STRUCTURAL ENGINEERING CALCULATIONS

FOR

A NEW MULTIFAMLY PROJECT
EVREN APARTMENTS
LEE'S SUMMIT, MISSOURI

PREPARED BY

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AND

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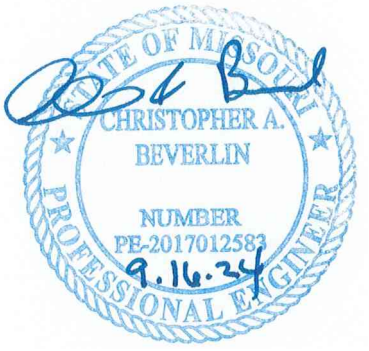
FOR

NSPJ ARCHITECTS
9415 NALL AVE.
SUITE 300
PRAIRIE VILLAGE, KANSAS 66207
(913) 831-1415

SEPTEMBER 13, 2024



Bob D. Campbell & Company
Structural Engineers

Evren Apartments
Lee's Summit MO
9/16/2024

Structural Design Criteria

Building Code:

International Building Code (IBC 2018) and All Reference Standards Per Chapter 35
And All Adopted Revisions Per the City of Overland Park, KS

1605.2 and 1605.3 Basic load combinations

P

LRFD Combinations		ASD Combinations	
1.4D	(Eq 16-1)	D	(Eq 16-8)
1.2D + 1.6L + 0.5(Lr or S or R)	(Eq 16-2)	D + L	(Eq 16-9)
1.2D + 1.6(Lr or S or R) + (f_1L or 0.5W)	(Eq 16-3)	D + (Lr or S or R)	(Eq 16-10)
1.2D + W + f_1L + 0.5(Lr or S or R)	(Eq 16-4)	D + 0.75L + 0.75(Lr or S or R)	(Eq 16-11)
1.2D + E + f_1L + f_2S	(Eq 16-5)	D + (0.6W or 0.7E)	(Eq 16-12)
0.9D ± W	(Eq 16-6)	D + 0.75(0.6W) + 0.75L + 0.75(Lr or S or R)	(Eq 16-13)
0.9D ± E	(Eq 16-7)	D + 0.75(0.7E) + 0.75L + 0.75(Lr or S or R)	(Eq 16-14)
		0.6D ± 0.6W	(Eq 16-15)
f_1 = 1.0 (Public Assembly Live Load & Garage); 0.5 (Other Live Load)		0.6D ± 0.7E	(Eq 16-16)

f_2=0.7 (Non-Shedding roofs); 0.2 (Other Roofs)

ASD Combinations Used: Steel, Wood Framing, Wood Shearwall, Anchor (Allowable Level) and Footing Bearing Determination
LRFD Comnination Used for Concrete and Anchor Design (Strength Level)

Structural Design Loads

Roof Dead Load:

Ceilings	5 psf	
Suspended mech & elec	10 psf	
Truss & Deck Weight	5 psf	
Roofing & insulation	5 psf	
	25 psf	**D**

New Floor Dead Load:

Ceilings	5 psf	
Suspended mech & elec	5 psf	
Joist & Deck Weight	8 psf	
1" Gypcrete Topping (110pcf)	9 psf	
Partition	8 psf	
	35 psf	**D**

			Floor LL - Public, Stairs	**100 psf**	**L**
			Floor Live Load - Private	**40 psf**	**L**
Roof Live Load	**20 psf**	**Lr**	Ground Snow Load	20 psf	
			Flat Roof Snow	15 psf	
Soil Report				**5 psf**	**S**

Shallow Foundations = 2,500psf bearing

Materials

Concrete: 3500 psi (footings, grade beams)
4000 psi (Interior Slabs & BLDG D Podium)
4000 psi Light Weight Concrete (110pcf) (Topping Slabs at Balconies and Podium at A1 and A3)
4500 psi w/ 6% +/- 1% air entrainment (exterior flatwork)

Reinf. Steel: ASTM A615 or A706 Grade 60 steel

Steel Framing: W-Shapes - A992, Gr 50 ksi
Tube Shapes - A500, Gr B, 46 ksi
Angles, Plates - A36, Gr 36 ksi

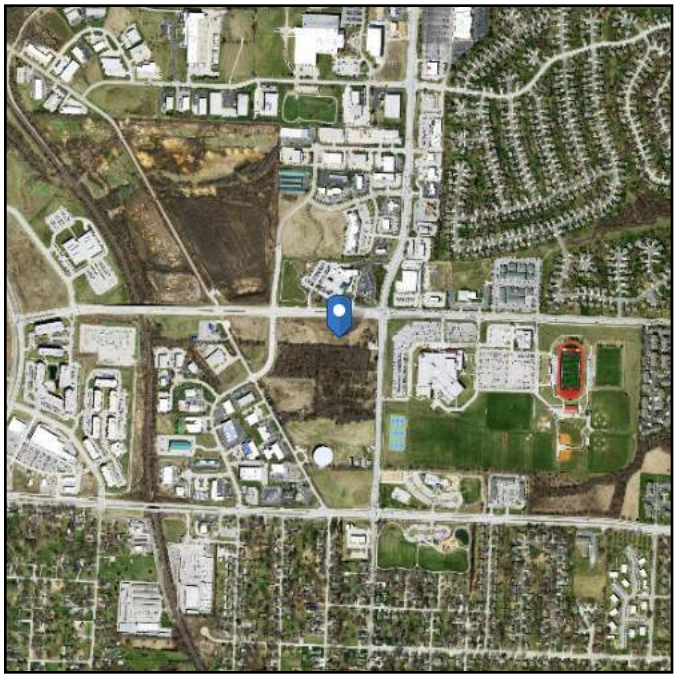
Wood:

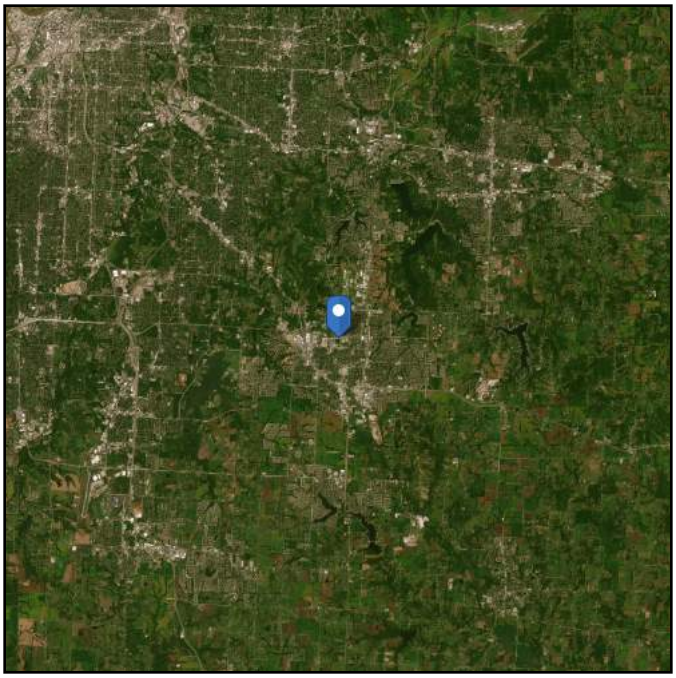
Studs	No. 2 DLF	Properties as Defined by NDS
Top Plates	No. 2 DLF	Properties as Defined by NDS
Sill Plates	No. 2 SYP	Properties as Defined by NDS
LSL:	Fb = 1,700 psi; E = 1,300 ksi	
LVL:	Fb = 2,600 psi; E = 1,900 ksi	
PSL:	Fb = 2,900 psi, E = 2,000 ksi ≤ 18" deep; E = 2,200 ksi > 18" dee	

ASCE Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Latitude:**	38.929931
Risk Category:	II	**Longitude:**	-94.381096
Soil Class:	C - Very Dense Soil and Soft Rock	**Elevation:**	1036.7056910518777 ft (NAVD 88)





Wind

Results:

Wind Speed	109 Vmph
10-year MRI	76 Vmph
25-year MRI	83 Vmph
50-year MRI	88 Vmph
100-year MRI	94 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed: Fri May 31 2024

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

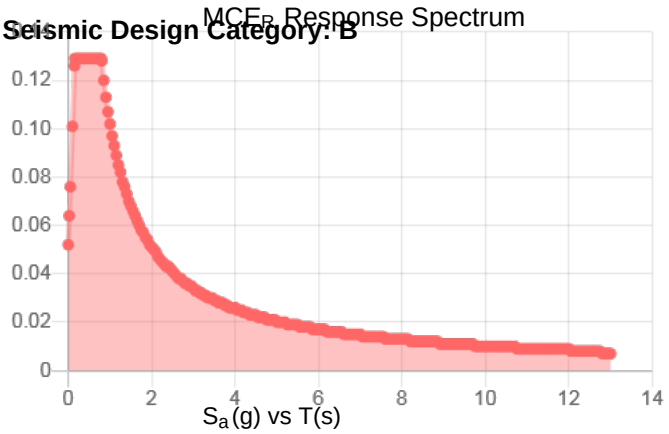
Seismic

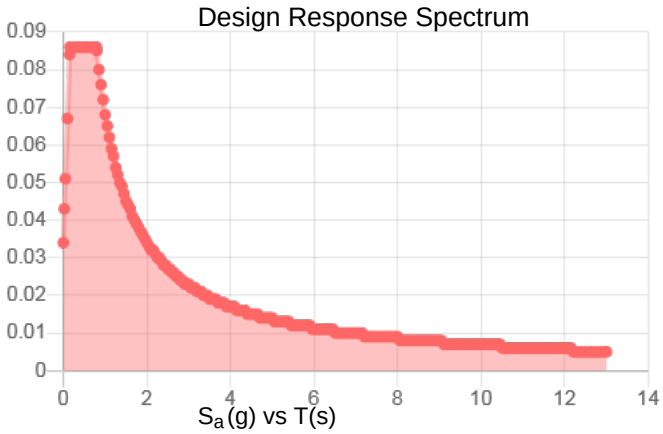
Site Soil Class: C - Very Dense Soil and Soft Rock

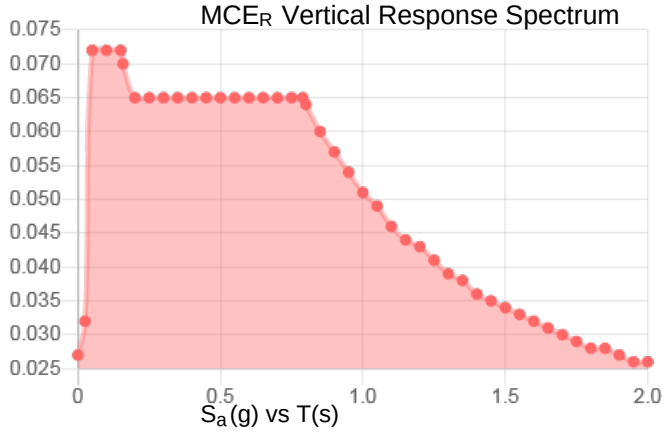
Results:

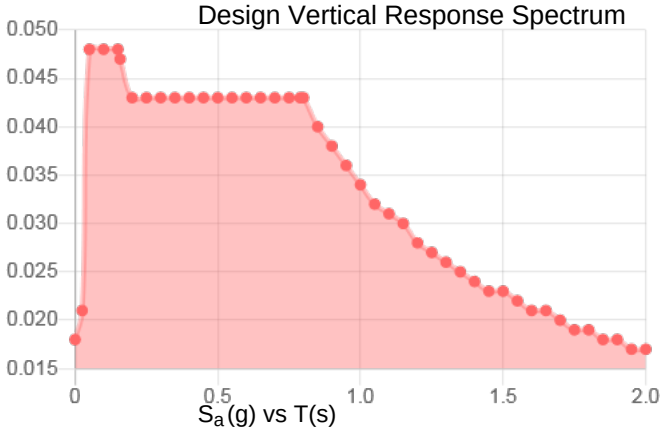
S_S :	0.099	S_{D1} :	0.068
S_1 :	0.068	T_L :	12
F_a :	1.3	PGA :	0.047
F_v :	1.5	PGA_M :	0.061
S_{MS} :	0.129	F_{PGA} :	1.3
S_{M1} :	0.102	I_e :	1
S_{DS} :	0.086	C_v :	0.7

Seismic Design Category: B









Data Accessed: **Fri May 31 2024**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed	40 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Fri May 31 2024

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Snow

Results:

Ground Snow Load, p_g:	20 lb/ft^2
Mapped Elevation:	1036.7 ft
Data Source:	ASCE/SEI 7-16, Table 7.2-8
Date Accessed:	Fri May 31 2024

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

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

Rain

Results:

15-minute Precipitation Intensity: 7.49 in./h

60-minute Precipitation Intensity: 3.52 in./h

Data Source: NOAA National Weather Service, Precipitation Frequency Data Server, Atlas 14 (https://www.nws.noaa.gov/oh/hdsc/)

Date Accessed: Fri May 31 2024

Flood

Results:

Flood Zone Categorization: X (unshaded)

Base Flood Elevation:

Data Source:	FEMA National Flood Hazard Layer - Effective Flood Hazard Layer for US, where modernized (https://msc.fema.gov/portal/search)
Date Accessed:	Fri May 31 2024
FIRM Panel:	If available, download FIRM panel here
Insurance Study Note:	Download FEMA Flood Insurance Study for this area here

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

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Evren Apartments - BLDG A

Bob D. Campbell & Co.

MFWRS Wind Pressures

				Roof Angle =	3°		
Kzt=	1.0	Leeward Kh=	**1.09**	Ridge Dirr. =	Flat (<10°)		
Kd=	0.85	G=	0.85	**Roof Coefficients**		Parapet GCp+=	1.5
V=	109 mph	Windward Cp=	0.8	Long. Windward	0.80	Parapet GCp-=	-1
I=	1.00	Leeward Cp=	-0.5	Long. Leeward	-0.50		
Exposure	C	Side Wall Cp=	-0.7	Trans. Windward	0.00	**Parapet Pres. =**	70.4
Roof Ht.	50	qh=	**28.2**	Trans. Leeward	0.00		

Height (ft.)	Kz	qz (psf)	Windward Pressure (psf)	Leeward Pressure (psf)	Total Pressure (psf)	Va = 0.6Vu	Side Wall Pressure (psf)
15	0.85	22.0	14.9	-12.0	26.9	16.2	-16.8
20	0.9	23.3	15.8	-12.0	27.8	16.7	-16.8
25	0.94	24.3	16.5	-12.0	28.5	17.1	-16.8
30	0.98	25.3	17.2	-12.0	29.2	17.5	-16.8
40	1.04	26.9	18.3	-12.0	30.3	18.2	-16.8
50	1.09	28.2	19.2	-12.0	31.1	18.7	-16.8
60	1.13	29.2	19.9	-12.0	31.8	19.1	-16.8
70	1.17	30.2	20.6	-12.0	32.5	19.5	-16.8
80	1.21	31.3	21.3	-12.0	33.2	19.9	-16.8
90	1.24	32.1	21.8	-12.0	33.8	20.3	-16.8
100	1.26	32.6	22.2	-12.0	34.1	20.5	-16.8
120	1.31	33.9	23.0	-12.0	35.0	21.0	-16.8
140	1.36	35.2	23.9	-12.0	35.9	21.5	-16.8
160	1.39	35.9	24.4	-12.0	36.4	21.8	-16.8
180	1.17	30.2	20.6	-12.0	32.5	19.5	-16.8

Ultimate Wind Load Per Floor

Floor	Elev.	TTL P.	Bldg Length	Load to FLR	Total Load	TTL P.	Bldg Width	Load to FLR	Total Load
T/Parapet	52	70.4	150	77.8 k	77.8 k	70.4	68	35.3 k	35.3 k
T/Truss	44.64	30.7	150	12.1 k	89.9 k	30.7	68	5.5 k	40.8 k
B truss	42	30.4	150	23.0 k	112.9 k	30.4	68	10.4 k	51.2 k
4th	31.94	29.4	150	45.7 k	158.6 k	29.4	68	20.7 k	71.9 k
3rd	21.29	28.0	150	44.7 k	203.3 k	28.0	68	20.3 k	92.1 k
2nd	10.64	26.9	150	43.0 k	246.2 k	26.9	68	19.5 k	111.6 k
Podium	0	26.9	0	0.0 k	246.2 k	26.9	0	0.0 k	111.6 k
Ground	0				246.2 k				111.6 k

Evren Apartments - BLDG A

Bob D. Campbell & Co.

Comp. and Clad. Wind Pressures

Roof Ht. h ≤ 60ft. w/ Monoslope Roof

Kzt=	1.0	Leeward Kh=	#N/A	**Building Dimensions**	
Kd=	0.85	G=	0.85	Length	100 ft
V=	109.0 mph	qh=	28.2	Width	75 ft
I=	1.00	GCpi +/-=	0.18	a	7.5 ft
Exposure	C	Roof θ	2.00		
Roof Ht.	50.0	(Reduce Wall Pressures by 10% if θ < 10°)			

Controlling Negative Wind Pressures (psf) (Note: 0.6W Factor Used for Allowable Loads)

Ae (ft^2)	Roofs					Walls	
	Zone 1	Zone 2	Zone 2'	Zone 3	Zone 3'	Zone 4	Zone 5
10	-19.95	-33.48	0.00	-50.39	0.00	-19.48	-24.04
20	-19.44	-30.10	0.00	-41.93	0.00	-18.72	-22.52
50	-18.77	-25.02	0.00	-30.10	0.00	-17.96	-20.24
100	-18.26	-21.64	0.00	-21.64	0.00	-17.20	-18.72
200	-18.26	-21.64	0.00	-21.64	0.00	-16.43	-17.20
500	-18.26	-21.64	0.00	-21.64	0.00	-14.91	-14.91
1000	-18.26	-21.64	0.00	-21.64	0.00	-14.91	-14.91

Evren Apartments - BLDG A

Bob D. Campbell & Co.

Comp. and Clad. Wind Pressures

Roof Ht. h ≤ 60ft. w/ Gable/Hip Roof

Kzt=	1.0	Leeward Kh=	#N/A	**Building Dimensions**	
Kd=	0.85	G=	0.85	Length	377 ft
V=	109.0 mph	qh=	28.2	Width	73 ft
I=	1.00	GCpi +/-=	0.18	a	7.3 ft
Exposure	C	Roof θ	26.00		
Roof Ht.	50.0	(Reduce Wall Pressures by 10% if θ < 10°)			

Controlling Negative Wind Pressures (psf)

Ae (ft^2)	Roofs			Walls	
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
10	-30.43	-52.98	-78.34	-36.07	-44.52
20	-29.59	-48.75	-72.70	-34.66	-41.71
50	-28.46	-43.12	-67.07	-33.25	-37.48
100	-27.62	-38.89	-61.43	-31.84	-34.66
200	-27.62	-38.89	-61.43	-30.43	-31.84
500	-27.62	-38.89	-61.43	-27.62	-27.62
1000	-27.62	-38.89	-61.43	-27.62	-27.62

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Evren Apartments - BLDG A
Seismic Load Distribution

Wood Shearwalls

R =	2		
I =	1	SDC =	B
Ta =	0.33		**Cs**
Sds =	0.086		0.043
Sd1 =	0.068		0.103
k =	1		0.043

Seismic Force Distribution

Floor	**Height**	**Area**	**DL (psf)**	**Weight (k)**	**WxHx^k**	**Cvx**	**Fx**	
Roof	42	10200	25	255	10710	0.32	18.2 k	12.7557
4th	31.94	10200	35	357	11402.58	0.34	19.4 k	13.58057
3rd	21.29	10200	35	357	7600.53	0.23	12.9 k	9.052298
2nd	10.64	10200	35	357	3798.48	0.11	6.5 k	4.524023
				1326	33512	1	57 k	

At Bottom of Wood

Base V = 57 k

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Evren Apartments - BLDG A
Controlling Lateral Forces

Transverse Lateral Loads

	Wind			Seismic			
	Fx	**0.6 Fx**	**TTL Fx**	**Fx**	**0.7 Fx**	**TTL Fx**	
Roof	113 k	67.7 k	68 k	18 k	13 k	13 k	Wind Controls
4th	46 k	27.4 k	95 k	19 k	14 k	26 k	Wind Controls
3rd	45 k	26.8 k	122 k	13 k	9 k	35 k	Wind Controls
2nd	43 k	25.8 k	148 k	6 k	5 k	40 k	Wind Controls
	246 k	148 k		57 k	40 k		

Longitudinal Lateral Loads

	Wind			Seismic			
	Fx	**0.6 Fx**	**TTL Fx**	**Fx**	**0.7 Fx**	**TTL Fx**	
Roof	51 k	30.7 k	31 k	18 k	13 k	13 k	Wind Controls
4th	21 k	12.4 k	43 k	19 k	14 k	26 k	Wind Controls
3rd	20 k	12.2 k	55 k	13 k	9 k	35 k	Wind Controls
2nd	19 k	11.7 k	67 k	6 k	5 k	40 k	Wind Controls
	112 k	67 k		57 k	40 k		

Evren Apartments - BLDG C+D

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MFWRS Wind Pressures

				Roof Angle =	3°		
Kzt=	1.0	Leeward Kh=	**1.09**	Ridge Dirr. =	Flat (<10°)		
Kd=	0.85	G=	0.85	**Roof Coefficients**		Parapet GCp+=	1.5
V=	109 mph	Windward Cp=	0.8	Long. Windward	0.80	Parapet GCp-=	-1
I=	1.00	Leeward Cp=	-0.5	Long. Leeward	-0.50		
Exposure	C	Side Wall Cp=	-0.7	Trans. Windward	0.00	**Parapet Pres. =**	70.4
Roof Ht.	50	qh=	**28.2**	Trans. Leeward	0.00		

Height (ft.)	Kz	qz (psf)	Windward Pressure (psf)	Leeward Pressure (psf)	Total Pressure (psf)	Va = 0.6Vu	Side Wall Pressure (psf)
15	0.85	22.0	14.9	-12.0	26.9	16.2	-16.8
20	0.9	23.3	15.8	-12.0	27.8	16.7	-16.8
25	0.94	24.3	16.5	-12.0	28.5	17.1	-16.8
30	0.98	25.3	17.2	-12.0	29.2	17.5	-16.8
40	1.04	26.9	18.3	-12.0	30.3	18.2	-16.8
50	1.09	28.2	19.2	-12.0	31.1	18.7	-16.8
60	1.13	29.2	19.9	-12.0	31.8	19.1	-16.8
70	1.17	30.2	20.6	-12.0	32.5	19.5	-16.8
80	1.21	31.3	21.3	-12.0	33.2	19.9	-16.8
90	1.24	32.1	21.8	-12.0	33.8	20.3	-16.8
100	1.26	32.6	22.2	-12.0	34.1	20.5	-16.8
120	1.31	33.9	23.0	-12.0	35.0	21.0	-16.8
140	1.36	35.2	23.9	-12.0	35.9	21.5	-16.8
160	1.39	35.9	24.4	-12.0	36.4	21.8	-16.8
180	1.17	30.2	20.6	-12.0	32.5	19.5	-16.8

Ultimate Wind Load Per Floor

Floor	Elev.	TTL P.	Bldg Length	Load to FLR	Total Load	TTL P.	Bldg Width	Load to FLR	Total Load
T/Parapet	52	70.4	205	106.3 k	106.3 k	70.4	68	35.3 k	35.3 k
T/Truss	44.64	30.7	205	16.6 k	122.9 k	30.7	68	5.5 k	40.8 k
B truss	42	30.4	205	31.4 k	154.3 k	30.4	68	10.4 k	51.2 k
4th	31.94	29.4	205	62.4 k	216.7 k	29.4	68	20.7 k	71.9 k
3rd	21.29	28.0	205	61.1 k	277.8 k	28.0	68	20.3 k	92.1 k
2nd	10.64	26.9	205	58.7 k	336.5 k	26.9	68	19.5 k	111.6 k
Podium	0	26.9	0	0.0 k	336.5 k	26.9	0	0.0 k	111.6 k
Ground	0				336.5 k				111.6 k

Evren Apartments - BLDG C+D

Bob D. Campbell & Co.

Comp. and Clad. Wind Pressures

Roof Ht. h ≤ 60ft. w/ Monoslope Roof

Kzt=	1.0	Leeward Kh=	#N/A	**Building Dimensions**	
Kd=	0.85	G=	0.85	Length	100 ft
V=	109.0 mph	qh=	28.2	Width	75 ft
I=	1.00	GCpi +/-=	0.18	a	7.5 ft
Exposure	C	Roof θ	2.00		
Roof Ht.	50.0	(Reduce Wall Pressures by 10% if θ < 10°)			

Controlling Negative Wind Pressures (psf) (Note: 0.6W Factor Used for Allowable Loads)

Ae (ft^2)	Roofs					Walls	
	Zone 1	Zone 2	Zone 2'	Zone 3	Zone 3'	Zone 4	Zone 5
10	-19.95	-33.48	0.00	-50.39	0.00	-19.48	-24.04
20	-19.44	-30.10	0.00	-41.93	0.00	-18.72	-22.52
50	-18.77	-25.02	0.00	-30.10	0.00	-17.96	-20.24
100	-18.26	-21.64	0.00	-21.64	0.00	-17.20	-18.72
200	-18.26	-21.64	0.00	-21.64	0.00	-16.43	-17.20
500	-18.26	-21.64	0.00	-21.64	0.00	-14.91	-14.91
1000	-18.26	-21.64	0.00	-21.64	0.00	-14.91	-14.91

Evren Apartments - BLDG C+D

Bob D. Campbell & Co.

Comp. and Clad. Wind Pressures

Roof Ht. h ≤ 60ft. w/ Gable/Hip Roof

Kzt=	1.0	Leeward Kh=	#N/A	**Building Dimensions**	
Kd=	0.85	G=	0.85	Length	377 ft
V=	109.0 mph	qh=	28.2	Width	73 ft
I=	1.00	GCpi +/-=	0.18	a	7.3 ft
Exposure	C	Roof θ	26.00		
Roof Ht.	50.0	(Reduce Wall Pressures by 10% if θ < 10°)			

Controlling Negative Wind Pressures (psf)

Ae (ft^2)	Roofs			Walls	
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
10	-30.43	-52.98	-78.34	-36.07	-44.52
20	-29.59	-48.75	-72.70	-34.66	-41.71
50	-28.46	-43.12	-67.07	-33.25	-37.48
100	-27.62	-38.89	-61.43	-31.84	-34.66
200	-27.62	-38.89	-61.43	-30.43	-31.84
500	-27.62	-38.89	-61.43	-27.62	-27.62
1000	-27.62	-38.89	-61.43	-27.62	-27.62

Bob D. Campbell & Co.

Evren Apartments - BLDG C+D
Seismic Load Distribution

Wood Shearwalls

R =	2		
I =	1	SDC =	B
Ta =	0.33		**Cs**
Sds =	0.086		0.043
Sd1 =	0.068		0.103
k =	1		0.043

Seismic Force Distribution

Floor	**Height**	**Area**	**DL (psf)**	**Weight (k)**	**WxHx^k**	**Cvx**	**Fx**	
Roof	42	13940	25	348.5	14637	0.32	24.9 k	17.4328
4th	31.94	13940	35	487.9	15583.53	0.34	26.5 k	18.56012
3rd	21.29	13940	35	487.9	10387.39	0.23	17.7 k	12.37147
2nd	10.64	13940	35	487.9	5191.256	0.11	8.8 k	6.182832
				1812	45799	1	78 k	

At Bottom of Wood

Base V = 78 k

Bob D. Campbell & Co.

Evren Apartments - BLDG C+D
Controlling Lateral Forces

Transverse Lateral Loads

	Wind			Seismic			
	Fx	**0.6 Fx**	**TTL Fx**	**Fx**	**0.7 Fx**	**TTL Fx**	
Roof	154 k	92.6 k	93 k	25 k	17 k	17 k	Wind Controls
4th	62 k	37.5 k	130 k	27 k	19 k	36 k	Wind Controls
3rd	61 k	36.7 k	167 k	18 k	12 k	48 k	Wind Controls
2nd	59 k	35.2 k	202 k	9 k	6 k	55 k	Wind Controls
	337 k	202 k		78 k	55 k		

Longitudinal Lateral Loads

	Wind			Seismic			
	Fx	**0.6 Fx**	**TTL Fx**	**Fx**	**0.7 Fx**	**TTL Fx**	
Roof	51 k	30.7 k	31 k	25 k	17 k	17 k	Wind Controls
4th	21 k	12.4 k	43 k	27 k	19 k	36 k	Wind Controls
3rd	20 k	12.2 k	55 k	18 k	12 k	48 k	Wind Controls
2nd	19 k	11.7 k	67 k	9 k	6 k	55 k	Wind Controls
	112 k	67 k		78 k	55 k		

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: ADA Garage

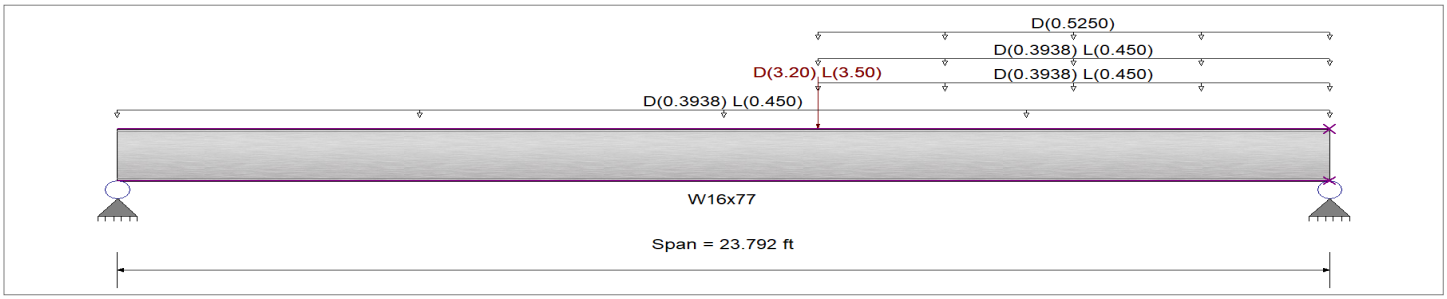
CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Allowable Strength Design
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling
Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi
E: Modulus : 29,000.0 ksi



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Uniform Load : D = 0.0350, L = 0.040 ksf, Tributary Width = 11.250 ft, (2nd Floor)

Uniform Load : D = 0.0350, L = 0.040 ksf, Extent = 13.750 -->> 23.792 ft, Tributary Width = 11.250 ft, (3rd Floor)

Uniform Load : D = 0.0350, L = 0.040 ksf, Extent = 13.750 -->> 23.792 ft, Tributary Width = 11.250 ft, (4th Floor)

Point Load : D = 3.20, L = 3.50 k @ 13.750 ft, (3rd Floor - T1 Upset Beam Reaction)

Point Load : D = 3.20, L = 3.50 k @ 13.750 ft, (4th Floor Floor - T1 Upset Beam Reaction)

Uniform Load : D = 0.0150 ksf, Extent = 13.750 -->> 23.792 ft, Tributary Width = 35.0 ft, (Wall Self WT)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.549 : 1	Maximum Shear Stress Ratio =	0.241 : 1
Section used for this span	W16x77	Section used for this span	W16x77
Ma : Applied	205.636 k-ft	Va : Applied	36.226 k
Mn / Omega : Allowable	374.251 k-ft	Vn/Omega : Allowable	150.150 k
Load Combination	+D+L	Load Combination	+D+L
		Location of maximum on span	23.792 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.280 in	Ratio =	1,018	>=600.	Span: 1 : L Only
Max Upward Transient Deflection	0 in	Ratio =	0	<600.0	n/a
Max Downward Total Deflection	0.592 in	Ratio =	482	>=480.	Span: 1 : +D+L
Max Upward Total Deflection	0 in	Ratio =	0	<480.0	n/a

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	VnxVnx/Omega
D Only												
Dsgn. L = 23.79 ft	1	0.288	0.131	107.80		107.80	625.00	374.25	1.00	1.00	19.70	225.23 150.15
+D+L												
Dsgn. L = 23.79 ft	1	0.549	0.241	205.64		205.64	625.00	374.25	1.00	1.00	36.23	225.23 150.15
+D+0.750L												
Dsgn. L = 23.79 ft	1	0.484	0.214	181.18		181.18	625.00	374.25	1.00	1.00	32.09	225.23 150.15
+0.60D												
Dsgn. L = 23.79 ft	1	0.173	0.079	64.68		64.68	625.00	374.25	1.00	1.00	11.82	225.23 150.15

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: ADA Garage

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L	1	0.5919	12.508		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	21.297	36.226
Max Upward from Load Combinations	21.297	36.226
Max Upward from Load Cases	11.083	19.697
D Only	11.083	19.697
+D+L	21.297	36.226
+D+0.750L	18.744	32.094
+0.60D	6.650	11.818
L Only	10.215	16.529

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG 1 - Foundation Wall at SRW

Code Reference

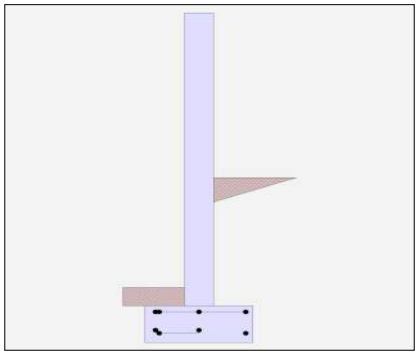
Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16

Criteria

Retained Height	=	3.50 ft
Wall height above soil	=	4.50 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	6.00 in
Water table above bottom of footing	=	0.0 ft

Soil Data

Allow Soil Bearing	=	2,500.0 psf
Equivalent Fluid Pressure Method		
Active Heel Pressure	=	50.0 psf/ft
	=	
Passive Pressure	=	250.0 psf/ft
Soil Density, Heel	=	110.00 pcf
Soil Density, Toe	=	110.00 pcf
Footing||Soil Friction	=	0.400
Soil height to ignore for passive pressure	=	12.00 in



Surcharge Loads

Surcharge Over Heel	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Load	=	0.0 lbs
Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

Lateral Load Applied to Stem

Lateral Load	=	0.0 #/ft
...Height to Top	=	0.00 ft
...Height to Bottom	=	0.00 ft
Load Type	=	Wind (W) (Service Level)
Wind on Exposed Stem (Strength Level)	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG 1 - Foundation Wall at SRW

Design Summary

Wall Stability Ratios			
Overturning	=	2.91	OK
Sliding	=	1.55	OK
Global Stability	=	1.63	
Total Bearing Load	=	1,577 lbs	
...resultant ecc.	=	3.94 in	
Eccentricity within middle third			
Soil Pressure @ Toe	=	1,128 psf	OK
Soil Pressure @ Heel	=	134 psf	OK
Allowable	=	2,500 psf	
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	1,579 psf	
ACI Factored @ Heel	=	187 psf	
Footing Shear @ Toe	=	2.6 psi	OK
Footing Shear @ Heel	=	1.6 psi	OK
Allowable	=	88.7 psi	
Sliding Calcs			
Lateral Sliding Force	=	506.3 lbs	
less 100% Passive Force	-	156.3 lbs	
less 100% Friction Force	-	630.9 lbs	
Added Force Req'd	=	0.0 lbs	OK
....for 1.5 Stability	=	0.0 lbs	OK

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

		Bottom		
		Stem OK		
Design Height Above Ftg	ft =	0.00		
Wall Material Above "Ht"	=	Concrete		
Design Method	=	SD	SD	SD
Thickness	=	8.00		
Rebar Size	=	# 4		
Rebar Spacing	=	12.00		
Rebar Placed at	=	Center		
Design Data				
fb/FB + fa/Fa	=	**0.165**		
Total Force @ Section				
Service Level	lbs =			
Strength Level	lbs =	490.0		
Moment....Actual				
Service Level	ft-# =			
Strength Level	ft-# =	571.7		
Moment.....Allowable	=	3,448.3		
Shear.....Actual				
Service Level	psi =			
Strength Level	psi =	10.2		
Shear.....Allowable	psi =	88.7		
Anet (Masonry)	in2 =			
Wall Weight	psf =	100.0		
Rebar Depth 'd'	in =	4.00		
Masonry Data				
f'm	psi =			
Fs	psi =			
Solid Grouting	=			
Modular Ratio 'n'	=			
Equiv. Solid Thick.	=			
Masonry Block Type	=			
Masonry Design Method	=	ASD		
Concrete Data				
f'c	psi =	3,500.0		
Fy	psi =	60,000.0		

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG 1 - Foundation Wall at SRW

Concrete Stem Rebar Area Details

Bottom Stem	Vertical Reinforcing	Horizontal Reinforcing	
As (based on applied moment) :	0.0345 in2/ft		
(4/3) * As :	0.046 in2/ft	Min Stem T&S Reinf Area 1.536 in2	
200bd/fy : 200(12)(4)/60000 :	0.16 in2/ft	Min Stem T&S Reinf Area per ft of stem Height : 0.192 in2/ft	
0.0018bh : 0.0018(12)(8) :	0.1728 in2/ft	Horizontal Reinforcing Options :	
	==========	One layer of :	Two layers of :
Required Area :	0.1728 in2/ft	#4@ 12.50 in	#4@ 25.00 in
Provided Area :	0.2 in2/ft	#5@ 19.38 in	#5@ 38.75 in
Maximum Area :	0.7586 in2/ft	#6@ 27.50 in	#6@ 55.00 in

Footing Data

Toe Width	=	0.92 ft
Heel Width	=	1.58
Total Footing Width	=	2.50
Footing Thickness	=	12.00 in
Key Width	=	0.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	0.00 ft

f'c = 3,500 psi Fy = 60,000 psi
Footing Concrete Density = 150.00 pcf
Min. As % = 0.0018
Cover @ Top 2.00 @ Btm.= 3.00 in

Footing Design Results

		Toe	Heel	
Factored Pressure	=	1,579	187 psf	
Mu' : Upward	=	596	149 ft-#	
Mu' : Downward	=	104	268 ft-#	
Mu: Design	=	492 OK	119 ft-#	OK
phiMn	=	27,857	24,457 ft-#	
Actual 1-Way Shear	=	2.60	1.61 psi	
Allow 1-Way Shear	=	88.74	88.74 psi	

Toe Reinforcing = # 8 @ 12.00 in
Heel Reinforcing = # 7 @ 12.00 in
Key Reinforcing = None Spec'd
Footing Torsion, Tu = 0.00 ft-lbs
Footing Allow. Torsion, phi Tu = 0.00 ft-lbs

If torsion exceeds allowable, provide supplemental design for footing torsion.

Other Acceptable Sizes & Spacings

Toe: #4@ 9.25 in, #5@ 14.35 in, #6@ 20.37 in, #7@ 27.77 in, #8@ 36.57 in, #9@ 46.29 in, #10@ 58.79 in

Heel: #4@ 9.25 in, #5@ 14.35 in, #6@ 20.37 in, #7@ 27.77 in, #8@ 36.57 in, #9@ 46.29 in, #10@ 58.79 in

Key: No key defined

Min footing T&S reinf Area 0.65 in2
Min footing T&S reinf Area per foot 0.26 in2 /ft

If one layer of horizontal bars:	If two layers of horizontal bars:
#4@ 9.26 in	#4@ 18.52 in
#5@ 14.35 in	#5@ 28.70 in
#6@ 20.37 in	#6@ 40.74 in

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG 1 - Foundation Wall at SRW

Summary of Overturning & Resisting Forces & Moments

Item	.....OVERTURNING..... Force lbs	Distance ft	Moment ft-#	.....RESISTING..... Force lbs	Distance ft	Moment ft-#
HL Act Pres (ab water tbl)	506.3	1.50	759.4			
HL Act Pres (be water tbl)						
Hydrostatic Force						
Buoyant Force =						
Surcharge over Heel =						
Surcharge Over Toe =						
Adjacent Footing Load =						
Added Lateral Load =						
Load @ Stem Above Soil =						
=						
				Soil Over HL (ab. water tbl)	351.6	2.04	718.5
				Soil Over HL (bel. water tbl)		2.04	718.5
				Water Table			
				Sloped Soil Over Heel =			
				Surcharge Over Heel =			
				Adjacent Footing Load =			
				Axial Dead Load on Stem =			
				* Axial Live Load on Stem =			
				Soil Over Toe =	50.6	0.46	23.3
				Surcharge Over Toe =			
				Stem Weight(s) =	800.0	1.25	1,002.7
				Earth @ Stem Transitions =			
				Footing Weight =	375.0	1.25	468.8
				Key Weight =			
				Vert. Component =			
Total =	506.3	**O.T.M.** =	759.4	**Total =**	1,577.2 lbs	**R.M.=**	2,213.2

Resisting/Overturning Ratio = **2.91**

Vertical Loads used for Soil Pressure = 1,577.2 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

Soil Spring Reaction Modulus	250.0	pci
Horizontal Defl @ Top of Wall (approximate only)	0.100	in

The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe, because the wall would then tend to rotate into the retained soil.

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG 1 - Foundation Wall at SRW

Rebar Lap & Embedment Lengths Information

Stem Design Segment: Bottom
Stem Design Height: 0.00 ft above top of footing

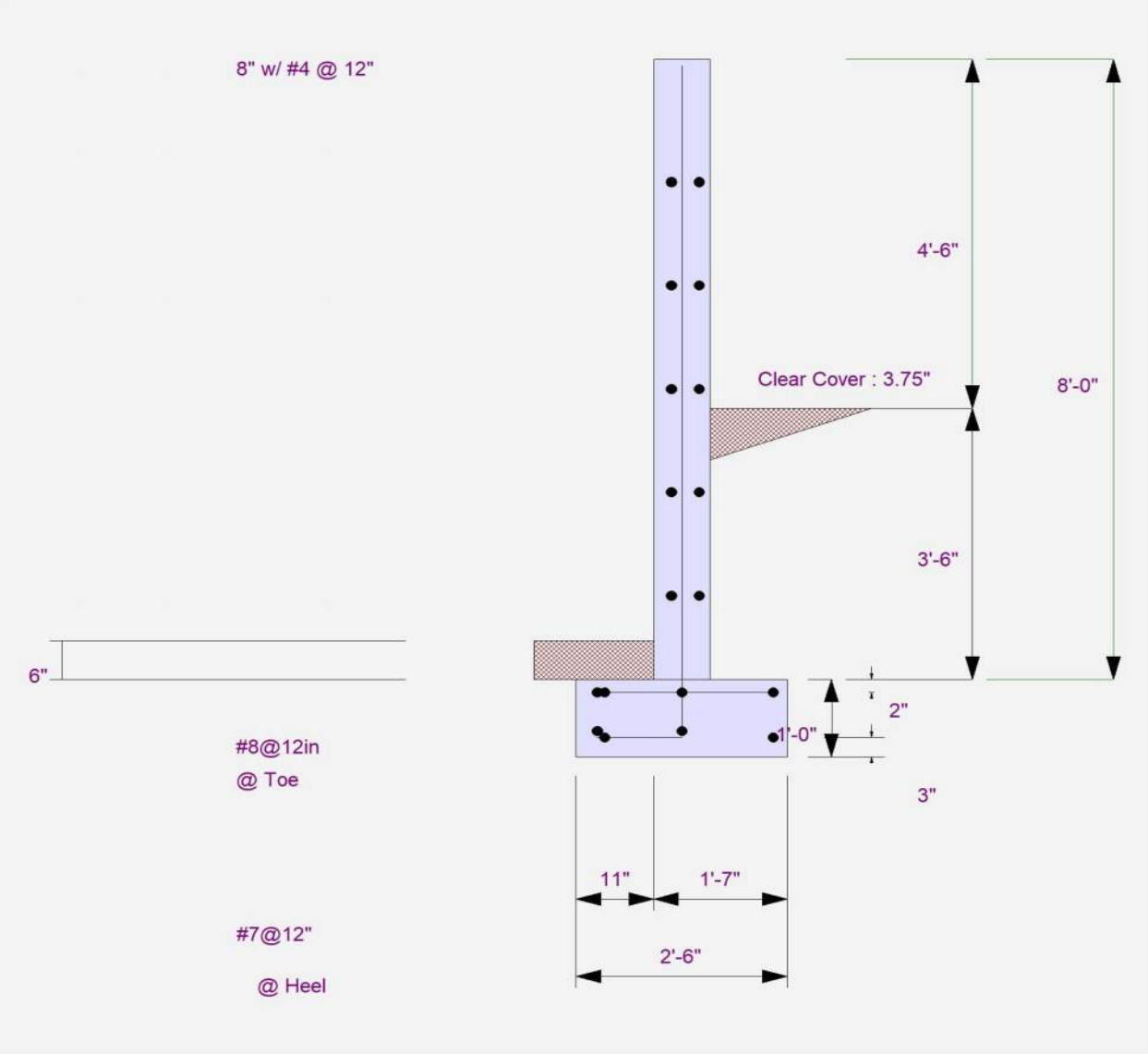
Lap Splice length for #4 bar specified in this stem design segment (25.4.2.3a) =	15.82 in
Development length for #4 bar specified in this stem design segment =	12.17 in
Hooked embedment length into footing for #4 bar specified in this stem design segment =	7.10 in
As Provided =	0.2000 in2/ft
As Required =	0.1728 in2/ft

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG 1 - Foundation Wall at SRW

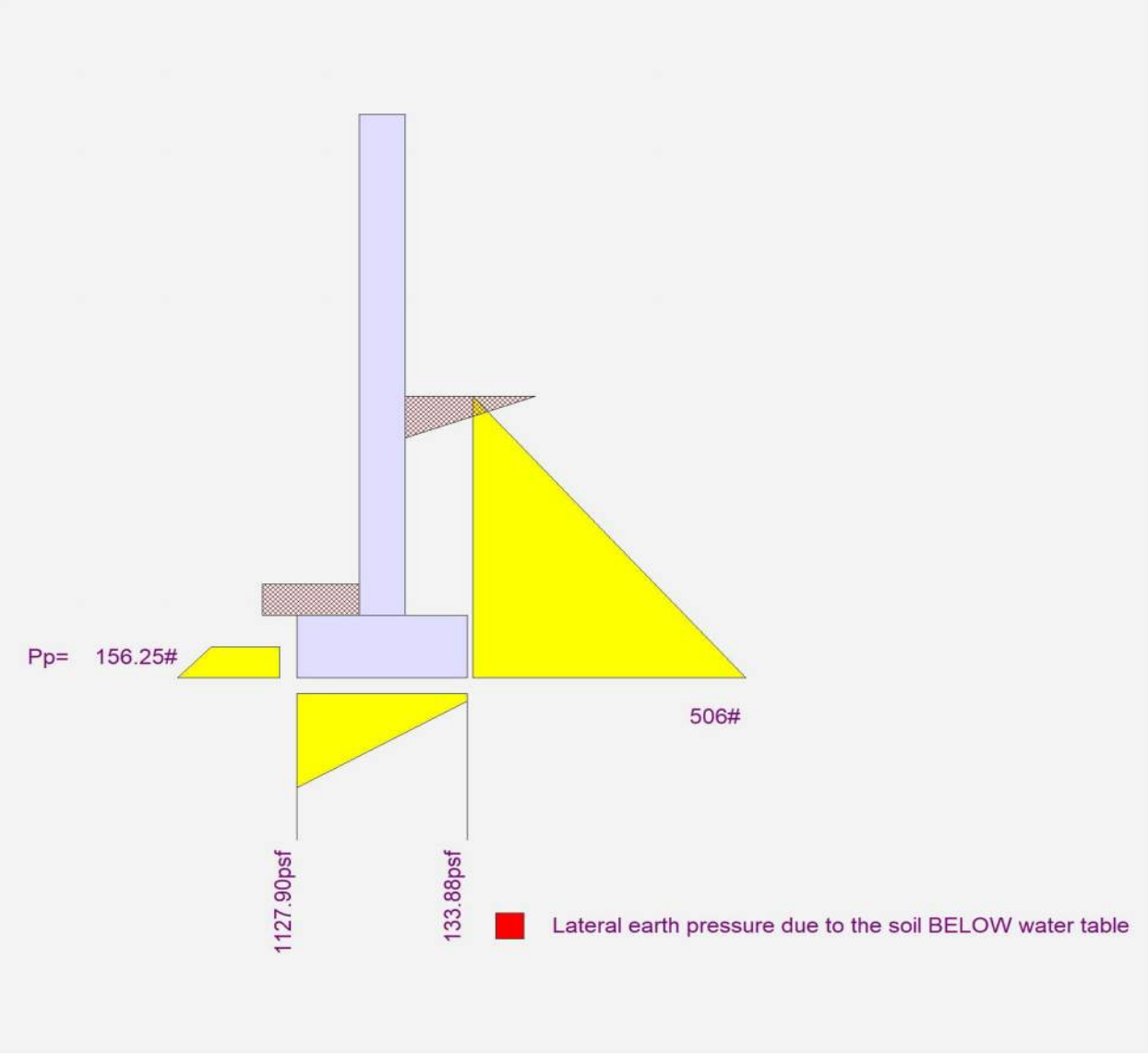


Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG 1 - Foundation Wall at SRW



Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 11ft

Code Reference

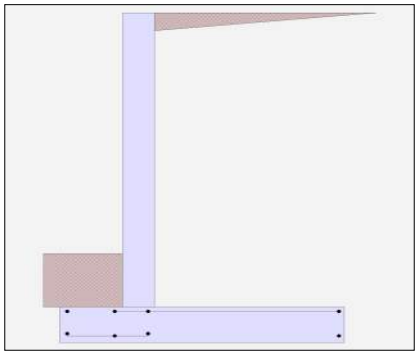
Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16

Criteria

Retained Height	=	11.00 ft
Wall height above soil	=	0.00 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	24.00 in
Water table above bottom of footing	=	0.0 ft

Soil Data

Allow Soil Bearing	=	2,500.0 psf
Equivalent Fluid Pressure Method		
Active Heel Pressure	=	50.0 psf/ft
	=	
Passive Pressure	=	290.0 psf/ft
Soil Density, Heel	=	110.00 pcf
Soil Density, Toe	=	110.00 pcf
Footing||Soil Friction	=	0.400
Soil height to ignore for passive pressure	=	12.00 in



Surcharge Loads

Surcharge Over Heel	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0
Used for Sliding & Overturning		

Lateral Load Applied to Stem

Lateral Load	=	0.0 #/ft
...Height to Top	=	0.00 ft
...Height to Bottom	=	0.00 ft
Load Type	=	Wind (W) (Service Level)
Wind on Exposed Stem (Strength Level)	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Axial Load Applied to Stem

Axial Dead Load	=	0.0 lbs
Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 11ft

Design Summary

Wall Stability Ratios			
Overturning	=	3.60	OK
Sliding	=	1.56	OK
Global Stability	=	1.64	
Total Bearing Load	=	11,150 lbs	
...resultant ecc.	=	10.31 in	
Eccentricity within middle third			
Soil Pressure @ Toe	=	1,949 psf	OK
Soil Pressure @ Heel	=	529 psf	OK
Allowable	=	2,500 psf	
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	2,728 psf	
ACI Factored @ Heel	=	741 psf	
Footing Shear @ Toe	=	13.0 psi	OK
Footing Shear @ Heel	=	10.7 psi	OK
Allowable	=	88.7 psi	
Sliding Calcs			
Lateral Sliding Force	=	3,802.8 lbs	
less 100% Passive Force	-	1,466.1 lbs	
less 100% Friction Force	-	4,460.0 lbs	
Added Force Req'd	=	0.0 lbs	OK
....for 1.5 Stability	=	0.0 lbs	OK

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

		Bottom		
		Stem OK		
Design Height Above Ftg	ft =	0.00		
Wall Material Above "Ht"	=	Concrete		
Design Method	=	SD	SD	SD
Thickness	=	12.00		
Rebar Size	=	# 6		
Rebar Spacing	=	12.00		
Rebar Placed at	=	Edge		
Design Data				
fb/FB + fa/Fa	=	**0.968**		
Total Force @ Section				
Service Level	lbs =			
Strength Level	lbs =	4,840.0		
Moment....Actual				
Service Level	ft-# =			
Strength Level	ft-# =	17,746.7		
Moment.....Allowable	=	18,323.2		
Shear.....Actual				
Service Level	psi =			
Strength Level	psi =	41.9		
Shear.....Allowable	psi =	88.7		
Anet (Masonry)	in2 =			
Wall Weight	psf =	150.0		
Rebar Depth 'd'	in =	9.63		
Masonry Data				
f'm	psi =			
Fs	psi =			
Solid Grouting	=			
Modular Ratio 'n'	=			
Equiv. Solid Thick.	=			
Masonry Block Type	=			
Masonry Design Method	=	ASD		
Concrete Data				
f'c	psi =	3,500.0		
Fy	psi =	60,000.0		

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 11ft

Concrete Stem Rebar Area Details

Bottom Stem	Vertical Reinforcing	Horizontal Reinforcing
As (based on applied moment) :	0.4238 in2/ft	
(4/3) * As :	0.565 in2/ft	Min Stem T&S Reinf Area 3.168 in2
200bd/fy : 200(12)(9.625)/60000 :	0.385 in2/ft	Min Stem T&S Reinf Area per ft of stem Height : 0.288 in2/ft
0.0018bh : 0.0018(12)(12) :	0.2592 in2/ft	Horizontal Reinforcing Options :
	==========	One layer of : Two layers of :
Required Area :	0.4238 in2/ft	#4@ 8.33 in #4@ 16.67 in
Provided Area :	0.44 in2/ft	#5@ 12.92 in #5@ 25.83 in
Maximum Area :	1.8254 in2/ft	#6@ 18.33 in #6@ 36.67 in

Footing Data

Toe Width	=	2.00 ft
Heel Width	=	7.00
Total Footing Width	=	9.00
Footing Thickness	=	16.00 in
Key Width	=	0.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	0.00 ft

f'c = 3,500 psi Fy = 60,000 psi
Footing Concrete Density = 150.00 pcf
Min. As % = 0.0018
Cover @ Top 2.00 @ Btm.= 3.00 in

Footing Design Results

		Toe	Heel	
Factored Pressure	=	2,728	741	psf
Mu' : Upward	=	5,162	21,281	ft-#
Mu' : Downward	=	1,008	30,456	ft-#
Mu: Design	=	4,154 OK	9,175 ft-#	OK
phiMn	=	24,265	20,750	ft-#
Actual 1-Way Shear	=	12.97	10.70	psi
Allow 1-Way Shear	=	88.74	88.74	psi

Toe Reinforcing = # 6 @ 12.00 in
Heel Reinforcing = # 6 @ 15.27 in
Key Reinforcing = None Spec'd
Footing Torsion, Tu = 0.00 ft-lbs
Footing Allow. Torsion, phi Tu = 0.00 ft-lbs

If torsion exceeds allowable, provide supplemental design for footing torsion.

Other Acceptable Sizes & Spacings

Toe: #4@ 6.94 in, #5@ 10.76 in, #6@ 15.27 in, #7@ 20.83 in, #8@ 27.43 in, #9@ 34.72 in, #10@ 44.09 in

Heel: #4@ 6.94 in, #5@ 10.76 in, #6@ 15.27 in, #7@ 20.83 in, #8@ 27.43 in, #9@ 34.72 in, #10@ 44.09 in

Key: No key defined

Min footing T&S reinf Area 3.11 in2
Min footing T&S reinf Area per foot 0.35 in2 /ft

If one layer of horizontal bars:	If two layers of horizontal bars:
#4@ 6.94 in	#4@ 13.89 in
#5@ 10.76 in	#5@ 21.53 in
#6@ 15.28 in	#6@ 30.56 in

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 11ft

Summary of Overturning & Resisting Forces & Moments

Item	.....OVERTURNING..... Force lbs	Distance ft	Moment ft-#	.....RESISTING..... Force lbs	Distance ft	Moment ft-#
HL Act Pres (ab water tbl)	3,802.8	4.11	15,633.6			
HL Act Pres (be water tbl)						
Hydrostatic Force						
Buoyant Force =						
Surcharge over Heel =						
Surcharge Over Toe =						
Adjacent Footing Load =						
Added Lateral Load =						
Load @ Stem Above Soil =						
=						
				Soil Over HL (ab. water tbl)	7,260.0	6.00	43,560.0
				Soil Over HL (bel. water tbl)		6.00	43,560.0
				Water Table			
				Sloped Soil Over Heel =			
				Surcharge Over Heel =			
				Adjacent Footing Load =			
				Axial Dead Load on Stem =			
				* Axial Live Load on Stem =			
				Soil Over Toe =	440.0	1.00	440.0
				Surcharge Over Toe =			
				Stem Weight(s) =	1,650.0	2.50	4,125.0
				Earth @ Stem Transitions =			
				Footing Weight =	1,800.0	4.50	8,100.0
				Key Weight =			
				Vert. Component =			
Total =	3,802.8	**O.T.M.** =	15,633.6	**Total =**	11,150.0 lbs	**R.M.=**	56,225.0

Resisting/Overturning Ratio = **3.60**

Vertical Loads used for Soil Pressure = 11,150.0 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

Soil Spring Reaction Modulus	250.0	pci
Horizontal Defl @ Top of Wall (approximate only)	0.066	in

The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe, because the wall would then tend to rotate into the retained soil.

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 11ft

Rebar Lap & Embedment Lengths Information

Stem Design Segment: Bottom

Stem Design Height: 0.00 ft above top of footing

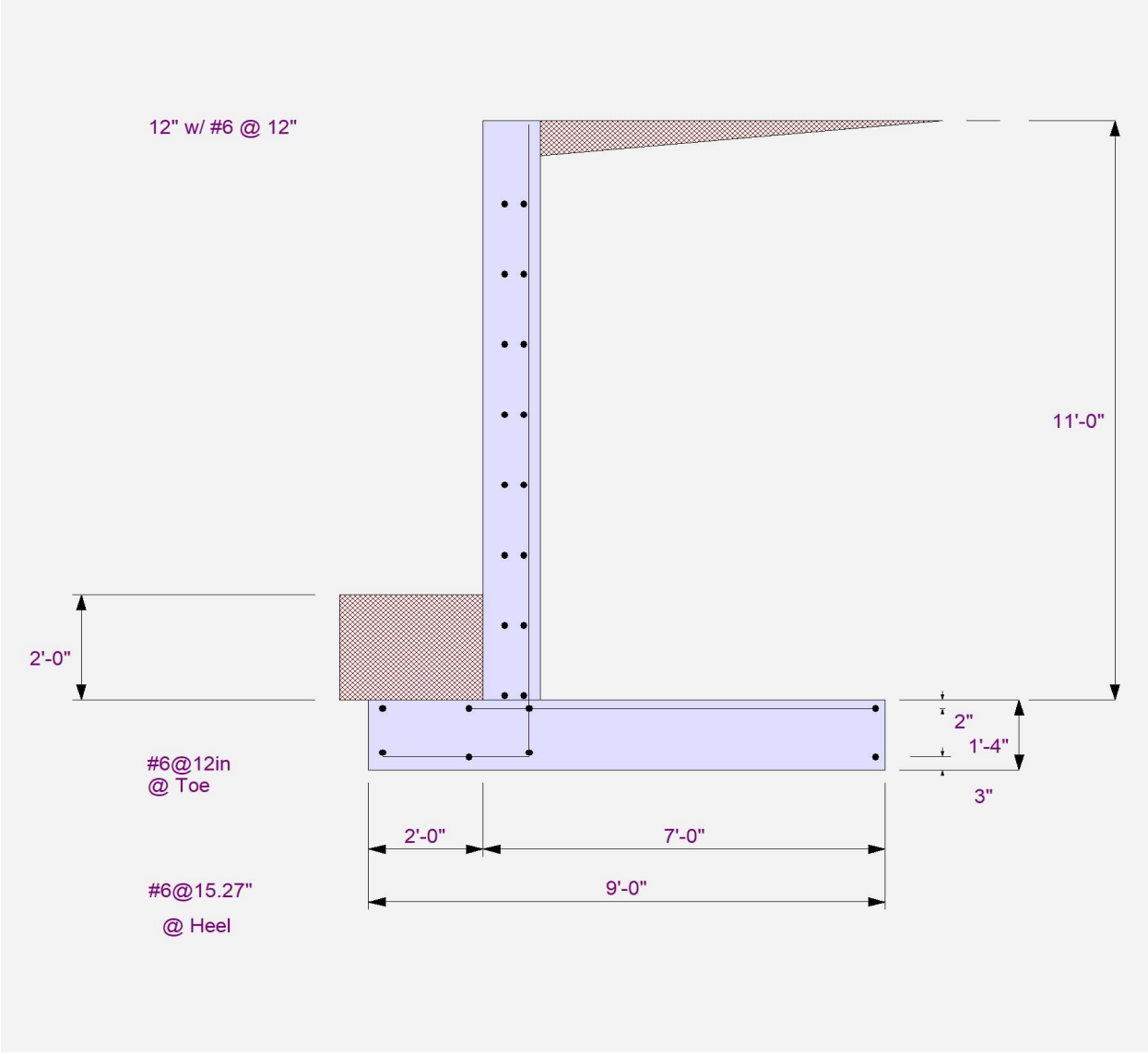
Lap Splice length for #6 bar specified in this stem design segment (25.4.2.3a) =	23.73 in
Development length for #6 bar specified in this stem design segment =	18.26 in
Hooked embedment length into footing for #6 bar specified in this stem design segment =	10.65 in
As Provided =	0.4400 in2/ft
As Required =	0.4238 in2/ft

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 11ft

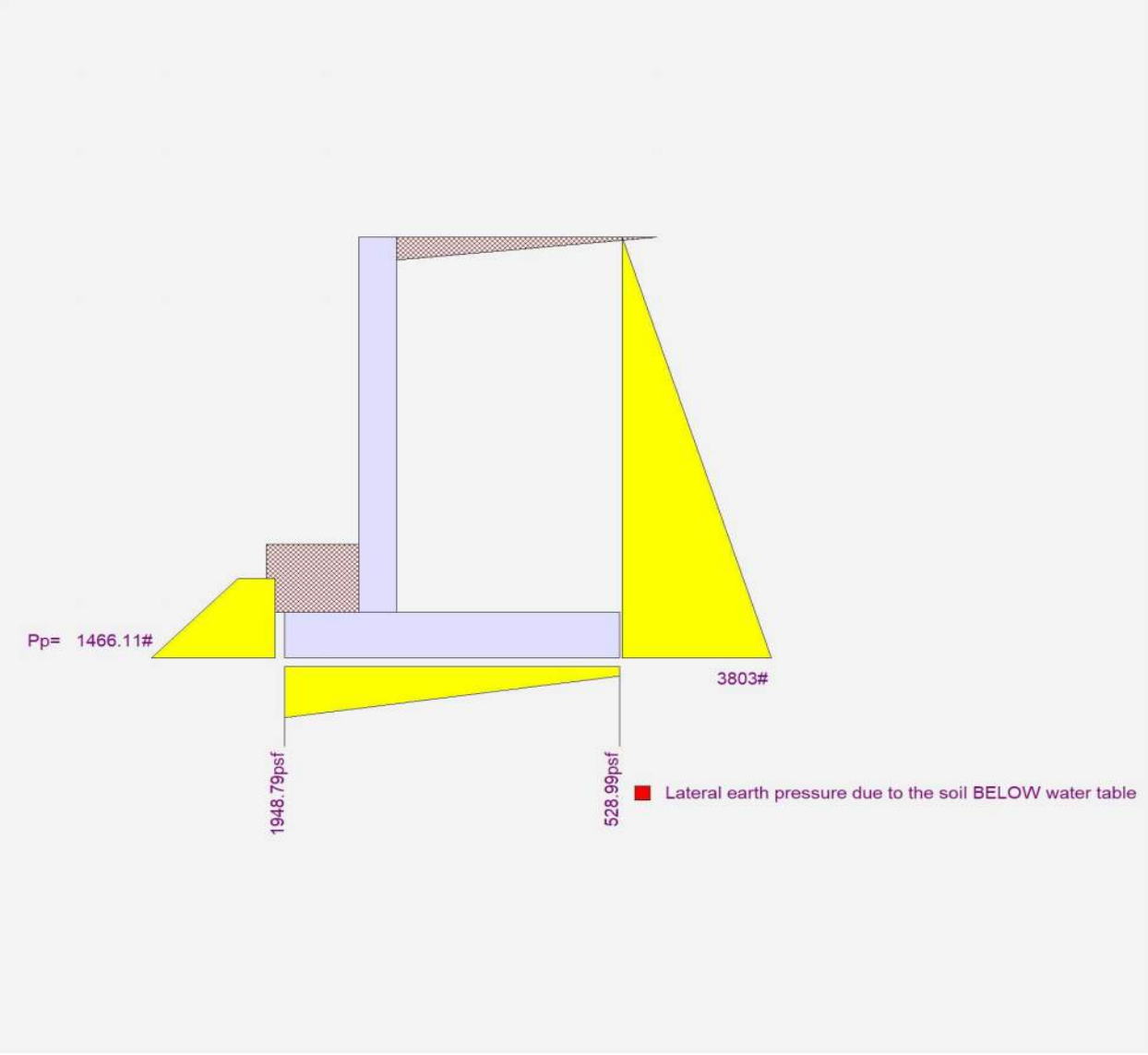


Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 11ft



Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 10ft

Code Reference

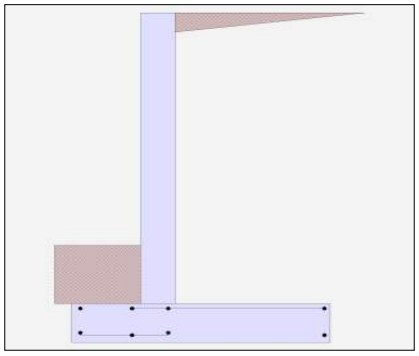
Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16

Criteria

Retained Height	=	10.00 ft
Wall height above soil	=	0.00 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	24.00 in
Water table above bottom of footing	=	0.0 ft

Soil Data

Allow Soil Bearing	=	2,500.0 psf
Equivalent Fluid Pressure Method		
Active Heel Pressure	=	50.0 psf/ft
	=	
Passive Pressure	=	290.0 psf/ft
Soil Density, Heel	=	110.00 pcf
Soil Density, Toe	=	110.00 pcf
Footing||Soil Friction	=	0.400
Soil height to ignore for passive pressure	=	12.00 in



Surcharge Loads

Surcharge Over Heel	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Load	=	0.0 lbs
Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

Lateral Load Applied to Stem

Lateral Load	=	0.0 #/ft
...Height to Top	=	0.00 ft
...Height to Bottom	=	0.00 ft
Load Type	=	Wind (W) (Service Level)
Wind on Exposed Stem (Strength Level)	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 10ft

Design Summary

Wall Stability Ratios			
Overturning	=	2.95	OK
Sliding	=	1.50	OK
Global Stability	=	1.58	
Total Bearing Load	=	8,390 lbs	
...resultant ecc.	=	11.14 in	
Eccentricity within middle third			
Soil Pressure @ Toe	=	1,950 psf	OK
Soil Pressure @ Heel	=	288 psf	OK
Allowable	=	2,500 psf	
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	2,730 psf	
ACI Factored @ Heel	=	403 psf	
Footing Shear @ Toe	=	12.7 psi	OK
Footing Shear @ Heel	=	12.8 psi	OK
Allowable	=	88.7 psi	
Sliding Calcs			
Lateral Sliding Force	=	3,211.1 lbs	
less 100% Passive Force	-	1,466.1 lbs	
less 100% Friction Force	-	3,356.0 lbs	
Added Force Req'd	=	0.0 lbs	OK
....for 1.5 Stability	=	0.0 lbs	OK

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

		Bottom		
		Stem OK		
Design Height Above Ftg	ft =	0.00		
Wall Material Above "Ht"	=	Concrete		
Design Method	=	SD	SD	SD
Thickness	=	12.00		
Rebar Size	=	# 6		
Rebar Spacing	=	12.00		
Rebar Placed at	=	Edge		
Design Data				
fb/FB + fa/Fa	=	**0.727**		
Total Force @ Section				
Service Level	lbs =			
Strength Level	lbs =	4,000.0		
Moment....Actual				
Service Level	ft-# =			
Strength Level	ft-# =	13,333.3		
Moment.....Allowable	=	18,323.2		
Shear.....Actual				
Service Level	psi =			
Strength Level	psi =	34.6		
Shear.....Allowable	psi =	88.7		
Anet (Masonry)	in2 =			
Wall Weight	psf =	150.0		
Rebar Depth 'd'	in =	9.63		
Masonry Data				
f'm	psi =			
Fs	psi =			
Solid Grouting	=			
Modular Ratio 'n'	=			
Equiv. Solid Thick.	=			
Masonry Block Type	=			
Masonry Design Method	=	ASD		
Concrete Data				
f'c	psi =	3,500.0		
Fy	psi =	60,000.0		

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 10ft

Concrete Stem Rebar Area Details

Bottom Stem	Vertical Reinforcing	Horizontal Reinforcing
As (based on applied moment) :	0.3184 in2/ft	
(4/3) * As :	0.4245 in2/ft	Min Stem T&S Reinf Area 2.880 in2
200bd/fy : 200(12)(9.625)/60000 :	0.385 in2/ft	Min Stem T&S Reinf Area per ft of stem Height : 0.288 in2/ft
0.0018bh : 0.0018(12)(12) :	0.2592 in2/ft	Horizontal Reinforcing Options :
	==========	One layer of : Two layers of :
Required Area :	0.385 in2/ft	#4@ 8.33 in #4@ 16.67 in
Provided Area :	0.44 in2/ft	#5@ 12.92 in #5@ 25.83 in
Maximum Area :	1.8254 in2/ft	#6@ 18.33 in #6@ 36.67 in

Footing Data

Toe Width	=	2.00 ft
Heel Width	=	5.50
Total Footing Width	=	7.50
Footing Thickness	=	16.00 in
Key Width	=	0.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	0.00 ft

f'c = 3,500 psi Fy = 60,000 psi
Footing Concrete Density = 150.00 pcf
Min. As % = 0.0018
Cover @ Top 2.00 @ Btm.= 3.00 in

Footing Design Results

		Toe	Heel	
Factored Pressure	=	2,730	403	psf
Mu' : Upward	=	5,045	8,789	ft-#
Mu' : Downward	=	1,008	15,795	ft-#
Mu: Design	=	4,037 OK	7,006 ft-#	OK
phiMn	=	24,265	20,750	ft-#
Actual 1-Way Shear	=	12.71	12.76	psi
Allow 1-Way Shear	=	88.74	88.74	psi

Toe Reinforcing = # 6 @ 12.00 in
Heel Reinforcing = # 6 @ 15.27 in
Key Reinforcing = None Spec'd
Footing Torsion, Tu = 0.00 ft-lbs
Footing Allow. Torsion, phi Tu = 0.00 ft-lbs

If torsion exceeds allowable, provide supplemental design for footing torsion.

Other Acceptable Sizes & Spacings

Toe: #4@ 6.94 in, #5@ 10.76 in, #6@ 15.27 in, #7@ 20.83 in, #8@ 27.43 in, #9@ 34.72 in, #10@ 44.09 in

Heel: #4@ 6.94 in, #5@ 10.76 in, #6@ 15.27 in, #7@ 20.83 in, #8@ 27.43 in, #9@ 34.72 in, #10@ 44.09 in

Key: No key defined

Min footing T&S reinf Area 2.59 in2
Min footing T&S reinf Area per foot 0.35 in2 /ft

If one layer of horizontal bars:	If two layers of horizontal bars:
#4@ 6.94 in	#4@ 13.89 in
#5@ 10.76 in	#5@ 21.53 in
#6@ 15.28 in	#6@ 30.56 in

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 10ft

Summary of Overturning & Resisting Forces & Moments

Item	.....OVERTURNING..... Force lbs	Distance ft	Moment ft-#	.....RESISTING..... Force lbs	Distance ft	Moment ft-#
HL Act Pres (ab water tbl)	3,211.1	3.78	12,130.9			
HL Act Pres (be water tbl)						
Hydrostatic Force						
Buoyant Force =						
Surcharge over Heel =						
Surcharge Over Toe =						
Adjacent Footing Load =						
Added Lateral Load =						
Load @ Stem Above Soil =						
=						
Soil Over HL (ab. water tbl)				4,950.0	5.25	25,987.5
Soil Over HL (bel. water tbl)					5.25	25,987.5
Water Table						
Sloped Soil Over Heel =						
Surcharge Over Heel =						
Adjacent Footing Load =						
Axial Dead Load on Stem =						
* Axial Live Load on Stem =						
Soil Over Toe =				440.0	1.00	440.0
Surcharge Over Toe =						
Stem Weight(s) =				1,500.0	2.50	3,750.0
Earth @ Stem Transitions =						
Footing Weight =				1,500.0	3.75	5,625.0
Key Weight =						
Vert. Component =						
Total =	3,211.1	**O.T.M.** =	12,130.9	**Total =** 8,390.0 lbs	**R.M.=**	35,802.5

Resisting/Overturning Ratio = **2.95**

Vertical Loads used for Soil Pressure = 8,390.0 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

Soil Spring Reaction Modulus	250.0	pci
Horizontal Defl @ Top of Wall (approximate only)	0.072	in

The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe, because the wall would then tend to rotate into the retained soil.

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 10ft

Rebar Lap & Embedment Lengths Information

Stem Design Segment: Bottom

Stem Design Height: 0.00 ft above top of footing

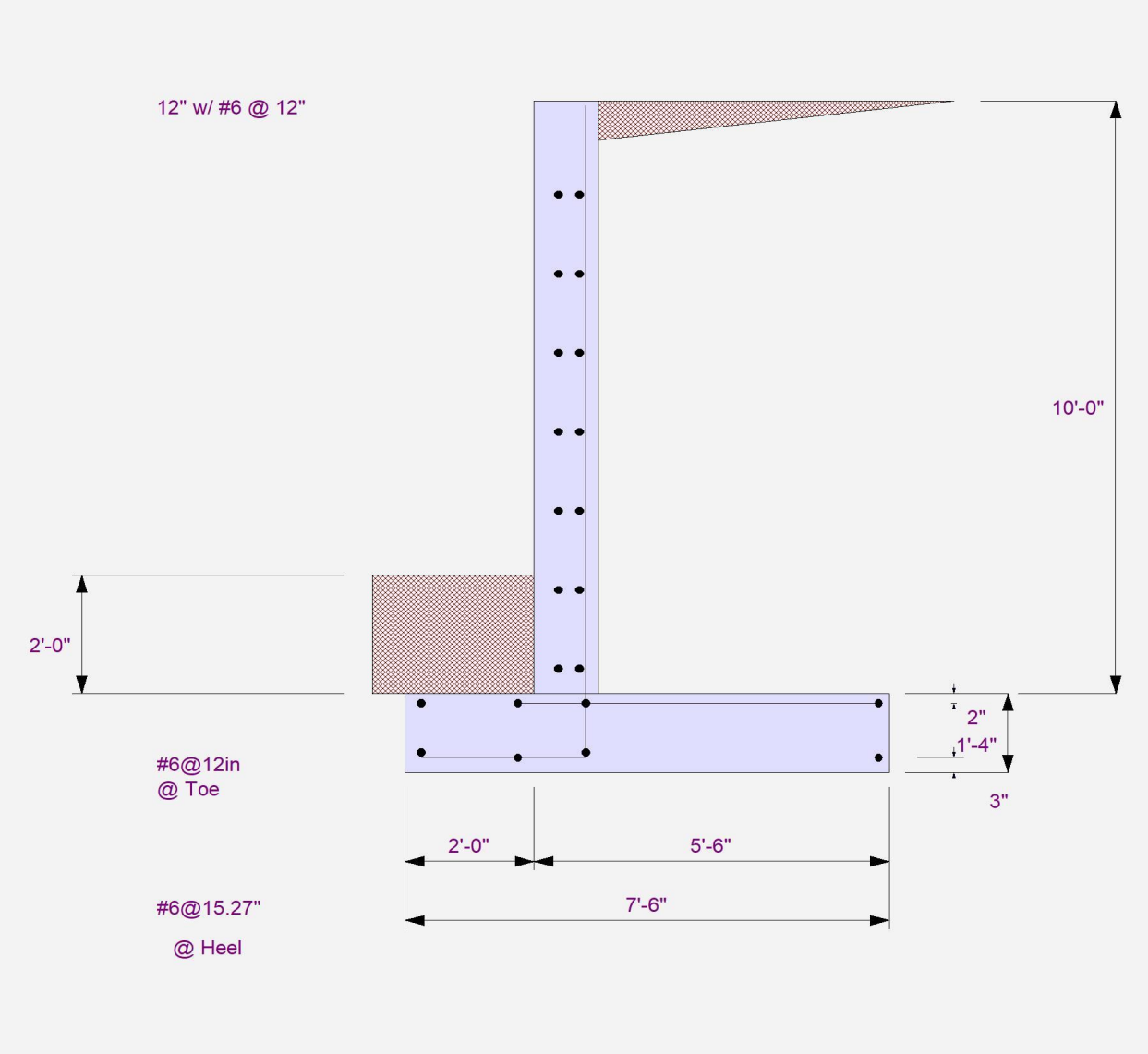
Lap Splice length for #6 bar specified in this stem design segment (25.4.2.3a) =	23.73 in
Development length for #6 bar specified in this stem design segment =	18.26 in
Hooked embedment length into footing for #6 bar specified in this stem design segment =	10.65 in
As Provided =	0.4400 in2/ft
As Required =	0.3850 in2/ft

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 10ft

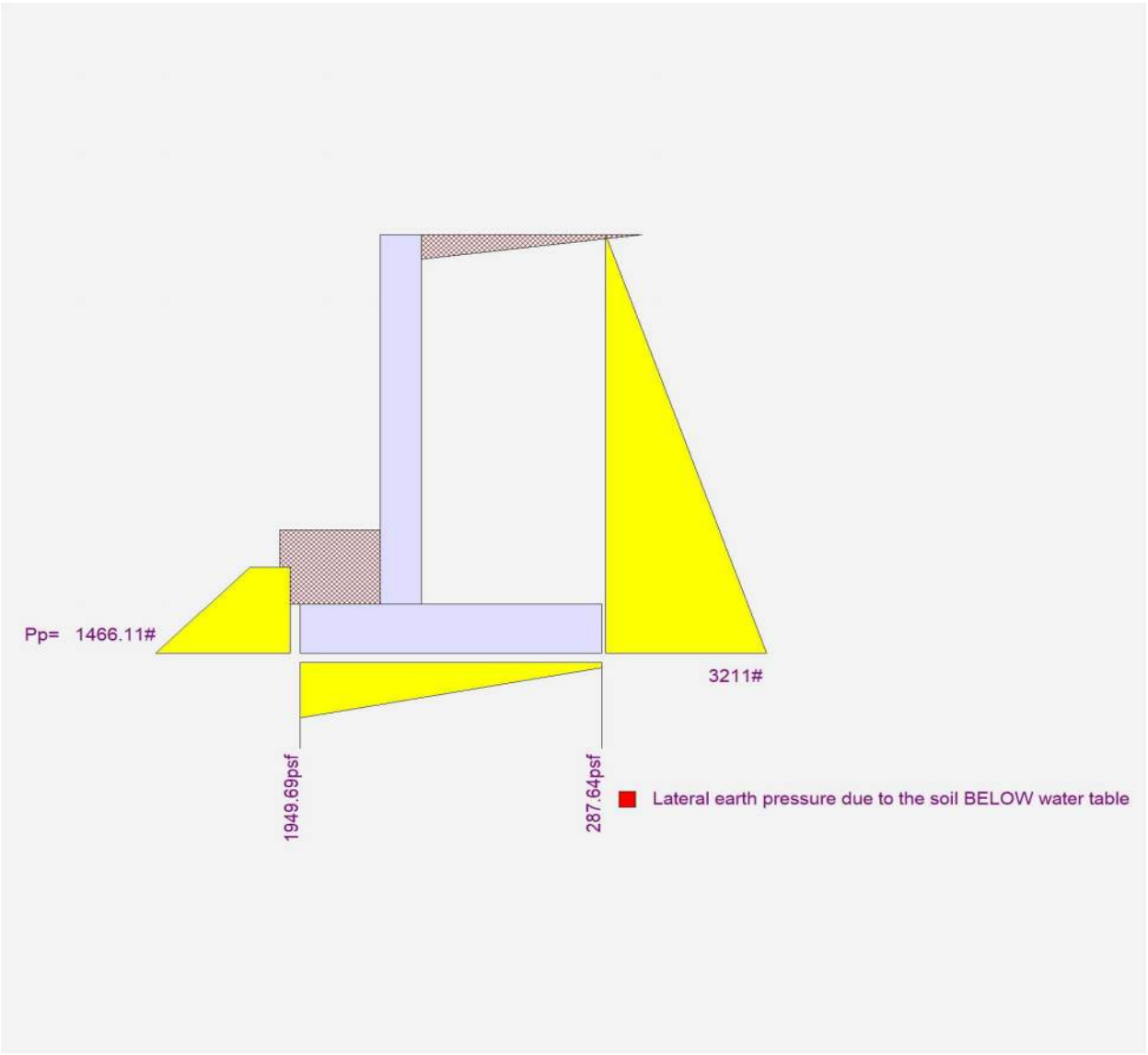


Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 10ft



Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 9ft

Code Reference

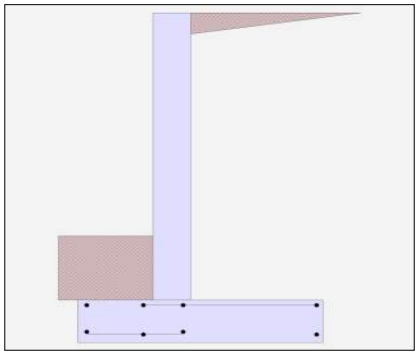
Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16

Criteria

Retained Height	=	9.00 ft
Wall height above soil	=	0.00 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	24.00 in
Water table above bottom of footing	=	0.0 ft

Soil Data

Allow Soil Bearing	=	2,500.0 psf
Equivalent Fluid Pressure Method		
Active Heel Pressure	=	50.0 psf/ft
	=	
Passive Pressure	=	290.0 psf/ft
Soil Density, Heel	=	110.00 pcf
Soil Density, Toe	=	110.00 pcf
Footing||Soil Friction	=	0.400
Soil height to ignore for passive pressure	=	12.00 in



Surcharge Loads

Surcharge Over Heel	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0
Used for Sliding & Overturning		

Lateral Load Applied to Stem

Lateral Load	=	0.0 #/ft
...Height to Top	=	0.00 ft
...Height to Bottom	=	0.00 ft
Load Type	=	Wind (W) (Service Level)
Wind on Exposed Stem (Strength Level)	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Axial Load Applied to Stem

Axial Dead Load	=	0.0 lbs
Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 9ft

Design Summary

Wall Stability Ratios			
Overturning	=	2.66	OK
Sliding	=	1.53	OK
Global Stability	=	1.57	
Total Bearing Load	=	6,555 lbs	
...resultant ecc.	=	10.98 in	
Eccentricity within middle third			
Soil Pressure @ Toe	=	1,860 psf	OK
Soil Pressure @ Heel	=	156 psf	OK
Allowable	=	2,500 psf	
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	2,605 psf	
ACI Factored @ Heel	=	219 psf	
Footing Shear @ Toe	=	11.7 psi	OK
Footing Shear @ Heel	=	12.2 psi	OK
Allowable	=	88.7 psi	
Sliding Calcs			
Lateral Sliding Force	=	2,669.4 lbs	
less 100% Passive Force	-	1,466.1 lbs	
less 100% Friction Force	-	2,622.0 lbs	
Added Force Req'd	=	0.0 lbs	OK
....for 1.5 Stability	=	0.0 lbs	OK

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

		Bottom		
		Stem OK		
Design Height Above Ftg	ft =	0.00		
Wall Material Above "Ht"	=	Concrete		
Design Method	=	SD	SD	SD
Thickness	=	12.00		
Rebar Size	=	# 6		
Rebar Spacing	=	12.00		
Rebar Placed at	=	Edge		
Design Data				
fb/FB + fa/Fa	=	**0.530**		
Total Force @ Section				
Service Level	lbs =			
Strength Level	lbs =	3,240.0		
Moment....Actual				
Service Level	ft-# =			
Strength Level	ft-# =	9,720.0		
Moment.....Allowable	=	18,323.2		
Shear.....Actual				
Service Level	psi =			
Strength Level	psi =	28.1		
Shear.....Allowable	psi =	88.7		
Anet (Masonry)	in2 =			
Wall Weight	psf =	150.0		
Rebar Depth 'd'	in =	9.63		
Masonry Data				
f'm	psi =			
Fs	psi =			
Solid Grouting	=			
Modular Ratio 'n'	=			
Equiv. Solid Thick.	=			
Masonry Block Type	=			
Masonry Design Method	=	ASD		
Concrete Data				
f'c	psi =	3,500.0		
Fy	psi =	60,000.0		

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 9ft

Concrete Stem Rebar Area Details

Bottom Stem	Vertical Reinforcing	Horizontal Reinforcing
As (based on applied moment) :	0.2321 in2/ft	
(4/3) * As :	0.3095 in2/ft	Min Stem T&S Reinf Area 2.592 in2
200bd/fy : 200(12)(9.625)/60000 :	0.385 in2/ft	Min Stem T&S Reinf Area per ft of stem Height : 0.288 in2/ft
0.0018bh : 0.0018(12)(12) :	0.2592 in2/ft	Horizontal Reinforcing Options :
	==========	One layer of : Two layers of :
Required Area :	0.3095 in2/ft	#4@ 8.33 in #4@ 16.67 in
Provided Area :	0.44 in2/ft	#5@ 12.92 in #5@ 25.83 in
Maximum Area :	1.8254 in2/ft	#6@ 18.33 in #6@ 36.67 in

Footing Data

Toe Width	=	2.00 ft
Heel Width	=	4.50
Total Footing Width	=	6.50
Footing Thickness	=	16.00 in
Key Width	=	0.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	0.00 ft

f'c = 3,500 psi Fy = 60,000 psi
Footing Concrete Density = 150.00 pcf
Min. As % = 0.0018
Cover @ Top 2.00 @ Btm.= 3.00 in

Footing Design Results

		Toe	Heel	
Factored Pressure	=	2,605	219 psf	
Mu' : Upward	=	4,720	3,964 ft-#	
Mu' : Downward	=	1,008	8,747 ft-#	
Mu: Design	=	3,712 OK	4,782 ft-#	OK
phiMn	=	32,557	35,257 ft-#	
Actual 1-Way Shear	=	11.74	12.24 psi	
Allow 1-Way Shear	=	88.74	88.74 psi	

Toe Reinforcing = # 7 @ 12.00 in
Heel Reinforcing = # 7 @ 12.00 in
Key Reinforcing = None Spec'd
Footing Torsion, Tu = 0.00 ft-lbs
Footing Allow. Torsion, phi Tu = 0.00 ft-lbs

If torsion exceeds allowable, provide supplemental design for footing torsion.

Other Acceptable Sizes & Spacings

Toe: #4@ 6.94 in, #5@ 10.76 in, #6@ 15.27 in, #7@ 20.83 in, #8@ 27.43 in, #9@ 34.72 in, #10@ 44.09 in

Heel: #4@ 6.94 in, #5@ 10.76 in, #6@ 15.27 in, #7@ 20.83 in, #8@ 27.43 in, #9@ 34.72 in, #10@ 44.09 in

Key: No key defined

Min footing T&S reinf Area 2.25 in2
Min footing T&S reinf Area per foot 0.35 in2 /ft

If one layer of horizontal bars:	If two layers of horizontal bars:
#4@ 6.94 in	#4@ 13.89 in
#5@ 10.76 in	#5@ 21.53 in
#6@ 15.28 in	#6@ 30.56 in

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 9ft

Summary of Overturning & Resisting Forces & Moments

Item	.....OVERTURNING..... Force lbs	Distance ft	Moment ft-#	.....RESISTING..... Force lbs	Distance ft	Moment ft-#
HL Act Pres (ab water tbl)	2,669.4	3.44	9,194.8			
HL Act Pres (be water tbl)						
Hydrostatic Force						
Buoyant Force =						
Surcharge over Heel =						
Surcharge Over Toe =						
Adjacent Footing Load =						
Added Lateral Load =						
Load @ Stem Above Soil =						
=						
				Soil Over HL (ab. water tbl)	3,465.0	4.75	16,458.8
				Soil Over HL (bel. water tbl)		4.75	16,458.8
				Water Table			
				Sloped Soil Over Heel =			
				Surcharge Over Heel =			
				Adjacent Footing Load =			
				Axial Dead Load on Stem =			
				* Axial Live Load on Stem =			
				Soil Over Toe =	440.0	1.00	440.0
				Surcharge Over Toe =			
				Stem Weight(s) =	1,350.0	2.50	3,375.0
				Earth @ Stem Transitions =			
				Footing Weight =	1,300.0	3.25	4,225.0
				Key Weight =			
				Vert. Component =			
Total =	2,669.4	**O.T.M.** =	9,194.8	**Total =**	6,555.0 lbs	**R.M.=**	24,498.8

Resisting/Overturning Ratio = **2.66**

Vertical Loads used for Soil Pressure = 6,555.0 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

Soil Spring Reaction Modulus	250.0	pci
Horizontal Defl @ Top of Wall (approximate only)	0.072	in

The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe, because the wall would then tend to rotate into the retained soil.

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 9ft

Rebar Lap & Embedment Lengths Information

Stem Design Segment: Bottom

Stem Design Height: 0.00 ft above top of footing

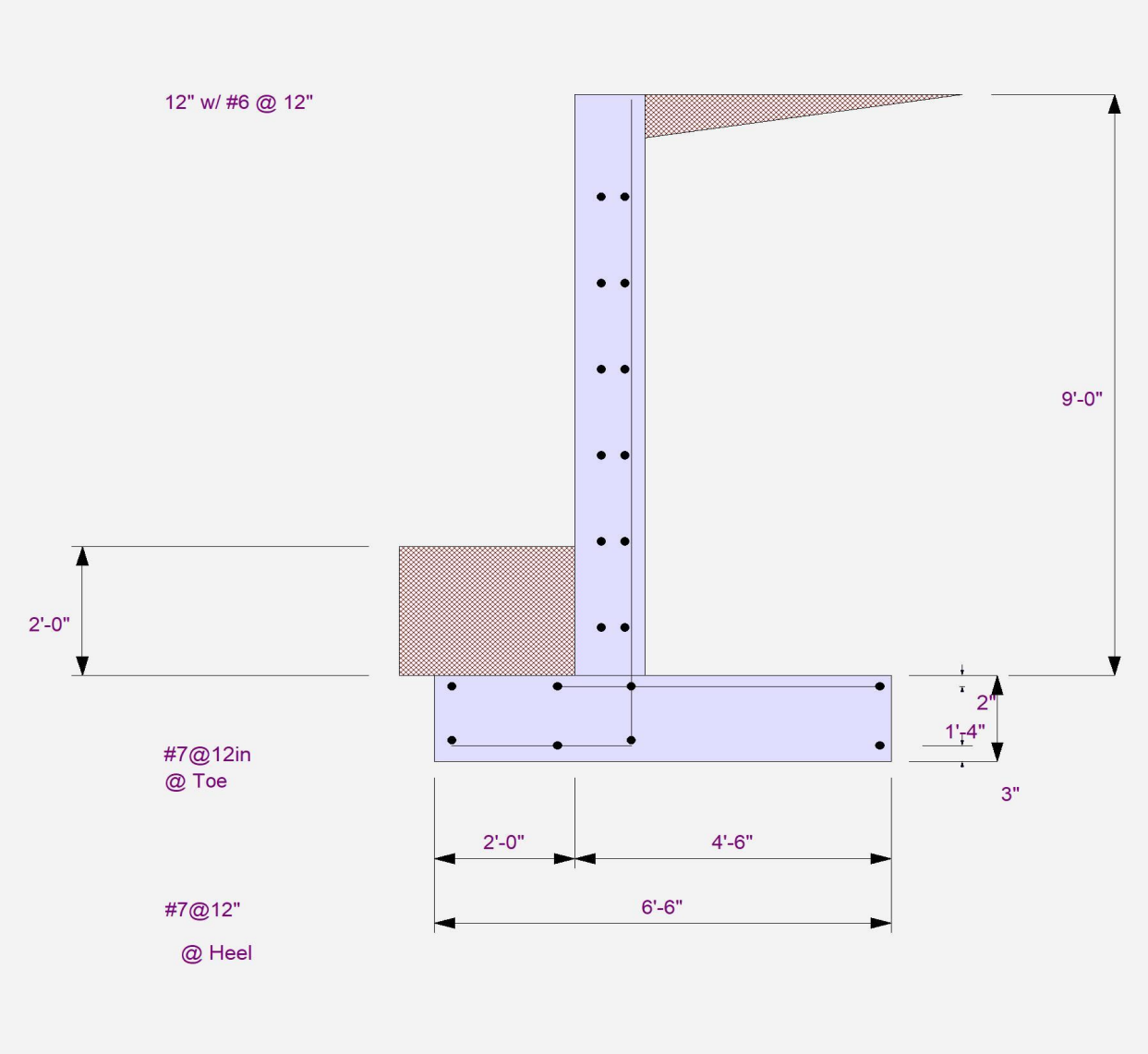
Lap Splice length for #6 bar specified in this stem design segment (25.4.2.3a) =	23.73 in
Development length for #6 bar specified in this stem design segment =	18.26 in
Hooked embedment length into footing for #6 bar specified in this stem design segment =	10.65 in
As Provided =	0.4400 in2/ft
As Required =	0.3095 in2/ft

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 9ft

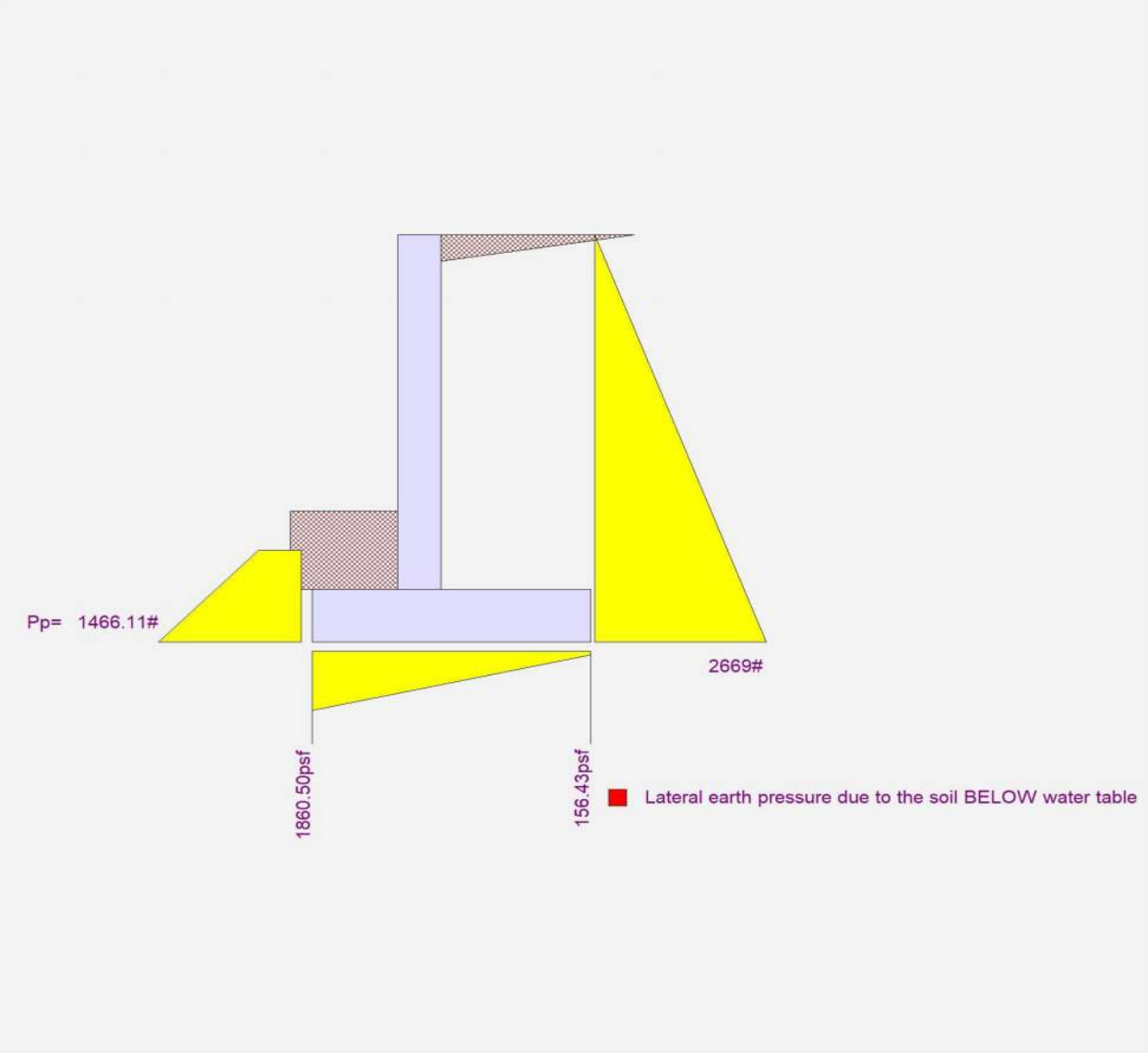


Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: BLDG D - Retaining Wall - 9ft



Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: NSPJ2403-Evern-Tudor.ec6

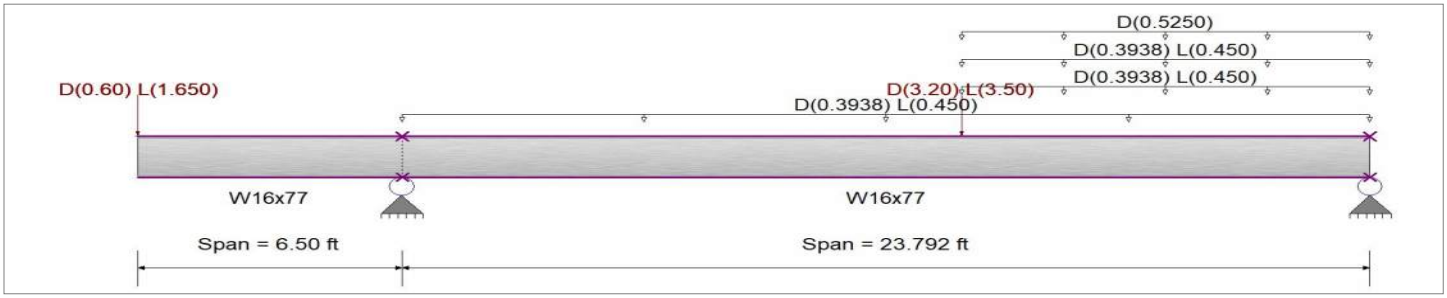
DESCRIPTION: ADA Garage - Cantilever

CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method :	Allowable Strength Design	Fy : Steel Yield :	50.0 ksi
Beam Bracing :	Beam is Fully Braced against lateral-torsional buckling	E: Modulus :	29,000.0 ksi
Bending Axis :	Major Axis Bending		



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Load(s) for Span Number 1
Point Load : D = 0.60, L = 1.650 k @ 0.0 ft, (2nd Floor Balcony)

Point Load : D = 0.60, L = 1.650 k @ 0.0 ft, (3rd Floor Balcony)

Point Load : D = 0.60, L = 1.650 k @ 0.0 ft, (4th Floor Balcony)

Load for Span Number 2
Uniform Load : D = 0.0350, L = 0.040 ksf, Tributary Width = 11.250 ft, (2nd Floor)

Uniform Load : D = 0.0350, L = 0.040 ksf, Extent = 13.750 -->> 23.792 ft, Tributary Width = 11.250 ft, (3rd Floor)

Uniform Load : D = 0.0350, L = 0.040 ksf, Extent = 13.750 -->> 23.792 ft, Tributary Width = 11.250 ft, (4th Floor)

Point Load : D = 3.20, L = 3.50 k @ 13.750 ft, (3rd Floor - T1 Upset Beam Reaction)

Point Load : D = 3.20, L = 3.50 k @ 13.750 ft, (4th Floor Floor - T1 Upset Beam Reaction)

Uniform Load : D = 0.0150 ksf, Extent = 13.750 -->> 23.792 ft, Tributary Width = 35.0 ft, (Wall Self WT)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.498 : 1	Maximum Shear Stress Ratio =	0.229 : 1
Section used for this span	W16x77	Section used for this span	W16x77
Ma : Applied	186.450 k-ft	Va : Applied	34.314 k
Mn / Omega : Allowable	374.251 k-ft	Vn/Omega : Allowable	150.150 k
Load Combination	+D+L	Load Combination	+D+L
		Location of maximum on span	23.792 ft
Span # where maximum occurs	Span # 2	Span # where maximum occurs	Span # 2

Maximum Deflection

Max Downward Transient Deflection	0.221 in	Ratio =	1,293	>=600.	Span: 2 : L Only
Max Upward Transient Deflection	-0.112 in	Ratio =	1,395	>=600.	Span: 2 : L Only
Max Downward Total Deflection	0.508 in	Ratio =	562	>=480.	Span: 2 : +D+L
Max Upward Total Deflection	-0.314 in	Ratio =	497	>=480.	Span: 2 : +D+L

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: ADA Garage - Cantilever

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	VnxVnx/Omega
D Only												
Dsgn. L = 6.50 ft	1	0.036	0.078		-13.33	13.33	625.00	374.25	1.00	1.00	11.64	225.23 150.15
Dsgn. L = 23.79 ft	2	0.273	0.127	102.20	-13.33	102.20	625.00	374.25	1.00	1.00	19.14	225.23 150.15
+D+L												
Dsgn. L = 6.50 ft	1	0.122	0.155		-45.50	45.50	625.00	374.25	1.00	1.00	23.21	225.23 150.15
Dsgn. L = 23.79 ft	2	0.498	0.229	186.45	-45.50	186.45	625.00	374.25	1.00	1.00	34.31	225.23 150.15
+D+0.750L												
Dsgn. L = 6.50 ft	1	0.100	0.135		-37.46	37.46	625.00	374.25	1.00	1.00	20.32	225.23 150.15
Dsgn. L = 23.79 ft	2	0.442	0.203	165.39	-37.46	165.39	625.00	374.25	1.00	1.00	30.52	225.23 150.15
+0.60D												
Dsgn. L = 6.50 ft	1	0.021	0.047		-8.00	8.00	625.00	374.25	1.00	1.00	6.99	225.23 150.15
Dsgn. L = 23.79 ft	2	0.164	0.076	61.32	-8.00	61.32	625.00	374.25	1.00	1.00	11.48	225.23 150.15

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	+D+L	-0.3138	0.000
+D+L	2	0.5077	12.848		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions		30.460	34.314
Max Upward from Load Combinations		30.460	34.314
Max Upward from Load Cases		16.517	19.137
D Only		13.943	19.137
+D+L		30.460	34.314
+D+0.750L		26.331	30.519
+0.60D		8.366	11.482
L Only		16.517	15.177

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: NSPJ2403-Evern-Tudor.ec6

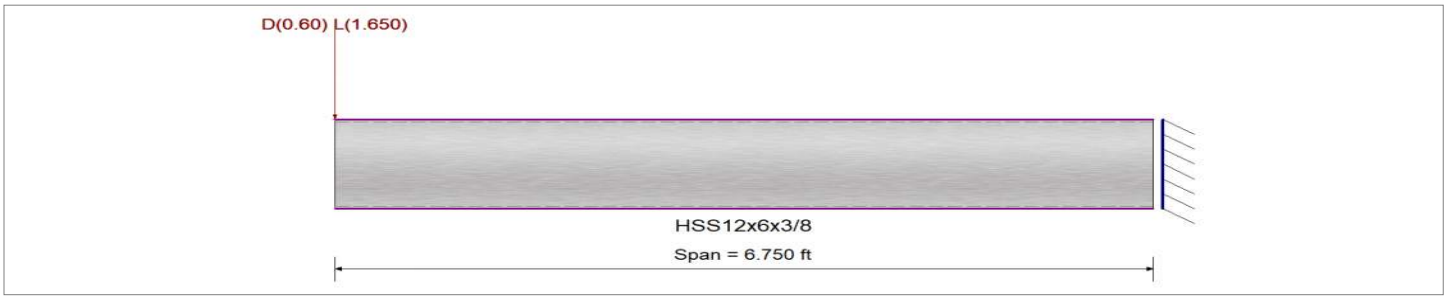
DESCRIPTION: ADA Garage - Cantilever ONLY

CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method :	Allowable Strength Design	Fy : Steel Yield :	50.0 ksi
Beam Bracing :	Beam is Fully Braced against lateral-torsional buckling	E: Modulus :	29,000.0 ksi
Bending Axis :	Major Axis Bending		



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Load(s) for Span Number 1
Point Load : D = 0.60, L = 1.650 k @ 0.0 ft, (2nd Floor Balcony)

Point Load : D = 0.60, L = 1.650 k @ 0.0 ft, (3rd Floor Balcony)

Point Load : D = 0.60, L = 1.650 k @ 0.0 ft, (4th Floor Balcony)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.416 : 1	Maximum Shear Stress Ratio =	0.051 : 1
Section used for this span	HSS12x6x3/8	Section used for this span	HSS12x6x3/8
Ma : Applied	46.537 k-ft	Va : Applied	7.039 k
Mn / Omega : Allowable	111.776 k-ft	Vn/Omega : Allowable	137.339 k
Load Combination	+D+L	Load Combination	+D+L
		Location of maximum on span	6.750 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.141 in	Ratio =	1,149	>=600.	Span: 1 : L Only
Max Upward Transient Deflection	0 in	Ratio =	0	<600.0	n/a
Max Downward Total Deflection	0.195 in	Ratio =	830	>=480.	Span: 1 : +D+L
Max Upward Total Deflection	0 in	Ratio =	0	<480.0	n/a

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
D Only													
Dsgn. L = 6.75 ft	1	0.117	0.015		-13.12	13.12	186.67	111.78	1.00	1.00	2.09	229.36	137.34
+D+L													
Dsgn. L = 6.75 ft	1	0.416	0.051		-46.54	46.54	186.67	111.78	1.00	1.00	7.04	229.36	137.34
+D+0.750L													
Dsgn. L = 6.75 ft	1	0.342	0.042		-38.18	38.18	186.67	111.78	1.00	1.00	5.80	229.36	137.34
+0.60D													
Dsgn. L = 6.75 ft	1	0.070	0.009		-7.87	7.87	186.67	111.78	1.00	1.00	1.25	229.36	137.34

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L	1	0.1953	0.000		0.0000	0.000

Vertical Reactions

Support notation : Far left is #: Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	7.039	

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: ADA Garage - Cantilever ONLY

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from Load Combinations		7.039
Max Upward from Load Cases		4.950
D Only		2.089
+D+L		7.039
+D+0.750L		5.801
+0.60D		1.253
L Only		4.950

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Column

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: ADA Garage Steel Column

Code References

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

Steel Section Name : **HSS5x5x5/16**

Analysis Method :	Allowable Strength
Steel Stress Grade	
Fy : Steel Yield	46.0 ksi
E : Elastic Bending Modulus	29,000.0 ksi

Overall Column Height	11.0 ft
Top & Bottom Fixity	Top & Bottom Pinned
Brace condition :	

Fully braced against buckling ABOUT X-X Axis
Fully braced against buckling ABOUT Y-Y Axis

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 209.880 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 11.0 ft, Xecc = 1.0 in, Yecc = 1.0 in, D = 20.0, L = 17.0 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.5175** : 1

Load Combination	+D+L
Location of max.above base	11.0 ft
At maximum location values are . . .	
Pa : Axial	37.210 k
Pn / Omega : Allowabl	144.886 k
Ma-x : Applied	-3.083 k-ft
Mn-x / Omega : Allowable	21.026 k-ft
Ma-y : Applied	-3.083 k-ft
Mn-y / Omega : Allowable	21.026 k-ft

PASS Maximum Shear Stress Rati **0.007061** : 1

Load Combination	+D+L
Location of max.above base	0.0 ft
At maximum location values are . . .	
Va : Applied	0.2803 k
Vn / Omega : Allowable	39.696 k

Maximum Load Reactions . .

Top along X-X	0.2803 k
Bottom along X-X	0.2803 k
Top along Y-Y	0.2803 k
Bottom along Y-Y	0.2803 k

Maximum Load Deflections . . .

Along Y-Y -0.07571 in at 6.423 ft above base
for load combination : +D+L

Along X-X -0.07571 in at 6.423 ft above base
for load combination : +D+L

Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios: Stress Ratio	Status	Location	Cbx	Cby	KxLx/Ry	KyLy/Rx	Maximum Shear Ratios: Stress Ratio	Status	Location
D Only	0.228	PASS	11.00 ft	1.00	1.00	0.00	0.00	0.004	PASS	0.00 ft
+D+L	0.518	PASS	11.00 ft	1.00	1.00	0.00	0.00	0.007	PASS	0.00 ft
+D+0.750L	0.458	PASS	11.00 ft	1.00	1.00	0.00	0.00	0.006	PASS	0.00 ft
+0.60D	0.137	PASS	11.00 ft	1.00	1.00	0.00	0.00	0.002	PASS	0.00 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction @ Base	X-X Axis Reaction k @ Base	@ Top	Y-Y Axis Reaction @ Base	@ Top	Mx - End Moments k-ft @ Base	@ Top	My - End Moments @ Base	@ Top
D Only	20.210	0.152	0.152	-0.152	0.152				
+D+L	37.210	0.280	0.280	-0.280	0.280				
+D+0.750L	32.960	0.248	0.248	-0.248	0.248				
+0.60D	12.126	0.091	0.091	-0.091	0.091				
L Only	17.000	0.129	0.129	-0.129	0.129				

Extreme Reactions

Item	Extreme Value	Axial Reaction @ Base	X-X Axis Reaction k @ Base	@ Top	Y-Y Axis Reaction @ Base	@ Top	Mx - End Moments k-ft @ Base	@ Top	My - End Moments @ Base	@ Top
Axial @ Base	Maximum	37.210	0.280	0.280	-0.280	0.280		-3.083		-3.083
"	Minimum	12.126	0.091	0.091	-0.091	0.091		-1.000		-1.000
Reaction, X-X Axis Base	Maximum	37.210	0.280	0.280	-0.280	0.280		-3.083		-3.083
"	Minimum	12.126	0.091	0.091	-0.091	0.091		-1.000		-1.000

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Column

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: ADA Garage Steel Column

Extreme Reactions

Item	Extreme Value	Axial Reaction @ Base	X-X Axis Reaction @ Base	X-X Axis Reaction @ Top	k	Y-Y Axis Reaction @ Base	Y-Y Axis Reaction @ Top	Mx - End Moments @ Base	Mx - End Moments @ Top	k-ft	My - End Moments @ Base	My - End Moments @ Top
Reaction, Y-Y Axis Base	Maximum	12.126	0.091	0.091		-0.091	0.091		-1.000			-1.000
"	Minimum	37.210	0.280	0.280		-0.280	0.280		-3.083			-3.083
Reaction, X-X Axis Top	Maximum	37.210	0.280	0.280		-0.280	0.280		-3.083			-3.083
"	Minimum	12.126	0.091	0.091		-0.091	0.091		-1.000			-1.000
Reaction, Y-Y Axis Top	Maximum	37.210	0.280	0.280		-0.280	0.280		-3.083			-3.083
"	Minimum	12.126	0.091	0.091		-0.091	0.091		-1.000			-1.000
Moment, X-X Axis Base	Maximum	20.210		0.152		-0.152	0.152		-1.667			-1.667
"	Minimum	20.210		0.152		-0.152	0.152		-1.667			-1.667
Moment, Y-Y Axis Base	Maximum	20.210	0.152	0.152		-0.152	0.152		-1.667			-1.667
"	Minimum	20.210	0.152	0.152		-0.152	0.152		-1.667			-1.667
Moment, X-X Axis Top	Maximum	12.126	0.091	0.091		-0.091	0.091		-1.000			-1.000
"	Minimum	37.210	0.280	0.280		-0.280	0.280		-3.083			-3.083
Moment, Y-Y Axis Top	Maximum	12.126	0.091	0.091		-0.091	0.091		-1.000			-1.000
"	Minimum	37.210	0.280	0.280		-0.280	0.280		-3.083			-3.083

Maximum Deflections for Load Combinations

Load Combination	Max. Deflection in X dir		Distance		Max. Deflection in Y dir		Distance	
D Only	-0.0409	in	6.423	ft	-0.041	in	6.423	ft
+D+L	-0.0757	in	6.423	ft	-0.076	in	6.423	ft
+D+0.750L	-0.0670	in	6.423	ft	-0.067	in	6.423	ft
+0.60D	-0.0246	in	6.423	ft	-0.025	in	6.423	ft
L Only	-0.0348	in	6.423	ft	-0.035	in	6.423	ft

Steel Section Properties : HSS5x5x5/16

Depth	=	5.000	in	I xx	=	19.00	in^4	J	= 31.200 in^4
Design Thick	=	0.291	in	S xx	=	7.62	in^3		
Width	=	5.000	in	R xx	=	1.900	in		
Wall Thick	=	0.313	in	Zx	=	9.160	in^3		
Area	=	5.260	in^2	I yy	=	19.000	in^4	C	= 12.800 in^3
Weight	=	19.080	plf	S yy	=	7.620	in^3		
				R yy	=	1.900	in		
Ycg	=	0.000	in						

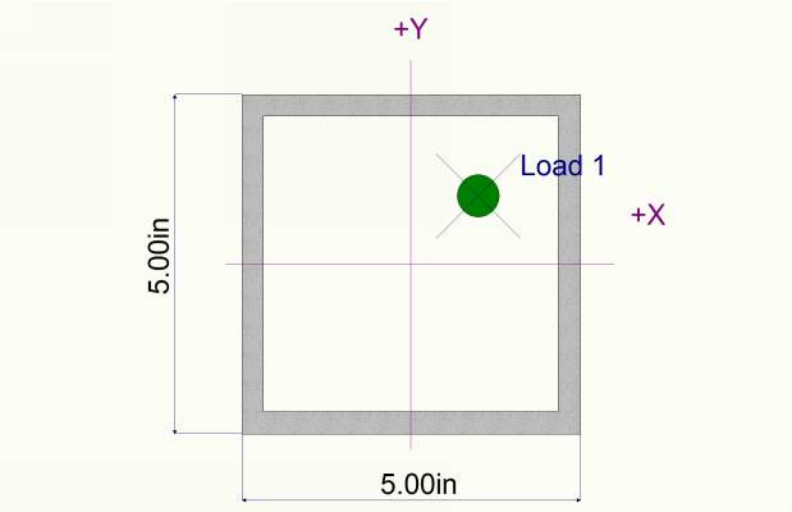
Project Title:
Engineer:
Project ID:
Project Descr:

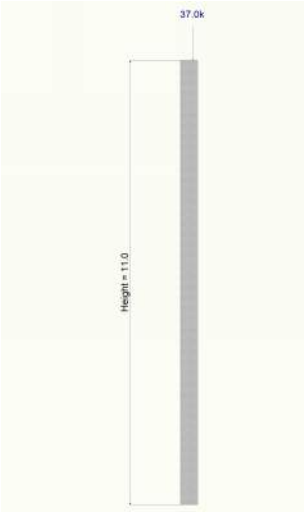
Steel Column

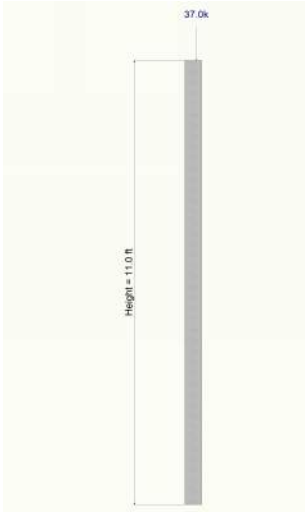
Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: ADA Garage Steel Column

Sketches







Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: Trash Enclosure (Footing Restrained at Slab)

Code Reference

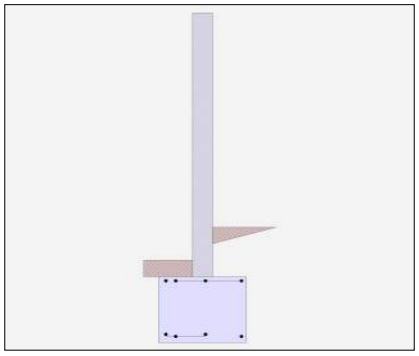
Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16

Criteria

Retained Height	=	2.00 ft
Wall height above soil	=	8.67 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	8.00 in
Water table above bottom of footing	=	0.0 ft

Soil Data

Allow Soil Bearing	=	2,500.0 psf
Equivalent Fluid Pressure Method		
Active Heel Pressure	=	45.0 psf/ft
	=	
Passive Pressure	=	250.0 psf/ft
Soil Density, Heel	=	110.00 pcf
Soil Density, Toe	=	110.00 pcf
Footing||Soil Friction	=	0.400
Soil height to ignore for passive pressure	=	12.00 in



Surcharge Loads

Surcharge Over Heel	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0
Used for Sliding & Overturning		

Lateral Load Applied to Stem

Lateral Load	=	0.0 #/ft
...Height to Top	=	0.00 ft
...Height to Bottom	=	0.00 ft
Load Type	=	Wind (W) (Service Level)
Wind on Exposed Stem (Service Level)	=	10.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Axial Load Applied to Stem

Axial Dead Load	=	0.0 lbs
Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Project File: NSPJ2403-Evern-Tudor.ec6

DESCRIPTION: Trash Enclosure (Footing Restrained at Slab)

Design Summary

Wall Stability Ratios

Overturning	=	1.60	OK
Sliding	=	3.26	OK
Global Stability	=	3.69	

Total Bearing Load	=	1,542	lbs
...resultant ecc.	=	10.79	in
Eccentricity outside middle third			
Soil Pressure @ Toe	=	1,710	psf OK
Soil Pressure @ Heel	=	0	psf OK
Allowable	=	2,500	psf
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	2,395	psf
ACI Factored @ Heel	=	0	psf
Footing Shear @ Toe	=	3.5	psi OK
Footing Shear @ Heel	=	2.4	psi OK
Allowable	=	88.7	psi

Sliding Calcs

Lateral Sliding Force	=	576.7	lbs
less 100% Passive Force	-	1,263.9	lbs
less 100% Friction Force	-	616.7	lbs
Added Force Req'd	=	0.0	lbs OK
....for 1.5 Stability	=	0.0	lbs OK

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

		Bottom		
		Stem OK		
Design Height Above Ftg	ft =	0.00		
Wall Material Above "Ht"	=	Masonry		
Design Method	=	ASD	SD	SD
Thickness	=	8.00		
Rebar Size	=	# 5		
Rebar Spacing	=	24.00		
Rebar Placed at	=	Edge		
Design Data				
fb/FB + fa/Fa	=	**0.489**		
Total Force @ Section				
Service Level	lbs =	176.7		
Strength Level	lbs =			
Moment....Actual				
Service Level	ft-# =	609.2		
Strength Level	ft-# =			
Moment.....Allowable	=	1,245.6		
Shear.....Actual				
Service Level	psi =	1.9		
Strength Level	psi =			
Shear.....Allowable	psi =	50.3		
Anet (Masonry)	in2 =	91.50		
Wall Weight	psf =	0.0		
Rebar Depth 'd'	in =	5.25		

Masonry Data

f'm	psi =	2,000
Fs	psi =	20,000
Solid Grouting	=	Yes
Modular Ratio 'n'	=	16.11
Equiv. Solid Thick.	in =	7.63
Masonry Block Type	=	
Masonry Design Method	=	ASD

Concrete Data

f'c	psi =
Fy	psi =

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Cantilevered Retaining Wall

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DESCRIPTION: Trash Enclosure (Footing Restrained at Slab)

Footing Data

Toe Width	=	1.17 ft
Heel Width	=	1.83
Total Footing Width	=	3.00
Footing Thickness	=	32.00 in
Key Width	=	0.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	0.00 ft

f'c = 3,500 psi Fy = 60,000 psi
Footing Concrete Density = 150.00 pcf
Min. As % = 0.0000
Cover @ Top 2.00 @ Btm.= 3.00 in

Footing Design Results

		Toe		Heel	
Factored Pressure	=	2,395		0	psf
Mu' : Upward	=	1,284		0	ft-#
Mu' : Downward	=	500		648	ft-#
Mu: Design	=	785	OK	648	ft-# OK
phiMn	=	1,074		883	ft-#
Actual 1-Way Shear	=	3.49		2.44	psi
Allow 1-Way Shear	=	88.74		88.74	psi

Toe Reinforcing = # 4 @ 290.83 in
Heel Reinforcing = # 4 @ 364.93 in
Key Reinforcing = None Spec'd
Footing Torsion, Tu = 0.00 ft-lbs
Footing Allow. Torsion, phi Tu = 0.00 ft-lbs

If torsion exceeds allowable, provide supplemental design for footing torsion.

Other Acceptable Sizes & Spacings

Toe: #4@ 290.83 in, #5@ 450.79 in, #6@ 639.83 in, #7@ 864.00 in, #8@ 864.00 in, #9@ 864.00 in, #10@ 864.00 in

Heel: #4@ 364.93 in, #5@ 565.65 in, #6@ 802.85 in, #7@ 864.00 in, #8@ 864.00 in, #9@ 864.00 in, #10@ 864.00 in

Key: No key defined

Min footing T&S reinf Area 0.00 in2
Min footing T&S reinf Area per foot 0.00 in2 /ft

If one layer of horizontal bars:	If two layers of horizontal bars:
#4@ 0.00 in	#4@ 0.00 in
#5@ 0.00 in	#5@ 0.00 in
#6@ 0.00 in	#6@ 0.00 in

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Cantilevered Retaining Wall

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DESCRIPTION: Trash Enclosure (Footing Restrained at Slab)

Summary of Overturning & Resisting Forces & Moments

Item		.....OVERTURNING..... Force lbs	Distance ft	Moment ft-#		.....RESISTING..... Force lbs	Distance ft	Moment ft-#
HL Act Pres (ab water tbl)		490.0	1.56	762.2	Soil Over HL (ab. water tbl)	255.9	2.42	618.9
HL Act Pres (be water tbl)					Soil Over HL (bel. water tbl)		2.42	618.9
Hydrostatic Force					Water Table			
Buoyant Force	=				Sloped Soil Over Heel	=		
Surcharge over Heel	=				Surcharge Over Heel	=		
Surcharge Over Toe	=				Adjacent Footing Load	=		
Adjacent Footing Load	=				Axial Dead Load on Stem	=		
Added Lateral Load	=				* Axial Live Load on Stem	=		
Load @ Stem Above Soil	=	86.7	9.00	780.4	Soil Over Toe	=	85.8	0.59	50.2
	=				Surcharge Over Toe	=			
					Stem Weight(s)	=			
					Earth @ Stem Transitions	=			
Total	=	576.7	**O.T.M.** =	1,542.7	Footing Weight	=	1,200.0	1.50	1,800.0
					Key Weight	=			
					Vert. Component	=			
					Total =		1,541.7 lbs	**R.M.=**	2,469.1

Resisting/Overturning Ratio = **1.60**

Vertical Loads used for Soil Pressure = 1,541.7 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

Soil Spring Reaction Modulus	250.0	pci
Horizontal Defl @ Top of Wall (approximate only)	0.169	in

The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe, because the wall would then tend to rotate into the retained soil.

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Cantilevered Retaining Wall

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DESCRIPTION: Trash Enclosure (Footing Restrained at Slab)

Rebar Lap & Embedment Lengths Information

Stem Design Segment: Bottom
Stem Design Height: 0.00 ft above top of footing
Calculated Rebar Stress, fs = 9782.15 psi

Lap Splice length for #5 bar specified in this stem design segment (25.4.2.3a) =	25.00 in
Development length for #5 bar specified in this stem design segment =	12.23 in
Hooked embedment length into footing for #5 bar specified in this stem design segment =	6.00 in
As Provided =	0.1550 in2/ft
As Required =	0.0777 in2/ft

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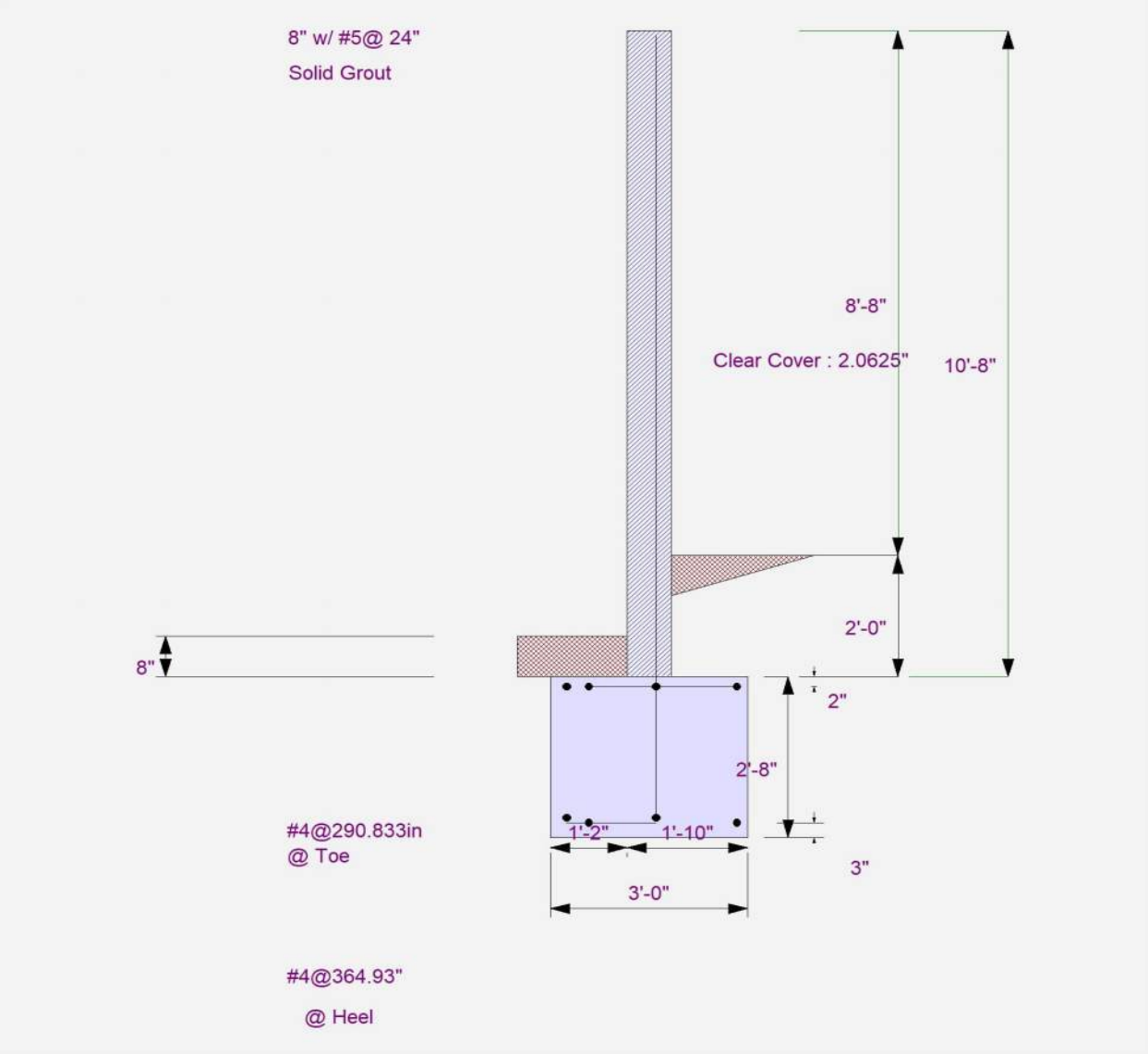
DESCRIPTION: Trash Enclosure (Footing Restrained at Slab)



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Cantilevered Retaining Wall

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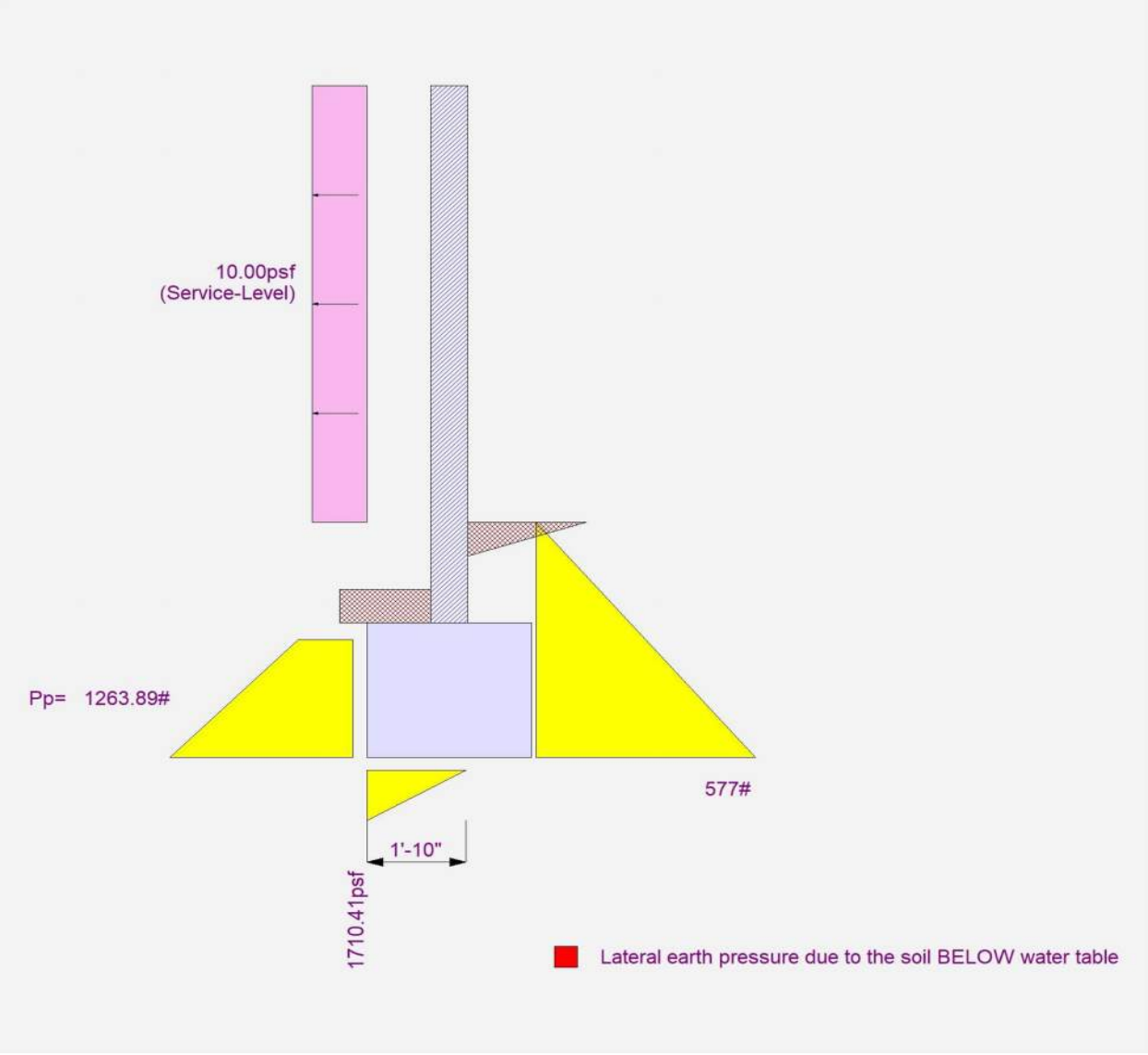
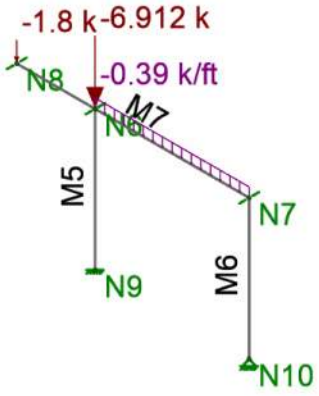
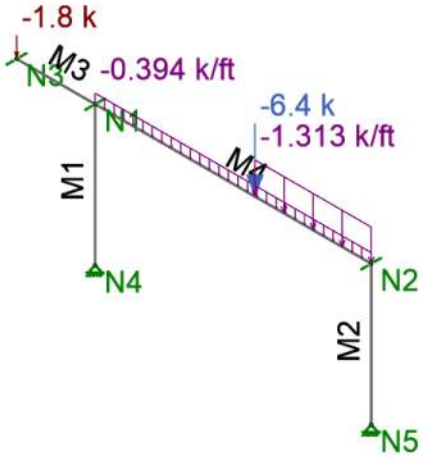






Loads: BLC 1, Dead

RISA	<Licensed Company>		
	CAB		
	NSPJ2403		

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	N1	0	0	0	
2	N2	23.75	0	0	
3	N3	-6.75	0	0	
4	N4	0	-12	0	
5	N5	23.75	-12	0	
6	N6	0	50	0	
7	N7	13.25	50	0	
8	N8	-6.75	50	0	
9	N9	0	38	0	
10	N10	13.25	38	0	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N3			Reaction			
2	N1			Reaction			
3	N8			Reaction			
4	N2			Reaction			
5	N6			Reaction			
6	N7			Reaction			
7	N4	Reaction	Reaction	Reaction			
8	N5	Reaction	Reaction	Reaction			
9	N9	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
10	N10	Reaction	Reaction	Reaction			

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B RECT	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A500 Gr.C RND	29000	11154	0.3	0.65	0.527	46	1.4	62	1.3
7	A500 Gr.C RECT	29000	11154	0.3	0.65	0.527	50	1.4	62	1.3
8	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
9	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
10	A913 Gr.65	29000	11154	0.3	0.65	0.49	65	1.1	80	1.1

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N4	N1	Column	Column	Tube	A500 Gr.C RECT	Typical
2	M2	N5	N2	Column	Column	Tube	A500 Gr.C RECT	Typical
3	M3	N3	N1	Cantilever	Beam	Tube	A500 Gr.C RECT	Typical
4	M4	N1	N2	Main Beam	Beam	Wide Flange	A992	Typical
5	M5	N9	N6	Column	Column	Tube	A500 Gr.C RECT	Typical
6	M6	N10	N7	Column	Column	Tube	A500 Gr.C RECT	Typical
7	M7	N8	N7	Cantilever	Beam	Tube	A500 Gr.C RECT	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
1	M1	Column	12	Lbyy	N/A	N/A	Lateral
2	M2	Column	12	Lbyy	N/A	N/A	Lateral
3	M3	Cantilever	6.75	2	N/A	N/A	Lateral
4	M4	Main Beam	23.75	2	N/A	N/A	Lateral
5	M5	Column	12	Lbyy	N/A	N/A	Lateral
6	M6	Column	12	Lbyy	N/A	N/A	Lateral
7	M7	Cantilever	20	2	N/A	N/A	Lateral

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M4	Y	-6.4	13.75

Member Point Loads (BLC 2 : Live)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M4	Y	-7	13.75

Wall Panel Point Loads

No Data to Print...

Diaphragm Point Loads

No Data to Print...

Member Distributed Loads (BLC 1 : Dead)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M4	Y	-0.394	-0.394	0	%100
2	M4	Y	-1.313	-1.313	13.75	23.75
3	M7	Y	-0.39	-0.39	6.75	%100

Member Distributed Loads (BLC 2 : Live)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M4	Y	-0.45	-0.45	0	%100
2	M4	Y	-0.9	-0.9	13.75	23.75
3	M7	Y	-0.45	-0.45	6.75	%100

Basic Load Cases

	BLC Description	Category	Nodal	Point	Distributed
1	Dead	DL	3	1	3
2	Live	LL	3	1	3

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor
1	Dead	Yes	Y	DL	1		
2	Live	Yes	Y	LL	1		
3	D+L	Yes	Y	DL	1	LL	1

Node Reactions

	LC	Node Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	N3	0	0	0	0	0	0
2	3	N1	0	0	0	0	0	0
3	3	N8	0	0	0	0	0	0
4	3	N2	0	0	0	0	0	0
5	3	N6	0	0	0	0	0	0
6	3	N7	0	0	0	0	0	0
7	3	N4	0.392	29.113	0	0	0	0
8	3	N5	-0.392	33.212	0	0	0	0
9	3	N9	-0.101	30.116	0	0	0	-0.654
10	3	N10	0.101	2.116	0	0	0	0
11	3	Totals:	0	94.557	0			
12	3	COG (ft):	X: 8.67	Y: 17.044	Z: 0			

Node Displacements

	LC	Node Label	X [in]	Y [in]	Z [in]	X Rotation [rad]	Y Rotation [rad]	Z Rotation [rad]
1	3	N1	-0.348	-0.027	0	0	0	-3.921e-3
2	3	N2	-0.348	-0.031	0	0	0	5.734e-3
3	3	N3	-0.348	0.092	0	0	0	-3.692e-4
4	3	N4	0	0	0	0	0	5.556e-3
5	3	N5	0	0	0	0	0	7.716e-4
6	3	N6	-0.183	-0.028	0	0	0	2.794e-3
7	3	N7	-0.183	-0.002	0	0	0	-5.107e-5
8	3	N8	-0.183	-0.453	0	0	0	6.345e-3
9	3	N9	0	0	0	0	0	0
10	3	N10	0	0	0	0	0	1.927e-3

Maximum Member Section Forces

	LC	Member Label		Axial[k]	Loc[ft]	y Shear[k]	Loc[ft]	z Shear[k]	Loc[ft]	Torque[k-ft]	Loc[ft]	y-y Moment[k-ft]	Loc[ft]	z-z Moment[k-ft]	Loc[ft]
1	3	M1	max	29.113	12	-0.504	12	0	12	0	12	0	12	6.043	12
2			min	29.113	0	-0.504	0	0	0	0	0	0	0	0	0
3	3	M2	max	33.212	12	0.264	12	0	12	0	12	0	12	0	0
4			min	33.212	0	0.264	0	0	0	0	0	0	0	-3.165	12
5	3	M3	max	0	6.75	-6.75	6.75	0	6.75	0	6.75	0	6.75	45.563	6.75
6			min	0	0	-6.75	0	0	0	0	0	0	0	0	0
7	3	M4	max	0.392	23.75	22.363	0	0	23.75	0	23.75	0	23.75	51.606	0
8			min	0.392	0	-33.212	23.75	0	0	0	0	0	0	-175.812	13.854
9	3	M5	max	30.116	12	0.04	12	0	12	0	12	0	12	-0.654	0
10			min	30.116	0	0.04	0	0	0	0	0	0	0	-1.128	12
11	3	M6	max	2.116	12	-0.105	12	0	12	0	12	0	12	1.261	12
12			min	2.116	0	-0.105	0	0	0	0	0	0	0	0	0
13	3	M7	max	0	6.667	8.909	6.875	0	20	0	20	0	20	45	6.667
14			min	-0.101	6.875	-6.75	0	0	0	0	0	0	0	-3.926	17.5

Member End Reactions

	LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
1	3	M1	I	29.113	-0.504	0	0	0	0
2			J	29.113	-0.504	0	0	0	6.043
3	3	M2	I	33.212	0.264	0	0	0	0
4			J	33.212	0.264	0	0	0	-3.165
5	3	M3	I	0	-6.75	0	0	0	0
6			J	0	-6.75	0	0	0	45.563

Member End Reactions (Continued)

	LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
7	3	M4	I	0.392	22.363	0	0	0	51.606
8			J	0.392	-33.212	0	0	0	3.165
9	3	M5	I	30.116	0.04	0	0	0	-0.654
10			J	30.116	0.04	0	0	0	-1.128
11	3	M6	I	2.116	-0.105	0	0	0	0
12			J	2.116	-0.105	0	0	0	1.261
13	3	M7	I	0	-6.75	0	0	0	0
14			J	-0.101	-2.116	0	0	0	-1.261

Beam Deflections

	LC	Member Label	Span	Location [ft]	y' [in]	(n) L'/y' Ratio
1	3	M3	1	0	-0.198	817
2	3	M4	1	12.865	-0.467	610
3	3	M7	1	0	-0.411	394
4			2	10.625	0.05	3193

Beam Deflection Checks

	Beam	Design Rule	Span	Defl [in]	Ratio	LC	Defl [in]	Ratio	LC	Defl [in]	Ratio	LC
1	M3	Typical	1	N/A	N/A	N/A	N/A	N/A	N/A	-0.198	817	3(DL+LL)
2	M4	Typical	1	N/A	N/A	N/A	N/A	N/A	N/A	-0.467	610	3(DL+LL)
3	M7	Typical	1	N/A	N/A	N/A	N/A	N/A	N/A	-0.411	394	3(DL+LL)
4			2	N/A	N/A	N/A	N/A	N/A	N/A	0.05	3193	3(DL+LL)

AISC 15TH (360-16): ASD Member Steel Code Checks

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn
1	3	M1	HSS5X5X5	0.516	12	0.012	12	y	103.502	157.485	22.854	22.854	1.667	H1-1a
2	3	M2	HSS5X5X5	0.444	12	0.006	12	y	103.502	157.485	22.854	22.854	1.667	H1-1a
3	3	M3	HSS12X6X6	0.408	6.75	0.049	6.75	y	326.898	353.293	63.579	111.776	1.667	H1-1b
4	3	M4	W16X77	0.471	13.854	0.221	23.75	y	255.37	676.647	102.545	374.251	1	H1-1b
5	3	M5	HSS5X5X5	0.335	12	0.001	12	y	103.502	157.485	22.854	22.854	1.202	H1-1a
6	3	M6	HSS5X5X5	0.065	12	0.002	12	y	103.502	157.485	22.854	22.854	1.667	H1-1b
7	3	M7	HSS12X6X6	0.403	6.667	0.065	6.875	y	178.679	353.293	63.579	111.776	1.9	H1-1b

Wood Movement Multi-Story Stick Framed Construction - Section 1/S0.06 - Exterior

Evren Apartments

Brick Expansion

Is Brick Present	NO	
Temperature Change	100	^{o}F
Coefficient of Moisture Expansion	5.00E-04	in/in
Coefficient of Thermal Expansion	4.00E-06	in/in/^{o}F

Wood Shrinkage

Number of Plates	3
Number of Chords in Truss	2
Rimboard Present	NO
LSL or Dimensional Plates	Dimensional
Truss Height	18 in
Subfloor Thickness	0.719 in
Subfloor Swell	20.0%
Axial Creep	0.125 in
Nesting Per Floor (in)	0.063 in
Moisture Content at Install (MC)	13.0%
Moisture Content at Equilibrium (EMC)	8.0%

Shrinkage for 30% Change in MC	DF Studs	SYP Sill Plate	SPF Truss
Radial	4.80%	5.28%	5.28%
Tangential	7.60%	7.89%	7.89%
Longitudinal	0.15%		

Level	Floor to Floor Height (ft)	(in)	Brick Expansion Moisture (in)	Thermal (in)	Wood Shrinkage Plates (in)	Truss (in)	Subfloor (in)	Stud (in)	Creep (in)	Nesting (in)	Fc_{perp} Deformation (in)	Total Movement Per Floor (in)	Cumulative (in)	Cumulative w/o Nesting (in)
4	10.09	121.08	0.000	0.000	0.047	0.037	0.072	0.025	0.031	0.063	0.04	0.31	1.42	1.17
3	10.65	127.75	0.000	0.000	0.047	0.037	0.072	0.026	0.042	0.063	0.04	0.33	1.10	0.91
2	10.65	127.75	0.000	0.000	0.047	0.037	0.072	0.026	0.063	0.063	0.04	0.35	0.78	0.65
1	10.65	127.80	0.000	0.000	0.047	0.037	0.072	0.026	0.125	0.063	0.06	0.43	0.43	0.37

Notes:

1. Shrinkage of dimensional plates is based on Douglas Fir with an average of radial and tangential shrinkage to account for various milling possibilities.
2. Subfloor shrinkage based on a 50% reduction from subfloor potential swell.
3. Creep is considered to be at the max at the first floor (max axial load) and reduces with each vertical level as axial load is minimized.
4. Nesting is the consolidation of construction gaps.
5. Fc (perp) deformation is based on utilizing less than 73% of the compression perpendicular to the grain with a deformation of 0.02" per NDS Section 4.2.6 at each end of stud bearing for the upper floors and using greater than 73% at the treated southern pine sill plate in contact with the concrete with a deformation of 0.04".

Wood Movement Multi-Story Stick Framed Construction - Section 2/S0.06 - Interior Load Bearing Evren Apartments

Brick Expansion

Is Brick Present	NO	
Temperature Change	100	^{o}F
Coefficient of Moisture Expansion	5.00E-04	in/in
Coefficient of Thermal Expansion	4.00E-06	in/in/^{o}F

Wood Shrinkage

Number of Plates	3
Number of Chords in Truss	2
Rimboard Present	NO
LSL or Dimensional Plates	Dimensional
Truss Height	18 in
Subfloor Thickness	0.719 in
Subfloor Swell	20.0%
Axial Creep	0.125 in
Nesting Per Floor (in)	0.063 in
Moisture Content at Install (MC)	13.0%
Moisture Content at Equilibrium (EMC)	8.0%

Shrinkage for 30% Change in MC	DF Studs	SYP Sill Plate	SPF Truss
Radial	4.80%	5.28%	5.28%
Tangential	7.60%	7.89%	7.89%
Longitudinal	0.15%		

Level	Floor to Floor Height (ft)	(in)	Brick Expansion Moisture (in)	Thermal (in)	Wood Shrinkage Plates (in)	Truss (in)	Subfloor (in)	Stud (in)	Creep (in)	Nesting (in)	Fc_{perp} Deformation (in)	Total Movement Per Floor (in)	Cumulative (in)	Cumulative w/o Nesting (in)
4	10.09	121.08	0.000	0.000	0.047	0.037	0.072	0.025	0.031	0.063		0.27	1.38	1.13
3	10.65	127.75	0.000	0.000	0.047	0.037	0.072	0.026	0.042	0.063	0.04	0.33	1.10	0.91
2	10.65	127.75	0.000	0.000	0.047	0.037	0.072	0.026	0.063	0.063	0.04	0.35	0.78	0.65
1	10.65	127.80	0.000	0.000	0.047	0.037	0.072	0.026	0.125	0.063	0.06	0.43	0.43	0.37

Notes:

1. Shrinkage of dimensional plates is based on Douglas Fir with an average of radial and tangential shrinkage to account for various milling possibilities.
2. Subfloor shrinkage based on a 50% reduction from subfloor potential swell.
3. Creep is considered to be at the max at the first floor (max axial load) and reduces with each vertical level as axial load is minimized.
4. Nesting is the consolidation of construction gaps.
5. Fc (perp) deformation is based on utilizing less than 73% of the compression perpendicular to the grain with a deformation of 0.02" per NDS Section 4.2.6 at each end of stud bearing for the upper floors and using greater than 73% at the treated southern pine sill plate in contact with the concrete with a deformation of 0.04".

Wood Movement Multi-Story Stick Framed Construction - Section 3/S0.06 - Exterior

Evren Apartments

Brick Expansion

Is Brick Present	NO	
Temperature Change	100	^{o}F
Coefficient of Moisture Expansion	5.00E-04	in/in
Coefficient of Thermal Expansion	4.00E-06	in/in/^{o}F

Wood Shrinkage

Number of Plates	3
Number of Chords in Truss	2
Rimboard Present	NO
LSL or Dimensional Plates	Dimensional
Truss Height	18 in
Subfloor Thickness	0.719 in
Subfloor Swell	20.0%
Axial Creep	0.125 in
Nesting Per Floor (in)	0.063 in
Moisture Content at Install (MC)	13.0%
Moisture Content at Equilibrium (EMC)	8.0%

Shrinkage for 30% Change in MC	DF Studs	SYP Sill Plate	SPF Truss
Radial	4.80%	5.28%	5.28%
Tangential	7.60%	7.89%	7.89%
Longitudinal	0.15%		

Level	Floor to Floor Height (ft)	(in)	Brick Expansion Moisture (in)	Thermal (in)	Wood Shrinkage Plates (in)	Truss (in)	Subfloor (in)	Stud (in)	Creep (in)	Nesting (in)	Fc_{perp} Deformation (in)	Total Movement Per Floor (in)	Cumulative (in)	Cumulative w/o Nesting (in)
4	10.09	121.08	0.000	0.000	0.047	0.037	0.072	0.025	0.031	0.063		0.27	1.24	0.99
3	10.65	127.75	0.000	0.000	0.047	0.037	0.072	0.026	0.042	0.063		0.29	0.96	0.77
2	10.65	127.75	0.000	0.000	0.047	0.037	0.072	0.026	0.063	0.063		0.31	0.68	0.55
1	10.65	127.80	0.000	0.000	0.047	0.037	0.072	0.026	0.125	0.063		0.37	0.37	0.31

Notes:

1. Shrinkage of dimensional plates is based on Douglas Fir with an average of radial and tangential shrinkage to account for various milling possibilities.
2. Subfloor shrinkage based on a 50% reduction from subfloor potential swell.
3. Creep is considered to be at the max at the first floor (max axial load) and reduces with each vertical level as axial load is minimized.
4. Nesting is the consolidation of construction gaps.
5. Fc (perp) deformation is based on utilizing less than 73% of the compression perpendicular to the grain with a deformation of 0.02" per NDS Section 4.2.6 at each end of stud bearing for the upper floors and using greater than 73% at the treated southern pine sill plate in contact with the concrete with a deformation of 0.04".

EVREN APARTMENTS
Stud Wall Design

Bob D. Campbell & Co.
9/16/2024

Level Loadings

Type	DL	LL	TL
Balcony (Private)	15 psf	60 psf	75 psf
Balcony (Public)	15 psf	100 psf	115 psf
Floor (Private)	35 psf	40 psf	75 psf
Floor (Public)	35 psf	100 psf	135 psf
Roof (Flat)	25 psf	20 psf	45 psf
Roof (Sloped)	25 psf	20 psf	45 psf
Storage	35 psf	125 psf	160 psf

Notes:

Wood Properties

Grade	Fb	Fc
Stud	700	850
No. 2	900	1350
No. 1	1000	1500
Sel. Struct.	1500	1700

Wind Pressure

Exterior	25 psf
Interior	5 psf
Special	-

Built-up Col Design (L=12', Lu=60")

		P allow
(4) 2x4 @ 16"oc	5 psf	3656 plf
(4.5) 2x4 @ 16"oc	5 psf	4165 plf
(5) 2x4 @ 16"oc	5 psf	4673 plf
(5.5) 2x4 @ 16"oc	5 psf	5187 plf
(6) 2x4 @ 16"oc	5 psf	5700 plf

Truss Bearing Check

Allowable Bearing Stress	565 psi
Number of Truss Verticals	2

Rim Board Check

Rim Board Width		1.25 in.
Rim Board Depth		18 in.
Allowable Uniform Load		4340 plf
Allowable Bearing Stress		710 psi

Exterior

REVIEWED	Roof Bearing						Wood Stud Properties									Rim Board Unity Checks			Truss	Additional	Truss Bearing
Level	DL	LL	TL	TW	Adt'l Ld	TL	Number	Size	Spacing	Grade	Lu (in.)	Height	Wall Condition	Lateral Force	P allow.	Unity	Has Rim Board	Uniform Load	Concentrated Load	Spacing	Squash Blocks	Check
Roof (Flat)	25 psf	20 psf	45 psf	17.0 ft	50 plf	815 plf	1.0	2x6	24.0 in.	No. 2	12 in.	10 ft	Exterior	50 plf	1703 plf	0.48	Yes	-	-	24 in.	0	0.27
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	990 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	2391 plf	0.41	Yes	0.19	0.41	16 in.	0	0.04
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	1165 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	2391 plf	0.49	Yes	0.23	0.50	16 in.	0	0.04
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	1340 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	2391 plf	0.56	Yes	0.27	0.58	16 in.	0	0.04
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	1515 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	2391 plf	0.63	Yes	0.31	0.67	16 in.	0	0.04

REVIEWED	Roof + Floor Bearing						Wood Stud Properties									Rim Board Unity Checks			Truss	Additional	Truss Bearing
Level	DL	LL	TL	TW	Adt'l Ld	TL	Number	Size	Spacing	Grade	Lu (in.)	Height	Wall Condition	Lateral Force	P allow.	Unity	Has Rim Board	Uniform Load	Concentrated Load	Spacing	Squash Blocks	Check
Roof (Flat)	25 psf	20 psf	45 psf	17.0 ft	50 plf	815 plf	1.0	2x6	24.0 in.	No. 2	12 in.	10 ft	Exterior	50 plf	1703 plf	0.48	Yes	-	-	24 in.	0	0.27
Floor (Private)	35 psf	40 psf	75 psf	9.0 ft	100 plf	1590 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	2391 plf	0.66	Yes	0.19	0.41	16 in.	0	0.17
Floor (Private)	35 psf	40 psf	75 psf	9.0 ft	100 plf	2365 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	2391 plf	0.99	Yes	0.37	0.80	16 in.	0	0.17
Floor (Private)	35 psf	40 psf	75 psf	9.0 ft	100 plf	3140 plf	1.5	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	4079 plf	0.77	Yes	0.54	1.18	16 in.	0	0.17
Floor (Private)	35 psf	40 psf	75 psf	9.0 ft	100 plf	3915 plf	1.5	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	4079 plf	0.96	Yes	0.72	1.35	16 in.	0	0.17

REVIEWED	Floor Bearing						Wood Stud Properties									Rim Board Unity Checks			Truss	Additional	Truss Bearing
Level	DL	LL	TL	TW	Adt'l Ld	TL	Number	Size	Spacing	Grade	Lu (in.)	Height	Wall Condition	Lateral Force	P allow.	Unity	Has Rim Board	Uniform Load	Concentrated Load	Spacing	Squash Blocks	Check
Roof (Flat)	25 psf	20 psf	45 psf	5.0 ft	50 plf	275 plf	1.0	2x6	24.0 in.	No. 2	12 in.	10 ft	Exterior	50 plf	1703 plf	0.16	Yes	-	-	24 in.	0	0.09
Floor (Private)	35 psf	40 psf	75 psf	9.0 ft	100 plf	1050 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	2391 plf	0.44	Yes	0.06	0.14	16 in.	0	0.17
Floor (Private)	35 psf	40 psf	75 psf	9.0 ft	100 plf	1825 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	2391 plf	0.76	Yes	0.24	0.53	16 in.	0	0.17
Floor (Private)	35 psf	40 psf	75 psf	9.0 ft	100 plf	2600 plf	1.5	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	4079 plf	0.64	Yes	0.42	0.91	16 in.	0	0.17
Floor (Private)	35 psf	40 psf	75 psf	9.0 ft	100 plf	3375 plf	1.5	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	4079 plf	0.83	Yes	0.60	1.12	16 in.	0	0.17

Balcony

REVIEWED	Roof Bearing						Wood Stud Properties									Rim Board Unity Checks			Truss	Additional	Truss Bearing
Level	DL	LL	TL	TW	Adt'l Ld	TL	Number	Size	Spacing	Grade	Lu (in.)	Height	Wall Condition	Lateral Force	P allow.	Unity	Has Rim Board	Uniform Load	Concentrated Load	Spacing	Squash Blocks	Check
Roof (Flat)	25 psf	20 psf	45 psf	17.0 ft	50 plf	815 plf	1.0	2x6	24.0 in.	No. 2	12 in.	10 ft	Exterior	50 plf	1703 plf	0.48	Yes	-	-	24 in.	0	0.27
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	175 plf	1215 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	2391 plf	0.51	Yes	0.19	0.41	16 in.	0	0.09
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	175 plf	1615 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	2391 plf	0.68	Yes	0.28	0.61	16 in.	0	0.09
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	175 plf	2015 plf	1.5	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	4079 plf	0.49	Yes	0.37	0.81	16 in.	0	0.09
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	175 plf	2415 plf	1.5	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	4079 plf	0.59	Yes	0.46	0.86	16 in.	0	0.09

REVIEWED	Floor + Balc Bearing (Unit B9 Bldg B)						Wood Stud Properties									Rim Board Unity Checks			Truss	Additional	Truss Bearing
Level	DL	LL	TL	TW	Adt'l Ld	TL	Number	Size	Spacing	Grade	Lu (in.)	Height	Wall Condition	Lateral Force	P allow.	Unity	Has Rim Board	Uniform Load	Concentrated Load	Spacing	Squash Blocks	Check
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	50 plf	140 plf	1.0	2x6	24.0 in.	No. 2	12 in.	10 ft	Exterior	50 plf	1703 plf	0.08	Yes	-	-	24 in.	0	0.05
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	925 plf	1290 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	2391 plf	0.54	Yes	0.03	0.07	16 in.	0	0.26
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	925 plf	2440 plf	1.5	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	4079 plf	0.60	Yes	0.30	0.65	16 in.	0	0.26
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	925 plf	3590 plf	2.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	5244 plf	0.68	Yes	0.56	1.05	16 in.	0	0.26
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	925 plf	4740 plf	2.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	5244 plf	0.90	Yes	0.83	1.35	16 in.	0	0.26

REVIEWED	Roof + Floor + Balc Bearing (Unit B9 Bldg B)						Wood Stud Properties									Rim Board Unity Checks			Truss	Additional	Truss Bearing
Level	DL	LL	TL	TW	Adt'l Ld	TL	Number	Size	Spacing	Grade	Lu (in.)	Height	Wall Condition	Lateral Force	P allow.	Unity	Has Rim Board	Uniform Load	Concentrated Load	Spacing	Squash Blocks	Check
Roof (Flat)	25 psf	20 psf	45 psf	18.0 ft	50 plf	860 plf	1.0	2x6	24.0 in.	No. 2	12 in.	10 ft	Exterior	50 plf	1703 plf	0.50	Yes	-	-	24 in.	0	0.29
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	925 plf	2010 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	2391 plf	0.84	Yes	0.20	0.43	16 in.	0	0.26
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	925 plf	3160 plf	1.5	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	4079 plf	0.77	Yes	0.46	1.01	16 in.	0	0.26
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	925 plf	4310 plf	2.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Exterior	50 plf	5244 plf	0.82	Yes	0.73	1.36	16 in.	0	0.26

Corridor

REVIEWED	Roof Bearing						Wood Stud Properties									Rim Board Unity Checks			Truss	Additional	Truss Bearing
Level	DL	LL	TL	TW	Adt'l Ld	TL	Number	Size	Spacing	Grade	Lu (in.)	Height	Wall Condition	Lateral Force	P allow.	Unity	Has Rim Board	Uniform Load	Concentrated Load	Spacing	Squash Blocks	Check
Roof (Flat)	25 psf	20 psf	45 psf	19.0 ft	50 plf	905 plf	1.0	2x6	24.0 in.	No. 2	12 in.	10 ft	Interior	10 plf	2913 plf	0.31	Yes	-	-	24 in.	0	0.31
Floor (Private)	35 psf	40 psf	75 psf	4.5 ft	100 plf	1343 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Interior	10 plf	2913 plf	0.46	Yes	0.21	0.45	24 in.	0	0.15
Floor (Private)	35 psf	40 psf	75 psf	4.5 ft	100 plf	1780 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Interior	10 plf	2913 plf	0.61	Yes	0.31	0.67	24 in.	0	0.15
Floor (Private)	35 psf	40 psf	75 psf	4.5 ft	100 plf	2218 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Interior	10 plf	2913 plf	0.76	Yes	0.41	0.89	24 in.	0	0.15
Floor (Private)	35 psf	40 psf	75 psf	4.5 ft	100 plf	2655 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Interior	10 plf	2913 plf	0.91	Yes	0.51	1.11	24 in.	0	0.15

REVIEWED	Bldg B - Storage Wall						Wood Stud Properties									Rim Board Unity Checks			Truss	Additional	Truss Bearing
Level	DL	LL	TL	TW	Adt'l Ld	TL	Number	Size	Spacing	Grade	Lu (in.)	Height	Wall Condition	Lateral Force	P allow.	Unity	Has Rim Board	Uniform Load	Concentrated Load	Spacing	Squash Blocks	Check
Roof (Flat)	25 psf	20 psf	45 psf	19.0 ft	50 plf	905 plf	1.0	2x6	24.0 in.	No. 2	12 in.	10 ft	Interior	10 plf	2913 plf	0.31	Yes	-	-	24 in.	0	0.31
Storage	35 psf	125 psf	160 psf	6.0 ft	363 plf	2228 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Interior	10 plf	2913 plf	0.76	Yes	0.21	0.45	24 in.	0	0.45
Storage	35 psf	125 psf	160 psf	6.0 ft	363 plf	3550 plf	1.5	2x6	24.0 in.	No. 2	12 in.	9 ft	Interior	10 plf	4079 plf	0.87	Yes	0.51	1.12	24 in.	0	0.45
Storage	35 psf	125 psf	160 psf	6.0 ft	363 plf	4873 plf	2.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Interior	10 plf	5244 plf	0.93	Yes	0.82	1.52	24 in.	0	0.45

Stair

REVIEWED	Stair Wall						Wood Stud Properties										Rim Board Unity Checks			Truss Spacing	Additional Squash Blocks	Truss Bearing Check
Level	DL	LL	TL	TW	Adt'l Ld	TL	Number	Size	Spacing	Grade	Lu (in.)	Height	Wall Condition	Lateral Force	P allow.	Unity	Has Rim Board	Uniform Load	Concentrated Load			
Roof (Flat)	25 psf	20 psf	45 psf	5.0 ft	50 plf	275 plf	1.0	2x6	16.0 in.	No. 2	12 in.	10 ft	Interior	8 plf	4370 plf	0.06	Yes	-	-	24 in.	0	0.09
Floor (Public)	35 psf	100 psf	135 psf	3.5 ft	100 plf	848 plf	1.0	2x6	16.0 in.	No. 2	12 in.	9 ft	Interior	8 plf	4370 plf	0.19	Yes	0.06	0.09	16 in.	0	0.13
Floor (Public)	35 psf	100 psf	135 psf	3.5 ft	100 plf	1420 plf	1.0	2x6	16.0 in.	No. 2	12 in.	9 ft	Interior	8 plf	4370 plf	0.32	Yes	0.20	0.28	16 in.	0	0.13
Floor (Public)	35 psf	100 psf	135 psf	3.5 ft	100 plf	1993 plf	1.0	2x6	16.0 in.	No. 2	12 in.	9 ft	Interior	8 plf	4370 plf	0.46	Yes	0.33	0.47	16 in.	0	0.13
Floor (Public)	35 psf	100 psf	135 psf	3.5 ft	100 plf	2565 plf	1.0	2x6	16.0 in.	No. 2	12 in.	9 ft	Interior	8 plf	4370 plf	0.59	Yes	0.46	0.67	16 in.	0	0.13

Unit Partition

REVIEWED	Max Trib for Single 2x6 @ 16"oc						Wood Stud Properties										Rim Board Unity Checks			Truss Spacing	Additional Squash Blocks	Truss Bearing Check
Level	DL	LL	TL	TW	Adt'l Ld	TL	Number	Size	Spacing	Grade	Lu (in.)	Height	Wall Condition	Lateral Force	P allow.	Unity	Has Rim Board	Uniform Load	Concentrated Load			
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	50 plf	140 plf	1.0	2x6	24.0 in.	No. 2	12 in.	10 ft	Interior	10 plf	2913 plf	0.05	No	-	-	24 in.	0	0.05
Floor (Private)	35 psf	40 psf	75 psf	15.0 ft	100 plf	1365 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Interior	10 plf	2913 plf	0.47	No	0.03	0.07	16 in.	0	0.31
Floor (Private)	35 psf	40 psf	75 psf	15.0 ft	100 plf	2590 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Interior	10 plf	2913 plf	0.89	No	0.31	0.68	16 in.	0	0.58
Floor (Private)	35 psf	40 psf	75 psf	15.0 ft	100 plf	3815 plf	1.5	2x6	24.0 in.	No. 2	12 in.	9 ft	Interior	10 plf	4079 plf	0.94	No	0.60	1.30	16 in.	0	0.86
Floor (Private)	35 psf	40 psf	75 psf	15.0 ft	100 plf	5040 plf	2.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Interior	10 plf	5244 plf	0.96	No	0.88	1.64	16 in.	0	1.13

REVIEWED	Unit B9						Wood Stud Properties										Rim Board Unity Checks			Truss Spacing	Additional Squash Blocks	Truss Bearing Check
Level	DL	LL	TL	TW	Adt'l Ld	TL	Number	Size	Spacing	Grade	Lu (in.)	Height	Wall Condition	Lateral Force	P allow.	Unity	Has Rim Board	Uniform Load	Concentrated Load			
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	50 plf	140 plf	1.0	2x6	24.0 in.	No. 2	12 in.	10 ft	Interior	10 plf	2913 plf	0.05	No	-	-	24 in.	0	0.05
Floor (Private)	35 psf	40 psf	75 psf	18.0 ft	100 plf	1590 plf	1.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Interior	10 plf	2913 plf	0.55	No	0.03	0.07	16 in.	0	0.36
Floor (Private)	35 psf	40 psf	75 psf	18.0 ft	100 plf	3040 plf	1.5	2x6	24.0 in.	No. 2	12 in.	9 ft	Interior	10 plf	4079 plf	0.75	No	0.37	0.80	16 in.	0	0.68
Floor (Private)	35 psf	40 psf	75 psf	18.0 ft	100 plf	4490 plf	2.0	2x6	24.0 in.	No. 2	12 in.	9 ft	Interior	10 plf	5244 plf	0.86	No	0.70	1.30	16 in.	0	1.01
Floor (Private)	35 psf	40 psf	75 psf	18.0 ft	100 plf	5940 plf	2.5	2x6	24.0 in.	No. 2	12 in.	9 ft	Interior	10 plf	6409 plf	0.93	No	1.03	1.69	16 in.	0	1.34

Unit Demising

REVIEWED	Floor Bearing - Max Trib for Wall Type						Wood Stud Properties										Rim Board Unity Checks			Truss Spacing	Additional Squash Blocks	Truss Bearing Check
Level	DL	LL	TL	TW	Adt'l Ld	TL	Number	Size	Spacing	Grade	Lu (in.)	Height	Wall Condition	Lateral Force	P allow.	Unity	Has Rim Board	Uniform Load	Concentrated Load			
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	50 plf	140 plf	1.0	2x4	24.0 in.	No. 2	60 in.	10 ft	Interior	10 plf	570 plf	0.25	No	-	-	24 in.	0	0.05
Floor (Private)	35 psf	40 psf	75 psf	9.0 ft	100 plf	915 plf	1.5	2x4	24.0 in.	No. 2	60 in.	9 ft	Interior	10 plf	1458 plf	0.63	No	0.03	0.07	16 in.	0	0.21
Floor (Private)	35 psf	40 psf	75 psf	9.0 ft	100 plf	1690 plf	2.0	2x4	24.0 in.	No. 2	60 in.	9 ft	Interior	10 plf	2037 plf	0.83	No	0.21	0.39	16 in.	0	0.38
Floor (Private)	35 psf	40 psf	75 psf	9.0 ft	100 plf	2465 plf	2.5	2x4	24.0 in.	No. 2	60 in.	9 ft	Interior	10 plf	2622 plf	0.94	No	0.39	0.63	16 in.	0	0.55
Floor (Private)	35 psf	40 psf	75 psf	9.0 ft	100 plf	3240 plf	3.0	2x4	24.0 in.	No. 2	60 in.	9 ft	Interior	10 plf	3212 plf	1.01	No	0.57	0.82	16 in.	0	0.73

REVIEWED	Roof Only						Wood Stud Properties										Rim Board Unity Checks			Truss Spacing	Additional Squash Blocks	Truss Bearing Check
Level	DL	LL	TL	TW	Adt'l Ld	TL	Number	Size	Spacing	Grade	Lu (in.)	Height	Wall Condition	Lateral Force	P allow.	Unity	Has Rim Board	Uniform Load	Concentrated Load			
Roof (Flat)	25 psf	20 psf	45 psf	18.5 ft	50 plf	883 plf	1.5	2x4	24.0 in.	No. 2	60 in.	10 ft	Interior	10 plf	1139 plf	0.77	No	-	-	24 in.	0	0.30
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	1058 plf	1.5	2x4	24.0 in.	No. 2	60 in.	9 ft	Interior	10 plf	1458 plf	0.73	No	0.20	0.38	16 in.	0	0.24
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	1233 plf	1.5	2x4	24.0 in.	No. 2	60 in.	9 ft	Interior	10 plf	1458 plf	0.85	No	0.24	0.45	16 in.	0	0.28
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	1408 plf	1.5	2x4	24.0 in.	No. 2	60 in.	9 ft	Interior	10 plf	1458 plf	0.97	No	0.28	0.53	16 in.	0	0.32
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	1583 plf	2.0	2x4	24.0 in.	No. 2	60 in.	9 ft	Interior	10 plf	2037 plf	0.78	No	0.32	0.60	16 in.	0	0.36

Evren
Header and Jamb Design

Bob D. Campbell & Co.
8/15/2024

Level Loadings

Type	DL	LL	TL
Balcony (Private)	15 psf	60 psf	75 psf
Balcony (Public)	55 psf	100 psf	155 psf
Floor (Private)	35 psf	40 psf	75 psf
Floor (Public)	35 psf	100 psf	135 psf
Roof (Flat)	25 psf	20 psf	45 psf
Roof (Sloped)	25 psf	20 psf	45 psf
Roof (MECH)	25 psf	45 psf	70 psf
Storage	35 psf	125 psf	160 psf

Header Grade	Fb
Stud	700
No. 2	900
No. 1	1000
LVL	2600
PSL	2900

Jamb Grade	Fc
Stud	850
No. 2	1350
No. 1	1500
Sel. Struct.	1700

Notes:
-Refer to ' Wood Header and Jamb Design Key' for member locations
- *Refer to Forte Calculations for beam/header design on where specified

TL Deflection Criteria L/ 360

Interior WL 5 psf
Exterior WL 20 psf

Note: Jack Studs assumed to be braced at 24"oc (weak axis) and L = Stud Height - 1 ft

Exterior

3'-0" - Roof Brg

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	17.0 ft	50 plf	2.0 ft	3 ft	1070 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.41	1109 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	1664 lb	0.52	1	5623 lb	0.30	9 ft	739 lb	60 in.	1	1772 lb	0.42
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	2.0 ft	3 ft	200 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.08	204 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	306 lb	0.10	1	5623 lb	0.05	9 ft	136 lb	60 in.	1	1772 lb	0.08
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	2.0 ft	3 ft	200 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.08	204 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	306 lb	0.10	1	5623 lb	0.05	9 ft	136 lb	60 in.	1	1772 lb	0.08
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	2.0 ft	3 ft	200 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.08	204 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	306 lb	0.10	1	5623 lb	0.05	9 ft	136 lb	60 in.	1	1772 lb	0.08

3'-0" - Floor Brg

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	50 plf	2.0 ft	3 ft	170 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.07	175 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	262 lb	0.08	1	5623 lb	0.05	9 ft	116 lb	60 in.	1	1772 lb	0.07
Floor (Private)	35 psf	40 psf	75 psf	10.5 ft	100 plf	2.0 ft	3 ft	1150 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.44	1190 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	1786 lb	0.56	1	5623 lb	0.32	9 ft	794 lb	60 in.	1	1772 lb	0.45
Floor (Private)	35 psf	40 psf	75 psf	10.5 ft	100 plf	2.0 ft	3 ft	1150 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.44	1190 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	1786 lb	0.56	1	5623 lb	0.32	9 ft	794 lb	60 in.	1	1772 lb	0.45
Floor (Private)	35 psf	40 psf	75 psf	10.5 ft	100 plf	2.0 ft	3 ft	1150 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.44	1190 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	1786 lb	0.56	1	5623 lb	0.32	9 ft	2493 lb	60 in.	2	11602 lb	0.21

6'-0" - Roof Brg

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	17.0 ft	50 plf	2.0 ft	6 ft	815 plf	(3) 2x	2 x 10	No. 2	Span	1171 plf	0.70	885 plf	No. 2	2x6	Exterior	70 plf	16 in. oc	8 ft	2654 lb	0.79	1	5623 lb	0.47	9 ft	590 lb	60 in.	1	1201 lb	0.49
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	2.0 ft	6 ft	175 plf	(3) 2x	2 x 8	No. 2	Span	786 plf	0.22	182 plf	No. 2	2x6	Exterior	70 plf	16 in. oc	8 ft	545 lb	0.17	1	5623 lb	0.10	9 ft	121 lb	60 in.	1	1201 lb	0.10
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	2.0 ft	6 ft	175 plf	(3) 2x	2 x 8	No. 2	Span	786 plf	0.22	182 plf	No. 2	2x6	Exterior	70 plf	16 in. oc	8 ft	545 lb	0.17	1	5623 lb	0.10	9 ft	121 lb	60 in.	1	1201 lb	0.10
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	2.0 ft	6 ft	175 plf	(3) 2x	2 x 8	No. 2	Span	786 plf	0.22	182 plf	No. 2	2x6	Exterior	70 plf	16 in. oc	8 ft	545 lb	0.17	1	5623 lb	0.10	9 ft	121 lb	60 in.	1	1201 lb	0.10

6'-0" - Floor Brg

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	50 plf	2.0 ft	6 ft	140 plf	(3) 2x	2 x 8	No. 2	Span	786 plf	0.18	148 plf	No. 2	2x6	Exterior	70 plf	16 in. oc	8 ft	445 lb	0.14	1	5623 lb	0.08	9 ft	99 lb	60 in.	2	10524 lb	0.01
Floor (Private)	35 psf	40 psf	75 psf	8.0 ft	100 plf	2.0 ft	6 ft	700 plf	(3) 2x	2 x 10	No. 2	Span	1171 plf	0.60	755 plf	No. 2	2x6	Exterior	70 plf	16 in. oc	8 ft	2264 lb	0.68	1	5623 lb	0.40	9 ft	503 lb	60 in.	1	1201 lb	0.42
Floor (Private)	35 psf	40 psf	75 psf	8.0 ft	100 plf	2.0 ft	6 ft	700 plf	(3) 2x	2 x 10	No. 2	Span	1171 plf	0.60	755 plf	No. 2	2x6	Exterior	70 plf	16 in. oc	8 ft	2264 lb	0.68	1	5623 lb	0.40	9 ft	503 lb	60 in.	1	1201 lb	0.42
Floor (Private)	35 psf	40 psf	75 psf	8.0 ft	100 plf	2.0 ft	6 ft	700 plf	(3) 2x	2 x 10	No. 2	Span	1171 plf	0.60	755 plf	No. 2	2x6	Exterior	70 plf	16 in. oc	8 ft	2264 lb	0.68	1	5623 lb	0.40	9 ft	3221 lb	60 in.	2	10524 lb	0.31

9'-0" - Roof Brg

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	15.0 ft	50 plf	2.0 ft	9 ft	800 plf	3 LVL	9.25	LVL	Span	1337 plf	0.60	834 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	3752 lb	1.16	1	5623 lb	0.67	9 ft	556 lb	60 in.	1	971 lb	0.57
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	2.0 ft	9 ft	183 plf	(3) 2x	2 x 8	No. 2	Span	349 plf	0.53	187 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	842 lb	0.27	1	5623 lb	0.15	9 ft	125 lb	60 in.	1	971 lb	0.13
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	2.0 ft	9 ft	183 plf	(3) 2x	2 x 8	No. 2	Span	349 plf	0.53	187 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	842 lb	0.27	1	5623 lb	0.15	9 ft	619 lb	60 in.	1	971 lb	0.64
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	2.0 ft	9 ft	183 plf	(3) 2x	2 x 8	No. 2	Span	349 plf	0.53	187 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	842 lb	0.27	1	5623 lb	0.15	9 ft	1586 lb	60 in.	2	9870 lb	0.16

9'-0" - Roof + Floor Brg

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	15.0 ft	50 plf	2.0 ft	9 ft	800 plf	3 LVL	9.25	LVL	Span	1337 plf	0.60	834 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	3752 lb	1.16	1	5623 lb	0.67	9 ft	556 lb	60 in.	2	9870 lb	0.06
Floor (Private)	35 psf	40 psf	75 psf	6.5 ft	100 plf	2.0 ft	9 ft	642 plf	3 LVL	9.25	LVL	Span	1337 plf	0.48	666 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	2998 lb	0.93	1	5623 lb	0.53	9 ft	2127 lb	60 in.	2	9870 lb	0.22
Floor (Private)	35 psf	40 psf	75 psf	6.5 ft	100 plf	2.0 ft	9 ft	642 plf	3 LVL	9.25	LVL	Span	1337 plf	0.48	666 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	2998 lb	0.93	1	5623 lb	0.53	9 ft	5569 lb	60 in.	2	9870 lb	0.56
Floor (Private)	35 psf	40 psf	75 psf	6.5 ft	100 plf	2.0 ft	9 ft	642 plf	3 LVL	9.25	LVL	Span	1337 plf	0.48	666 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	2998 lb	0.93	1	5623 lb	0.53	9 ft	9011 lb	60 in.	2	9870 lb	0.91

9'-0" - Non-Roof + Non-Floor

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	50 plf	2.0 ft	9 ft	150 plf	(3) 2x	2 x 8	No. 2	Span	349 plf	0.43	155 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	695 lb	0.22	1	5623 lb	0.12	9 ft	103 lb	60 in.	1	971 lb	0.11
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	2.0 ft	9 ft	183 plf	(3) 2x	2 x 8	No. 2	Span	349 plf	0.53	187 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	842 lb	0.27	1	5623 lb	0.15	9 ft	125 lb	60 in.	1	971 lb	0.13
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	2.0 ft	9 ft	183 plf	(3) 2x	2 x 8	No. 2	Span	349 plf	0.53	187 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	842 lb	0.27	1	5623 lb	0.15	9 ft	125 lb	60 in.	1	971 lb	0.13
Floor (Private)	35 psf	40 psf	75 psf	1.0 ft	100 plf	2.0 ft	9 ft	183 plf	(3) 2x	2 x 8	No. 2	Span	349 plf	0.53	187 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	842 lb	0.27	1	5623 lb	0.15	9 ft	125 lb	60 in.	2	9870 lb	0.01

Balcony

3'-0" - Floor Brg

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	50 plf	2.0 ft	3 ft	170 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.07	175 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	262 lb	0.08	1	5623 lb	0.05	9 ft	116 lb	60 in.	1	1772 lb	0.07
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	550 plf	2.0 ft	3 ft	850 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.33	862 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	1292 lb	0.41	1	5623 lb	0.23	9 ft	574 lb	60 in.	1	1772 lb	0.32
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	550 plf	2.0 ft	3 ft	850 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.33	862 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	1292 lb	0.41	1	5623 lb	0.23	9 ft	574 lb	60 in.	1	1772 lb	0.32
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	550 plf	2.0 ft	3 ft	850 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.33	862 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	1292 lb	0.41	1	5623 lb	0.23	9 ft	574 lb	60 in.	1	1772 lb	0.32

3'-0" - Non-Roof + Non-Floor

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	50 plf	2.0 ft	3 ft	170 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.07	175 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	262 lb	0.08	1	5623 lb	0.05	9 ft	116 lb	60 in.	1	1772 lb	0.07
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	175 plf	2.0 ft	3 ft	475 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.18	487 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	730 lb	0.23	1	5623 lb	0.13	9 ft	324 lb	60 in.	1	1772 lb	0.18
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	175 plf	2.0 ft	3 ft	475 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.18	487 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	730 lb	0.23	1	5623 lb	0.13	9 ft	324 lb	60 in.	1	1772 lb	0.18
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	175 plf	2.0 ft	3 ft	475 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.18	487 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	730 lb	0.23	1	5623 lb	0.13	9 ft	324 lb	60 in.	1	1772 lb	0.18

3'-0" - Floor Brg - Unit B6

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	10.0 ft	50 plf	2.0 ft	3 ft	650 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.25	673 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	1010 lb	0.31	1	5623 lb	0.18	9 ft	449 lb	60 in.	1	1772 lb	0.25
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	850 plf	2.0 ft	3 ft	1150 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.44	1162 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	1742 lb	0.56	1	5623 lb	0.31	9 ft	774 lb	60 in.	1	1772 lb	0.44
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	850 plf	2.0 ft	3 ft	1150 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.44	1162 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	1742 lb	0.56	1	5623 lb	0.31	9 ft	869 lb	60 in.	1	1772 lb	0.49
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	850 plf	2.0 ft	3 ft	1150 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.44	1162 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	1742 lb	0.56	1	5623 lb	0.31	9 ft	3386 lb	60 in.	2	11602 lb	0.29

6'-0" - Non-Roof + Non-Floor

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	50 plf	2.0 ft	6 ft	140 plf	(3) 2x	2 x 8	No. 2	Span	786 plf	0.18	148 plf	No. 2	2x6	Exterior	70 plf	16 in. oc	8 ft	445 lb	0.14	1	5623 lb	0.08	9 ft	99 lb	60 in.	1	1201 lb	0.08
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	175 plf	2.0 ft	6 ft	400 plf	(3) 2x	2 x 8	No. 2	Span	786 plf	0.51	420 plf	No. 2	2x6	Exterior	70 plf	16 in. oc	8 ft	1261 lb	0.39	1	5623 lb	0.22	9 ft	280 lb	60 in.	1	1201 lb	0.23
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	175 plf	2.0 ft	6 ft	400 plf	(3) 2x	2 x 8	No. 2	Span	786 plf	0.51	420 plf	No. 2	2x6	Exterior	70 plf	16 in. oc	8 ft	1261 lb	0.39	1	5623 lb	0.22	9 ft	280 lb	60 in.	1	1201 lb	0.23
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	175 plf	2.0 ft	6 ft	400 plf	(3) 2x	2 x 8	No. 2	Span	786 plf	0.51	420 plf	No. 2	2x6	Exterior	70 plf	16 in. oc	8 ft	1261 lb	0.39	1	5623 lb	0.22	9 ft	280 lb	60 in.	1	1201 lb	0.23

6'-0" - Floor Brg - Unit B3a/B9

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	50 plf	2.0 ft	6 ft	140 plf	(3) 2x	2 x 8	No. 2	Span	786 plf	0.18	148 plf	No. 2	2x6	Exterior	70 plf	16 in. oc	8 ft	445 lb	0.14	1	5623 lb	0.08	9 ft	99 lb	60 in.	1	1201 lb	0.08
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	963 plf	2.0 ft	6 ft	1188 plf	(3) 2x	2 x 12	No. 2	Span	1574 plf	0.75	1208 plf	No. 2	2x6	Exterior	70 plf	16 in. oc	8 ft	3624 lb	1.15	1	5623 lb	0.64	9 ft	805 lb	60 in.	1	1201 lb	0.67
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	963 plf	2.0 ft	6 ft	1188 plf	(3) 2x	2 x 12	No. 2	Span	1574 plf	0.75	1208 plf	No. 2	2x6	Exterior	70 plf	16 in. oc	8 ft	3624 lb	1.15	1	5623 lb	0.64	9 ft	3779 lb	60 in.	2	10524 lb	0.36
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	963 plf	2.0 ft	6 ft	1188 plf	(3) 2x	2 x 12	No. 2	Span	1574 plf	0.75	1208 plf	No. 2	2x6	Exterior	70 plf	16 in. oc	8 ft	3624 lb	1.15	1	5623 lb	0.64	9 ft	8208 lb	60 in.	2	10524 lb	0.78

9'-0" - Roof Brg + Flr

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	15.0 ft	50 plf	2.0 ft	9 ft	800 plf	3 LVL	9.25	LVL	Span	1337 plf	0.60	834 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	3752 lb	1.16	1	5623 lb	0.67	9 ft	556 lb	60 in.	2	9870 lb	0.06
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	625 plf	2.0 ft	9 ft	875 plf	3 LVL	9.25	LVL	Span	1337 plf	0.65	886 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	3988 lb	1.27	1	5623 lb	0.71	9 ft	3265 lb	60 in.	2	9870 lb	0.33
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	625 plf	2.0 ft	9 ft	875 plf	3 LVL	9.25	LVL	Span	1337 plf	0.65	886 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	3988 lb	1.27	1	5623 lb	0.71	9 ft	7844 lb	60 in.	2	9870 lb	0.79
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	625 plf	2.0 ft	9 ft	875 plf	3 LVL	9.25	LVL	Span	1337 plf	0.65	886 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	3988 lb	1.27	1	5623 lb	0.71	9 ft	12423 lb	60 in.	3	16758 lb	0.74

9'-0" - Roof + Floor Brg

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	18.0 ft	50 plf	2.0 ft	9 ft	950 plf	3 LVL	9.25	LVL	Span	1337 plf	0.71	991 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	4458 lb	1.38	1	5623 lb	0.79	9 ft	660 lb	60 in.	2	9870 lb	0.07
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	175 plf	2.0 ft	9 ft	425 plf	(3) 2x	2 x 10	No. 2	Span	520 plf	0.82	436 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	1963 lb	0.62	1	5623 lb	0.35	9 ft	1750 lb	60 in.	2	9870 lb	0.18
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	175 plf	2.0 ft	9 ft	425 plf	(3) 2x	2 x 10	No. 2	Span	520 plf	0.82	436 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	1963 lb	0.62	1	5623 lb	0.35	9 ft	4004 lb	60 in.	2	9870 lb	0.41
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	175 plf	2.0 ft	9 ft	425 plf	(3) 2x	2 x 10	No. 2	Span	520 plf	0.82	436 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	1963 lb	0.62	1	5623 lb	0.35	9 ft	6258 lb	60 in.	2	9870 lb	0.63

9'-0" - Flr Brg

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	300 plf	2.0 ft	9 ft	400 plf	(3) 2x	2 x 10	No. 2	Span	520 plf	0.77	405 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	1820 lb	0.58	1	5623 lb	0.32	9 ft	270 lb	60 in.	1	971 lb	0.28
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	925 plf	2.0 ft	9 ft	1175 plf	3 LVL	11.25	LVL	Span	2363 plf	0.50	1186 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	5338 lb	1.70	2	11602 lb	0.46	9 ft	791 lb	60 in.	2	9870 lb	0.08
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	925 plf	2.0 ft	9 ft	1175 plf	3 LVL	11.25	LVL	Span	2363 plf	0.50	1186 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	5338 lb	1.70	2	11602 lb	0.46	9 ft	2747 lb	60 in.	2	9870 lb	0.28
Balcony (Private)	15 psf	60 psf	75 psf	3.0 ft	925 plf	2.0 ft	9 ft	1175 plf	3 LVL	11.25	LVL	Span	2363 plf	0.50	1186 plf	No. 2	2x6	Exterior	80 plf	16 in. oc	8 ft	5338 lb	1.70	2	11602 lb	0.46	9 ft	8876 lb	60 in.	2	9870 lb	0.90

Corridor

5'-4" - Inset Unit Entry - Typical

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	15.0 ft	50 plf	2.0 ft	~~6 ft~~	~~725 plf~~	~~1 LVL~~	~~18~~	~~LVL~~	~~Span~~	~~1995 plf~~	~~0.36~~	786 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	0.70	0	0 lb	0.00	9 ft	2883 lb	60 in.	2	11602 lb	0.25
Floor (Private)	35 psf	40 psf	75 psf	4.0 ft	100 plf	2.0 ft	~~6 ft~~	~~400 plf~~	~~1 LVL~~	~~18~~	~~LVL~~	~~Span~~	~~1995 plf~~	~~0.20~~	427 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	0.39	0	0 lb	0.00	9 ft	4450 lb	60 in.	2	11602 lb	0.38
Floor (Private)	35 psf	40 psf	75 psf	4.0 ft	100 plf	2.0 ft	~~6 ft~~	~~400 plf~~	~~1 LVL~~	~~18~~	~~LVL~~	~~Span~~	~~1995 plf~~	~~0.20~~	427 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	0.39	0	0 lb	0.00	9 ft	6017 lb	60 in.	2	11602 lb	0.52
Floor (Private)	35 psf	40 psf	75 psf	4.0 ft	100 plf	2.0 ft	~~6 ft~~	~~400 plf~~	~~1 LVL~~	~~18~~	~~LVL~~	~~Span~~	~~1995 plf~~	~~0.20~~	427 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	0.39	0	0 lb	0.00	9 ft	7583 lb	60 in.	2	11602 lb	0.65
							Girder Truss Designed by Others																									

5'-4" - Inset Unit Entry - B3a

							Header								Jamb Size						Jack						King					

Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	18.0 ft	50 plf	2.0 ft	~~6 ft~~	~~860 plf~~	~~1 LVL~~	~~18~~	~~LVL~~	~~Span~~	~~1995 plf~~	~~0.43~~	934 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	0.83	0	0 lb	0.00	9 ft	3423 lb	60 in.	2	11602 lb	0.30
Floor (Private)	35 psf	40 psf	75 psf	12.0 ft	0 plf	2.0 ft	~~6 ft~~	~~900 plf~~	~~1 LVL~~	~~18~~	~~LVL~~	~~Span~~	~~1995 plf~~	~~0.45~~	982 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	0.87	0	0 lb	0.00	9 ft	7023 lb	60 in.	2	11602 lb	0.61
Floor (Private)	35 psf	40 psf	75 psf	12.0 ft	0 plf	2.0 ft	~~6 ft~~	~~900 plf~~	~~1 LVL~~	~~18~~	~~LVL~~	~~Span~~	~~1995 plf~~	~~0.45~~	982 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	0.87	0	0 lb	0.00	9 ft	10623 lb	60 in.	3	16758 lb	0.63
Floor (Private)	35 psf	40 psf	75 psf	12.0 ft	0 plf	2.0 ft	~~6 ft~~	~~900 plf~~	~~1 LVL~~	~~18~~	~~LVL~~	~~Span~~	~~1995 plf~~	~~0.45~~	982 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	0.87	0	0 lb	0.00	9 ft	14223 lb	60 in.	3	16758 lb	0.85
							Girder Truss Designed by Others																									

3'-0" - Roof

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	18.0 ft	50 plf	2.0 ft	3 ft	1130 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.43	1172 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	1757 lb	0.55	1	5623 lb	0.31	9 ft	781 lb	60 in.	1	2257 lb	0.35
Floor (Private)	35 psf	40 psf	75 psf	4.0 ft	100 plf	2.0 ft	3 ft	500 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.19	515 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	773 lb	0.24	1	5623 lb	0.14	9 ft	344 lb	60 in.	1	2257 lb	0.15
Floor (Private)	35 psf	40 psf	75 psf	4.0 ft	100 plf	2.0 ft	3 ft	500 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.19	515 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	773 lb	0.24	1	5623 lb	0.14	9 ft	344 lb	60 in.	1	2257 lb	0.15
Floor (Private)	35 psf	40 psf	75 psf	4.0 ft	100 plf	2.0 ft	3 ft	500 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.19	515 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	773 lb	0.24	1	5623 lb	0.14	9 ft	344 lb	60 in.	1	2257 lb	0.15

3'-0" - Storage - Bldg B

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	4.5 ft	50 plf	2.0 ft	3 ft	320 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.12	330 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	496 lb	0.15	1	5623 lb	0.09	9 ft	220 lb	60 in.	1	2257 lb	0.10
Storage	35 psf	125 psf	160 psf	6.0 ft	310 plf	2.0 ft	3 ft	1590 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.61	1639 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	2459 lb	0.77	1	5623 lb	0.44	9 ft	1093 lb	60 in.	1	2257 lb	0.48
Storage	35 psf	125 psf	160 psf	6.0 ft	310 plf	2.0 ft	3 ft	1590 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.61	1639 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	2459 lb	0.77	1	5623 lb	0.44	9 ft	2197 lb	60 in.	1	2257 lb	0.97
Storage	35 psf	125 psf	160 psf	6.0 ft	310 plf	2.0 ft	3 ft	1590 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.61	1639 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	2459 lb	0.77	1	5623 lb	0.44	9 ft	5748 lb	60 in.	2	11602 lb	0.50

6'-0" - Bldg B

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	4.5 ft	50 plf	2.0 ft	3 ft	320 plf	(2) 2x	2 x 8	No. 2	Span	1740 plf	0.18	330 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	0 lb	0.15	0	0 lb	0.00	9 ft	716 lb	60 in.	1	2257 lb	0.32
Floor (Private)	35 psf	40 psf	75 psf	4.5 ft	100 plf	2.0 ft	3 ft	550 plf	(2) 2x	2 x 10	No. 2	Span	2220 plf	0.25	567 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	0 lb	0.27	0	0 lb	0.00	9 ft	1945 lb	60 in.	2	11602 lb	0.17
Floor (Private)	35 psf	40 psf	75 psf	4.0 ft	100 plf	2.0 ft	3 ft	500 plf	(2) 2x	2 x 10	No. 2	Span	2220 plf	0.23	515 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	0 lb	0.24	0	0 lb	0.00	9 ft	3062 lb	60 in.	2	11602 lb	0.26
Floor (Private)	35 psf	40 psf	75 psf	4.0 ft	100 plf	2.0 ft	3 ft	500 plf	(2) 2x	2 x 10	No. 2	Span	2220 plf	0.23	515 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	0 lb	0.24	0	0 lb	0.00	9 ft	4178 lb	60 in.	2	11602 lb	0.36

A3 - 5'3" - Supporting Upset Beam - Unit Above Garage

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	18.0 ft	0 plf	2.0 ft	5 ft	972 plf	(3) 2x	2 x 8	No. 2	Span	1132 plf	0.86	1023 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	0.78	0	0 lb	0.00	9 ft	3240 lb	60 in.	3	16758 lb	0.19
Floor (Private)	35 psf	40 psf	75 psf	4.0 ft	0 plf	2.0 ft	5 ft	360 plf	(3) 2x	2 x 8	No. 2	Span	1132 plf	0.32	379 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	0.29	0	0 lb	0.00	9 ft	8403 lb	60 in.	2	11602 lb	0.72
Floor (Private)	35 psf	40 psf	75 psf	4.0 ft	0 plf	2.0 ft	5 ft	360 plf	(3) 2x	2 x 8	No. 2	Span	1132 plf	0.32	379 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	0.29	0	0 lb	0.00	9 ft	13565 lb	60 in.	3	16758 lb	0.81
Floor (Private)	35 psf	40 psf	75 psf	4.0 ft	0 plf	2.0 ft	5 ft	360 plf	(3) 2x	2 x 8	No. 2	Span	1132 plf	0.32	379 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	0.29	0	0 lb	0.00	9 ft	18728 lb	60 in.	4	21914 lb	0.85
							*Refer to Frote Calcs for Beam Design																									

B3a/B9 - 5'3" - Supporting Upset Beam - Unit Above Garage

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	17.0 ft	0 plf	2.0 ft	5 ft	918 plf	(3) 2x	2 x 8	No. 2	Span	1132 plf	0.81	966 plf	No. 2	2x4	Interior	20 plf	16 in. oc	8 ft	0 lb	1.16	0	0 lb	0.00	9 ft	3060 lb	60 in.	3	5692 lb	0.54
Floor (Private)	35 psf	40 psf	75 psf	4.0 ft	0 plf	2.0 ft	5 ft	360 plf	(3) 2x	2 x 8	No. 2	Span	1132 plf	0.32	379 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	0.29	0	0 lb	0.00	9 ft	12214 lb	60 in.	3	16758 lb	0.73
Floor (Private)	35 psf	40 psf	75 psf	4.0 ft	0 plf	2.0 ft	5 ft	360 plf	(3) 2x	2 x 8	No. 2	Span	1132 plf	0.32	379 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	0.29	0	0 lb	0.00	9 ft	21367 lb	60 in.	5	27070 lb	0.79
							*Refer to Frote Calcs for Beam Design																									

Stair/Elevator

3'-0" - Exterior

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	18.0 ft	50 plf	2.0 ft	3 ft	1070 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.41	1109 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	1664 lb	0.52	1	5623 lb	0.30	9 ft	739 lb	60 in.	1	1772 lb	0.42
Floor (Public)	35 psf	100 psf	135 psf	3.0 ft	100 plf	2.0 ft	3 ft	640 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.25	661 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	991 lb	0.31	1	5623 lb	0.18	9 ft	441 lb	60 in.	1	1772 lb	0.25
Floor (Public)	35 psf	100 psf	135 psf	3.0 ft	100 plf	2.0 ft	3 ft	640 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.25	661 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	991 lb	0.31	1	5623 lb	0.18	9 ft	441 lb	60 in.	1	1772 lb	0.25
Floor (Public)	35 psf	100 psf	135 psf	3.0 ft	100 plf	2.0 ft	3 ft	640 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.25	661 plf	No. 2	2x6	Exterior	40 plf	16 in. oc	8 ft	991 lb	0.31	1	5623 lb	0.18	9 ft	1076 lb	60 in.	2	11602 lb	0.09

3'-0" - Stair Corridor

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	18.0 ft	50 plf	2.0 ft	3 ft	1130 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.43	1172 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	1757 lb	0.55	1	5623 lb	0.31	9 ft	781 lb	60 in.	1	2257 lb	0.35
Floor (Public)	35 psf	100 psf	135 psf	4.0 ft	100 plf	2.0 ft	3 ft	820 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.31	848 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	1272 lb	0.40	1	5623 lb	0.23	9 ft	565 lb	60 in.	1	2257 lb	0.25
Floor (Public)	35 psf	100 psf	135 psf	4.0 ft	100 plf	2.0 ft	3 ft	820 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.31	848 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	1272 lb	0.40	1	5623 lb	0.23	9 ft	589 lb	60 in.	1	2257 lb	0.26
Floor (Public)	35 psf	100 psf	135 psf	4.0 ft	100 plf	2.0 ft	3 ft	820 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.31	848 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	1272 lb	0.40	1	5623 lb	0.23	9 ft	2426 lb	60 in.	2	11602 lb	0.21

3'-0" - Elevator

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	8.0 ft	50 plf	2.0 ft	3 ft	530 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.20	548 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	823 lb	0.26	1	5623 lb	0.15	9 ft	366 lb	60 in.	1	2257 lb	0.16
Floor (Public)	35 psf	100 psf	135 psf	4.0 ft	100 plf	2.0 ft	3 ft	820 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.31	848 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	1272 lb	0.40	1	5623 lb	0.23	9 ft	565 lb	60 in.	1	2257 lb	0.25
Floor (Public)	35 psf	100 psf	135 psf	4.0 ft	100 plf	2.0 ft	3 ft	820 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.31	848 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	1272 lb	0.40	1	5623 lb	0.23	9 ft	565 lb	60 in.	1	2257 lb	0.25
Floor (Public)	35 psf	100 psf	135 psf	4.0 ft	100 plf	2.0 ft	3 ft	820 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.31	848 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	1272 lb	0.40	1	5623 lb	0.23	9 ft	1076 lb	60 in.	1	2257 lb	0.48

6'-3" - Elevator Lobby

	Header	Jamb Size	Jack	King

Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	8.0 ft	50 plf	2.0 ft	6 ft	410 plf	(3) 2x	2 x 8	No. 2	Span	786 plf	0.52	443 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	1328 lb	0.40	1	5623 lb	0.24	9 ft	295 lb	60 in.	1	2101 lb	0.14
Floor (Public)	25 psf	100 psf	125 psf	4.0 ft	310 plf	2.0 ft	6 ft	810 plf	(3) 2x	2 x 10	No. 2	Span	1171 plf	0.69	855 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	2566 lb	0.78	1	5623 lb	0.46	9 ft	570 lb	60 in.	1	2101 lb	0.27
Floor (Public)	25 psf	100 psf	125 psf	4.0 ft	310 plf	2.0 ft	6 ft	810 plf	(3) 2x	2 x 10	No. 2	Span	1171 plf	0.69	855 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	2566 lb	0.78	1	5623 lb	0.46	9 ft	2274 lb	60 in.	2	11602 lb	0.20
Floor (Public)	25 psf	100 psf	125 psf	4.0 ft	310 plf	2.0 ft	6 ft	810 plf	(3) 2x	2 x 10	No. 2	Span	1171 plf	0.69	855 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	2566 lb	0.78	1	5623 lb	0.46	9 ft	5411 lb	60 in.	2	11602 lb	0.47

Unit

Typical - 3'-0" - 15' Trib

Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
							Header								Jamb Size						Jack						King						
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	50 plf	2.0 ft	3 ft	170 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.07	175 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	262 lb	0.08	1	5623 lb	0.05	9 ft	116 lb	60 in.	1	2257 lb	0.05
Floor (Private)	35 psf	40 psf	75 psf	15.0 ft	100 plf	2.0 ft	3 ft	1600 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.61	1658 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	2487 lb	0.77	1	5623 lb	0.44	9 ft	1105 lb	60 in.	1	2257 lb	0.49
Floor (Private)	35 psf	40 psf	75 psf	15.0 ft	100 plf	2.0 ft	3 ft	1600 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.61	1658 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	2487 lb	0.77	1	5623 lb	0.44	9 ft	1939 lb	60 in.	1	2257 lb	0.86
Floor (Private)	35 psf	40 psf	75 psf	15.0 ft	100 plf	2.0 ft	3 ft	1600 plf	(3) 2x	2 x 8	No. 2	Span	2610 plf	0.61	1658 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	2487 lb	0.77	1	5623 lb	0.44	9 ft	5531 lb	60 in.	2	11602 lb	0.48

A3/A6 - 11'9" - Upset Beam - Unit Above Garage

Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
							Header								Jamb Size						Jack						King						
Roof (Flat)	25 psf	20 psf	45 psf	0.0 ft	0 plf	2.0 ft	12 ft	0 plf	(3) 2x	2 x 8	No. 2	Span	196 plf	0.00	0 plf	No. 2	2x6	Interior	30 plf	16 in. oc	8 ft	0 lb	0.00	0	0 lb	0.00	9 ft	0 lb	60 in.	1	1940 lb	0.00
Floor (Private)	35 psf	40 psf	75 psf	13.0 ft	0 plf	2.0 ft	12 ft	975 plf	3 LVL	18	LVL	Span	2993 plf	0.33	1024 plf	No. 2	2x6	Interior	30 plf	16 in. oc	8 ft	0 lb	1.88	0	0 lb	0.00	9 ft	6530 lb	60 in.	2	11602 lb	0.56
Floor (Private)	35 psf	40 psf	75 psf	13.0 ft	0 plf	2.0 ft	12 ft	975 plf	3 LVL	18	LVL	Span	2993 plf	0.33	1024 plf	No. 2	2x6	Interior	30 plf	16 in. oc	8 ft	0 lb	1.88	0	0 lb	0.00	9 ft	13059 lb	60 in.	3	16758 lb	0.78

*Refer to Frote Calcs for Beam Design

A7 - 7'3" - Upset Beam - Unit Above Garage

Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
							Header								Jamb Size						Jack						King						
Roof (Flat)	25 psf	20 psf	45 psf	0.0 ft	0 plf	2.0 ft	8 ft	0 plf	(3) 2x	2 x 8	No. 2	Span	441 plf	0.00	0 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	0.00	0	0 lb	0.00	9 ft	0 lb	60 in.	1	2101 lb	0.00
Floor (Private)	35 psf	40 psf	75 psf	13.0 ft	0 plf	2.0 ft	8 ft	975 plf	3 LVL	18	LVL	Span	4489 plf	0.22	1045 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	1.26	0	0 lb	0.00	9 ft	3848 lb	60 in.	2	11602 lb	0.33
Floor (Private)	35 psf	40 psf	75 psf	13.0 ft	0 plf	2.0 ft	8 ft	975 plf	3 LVL	18	LVL	Span	4489 plf	0.22	1045 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	1.26	0	0 lb	0.00	9 ft	7697 lb	60 in.	3	16758 lb	0.46

*Refer to Frote Calcs for Beam Design

A9/B3a - 4'0" Upset

Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
							Header								Jamb Size						Jack						King						
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	50 plf	2.0 ft	4 ft	140 plf	(3) 2x	2 x 8	No. 2	Span	1770 plf	0.08	151 plf	No. 2	2x6	Open	5 plf	16 in. oc	8 ft	0 lb	0.09	0	0 lb	0.00	9 ft	403 lb	60 in.	2	11602 lb	0.03
Floor (Private)	35 psf	40 psf	75 psf	14.0 ft	100 plf	2.0 ft	4 ft	1150 plf	(3) 2x	2 x 8	No. 2	Span	1770 plf	0.65	1281 plf	No. 2	2x6	Open	5 plf	16 in. oc	8 ft	0 lb	0.74	0	0 lb	0.00	9 ft	3820 lb	60 in.	2	11602 lb	0.33
Floor (Private)	35 psf	40 psf	75 psf	14.0 ft	100 plf	2.0 ft	4 ft	1150 plf	(3) 2x	2 x 8	No. 2	Span	1770 plf	0.65	1281 plf	No. 2	2x6	Open	5 plf	16 in. oc	8 ft	0 lb	0.74	0	0 lb	0.00	9 ft	7237 lb	60 in.	2	11602 lb	0.62
Floor (Private)	35 psf	40 psf	75 psf	14.0 ft	100 plf	2.0 ft	4 ft	1150 plf	(3) 2x	2 x 8	No. 2	Span	1770 plf	0.65	1281 plf	No. 2	2x6	Open	5 plf	16 in. oc	8 ft	0 lb	0.74	0	0 lb	0.00	9 ft	10653 lb	60 in.	3	16758 lb	0.64

B9 - 4'0" Upset

Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
							Header								Jamb Size						Jack						King						
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	50 plf	2.0 ft	4 ft	140 plf	(3) 2x	2 x 8	No. 2	Span	1770 plf	0.08	151 plf	No. 2	2x6	Open	5 plf	16 in. oc	8 ft	0 lb	0.09	0	0 lb	0.00	9 ft	403 lb	60 in.	2	11602 lb	0.03
Floor (Private)	35 psf	40 psf	75 psf	17.5 ft	100 plf	2.0 ft	4 ft	1413 plf	(3) 2x	2 x 8	No. 2	Span	1770 plf	0.80	1577 plf	No. 2	2x6	Open	5 plf	16 in. oc	8 ft	0 lb	0.91	0	0 lb	0.00	9 ft	4608 lb	60 in.	2	11602 lb	0.40
Floor (Private)	35 psf	40 psf	75 psf	17.5 ft	100 plf	2.0 ft	4 ft	1413 plf	(3) 2x	2 x 8	No. 2	Span	1770 plf	0.80	1577 plf	No. 2	2x6	Open	5 plf	16 in. oc	8 ft	0 lb	0.91	0	0 lb	0.00	9 ft	8812 lb	60 in.	2	11602 lb	0.76
Floor (Private)	35 psf	40 psf	75 psf	17.5 ft	100 plf	2.0 ft	4 ft	1413 plf	(3) 2x	2 x 8	No. 2	Span	1770 plf	0.80	1577 plf	No. 2	2x6	Open	5 plf	16 in. oc	8 ft	0 lb	0.91	0	0 lb	0.00	9 ft	13016 lb	60 in.	3	16758 lb	0.78

B6 - 5'6" Upset

Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
							Header								Jamb Size						Jack						King						
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	50 plf	2.0 ft	6 ft	140 plf	(3) 2x	2 x 8	No. 2	Span	786 plf	0.18	148 plf	No. 2	2x6	Open	5 plf	16 in. oc	8 ft	0 lb	0.14	0	0 lb	0.00	9 ft	543 lb	60 in.	2	11602 lb	0.05
Floor (Private)	35 psf	40 psf	75 psf	16.5 ft	100 plf	2.0 ft	6 ft	1338 plf	(3) 2x	2 x 12	No. 2	Span	1574 plf	0.85	1450 plf	No. 2	2x6	Open	5 plf	16 in. oc	8 ft	0 lb	1.29	0	0 lb	0.00	9 ft	5860 lb	60 in.	2	11602 lb	0.51
Floor (Private)	35 psf	40 psf	75 psf	16.5 ft	100 plf	2.0 ft	6 ft	1338 plf	(3) 2x	2 x 12	No. 2	Span	1574 plf	0.85	1450 plf	No. 2	2x6	Open	5 plf	16 in. oc	8 ft	0 lb	1.29	0	0 lb	0.00	9 ft	11177 lb	60 in.	3	16758 lb	0.67
Floor (Private)	35 psf	40 psf	75 psf	16.5 ft	100 plf	2.0 ft	6 ft	1338 plf	(3) 2x	2 x 12	No. 2	Span	1574 plf	0.85	1450 plf	No. 2	2x6	Open	5 plf	16 in. oc	8 ft	0 lb	1.29	0	0 lb	0.00	9 ft	16493 lb	60 in.	3	16758 lb	0.98

B3a/B9 - 15'3" - Upset Beam - Unit Above Garage

Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
							Header								Jamb Size						Jack						King						
Roof (Flat)	25 psf	20 psf	45 psf	0.0 ft	0 plf	2.0 ft	15 ft	0 plf	(3) 2x	2 x 8	No. 2	Span	100 plf	0.00	0 plf	No. 2	2x6	Interior	40 plf	16 in. oc	8 ft	0 lb	0.00	0	0 lb	0.00	9 ft	0 lb	60 in.	1	1772 lb	0.00
Floor (Private)	35 psf	40 psf	75 psf	13.0 ft	0 plf	2.0 ft	15 ft	1040 plf	3 LVL	18	LVL	Span	1982 plf	0.52	1074 plf	No. 2	2x6	Interior	40 plf	16 in. oc	8 ft	0 lb	2.51	0	0 lb	0.00	9 ft	11772 lb	60 in.	3	16758 lb	0.70
Floor (Private)	35 psf	40 psf	75 psf	13.0 ft	0 plf	2.0 ft	15 ft	1040 plf	3 LVL	18	LVL	Span	1982 plf	0.52	1074 plf	No. 2	2x6	Interior	40 plf	16 in. oc	8 ft	0 lb	2.51	0	0 lb	0.00	9 ft	23545 lb	60 in.	5	27070 lb	0.87
Floor (Private)	35 psf	40 psf	75 psf	13.0 ft	0 plf	2.0 ft	15 ft	1040 plf	3 LVL	18	LVL	Span	1982 plf	0.52	1074 plf	No. 2	2x6	Interior	40 plf	16 in. oc	8 ft	0 lb	2.51	0	0 lb	0.00	9 ft	35317 lb	60 in.	5	27070 lb	1.30

*Refer to Frote Calcs for Beam Design

B3a - 8'-0" - Upset Beam

Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
							Header								Jamb Size						Jack						King						
Roof (Flat)	25 psf	20 psf	45 psf	0.0 ft	50 plf	2.0 ft	8 ft	50 plf	(3) 2x	2 x 8	No. 2	Span	441 plf	0.11	50 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	0.06	0	0 lb	0.00	9 ft	233 lb	60 in.	2	11602 lb	0.02
Floor (Private)	35 psf	40 psf	75 psf	15.0 ft	0 plf	2.0 ft	8 ft	1125 plf	3 LVL	9.25	LVL	Span	1904 plf	0.59	1205 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	1.45	0	0 lb	0.00	9 ft	5858 lb	60 in.	3	16758 lb	0.35
Floor (Private)	35 psf	40 psf	75 psf	15.0 ft	0 plf	2.0 ft	8 ft	1125 plf	3 LVL	9.25	LVL	Span	1904 plf	0.59	1205 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	1.45	0	0 lb	0.00	9 ft	11483 lb	60 in.	3	16758 lb	0.69
Floor (Private)	35 psf	40 psf	75 psf	15.0 ft	0 plf	2.0 ft	8 ft	1125 plf	3 LVL	9.25	LVL	Span	1904 plf	0.59	1205 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	0 lb	1.45	0	0 lb	0.00	9 ft	17108 lb	60 in.	4	21914 lb	0.78

B3b Type A - 5'8" Upset

							Header								Jamb Size						Jack						King						

Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Roof (Flat)	25 psf	20 psf	45 psf	2.0 ft	50 plf	2.0 ft	6 ft	140 plf	(3) 2x	2 x 8	No. 2	Span	786 plf	0.18	148 plf	No. 2	2x6	Open	5 plf	16 in. oc	8 ft	0 lb	0.14	0	0 lb	0.00	9 ft	543 lb	60 in.	2	11602 lb	0.05
Floor (Private)	35 psf	40 psf	75 psf	13.0 ft	100 plf	2.0 ft	6 ft	1075 plf	(3) 2x	2 x 12	No. 2	Span	1574 plf	0.68	1164 plf	No. 2	2x6	Open	5 plf	16 in. oc	8 ft	0 lb	1.04	0	0 lb	0.00	9 ft	4810 lb	60 in.	2	11602 lb	0.41
Floor (Private)	35 psf	40 psf	75 psf	13.0 ft	100 plf	2.0 ft	6 ft	1075 plf	(3) 2x	2 x 12	No. 2	Span	1574 plf	0.68	1164 plf	No. 2	2x6	Open	5 plf	16 in. oc	8 ft	0 lb	1.04	0	0 lb	0.00	9 ft	9077 lb	60 in.	2	11602 lb	0.78
Floor (Private)	35 psf	40 psf	75 psf	13.0 ft	100 plf	2.0 ft	6 ft	1075 plf	(3) 2x	2 x 12	No. 2	Span	1574 plf	0.68	1164 plf	No. 2	2x6	Open	5 plf	16 in. oc	8 ft	0 lb	1.04	0	0 lb	0.00	9 ft	13343 lb	60 in.	3	16758 lb	0.80

Garages

3'0" Header - Corridor Ends - Load Above

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Floor (Private)	35 psf	40 psf	75 psf	11.5 ft	2115 plf	2.0 ft	3 ft	3265 plf	(3) 2x	2 x 12	No. 2	Span	4050 plf	0.81	3309 plf	No. 2	2x6	Interior	10 plf	16 in. oc	8 ft	4964 lb	1.58	2	11602 lb	0.43	9 ft	2206 lb	60 in.	1	2257 lb	0.98

4'8" Upset - Floor Brg - End Units - No Load Above

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Floor (Private)	35 psf	40 psf	75 psf	12.5 ft	0 plf	2.0 ft	5 ft	1125 plf	(3) 2x	2 x 10	No. 2	Span	1688 plf	0.67	1184 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	2961 lb	0.91	1	5623 lb	0.53	9 ft	789 lb	60 in.	1	2101 lb	0.38

4'8" Upset - Floor Brg - End Units - No Load Above

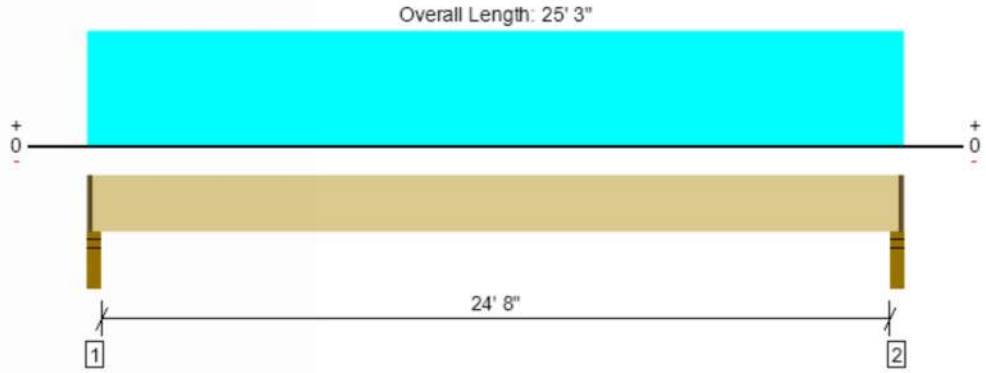
							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Floor (Private)	35 psf	40 psf	75 psf	18.0 ft	0 plf	2.0 ft	5 ft	1620 plf	(3) 2x	2 x 12	No. 2	Span	2269 plf	0.71	1705 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	4263 lb	1.30	1	5623 lb	0.76	9 ft	1137 lb	60 in.	2	11602 lb	0.10

6'0" Upset - Floor Brg - End Units - No Load Above

							Header								Jamb Size						Jack						King					
Level	DL	LL	TL	TW	Adt'l Ld	Truss Spcg	Length	WTTL	Type	Size	Grade	Lu	WAllow	Unity	WTTL	Grade	Jamb Size	Int or Ext	WL	Stud Spcg	HT	Pactual	BRG W Req'd	Jack	Pallow	Unity	HT	Pactual	Lu	King	Pallow	Unity
Floor (Private)	35 psf	40 psf	75 psf	12.5 ft	0 plf	2.0 ft	6 ft	938 plf	(3) 2x	2 x 10	No. 2	Span	1171 plf	0.80	1023 plf	No. 2	2x6	Interior	20 plf	16 in. oc	8 ft	3068 lb	0.91	1	5623 lb	0.55	9 ft	682 lb	60 in.	1	2101 lb	0.32

Balcony, Corner Balcony Beam - 23'-8"

1 piece(s) 5 1/2" x 14" 24F-V8 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3052 @ 2"	5259 (2.25")	Passed (58%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2721 @ 1' 5 1/2"	13603	Passed (20%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	18914 @ 12' 7 1/2"	34539	Passed (55%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.690 @ 12' 7 1/2"	0.748	Passed (L/434)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.934 @ 12' 7 1/2"	1.246	Passed (L/320)	--	1.0 D + 1.0 L (All Spans)

Member Length : 25' 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/400) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume/size factor of 0.96 that was calculated using length L = 24' 11".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - SPF	3.50"	2.25"	1.50"	802	2273	3075	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.50"	802	2273	3075	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)	25' 1" o/c	
Bottom Edge (Lu)	25' 1" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	1 1/4" to 25' 1 3/4"	N/A	18.7	--	
1 - Uniform (PSF)	0 to 25' 3" (Front)	3'	15.0	60.0	Default Load

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

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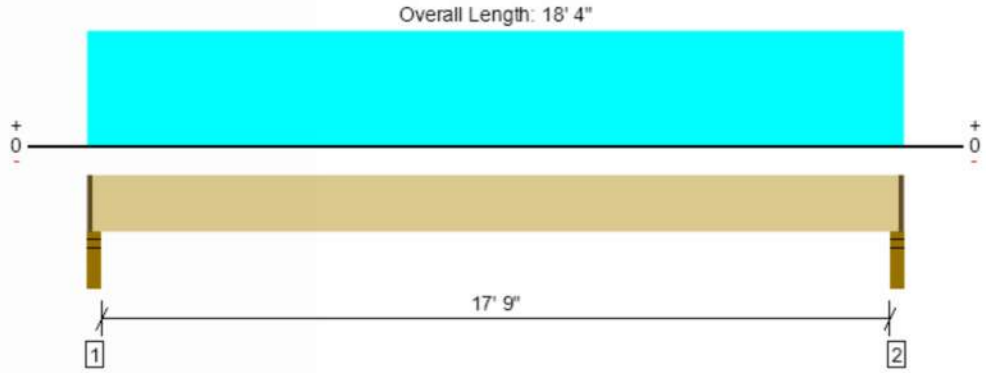
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

Balcony, Corner Balcony beam - 17'-9"

1 piece(s) 5 1/2" x 10 1/2" 24F-V8 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2166 @ 2"	5259 (2.25")	Passed (41%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1912 @ 1' 2"	10203	Passed (19%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	9681 @ 9' 2"	20213	Passed (48%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.445 @ 9' 2"	0.450	Passed (L/485)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.591 @ 9' 2"	0.900	Passed (L/365)	--	1.0 D + 1.0 L (All Spans)

Member Length : 18' 1 1/2"
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/size factor of 1.00 that was calculated using length L = 18'.
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - SPF	3.50"	2.25"	1.50"	540	1650	2190	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.50"	540	1650	2190	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)	18' 2" o/c	
Bottom Edge (Lu)	18' 2" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	1 1/4" to 18' 2 3/4"	N/A	14.0	--	
1 - Uniform (PSF)	0 to 18' 4" (Front)	3'	15.0	60.0	Default Load

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

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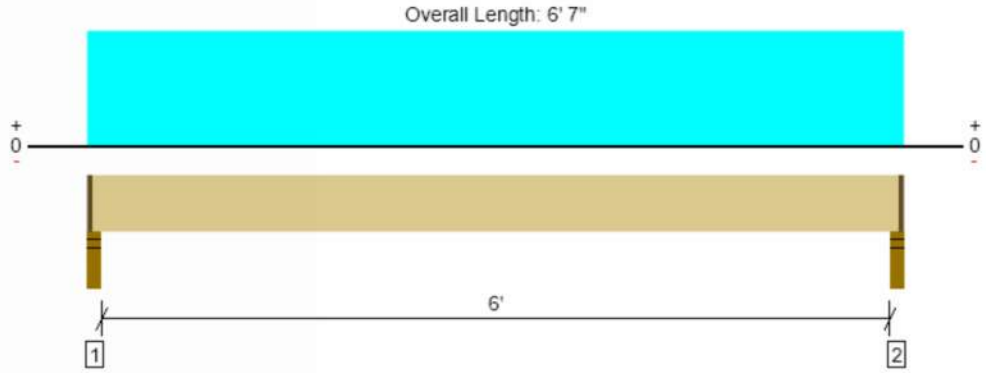
PASSED

Balcony, Corner Balcony Corner Beam - 6'0"

2 piece(s) 2 x 8 SP No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	974 @ 2"	2869 (2.25")	Passed (34%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	732 @ 10 3/4"	2538	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1492 @ 3' 3 1/2"	2025	Passed (74%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.062 @ 3' 3 1/2"	0.156	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.079 @ 3' 3 1/2"	0.313	Passed (L/954)	--	1.0 D + 1.0 L (All Spans)

Member Length : 6' 4 1/2"
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	Factored	
1 - Stud wall - SPF	3.50"	2.25"	1.50"	215	790	1005	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.50"	215	790	1005	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' 5" o/c	
Bottom Edge (Lu)	6' 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)	1 1/4" to 6' 5 3/4"	N/A	5.5	--	
1 - Uniform (PSF)	0 to 6' 7" (Front)	4'	15.0	60.0	Default Load

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

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PASSED

Balcony, Corner Column - 1st Flr

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

Post Height: 10'

Drawing is Conceptual

Design Results	Actual	Allowed	Result	LDF	Load: Combination
Slenderness	16	50	Passed (32%)	--	--
Compression (lbs)	15795	26803	Passed (59%)	1.00	1.0 D + 1.0 L
Base Bearing (lbs)	15795	1670625	Passed (1%)	--	1.0 D + 1.0 L
Bending/Compression	0.78	1	Passed (78%)	1.00	1.0 D + 1.0 L

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

Supports	Type	Material
Base	Beam	Steel

Max Unbraced Length	Comments
Full Member Length	No bracing assumed.

Member Type : Free Standing Post
Building Code : IBC 2015
Design Methodology : ASD

Vertical Loads	Dead (0.90)	Floor Live (1.00)	Comments
1 - Point (lb)	540	1650	Linked from: Corner Balcony beam - 17'-9", Support 1
2 - Point (lb)	540	1650	Linked from: Corner Balcony beam - 17'-9", Support 1
3 - Point (lb)	540	1650	Linked from: Corner Balcony beam - 17'-9", Support 1
4 - Point (lb)	802	2273	Linked from: Corner Balcony Beam - 23'-8", Support 1
5 - Point (lb)	802	2273	Linked from: Corner Balcony Beam - 23'-8", Support 1
6 - Point (lb)	802	2273	Linked from: Corner Balcony Beam - 23'-8", Support 1

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ForteWEB Software Operator	Job Notes
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Weyerhaeuser

Balcony, Corner Column - 2nd Flr

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

Post Height: 10'

Design Results	Actual	Allowed	Result	LDF	Load: Combination
Slenderness	16	50	Passed (32%)	--	--
Compression (lbs)	10530	26803	Passed (39%)	1.00	1.0 D + 1.0 L
Base Bearing (lbs)	10530	1670625	Passed (1%)	--	1.0 D + 1.0 L
Bending/Compression	0.42	1	Passed (42%)	1.00	1.0 D + 1.0 L

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

Supports	Type	Material
Base	Beam	Steel

Max Unbraced Length	Comments
Full Member Length	No bracing assumed.

Member Type : Free Standing Post
Building Code : IBC 2015
Design Methodology : ASD

Drawing is Conceptual

Vertical Loads	Dead (0.90)	Floor Live (1.00)	Comments
1 - Point (lb)	540	1650	Linked from: Corner Balcony beam - 17'-9", Support 1
2 - Point (lb)	540	1650	Linked from: Corner Balcony beam - 17'-9", Support 1
3 - Point (lb)	802	2273	Linked from: Corner Balcony Beam - 23'-8", Support 1
4 - Point (lb)	802	2273	Linked from: Corner Balcony Beam - 23'-8", Support 1

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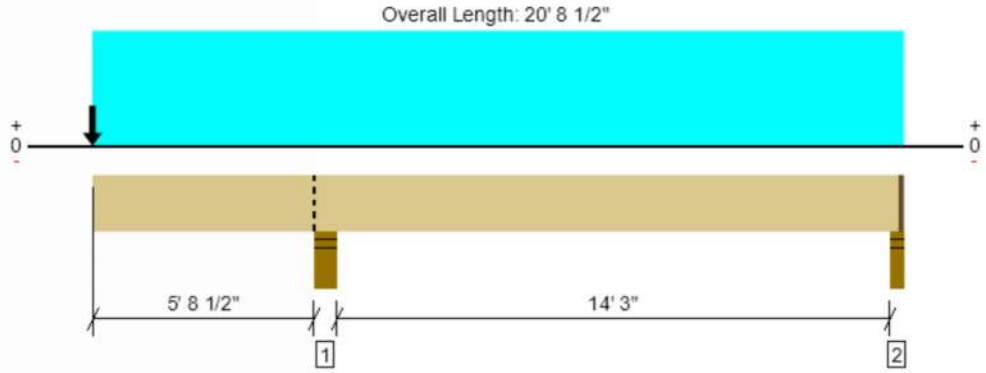
Weyerhaeuser

Balcony, 2nd Floor Cantilever Beam

1 piece(s) 8 3/4" x 18" 24F-V8 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	21713 @ 5' 11 1/4"	27191 (5.50")	Passed (80%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	10203 @ 4' 2 1/2"	27825	Passed (37%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	15268 @ 14' 7 1/8"	91050	Passed (17%)	1.00	1.0 D + 1.0 L (Alt Spans)
Neg Moment (Ft-lbs)	-54226 @ 5' 11 1/4"	86208	Passed (63%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.336 @ 0	0.356	Passed (2L/424)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.414 @ 0	0.475	Passed (2L/344)	--	1.0 D + 1.0 L (Alt Spans)

Member Length : 20' 7 1/4"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/400) and TL (L/300).
- Overhang deflection criteria: LL (2L/400) and TL (2L/300).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume/size factor of 0.96 that was calculated using length L = 11' 10 3/4".
- Critical negative moment adjusted by a volume/size factor of 0.91 that was calculated using length L = 20' 6 1/2".
- -510 lbs uplift at support located at 20' 6 1/2". Strapping or other restraint may be required.
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - SYP	5.50"	5.50"	4.39"	8394	13319	21713	Blocking
2 - Stud wall - SYP	3.50"	2.25"	1.50"	1988	3286/-2498	5274/-510	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	20' 7" o/c	
Bottom Edge (Lu)	20' 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 20' 7 1/4"	N/A	38.3	--	
1 - Uniform (PSF)	0 to 20' 8 1/2" (Front)	11'	35.0	40.0	Backspan Load
2 - Point (lb)	0 (Front)	N/A	540	1650	Linked from: Corner Balcony beam - 17'-9", Support 1
3 - Point (lb)	0 (Front)	N/A	540	1650	Linked from: Corner Balcony beam - 17'-9", Support 1
4 - Point (lb)	0 (Front)	N/A	540	1650	Linked from: Corner Balcony beam - 17'-9", Support 1

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

ForteWEB Software Operator	Job Notes
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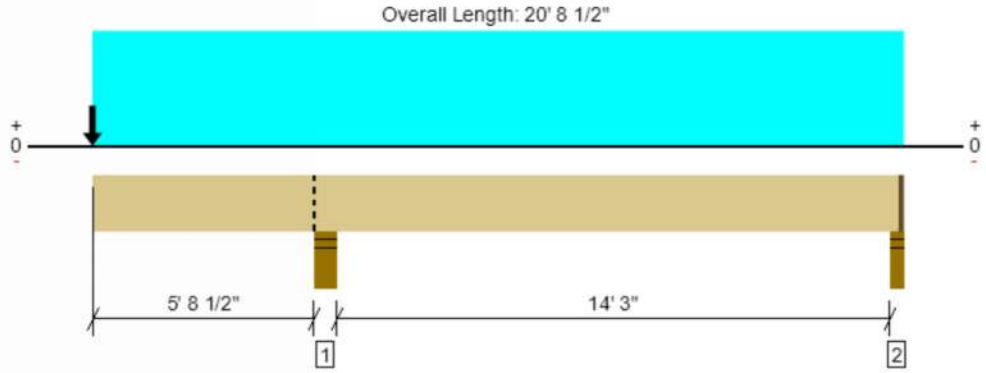
ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

Balcony, 2nd Floor Cantilever Beam-One Floor

1 piece(s) 5 1/2" x 16" 24F-V8 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	15308 @ 5' 11 1/4"	17091 (5.50")	Passed (90%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	6770 @ 7' 6"	15547	Passed (44%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	17678 @ 14' 15/16"	46933	Passed (38%)	1.00	1.0 D + 1.0 L (Alt Spans)
Neg Moment (Ft-lbs)	-27922 @ 5' 11 1/4"	46724	Passed (60%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.353 @ 0	0.396	Passed (2L/404)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.398 @ 0	0.594	Passed (2L/358)	--	1.0 D + 1.0 L (Alt Spans)

Member Length : 20' 7 1/4"
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).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 12' 11 1/8".
- Critical negative moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 15' 4 3/16".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - SYP	5.50"	5.50"	4.93"	6630	8677	15308	Blocking
2 - Stud wall - SYP	3.50"	2.25"	1.78"	2323	3286/-1156	5609	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	20' 7" o/c	
Bottom Edge (Lu)	20' 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 20' 7 1/4"	N/A	21.4	--	
1 - Uniform (PSF)	0 to 20' 8 1/2" (Front)	11'	35.0	40.0	Backspan Load
2 - Point (lb)	0 (Front)	N/A	540	1650	Linked from: Corner Balcony beam - 17'-9", Support 1

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

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ForteWEB Software Operator	Job Notes
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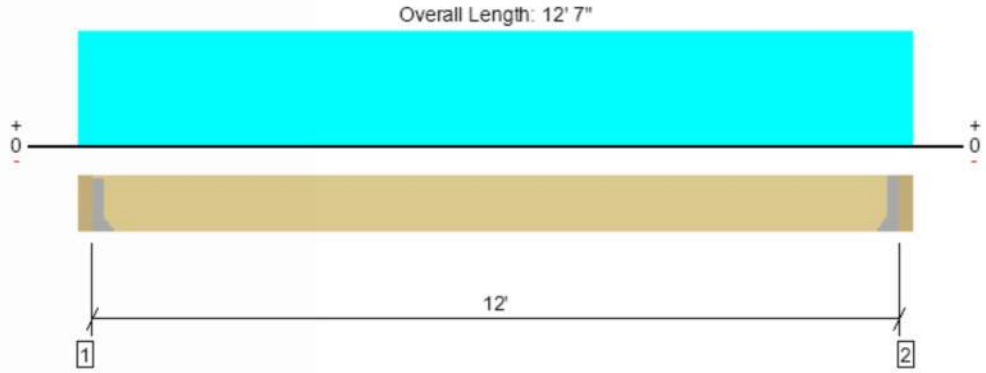
Balcony, Cant. Balcony - Edge Beam

2 piece(s) 2 x 10 SP No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	522 @ 3 1/2"	2543 (1.50")	Passed (21%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	455 @ 1' 3/4"	3238	Passed (14%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1567 @ 6' 3 1/2"	2853	Passed (55%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.101 @ 6' 3 1/2"	0.400	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.147 @ 6' 3 1/2"	0.600	Passed (L/982)	--	1.0 D + 1.0 L (All Spans)

Member Length : 12'
System : Floor
Member Type : Drop 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.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 9 1/4" SPF beam	3.50"	Hanger[1]	1.50"	168	378	546	See note [1]
2 - Hanger on 9 1/4" SPF beam	3.50"	Hanger[1]	1.50"	168	378	546	See note [1]

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' o/c	
Bottom Edge (Lu)	12' 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	LUS28-2	2.00"	N/A	6-10dx1.5	3-10d	
2 - Face Mount Hanger	LUS28-2	2.00"	N/A	6-10dx1.5	3-10d	

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	3 1/2" to 12' 3 1/2"	N/A	7.0	--	
1 - Uniform (PSF)	0 to 12' 7" (Front)	1'	15.0	60.0	Balcony Load
2 - Uniform (PLF)	0 to 12' 7" (Front)	N/A	5.0	-	Guardrail

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

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ForteWEB Software Operator	Job Notes
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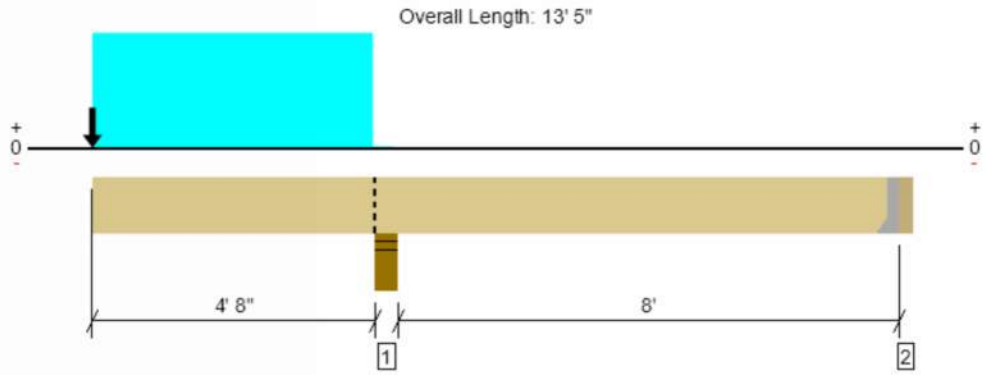
PASSED

Balcony, Cant Balcony - Cant Beam

3 piece(s) 2 x 12 SP No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2968 @ 4' 10 3/4"	10519 (5.50")	Passed (28%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1775 @ 3' 8 3/4"	5906	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-5742 @ 4' 10 3/4"	5933	Passed (97%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.193 @ 0	0.326	Passed (2L/608)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.255 @ 0	0.490	Passed (2L/460)	--	1.0 D + 1.0 L (All Spans)

Member Length : 13' 1 1/2"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Left cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- -645 lbs uplift at support located at 13' 1 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	Factored	
1 - Stud wall - SPF	5.50"	5.50"	1.55"	765	2203	2968	Blocking
2 - Hanger on 11 1/4" SPF beam	3.50"	Hanger[1]	1.50"	-122	-523	-645	See note [1]

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	13' 2" o/c	
Bottom Edge (Lu)	5' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LUS210-3	2.00"	N/A	8-10dx1.5	6-10d	

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 13' 1 1/2"	N/A	12.8	--	
1 - Uniform (PSF)	0 to 4' 8" (Front)	6'	15.0	60.0	Balcony
2 - Point (lb)	0 (Front)	N/A	30	-	Guardrail
3 - Uniform (PLF)	0 to 5' (Front)	N/A	5.0	-	Guardrail

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

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ForteWEB Software Operator	Job Notes
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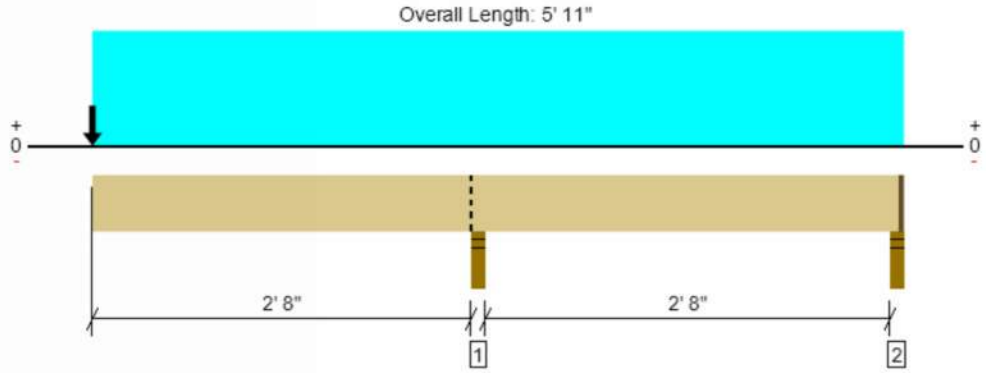
Balcony, 3/S1.30 - Cantilevered Joist

1 piece(s) 2 x 8 SP No.2 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	602 @ 2' 9 3/4"	2231 (3.50")	Passed (27%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	226 @ 2' 3/4"	1269	Passed (18%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-452 @ 2' 9 3/4"	1165	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.038 @ 0	0.200	Passed (2L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.054 @ 0	0.200	Passed (2L/999+)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 5' 9 3/4"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Overhang deflection criteria: LL (0.2") and TL (0.2").
- Left cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - SPF	3.50"	3.50"	1.50"	152	450	602	Blocking
2 - Stud wall - SPF	3.50"	2.25"	1.50"	-14	133/-101	119/-115	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 5' 11"	16"	15.0	60.0	wood balc load
2 - Point (PLF)	0	16"	15.0	-	railing SW

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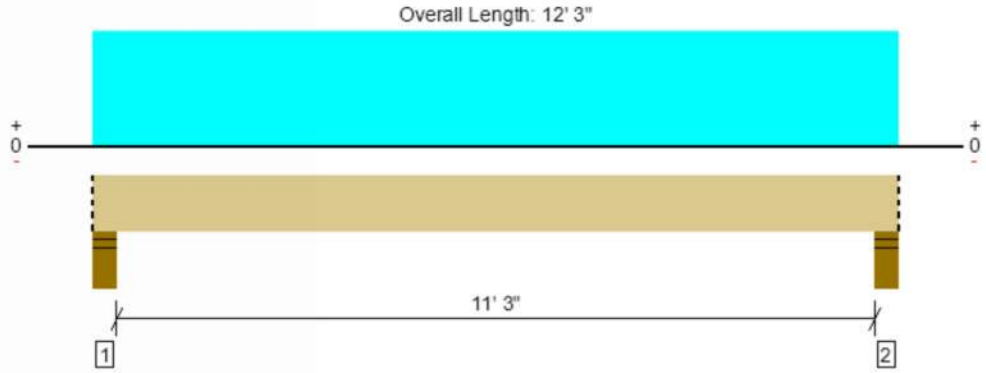
PASSED

Balcony, 3/S1.30 - Drop Beam

3 piece(s) 2 x 12 SP No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2008 @ 4 1/2"	15255 (6.00")	Passed (13%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1537 @ 1' 5 1/4"	5906	Passed (26%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	5419 @ 6' 1 1/2"	5933	Passed (91%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.126 @ 6' 1 1/2"	0.287	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.173 @ 6' 1 1/2"	0.383	Passed (L/800)	--	1.0 D + 1.0 L (All Spans)

Member Length : 12' 3"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	1.50"	538	1470	2008	Blocking
2 - Stud wall - DF	6.00"	6.00"	1.50"	538	1470	2008	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 9" o/c	
Bottom Edge (Lu)	12' 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 12' 3"	N/A	12.8	--	
1 - Uniform (PSF)	0 to 12' 3" (Front)	4'	15.0	60.0	wood deck load
2 - Uniform (PLF)	0 to 12' 3" (Top)	N/A	15.0	-	railing SW

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

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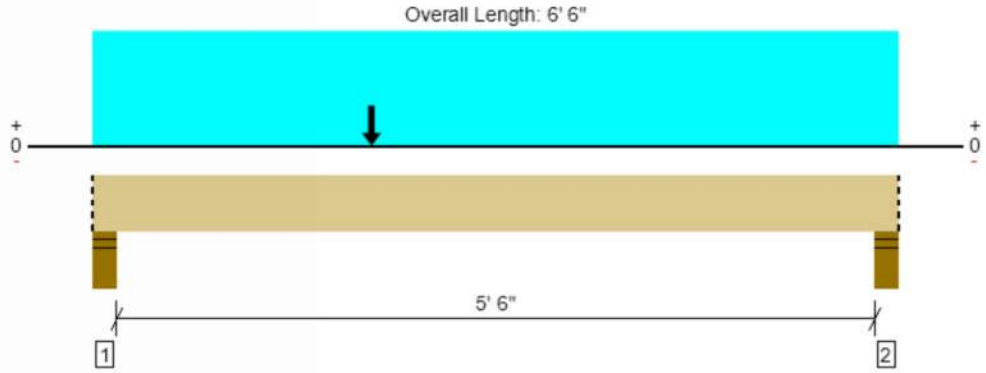
Corridor, A3 - Supporting Upset Beam

2 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4910 @ 4 1/2"	13125 (6.00")	Passed (37%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	4313 @ 2'	11970	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	8472 @ 2' 3"	38753	Passed (22%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.014 @ 2' 3"	0.144	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.026 @ 2' 3"	0.192	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 6' 6"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	2.24"	2328	2582	4910	Blocking
2 - Stud wall - DF	6.00"	6.00"	1.50"	1359	1518	2876	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	18.4	--	
1 - Uniform (PSF)	0 to 6' 6" (Front)	4'	30.0	40.0	corridor load
2 - Point (lb)	2' 3" (Front)	N/A	2787	3060	Linked from: A3 - 11'9" - Upset Beam, Support 1

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

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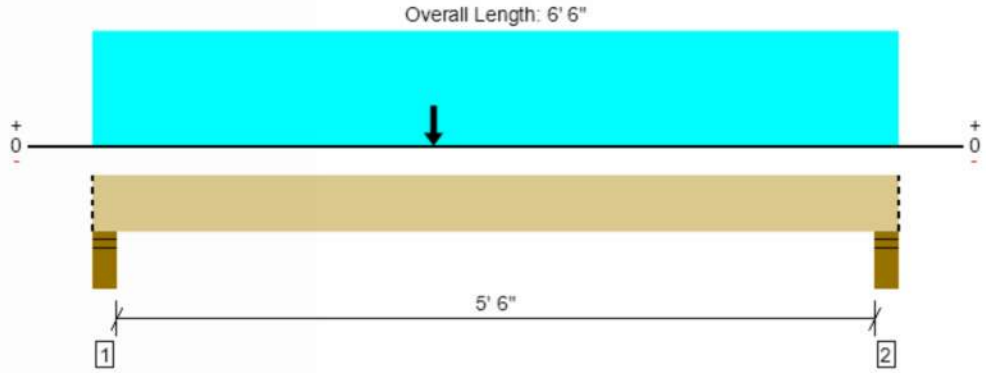
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

Corridor, A7 - Supporting Upset Beam

2 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5145 @ 4 1/2"	13125 (6.00")	Passed (39%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	4549 @ 2'	11970	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	11113 @ 2' 9"	38753	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.019 @ 2' 9"	0.144	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.036 @ 2' 9"	0.192	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 6' 6"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	2.35"	2477	2668	5145	Blocking
2 - Stud wall - DF	6.00"	6.00"	1.79"	1876	2032	3908	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	18.4	--	
1 - Uniform (PSF)	0 to 6' 6" (Front)	4'	30.0	40.0	corridor load
2 - Point (lb)	2' 9" (Top)	N/A	450	360	roof jamb above
3 - Point (lb)	2' 9" (Top)	N/A	1502	1650	Linked from: A7 - 7'3" - Upset Beam, Support 1
4 - Point (lb)	2' 9" (Top)	N/A	1502	1650	Linked from: A7 - 7'3" - Upset Beam, Support 1

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

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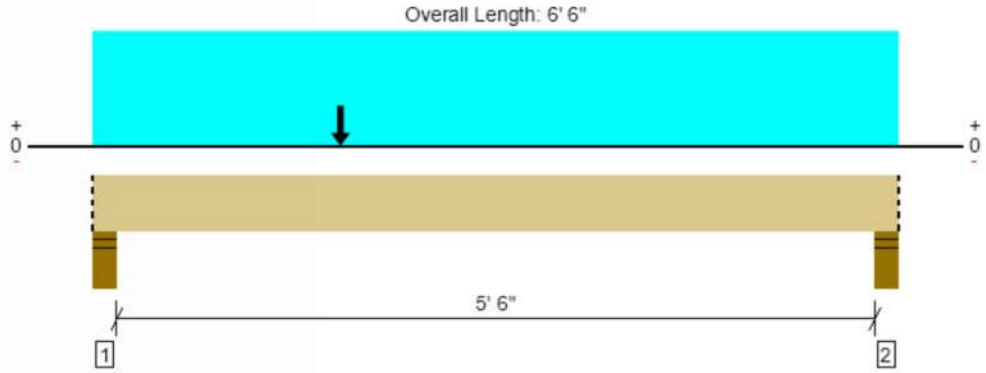
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

Corridor, B3a/B9 - Supporting Upset Beam

2 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	6293 @ 4 1/2"	13125 (6.00")	Passed (48%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	5696 @ 2'	11970	Passed (48%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	9650 @ 2'	38753	Passed (25%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.015 @ 2'	0.144	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.029 @ 2'	0.192	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 6' 6"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	2.88"	3021	3272	6293	Blocking
2 - Stud wall - DF	6.00"	6.00"	1.50"	1463	1604	3067	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	18.4	--	
1 - Uniform (PSF)	0 to 6' 6" (Front)	4'	30.0	40.0	corridor load
2 - Point (lb)	2' (Front)	N/A	3584	3836	Linked from: B3a - 15'3" - Upset Beam, Support 1

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

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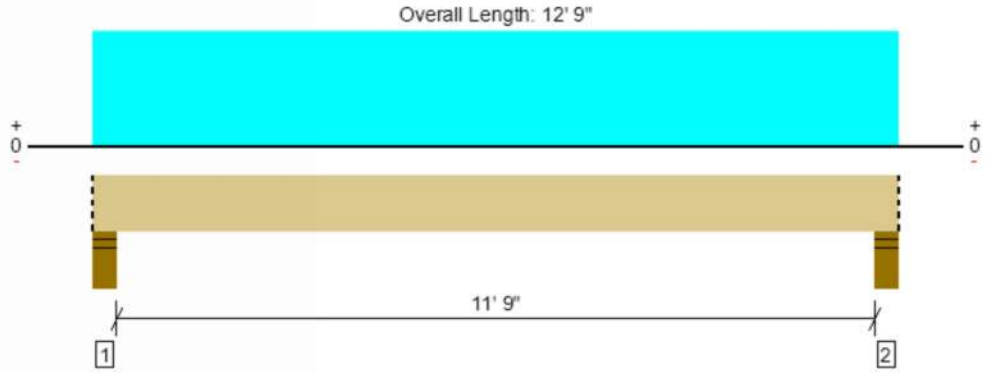
ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

Unit, A3 - 11'9" - Upset Beam

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



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5847 @ 4 1/2"	19688 (6.00")	Passed (30%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	4529 @ 1' 5 1/4"	11222	Passed (40%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	16510 @ 6' 4 1/2"	24206	Passed (68%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.197 @ 6' 4 1/2"	0.300	Passed (L/732)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.376 @ 6' 4 1/2"	0.400	Passed (L/383)	--	1.0 D + 1.0 L (All Spans)

Member Length : 12' 9"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	1.78"	2787	3060	5847	Blocking
2 - Stud wall - DF	6.00"	6.00"	1.78"	2787	3060	5847	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' 9" o/c	
Bottom Edge (Lu)	12' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 12' 9"	N/A	17.2	--	
1 - Uniform (PSF)	0 to 12' 9" (Front)	12'	35.0	40.0	floor load

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

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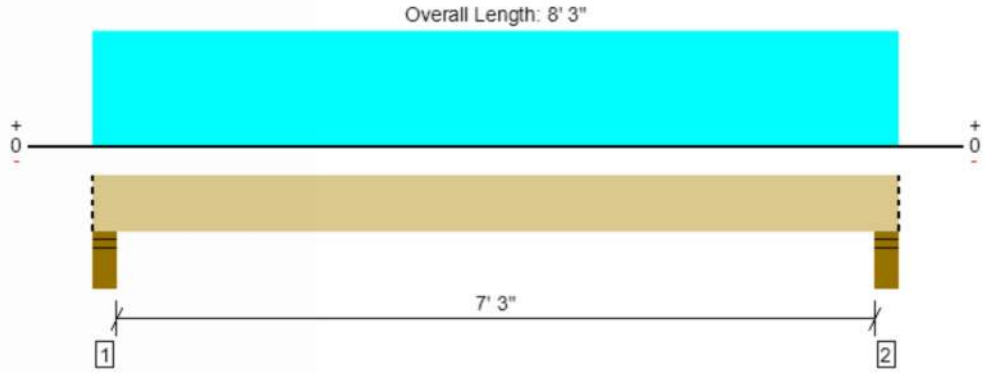
ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

Unit, A7 - 7'3" - Upset Beam

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



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3152 @ 4 1/2"	19688 (6.00")	Passed (16%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2181 @ 1' 3 1/4"	9227	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	5373 @ 4' 1 1/2"	16806	Passed (32%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.048 @ 4' 1 1/2"	0.188	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.091 @ 4' 1 1/2"	0.250	Passed (L/986)	--	1.0 D + 1.0 L (All Spans)

Member Length : 8' 3"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	1.50"	1502	1650	3152	Blocking
2 - Stud wall - DF	6.00"	6.00"	1.50"	1502	1650	3152	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' 3" o/c	
Bottom Edge (Lu)	8' 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 8' 3"	N/A	14.2	--	
1 - Uniform (PSF)	0 to 8' 3" (Front)	10'	35.0	40.0	floor load

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

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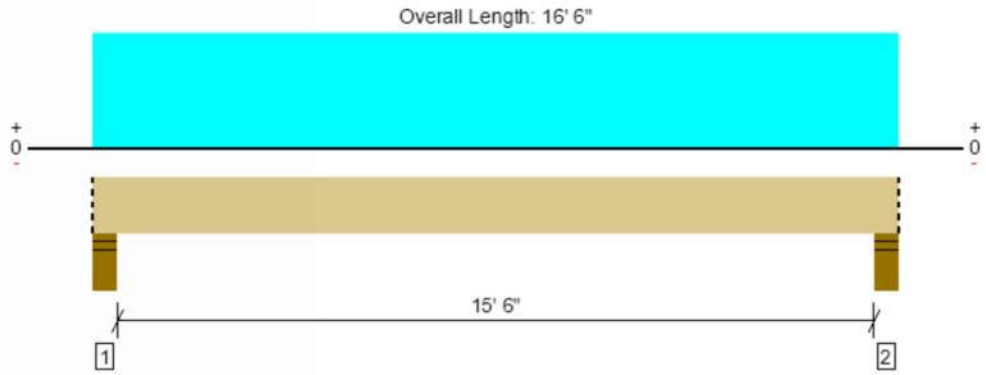
ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

Unit, B3a/B9 - 15'6" - Upset Beam

3 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	7420 @ 4 1/2"	19688 (6.00")	Passed (38%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	5621 @ 2'	17955	Passed (31%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	27890 @ 8' 3"	58130	Passed (48%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.144 @ 8' 3"	0.394	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.278 @ 8' 3"	0.525	Passed (L/680)	--	1.0 D + 1.0 L (All Spans)

Member Length : 16' 6"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	2.26"	3584	3836	7420	Blocking
2 - Stud wall - DF	6.00"	6.00"	2.26"	3584	3836	7420	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' 2" 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	27.6	--	
1 - Uniform (PSF)	0 to 16' 6" (Front)	11' 7 1/2"	35.0	40.0	floor load

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

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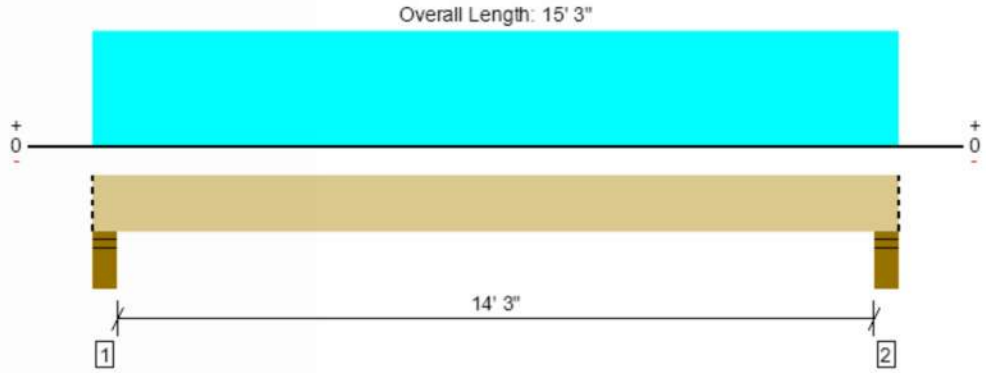
ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

PASSED

Unit, B3a/B9 - 14'3" - Upset Beam

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



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	6597 @ 4 1/2"	19688 (6.00")	Passed (34%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	5155 @ 1' 8"	13965	Passed (37%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	22738 @ 7' 7 1/2"	36387	Passed (62%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.205 @ 7' 7 1/2"	0.363	Passed (L/849)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.394 @ 7' 7 1/2"	0.483	Passed (L/442)	--	1.0 D + 1.0 L (All Spans)

Member Length : 15' 3"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	2.01"	3166	3431	6597	Blocking
2 - Stud wall - DF	6.00"	6.00"	2.01"	3166	3431	6597	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' o/c	
Bottom Edge (Lu)	15' 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 15' 3"	N/A	21.5	--	
1 - Uniform (PSF)	0 to 15' 3" (Front)	11' 3"	35.0	40.0	floor load

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

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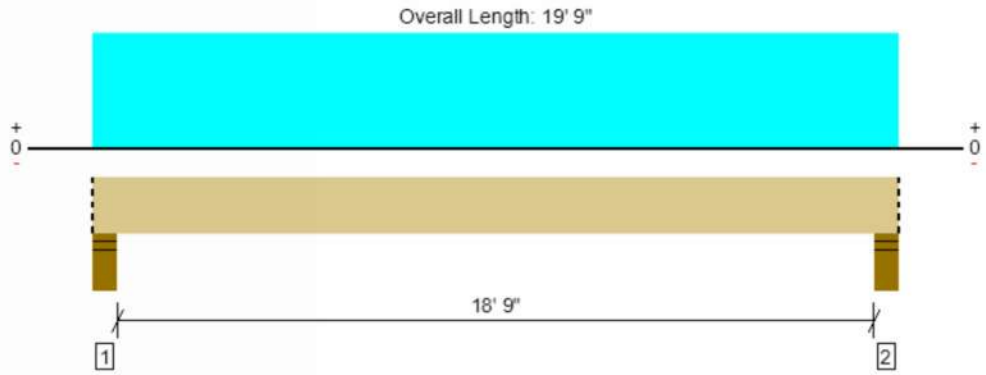
ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

Unit, B3a/B9 - 18'9" - Upset Beam

3 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	8789 @ 4 1/2"	19688 (6.00")	Passed (45%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	7009 @ 2'	17955	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	40164 @ 9' 10 1/2"	58130	Passed (69%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.290 @ 9' 10 1/2"	0.475	Passed (L/787)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.560 @ 9' 10 1/2"	0.633	Passed (L/407)	--	1.0 D + 1.0 L (All Spans)

Member Length : 19' 9"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	2.68"	4247	4543	8789	Blocking
2 - Stud wall - DF	6.00"	6.00"	2.68"	4247	4543	8789	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 9" o/c	
Bottom Edge (Lu)	19' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 19' 9"	N/A	27.6	--	
1 - Uniform (PSF)	0 to 19' 9" (Front)	11' 6"	35.0	40.0	floor load

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

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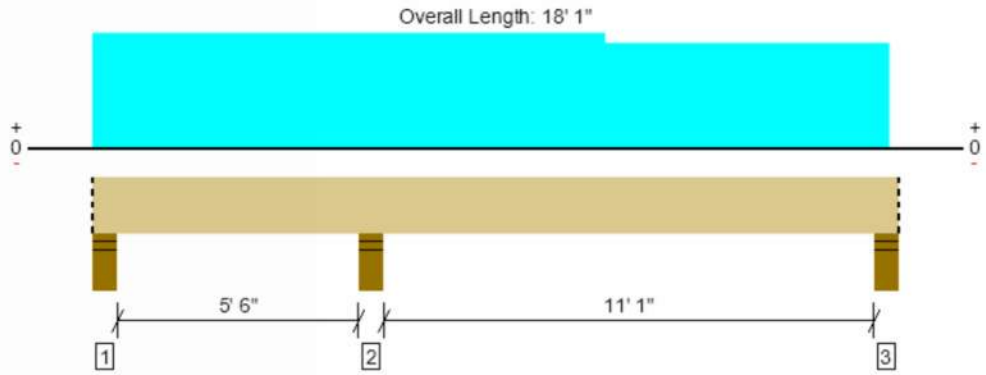
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

PASSED

Unit, B3a/B9 - 5'6"/11'1" - Upset Beam

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	10232 @ 6' 3"	13388 (6.00")	Passed (76%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	4600 @ 7' 8"	13965	Passed (33%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-10475 @ 6' 3"	36387	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.054 @ 12' 4 7/8"	0.286	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.100 @ 12' 5 3/8"	0.382	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)

Member Length : 18' 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/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- -264 lbs uplift at support located at 4 1/2". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	1.50"	548	1409/-812	1958/-264	Blocking
2 - Stud wall - SPF	6.00"	6.00"	4.59"	4910	5322	10232	None
3 - Stud wall - DF	6.00"	6.00"	1.50"	1901	2108/-59	4009	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' 1" o/c	
Bottom Edge (Lu)	18' 1" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 18' 1"	N/A	21.5	--	
1 - Uniform (PSF)	0 to 11' 6" (Front)	11' 6"	35.0	40.0	floor load
2 - Uniform (PSF)	11' 6" to 17' 10 1/2" (Front)	10' 6"	35.0	40.0	floor load

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

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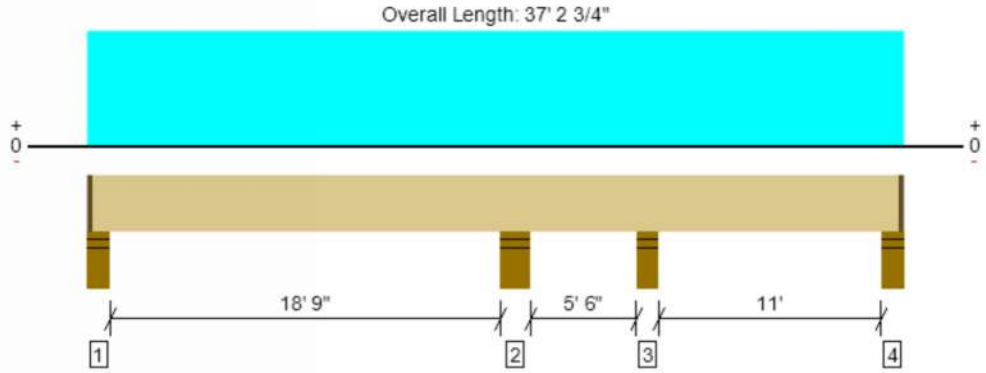
ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

PASSED

3rd Floor, BLDG C - Unit - Upset Beam

3 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	18142 @ 19' 6 1/8"	21505 (7.25")	Passed (84%)	--	1.0 D + 1.0 L (Adj Spans)
Shear (lbs)	8602 @ 17' 8 1/2"	17955	Passed (48%)	1.00	1.0 D + 1.0 L (Adj Spans)
Moment (Ft-lbs)	-32051 @ 19' 6 1/8"	58130	Passed (55%)	1.00	1.0 D + 1.0 L (Adj Spans)
Live Load Defl. (in)	0.179 @ 8' 11 7/8"	0.479	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.343 @ 8' 11 5/8"	0.959	Passed (L/672)	--	1.0 D + 1.0 L (Alt Spans)

Member Length : 37' 1/4"
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	Factored	
1 - Stud wall - SYP	5.50"	4.25"	2.40"	3472	3738	7210	1 1/4" Rim Board
2 - Stud wall - SYP	7.25"	7.25"	6.12"	8308	9835	18142	None
3 - Stud wall - SYP	5.50"	5.50"	2.47"	1870	5447/-1964	7317/-94	None
4 - Stud wall - SYP	5.50"	4.25"	1.63"	2356	2580/-10	4936	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)	14' 10" o/c	
Bottom Edge (Lu)	11' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	1 1/4" to 37' 1 1/2"	N/A	27.6	--	
1 - Uniform (PSF)	0 to 37' 2 3/4" (Front)	11' 6"	35.0	40.0	Default Load

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

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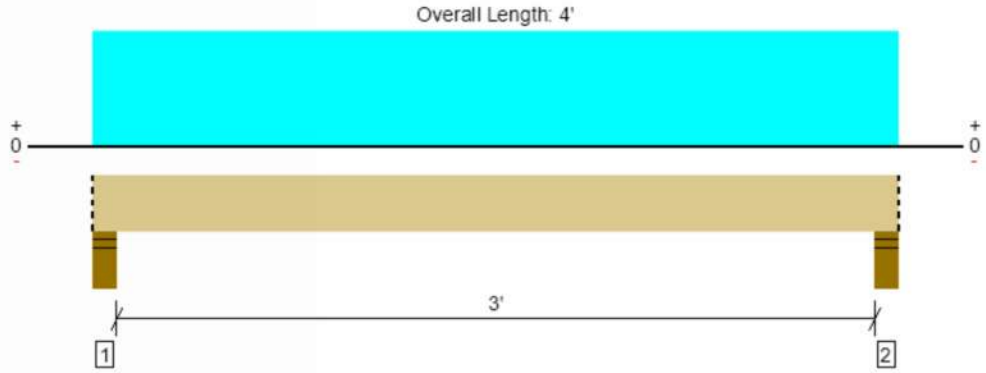
ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

PASSED

2nd Floor, 3'0" - Exterior Header - Load Above

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



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2609 @ 4 1/2"	16875 (6.00")	Passed (15%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1168 @ 1' 1 1/4"	3915	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1722 @ 2'	3548	Passed (49%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.005 @ 2'	0.081	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.014 @ 2'	0.108	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 4'
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	1.50"	1769	840	2609	Blocking
2 - Stud wall - DF	6.00"	6.00"	1.50"	1769	840	2609	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 4'	N/A	8.3	--	
1 - Uniform (PSF)	0 to 4' (Front)	1'	35.0	40.0	floor load
2 - Uniform (PSF)	0 to 4' (Front)	2'	35.0	40.0	(2) floor load above
3 - Uniform (PSF)	0 to 4' (Front)	15'	25.0	20.0	roof load above
4 - Uniform (PSF)	0 to 4' (Front)	33'	12.0	-	wall SW above

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

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ForteWEB Software Operator	Job Notes
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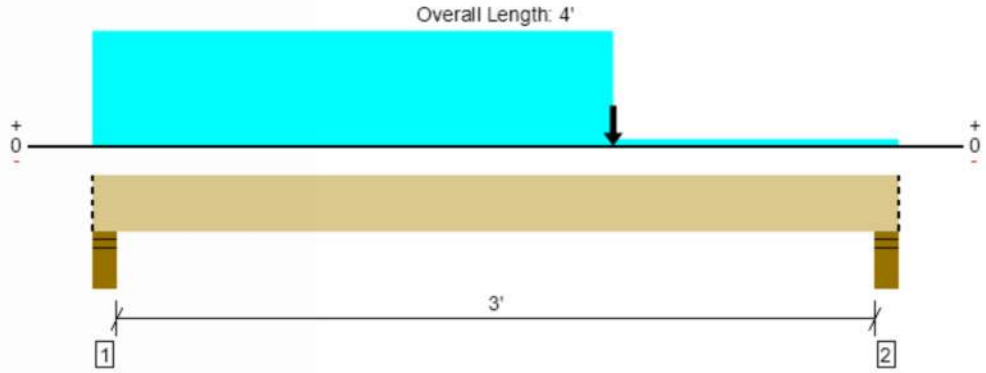
2nd Floor, 3'0" - Exterior Header - Load Above2

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3563 @ 4 1/2"	16875 (6.00")	Passed (21%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	3425 @ 2' 8 3/4"	4995	Passed (69%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3601 @ 2' 7"	5294	Passed (68%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.004 @ 2' 5/16"	0.081	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.013 @ 2' 5/16"	0.108	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 4'
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	1.50"	2418	1145	3563	Blocking
2 - Stud wall - DF	6.00"	6.00"	1.50"	2387	1147	3533	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 4'	N/A	10.6	--	
1 - Uniform (PSF)	0 to 4' (Front)	1'	35.0	40.0	floor load
2 - Uniform (PSF)	0 to 2' 7" (Top)	2'	35.0	40.0	(2) floor load above
3 - Uniform (PSF)	0 to 2' 7" (Top)	15'	25.0	20.0	roof load above
4 - Uniform (PSF)	0 to 2' 7" (Top)	33'	12.0	-	wall SW above
5 - Point (lb)	2' 7" (Top)	N/A	2450	1150	

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

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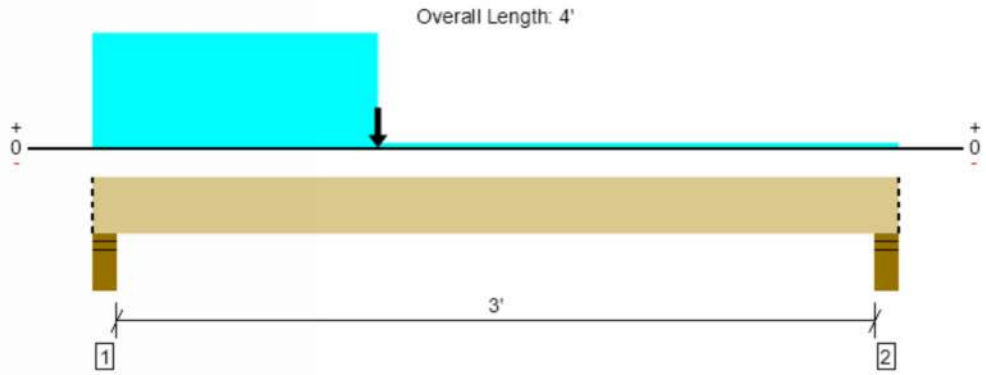
ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

PASSED

2nd Floor, 3'0" - Corridor Header_Offset Load Above

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	9499 @ 4 1/2"	19688 (6.00")	Passed (48%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	6835 @ 1' 5 1/4"	11222	Passed (61%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	8247 @ 1' 5"	24206	Passed (34%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.013 @ 1' 5"	0.081	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.025 @ 1' 5"	0.108	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 4'
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	2.90"	4816	4683	9499	Blocking
2 - Stud wall - DF	6.00"	6.00"	1.50"	1907	1964	3871	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 4'	N/A	17.2	--	
1 - Uniform (PSF)	0 to 4' (Front)	1'	35.0	40.0	floor load
2 - Uniform (PSF)	0 to 1' 5" (Front)	8'	35.0	40.0	(2) floor load above
3 - Uniform (PSF)	0 to 1' 5" (Front)	18'	25.0	20.0	roof load above
4 - Uniform (PSF)	0 to 1' 5" (Front)	33'	8.0	-	wall SW above
5 - Point (lb)	1' 5" (Top)	N/A	450	360	Roof Jamb Above
6 - Point (lb)	1' 5" (Top)	N/A	2328	2582	Linked from: A3 - Supporting Upset Beam, Support 1
7 - Point (lb)	1' 5" (Top)	N/A	2328	2582	Linked from: A3 - Supporting Upset Beam, Support 1

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

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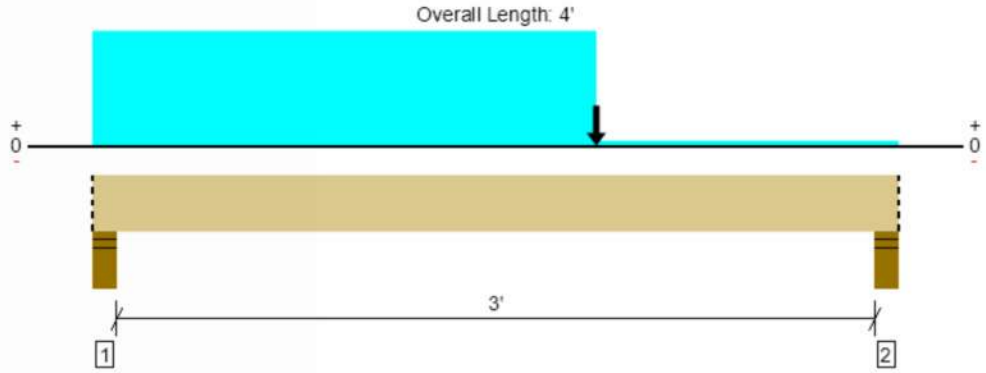
ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

2nd Floor, 3'0" - Corridor Header_Offset Load Above (2)

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	8298 @ 3' 7 1/2"	19688 (6.00")	Passed (42%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	8165 @ 2' 6 3/4"	11222	Passed (73%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	9238 @ 2' 6"	24206	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.014 @ 2' 6"	0.081	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.029 @ 2' 6"	0.108	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 4'
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	2.10"	3666	3220	6886	Blocking
2 - Stud wall - DF	6.00"	6.00"	2.53"	4134	4164	8298	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 4'	N/A	17.2	--	
1 - Uniform (PSF)	0 to 4' (Front)	1'	35.0	40.0	floor load
2 - Uniform (PSF)	0 to 2' 6" (Front)	8'	35.0	40.0	(2) floor load above
3 - Uniform (PSF)	0 to 2' 6" (Front)	18'	25.0	20.0	roof load above
4 - Uniform (PSF)	0 to 2' 6" (Front)	33'	8.0	-	wall SW above
5 - Point (lb)	2' 6" (Top)	N/A	450	360	Roof Jamb
6 - Point (lb)	2' 6" (Top)	N/A	2328	2582	Linked from: A3 - Supporting Upset Beam, Support 1
7 - Point (lb)	2' 6" (Top)	N/A	2328	2582	Linked from: A3 - Supporting Upset Beam, Support 1

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

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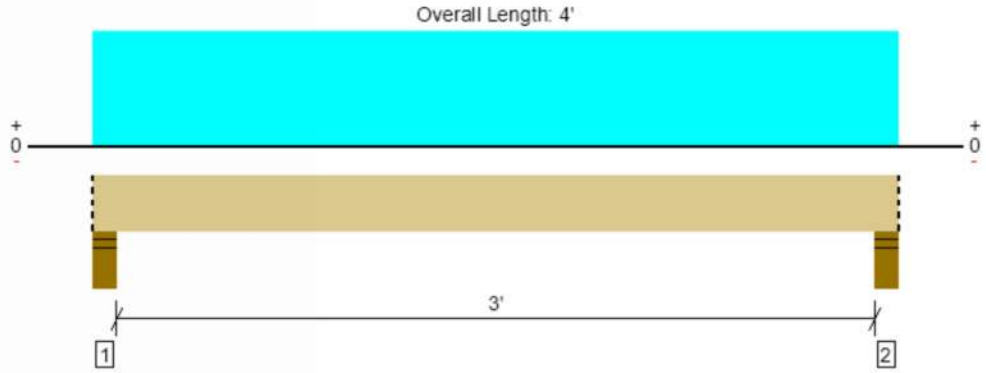
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

PASSED

2nd Floor, 3'0" - Corridor Header - Load Above

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3515 @ 4 1/2"	16875 (6.00")	Passed (21%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1574 @ 1' 1 1/4"	3915	Passed (40%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2320 @ 2'	3548	Passed (65%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.008 @ 2'	0.081	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.019 @ 2'	0.108	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 4'
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	1.50"	2075	1440	3515	Blocking
2 - Stud wall - DF	6.00"	6.00"	1.50"	2075	1440	3515	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 4'	N/A	8.3	--	
1 - Uniform (PSF)	0 to 4' (Front)	1'	35.0	40.0	floor load
2 - Uniform (PSF)	0 to 4' (Front)	8'	35.0	40.0	(2) floor load above
3 - Uniform (PSF)	0 to 4' (Front)	18'	25.0	20.0	roof load above
4 - Uniform (PSF)	0 to 4' (Front)	33'	8.0	-	wall SW above

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

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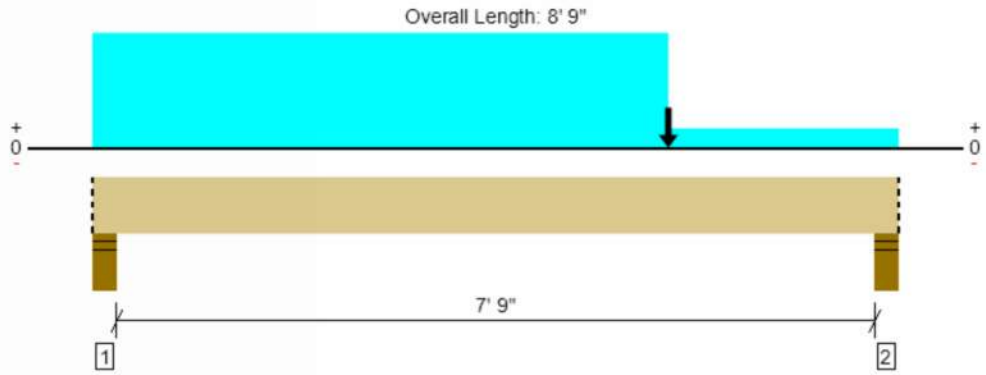
ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

2nd Floor, 7'9" - Corridor Beam - Offset Load Above

3 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	13360 @ 8' 4 1/2"	19688 (6.00")	Passed (68%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	12630 @ 6' 9"	17955	Passed (70%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	27720 @ 5' 7 1/16"	58130	Passed (48%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.044 @ 4' 6 11/16"	0.200	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.093 @ 4' 6 3/8"	0.267	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 8' 9"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	3.47"	6313	5084	11397	Blocking
2 - Stud wall - DF	6.00"	6.00"	4.07"	6922	6437	13360	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 8' 9"	N/A	27.6	--	
1 - Uniform (PSF)	0 to 8' 9" (Front)	4' 6"	35.0	40.0	floor load
2 - Uniform (PSF)	0 to 6' 3" (Front)	8'	35.0	40.0	(2) floor load above
3 - Uniform (PSF)	0 to 6' 3" (Front)	18'	25.0	20.0	roof load above
4 - Uniform (PSF)	0 to 6' 3" (Front)	33'	8.0	-	wall SW above
5 - Point (lb)	6' 3" (Top)	N/A	450	360	roof jamb above
6 - Point (lb)	6' 3" (Top)	N/A	2477	2668	Linked from: A7 - Supporting Upset Beam, Support 1
7 - Point (lb)	6' 3" (Top)	N/A	2477	2668	Linked from: A7 - Supporting Upset Beam, Support 1

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

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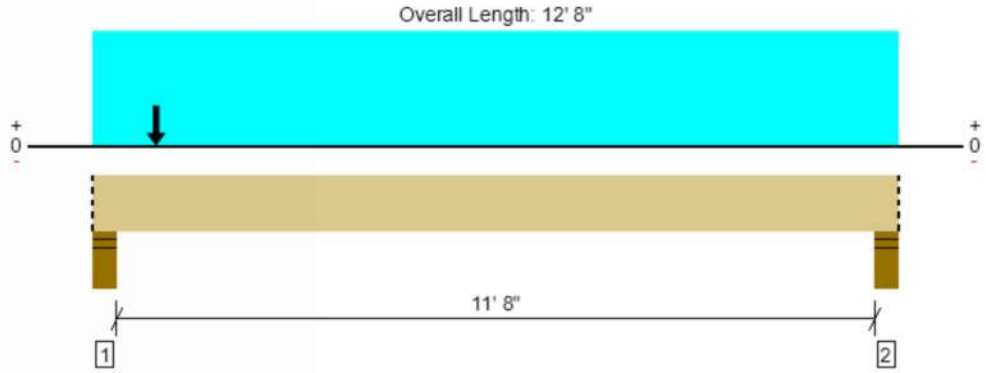
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

2nd Floor, 11'8" - Bldg A - Garages

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



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	19527 @ 4 1/2"	19688 (6.00")	Passed (99%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	10095 @ 1' 8"	13965	Passed (72%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	20621 @ 5' 5 9/16"	36387	Passed (57%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.135 @ 6' 1 3/8"	0.298	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.258 @ 6' 1 7/16"	0.397	Passed (L/554)	--	1.0 D + 1.0 L (All Spans)

Member Length : 12' 8"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	5.95"	9176	10352	19527	Blocking
2 - Stud wall - DF	6.00"	6.00"	1.94"	3044	3325	6369	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 8" o/c	
Bottom Edge (Lu)	12' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 12' 8"	N/A	21.5	--	
1 - Uniform (PSF)	0 to 12' 8" (Front)	11' 6"	35.0	40.0	floor load
2 - Point (lb)	1' (Front)	N/A	6850	7850	

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

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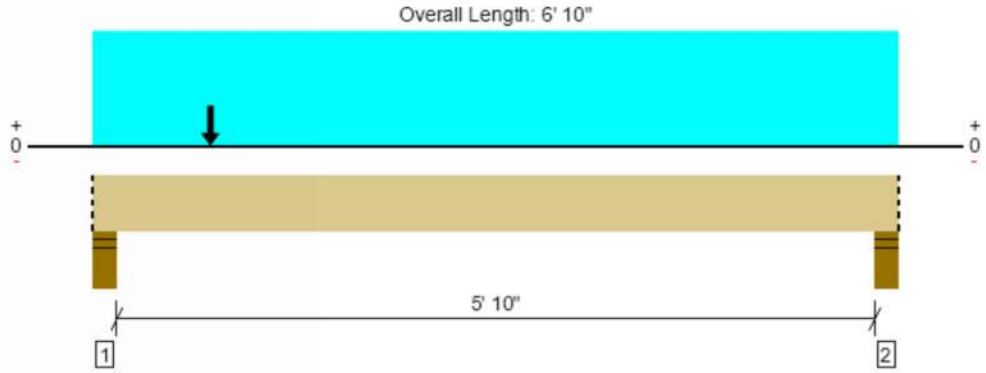
ForteWEB Software Operator	Job Notes
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

2nd Floor, 5'10" - Bldg A - Garages

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



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	16210 @ 4 1/2"	19688 (6.00")	Passed (82%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	7200 @ 1' 8"	13965	Passed (52%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	9973 @ 1' 8 1/2"	36387	Passed (27%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.022 @ 3' 2 5/16"	0.152	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.041 @ 3' 2 5/16"	0.203	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 6' 10"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	4.94"	7595	8615	16210	Blocking
2 - Stud wall - DF	6.00"	6.00"	1.50"	2152	2378	4530	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)	6' 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 6' 10"	N/A	21.5	--	
1 - Uniform (PSF)	0 to 6' 10" (Front)	11' 6"	35.0	40.0	floor load
2 - Point (lb)	1' (Front)	N/A	6850	7850	

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

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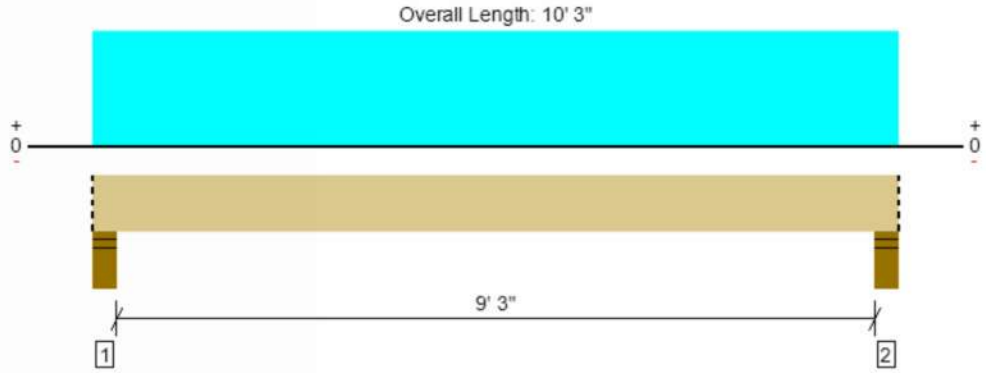
Patrick Lewandowski Bob D. Campbell & Co. (816) 531-4144 plewandowski@bdc-engrs.com	

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



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1603 @ 4 1/2"	16875 (6.00")	Passed (10%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1154 @ 1' 5 1/4"	6075	Passed (19%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3529 @ 5' 1 1/2"	7119	Passed (50%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.047 @ 5' 1 1/2"	0.237	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.067 @ 5' 1 1/2"	0.317	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 10' 3"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	1.50"	476	1128	1603	Blocking
2 - Stud wall - DF	6.00"	6.00"	1.50"	476	1128	1603	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 3" o/c	
Bottom Edge (Lu)	10' 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 10' 3"	N/A	12.8	--	
1 - Uniform (PSF)	0 to 10' 3" (Front)	1'	35.0	40.0	floor load
2 - Uniform (PSF)	0 to 10' 3" (Top)	3'	15.0	60.0	balcony load

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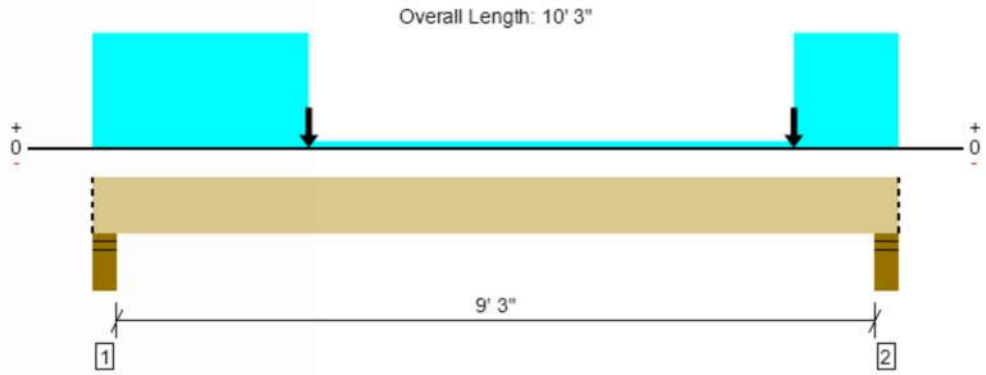
Garage, Plan Note D2

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



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Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	6462 @ 4 1/2"	19688 (6.00")	Passed (33%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	4575 @ 1' 5 1/4"	11222	Passed (41%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	10475 @ 2' 9"	24206	Passed (43%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.051 @ 4' 11 1/16"	0.237	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.146 @ 4' 10 7/8"	0.317	Passed (L/782)	--	1.0 D + 1.0 L (All Spans)

Member Length : 10' 3"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	6.00"	6.00"	1.97"	4286	2177	6462	Blocking
2 - Stud wall - DF	6.00"	6.00"	1.94"	4184	2185	6369	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 3" o/c	
Bottom Edge (Lu)	10' 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 10' 3"	N/A	17.2	--	
1 - Uniform (PSF)	0 to 10' 3" (Front)	1'	35.0	40.0	floor load
2 - Uniform (PSF)	0 to 2' 9" (Top)	2'	35.0	40.0	(2) floor load above
3 - Uniform (PSF)	0 to 2' 9" (Top)	15'	25.0	20.0	roof load above
4 - Uniform (PSF)	0 to 2' 9" (Top)	33'	12.0	-	wall SW above
5 - Uniform (PSF)	8' 11" to 10' 3" (Top)	2'	35.0	40.0	(2) floor load above
6 - Uniform (PSF)	8' 11" to 10' 3" (Top)	15'	25.0	20.0	roof load above
7 - Uniform (PSF)	8' 11" to 10' 3" (Top)	33'	12.0	-	wall SW above
8 - Point (lb)	2' 9" (Top)	N/A	2250	1200	
9 - Point (lb)	8' 11" (Top)	N/A	2250	1200	

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

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