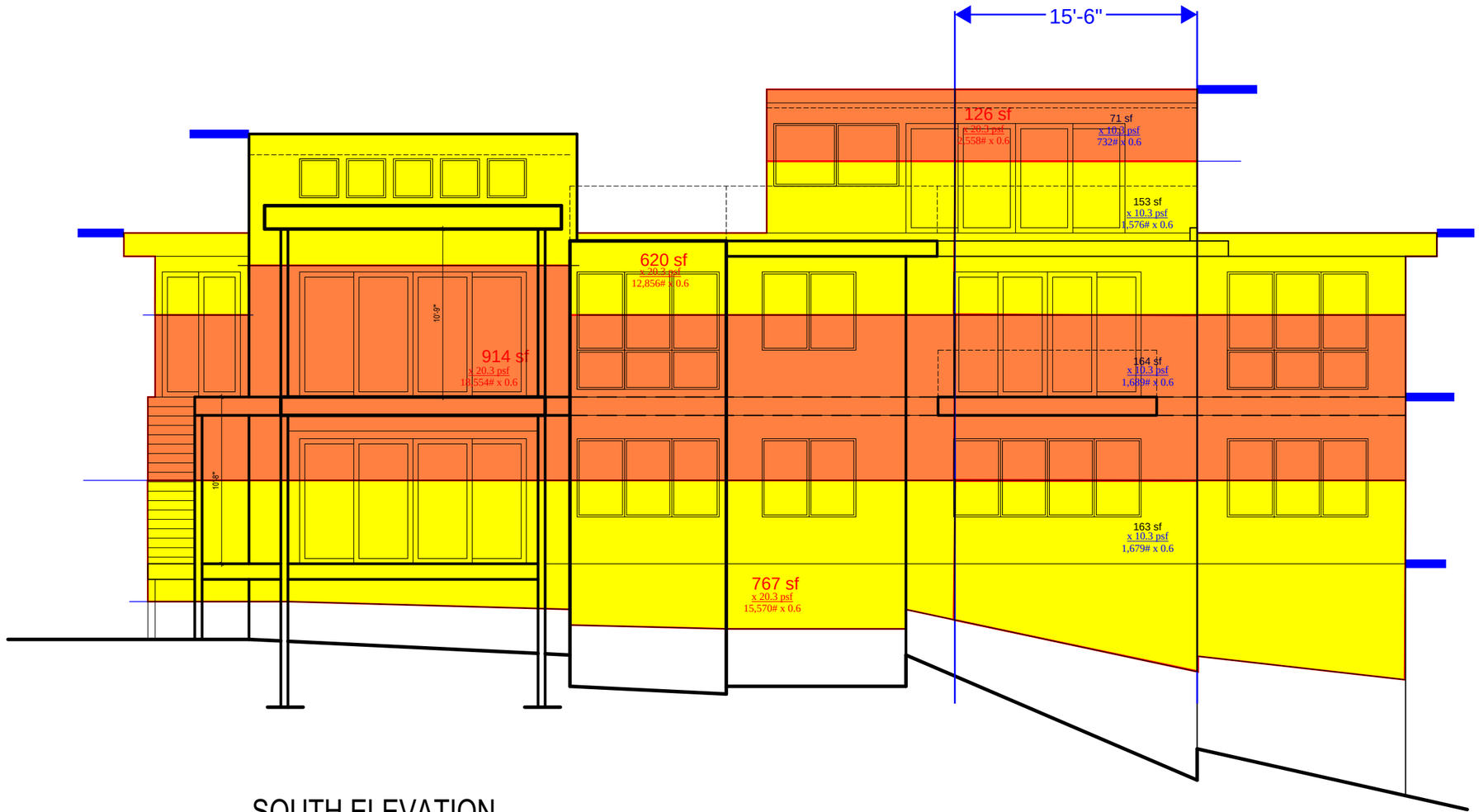




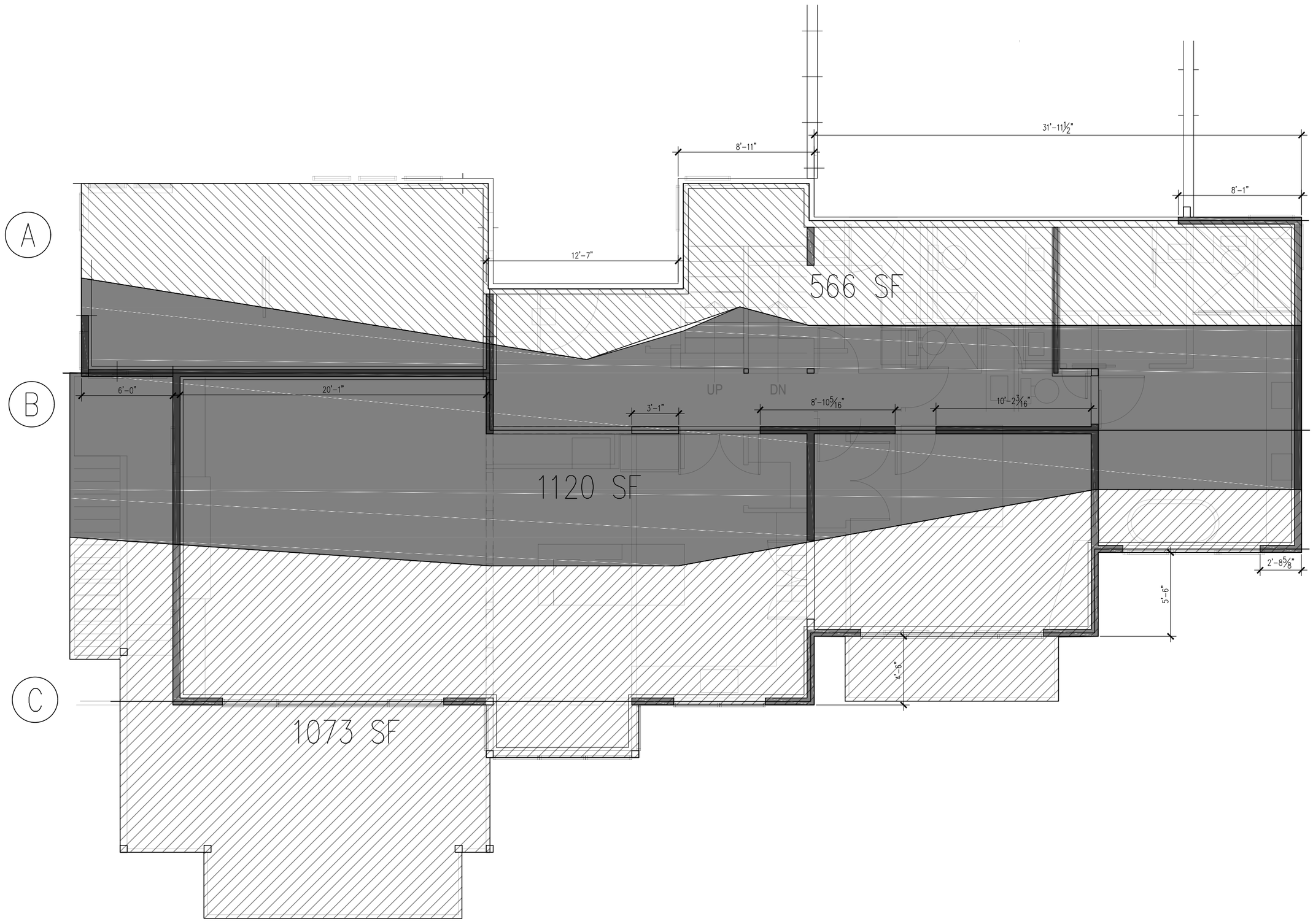
Stepped roofs θ ≤ 3°
h ≤ 60' & alt design h<90'

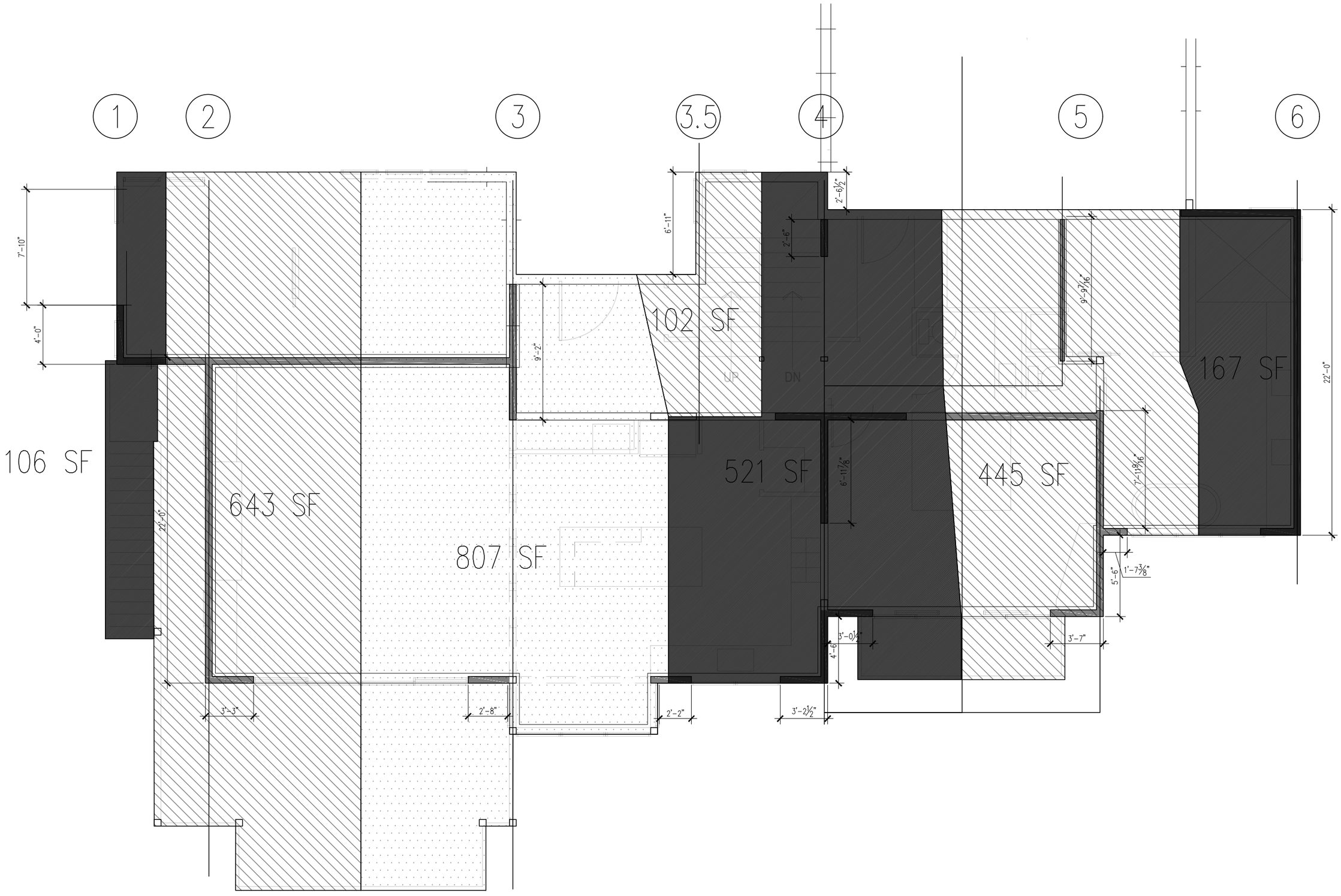


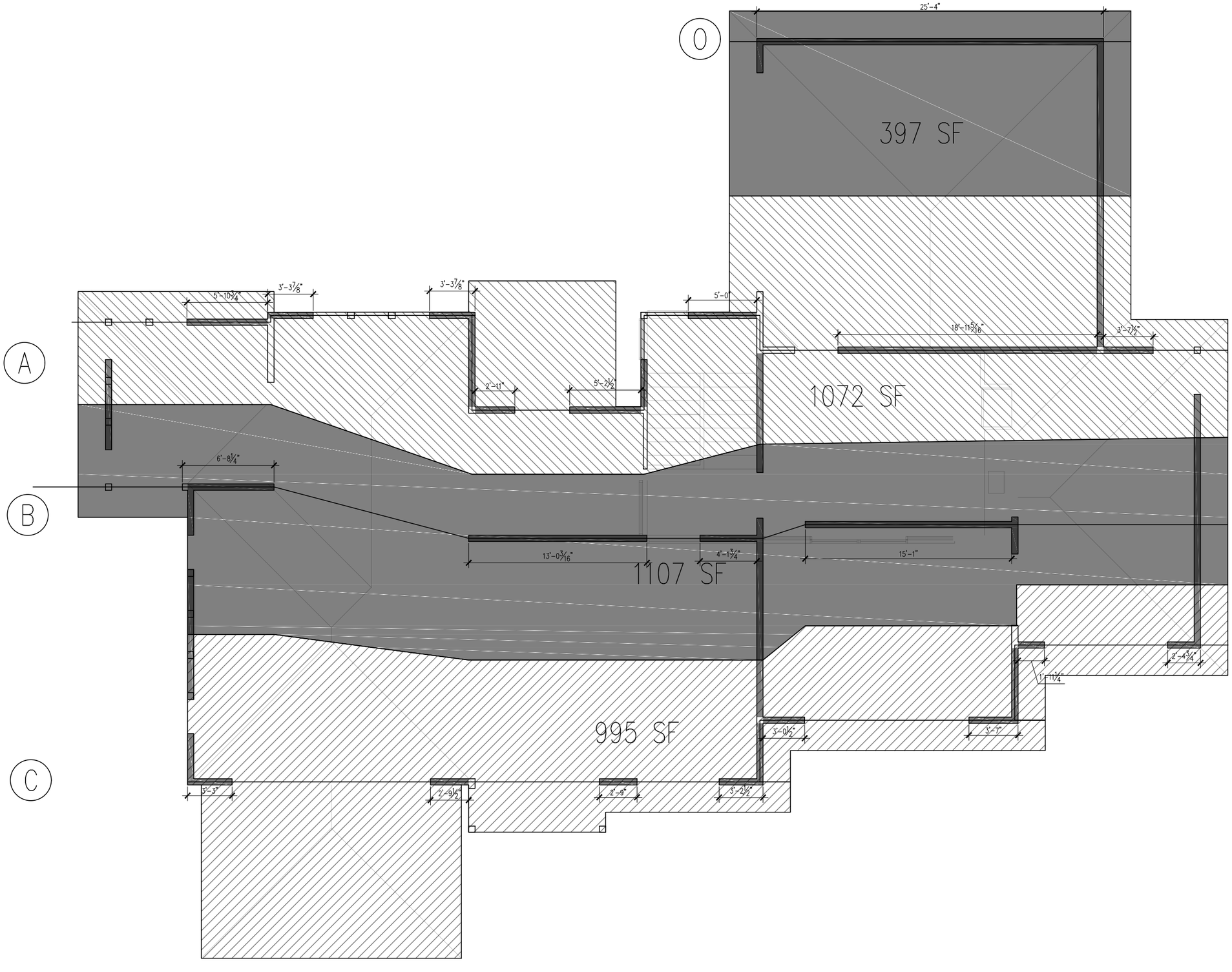
EAST ELEVATION

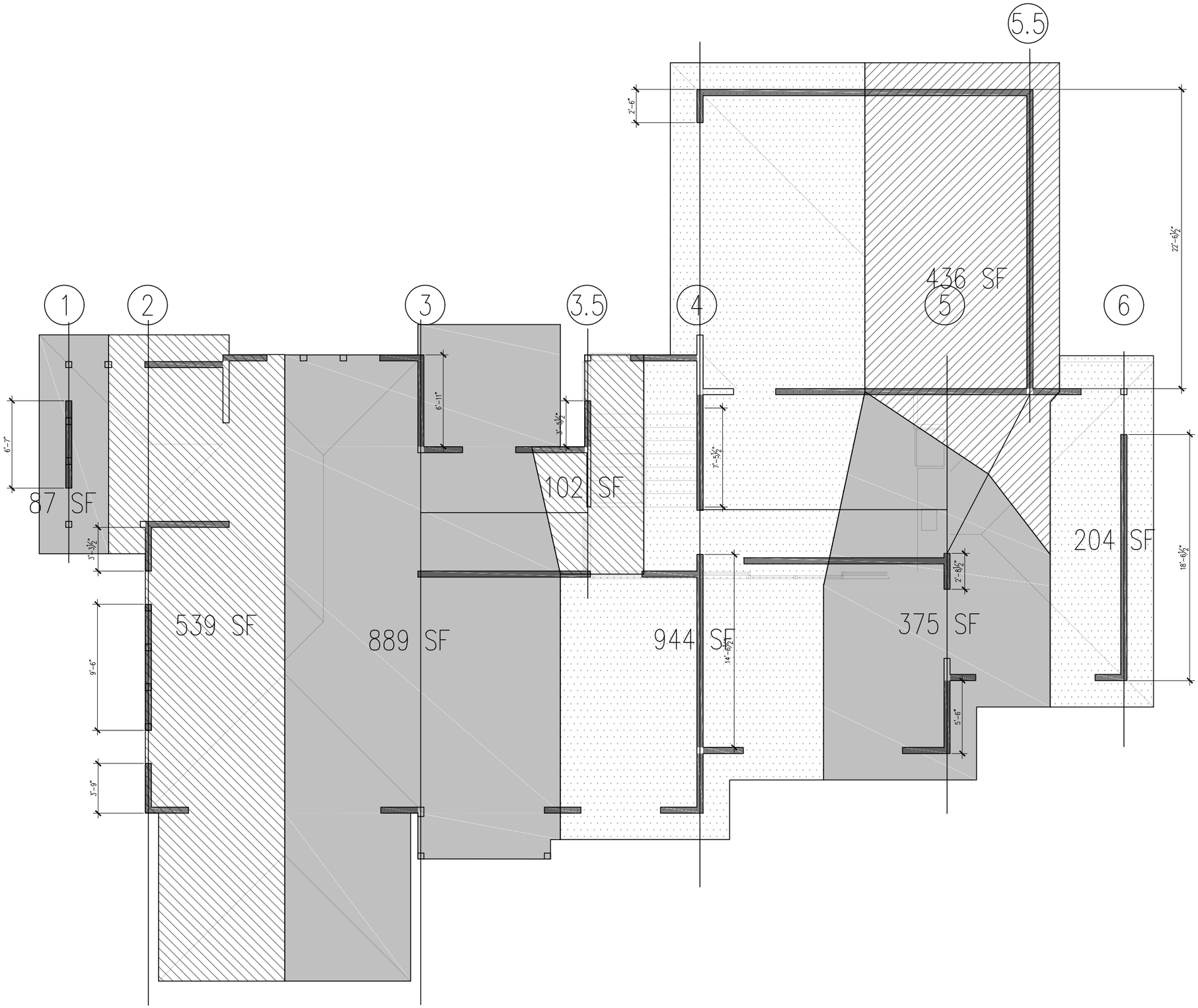


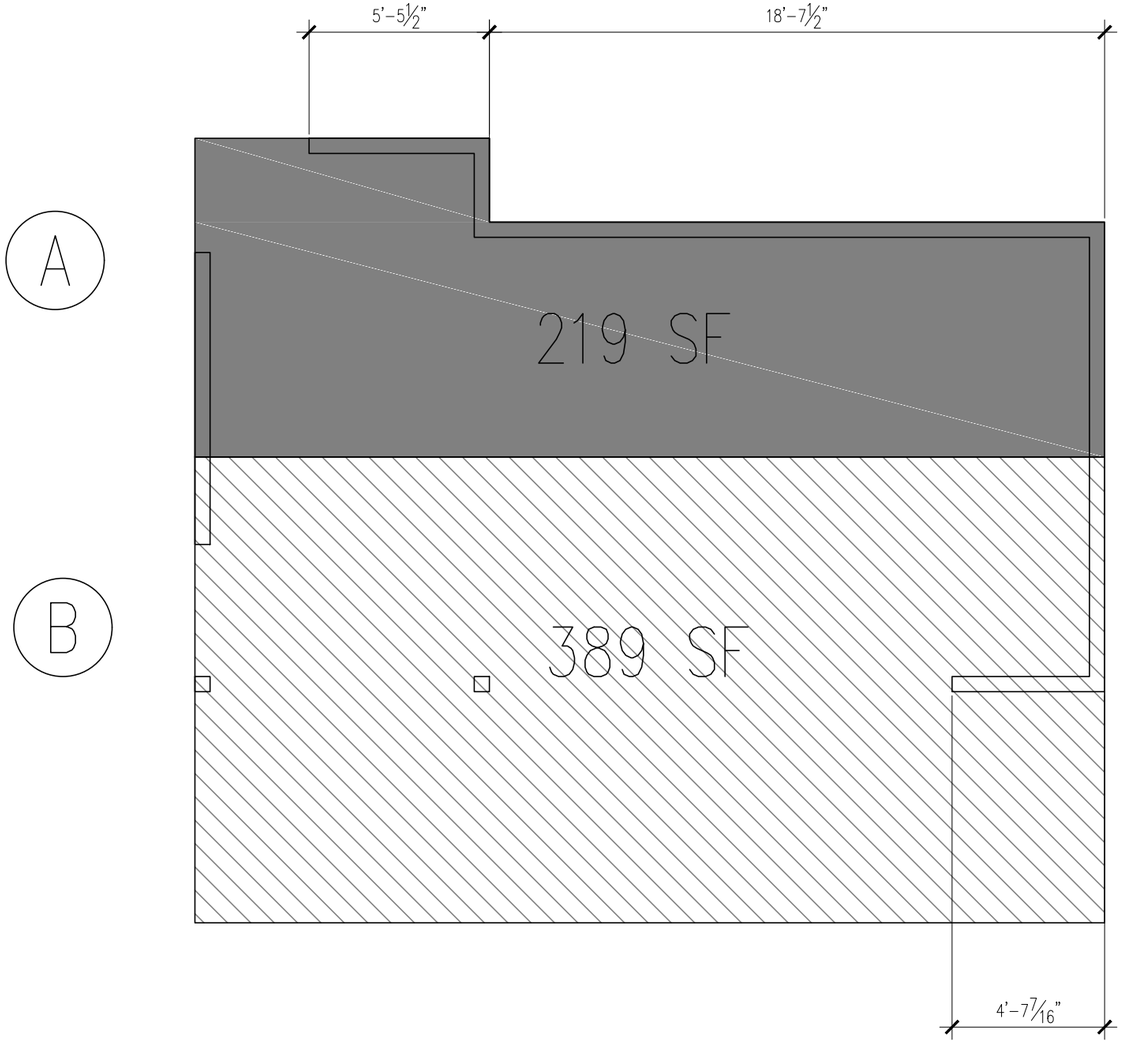
SOUTH ELEVATION

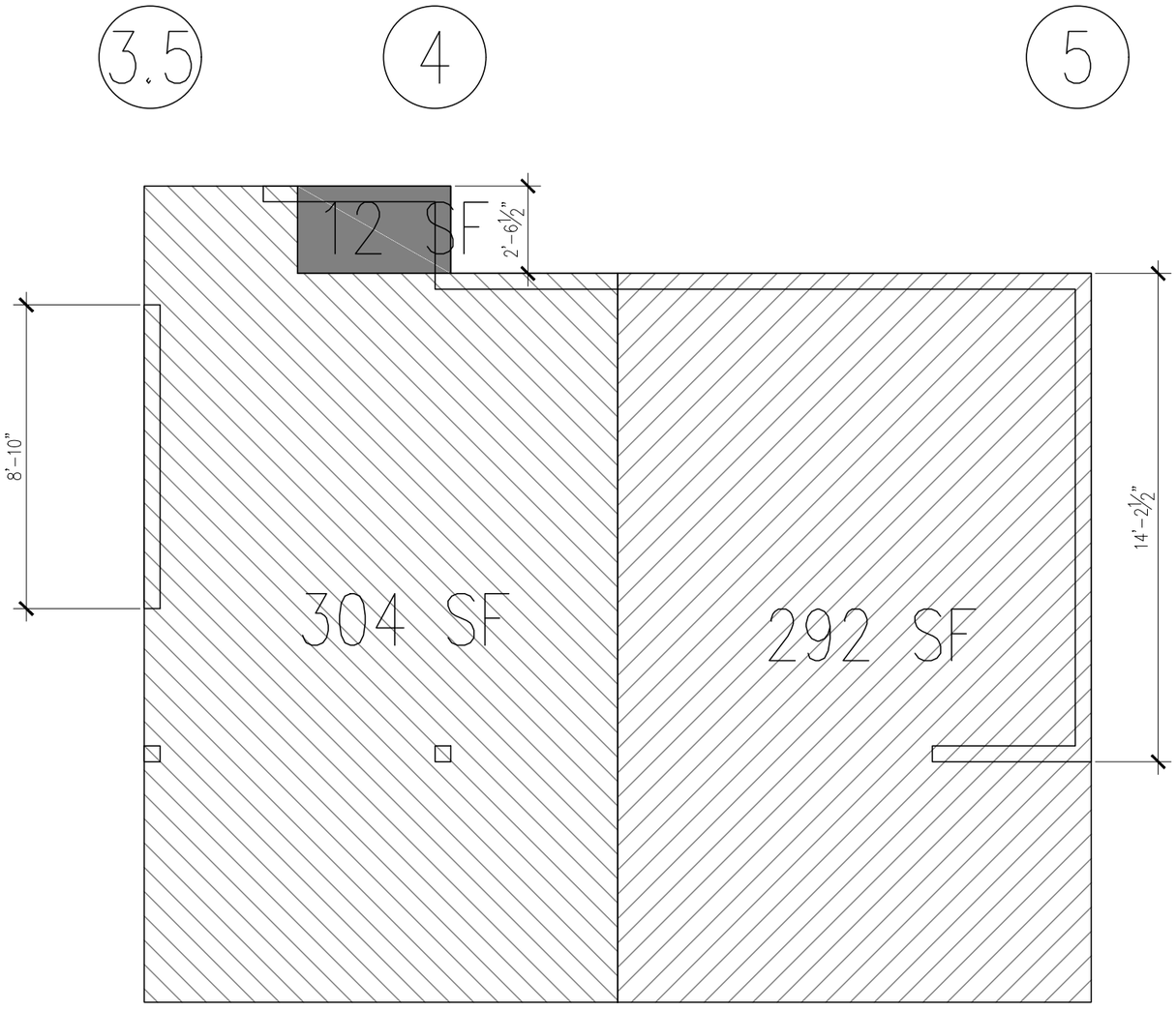

A
B
C
31'-11½"
8'-11"
8'-1"
12'-7"
566 SF
UP
DN
6'-0"
20'-1"
3'-1"
8'-10⅝"
10'-2⅜"
1120 SF
2'-8⅝"
5'-6"
4'-6"
1073 SF


1
2
3
3.5
4
5
6
106 SF
643 SF
807 SF
102 SF
521 SF
445 SF
167 SF
UP
DN
7'-10"
4'-0"
22'-6"
9'-2"
6'-11"
2'-6½"
2'-6"
9'-9⅞"
22'-0"
6'-11⅞"
7'-11⅞"
1'-7⅜"
5'-6"
3'-0½"
4'-6"
3'-7"
3'-3"
2'-8"
2'-2"
3'-2½"


0
A
B
C
25'-4"
397 SF
5'-10¼"
3'-3⅞"
3'-3⅞"
5'-0"
18'-11⁵⁄₁₆"
3'-2½"
2'-11"
5'-2½"
1072 SF
6'-8¼"
13'-0³⁄₁₆"
4'-1³⁄₄"
15'-1"
1107 SF
2'-4³⁄₄"
1'-11¼"
995 SF
3'-0½"
3'-7"
3'-3"
2'-9½"
2'-9"
3'-2½"

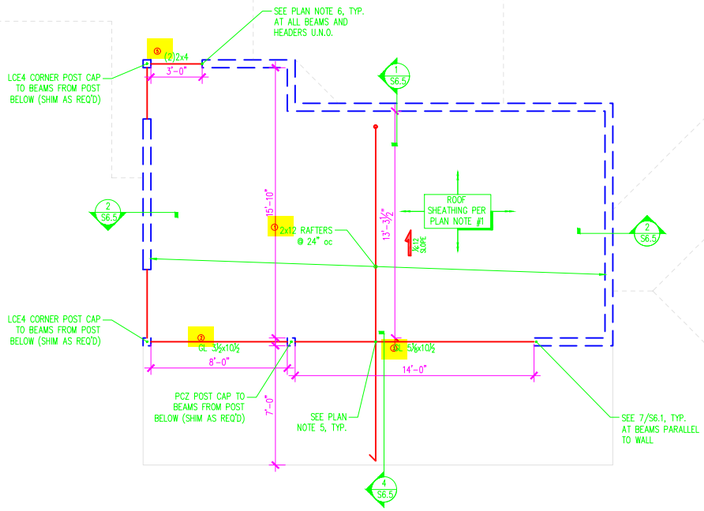

1
2
3
3.5
4
5
5.5
6
87 SF
539 SF
889 SF
102 SF
944 SF
436 SF
375 SF
204 SF
6'-7"
3'-3½"
9'-6"
3'-9"
6'-11"
3'-5½"
7'-5½"
14'-6½"
2'-6"
22'-6½"
2'-8½"
5'-6"
18'-6½"


A
B
5'-5½"
18'-7½"
219 SF
389 SF
4'-7 7/16"


3.5
4
5
12 SF
2'-6½"
8'-10"
14'-2½"
304 SF
292 SF

ROOF PLAN NOTES

1. SEE 1/S2.2 PLAN NOTE 1 FOR ROOF SHEATHING AND FASTENING REQUIREMENTS.
2. SEE 1/S2.1 PLAN NOTE 2 FOR STUDWALL INFORMATION BELOW.
3. DASHED WALLS SHOWN IN PLAN ARE LOAD-BEARING ELEMENTS BELOW FRAMING (i.e. FROM UPPER FLOOR TO UPPER ROOF).
   RAFTERS AND BEAMS SHOWN IN PLAN ARE AT UPPER ROOF ELEVATION.
4. SEE GENERAL STRUCTURAL NOTE #20 ON S1.0 FOR ENGINEERED LUMBER REQUIREMENTS.
5. PROVIDE H2.5A HURRICANE TIES AT END OF ALL RAFTERS AND TRUSSES.
6. ALL HEADERS SHALL HAVE A MINIMUM OF (2)2x POSTS AND (1)FULL HEIGHT TRIMMER STUD, U.N.O. IN PLAN (STUD DEPTH SHALL MATCH DEPTH OF THE WALL)



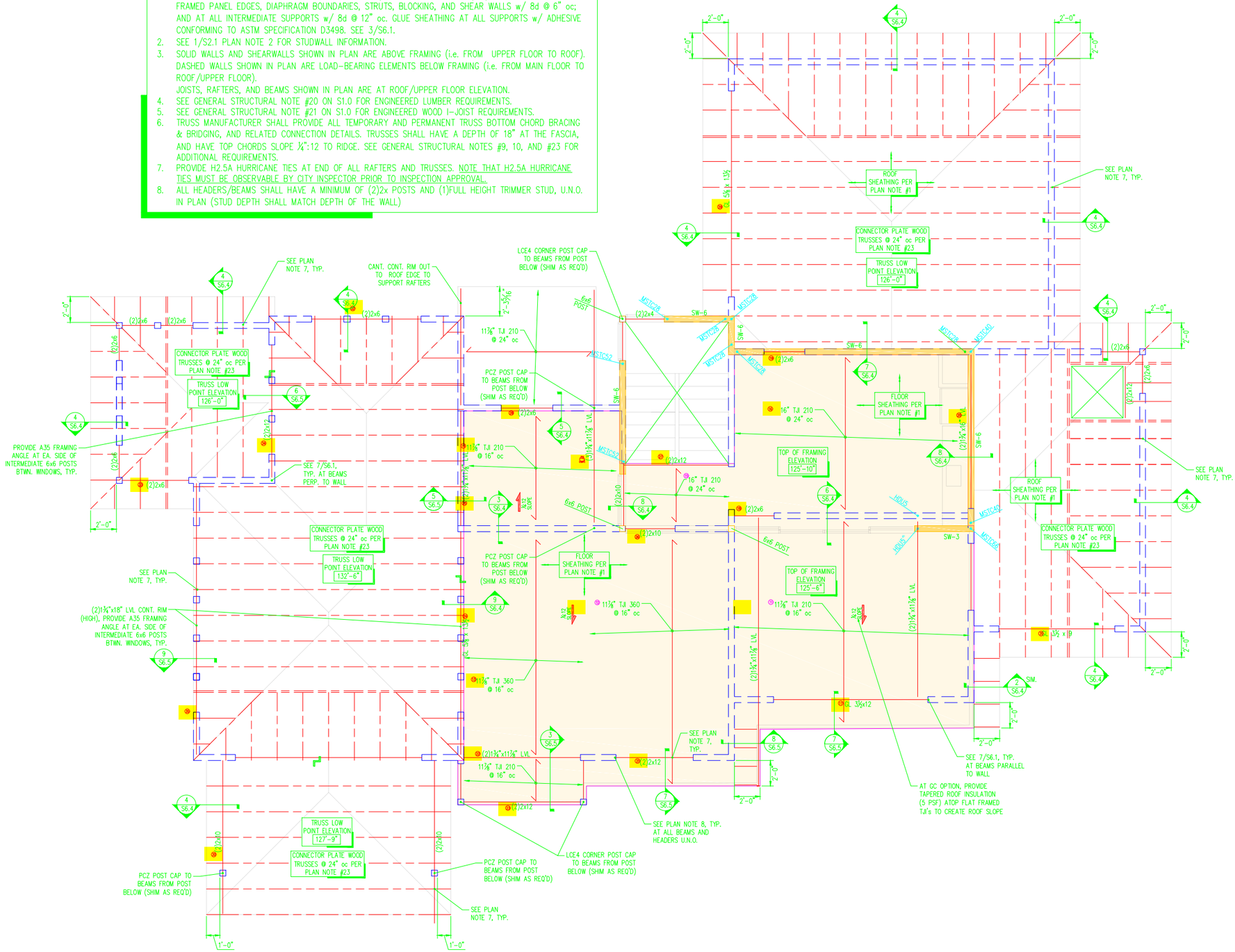
1 S2.4 UPPER ROOF FRAMING PLANE

1/4" = 1'-0"

NORTH

UPPER FLOOR & ROOF PLAN NOTES

1. SEE 1/S2.1 PLAN NOTE 1 FOR FLOOR SHEATHING AND FASTENING REQUIREMENTS.
   ROOF SHEATHING SHALL CONSIST OF ⅜" SHEATHING (PANEL SPAN RATING 32/16). NAIL SHEATHING AT ALL FRAMED PANEL EDGES, DIAPHRAGM BOUNDARIES, STRUTS, BLOCKING, AND SHEAR WALLS w/ 8d @ 6" oc; AND AT ALL INTERMEDIATE SUPPORTS w/ 8d @ 12" oc. GLUE SHEATHING AT ALL SUPPORTS w/ ADHESIVE CONFORMING TO ASTM SPECIFICATION D3498. SEE 3/S6.1.
2. SEE 1/S2.1 PLAN NOTE 2 FOR STUDWALL INFORMATION.
3. SOLID WALLS AND SHEARWALLS SHOWN IN PLAN ARE ABOVE FRAMING (i.e. FROM UPPER FLOOR TO ROOF). DASHED WALLS SHOWN IN PLAN ARE LOAD-BEARING ELEMENTS BELOW FRAMING (i.e. FROM MAIN FLOOR TO ROOF/UPPER FLOOR).
   JOISTS, RAFTERS, AND BEAMS SHOWN IN PLAN ARE AT ROOF/UPPER FLOOR ELEVATION.
4. SEE GENERAL STRUCTURAL NOTE #20 ON S1.0 FOR ENGINEERED LUMBER REQUIREMENTS.
5. SEE GENERAL STRUCTURAL NOTE #21 ON S1.0 FOR ENGINEERED WOOD I-JOIST REQUIREMENTS.
6. TRUSS MANUFACTURER SHALL PROVIDE ALL TEMPORARY AND PERMANENT TRUSS BOTTOM CHORD BRACING & BRIDGING, AND RELATED CONNECTION DETAILS. TRUSSES SHALL HAVE A DEPTH OF 18" AT THE FASCIA, AND HAVE TOP CHORDS SLOPE ¼":12 TO RIDGE. SEE GENERAL STRUCTURAL NOTES #9, 10, AND #23 FOR ADDITIONAL REQUIREMENTS.
7. PROVIDE H2.5A HURRICANE TIES AT END OF ALL RAFTERS AND TRUSSES. NOTE THAT H2.5A HURRICANE TIES MUST BE OBSERVABLE BY CITY INSPECTOR PRIOR TO INSPECTION APPROVAL.
8. ALL HEADERS/BEAMS SHALL HAVE A MINIMUM OF (2)2x POSTS AND (1)FULL HEIGHT TRIMMER STUD, U.N.O. IN PLAN (STUD DEPTH SHALL MATCH DEPTH OF THE WALL)



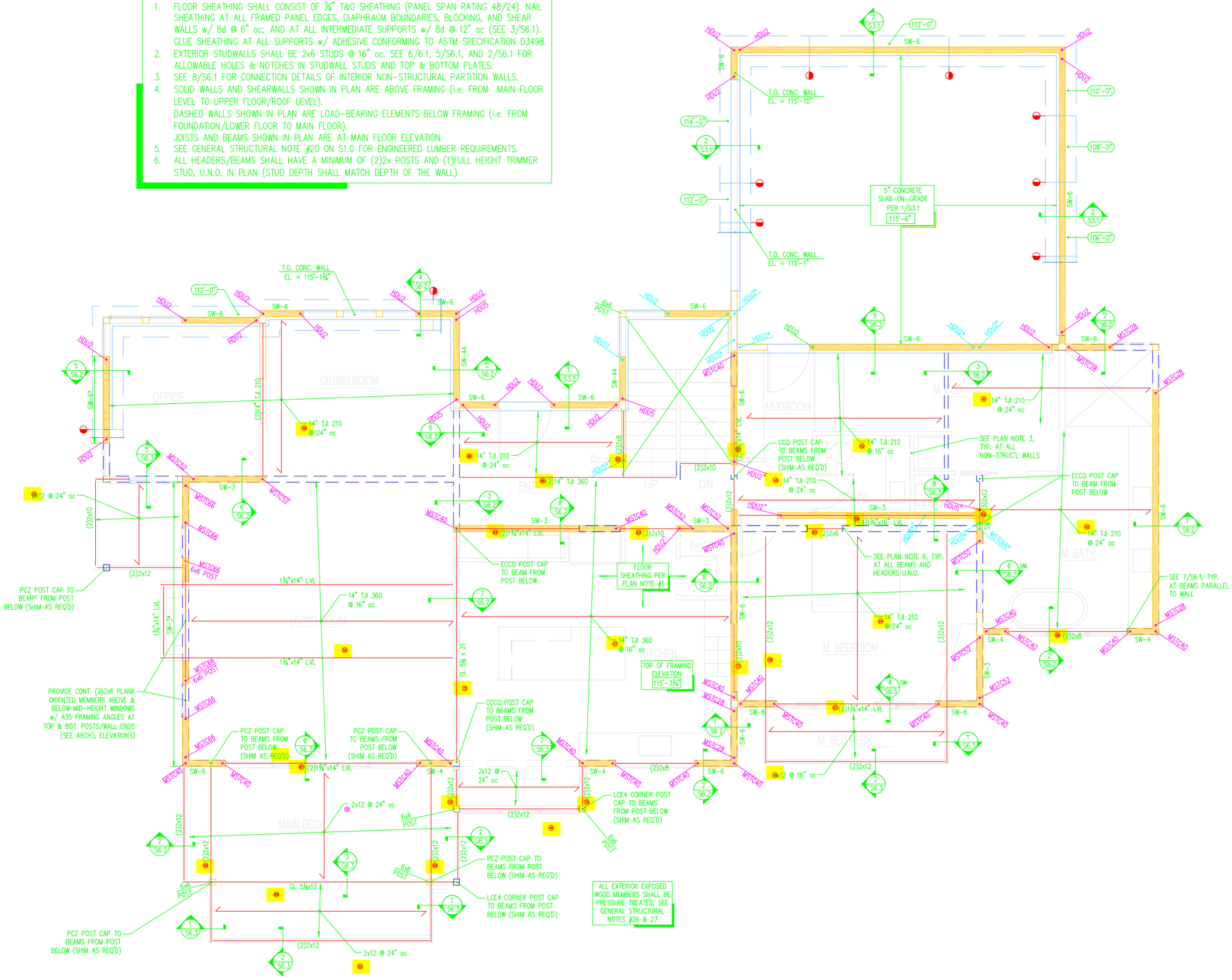
1 S2.3 UPPER FLOOR & ROOF FRAMING PLAN

1/4" = 1'-0"

NORTH

MAIN FLOOR PLAN NOTES

1. 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/ 8d @ 6" oc; AND AT ALL INTERMEDIATE SUPPORTS w/ 8d @ 12" oc (SEE 3/S6.1). GLUE SHEATHING AT ALL SUPPORTS w/ ADHESIVE CONFORMING TO ASTM SPECIFICATION D3498.
2. EXTERIOR STUDWALLS SHALL BE 2x6 STUDS @ 16" oc. SEE 6/6.1, 5/S6.1, AND 2/S6.1 FOR ALLOWABLE HOLES & NOTCHES IN STUDWALL STUDS AND TOP & BOTTOM PLATES.
3. SEE 8/S6.1 FOR CONNECTION DETAILS OF INTERIOR NON-STRUCTURAL PARTITION WALLS.
4. SOLID WALLS AND SHEARWALLS SHOWN IN PLAN ARE ABOVE FRAMING (i.e. FROM MAIN FLOOR LEVEL TO UPPER FLOOR/ROOF LEVEL).
   DASHED WALLS SHOWN IN PLAN ARE LOAD-BEARING ELEMENTS BELOW FRAMING (i.e. FROM FOUNDATION/LOWER FLOOR TO MAIN FLOOR).
   JOISTS AND BEAMS SHOWN IN PLAN ARE AT MAIN FLOOR ELEVATION.
5. SEE GENERAL STRUCTURAL NOTE #20 ON S1.0 FOR ENGINEERED LUMBER REQUIREMENTS.
6. ALL HEADERS/BEAMS SHALL HAVE A MINIMUM OF (2)2x POSTS AND (1)FULL HEIGHT TRIMMER STUD, U.N.O. IN PLAN (STUD DEPTH SHALL MATCH DEPTH OF THE WALL)



1 S2.2 MAIN FLOOR FRAMING PLAN

1/4" = 1'-0"

NORTH

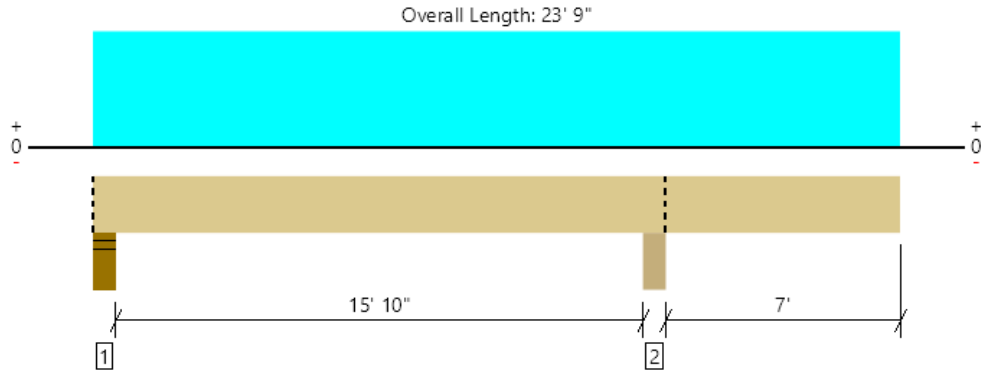
Upper Roof			
Member Name	Results	Current Solution	Comments
1 (long)	Failed	1 piece(s) 2 x 12 Douglas Fir-Larch No. 2 @ 24" OC	Right cantilever exceeds the maximum braced cantilever length of 5'.
1 (short)	Failed	1 piece(s) 2 x 12 Douglas Fir-Larch No. 2 @ 24" OC	Right cantilever exceeds the maximum braced cantilever length of 5'.
2	Passed	1 piece(s) 5 1/8" x 10 1/2" 24F-V4 DF Glulam	
3	Passed	1 piece(s) 3 1/2" x 10 1/2" 24F-V4 DF Glulam	
4	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
5	Passed	2 piece(s) 2 x 4 Douglas Fir-Larch No. 1	
Lower Roof			
Member Name	Results	Current Solution	Comments
11	Passed	1 piece(s) 11 7/8" TJI® 210 @ 16" OC	
12	Passed	1 piece(s) 11 7/8" TJI® 360 @ 16" OC	
13	Passed	1 piece(s) 11 7/8" TJI® 360 @ 16" OC	
13 short	Passed	1 piece(s) 11 7/8" TJI® 210 @ 16" OC	Web Stiffeners Required
14	Passed	1 piece(s) 11 7/8" TJI® 210 @ 16" OC	
15	Passed	1 piece(s) 16" TJI® 210 @ 24" OC	Web Stiffeners Required
16	Passed	1 piece(s) 16" TJI® 210 @ 24" OC	
17	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
18	Passed	2 piece(s) 2 x 6 Douglas Fir-Larch No. 1	
19	Passed	2 piece(s) 2 x 6 Douglas Fir-Larch No. 1	
20	Passed	2 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
21	Passed	2 piece(s) 2 x 12 Douglas Fir-Larch No. 1	
22	Passed	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
23	Passed	2 piece(s) 2 x 12 Douglas Fir-Larch No. 1	
24	Passed	1 piece(s) 5 1/8" x 13 1/2" 24F-V4 DF Glulam	
25	Passed	2 piece(s) 2 x 12 Douglas Fir-Larch No. 1	
26	Passed	1 piece(s) 2 x 10 Douglas Fir-Larch No. 1	
27	Passed	2 piece(s) 2 x 12 Douglas Fir-Larch No. 1	
28	Passed	2 piece(s) 2 x 6 Douglas Fir-Larch No. 1	
29	Passed	1 piece(s) 5 1/8" x 13 1/2" 24F-V4 DF Glulam	
30	Passed	2 piece(s) 2 x 10 Douglas Fir-Larch No. 1	
31	Passed	1 piece(s) 3 1/2" x 9" 24F-V4 DF Glulam	
32	Passed	2 piece(s) 2 x 6 Douglas Fir-Larch No. 1	
32 Cant	Failed	3 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	Right cantilever exceeds the maximum braced cantilever length of 7'.
33	Passed	2 piece(s) 2 x 6 Douglas Fir-Larch No. 1	
34	Passed	2 piece(s) 2 x 12 Douglas Fir-Larch No. 1	
35	Passed	2 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL	

Main Level			
Member Name	Results	Current Solution	Comments
40	Passed	1 piece(s) 14" TJI® 110 @ 24" OC	
41	Passed	1 piece(s) 14" TJI® 210 @ 24" OC	
42	Passed	1 piece(s) 14" TJI® 210 @ 16" OC	
43	Passed	1 piece(s) 14" TJI® 210 @ 16" OC	
44	Passed	1 piece(s) 14" TJI® 110 @ 24" OC	
45	Passed	1 piece(s) 2 x 12 Douglas Fir-Larch No. 1 @ 16" OC	
46	Passed	1 piece(s) 2 x 12 Douglas Fir-Larch No. 1 @ 24" OC	
47	Passed	1 piece(s) 14" TJI® 360 @ 16" OC	
48	Passed	1 piece(s) 14" TJI® 110 @ 24" OC	
49	Passed	1 piece(s) 14" TJI® 110 @ 24" OC	
50	Passed	1 piece(s) 14" TJI® 360 @ 16" OC	
51	Passed	1 piece(s) 2 x 12 Douglas Fir-Larch No. 1 @ 24" OC	
52	Passed	1 piece(s) 2 x 12 Douglas Fir-Larch No. 1 @ 24" OC	
53	Passed	1 piece(s) 2 x 12 Douglas Fir-Larch No. 1 @ 16" OC	
54	Passed	1 piece(s) 2 x 12 Douglas Fir-Larch No. 1 @ 16" OC	
55	Passed	1 piece(s) 2 x 12 Douglas Fir-Larch No. 1 @ 24" OC	
56	Passed	2 piece(s) 2 x 8 Douglas Fir-Larch No. 1	
57	Passed	2 piece(s) 1 3/4" x 9 1/4" 2.0E Microllam® LVL	
58	Passed	3 piece(s) 2 x 12 Hem-Fir No. 1	
59	Failed	4 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	An excessive uplift of -2768 lbs at support located at 4 1/2" failed this product.
59 (no seismic)	Passed	4 piece(s) 1 3/4" x 16" 2.0E Microllam® LVL	
60	Passed	2 piece(s) 2 x 6 Douglas Fir-Larch No. 1	
61	Failed	2 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	An excessive uplift of -1307 lbs at support located at 7' 3 7/16" failed this product.
62	Passed	3 piece(s) 2 x 12 Douglas Fir-Larch No. 1	
63	Passed	2 piece(s) 2 x 10 Douglas Fir-Larch No. 1	
64	Passed	2 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
65	Passed	2 piece(s) 2 x 8 Douglas Fir-Larch No. 1	
66	Passed	2 piece(s) 14" TJI® 360	
67	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
68	Passed	1 piece(s) 5 1/8" x 12" 24F-V4 DF Glulam	
69	Passed	2 piece(s) 2 x 12 Douglas Fir-Larch No. 1	
70	Passed	2 piece(s) 2 x 12 Douglas Fir-Larch No. 1	
71	Passed	2 piece(s) 2 x 10 Douglas Fir-Larch No. 1	
72	Passed	2 piece(s) 2 x 8 Douglas Fir-Larch No. 1	
73	Passed	1 piece(s) 5 1/8" x 21" 24F-V4 DF Glulam	
Lower Level			
Member Name	Results	Current Solution	Comments
80	Passed	1 piece(s) 2 x 12 Douglas Fir-Larch No. 1 @ 24" OC	
81	Passed	1 piece(s) 5 1/8" x 12" 24F-V4 DF Glulam	
82	Passed	2 piece(s) 2 x 12 Douglas Fir-Larch No. 1	

Upper Roof, 1 (long)

1 piece(s) 2 x 12 Douglas Fir-Larch No. 2 @ 24" OC

Right cantilever exceeds the maximum braced cantilever length of 5'.



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)	1523 @ 16' 6 1/4"	5157 (5.50")	Passed (30%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	767 @ 15' 4 1/4"	2329	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-2352 @ 16' 6 1/4"	2354	Passed (100%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.220 @ 23' 9"	0.723	Passed (2L/790)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.317 @ 7' 11"	1.077	Passed (L/611)	--	1.0 D + 1.0 S (Alt Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0.25/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Moment capacity over cantilever support 2 has been reduced by 25% to lessen the effects of buckling.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	5.50"	5.50"	1.50"	273	382	655	Blocking
2 - Beveled Plate - DF	5.50"	5.50"	1.62"	677	846	1523	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' 3" o/c	
Bottom Edge (Lu)	5' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 23' 9"	24"	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

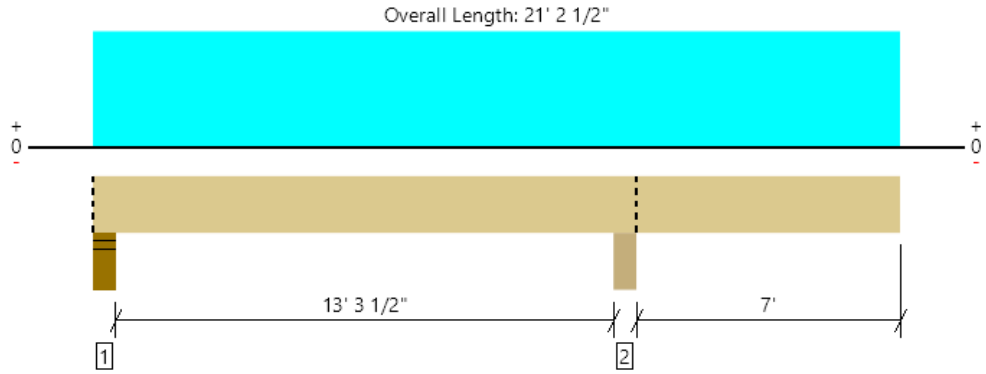
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Upper Roof, 1 (short)

1 piece(s) 2 x 12 Douglas Fir-Larch No. 2 @ 24" OC

Right cantilever exceeds the maximum braced cantilever length of 5'.



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)	1436 @ 13' 11 3/4"	5157 (5.50")	Passed (28%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	680 @ 12' 9 3/4"	2329	Passed (29%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-2352 @ 13' 11 3/4"	2354	Passed (100%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.249 @ 21' 2 1/2"	0.723	Passed (2L/698)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.355 @ 21' 2 1/2"	0.964	Passed (2L/488)	--	1.0 D + 1.0 S (Alt Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0.25/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Moment capacity over cantilever support 2 has been reduced by 25% to lessen the effects of buckling.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	5.50"	5.50"	1.50"	210	311	521	Blocking
2 - Beveled Plate - DF	5.50"	5.50"	1.53"	638	798	1436	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' o/c	
Bottom Edge (Lu)	5' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 21' 2 1/2"	24"	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

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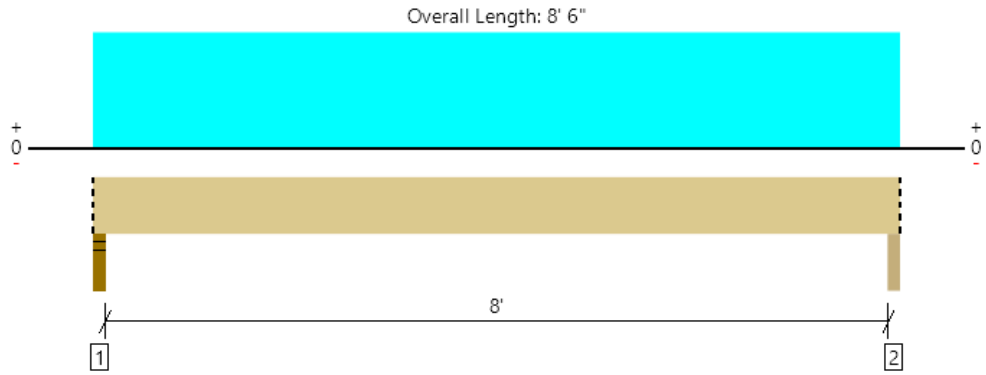
Weyerhaeuser

Upper Roof, 2

1 piece(s) 5 1/8" x 10 1/2" 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)	3292 @ 1 1/2"	9609 (3.00")	Passed (34%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2421 @ 1' 1 1/2"	10933	Passed (22%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	6590 @ 4' 3"	21660	Passed (30%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.050 @ 4' 3"	0.412	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.091 @ 4' 3"	0.550	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.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 8' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.00"	3.00"	1.50"	1494	1798	3292	Blocking
2 - Beam - GLB	3.00"	3.00"	1.50"	1494	1798	3292	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)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 8' 6"	N/A	13.1	--	
1 - Uniform (PLF)	0 to 8' 6" (Top)	N/A	338.5	423.0	Linked from: 1 (long), Support 2

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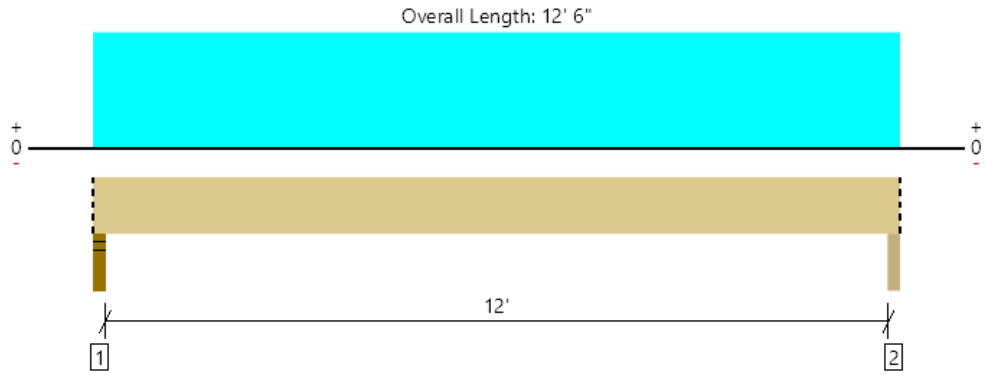
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper Roof, 3

1 piece(s) 3 1/2" x 10 1/2" 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)	4543 @ 1 1/2"	6563 (3.00")	Passed (69%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3726 @ 1' 1 1/2"	7466	Passed (50%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	13636 @ 6' 3"	14792	Passed (92%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.333 @ 6' 3"	0.613	Passed (L/442)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.606 @ 6' 3"	0.817	Passed (L/243)	--	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.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 12' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.00"	3.00"	2.08"	2050	2494	4544	Blocking
2 - Beam - GLB	3.00"	3.00"	2.00"	2050	2494	4544	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)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 12' 6"	N/A	8.9	--	
1 - Uniform (PLF)	0 to 12' 6" (Top)	N/A	319.0	399.0	Linked from: 1 (short), Support 2

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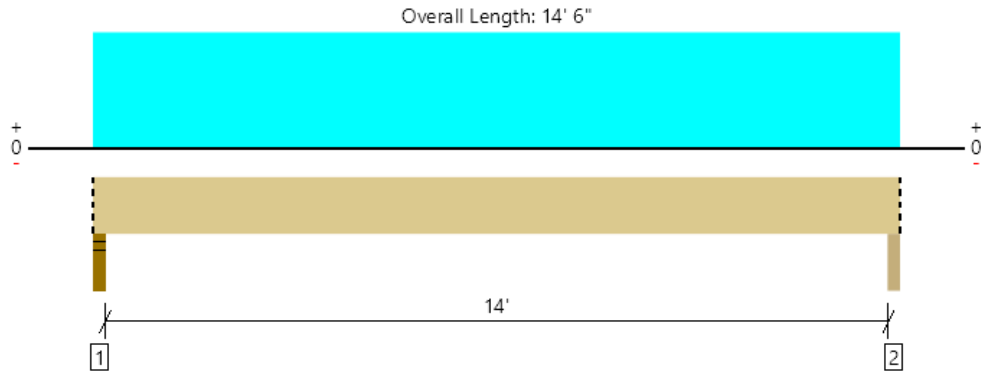
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Upper Roof, 4

1 piece(s) 3 1/2" x 12" 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)	5280 @ 1 1/2"	6563 (3.00")	Passed (80%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4369 @ 1' 3"	8533	Passed (51%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	18484 @ 7' 3"	19320	Passed (96%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.408 @ 7' 3"	0.712	Passed (L/419)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.745 @ 7' 3"	0.950	Passed (L/230)	--	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.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 14' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.00"	3.00"	2.41"	2387	2893	5280	Blocking
2 - Beam - GLB	3.00"	3.00"	2.32"	2387	2893	5280	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' 10" o/c	
Bottom Edge (Lu)	14' 6" 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 14' 6"	N/A	10.2	--	
1 - Uniform (PLF)	0 to 14' 6" (Top)	N/A	319.0	399.0	Linked from: 1 (short), Support 2

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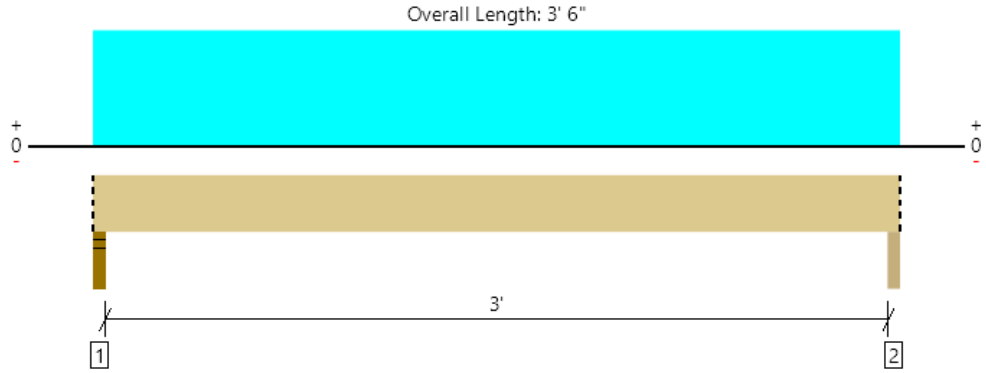
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Upper Roof, 5

2 piece(s) 2 x 4 Douglas Fir-Larch 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)	578 @ 1 1/2"	5625 (3.00")	Passed (10%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	399 @ 6 1/2"	1449	Passed (28%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	436 @ 1' 9"	880	Passed (50%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.026 @ 1' 9"	0.162	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.045 @ 1' 9"	0.217	Passed (L/857)	--	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	3.00"	3.00"	1.50"	244	334	578	Blocking
2 - Beam - GLB	3.00"	3.00"	1.50"	244	334	578	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)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 6"	N/A	2.7	--	
1 - Uniform (PLF)	0 to 3' 6" (Top)	N/A	136.5	191.0	Linked from: 1 (long), Support 1

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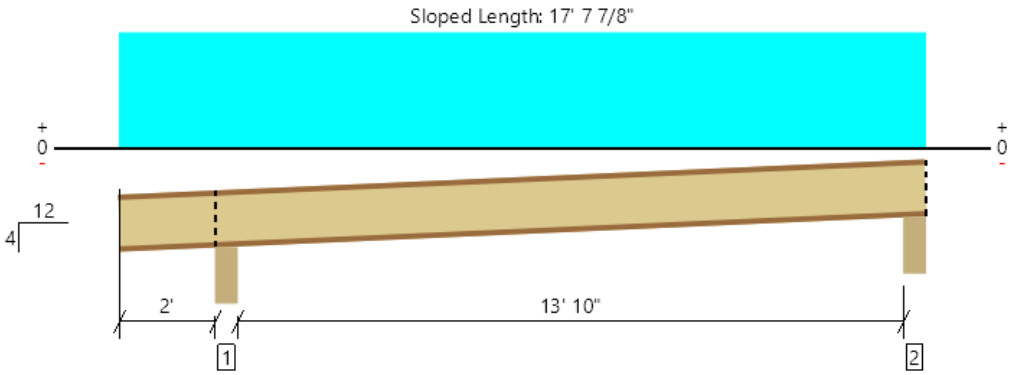
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Lower Roof, 11
1 piece(s) 11 7/8" TJI® 210 @ 16" OC



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

Member Length : 17' 11 13/16"

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	851 @ 16' 4 1/2"	1460 (3.50")	Passed (58%)	1.00	1.0 D + 1.0 L (Alt Spans)
Shear (lbs)	799 @ 16' 3 1/2"	1655	Passed (48%)	1.00	1.0 D + 1.0 L (Alt Spans)
Moment (Ft-lbs)	2836 @ 9' 4 1/4"	3795	Passed (75%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.290 @ 9' 3 5/8"	0.746	Passed (L/617)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.411 @ 9' 3 7/8"	0.994	Passed (L/435)	--	1.0 D + 1.0 L (Alt Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 4/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- 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 - Beveled Plate - DF	5.50"	5.50"	3.50"	333	758	1091	Blocking
2 - Beveled Plate - DF	5.50"	5.50"	1.75"	256	596/-14	852/-14	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' 3" o/c	
Bottom Edge (Lu)	8' 8" o/c	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 16' 9"	16"	25.0	60.0	Default Load

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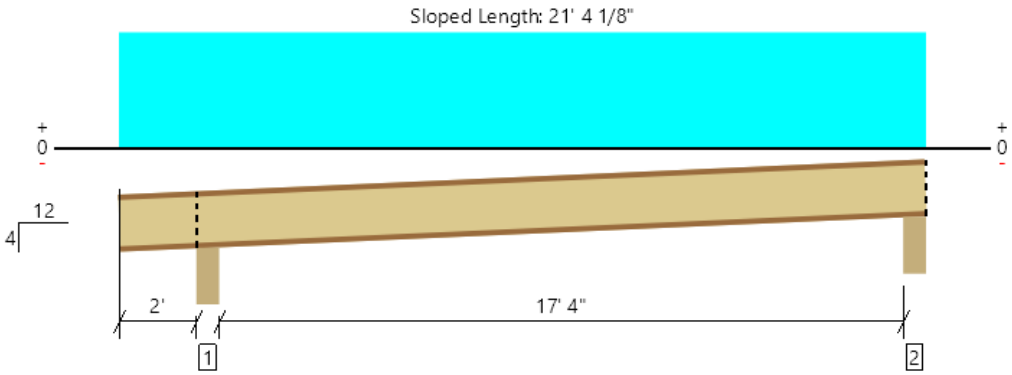
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Lower Roof, 12
1 piece(s) 11 7/8" TJI® 360 @ 16" OC



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

Member Length : 21' 8 1/8"

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1054 @ 19' 10 1/2"	1505 (3.50")	Passed (70%)	1.00	1.0 D + 1.0 L (Alt Spans)
Shear (lbs)	1001 @ 19' 9 1/2"	1705	Passed (59%)	1.00	1.0 D + 1.0 L (Alt Spans)
Moment (Ft-lbs)	4438 @ 11' 1 1/8"	6180	Passed (72%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.519 @ 11' 5/8"	0.930	Passed (L/430)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.739 @ 11' 13/16"	1.240	Passed (L/302)	--	1.0 D + 1.0 L (Alt Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 4/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- 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 - Beveled Plate - DF	5.50"	5.50"	3.50"	393	895	1288	Blocking
2 - Beveled Plate - DF	5.50"	5.50"	1.75"	318	736/-11	1054/-11	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' 4" o/c	
Bottom Edge (Lu)	9' 7" o/c	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 20' 3"	16"	25.0	60.0	Default Load

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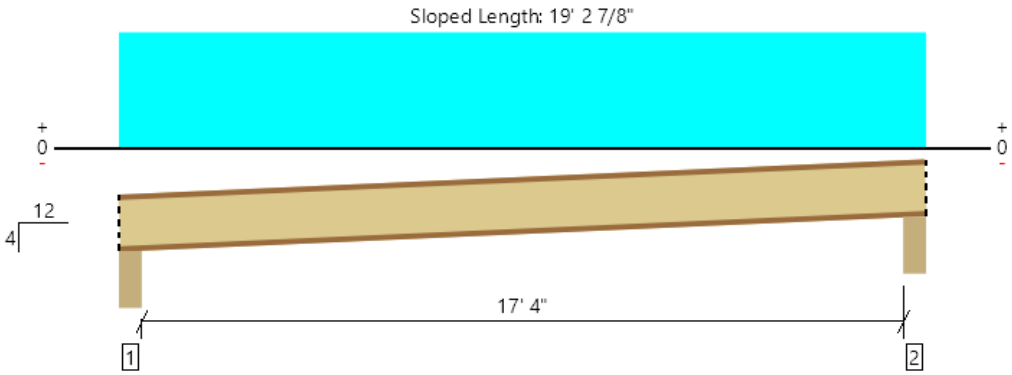
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Lower Roof, 13
1 piece(s) 11 7/8" TJI® 360 @ 16" OC



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

Member Length : 19' 6 13/16"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 4/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1051 @ 4 1/2"	1505 (3.50")	Passed (70%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	998 @ 5 1/2"	1705	Passed (59%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4408 @ 9' 1 1/2"	6180	Passed (71%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.503 @ 9' 1 1/2"	0.922	Passed (L/440)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.723 @ 9' 1 1/2"	1.230	Passed (L/306)	--	1.0 D + 1.0 L (All Spans)

- Deflection criteria: LL (L/240) and TL (L/180).
- 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 - Beveled Plate - DF	5.50"	5.50"	1.75"	321	730	1051	Blocking
2 - Beveled Plate - DF	5.50"	5.50"	1.75"	321	730	1051	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' 4" o/c	
Bottom Edge (Lu)	19' 3" o/c	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 18' 3"	16"	25.0	60.0	Default Load

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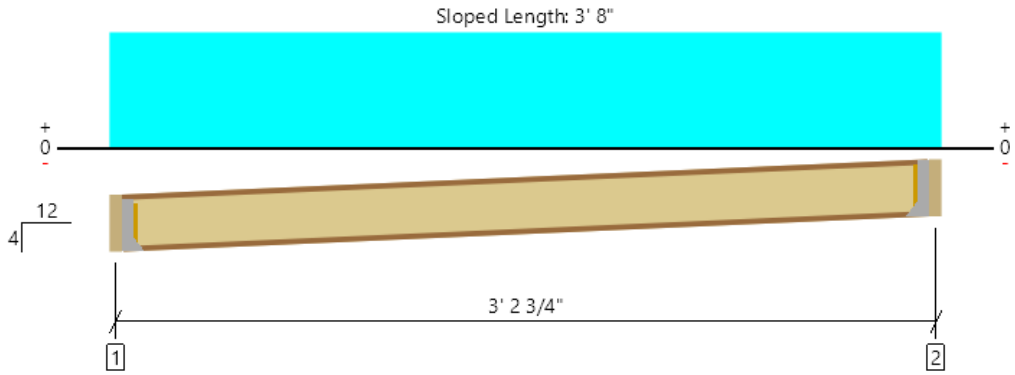
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Lower Roof, 13 short
1 piece(s) 11 7/8" TJI® 210 @ 16" OC



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

Member Length : 3' 5 5/8"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 4/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	172 @ 3"	1365 (1.75")	Passed (13%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	172 @ 3"	1655	Passed (10%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	128 @ 1' 8 7/8"	3795	Passed (3%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.002 @ 1' 8 7/8"	0.157	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.003 @ 1' 8 7/8"	0.209	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

- Deflection criteria: LL (L/240) and TL (L/180).
- 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 11 7/8" DF beam	3.00"	Hanger[1]	- / 1.75" [2]	61	139	200	See note [1], Web Stiffeners
2 - Hanger on 11 7/8" DF beam	3.00"	Hanger[1]	- / 1.75" [2]	61	139	200	See note [1], Web Stiffeners

- 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)	3' 2" o/c	
Bottom Edge (Lu)	3' 2" 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	LSSR2.1Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	Web Stiffeners
2 - Face Mount Hanger	LSSR2.1Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	Web Stiffeners

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 3' 5 3/4"	16"	25.0	60.0	Default Load

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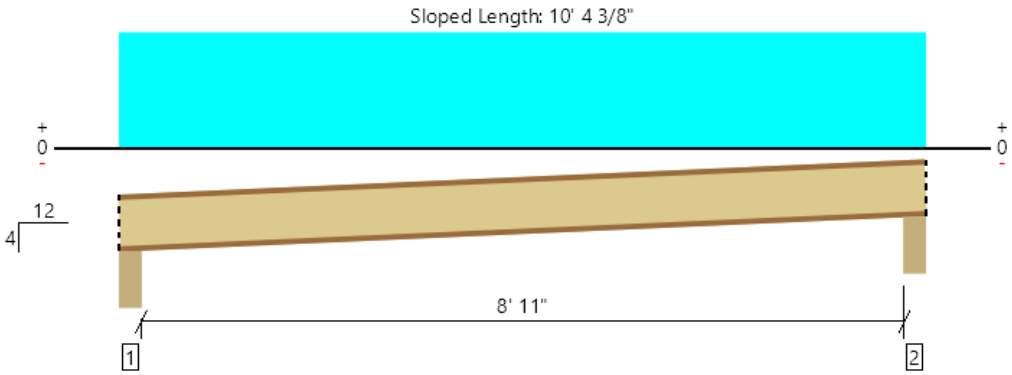
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Lower Roof, 14
1 piece(s) 11 7/8" TJI® 210 @ 16" OC



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

Member Length : 10' 8 5/16"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 4/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	566 @ 4 1/2"	1460 (3.50")	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	513 @ 5 1/2"	1655	Passed (31%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1187 @ 4' 11"	3795	Passed (31%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.058 @ 4' 11"	0.479	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.084 @ 4' 11"	0.638	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

- Deflection criteria: LL (L/240) and TL (L/180).
- 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 - Beveled Plate - DF	5.50"	5.50"	1.75"	173	393	566	Blocking
2 - Beveled Plate - DF	5.50"	5.50"	1.75"	173	393	566	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' 10" o/c	
Bottom Edge (Lu)	10' 4" o/c	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 9' 10"	16"	25.0	60.0	Default Load

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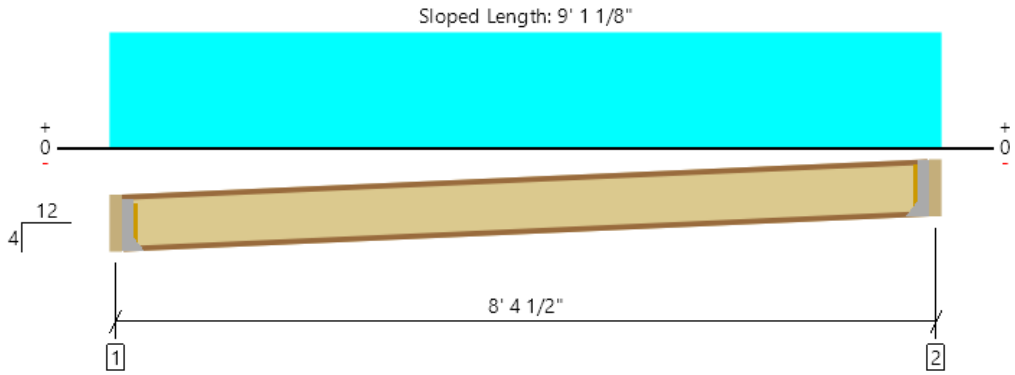
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Lower Roof, 15
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.

Member Length : 9' 1/8"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 4/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	374 @ 3"	1570 (1.75")	Passed (24%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	374 @ 3"	2519	Passed (15%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	761 @ 4' 3 3/4"	5911	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.014 @ 4' 3 3/4"	0.428	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.026 @ 4' 3 3/4"	0.571	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

- Deflection criteria: LL (L/240) and TL (L/180).
- 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	3.00"	Hanger[1]	- / 1.75" [2]	181	216	397	See note [1], Web Stiffeners
2 - Hanger on 16" DF beam	3.00"	Hanger[1]	- / 1.75" [2]	181	216	397	See note [1], Web Stiffeners

- 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)	8' 7" o/c	
Bottom Edge (Lu)	8' 7" 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	
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 Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 8' 7 1/2"	24"	20.0	25.0	Default Load

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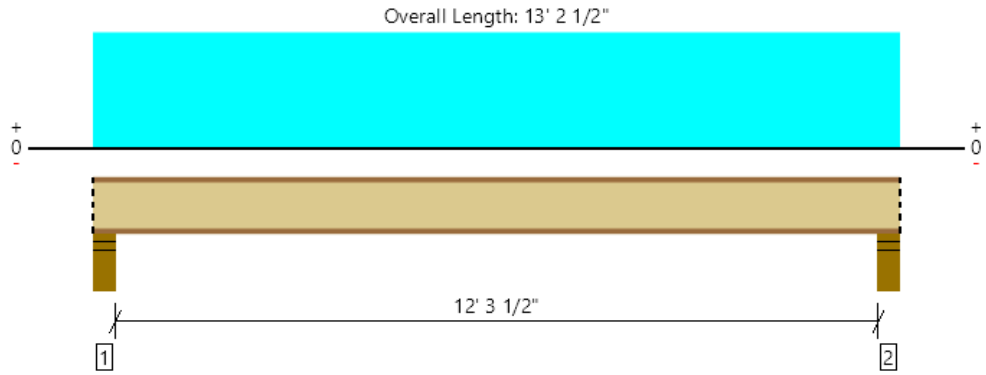
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Lower Roof, 16
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)	991 @ 4 1/2"	1460 (3.50")	Passed (68%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	922 @ 5 1/2"	2190	Passed (42%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2910 @ 6' 7 1/4"	5140	Passed (57%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.090 @ 6' 7 1/4"	0.623	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.168 @ 6' 7 1/4"	0.831	Passed (L/890)	--	1.0 D + 1.0 L (All Spans)

System : Roof
Member Type : Joist
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.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	5.50"	5.50"	1.75"	462	528	990	Blocking
2 - Stud wall - DF	5.50"	5.50"	1.75"	462	528	990	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' 1" o/c	
Bottom Edge (Lu)	13' 3" o/c	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 13' 2 1/2"	24"	35.0	40.0	Default Load

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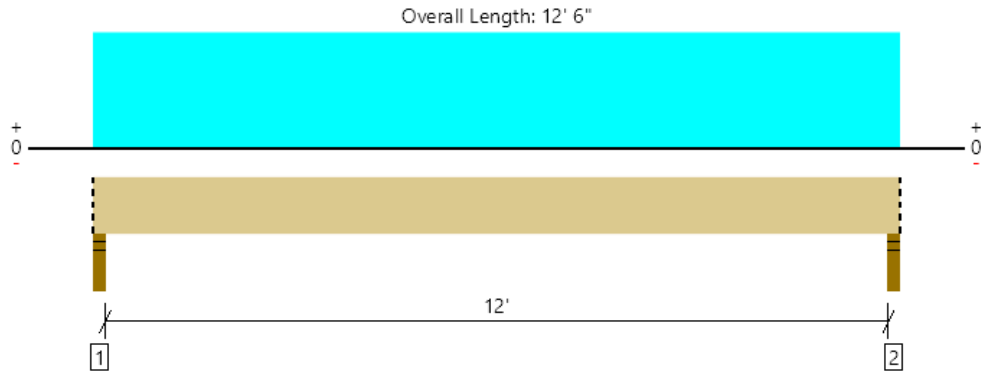
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Lower Roof, 17
1 piece(s) 3 1/2" x 12" 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)	5178 @ 1 1/2"	6563 (3.00")	Passed (79%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	4142 @ 1' 3"	7420	Passed (56%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	15540 @ 6' 3"	16800	Passed (93%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.318 @ 6' 3"	0.613	Passed (L/463)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.463 @ 6' 3"	0.817	Passed (L/318)	--	1.0 D + 1.0 L (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.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 12' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	3.00"	3.00"	2.37"	1625	3553	5178	Blocking
2 - Stud wall - DF	3.00"	3.00"	2.37"	1625	3553	5178	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	10.2	--	
1 - Uniform (PLF)	0 to 12' 6" (Top)	N/A	249.8	568.5	Linked from: 11, Support 1

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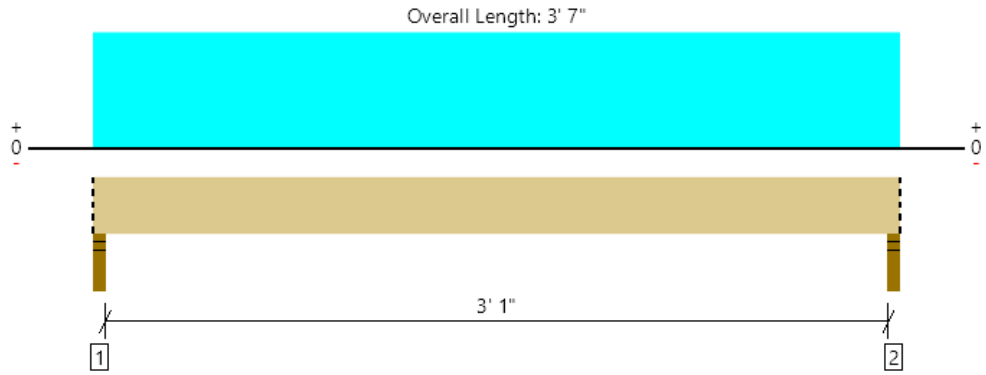
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Lower Roof, 18
2 piece(s) 2 x 6 Douglas Fir-Larch 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) [Group]
Member Reaction (lbs)	2039 @ 1 1/2"	5625 (3.00")	Passed (36%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	1233 @ 8 1/2"	1980	Passed (62%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	1581 @ 1' 9 1/2"	1639	Passed (96%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.028 @ 1' 9 1/2"	0.167	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.045 @ 1' 9 1/2"	0.222	Passed (L/895)	--	1.0 D + 1.0 L (All Spans) [1]

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	Floor Live	Total	
1 - Stud wall - DF	3.00"	3.00"	1.50"	765	1274	2039	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	765	1274	2039	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' 7" o/c	
Bottom Edge (Lu)	3' 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 3' 7"	N/A	4.2	--	
1 - Uniform (PLF)	0 to 3' 7" (Top)	N/A	231.0	264.0	Linked from: 16, Support 2
2 - Uniform (PLF)	0 to 3' 7" (Top)	N/A	192.0	447.0/-10.5	Linked from: 11, Support 2

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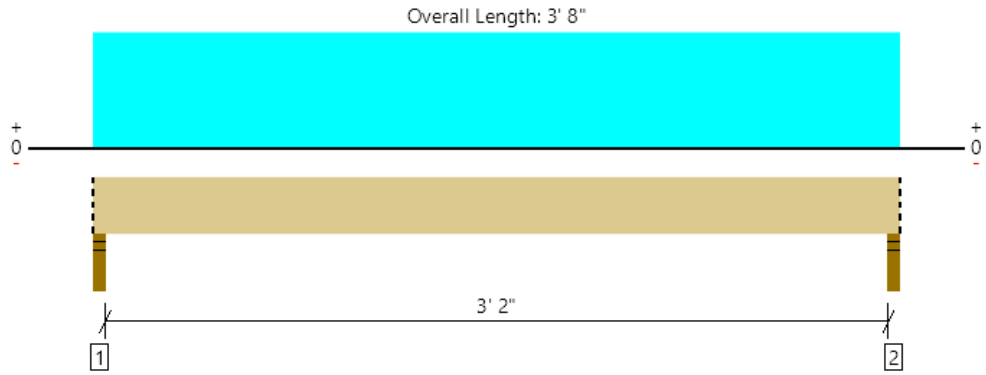
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Lower Roof, 19

2 piece(s) 2 x 6 Douglas Fir-Larch 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)	915 @ 1 1/2"	5625 (3.00")	Passed (16%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	562 @ 8 1/2"	1980	Passed (28%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	728 @ 1' 10"	1639	Passed (44%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.011 @ 1' 10"	0.171	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.022 @ 1' 10"	0.228	Passed (L/999+)	--	1.0 D + 1.0 L (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	Floor Live	Total	
1 - Stud wall - DF	3.00"	3.00"	1.50"	431	484	915	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	431	484	915	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' 8" o/c	
Bottom Edge (Lu)	3' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 3' 8"	N/A	4.2	--	
1 - Uniform (PLF)	0 to 3' 8" (Top)	N/A	231.0	264.0	Linked from: 16, Support 1

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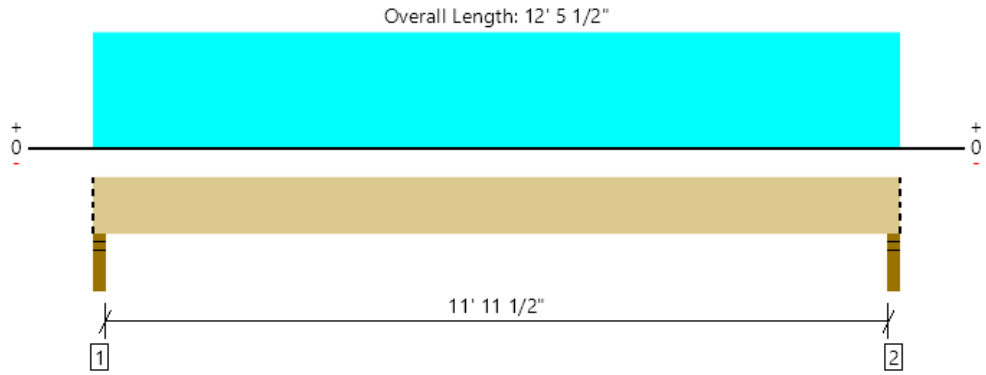
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Lower Roof, 20
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)	1324 @ 1 1/2"	6563 (3.00")	Passed (20%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	988 @ 1' 7"	12236	Passed (8%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3961 @ 6' 2 3/4"	35781	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.012 @ 6' 2 3/4"	0.610	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.053 @ 6' 2 3/4"	0.814	Passed (L/999+)	--	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.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.00"	3.00"	1.50"	1013	311	1324	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	1013	311	1324	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)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 12' 5 1/2"	N/A	16.3	--	
1 - Uniform (PSF)	0 to 12' 5 1/2" (Top)	2'	20.0	25.0	
2 - Uniform (PSF)	0 to 12' 5 1/2" (Top)	8' 6"	12.5	-	

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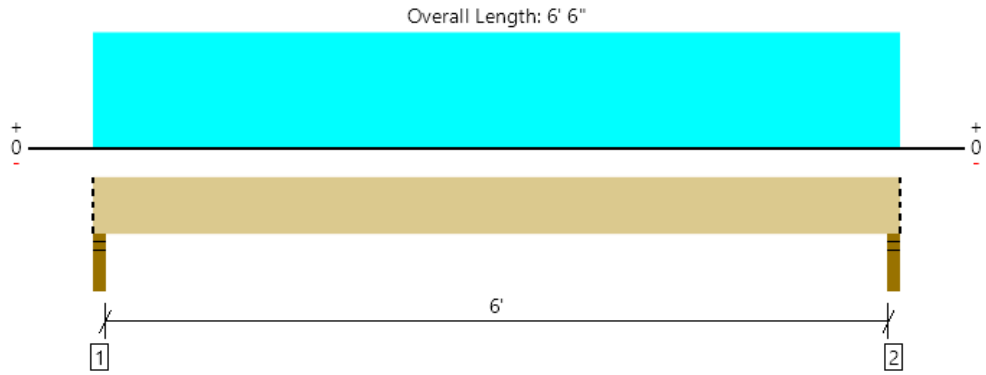
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Lower Roof, 21

2 piece(s) 2 x 12 Douglas Fir-Larch 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)	3167 @ 1 1/2"	5625 (3.00")	Passed (56%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2010 @ 1' 2 1/4"	4050	Passed (50%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4759 @ 3' 3"	5273	Passed (90%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.038 @ 3' 3"	0.313	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.055 @ 3' 3"	0.417	Passed (L/999+)	--	1.0 D + 1.0 L (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	Floor Live	Total	
1 - Stud wall - DF	3.00"	3.00"	1.69"	986	2182	3168	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.69"	986	2182	3168	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' 6" o/c	
Bottom Edge (Lu)	6' 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 6' 6"	N/A	8.6	--	
1 - Uniform (PLF)	0 to 6' 6" (Top)	N/A	294.8	671.3	Linked from: 12, Support 1

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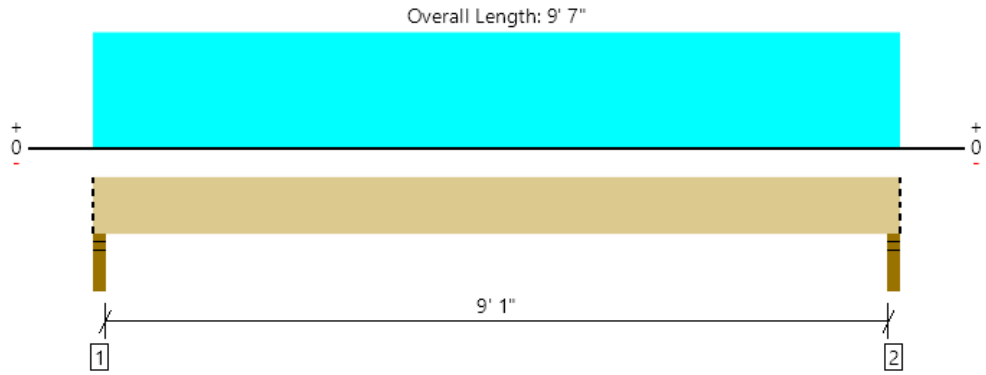
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Lower Roof, 22

2 piece(s) 1 3/4" x 11 7/8" 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)	3835 @ 1 1/2"	6563 (3.00")	Passed (58%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2843 @ 1' 2 7/8"	7897	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	8715 @ 4' 9 1/2"	17848	Passed (49%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.112 @ 4' 9 1/2"	0.467	Passed (L/998)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.164 @ 4' 9 1/2"	0.622	Passed (L/683)	--	1.0 D + 1.0 L (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.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	3.00"	3.00"	1.75"	1212	2623	3835	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.75"	1212	2623	3835	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' 7" o/c	
Bottom Edge (Lu)	9' 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 9' 7"	N/A	12.1	--	
1 - Uniform (PLF)	0 to 9' 7" (Top)	N/A	240.8	547.5	Linked from: 13, Support 1

Weyerhaeuser Notes

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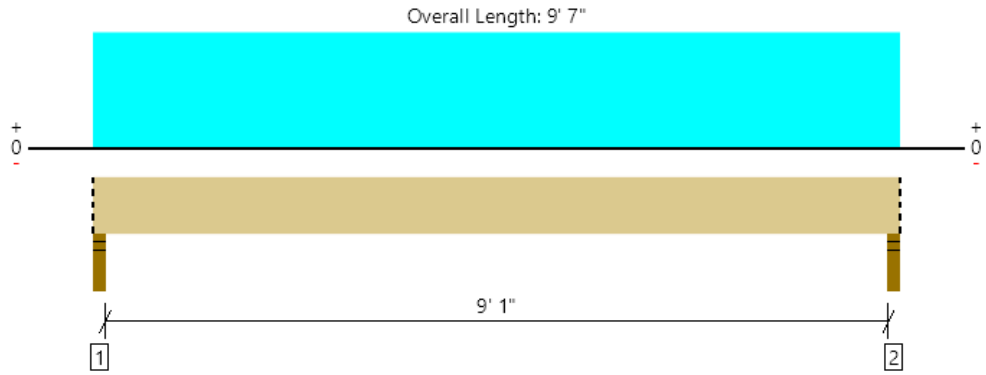
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Lower Roof, 23

2 piece(s) 2 x 12 Douglas Fir-Larch 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)	760 @ 1 1/2"	5625 (3.00")	Passed (14%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	571 @ 1' 2 1/4"	4050	Passed (14%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1726 @ 4' 9 1/2"	5273	Passed (33%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.029 @ 4' 9 1/2"	0.467	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.045 @ 4' 9 1/2"	0.622	Passed (L/999+)	--	1.0 D + 1.0 L (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	Floor Live	Total	
1 - Stud wall - DF	3.00"	3.00"	1.50"	260	500	760	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	260	500	760	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' 7" o/c	
Bottom Edge (Lu)	9' 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 9' 7"	N/A	8.6	--	
1 - Uniform (PLF)	0 to 9' 7" (Top)	N/A	45.8	104.3	Linked from: 13 short, Support 1

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

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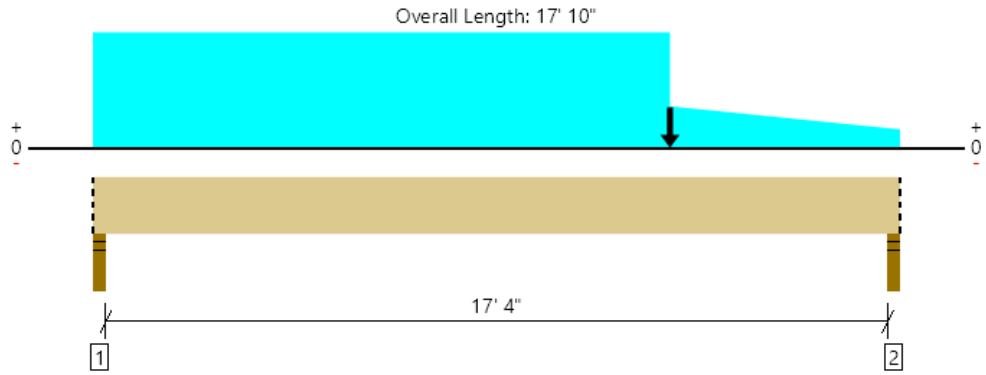
Weyerhaeuser

Lower Roof, 24

1 piece(s) 5 1/8" x 13 1/2" 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)	5257 @ 1 1/2"	9609 (3.00")	Passed (55%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4460 @ 1' 4 1/2"	14057	Passed (32%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	23195 @ 9' 7/8"	35805	Passed (65%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.367 @ 8' 11 1/16"	0.879	Passed (L/575)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.679 @ 8' 11 1/16"	1.172	Passed (L/311)	--	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.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 17' 7".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.00"	3.00"	1.64"	2420	2837	5257	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	1979	2286	4265	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)	17' 10" o/c	
Bottom Edge (Lu)	17' 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 17' 10"	N/A	16.8	--	
1 - Uniform (PSF)	0 to 17' 10" (Top)	2'	20.0	25.0	
2 - Uniform (PSF)	0 to 12' 9" (Top)	10' 6"	20.0	25.0	
3 - Tapered (PSF)	12' 9" to 17' 10" (Top)	2' 6" to 0	20.0	25.0	
4 - Point (lb)	12' 9" (Top)	N/A	580	725	Truss Girder w/ tributary area of 29 sf

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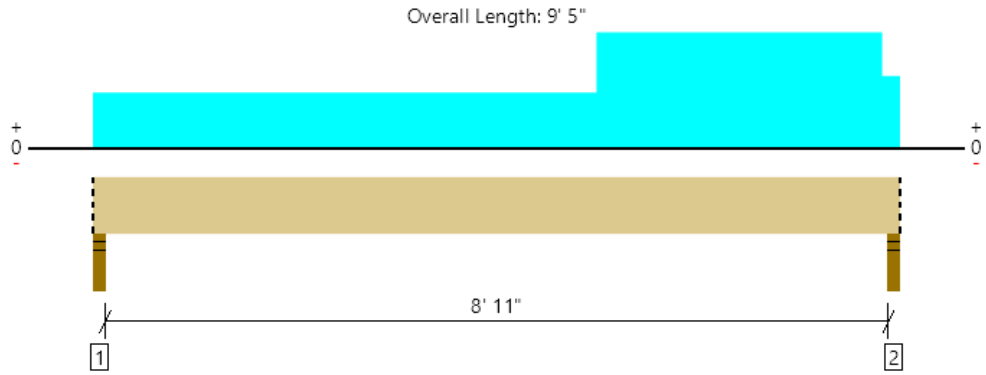
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Lower Roof, 25

2 piece(s) 2 x 12 Douglas Fir-Larch 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)	3373 @ 9' 3 1/2"	5625 (3.00")	Passed (60%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2360 @ 8' 2 3/4"	4658	Passed (51%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6101 @ 5' 4 11/16"	6064	Passed (101%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.084 @ 4' 10"	0.458	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.153 @ 4' 9 15/16"	0.611	Passed (L/718)	--	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"	1077	1295	2372	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.80"	1522	1851	3373	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)	9' 5" 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' 5"	N/A	8.6	--	
1 - Uniform (PSF)	0 to 9' 5" (Top)	2'	20.0	25.0	
2 - Uniform (PSF)	0 to 9' 2 1/2" (Top)	7' 7"	20.0	25.0	
3 - Uniform (PSF)	5' 10 1/2" to 9' 5" (Top)	10' 6"	20.0	25.0	

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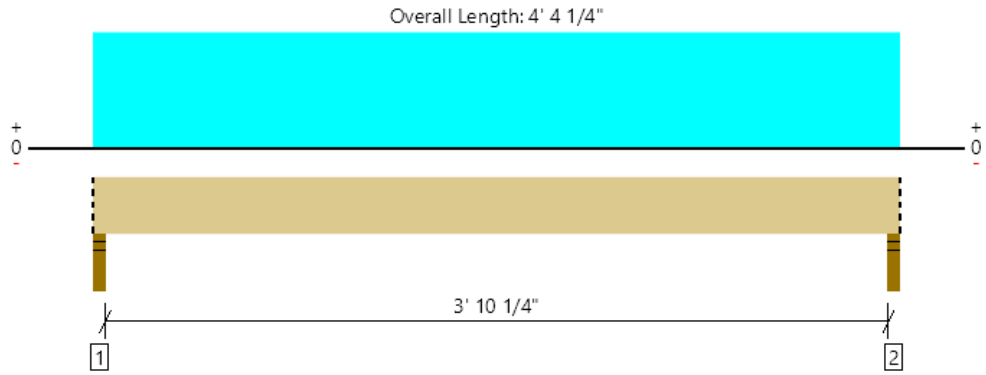
Weyerhaeuser

Lower Roof, 26

1 piece(s) 2 x 10 Douglas Fir-Larch 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) [Group]
Member Reaction (lbs)	1926 @ 1 1/2"	2813 (3.00")	Passed (68%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	1023 @ 1' 1/4"	1665	Passed (61%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	1862 @ 2' 2 1/8"	1961	Passed (95%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.021 @ 2' 2 1/8"	0.205	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.034 @ 2' 2 1/8"	0.274	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]

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	Floor Live	Snow	Total	
1 - Stud wall - DF	3.00"	3.00"	2.05"	724	1202/-18	235	2161/-18	Blocking
2 - Stud wall - DF	3.00"	3.00"	2.05"	724	1202/-18	235	2161/-18	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' 7" o/c	
Bottom Edge (Lu)	4' 4" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 4' 4 1/4"	N/A	3.5	--	--	
1 - Uniform (PLF)	0 to 4' 4 1/4" (Top)	N/A	90.5	-	108.0	Linked from: 15, Support 1
2 - Uniform (PLF)	0 to 4' 4 1/4" (Top)	N/A	238.5	552.0/-8.3	-	Linked from: 12, Support 2

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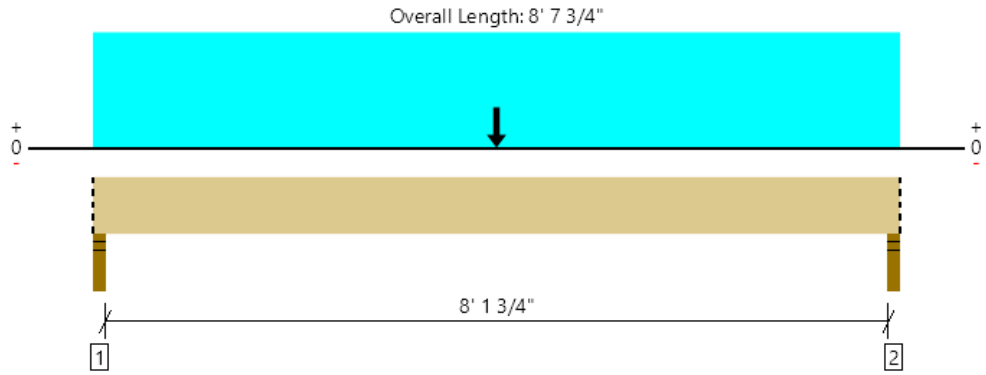
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Lower Roof, 27

2 piece(s) 2 x 12 Douglas Fir-Larch 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)	1455 @ 1 1/2"	5625 (3.00")	Passed (26%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1166 @ 1' 2 1/4"	4050	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4462 @ 4' 3 7/8"	5273	Passed (85%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.053 @ 4' 3 7/8"	0.420	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.081 @ 4' 3 7/8"	0.560	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 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	Floor Live	Snow	Total	
1 - Stud wall - DF	3.00"	3.00"	1.50"	571	713	467	1751	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	571	713	467	1751	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' 8" o/c	
Bottom Edge (Lu)	8' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 8' 7 3/4"	N/A	8.6	--	--	
1 - Point (lb)	4' 3 7/8" (Top)	N/A	285	1425	-	Stringer
2 - Uniform (PLF)	0 to 8' 7 3/4" (Top)	N/A	90.5	-	108.0	Linked from: 15, Support 1

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

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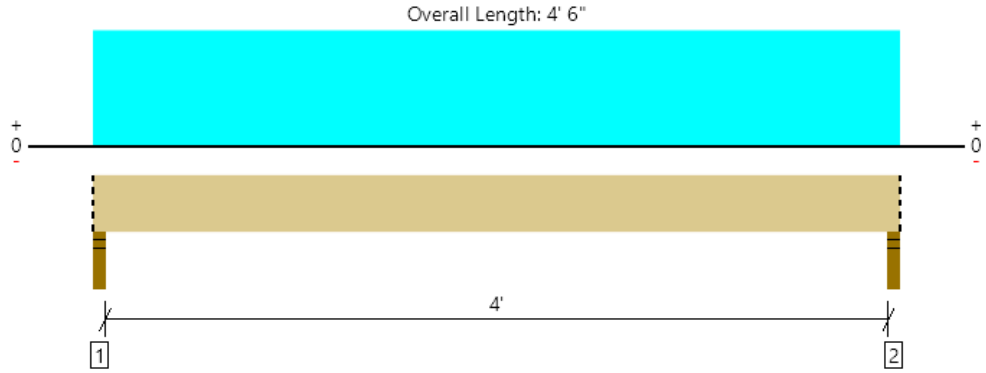
Weyerhaeuser

Lower Roof, 28

2 piece(s) 2 x 6 Douglas Fir-Larch 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)	965 @ 1 1/2"	5625 (3.00")	Passed (17%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	661 @ 8 1/2"	1980	Passed (33%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	968 @ 2' 3"	1639	Passed (59%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.031 @ 2' 3"	0.213	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.045 @ 2' 3"	0.283	Passed (L/999+)	--	1.0 D + 1.0 L (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	Floor Live	Total	
1 - Stud wall - DF	3.00"	3.00"	1.50"	301	663	964	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	301	663	964	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' 6" o/c	
Bottom Edge (Lu)	4' 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 4' 6"	N/A	4.2	--	
1 - Uniform (PLF)	0 to 4' 6" (Front)	N/A	129.8	294.8	Linked from: 14, Support 1

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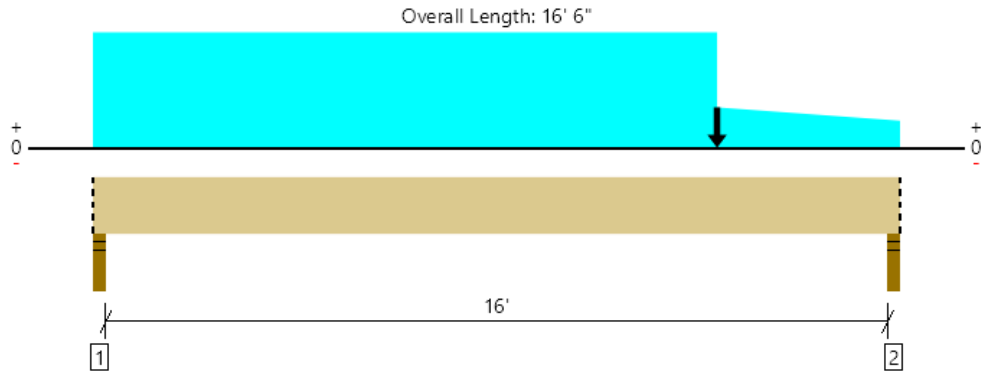
Weyerhaeuser

Lower Roof, 29

1 piece(s) 5 1/8" x 13 1/2" 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)	5842 @ 1 1/2"	9609 (3.00")	Passed (61%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	5303 @ 15' 1 1/2"	14057	Passed (38%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	24487 @ 8' 7 9/16"	35805	Passed (68%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.336 @ 8' 4"	0.813	Passed (L/580)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.619 @ 8' 4"	1.083	Passed (L/315)	--	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.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 16' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.00"	3.00"	1.82"	2674	3168	5842	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.74"	2548	3011	5559	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)	16' 6" o/c	
Bottom Edge (Lu)	16' 6" 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 16' 6"	N/A	16.8	--	
1 - Uniform (PSF)	0 to 12' 9 1/8" (Top)	14' 8"	20.0	25.0	
2 - Tapered (PSF)	12' 9 1/8" to 16' 6" (Top)	5' 1 3/8" to 3' 5 3/8"	20.0	25.0	
3 - Point (lb)	12' 9 1/8" (Top)	N/A	880	1100	Truss Girder w/ 44 SF

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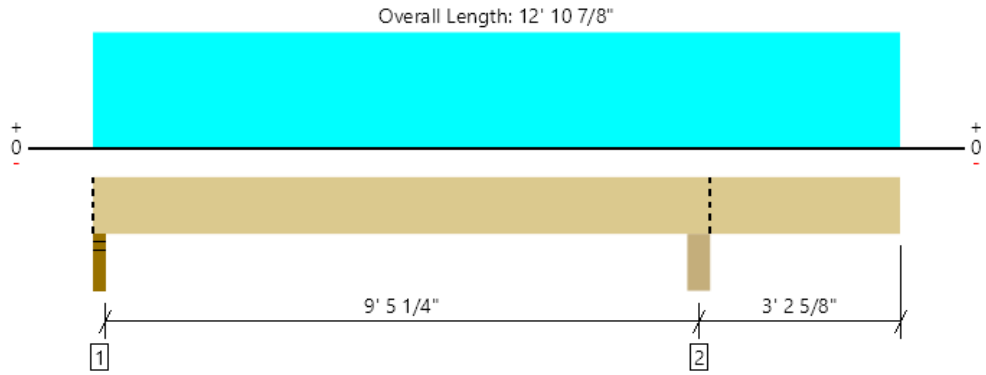
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Lower Roof, 30

2 piece(s) 2 x 10 Douglas Fir-Larch 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)	3712 @ 9' 8 1/4"	10313 (5.50")	Passed (36%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1879 @ 8' 8 1/4"	3830	Passed (49%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4183 @ 4' 6 1/8"	4510	Passed (93%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.115 @ 4' 9 5/8"	0.478	Passed (L/999)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.195 @ 4' 8 15/16"	0.637	Passed (L/588)	--	1.0 D + 1.0 S (Alt 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).
- Overhang deflection criteria: LL (2L/240) and TL (2L/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"	860	1101	1961	Blocking
2 - Column - DF	5.50"	5.50"	1.98"	1683	2029	3712	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' 3" o/c	
Bottom Edge (Lu)	12' 11" 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 12' 10 7/8"	N/A	7.0	--	
1 - Uniform (PSF)	0 to 12' 10 7/8" (Top)	9' 6"	20.0	25.0	

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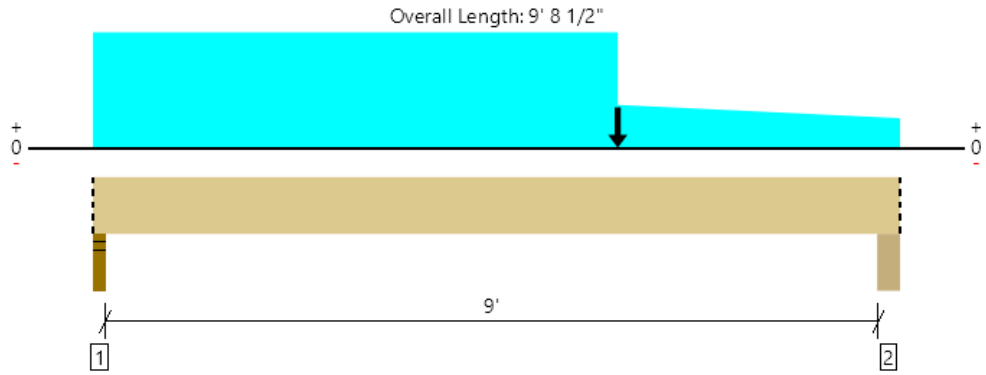
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Lower Roof, 31

1 piece(s) 3 1/2" x 9" 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)	3066 @ 1 1/2"	6563 (3.00")	Passed (47%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2473 @ 1'	6400	Passed (39%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	7550 @ 5' 2 1/16"	10868	Passed (69%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.165 @ 4' 9 9/16"	0.463	Passed (L/674)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.300 @ 4' 9 9/16"	0.617	Passed (L/370)	--	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.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 9' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.00"	3.00"	1.50"	1383	1683	3066	Blocking
2 - Column - DF	5.50"	5.50"	1.50"	1210	1465	2675	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' 9" o/c	
Bottom Edge (Lu)	9' 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 9' 8 1/2"	N/A	7.7	--	
1 - Uniform (PSF)	0 to 6' 3 3/4" (Top)	13'	20.0	25.0	
2 - Tapered (PSF)	6' 3 3/4" to 9' 8 1/2" (Top)	4' 10" to 3' 4"	20.0	25.0	
3 - Point (lb)	6' 3 3/4" (Top)	N/A	600	750	Truss Girder w/ 30 SF

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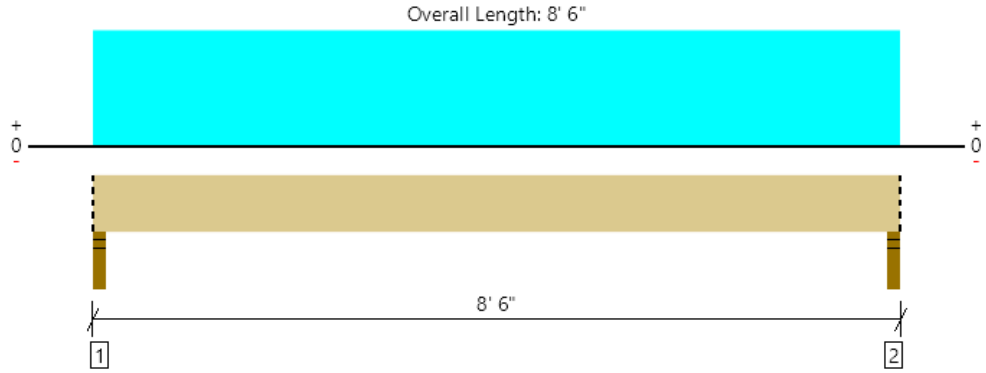
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Lower Roof, 32

2 piece(s) 2 x 6 Douglas Fir-Larch 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)	544 @ 1 1/2"	5625 (3.00")	Passed (10%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	453 @ 8 1/2"	2277	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1089 @ 4' 3"	1884	Passed (58%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.101 @ 4' 3"	0.412	Passed (L/977)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.189 @ 4' 3"	0.550	Passed (L/525)	--	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"	252	292	544	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	252	292	544	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)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 8' 6"	N/A	4.2	--	
1 - Uniform (PSF)	0 to 8' 6" (Top)	2' 9"	20.0	25.0	

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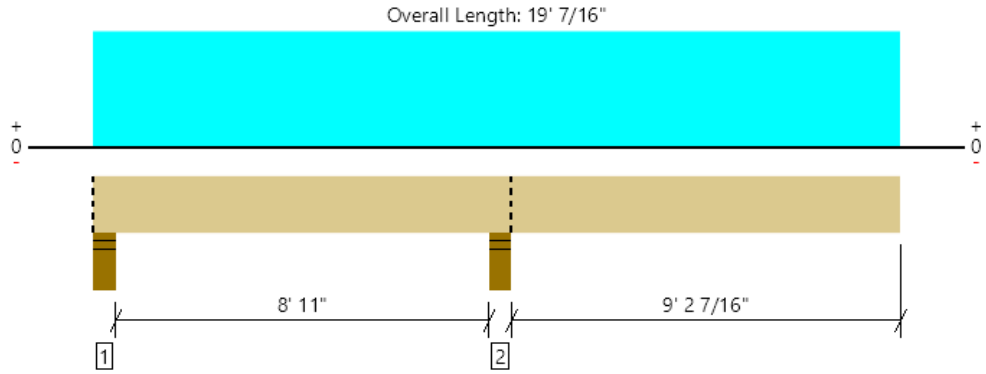
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Lower Roof, 32 Cant

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

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



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)	4729 @ 9' 7 1/4"	18047 (5.50")	Passed (26%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2059 @ 8' 4 5/8"	13622	Passed (15%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-11151 @ 9' 7 1/4"	23091	Passed (48%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.335 @ 19' 7/16"	0.943	Passed (2L/676)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.628 @ 19' 7/16"	1.258	Passed (2L/360)	--	1.0 D + 1.0 S (Alt 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).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- 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.
- -278 lbs uplift at support located at 4". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	5.50"	5.50"	1.50"	21	332/-299	353/-299	Blocking
2 - Stud wall - DF	5.50"	5.50"	1.50"	2293	2437	4730	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)	19' o/c	
Bottom Edge (Lu)	19' 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 19' 7/16"	N/A	18.2	--	
1 - Uniform (PSF)	0 to 19' 7/16" (Top)	5' 2"	20.0	25.0	

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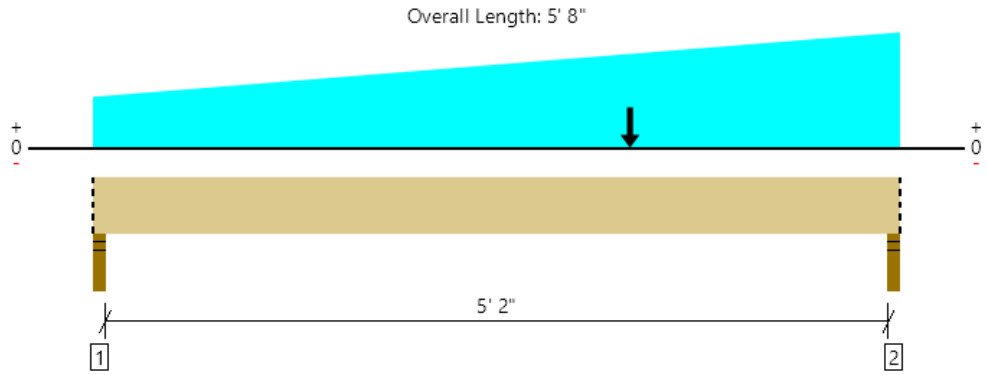
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Lower Roof, 33

2 piece(s) 2 x 6 Douglas Fir-Larch 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)	901 @ 5' 6 1/2"	5625 (3.00")	Passed (16%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	743 @ 4' 11 1/2"	2277	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1207 @ 3' 9 1/4"	1884	Passed (64%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.045 @ 2' 11 5/16"	0.271	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.083 @ 2' 11 5/16"	0.361	Passed (L/784)	--	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"	268	320	588	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	407	494	901	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 8" o/c	
Bottom Edge (Lu)	5' 8" 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 5' 8"	N/A	4.2	--	
1 - Tapered (PSF)	0 to 5' 8" (Top)	2' 2 5/8" to 5' 1/2"	20.0	25.0	
2 - Point (lb)	3' 9 1/4" (Top)	N/A	240	300	Truss Girder w/ 12 SF

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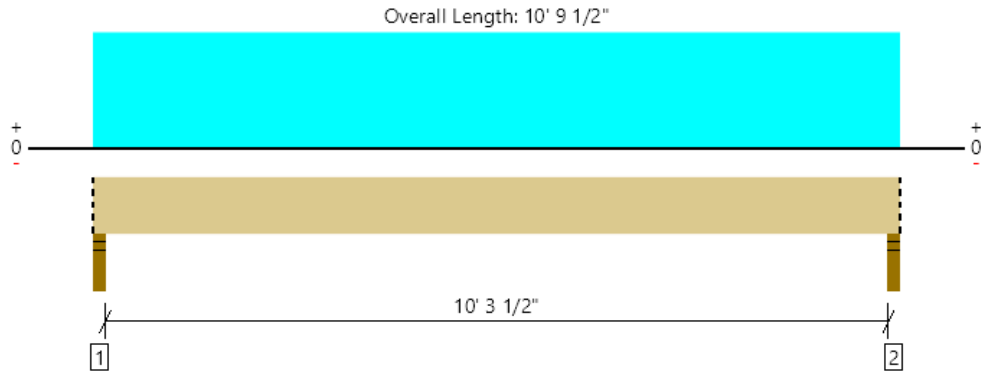
Weyerhaeuser

Lower Roof, 34

2 piece(s) 2 x 12 Douglas Fir-Larch 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)	2373 @ 1 1/2"	5625 (3.00")	Passed (42%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1851 @ 1' 2 1/4"	4658	Passed (40%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6110 @ 5' 4 3/4"	6064	Passed (101%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.110 @ 5' 4 3/4"	0.527	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.202 @ 5' 4 3/4"	0.703	Passed (L/626)	--	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"	1081	1293	2374	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	1081	1293	2374	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)	10' 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 10' 9 1/2"	N/A	8.6	--	
1 - Uniform (PSF)	0 to 10' 9 1/2" (Top)	7' 7"	20.0	25.0	
2 - Uniform (PSF)	0 to 10' 9 1/2" (Top)	2'	20.0	25.0	

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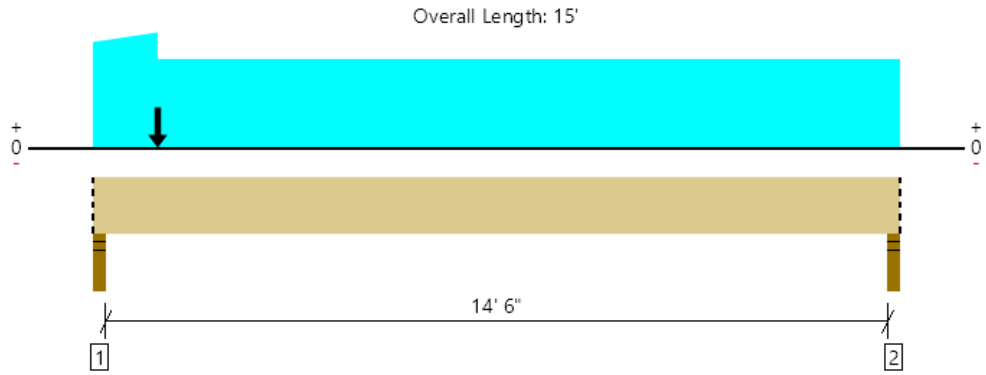
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Lower Roof, 35
2 piece(s) 1 3/4" x 18" 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)	5026 @ 1 1/2"	6563 (3.00")	Passed (77%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3551 @ 1' 9"	13766	Passed (26%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	14100 @ 7' 3 9/16"	44566	Passed (32%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.102 @ 7' 5 3/16"	0.738	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.190 @ 7' 5 1/4"	0.983	Passed (L/933)	--	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.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.00"	3.00"	2.30"	2310	2716	5026	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.73"	1757	2025	3782	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	14' 8" o/c	
Bottom Edge (Lu)	15' 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 15'	N/A	18.4	--	
1 - Tapered (PSF)	0 to 1' 2 7/16" (Front)	2' to 3' 2"	20.0	25.0	
2 - Point (lb)	1' 2 7/16" (Front)	N/A	580	725	Truss Girder w/ tributary area of 29 sf
3 - Uniform (PSF)	0 to 15' (Front)	10' 6"	20.0	25.0	

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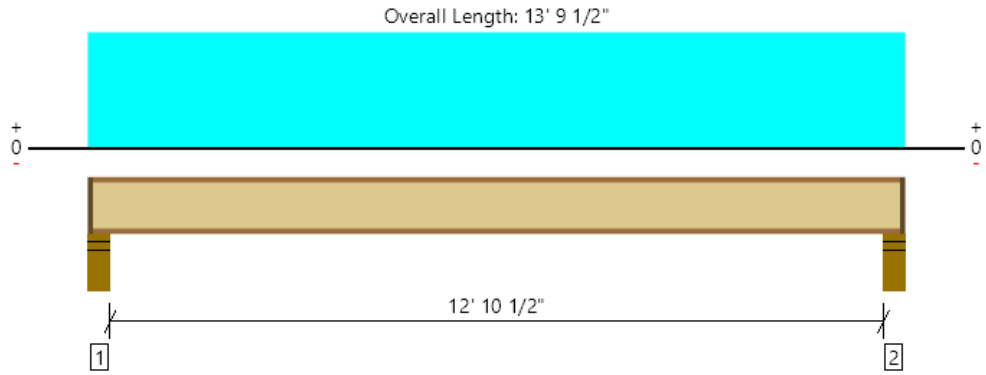
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main Level, 40
1 piece(s) 14" TJI® 110 @ 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)	1019 @ 4 1/2"	1375 (3.50")	Passed (74%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	966 @ 5 1/2"	1860	Passed (52%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3189 @ 6' 10 3/4"	3740	Passed (85%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.127 @ 6' 10 3/4"	0.326	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.238 @ 6' 10 3/4"	0.652	Passed (L/656)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	51	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"	2.16"	483	552	1035	1 1/4" Rim Board
2 - Stud wall - DF	5.50"	4.25"	2.16"	483	552	1035	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)	3' 5" o/c	
Bottom Edge (Lu)	13' 7" o/c	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 13' 9 1/2"	24"	35.0	40.0	Default Load

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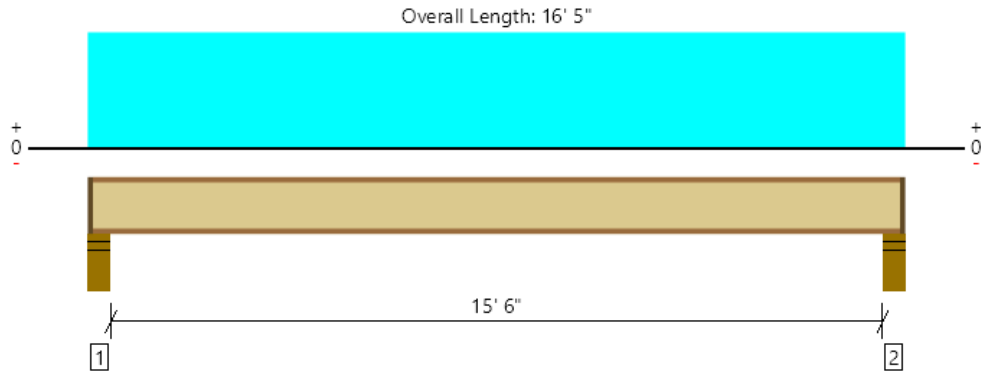
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Level, 41
1 piece(s) 14" 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)	1216 @ 4 1/2"	1460 (3.50")	Passed (83%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1163 @ 5 1/2"	1945	Passed (60%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4602 @ 8' 2 1/2"	4490	Passed (102%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.221 @ 8' 2 1/2"	0.392	Passed (L/852)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.414 @ 8' 2 1/2"	0.783	Passed (L/454)	--	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"	2.57"	575	657	1232	1 1/4" Rim Board
2 - Stud wall - DF	5.50"	4.25"	2.57"	575	657	1232	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)	3' 6" o/c	
Bottom Edge (Lu)	16' 3" o/c	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 16' 5"	24"	35.0	40.0	Default Load

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

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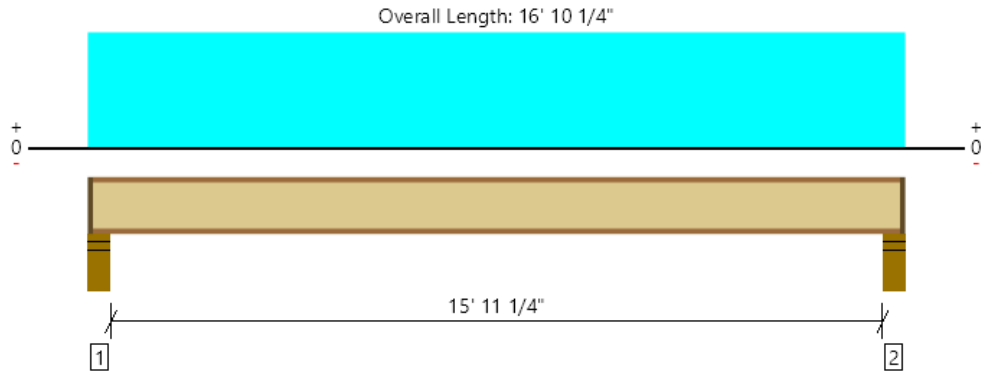
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Level, 42

1 piece(s) 14" TJI® 210 @ 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)	832 @ 4 1/2"	1460 (3.50")	Passed (57%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	797 @ 5 1/2"	1945	Passed (41%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3242 @ 8' 5 1/8"	4490	Passed (72%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.170 @ 8' 5 1/8"	0.403	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.319 @ 8' 5 1/8"	0.805	Passed (L/606)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	51	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"	1.75"	393	449	842	1 1/4" Rim Board
2 - Stud wall - DF	5.50"	4.25"	1.75"	393	449	842	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' 5" o/c	
Bottom Edge (Lu)	16' 8" o/c	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 16' 10 1/4"	16"	35.0	40.0	Default Load

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

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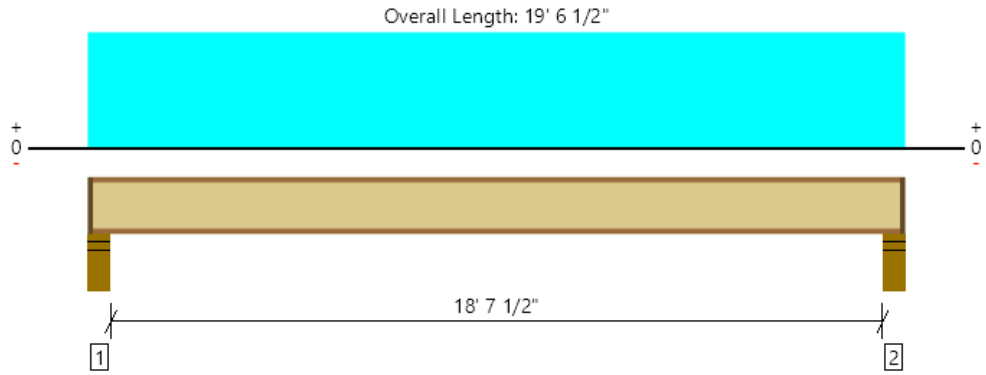
Weyerhaeuser

Main Level, 43
1 piece(s) 14" TJI® 210 @ 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)	967 @ 4 1/2"	1460 (3.50")	Passed (66%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	931 @ 5 1/2"	1945	Passed (48%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4414 @ 9' 9 1/4"	4490	Passed (98%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.302 @ 9' 9 1/4"	0.470	Passed (L/746)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.566 @ 9' 9 1/4"	0.940	Passed (L/398)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	44	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"	1.75"	456	521	977	1 1/4" Rim Board
2 - Stud wall - DF	5.50"	4.25"	1.75"	456	521	977	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)	3' 8" o/c	
Bottom Edge (Lu)	19' 4" o/c	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 19' 6 1/2"	16"	35.0	40.0	Default Load

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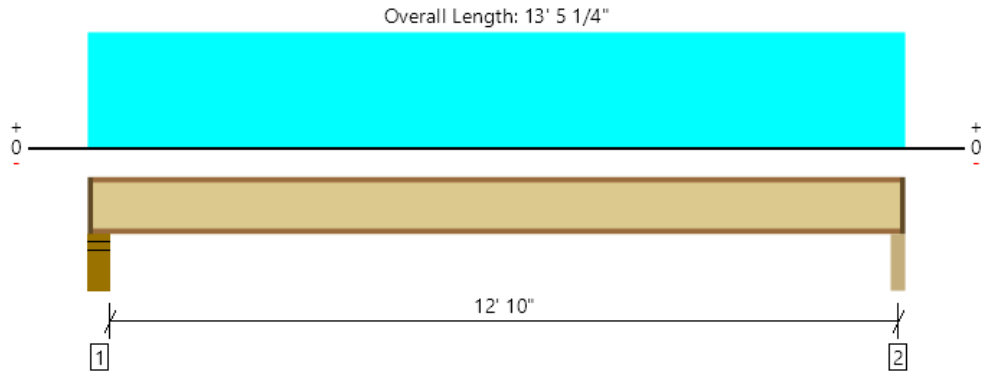
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Level, 44

1 piece(s) 14" TJI® 110 @ 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)	980 @ 13' 2 3/4"	1041 (2.25")	Passed (94%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	952 @ 5 1/2"	1860	Passed (51%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3098 @ 6' 9 5/8"	3740	Passed (83%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.121 @ 6' 9 5/8"	0.321	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.226 @ 6' 9 5/8"	0.643	Passed (L/681)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	48	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"	2.11"	476	544	1020	1 1/4" Rim Board
2 - Beam - DF	3.50"	2.25"	2.02"	464	531	995	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)	3' 5" o/c	
Bottom Edge (Lu)	13' 3" o/c	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 13' 5 1/4"	24"	35.0	40.0	Default Load

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

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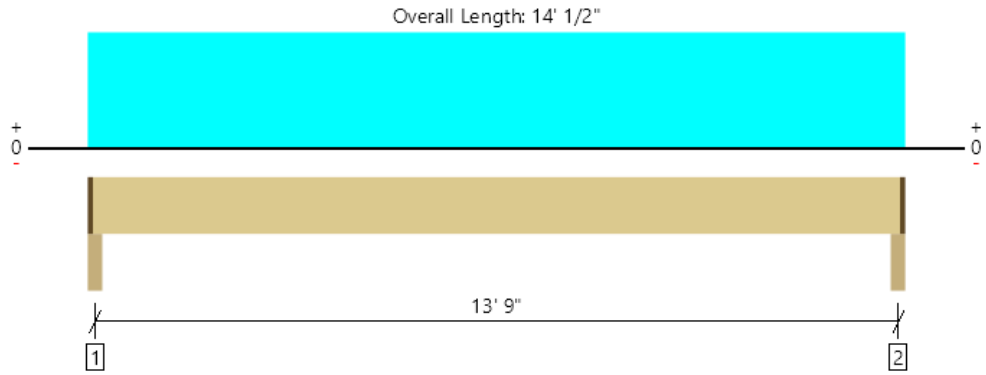
Weyerhaeuser

Main Level, 45

1 piece(s) 2 x 12 Douglas Fir-Larch No. 1 @ 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)	738 @ 2 1/2"	2109 (2.25")	Passed (35%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	618 @ 1' 2 3/4"	2025	Passed (31%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2475 @ 7' 1/4"	3032	Passed (82%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.205 @ 7' 1/4"	0.341	Passed (L/797)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.273 @ 7' 1/4"	0.681	Passed (L/598)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

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 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Beam - DF	3.50"	2.25"	1.50"	187	562	749	1 1/4" Rim Board
2 - Beam - DF	3.50"	2.25"	1.50"	187	562	749	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)	5' 3" o/c	
Bottom Edge (Lu)	13' 10" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 14' 1/2"	16"	20.0	60.0	Default Load

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

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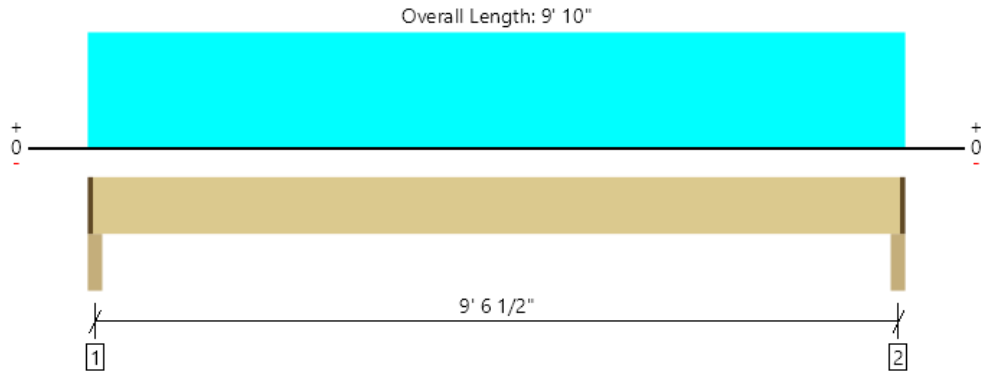
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Level, 46

1 piece(s) 2 x 12 Douglas Fir-Larch No. 1 @ 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)	770 @ 2 1/2"	2109 (2.25")	Passed (37%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	590 @ 1' 2 3/4"	2025	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1773 @ 4' 11"	3032	Passed (58%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.070 @ 4' 11"	0.235	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.094 @ 4' 11"	0.471	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

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 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Beam - DF	3.50"	2.25"	1.50"	197	590	787	1 1/4" Rim Board
2 - Beam - DF	3.50"	2.25"	1.50"	197	590	787	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)	8' 10" o/c	
Bottom Edge (Lu)	9' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 9' 10"	24"	20.0	60.0	Default Load

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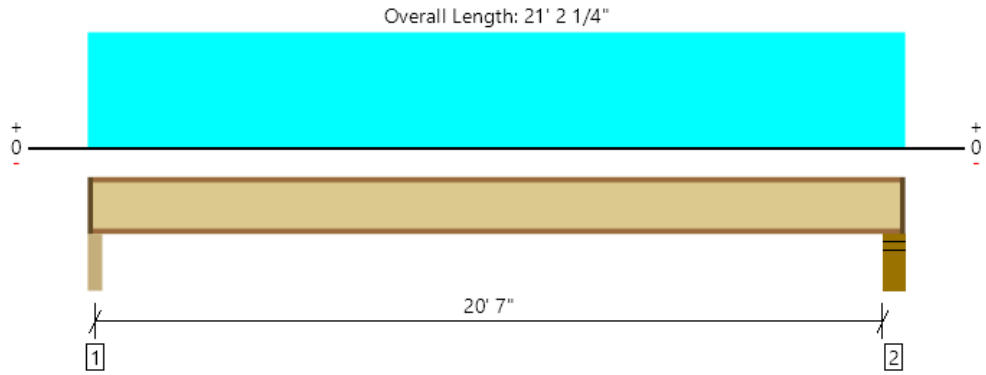
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Level, 47

1 piece(s) 14" 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)	1041 @ 2 1/2"	1202 (2.25")	Passed (87%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1022 @ 3 1/2"	1955	Passed (52%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	5307 @ 10' 6 1/8"	7335	Passed (72%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.344 @ 10' 6 1/8"	0.515	Passed (L/719)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.645 @ 10' 6 1/8"	1.030	Passed (L/384)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	42	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 - Beam - DF	3.50"	2.25"	1.75"	490	561	1051	1 1/4" Rim Board
2 - Stud wall - DF	5.50"	4.25"	1.75"	498	569	1067	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' 4" o/c	
Bottom Edge (Lu)	21' o/c	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 21' 2 1/4"	16"	35.0	40.0	Default Load

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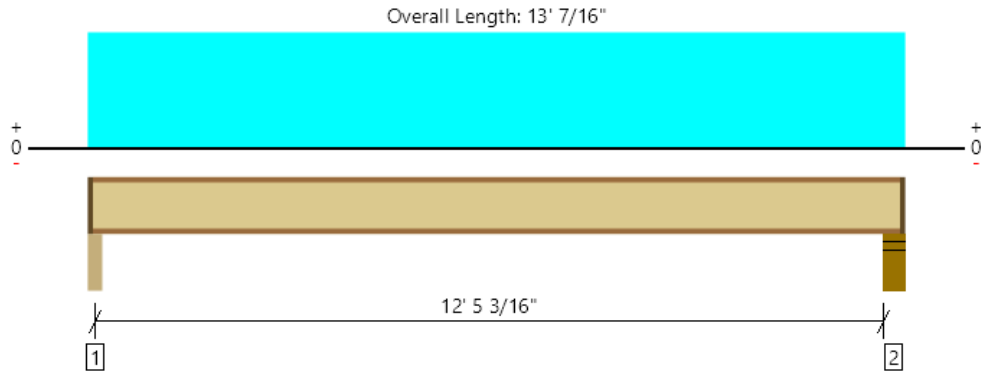
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Level, 48
1 piece(s) 14" TJI® 110 @ 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)	950 @ 2 1/2"	1041 (2.25")	Passed (91%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	921 @ 3 1/2"	1860	Passed (50%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2908 @ 6' 5 1/4"	3740	Passed (78%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.108 @ 6' 5 1/4"	0.311	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.202 @ 6' 5 1/4"	0.623	Passed (L/739)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	49	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 - Beam - DF	3.50"	2.25"	1.90"	450	515	965	1 1/4" Rim Board
2 - Stud wall - DF	5.50"	4.25"	2.00"	462	528	990	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)	3' 7" o/c	
Bottom Edge (Lu)	12' 10" o/c	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 13' 7/16"	24"	35.0	40.0	Default Load

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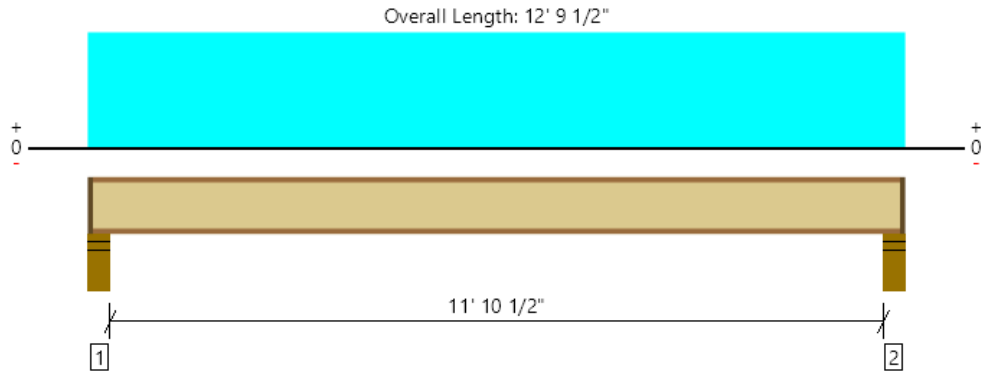
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Level, 49

1 piece(s) 14" TJI® 110 @ 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)	944 @ 4 1/2"	1375 (3.50")	Passed (69%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	891 @ 5 1/2"	1860	Passed (48%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2719 @ 6' 4 3/4"	3740	Passed (73%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.096 @ 6' 4 3/4"	0.301	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.179 @ 6' 4 3/4"	0.602	Passed (L/806)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	53	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"	1.88"	448	512	960	1 1/4" Rim Board
2 - Stud wall - DF	5.50"	4.25"	1.88"	448	512	960	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)	3' 9" o/c	
Bottom Edge (Lu)	12' 7" o/c	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 12' 9 1/2"	24"	35.0	40.0	Default Load

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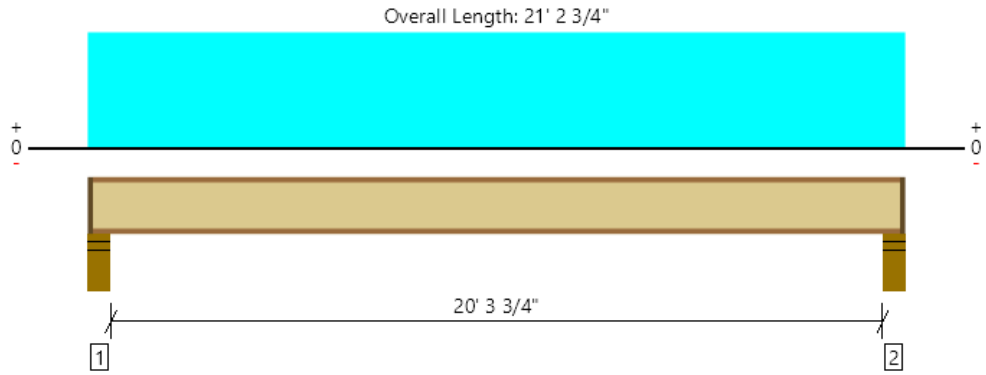
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main Level, 50
1 piece(s) 14" 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)	1051 @ 4 1/2"	1505 (3.50")	Passed (70%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1016 @ 5 1/2"	1955	Passed (52%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	5242 @ 10' 7 3/8"	7335	Passed (71%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.336 @ 10' 7 3/8"	0.512	Passed (L/731)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.630 @ 10' 7 3/8"	1.024	Passed (L/390)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	42	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"	1.75"	495	566	1061	1 1/4" Rim Board
2 - Stud wall - DF	5.50"	4.25"	1.75"	495	566	1061	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' 4" o/c	
Bottom Edge (Lu)	21' o/c	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 21' 2 3/4"	16"	35.0	40.0	Default Load

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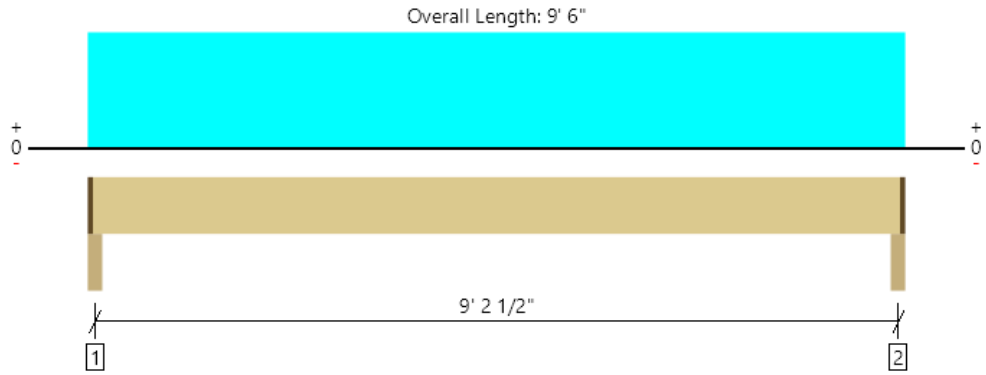
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Level, 51

1 piece(s) 2 x 12 Douglas Fir-Larch No. 1 @ 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)	743 @ 2 1/2"	2109 (2.25")	Passed (35%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	563 @ 1' 2 3/4"	2025	Passed (28%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1650 @ 4' 9"	3032	Passed (54%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.061 @ 4' 9"	0.227	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.081 @ 4' 9"	0.454	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

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 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Beam - DF	3.50"	2.25"	1.50"	190	570	760	1 1/4" Rim Board
2 - Beam - DF	3.50"	2.25"	1.50"	190	570	760	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)	9' 4" o/c	
Bottom Edge (Lu)	9' 4" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 9' 6"	24"	20.0	60.0	Default Load

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

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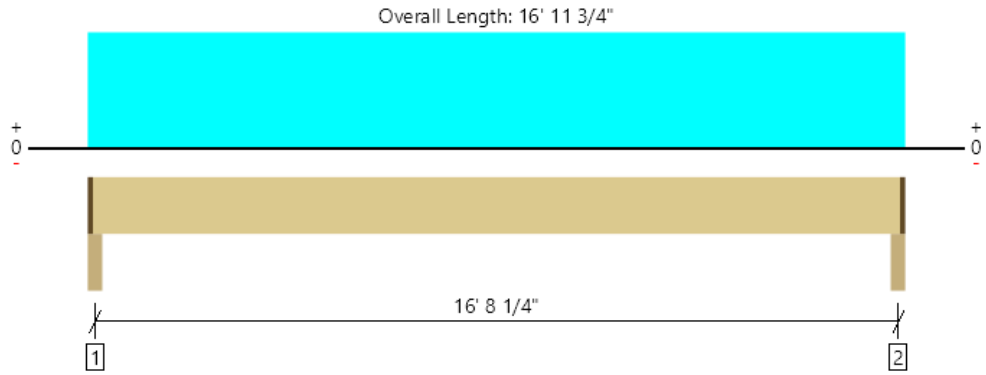
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Level, 52

1 piece(s) 2 x 12 Douglas Fir-Larch No. 1 @ 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)	604 @ 2 1/2"	2109 (2.25")	Passed (29%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	523 @ 1' 2 3/4"	2025	Passed (26%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2469 @ 8' 5 7/8"	3032	Passed (81%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.179 @ 8' 5 7/8"	0.414	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.403 @ 8' 5 7/8"	0.828	Passed (L/493)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

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 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Beam - DF	3.50"	2.25"	1.50"	340	272	612	1 1/4" Rim Board
2 - Beam - DF	3.50"	2.25"	1.50"	340	272	612	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)	5' 3" o/c	
Bottom Edge (Lu)	16' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 16' 11 3/4"	24"	20.0	16.0	Default Load

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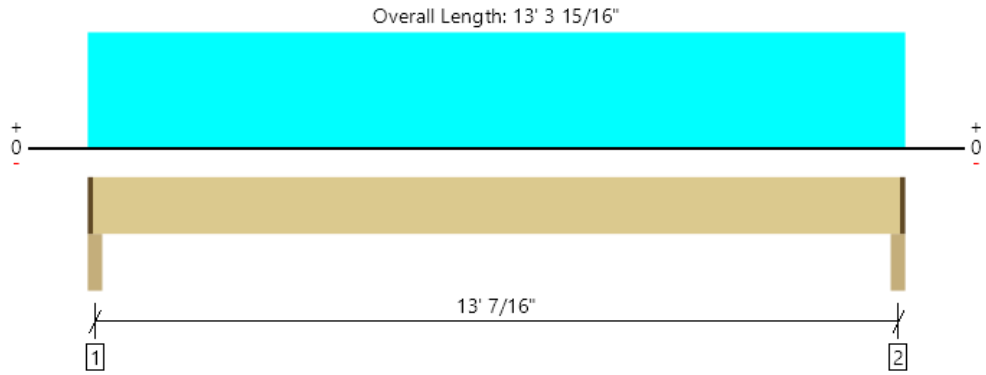
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Level, 53

1 piece(s) 2 x 12 Douglas Fir-Larch No. 1 @ 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)	700 @ 2 1/2"	2109 (2.25")	Passed (33%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	580 @ 1' 2 3/4"	2025	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2223 @ 6' 8"	3032	Passed (73%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.165 @ 6' 8"	0.323	Passed (L/937)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.220 @ 6' 8"	0.646	Passed (L/703)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

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 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Beam - DF	3.50"	2.25"	1.50"	178	533	711	1 1/4" Rim Board
2 - Beam - DF	3.50"	2.25"	1.50"	178	533	711	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' 3" o/c	
Bottom Edge (Lu)	13' 1" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 13' 3 15/16"	16"	20.0	60.0	Default Load

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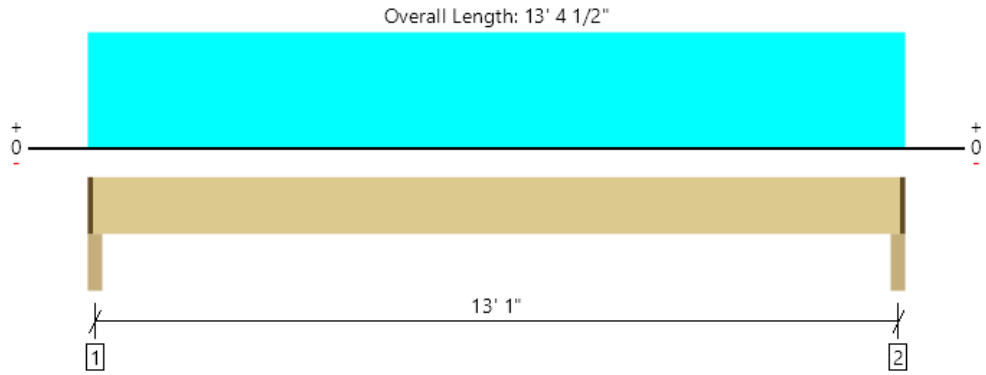
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Level, 54

1 piece(s) 2 x 12 Douglas Fir-Larch No. 1 @ 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)	702 @ 2 1/2"	2109 (2.25")	Passed (33%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	582 @ 1' 2 3/4"	2025	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2239 @ 6' 8 1/4"	3032	Passed (74%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.168 @ 6' 8 1/4"	0.324	Passed (L/927)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.224 @ 6' 8 1/4"	0.648	Passed (L/695)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

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 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Beam - DF	3.50"	2.25"	1.50"	178	535	713	1 1/4" Rim Board
2 - Beam - DF	3.50"	2.25"	1.50"	178	535	713	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' 3" o/c	
Bottom Edge (Lu)	13' 2" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 13' 4 1/2"	16"	20.0	60.0	Default Load

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

ForteWEB Software Operator	Job Notes
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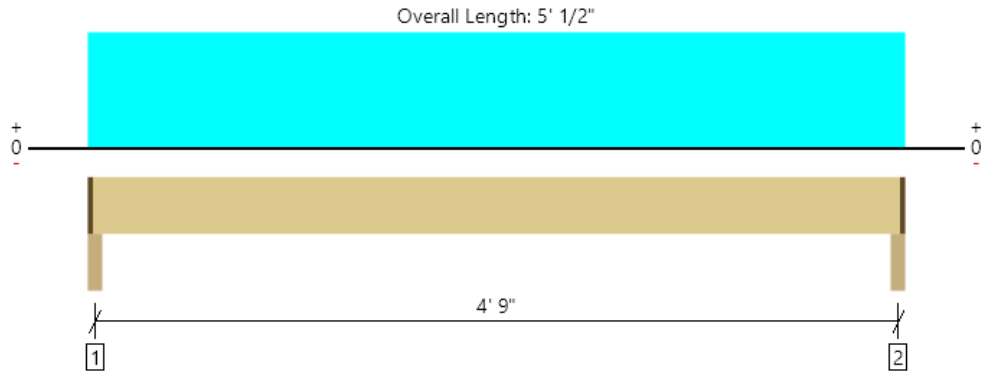
Weyerhaeuser

Main Level, 55

1 piece(s) 2 x 12 Douglas Fir-Larch No. 1 @ 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)	290 @ 2 1/2"	2109 (2.25")	Passed (14%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	155 @ 1' 2 3/4"	2025	Passed (8%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	321 @ 2' 6 1/4"	3032	Passed (11%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.003 @ 2' 6 1/4"	0.116	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.004 @ 2' 6 1/4"	0.231	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

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 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Beam - DF	3.50"	2.25"	1.50"	101	202	303	1 1/4" Rim Board
2 - Beam - DF	3.50"	2.25"	1.50"	101	202	303	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' 10" o/c	
Bottom Edge (Lu)	4' 10" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 5' 1/2"	24"	20.0	40.0	Default Load

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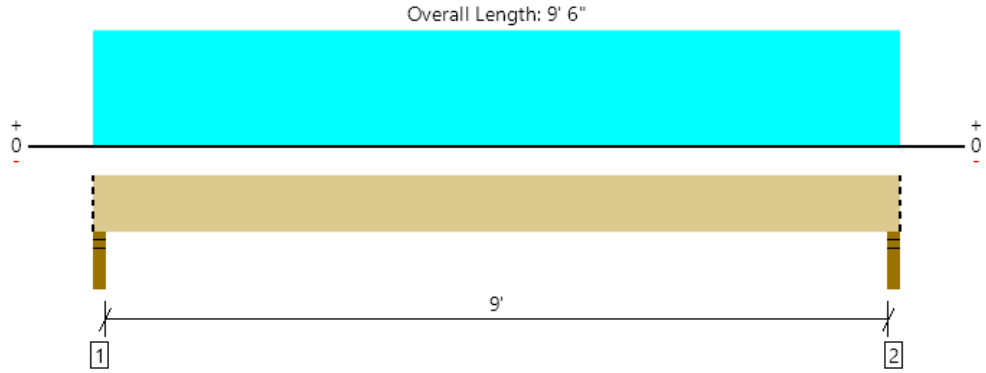
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Level, 56

2 piece(s) 2 x 8 Douglas Fir-Larch 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)	739 @ 1 1/2"	5625 (3.00")	Passed (13%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	606 @ 10 1/4"	2610	Passed (23%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1663 @ 4' 9"	2628	Passed (63%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.081 @ 4' 9"	0.231	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.158 @ 4' 9"	0.463	Passed (L/702)	--	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	3.00"	3.00"	1.50"	359	380	739	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	359	380	739	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 9' 6"	N/A	5.5	--	
1 - Uniform (PSF)	0 to 9' 6" (Top)	2'	35.0	40.0	Default Load

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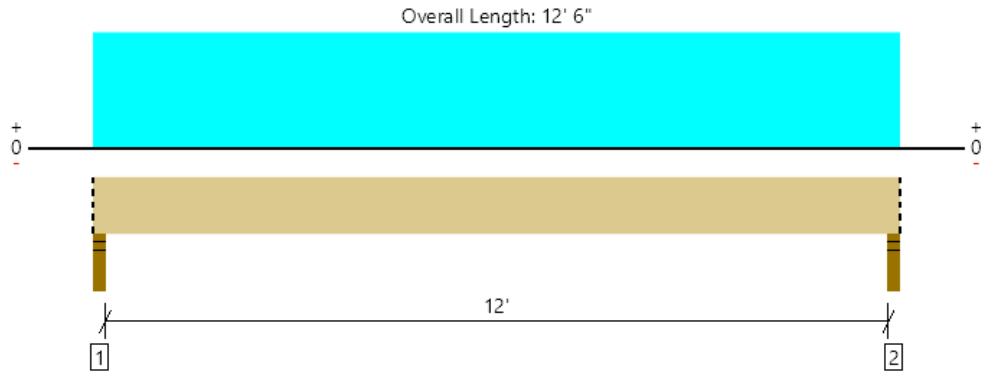
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main Level, 57

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)	3168 @ 1 1/2"	6563 (3.00")	Passed (48%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2651 @ 1' 1/4"	6151	Passed (43%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	9509 @ 6' 3"	11204	Passed (85%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.309 @ 6' 3"	0.306	Passed (L/476)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.590 @ 6' 3"	0.613	Passed (L/249)	--	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"	1509	1659	3168	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	1509	1659	3168	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' 9" 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	9.4	--	
1 - Uniform (PLF)	0 to 12' 6" (Top)	N/A	232.0	265.5	Linked from: 44, Support 2

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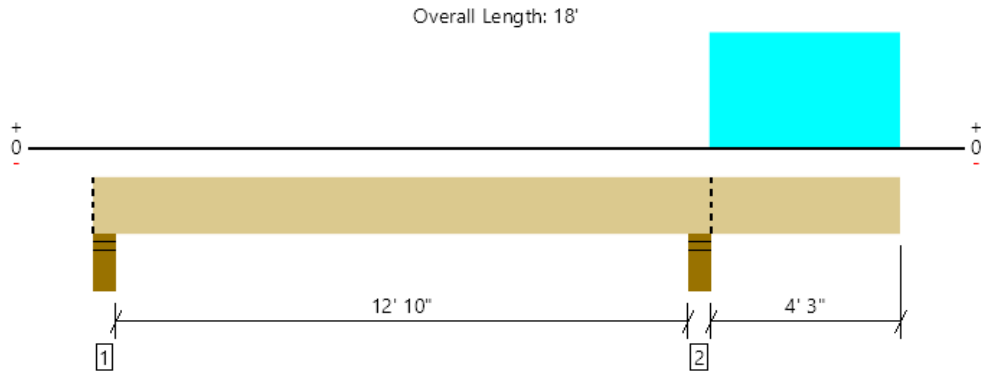
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main Level, 58

3 piece(s) 2 x 12 Hem-Fir 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)	2965 @ 13' 6 1/4"	10024 (5.50")	Passed (30%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1903 @ 14' 8 1/4"	5063	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-5749 @ 13' 6 1/4"	7712	Passed (75%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.225 @ 18'	0.224	Passed (2L/478)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.295 @ 18'	0.448	Passed (2L/364)	--	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).
- Overhang deflection criteria: LL (2L/480) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- -347 lbs uplift at support located at 4". Strapping or other restraint may be required.
- 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	5.50"	5.50"	1.50"	-27	-320	-347	Blocking
2 - Stud wall - DF	5.50"	5.50"	1.63"	854	2111	2965	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)	18' o/c	
Bottom Edge (Lu)	14' 11" 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 18'	N/A	12.8	--	
1 - Uniform (PLF)	13' 9" to 18' (Top)	N/A	140.3	421.5	Linked from: 45, 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
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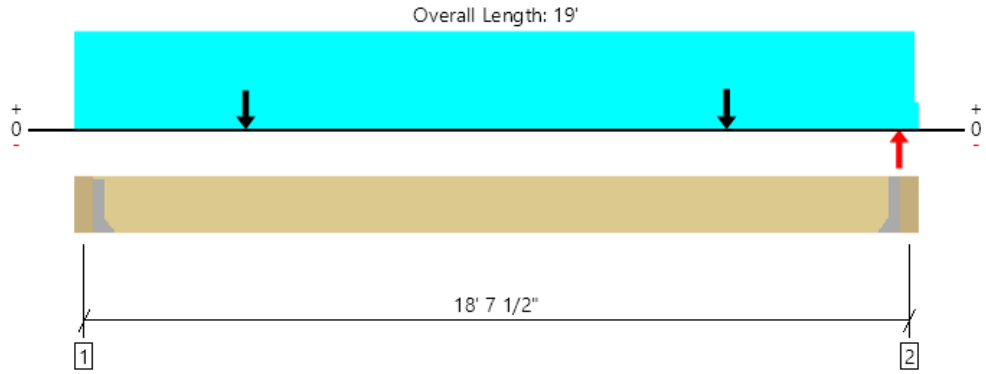
Weyerhaeuser

Main Level, 59

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

An excessive uplift of -2768 lbs at support located at 4 1/2" failed this product.



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)	16036 @ 4 1/2"	16036 (3.05")	Passed (100%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	11136 @ 1' 8 1/2"	21280	Passed (52%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	59500 @ 9' 6"	62228	Passed (96%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.600 @ 9' 6 5/16"	0.456	Failed (L/365)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans) [1]
Total Load Defl. (in)	0.961 @ 9' 6 3/16"	0.913	Failed (L/228)	--	1.0 D + 0.525 E + 0.75 L + 0.75 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).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Member should be side-loaded from both sides of the member or braced to prevent rotation.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Seismic	Total	
1 - Hanger on 16" DF beam	4.50"	Hanger[1]	3.05"	6050	7514	9141/-9141	22705/-9141	See note [1]
2 - Hanger on 16" DF beam	4.50"	Hanger[1]	2.48"	6015	7455	58/-58	13528/-58	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)	7' 6" o/c	
Bottom Edge (Lu)	18' 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	HHGU7.25-SDS H=15.938	5.25"	N/A	44-SDS25212	28-SDS25212	
2 - Face Mount Hanger	HGU7.25-SDS H=15.938	5.25"	N/A	36-SDS25212	24-SDS25212	

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

ForteWEB Software Operator	Job Notes
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Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	4 1/2" to 18' 7 1/2"	N/A	32.7	--	--	
1 - Uniform (PSF)	0 to 19' (Top)	2'	35.0	40.0	-	
2 - Uniform (PSF)	0 to 19' (Top)	9'	12.5	-	-	
3 - Point (lb)	3' 9 15/16" (Top)	N/A	-	-	8870	3548# chord force w/ overstrength
4 - Point (lb)	18' 7 1/4" (Top)	N/A	-	-	-8870	3548# chord force w/ overstrength
5 - Point (lb)	14' 8 1/2" (Top)	N/A	-	-	9083	3633# chord force w/ overstrength
6 - Uniform (PLF)	0 to 18' 11" (Top)	N/A	231.0	264.0	-	Linked from: 16, Support 2
7 - Uniform (PLF)	0 to 18' 11" (Top)	N/A	192.0	447.0/-10.5	-	Linked from: 11, Support 2

Weyerhaeuser Notes

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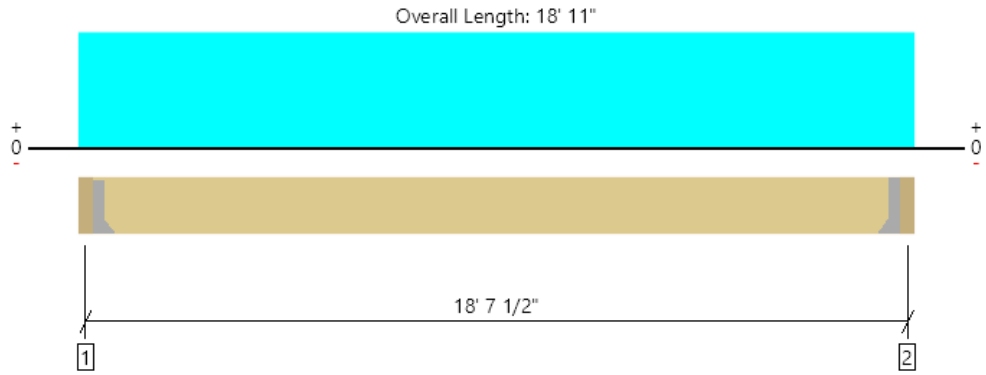
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main Level, 59 (no seismic)
4 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)	13101 @ 3 1/2"	13101 (2.50")	Passed (100%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	11195 @ 1' 7 1/2"	21280	Passed (53%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	60045 @ 9' 5 1/2"	62228	Passed (96%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.455 @ 9' 5 1/2"	0.458	Passed (L/484)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.822 @ 9' 5 1/2"	0.917	Passed (L/268)	--	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.
- Member should be side-loaded from both sides of the member or braced to prevent rotation.

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]	2.50"	6026	7482	13508	See note [1]
2 - Hanger on 16" DF beam	3.50"	Hanger[1]	2.50"	6026	7482	13508	See note [1]

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' o/c	
Bottom Edge (Lu)	18' 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	HGU7.25-SDS H=15.938	5.25"	N/A	36-SDS25212	24-SDS25212	
2 - Face Mount Hanger	HGU7.25-SDS H=15.938	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 18' 7 1/2"	N/A	32.7	--	
1 - Uniform (PSF)	0 to 18' 11" (Top)	2'	35.0	40.0	
2 - Uniform (PSF)	0 to 18' 11" (Top)	9'	12.5	-	
3 - Uniform (PLF)	0 to 18' 11" (Top)	N/A	231.0	264.0	Linked from: 16, Support 2
4 - Uniform (PLF)	0 to 18' 11" (Top)	N/A	192.0	447.0/-10.5	Linked from: 11, Support 2

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

Weyerhaeuser

Weyerhaeuser Notes

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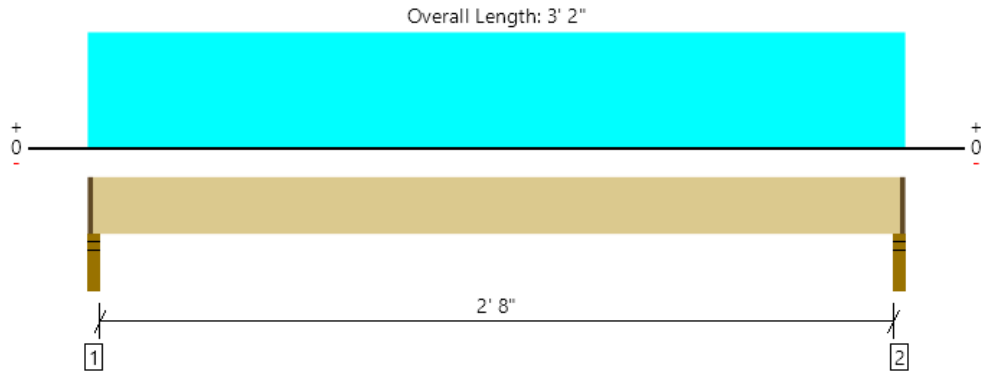
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main Level, 60

2 piece(s) 2 x 6 Douglas Fir-Larch 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)	761 @ 1 1/2"	3281 (1.75")	Passed (23%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	450 @ 8 1/2"	1980	Passed (23%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	547 @ 1' 7"	1639	Passed (33%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.006 @ 1' 7"	0.073	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.012 @ 1' 7"	0.146	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	3.00"	1.75"	1.50"	383	431	814	1 1/4" Rim Board
2 - Stud wall - DF	3.00"	1.75"	1.50"	383	431	814	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)	3' o/c	
Bottom Edge (Lu)	3' o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	1 1/4" to 3' 3/4"	N/A	4.2	--	
1 - Uniform (PLF)	0 to 3' 2" (Top)	N/A	238.0	272.0	Linked from: 44, Support 1

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

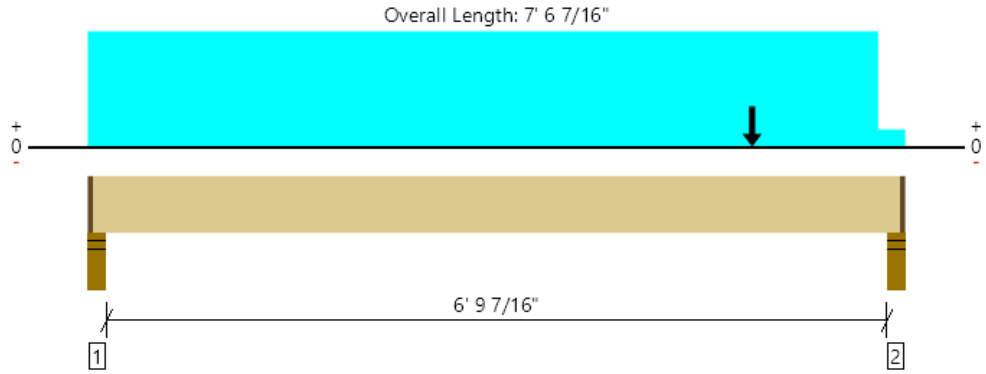
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Level, 61

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

An excessive uplift of -1307 lbs at support located at 7' 3 7/16" failed this product.



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)	6052 @ 7' 3 7/16"	7109 (3.25")	Passed (85%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	3082 @ 5' 11 15/16"	9310	Passed (33%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	5879 @ 4' 2 1/4"	24258	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.031 @ 4' 1/4"	0.176	Passed (L/999+)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.056 @ 3' 11 1/4"	0.352	Passed (L/999+)	--	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	4.50"	3.25"	1.50"	1728	1446	77	747/-747	3998/-747	1 1/4" Rim Board
2 - Stud wall - DF	4.50"	3.25"	2.77"	2229	2078	390	3778/-3778	8475/-3778	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)	7' 4" o/c	
Bottom Edge (Lu)	7' 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)	1 1/4" to 7' 5 3/16"	N/A	14.3	--	--	--	
1 - Uniform (PSF)	0 to 7' 6 7/16" (Top)	9'	12.5	-	-	-	
2 - Point (lb)	6' 1 1/2" (Top)	N/A	286	357	-	-	
3 - Point (lb)	6' 1 1/2" (Top)	N/A	-	-	-	4525	1810# chord force w/ overstrength
4 - Point (lb)	6' 1 1/2" (Top)	N/A	571	713	467	-	Linked from: 27, Support 1
5 - Uniform (PLF)	0 to 7' 3 7/16" (Top)	N/A	294.8	336.8	-	-	Linked from: 42, Support 1

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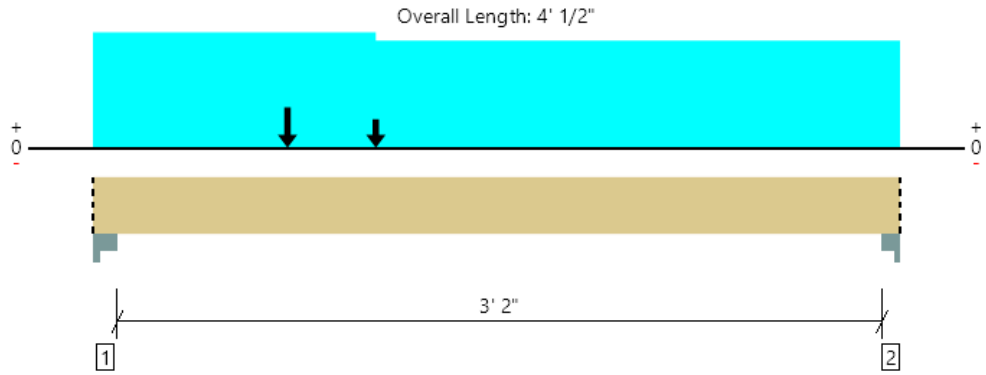
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Level, 62

3 piece(s) 2 x 12 Douglas Fir-Larch 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)	15877 @ 4 1/2"	16875 (6.00")	Passed (94%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	5398 @ 1' 5 1/4"	6075	Passed (89%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	7959 @ 11 11/16"	7910	Passed (101%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.013 @ 1' 11 15/16"	0.085	Passed (L/999+)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.020 @ 1' 11 15/16"	0.171	Passed (L/999+)	--	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.
- -682 lbs uplift at support located at 4 1/2". Strapping or other restraint may be required.
- -563 lbs uplift at support located at 3' 9 1/2". Strapping or other restraint may be required.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Seismic	Total	
1 - Column Cap - steel	6.00"	6.00"	5.65"	6563	7798	6600/-6600	20961/-6600	Blocking
2 - Column Cap - steel	4.50"	4.50"	2.17"	2439	2842	2895/-2895	8176/-2895	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' 1" o/c	
Bottom Edge (Lu)	4' 1" 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 4' 1/2"	N/A	12.8	--	--	
1 - Uniform (PSF)	0 to 1' 5" (Top)	9'	12.5	-	-	
2 - Point (lb)	1' 5" (Top)	N/A	-	-	9495	3798# chord force w/ overstrength
3 - Uniform (PLF)	0 to 4' 1/2" (Top)	N/A	342.0	390.8	-	Linked from: 43, Support 1
4 - Uniform (PLF)	0 to 4' 1/2" (Top)	N/A	342.0	390.8	-	Linked from: 43, Support 1
5 - Point (lb)	11 11/16" (Top)	N/A	6026	7482	-	Linked from: 59 (no seismic), Support 2

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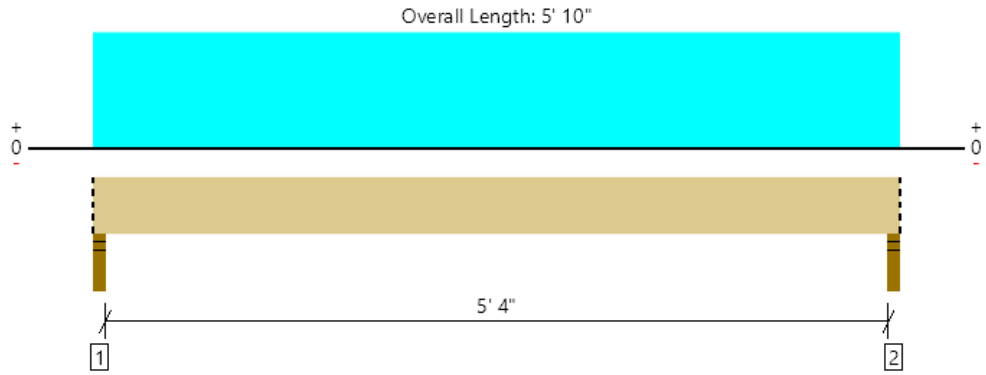
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main Level, 63

2 piece(s) 2 x 10 Douglas Fir-Larch 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) [Group]
Member Reaction (lbs)	2467 @ 1 1/2"	5625 (3.00")	Passed (44%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	1604 @ 1' 1/4"	3330	Passed (48%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	3296 @ 2' 11"	3922	Passed (84%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.036 @ 2' 11"	0.140	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.055 @ 2' 11"	0.279	Passed (L/999+)	--	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.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - DF	3.00"	3.00"	1.50"	857	1610/-24	176	2643/-24	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	857	1610/-24	176	2643/-24	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' 10" o/c	
Bottom Edge (Lu)	5' 10" 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 5' 10"	N/A	7.0	--	--	
1 - Uniform (PSF)	0 to 5' 10" (Top)	2' 5"	20.0	-	25.0	
2 - Uniform (PLF)	0 to 5' 10" (Top)	N/A	238.5	552.0/-8.3	-	Linked from: 12, Support 2

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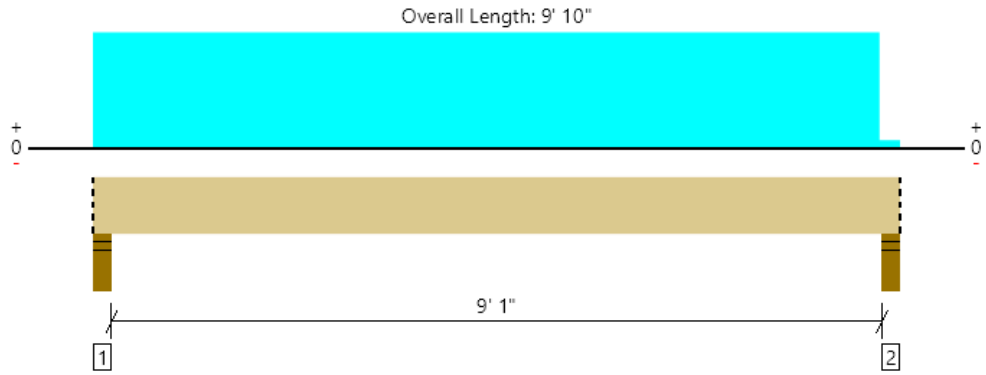
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Level, 64

2 piece(s) 1 3/4" x 14" 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)	8375 @ 3"	9844 (4.50")	Passed (85%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	5749 @ 1' 6 1/2"	9310	Passed (62%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	18547 @ 4' 11"	24258	Passed (76%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.145 @ 4' 11"	0.233	Passed (L/773)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.225 @ 4' 11"	0.467	Passed (L/497)	--	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	4.50"	4.50"	3.83"	2991	5384	8375	Blocking
2 - Stud wall - DF	4.50"	4.50"	3.65"	2870	5110	7980	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)	7' 5" 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)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 9' 10"	N/A	14.3	--	
1 - Uniform (PSF)	0 to 9' 10" (Top)	9'	12.5	-	
2 - Uniform (PLF)	0 to 9' 7" (Top)	N/A	240.8	547.5	Linked from: 13, Support 2
3 - Uniform (PLF)	0 to 9' 7" (Top)	N/A	240.8	547.5	Linked from: 13, Support 2

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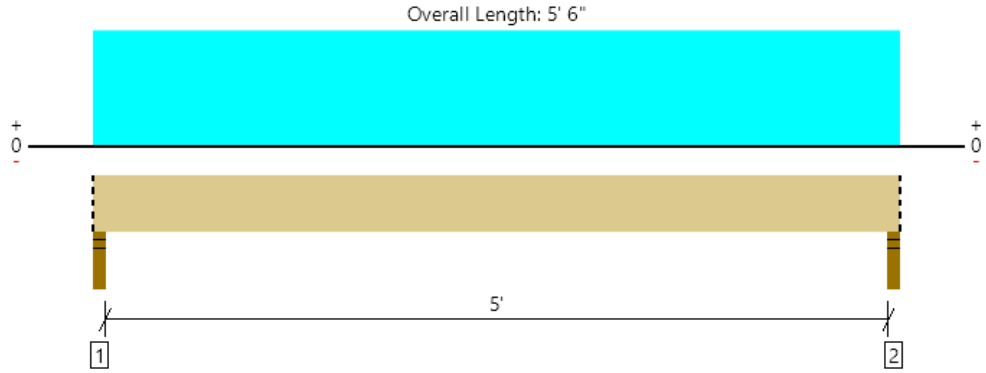
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Main Level, 65

2 piece(s) 2 x 8 Douglas Fir-Larch 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)	1651 @ 1 1/2"	5625 (3.00")	Passed (29%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1138 @ 10 1/4"	2610	Passed (44%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2069 @ 2' 9"	2628	Passed (79%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.027 @ 2' 9"	0.131	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.063 @ 2' 9"	0.262	Passed (L/994)	--	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	3.00"	3.00"	1.50"	943	708	1651	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	943	708	1651	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' 6" o/c	
Bottom Edge (Lu)	5' 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 5' 6"	N/A	5.5	--	
1 - Uniform (PSF)	0 to 5' 6" (Top)	9'	12.5	-	
2 - Uniform (PLF)	0 to 5' 6" (Top)	N/A	225.0	257.5	Linked from: 48, Support 1

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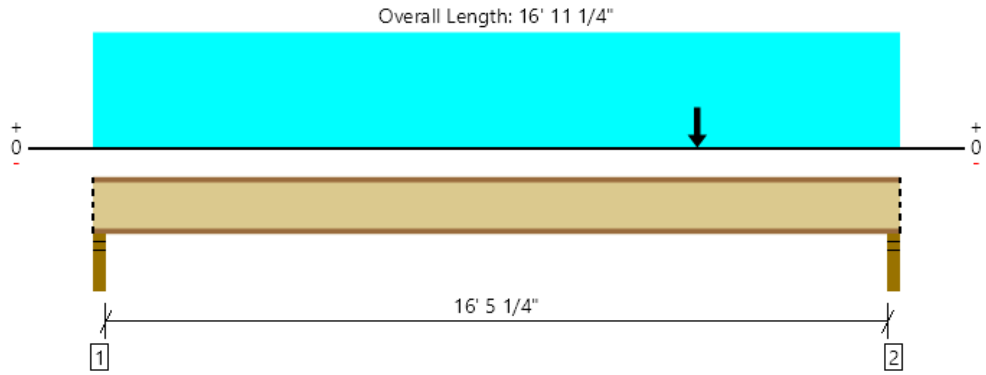
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Level, 66
2 piece(s) 14" TJI® 360



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)	2569 @ 16' 9 3/4"	2768 (3.00")	Passed (93%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2529 @ 16' 8 1/4"	3910	Passed (65%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	9394 @ 11' 15/16"	14670	Passed (64%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.213 @ 8' 9 13/16"	0.417	Passed (L/939)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.447 @ 8' 10 5/16"	0.834	Passed (L/448)	--	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"	1.75"	882	853	1735	Blocking
2 - Stud wall - DF	3.00"	3.00"	2.59"	1358	1210	2568	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' 8" o/c	
Bottom Edge (Lu)	16' 11" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•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' 11 1/4"	N/A	6.6	--	
1 - Uniform (PSF)	0 to 16' 11 1/4" (Top)	2'	35.0	40.0	
2 - Point (lb)	12' 8 3/16" (Top)	N/A	943	708	Linked from: 65, Support 2

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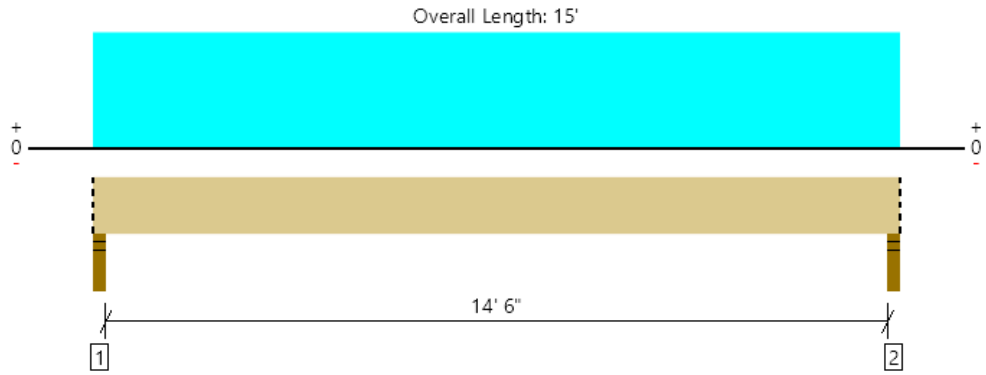
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Level, 67

1 piece(s) 3 1/2" x 12" 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)	2927 @ 1 1/2"	6563 (3.00")	Passed (45%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2439 @ 1' 3"	7420	Passed (33%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	10612 @ 7' 6"	16800	Passed (63%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.335 @ 7' 6"	0.369	Passed (L/529)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.458 @ 7' 6"	0.738	Passed (L/386)	--	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.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 14' 9".
- 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	Total	
1 - Stud wall - DF	3.00"	3.00"	1.50"	789	2138	2927	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	789	2138	2927	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)	15' o/c	
Bottom Edge (Lu)	15' 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 15'	N/A	10.2	--	
1 - Uniform (PLF)	0 to 15' (Top)	N/A	95.0	285.0	Linked from: 51, Support 2

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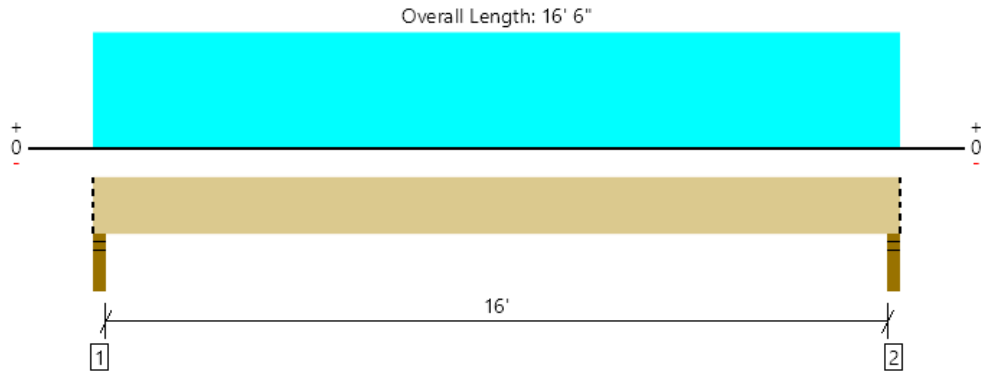
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Level, 68

1 piece(s) 5 1/8" x 12" 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)	3258 @ 1 1/2"	9609 (3.00")	Passed (34%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2765 @ 1' 3"	10865	Passed (25%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	13036 @ 8' 3"	24600	Passed (53%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.337 @ 8' 3"	0.406	Passed (L/579)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.466 @ 8' 3"	0.813	Passed (L/418)	--	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.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 16' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	3.00"	3.00"	1.50"	907	2351	3258	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	907	2351	3258	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)	16' 6" o/c	
Bottom Edge (Lu)	16' 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 16' 6"	N/A	14.9	--	
1 - Uniform (PLF)	0 to 16' 6" (Top)	N/A	95.0	285.0	Linked from: 51, Support 2

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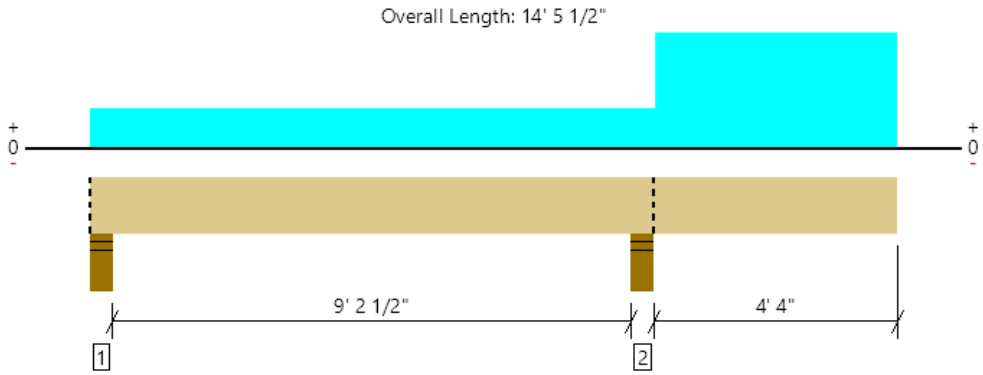
Weyerhaeuser

Main Level, 69

2 piece(s) 2 x 12 Douglas Fir-Larch 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)	3417 @ 9' 10 3/4"	10313 (5.50")	Passed (33%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1611 @ 11' 3/4"	4050	Passed (40%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-4931 @ 9' 10 3/4"	5273	Passed (94%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.150 @ 14' 5 1/2"	0.228	Passed (2L/730)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.255 @ 14' 5 1/2"	0.456	Passed (2L/430)	--	1.0 D + 1.0 L (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/480) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- -267 lbs uplift at support located at 4". Strapping or other restraint may be required.
- 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	5.50"	5.50"	1.50"	11	614/-278	625/-278	Blocking
2 - Stud wall - DF	5.50"	5.50"	1.82"	1428	1989	3417	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	14' 6" o/c	
Bottom Edge (Lu)	5' 11" 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 14' 5 1/2"	N/A	8.6	--	
1 - Uniform (PSF)	0 to 14' 5 1/2" (Top)	2'	20.0	60.0	
2 - Uniform (PLF)	10' 1 1/2" to 14' 5 1/2" (Top)	N/A	170.0	136.0	Linked from: 52, Support 1

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ForteWEB Software Operator	Job Notes
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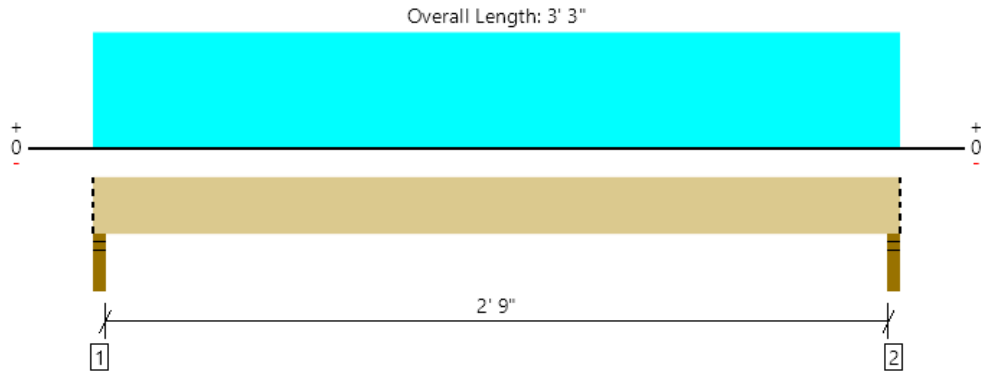
Weyerhaeuser

Main Level, 70

2 piece(s) 2 x 12 Douglas Fir-Larch 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)	653 @ 1 1/2"	5625 (3.00")	Passed (12%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	176 @ 1' 2 1/4"	4050	Passed (4%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	452 @ 1' 7 1/2"	5273	Passed (9%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.001 @ 1' 7 1/2"	0.075	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.001 @ 1' 7 1/2"	0.150	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	3.00"	3.00"	1.50"	174	479	653	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	174	479	653	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' 3" o/c	
Bottom Edge (Lu)	3' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 3' 3"	N/A	8.6	--	
1 - Uniform (PLF)	0 to 3' 3" (Top)	N/A	98.5	295.0	Linked from: 46, Support 1

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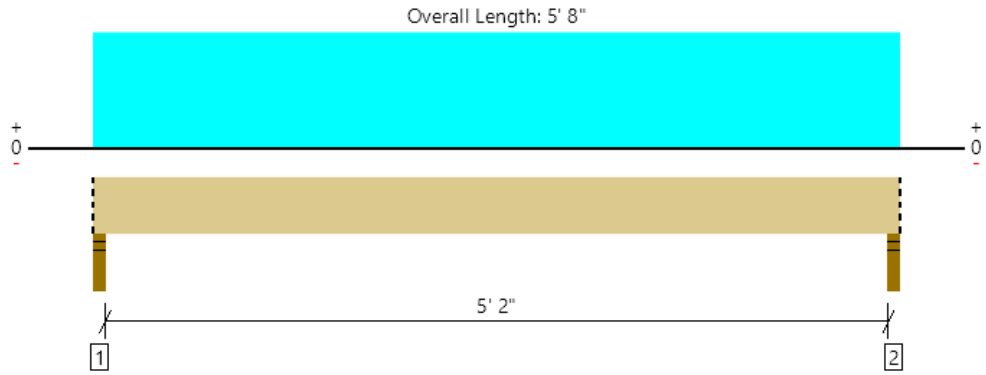
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Level, 71

2 piece(s) 2 x 10 Douglas Fir-Larch 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)	2572 @ 1 1/2"	5625 (3.00")	Passed (46%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1645 @ 1' 1/4"	3330	Passed (49%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3329 @ 2' 10"	3922	Passed (85%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.024 @ 2' 10"	0.135	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.052 @ 2' 10"	0.271	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	3.00"	3.00"	1.50"	1380	1192	2572	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	1380	1192	2572	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 5' 8"	N/A	7.0	--	
1 - Uniform (PSF)	0 to 5' 8" (Top)	9'	12.5	-	
2 - Uniform (PLF)	0 to 5' 8" (Top)	N/A	367.5	420.8	Linked from: 47, Support 1

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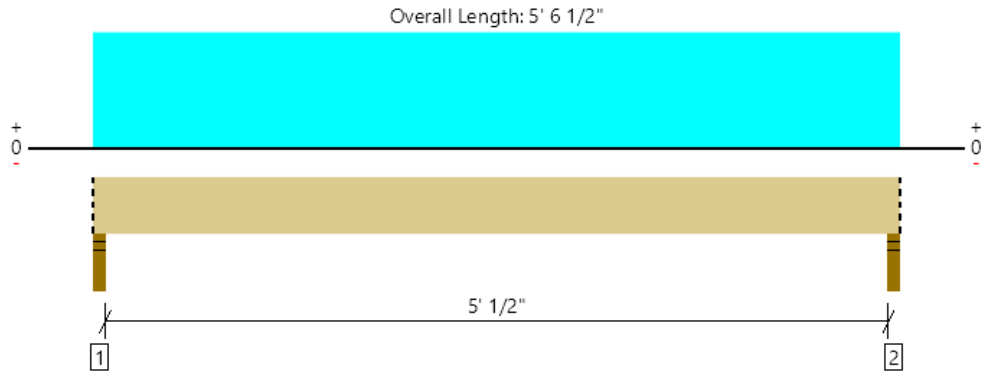
ForteWEB Software Operator	Job Notes
Javid Abdi Atlas Consulting Engineers (206) 427-7233 javiddabdi@yahoo.com	

Weyerhaeuser

Main Level, 72

2 piece(s) 2 x 8 Douglas Fir-Larch 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)	1493 @ 1 1/2"	5625 (3.00")	Passed (27%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1033 @ 10 1/4"	2610	Passed (40%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1886 @ 2' 9 1/4"	2628	Passed (72%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.044 @ 2' 9 1/4"	0.132	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.059 @ 2' 9 1/4"	0.265	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	3.00"	3.00"	1.50"	385	1108	1493	Blocking
2 - Stud wall - DF	3.00"	3.00"	1.50"	385	1108	1493	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' 7" o/c	
Bottom Edge (Lu)	5' 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 5' 6 1/2"	N/A	5.5	--	
1 - Uniform (PLF)	0 to 5' 6 1/2" (Top)	N/A	133.5	399.8	Linked from: 53, Support 2

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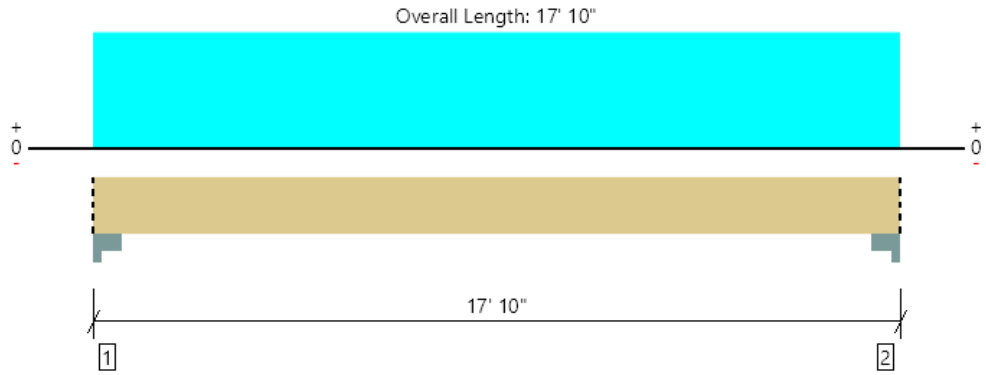
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Main Level, 73

1 piece(s) 5 1/8" x 21" 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)	14357 @ 5 1/2"	23319 (7.00")	Passed (62%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	10600 @ 2' 4"	19014	Passed (56%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	57598 @ 8' 11"	72794	Passed (79%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.219 @ 8' 11"	0.423	Passed (L/928)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.417 @ 8' 11"	0.846	Passed (L/487)	--	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.
- Critical positive moment adjusted by a volume factor of 0.97 that was calculated using length L = 16' 11".
- 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	Total	
1 - Column Cap - steel	7.00"	7.00"	4.31"	6820	7537	14357	Blocking
2 - Column Cap - steel	7.00"	7.00"	4.31"	6820	7537	14357	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)	17' 10" o/c	
Bottom Edge (Lu)	17' 10" 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 17' 10"	N/A	26.2	--	
1 - Uniform (PLF)	0 to 17' 10" (Top)	N/A	367.5	420.8	Linked from: 47, Support 1
2 - Uniform (PLF)	0 to 17' 10" (Top)	N/A	371.3	424.5	Linked from: 50, Support 1

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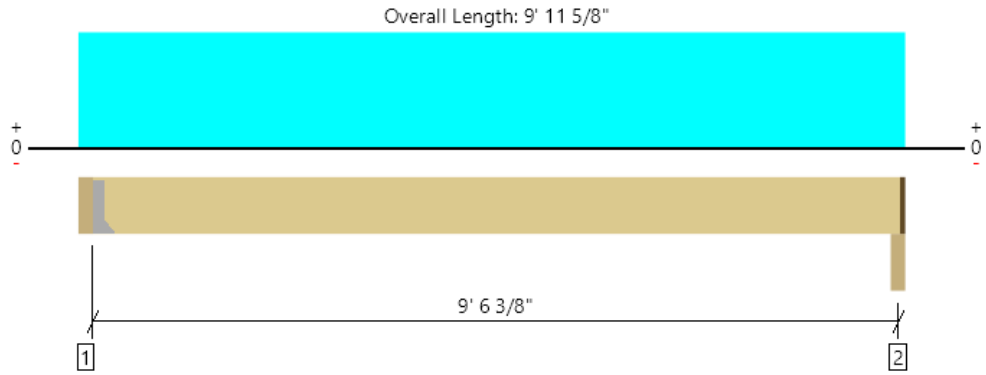
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

Lower Level, 80

1 piece(s) 2 x 12 Douglas Fir-Larch No. 1 @ 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)	758 @ 3 1/2"	1406 (1.50")	Passed (54%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	608 @ 1' 2 3/4"	2025	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1793 @ 5' 5/16"	3032	Passed (59%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.072 @ 5' 5/16"	0.237	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.096 @ 5' 5/16"	0.473	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

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 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Hanger on 11 1/4" DF beam	3.50"	Hanger[1]	1.50"	201	603	804	See note [1]
2 - Beam - DF	3.50"	2.25"	1.50"	198	593	791	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing 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)	8' 8" o/c	
Bottom Edge (Lu)	9' 7" o/c	

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS28	1.75"	N/A	6-10dx1.5	3-10d	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 9' 11 5/8"	24"	20.0	60.0	Default Load

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

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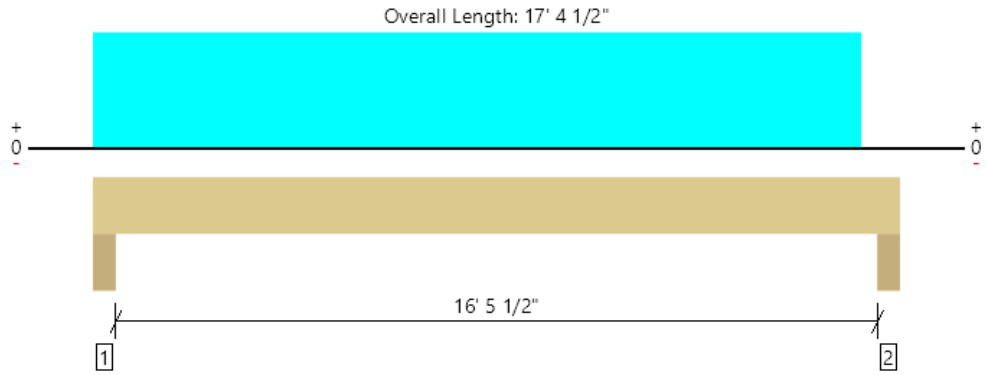
Weyerhaeuser

Lower Level, 81

1 piece(s) 5 1/8" x 12" 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)	3563 @ 4"	18322 (5.50")	Passed (19%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2970 @ 15' 11"	10865	Passed (27%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	14298 @ 8' 8 3/16"	24600	Passed (58%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.391 @ 8' 8 3/16"	0.557	Passed (L/513)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.541 @ 8' 8 3/16"	0.835	Passed (L/371)	--	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/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 1.00 that was calculated using length L = 16' 8 1/2".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Column - DF	5.50"	5.50"	1.50"	989	2574	3563	None
2 - Column - DF	5.50"	5.50"	1.50"	908	2331	3239	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	17' 5" o/c	
Bottom Edge (Lu)	17' 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 17' 4 1/2"	N/A	14.9	--	
1 - Uniform (PLF)	0 to 16' 6 1/2" (Top)	N/A	99.0	296.5	Linked from: 80, Support 2

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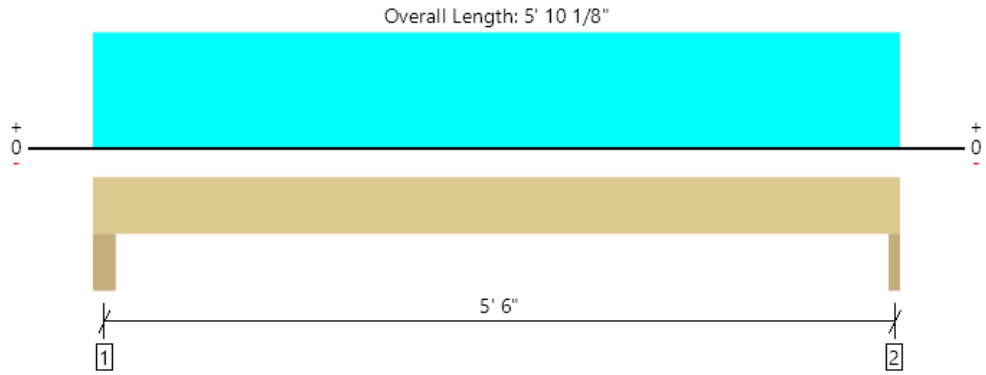
Weyerhaeuser

Lower Level, 82

2 piece(s) 2 x 12 Douglas Fir-Larch 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)	1134 @ 5' 8 7/8"	5156 (2.75")	Passed (22%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	663 @ 1' 4 3/4"	4050	Passed (16%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1476 @ 3' 7/16"	5273	Passed (28%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.009 @ 3' 7/16"	0.135	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.013 @ 3' 7/16"	0.270	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 - Column - DF	5.50"	5.50"	1.50"	327	900	1227	None
2 - Column - DF	2.75"	2.75"	1.50"	302	832	1134	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 10" o/c	
Bottom Edge (Lu)	5' 10" 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' 10 1/8"	N/A	8.6	--	
1 - Uniform (PLF)	0 to 5' 10 1/8" (Top)	N/A	99.0	296.5	Linked from: 80, Support 2

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Weyerhaeuser

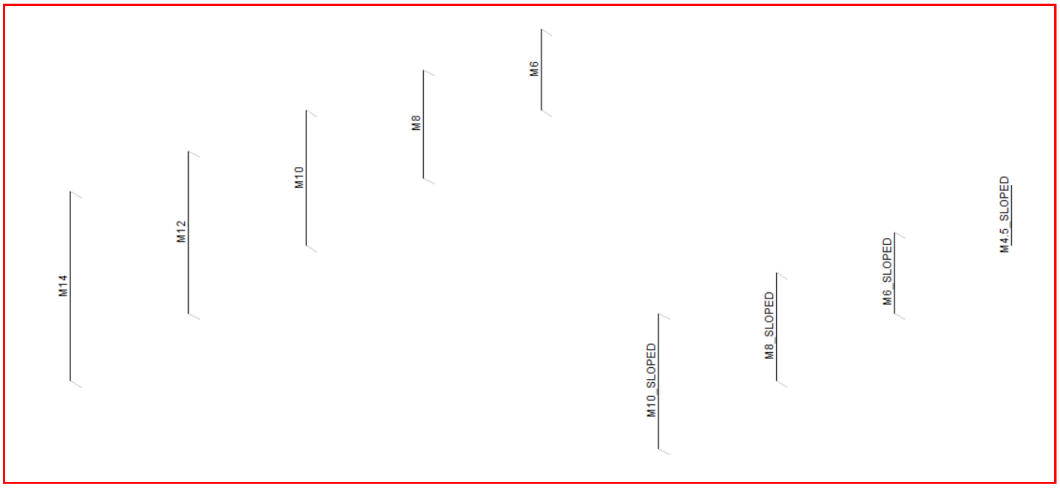
LOWER FLOOR PLAN NOTES

1. EXTERIOR STUDWALLS SHALL BE 2x6 STUDS @ 16" oc. SEE 6/6.1, 5/S6.1, AND 2/S6.1 FOR ALLOWABLE HOLES & NOTCHES IN STUDWALL STUDS AND TOP & BOTTOM PLATES.
2. SEE 8/S6.1 FOR CONNECTION DETAILS OF INTERIOR NON-STRUCTURAL PARTITION WALLS.
3. SOLID WALLS AND SHEARWALLS SHOWN IN PLAN ARE ABOVE FRAMING (i.e. FROM LOWER FLOOR LEVEL TO MAIN FLOOR LEVEL).
   JOISTS AND BEAMS SHOWN IN PLAN ARE AT LOWER FLOOR ELEVATION.
4. SEE GENERAL STRUCTURAL NOTE #28 ON S1.0 FOR ENGINEERED LUMBER REQUIREMENTS.

1 S2.1 FOUNDATION, LOWER FLOOR, AND LOWER DECK FRAMING PLAN

1/4" = 1'-0"

NORTH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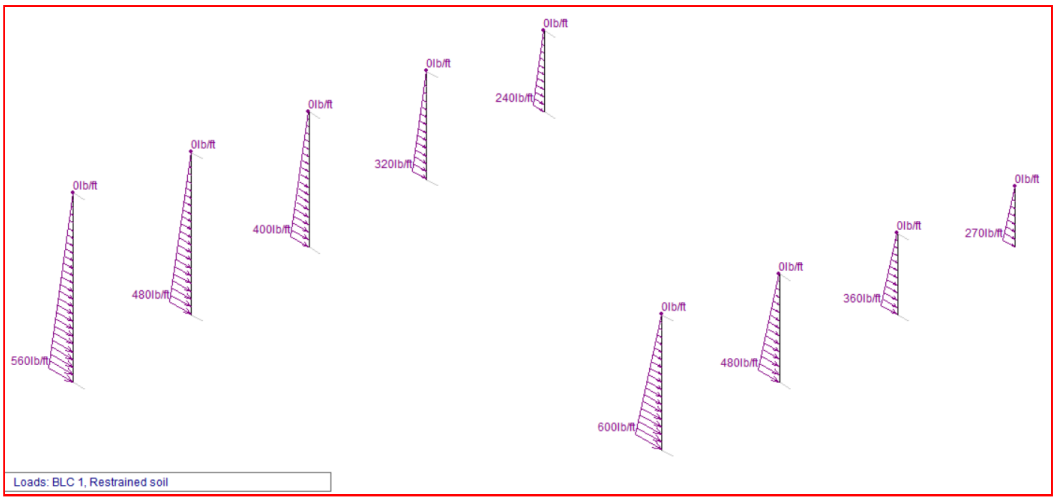
M6_SLOPED
M4.5_SLOPED


0lb/ft
560lb/ft
480lb/ft
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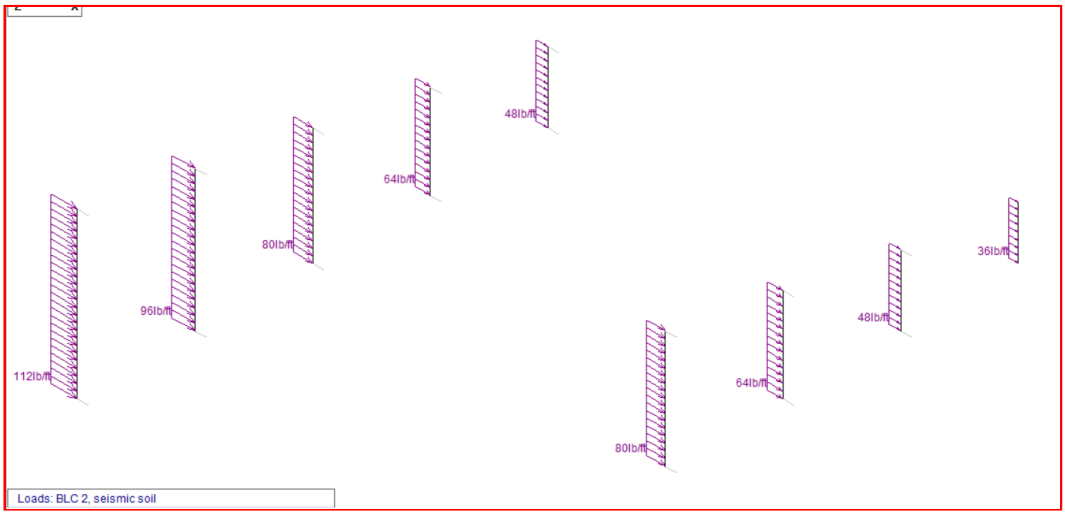
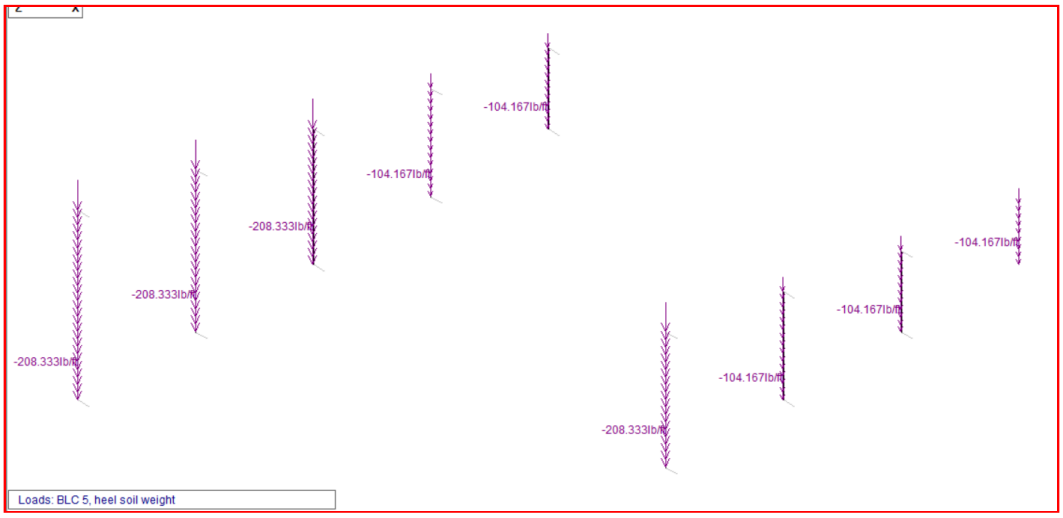
320lb/ft
240lb/ft
600lb/ft
480lb/ft
360lb/ft
270lb/ft
Loads: BLC 1, Restrained soil


112lb/ft
96lb/ft
80lb/ft
64lb/ft
48lb/ft
80lb/ft
64lb/ft
48lb/ft
36lb/ft
Loads: BLC 2, seismic soil


-150lb/ft
-150lb/ft
-100lb/ft
-100lb/ft
-100lb/ft
-100lb/ft
-100lb/ft
-100lb/ft
-100lb/ft
Loads: BLC 3, dead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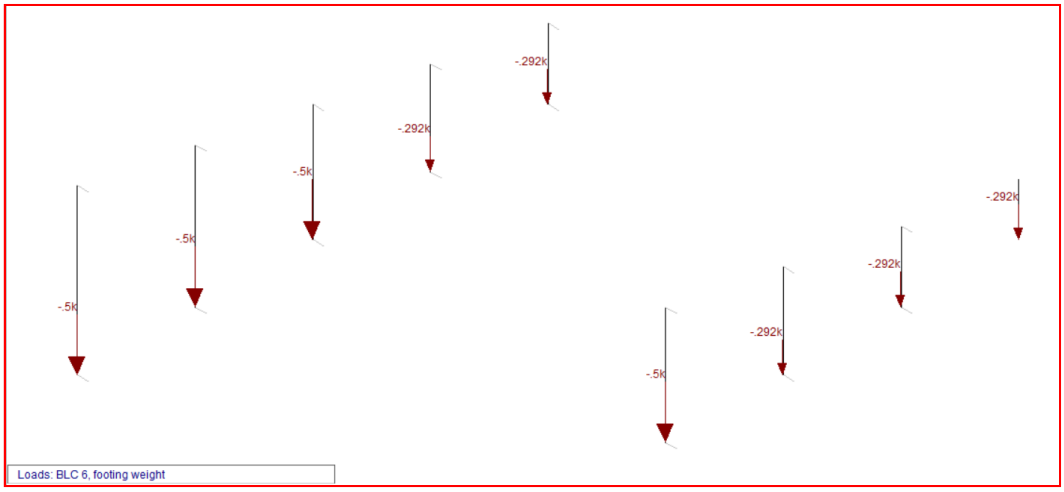
Loads: BLC 5, heel soil weight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-.292k
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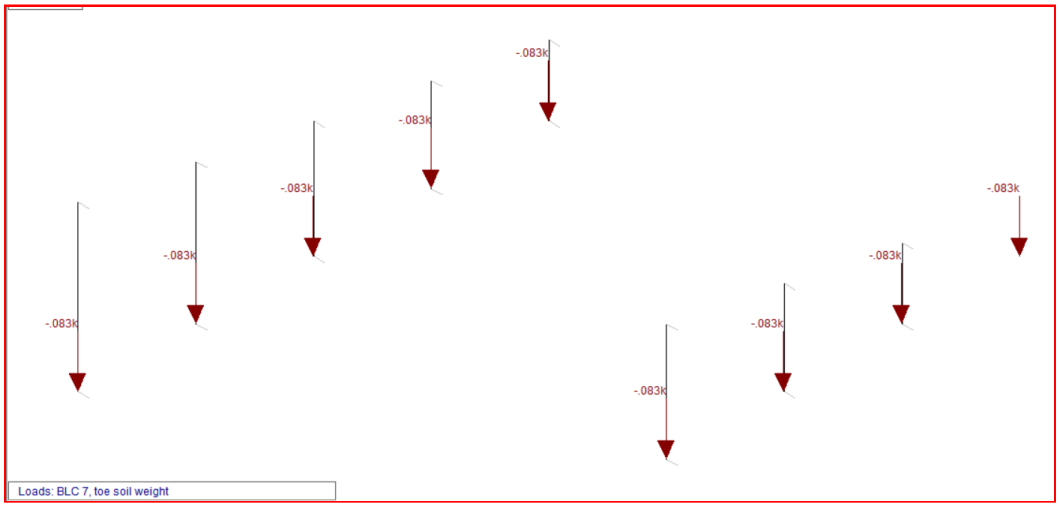
Loads: BLC 6, footing weight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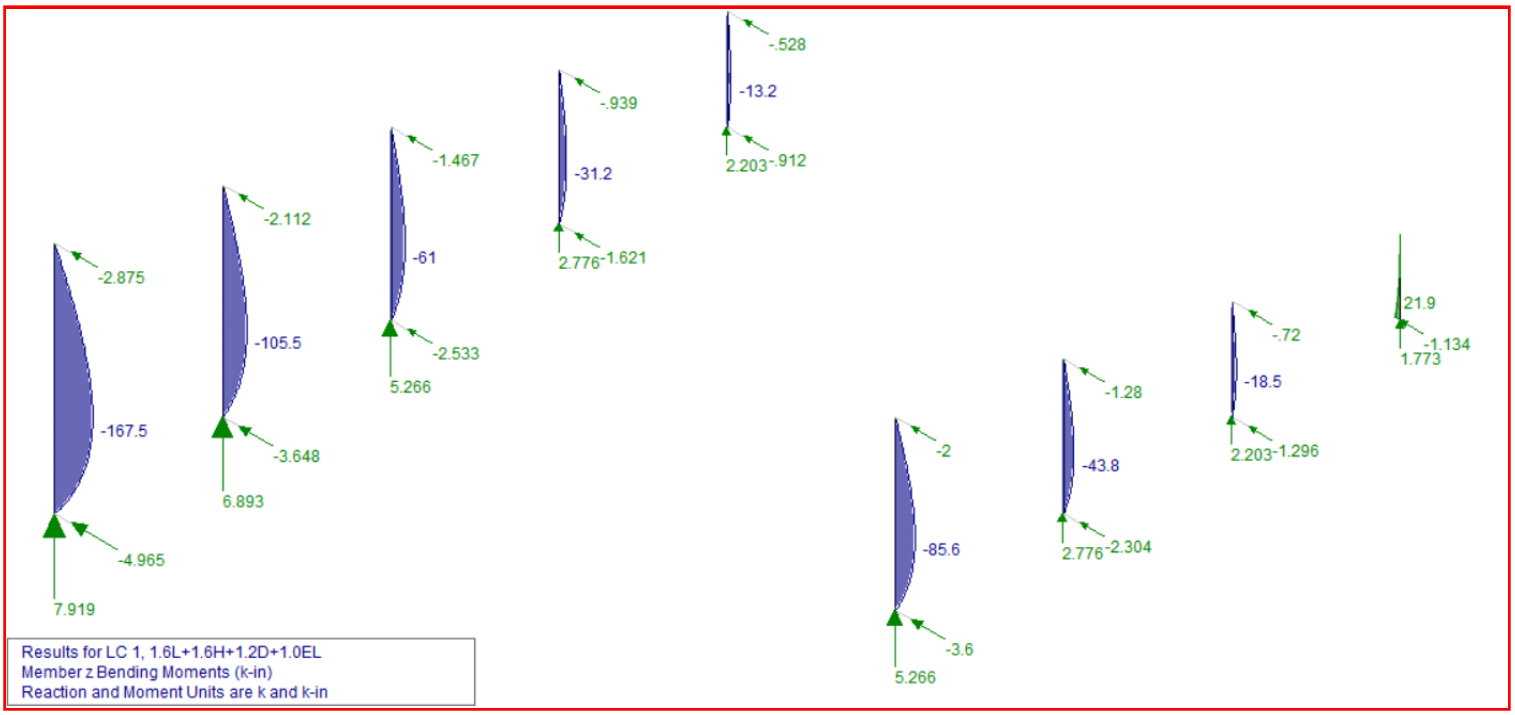
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-4.965
7.919
-2
-85.6
-3.6
5.266
-1.28
-43.8
2.776
-2.304
-.72
-18.5
2.203
-1.296
21.9
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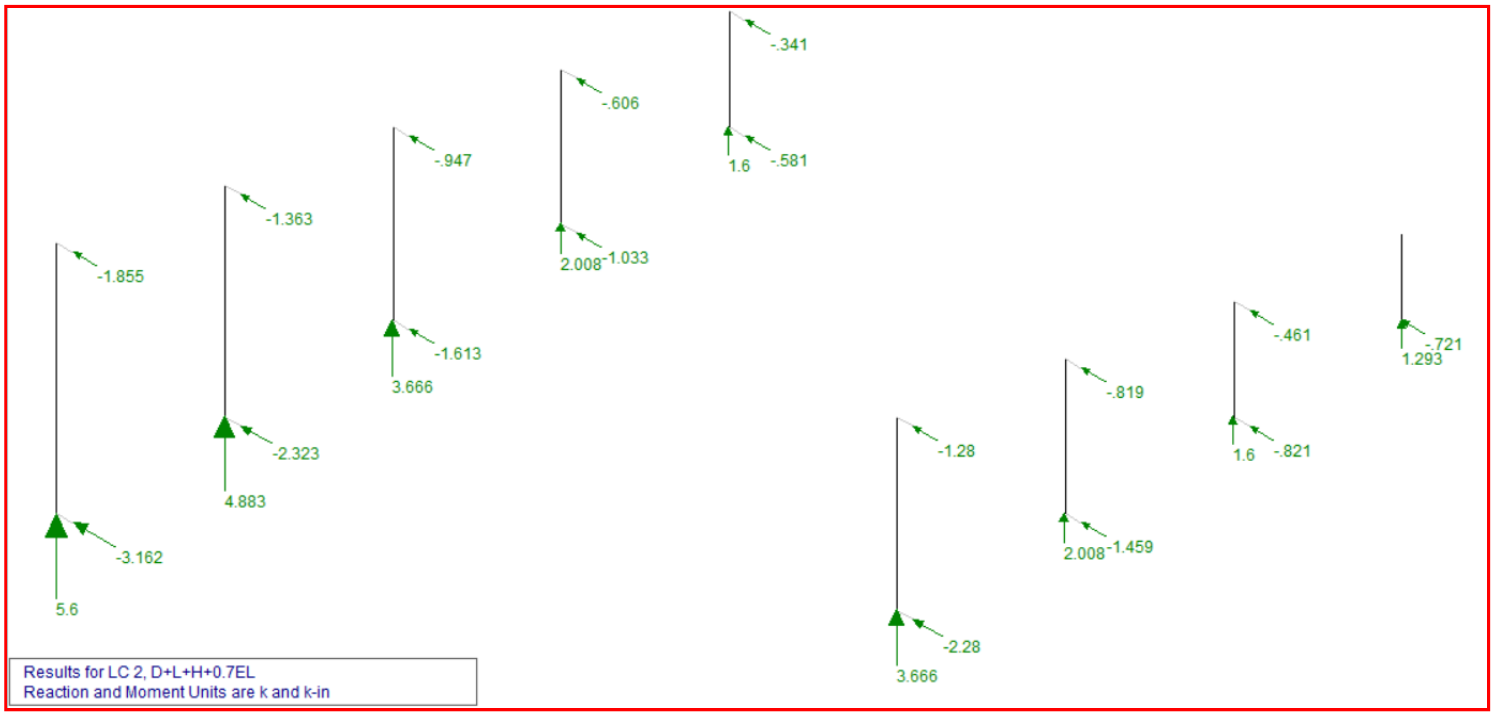
Results for LC 1, 1.6L+1.6H+1.2D+1.0EL
Member z Bending Moments (k-in)
Reaction and Moment Units are k and k-in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-.606
2.008
-1.033
-.947
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3.666
-1.363
-2.323
4.883
-1.855
-3.162
5.6
-1.28
-2.28
3.666
-.819
2.008
-1.459
-.461
1.6
-.821
-.721
1.293
Results for LC 2, D+L+H+0.7EL
Reaction and Moment Units are k and k-in

Height (ft)	F_{top} (plf)	F_{bot} (plf)	Dead (plf)	Friction (plf)	Passive		R_{bot} (plf)	Sliding	
6	341	581	1,599	560	394	1.5	953	OK	-
8	606	1,033	2,007	702	394	1.5	1,096	OK	-
10	947	1,613	3,666	1,283	394	1.5	1,677	OK	-
12	1,363	2,323	4,883	1,709	394	1.5	2,103	629	0.419
14	1,855	3,162	5,600	1,960	394	1.5	2,354	2,309	1.320

WALL

	M_{max} (K-in) LRFD	ØMn (K-in)	V_{max} (K) LRFD	ØVn (K)	a (in)	As_{vert} (in^2)	ρ_{vert}	As_{horiz} (in^2)	ρ_{horiz}	Fy (ksi)	F'c (ksi)	b (in)	d (in)
6	13.2	46.5	0.9	5.4	0.529411765	0.15	0.0015625	0.2	0.002083333	60	2.5	8	6
8	31.2	61.0	1.6	5.4	0.705882353	0.2	0.002083333	0.2	0.002083333	60	2.5	8	6
10	61.0	91.3	2.5	5.4	1.094117647	0.31	0.003229167	0.2	0.002083333	60	2.5	8	6
12	105.5	150.2	3.6	7.2	1.050352941	0.372	0.0031	0.31	0.002583333	60	2.5	10	8
14	167.5	184.4	5.0	7.2	1.312941176	0.465	0.003875	0.31	0.002583333	60	2.5	10	8

Height (ft)	F_{top} (plf)	F_{bot} (plf)	Dead (plf)	Friction (plf)	Passive		R_{bot} (plf)	Sliding	
6	461	821	1,599	560	394	1.5	953	OK	-
8	819	1,459	2,007	702	394	1.5	1,096	1,037	1.037
10	1,280	2,280	3,666	1,283	394	1.5	1,677	1,723	1.379

WALL

	M_{max} (K-in) LRFD	ØMn (K-in)	V_{max} (K) LRFD	ØVn (K)	a (in)	As_{vert} (in^2)	ρ_{vert}	As_{horiz} (in^2)	ρ_{horiz}	Fy (ksi)	F'c (ksi)	b (in)	d (in)
6	18.5	46.5	0.9	5.4	0.529411765	0.15	0.0015625	0.2	0.002083333	60	2.5	8	6
8	43.8	61.0	1.6	5.4	0.705882353	0.2	0.002083333	0.2	0.002083333	60	2.5	8	6
10	85.6	91.3	2.5	5.4	1.094117647	0.31	0.003229167	0.2	0.002083333	60	2.5	8	6

Height (ft)	6	8	10	12	14
W (plf)	-	-	-	2,688	4,677
L (ft)	-	-	-	16	10.67
M (lb-ft)	-	-	-	86,016	66,559
ØMn (K-in)	-	-	-	101,195	101,195
a (in)	-	-	-	1.459	1.459
As (in^2)	-	-	-	0.62	0.62
Fy (ksi)	-	-	-	60	60
F'c (ksi)	-	-	-	2.5	2.5
b (in)	10	10	10	12	12
d (in)	25	25	25	37	37
Bot Reinf	0.6	0.6	0.6	1.24	1.24
ρ_{bottom}	0.002142857	0.002142857	0.002142857	0.002583333	0.002583333
Trans Reinf	0.24	0.24	0.24	0.31	0.31
ρ_{trans}	0.002	0.002	0.002	0.002152778	0.002152778

CANTILEVER RETAINING WALL EXTERNAL STABILITY

limitations: uses Rankine coefficients for noncohesive soils, external moment at top of wall does not contribute to restoring moment (overturning only), no deflection or service load checks, soil on low side of wall does not brace wall against overturning (sliding only)

reference: Nilson & Winter, Design of Concrete Structures, 11th Edition, page 680

file author: S. Frech last modified: 4/25/2002

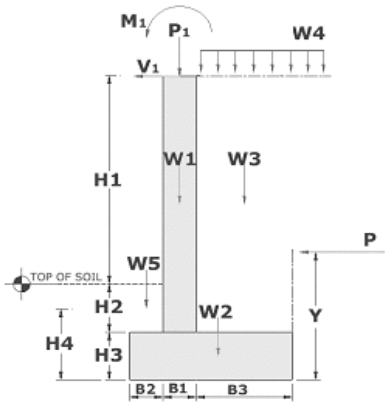
SOIL DATA

w	120	(pcf)	soil unit weight
phi	36.9	(deg)	soil internal angle of friction
del	0	(deg)	surface angle incline
	0.35		coeff. friction w/Concrete
	0.800		cosine(phi)
	1.000		cosine(del)
Ca	0.250	*30 psf*	coeff. of active pressure
Cp	2.917	*349.98 psf*	coeff. of passive pressure

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

WALL GEOMETRY

H1	4.5	(ft)	soil retained
H2	0.6666667	(ft)	soil depth above toe
H3	0.8333333	(ft)	footing thickness
H4	1.5	(ft)	passive pressure soil depth
B1	0.6666667	(ft)	wall width
B2	0.8333333	(ft)	toe width
B3	0.8333333	(ft)	heel width
H	6	(ft)	total height
B	2.3333333	(ft)	total base
	150	(pcf)	concrete unit weight



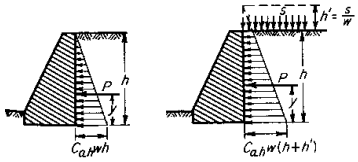
EXTERNAL LOADS

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

LOAD CALCULATIONS

lateral soil force and overturning moment

H_{prime}	0.00	(ft)	converted surcharge
Y	2.00	(ft)	distance to soil load resultant
P	540	(lbs)	soil load resultant
	1080	(lb-ft)	Mo, soil + surcharge
	0	(lb-ft)	Mo, external load
	1,080	(lb-ft)	total overturning Moment

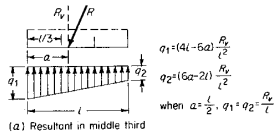


$y = \frac{h}{3}$ $\qquad$ $y = \frac{h^2+3hh'}{3(h+2h')}$

$P = \frac{1}{2}C_{a,h}wh^2$ $\qquad$ $P = \frac{1}{2}C_{a,h}wh(h+2h')$

wall restoring forces

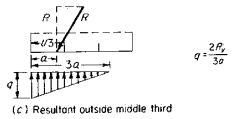
component	weight (#)	arm (ft)	moment (#-ft)
w1 (concrete)	517	1.17	603
w2 (concrete)	292	1.17	340
w3 (heel soil)	517	1.92	990
w4 (surcharge)	0	1.92	0
w5 (toe soil)	67	0.42	28
P applied	0	1.17	0
vert. force	1,392	moment	1,961



(a) Resultant in middle third

$q_1 = (4l-6a)\frac{R_v}{l^2}$ $\qquad$ $q_2 = (6a-2l)\frac{R_v}{l^2}$

when $a = \frac{l}{2}$, $q_1 = q_2 = \frac{R_v}{l}$



(c) Resultant outside middle third

$q = \frac{2R_v}{3a}$

lateral sliding resistance

	394	(lb) passive pressure sliding resistance
	487	(lb) soil friction force
	881	(lb) total sliding resistance

STABILITY FACTOR OF SAFETY CHECKS

	1		F.S. overturning
	1		F.S. sliding
overturning	1.82	OK	Mr / Mo
sliding	1.63	OK	(PP+F)/(Ph+V)

SOIL BEARING

a	0.63	(ft)	distance to resultant
	0.78' to 1.56'		middle third of footing
q1	1473	(psf)	bearing pressure @ toe
q2	N.A.	(psf)	bearing pressure @ heel