Reeve & Associates, Inc.

Structural Calculations

for

Autumn Sky 4-Plex Townhomes - Building 25 – The Springville

Herriman, Utah

submitted to:

ARCFLO

Solutions you can build on for over 70 years

contact:
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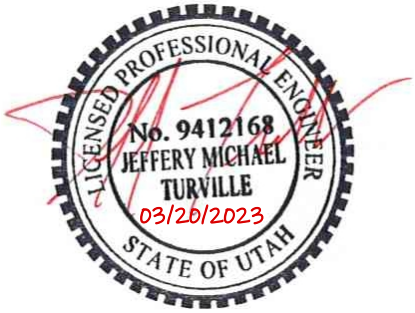

Notice

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March 2023
Ref: 4899-B14

Solutions you can build on

Project Information

Project Name: Autumn Sky 4-Plex Townhomes – Building 25
Project Location: Herriman, Utah

Design Criteria

Governing Building Code:	2018 IBC
Construction Type:	Wood Bearing Wall
Wind Zone and Exposure:	115mph. (3 sec. gust), Exp C
Seismic Design Category:	D
Soil Site Class:	D
Spectral Accelerations	S_S = 1.024g S_{DS} = 0.819g
	S_1 = 0.368g S_{D1} = 0.474g
Design Loads:	Roof Dead Load = 15 psf
	Ground Snow Load = 45 psf
	Roof Snow Load = 35 psf
	Floor Dead Load = 15 psf
	Floor Live Load = 40 psf

Construction Materials

Concrete 28-Day Compressive Strength

Foundations:	f'_c = 3000 psi (2500 psi design)
Exterior Slabs on Grade:	f'_c = 4000 psi
Reinforcing Grade:	ASTM A615 Grade 60

Structural Steel: ASTM A992 (f_y = 50000 psi)

Wood

Sawn Lumber:			
DF#2 or better	Fb=875 psi	Fv=95 psi	E=1.6·10^6 psi
Laminated Veneer Lumber:			
Microllam®	Fb=2600 psi	Fv=285 psi	E=1.9·10^6 psi
Parallel Strand Lumber:			
Parallam®	Fb=2900 psi	Fv=290 psi	E=2.0·10^6 psi
Glu-Laminated Beams:			
24F-V4 DF/DF	Fb=2400 psi	Fv=195 psi	E=1.8·10^6 psi

Roof Sheathing	15/32" OSB
Floor Sheathing	3/4" OSB
Wall Sheathing	7/16" OSB

Soil Criteria

Geotechnical Consultant:	None
Report Number:	N/A
Bearing Pressure:	1500 psf (Assumed)
Min. Bearing Depth:	30” to bottom of footing

(Contractor/Owner to verify proper bearing conditions are provided)

Hazards by Location

Search Information

Address: 5309 W Autumn Moon Ln, Herriman, UT 84096, USA

Coordinates: 40.5308037, -112.0175461

Elevation: 4830 ft

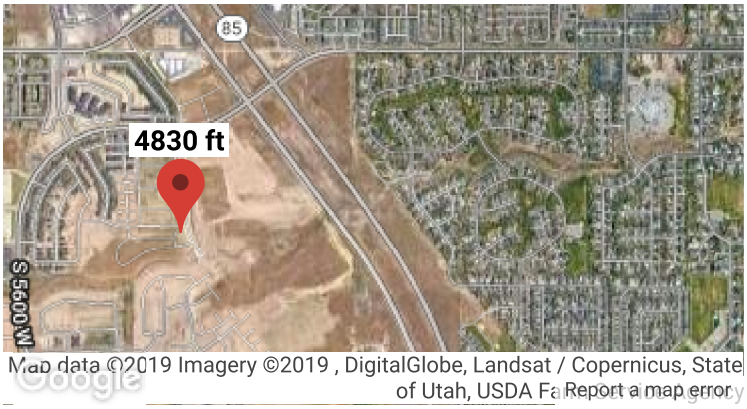
Timestamp: 2019-07-09T13:38:16.741Z

Hazard Type: Seismic

Reference Document: ASCE7-16

Risk Category: II

Site Class: D-default



Basic Parameters

Name	Value	Description
S_S	1.024	MCE_R ground motion (period=0.2s)
S_1	0.368	MCE_R ground motion (period=1.0s)
S_{MS}	1.229	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	0.819	Numeric seismic design value at 0.2s SA
S_{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8

Additional Information

Name	Value	Description
SDC	* null	Seismic design category
F_a	1.2	Site amplification factor at 0.2s
F_v	* null	Site amplification factor at 1.0s
CR_S	0.877	Coefficient of risk (0.2s)
CR_1	0.878	Coefficient of risk (1.0s)
PGA	0.449	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.538	Site modified peak ground acceleration

T_L	8	Long-period transition period (s)
SsRT	1.024	Probabilistic risk-targeted ground motion (0.2s)
SsUH	1.168	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.818	Factored deterministic acceleration value (0.2s)
S1RT	0.368	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.419	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.657	Factored deterministic acceleration value (1.0s)
PGAd	0.725	Factored deterministic acceleration value (PGA)

* See Section 11.4.8

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

Disclaimer

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

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Reeve & Associates, Inc.	PROJECT		PROJ NO.		
			CALC NO.		
	SUBJECT	**Low Roof Snow Load per ASCE 7** **Leeward and Windward Snow Drift**	BY JMT	DATE	7/9/19
			CHK	DATE	
			SHEET	OF	REV

Description:

GENERAL INPUT AND OUTPUT:

"Leeward" or "Windward":	1.00	*Leeward*	Snow Load Density:	19.83 pcf
Roof Slope:	8:12	*33.69 °*	h_b (Snow Depth):	1.74 feet
County (State of Utah)	UTAH		h_d (potential drift height):	-1.50 feet
Elevation at Site	4700 ft		h_c (Roof to Snow):	0.00 feet
p_g (SEAU Flat Roof Snow)	45 psf	_____ *<---Manual Entry*	Maximum Drift Height:	0.00 feet
C_e (Exposure Factor):	1.0		Drift Width:	0.00 feet
C_t (Thermal Factor):	1.1			
I_s (Importance Factor):	1.0		Maximum Snow Load:	**34.50 psf**
L_u (Length of Roof):	0.00 feet	*Upper Roof*		
Elevation Difference:	0.00 feet		Maximum Drift Weight:	**0.00 psf**
P_f (Roof Snow):	**34.5 psf**		Drift Width:	**0.00 feet**
C_s (Roof Slope Factor):	1.0			
P_s (Sloped Roof Snow):	**34.5 psf**			

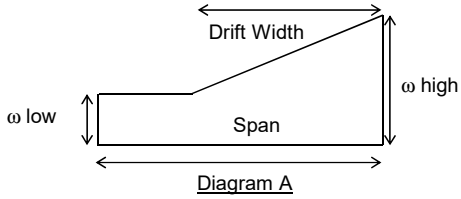

Diagram A

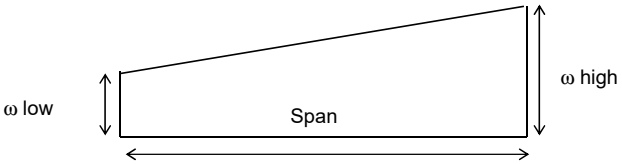

Diagram B

Reeve & Associates, Inc.

Land Planners · Civil Engineers · Land Surveyors
Traffic Engineers · Structural Engineers · Landscape Architects
920 Chambers Street, Suite 14 -- Ogden, UT 84403
Phone: (801) 621-3100
Fax: (801) 621-2666

Date:	Sheet 1 Of 1
Designed By: JMT	Project Number:

Seismic Calculations

Earthquake Loads-Site Ground Motion

I=	1		h_n=	28.00 ft	(Building Height)
R=	6.5	Wood Brg Wall	Structure Type =	Other	
S_s=	1.024		C_t=	0.02	
S_1=	0.368		x=	0.75	
Site Class=	D				

Check Height for LFRS = 28.0ft > NP (per exception 12.2.5.6 where
DL = 6.5 psf (Estimated) DL <20psf allowed up to 65ft)

F_a= 1.20
S_{MS}= 1.229 S_{MS}= F_a*S_S
S_{DS}= 0.819 S_{DS}= 2*S_{MS}/3

F_v= 1.93
S_{M1}= 0.711 S_{M1}= F_v*S_1
S_{D1}= 0.474 S_{D1}= 2*S_{M1}/3

Earthquake Loads-Minimum Design Lateral Force

C_s= 0.126 T= 0.243 s
C_s= 0.3 Load Combinations that control lateral:
C_s= 0.036 D+0.75L+0.75S+0.75(0.7*E)
ASD Load Factor = 0.7 0.6D+0.7E
USE Rho = 1.3
C_s= 0.126
V=C_S*W **V = ASD Load Factor*Rho*Cs*W = 0.11 *W**

Dead Load Effect

0.2*S_{DS}= 0.164
(+/-) 0.2*S_{DS}*D

Seismic Design Category

SDS => D

SD1 => D

Wind Design - ASCE 7-10 Chp 27

Risk Category =	II	
Basic Wind Speed V =	115	mph
Exposure Category =	C	3
Wind Directionality Factor, Kd =	0.85	
Topographic Factor, Kzt =	1	
Gust Effect Factor, G =	0.85	
Total Stories =	2	(5 max)
Internal Pressure Coefficient, Gcpi =	0.18	
	-0.18	

Enclosure Classification

	Length	Height	Ag	Ao	% open	Open	Partial 1	Partial 2	Partial Total
Wall 1 =	100	10	1000	800	80.0	Y	Y	N	N
Wall 2 =	100	10	1000	200	20.0	N	N	Y	N
Wall 3 =	25	10	250	30	12.0	N	N	Y	N
Wall 4 =	25	10	250	50	20.0	N	N	Y	N

Open Building: NO
Partially Open: NO
Enclosed: YES

Wall Pressure

	Front to Back	Side to Side
Windward Wall, Cp =	0.8	0.8
Windward Wall Width, B =	32 ft	49 ft
Side Wall Width, L =	49 ft	32 ft
L/B =	1.53125	0.653061
Leeward Wall, Cp =	-0.3	-0.5
Side Wall, Cp =	-0.7	-0.7

Roof Pressure

	Front to Back		Side to Side	
Roof Type =	Gable 1		Gable 1	
Roof Pitch =	8/12	33.7 °	8/12	33.7 °
Ridge Height =	28 ft		28 ft	
Eave Height =	18 ft		18 ft	
Mean Roof Height, h =	22.8 ft		22.8 ft	
h/L =	0.46		0.71	
h/2 =	11 ft		11 ft	
Kh =	0.93		0.93	
qh =	26.7 psf		26.7 psf	

Parapet Wall Pressure

Parapet Wall Height =	0 ft
Building Height to top of parapet=	0 ft
Kz =	0.85
qp =	24.4 psf
WW GCpn =	1.50
LW GCpn+	-1.00
Pp =	61.1 psf
Adj. Pp =	36.6 psf
Parapet Load per foot =	0.0 plf

Roof Pressure Coefficient, Cp

		Front to Back: WW Area: 548 ft² / LW Area: 548 ft² — Distance from Windward Edge, ft				Side to Side: WW Area: 839 ft² / LW Area: 839 ft² — Distance from Windward Edge, ft				
	Max/Min	0 ft	11 ft	23 ft	46 ft	Max/Min	0 ft	11 ft	23 ft	46 ft
Windward Normal to Ridge =	Max	0.29	0.29	0.29	0.29	Max	0.24	0.24	0.24	0.24
	Min	-0.18	-0.18	-0.18	-0.18	Min	-0.21	-0.21	-0.21	-0.21
Leeward Normal to Ridge =	Max	-0.60	-0.60	-0.60	-0.60	Max	-0.60	-0.60	-0.60	-0.60
	Min	-0.60	-0.60	-0.60	-0.60	Min	-0.60	-0.60	-0.60	-0.60
Parallel to Ridge =	Max	-0.18	-0.18	-0.18	-0.18	Max	-0.18	-0.18	-0.18	-0.18
	Min	-0.90	-0.90	-0.50	-0.30	Min	-1.07	-1.07	-0.58	-0.47

ASD Factor: 0.6

Load Description	Overall Height	Wall Trib	Kz	qz	Front to Back WW	Front to Back LW	Front to Back SW	Front to Back Int +/-	Total WW+LW	Shear Force, lbs	Adj. Shear Force, lbs	Adj. Wall Force
Roof	22.8 ft	-	-	max-->	6.5 psf	-13.6 psf	varies	4.8 psf	20.1 psf	6120 lbs	3672 lbs	
				min-->	-4.1 psf	-13.6 psf	varies	-4.8 psf	9.5 psf	2902 lbs	1741 lbs	
Wall 2	8 ft	4.5	0.85		24.4 psf	16.6 psf	-6.8 psf	-15.9 psf	4.8 psf	23.4 psf	3371 lbs	2023 lbs	
Wall 1	9 ft	8.5	0.85		24.4 psf	16.6 psf	-6.8 psf	-15.9 psf	4.8 psf	23.4 psf	6368 lbs	3821 lbs	
			0.85		24.4 psf	16.6 psf	-6.8 psf	-15.9 psf	4.8 psf	23.4 psf	0 lbs	0 lbs	
			0.85		24.4 psf	16.6 psf	-6.8 psf	-15.9 psf	4.8 psf	23.4 psf	0 lbs	0 lbs	
			0.85		24.4 psf	16.6 psf	-6.8 psf	-15.9 psf	4.8 psf	23.4 psf	0 lbs	0 lbs	
Other												
									Front to Back Total Shear:		15859 lbs	9515 lbs

		Side to Side WW	Side to Side LW	Side to Side SW	Side to Side Int +/-	Total WW + LW	Shear Force, lbs	Adj. Shear Force, lbs	Adj. Wall Force
Roof	max-->	5.5 psf	-13.6 psf	varies	4.8 psf	19.1 psf	8892 lbs	5335 lbs	
	min-->	-4.8 psf	-13.6 psf	varies	-4.8 psf	8.8 psf	4104 lbs	2462 lbs	
Wall 2		16.6 psf	-11.3 psf	-15.9 psf	4.8 psf	27.9 psf	6162 lbs	3697 lbs	
Wall 1		16.6 psf	-11.3 psf	-15.9 psf	4.8 psf	27.9 psf	11639 lbs	6984 lbs	
		16.6 psf	-11.3 psf	-15.9 psf	4.8 psf	27.9 psf	0 lbs	0 lbs	
		16.6 psf	-11.3 psf	-15.9 psf	4.8 psf	27.9 psf	0 lbs	0 lbs	
		16.6 psf	-11.3 psf	-15.9 psf	4.8 psf	27.9 psf	0 lbs	0 lbs	
Other									
						Side to Side Total Shear:	26693 lbs	16016 lbs	

LATERAL ANALYSIS

4 plexCALCS end unit ASPEN

Side-to-Side Dim:	32 ft		
Front-to-Back Dim:	49 ft	Height	
Roof Trib:	4.5 ft	18 ft	
Floor Trib:	8.5 ft	9 ft	
Floor Trib:			
Floor Trib:			
Roof Seismic DL:	15 psf		
Floor Seismic DL:	15 psf		
Wall Seismic DL:	12 psf		

Roof Area =	1568 ft²
Floor Area =	1568
Floor Area =	
Floor Area =	

Seismic: V = 0.11 *W

F-front-to-back:	V		W	WxHx	Cvx	Fx
Roof	3094 lbs	lb	26976	485568	0.64	4201 lbs
Floor	3446 lbs	lb	30048	270432	0.36	2339 lbs
Floor	0 lbs	lb	0	0	0.00	0 lbs
Floor	0 lbs	lb	0	0	0.00	0 lbs
	6540 lbs		57024	756000		6540 lbs
F-side-to-side:						
Roof	3304 lbs	lb	28812	518616	0.63	4520 lbs
Floor	3844 lbs	lb	33516	301644	0.37	2629 lbs
Floor	0 lbs	lb	0	0	0.00	0 lbs
Floor	0 lbs	lb	0	0	0.00	0 lbs
	7148 lbs		62328	820260		7148 lbs

Wind:

F-front-to-back:	
Roof	5695 lbs
Floor	3821 lbs
Floor	0 lbs
Floor	0 lbs
F-side-to-side:	
Roof	9032 lbs
Floor	6984 lbs
Floor	0 lbs
Floor	0 lbs

Use for Design:

F-front-to-back:			
Roof	5695 lbs	**Wind Governs**	1.4
Floor	3821 lbs	**Wind Governs**	1.4
Floor	0 lbs		1
Floor	0 lbs		1
F-side-to-side:			
Roof	9032 lbs	**Wind Governs**	1.4
Floor	6984 lbs	**Wind Governs**	1.4
Floor	0 lbs		1
Floor	0 lbs		1

SW capacities (plf):

	seismic	wind
SW-1	260	365
SW-2	380	532
SW-3	490	685
SW-4	640	896
SW-5	760	1065
SW-6	980	1370

Hold Down capacities (lb):

0	NONE		0	NONE	
200	LSTHD8	1610	200	MST37	1725
1610	STHD10	2175	1725	MST48	3215
2175	STHD14	5345	3215	MST60	5240
5345	HDU4	4565	5240	MST72	6730
4565	HDU5	5645	6730	(2) MST60	10480
5645	HDU8	7870	10480	(2) MST72	13460
7870	HDU11	9535	13460	NG	

SHEAR WALLS

Resisting DL: 10 psf

ROOF

Front-to-Back SW:	**Line 1**	**Line 2**	**Line 3**	**Line 4**	**Line 5**	**Line 6**	**Line 7**	**Line 8**	**Line 9**	**Line 10**
SW Height (ft):	8	8								
SW Trib (ft):	16	16								
SW Forces:	2847	2847	0	0	0	0	0	0	0	0
Total SW Length (ft):	32.5	38	0	0	0	0	0	0	0	0
Shear (lb/ft):	88	75	0	0	0	0	0	0	0	0
Uplift (lb):	701	599	0	0	0	0	0	0	0	0
SW Length (ft):	35	38								
Sum Perf Sgmts (ft):	32.5	38								
Area Openings (sf):	6.25	0								
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:	**SW-1**	**SW-1**								
Trib DL (ft):	8	8								
2/3 resisting DL (lb):	933.3333	1013.333	0	0	0	0	0	0	0	0
Net Uplift (lb):	-236	-414	0	0	0	0	0	0	0	0
Hold Down:	**#N/A**	**#N/A**								
SW Length (ft):										
Sum Perf Sgmts (ft):										
Area Openings (sf):										
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:										
Trib DL (ft):										
2/3 resisting DL (lb):	0	0	0	0	0	0	0	0	0	0
Net Uplift (lb):	701	599	0	0	0	0	0	0	0	0
Hold Down:	**MST37**									
SW Length (ft):										
Sum Perf Sgmts (ft):										
Area Openings (sf):										
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:										
Trib DL (ft):										
2/3 resisting DL (lb):	0	0	0	0	0	0	0	0	0	0
Net Uplift (lb):	701	599	0	0	0	0	0	0	0	0
Hold Down:	**MST37**									
SW Length (ft):										
Sum Perf Sgmts (ft):										
Area Openings (sf):										
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:										
Trib DL (ft):										
2/3 resisting DL (lb):	0	0	0	0	0	0	0	0	0	0
Net Uplift (lb):	701	599	0	0	0	0	0	0	0	0
Hold Down:										
SW Length (ft):										
Sum Perf Sgmts (ft):										
Area Openings (sf):										
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:										
Trib DL (ft):										
2/3 resisting DL (lb):	0	0	0	0	0	0	0	0	0	0
Net Uplift (lb):	701	599	0	0	0	0	0	0	0	0
Hold Down:										

FLOOR

Front-to-Back SW:	**Line 1**	**Line 2**	**Line 3**	**Line 4**	**Line 5**	**Line 6**	**Line 7**	**Line 8**	**Line 9**	**Line 10**
SW Height (ft):	9	9								
SW Trib (ft):	16	16								
SW Forces:	1910	1910	0	0	0	0	0	0	0	0
Total SW Length (ft):	28.5	48	0	0	0	0	0	0	0	0
Shear (lb/ft):	167	99	0	0	0	0	0	0	0	0
Uplift (lb):	2302	1367	0	0	0	0	0	0	0	0
SW Length (ft):	10	48								
Sum Perf Sgmts (ft):	7	48								
Area Openings (sf):	18	0								
Co:	0.77	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:	**SW-1**	**SW-1**								
Trib DL (ft):	8	8								
2/3 resisting DL (lb):	1200	2293.333	0	0	0	0	0	0	0	0
Net Uplift (lb):	1792	-927	0	0	0	0	0	0	0	0
Hold Down:	**STHD10**	**#N/A**								
SW Length (ft):	7									
Sum Perf Sgmts (ft):	7									
Area Openings (sf):	0									
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:	**SW-1**									
Trib DL (ft):	8									
2/3 resisting DL (lb):	186.6667	0	0	0	0	0	0	0	0	0
Net Uplift (lb):	2115	1367	0	0	0	0	0	0	0	0
Hold Down:	**STHD10**									
SW Length (ft):	14.5									
Sum Perf Sgmts (ft):	14.5									
Area Openings (sf):	0									
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:	**SW-1**									
Trib DL (ft):	8									
2/3 resisting DL (lb):	386.6667	0	0	0	0	0	0	0	0	0
Net Uplift (lb):	1915	1367	0	0	0	0	0	0	0	0
Hold Down:	**STHD10**									
SW Length (ft):										
Sum Perf Sgmts (ft):										
Area Openings (sf):										
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:										
Trib DL (ft):										
2/3 resisting DL (lb):	0	0	0	0	0	0	0	0	0	0
Net Uplift (lb):	2302	1367	0	0	0	0	0	0	0	0
Hold Down:										
SW Length (ft):										
Sum Perf Sgmts (ft):										
Area Openings (sf):										
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:										
Trib DL (ft):										
2/3 resisting DL (lb):	0	0	0	0	0	0	0	0	0	0
Net Uplift (lb):	2302	1367	0	0	0	0	0	0	0	0
Hold Down:										

ROOF

Side-to-Side SW:	Line A	Line B	Line C	Line D	Line E	Line F	Line G	Line H	Line J	Line K
SW Height (ft):	8	8								
SW Trib (ft):	22	22								
SW Forces:	4055	4055	0	0	0	0	0	0	0	0
Total SW Length (ft):	17.5	16	0	0	0	0	0	0	0	0
Shear (lb/ft):	232	253	0	0	0	0	0	0	0	0
Uplift (lb):	1854	2028	0	0	0	0	0	0	0	0
	FTAO	FTAO								
SW Length (ft):	11	16								
Sum Perf Sgmts (ft):	11	16								
Area Openings (sf):	0	0								
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:	**SW-1**	**SW-3**								
Trib DL (ft):	8	10								
2/3 resisting DL (lb):	293.3333	533.3333	0	0	0	0	0	0	0	0
Net Uplift (lb):	1560	1494	0	0	0	0	0	0	0	0
Hold Down:	**MST37**	**MST37**	**NONE**							
SW Length (ft):	9.5									
Sum Perf Sgmts (ft):	6.5									
Area Openings (sf):	9									
Co:	0.96	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:	**SW-1**									
Trib DL (ft):	27									
2/3 resisting DL (lb):	855	0	0	0	0	0	0	0	0	0
Net Uplift (lb):	1072	2028	0	0	0	0	0	0	0	0
Hold Down:	**MST37**									
SW Length (ft):										
Sum Perf Sgmts (ft):										
Area Openings (sf):										
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:										
Trib DL (ft):										
2/3 resisting DL (lb):	0	0	0	0	0	0	0	0	0	0
Net Uplift (lb):	1854	2028	0	0	0	0	0	0	0	0
Hold Down:										
SW Length (ft):										
Sum Perf Sgmts (ft):										
Area Openings (sf):										
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:										
Trib DL (ft):										
2/3 resisting DL (lb):	0	0	0	0	0	0	0	0	0	0
Net Uplift (lb):	1854	2028	0	0	0	0	0	0	0	0
Hold Down:										
SW Length (ft):										
Sum Perf Sgmts (ft):										
Area Openings (sf):										
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:										
Trib DL (ft):										
2/3 resisting DL (lb):	0	0	0	0	0	0	0	0	0	0
Net Uplift (lb):	1854	2028	0	0	0	0	0	0	0	0
Hold Down:										

FLOOR

Side-to-Side SW:	Line A	Line B	Line C	Line D	Line E	Line F	Line G	Line H	Line J	Line K
SW Height (ft):	8	9	9							
SW Trib (ft):	10	14	24							
SW Forces:	1425	1995	3421	0	0	0	0	0	0	0
Total SW Length (ft):	16.25	16	21	0	0	0	0	0	0	0
Shear (lb/ft):	337	378	163	0	0	0	0	0	0	0
Uplift (lb):	4694	5431	1466	0	0	0	0	0	0	0
		FTAO								
SW Length (ft):	11	16	21							
Sum Perf Sgmts (ft):	11	16	21							
Area Openings (sf):	0	0	0							
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:	**Pframe**	**SW-4**	**SW-1**							
Trib DL (ft):	14	15	21							
2/3 resisting DL (lb):	806.6667	1333.333	1470	0	0	0	0	0	0	0
Net Uplift (lb):	3888	4098	-4	0	0	0	0	0	0	0
Hold Down:	**STHD14**	**STHD14**	**#N/A**							
SW Length (ft):	5.25									
Sum Perf Sgmts (ft):	5.25									
Area Openings (sf):	0									
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:	**SW-1**									
Trib DL (ft):	14									
2/3 resisting DL (lb):	1100	0	0	0	0	0	0	0	0	0
Net Uplift (lb):	3594	5431	1466	0	0	0	0	0	0	0
Hold Down:	**STHD14**									
SW Length (ft):										
Sum Perf Sgmts (ft):										
Area Openings (sf):										
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:										
Trib DL (ft):										
2/3 resisting DL (lb):	0	0	0	0	0	0	0	0	0	0
Net Uplift (lb):	4694	5431	1466	0	0	0	0	0	0	0
Hold Down:										
SW Length (ft):										
Sum Perf Sgmts (ft):										
Area Openings (sf):										
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:										
Trib DL (ft):										
2/3 resisting DL (lb):	0	0	0	0	0	0	0	0	0	0
Net Uplift (lb):	4694	5431	1466	0	0	0	0	0	0	0
Hold Down:										
SW Length (ft):										
Sum Perf Sgmts (ft):										
Area Openings (sf):										
Co:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SW Designation:										
Trib DL (ft):										
2/3 resisting DL (lb):	0	0	0	0	0	0	0	0	0	0
Net Uplift (lb):	4694	5431	1466	0	0	0	0	0	0	0
Hold Down:										

Simple Span Beam Calculation

Adjustment Factors - ASD

Cd:	1.15	Cfu:	NA	
Cm:	1.00	Ci:	1.00	
Ct:	1.00	Cr:	1.00	
Cl:	1.00	Cv:	-	Glu-Lam & LVL Only
Cf:	-	Cc:	1.00	Glu-Lam Only

Roof DL	10	psf	Include Self Wt?
Floor DL	15	psf	No
Live	40	psf	
Snow	35	psf	

--->> Point Load distance must be >= midspan distance!

Active Member for Deflection Calc and Shear Diagram: RB-7

member ID	span ft	roof trib ft	floor trib ft	wall load plf	point load dead lbs	point load live lbs	point load snow lbs	dist from left, ft	left reaction dead lbs	left reaction live lbs	left reaction snow lbs	right reaction dead lbs	right reaction live lbs	right reaction snow lbs	applied moment lb-ft	% Str	applied shear lbs	% Str	Selected Member	Live/Total Deflection	actual Δ, in.	Δ limit, L/	Δ act, L/	check	Max Defl Location, ft	Min Bearing Length, in
RB-1	4	21							420	0	1470	420	0	1470	1890	69.5	1890	63.0	(2) 2x8	Live	0.03	L/240	L/1728	Pass	2.0	1.0
RB-2	6	5							150	0	525	150	0	525	1013	37.2	675	22.5	(2) 2x8	Live	0.03	L/240	L/2151	Pass	3.0	0.4
RB-3	6	26							780	0	2730	780	0	2730	5265	64.4	3510	63.3	(2) 1-3/4"x7-1/4" LVL	Live	0.12	L/240	L/603	Pass	3.0	1.3
RB-4	8	8							320	0	1120	320	0	1120	2880	70.6	1440	32.0	(3) 2x8	Live	0.11	L/240	L/851	Pass	4.0	0.5
RB-5	10.5	19			700		1650	8.5	1131	0	3806	1564	0	4827	14250	73.7	6391	60.2	(3) 1-3/4"x9-1/4" LVL	Live	0.32	L/360	L/393	Pass	5.4	1.6
RB-6	14	5		100					1050	0	1225	1050	0	1225	7963	41.2	2275	21.4	(3) 1-3/4"x9-1/4" LVL	Live	0.22	L/360	L/769	Pass	7.0	0.6
RB-7	2.5	21			700		1650	1.833	449	0	1359	776	0	2129	1727	63.5	2904	96.8	(2) 2x8	Live	0.01	L/360	L/3398	Pass	1.3	1.5
RB-8									0	0	0	0	0	0	0		0			Live		L/360				
RB-9									0	0	0	0	0	0	0		0			Live		L/360				
RB-10									0	0	0	0	0	0	0		0			Live		L/360				
RB-11									0	0	0	0	0	0	0		0			Live		L/360				
RB-12									0	0	0	0	0	0	0		0			Live		L/360				
RB-13									0	0	0	0	0	0	0		0			Live		L/360				
RB-14									0	0	0	0	0	0	0		0			Live		L/360				
RB-15									0	0	0	0	0	0	0		0			Live		L/360				
RB-16									0	0	0	0	0	0	0		0			Live		L/360				
RB-17									0	0	0	0	0	0	0		0			Live		L/360				
RB-18									0	0	0	0	0	0	0		0			Live		L/360				
RB-19									0	0	0	0	0	0	0		0			Live		L/360				
RB-20									0	0	0	0	0	0	0		0			Live		L/360				
RB-21									0	0	0	0	0	0	0		0			Live		L/360				
RB-22									0	0	0	0	0	0	0		0			Live		L/360				
RB-23									0	0	0	0	0	0	0		0			Live		L/360				
RB-24									0	0	0	0	0	0	0		0			Live		L/360				
RB-25									0	0	0	0	0	0	0		0			Live		L/360				
RB-26									0	0	0	0	0	0	0		0			Live		L/360				
RB-27									0	0	0	0	0	0	0		0			Live		L/360				

Simple Span Beam Calculation

Adjustment Factors - ASD

Cd:	1.00	Cfu:	NA	
Cm:	1.00	Ci:	1.00	
Ct:	1.00	Cr:	1.15	
Cl:	1.00	Cv:	-	Glu-Lam & LVL Only
Cf:	-	Cc:	1.00	Glu-Lam Only

Roof DL	15	psf	Include Self Wt?
Floor DL	15	psf	No
Live	40	psf	
Snow	35	psf	

--->> Point Load distance must be >= midspan distance!

Active Member for Deflection Calc and Shear Diagram: FB-15

member ID	span ft	roof trib ft	floor trib ft	wall load plf	point load dead lbs	point load live lbs	point load snow lbs	dist from left, ft	left reaction dead lbs	left reaction live lbs	left reaction snow lbs	right reaction dead lbs	right reaction live lbs	right reaction snow lbs	applied moment lb-ft	% Str	applied shear lbs	% Str	Selected Member	Live/Total Deflection	actual Δ, in.	Δ limit L/	Δ act L/	check	Max Defl Location, ft	Min Bearing Length, in
FB-1	4		16						480	1280	0	480	1280	0	1760	64.7	1760	67.4	(2) 2x8	Live	0.04	L/360	L/1227	Pass	3.2	0.9
FB-2	6		13						585	1560	0	585	1560	0	3218	78.9	2145	54.8	(3) 2x8	Live	0.07	L/360	L/1086	Pass	3.0	0.8
FB-3	6		13						585	1560	0	585	1560	0	3218	79.3	2145	64.4	(2) 2x10	Live	0.05	L/360	L/1503	Pass	3.0	1.1
FB-4	4		7						210	560	0	210	560	0	770	3.8	770	9.8	(2) 1-3/4"x11-7/8" LVL	Live	0.00	L/480	L/29072	Pass	2.0	0.3
FB-5	3	22	6						630	360	1155	630	360	1155	1339	49.2	1785	68.4	(2) 2x8	Live	0.01	L/480	L/3910	Pass	1.5	1.1
FB-6	10	5	8	100					1475	1600	875	1475	1600	875	8328	40.6	3331	42.2	(2) 1-3/4"x11-7/8" LVL	Live	0.09	L/480	L/1403	Pass	5.0	1.5
FB-7	5.5	18	5	100					1224	550	1733	1224	550	1733	4065	19.8	2956	37.4	(2) 1-3/4"x11-7/8" LVL	Live	0.01	L/480	L/4970	Pass	2.7	1.3
FB-8	4.5	8	7	100					731	630	630	731	630	630	1886	9.2	1676	21.2	(2) 1-3/4"x11-7/8" LVL	Live	0.00	L/480	L/13612	Pass	2.2	0.8
FB-9	20								0	0	0	0	0	0	0	#N/A	0	#N/A	see calc	Live		L/360	######	######		
FB-10	20								0	0	0	0	0	0	0	#N/A	0	#N/A	see calc	Live		L/480	######	######		
FB-11	16								0	0	0	0	0	0	0	#N/A	0	#N/A	see calc	Live		L/480	######	######		
FB-12									0	0	0	0	0	0	0		0		not used	Live		L/480			6.5	
FB-13	15		14						1575	4200	0	1575	4200	0	21656	70.3	5775	48.8	(3) 1-3/4"x11-7/8" LVL	Live	0.44	L/360	L/413	Pass	7.5	1.5
FB-14	3		28	100					780	1680	0	780	1680	0	1845	45.5	2460	73.9	(2) 2x10	Live	0.01	L/480	L/5583	Pass	1.5	1.3
FB-15	8		18	100					1480	2880	0	1480	2880	0	8720	71.1	4360	60.3	(3) 1-3/4"x7-1/4" LVL	Live	0.20	L/480	L/482	Pass	4.0	1.1
FB-16									0	0	0	0	0	0	0		0			Live		L/480				
FB-17									0	0	0	0	0	0	0		0			Live		L/480				
FB-18									0	0	0	0	0	0	0		0			Live		L/480				
FB-19									0	0	0	0	0	0	0		0			Live		L/480				
FB-20									0	0	0	0	0	0	0		0			Live		L/480				
FB-21									0	0	0	0	0	0	0		0			Live		L/480				
FB-22									0	0	0	0	0	0	0		0			Live		L/480				
FB-23									0	0	0	0	0	0	0		0			Live		L/480				
FB-24									0	0	0	0	0	0	0		0			Live		L/480				
FB-25									0	0	0	0	0	0	0		0			Live		L/480				
FB-26									0	0	0	0	0	0	0		0			Live		L/480				
FB-27									0	0	0	0	0	0	0		0			Live		L/480				

Simple Span Beam Calculation
Mid Unit
Adjustment Factors - ASD

Cd:	1.15	Cfu:	NA	
Cm:	1.00	Ci:	1.00	
Ct:	1.00	Cr:	1.00	
Cl:	1.00	Cv:	-	Glu-Lam & LVL Only
Cf:	-	Cc:	1.00	Glu-Lam Only

Roof DL	10	psf	Include Self Wt?
Floor DL	15	psf	No
Live	40	psf	
Snow	35	psf	

---->> Point Load distance must be >= midspan distance!

Active Member for Deflection Calc and Shear Diagram: RB-7

member ID	span ft	roof trib ft	floor trib ft	wall load plf	point load dead lbs	point load live lbs	point load snow lbs	dist from left, ft	left reaction dead lbs	left reaction live lbs	left reaction snow lbs	right reaction dead lbs	right reaction live lbs	right reaction snow lbs	applied moment lb-ft	% Str	applied shear lbs	% Str	Selected Member	Live/Total Deflection	actual Δ, in.	Δ limit, L/	Δ act, L/	check	Max Defl Location, ft	Min Bearing Length, in
RB-1	4	21							420	0	1470	420	0	1470	1890	69.5	1890	63.0	(2) 2x8	Live	0.03	L/240	L/1728	Pass	2.0	1.0
RB-2	6	21							630	0	2205	630	0	2205	4253	33.0	2835	40.1	(2) 1-3/4"x9-1/4" LVL	Live	0.05	L/240	L/1551	Pass	3.0	1.1
RB-3	6	26							780	0	2730	780	0	2730	5265	64.4	3510	63.3	(2) 1-3/4"x7-1/4" LVL	Live	0.12	L/240	L/603	Pass	3.0	1.3
RB-4	12	8							480	0	1680	480	0	1680	6480	52.8	2160	26.0	(3) 1-3/4"x7-1/4" LVL	Live	0.33	L/240	L/443	Pass	4.0	0.5
RB-5	10.5	19			700		1650	8.5	1131	0	3806	1564	0	4827	14250	73.7	6391	60.2	(3) 1-3/4"x9-1/4" LVL	Live	0.32	L/360	L/393	Pass	5.4	1.6
RB-6	14	5		100					1050	0	1225	1050	0	1225	7963	41.2	2275	21.4	(3) 1-3/4"x9-1/4" LVL	Live	0.22	L/360	L/769	Pass	7.0	0.6
RB-7	2.5	21			700		1650	1.833	449	0	1359	776	0	2129	1727	63.5	2904	96.8	(2) 2x8	Live	0.01	L/360	L/3398	Pass	1.3	1.5
RB-8									0	0	0	0	0	0	0		0			Live		L/360				
RB-9									0	0	0	0	0	0	0		0			Live		L/360				
RB-10									0	0	0	0	0	0	0		0			Live		L/360				
RB-11									0	0	0	0	0	0	0		0			Live		L/360				
RB-12									0	0	0	0	0	0	0		0			Live		L/360				
RB-13									0	0	0	0	0	0	0		0			Live		L/360				
RB-14									0	0	0	0	0	0	0		0			Live		L/360				
RB-15									0	0	0	0	0	0	0		0			Live		L/360				
RB-16									0	0	0	0	0	0	0		0			Live		L/360				
RB-17									0	0	0	0	0	0	0		0			Live		L/360				
RB-18									0	0	0	0	0	0	0		0			Live		L/360				
RB-19									0	0	0	0	0	0	0		0			Live		L/360				
RB-20									0	0	0	0	0	0	0		0			Live		L/360				
RB-21									0	0	0	0	0	0	0		0			Live		L/360				
RB-22									0	0	0	0	0	0	0		0			Live		L/360				
RB-23									0	0	0	0	0	0	0		0			Live		L/360				
RB-24									0	0	0	0	0	0	0		0			Live		L/360				
RB-25									0	0	0	0	0	0	0		0			Live		L/360				
RB-26									0	0	0	0	0	0	0		0			Live		L/360				
RB-27									0	0	0	0	0	0	0		0			Live		L/360				

Simple Span Beam Calculation
Mid Unit
Adjustment Factors - ASD

Cd:	1.00	Cfu:	NA	
Cm:	1.00	Ci:	1.00	
Ct:	1.00	Cr:	1.15	
Cl:	1.00	Cv:	-	Glu-Lam & LVL Only
Cf:	-	Cc:	1.00	Glu-Lam Only

Roof DL	15	psf	Include Self Wt?
Floor DL	15	psf	No
Live	40	psf	
Snow	35	psf	

---->> Point Load distance must be >= midspan distance!

Active Member for Deflection Calc and Shear Diagram: FB-15

member ID	span ft	roof trib ft	floor trib ft	wall load plf	point load dead lbs	point load live lbs	point load snow lbs	dist from left, ft	left reaction dead lbs	left reaction live lbs	left reaction snow lbs	right reaction dead lbs	right reaction live lbs	right reaction snow lbs	applied moment lb-ft	% Str	applied shear lbs	% Str	Selected Member	Live/Total Deflection	actual Δ, in.	Δ limit L/	Δ act L/	check	Max Defl Location, ft	Min Bearing Length, in
FB-1	4		16						480	1280	0	480	1280	0	1760	64.7	1760	67.4	(2) 2x8	Live	0.04	L/360	L/1227	Pass	3.2	0.9
FB-2	6		13						585	1560	0	585	1560	0	3218	78.9	2145	54.8	(3) 2x8	Live	0.07	L/360	L/1086	Pass	3.0	0.8
FB-3	6		13						585	1560	0	585	1560	0	3218	79.3	2145	64.4	(2) 2x10	Live	0.05	L/360	L/1503	Pass	3.0	1.1
FB-4	6		7						315	840	0	315	840	0	1733	8.4	1155	14.6	(2) 1-3/4"x11-7/8" LVL	Live	0.01	L/480	L/10383	Pass	2.0	0.4
FB-5	3	22	6						630	360	1155	630	360	1155	1339	49.2	1785	68.4	(2) 2x8	Live	0.01	L/480	L/3910	Pass	1.5	1.1
FB-6	10	5	8	100					1475	1600	875	1475	1600	875	8328	40.6	3331	42.2	(2) 1-3/4"x11-7/8" LVL	Live	0.09	L/480	L/1403	Pass	5.0	1.5
FB-7	5.5	18	5	100					1224	550	1733	1224	550	1733	4065	19.8	2956	37.4	(2) 1-3/4"x11-7/8" LVL	Live	0.01	L/480	L/4970	Pass	2.7	1.3
FB-8	4.5	8	7	100					731	630	630	731	630	630	1886	9.2	1676	21.2	(2) 1-3/4"x11-7/8" LVL	Live	0.00	L/480	L/13612	Pass	2.2	0.8
FB-9	20								0	0	0	0	0	0	0	#N/A	0	#N/A	see calc	Live		L/360	######	######		
FB-10	20								0	0	0	0	0	0	0	#N/A	0	#N/A	see calc	Live		L/480	######	######		
FB-11	16								0	0	0	0	0	0	0	#N/A	0	#N/A	see calc	Live		L/480	######	######		
FB-12									0	0	0	0	0	0	0		0		not used	Live		L/480			6.5	
FB-13b	17.5		14						1838	4900	0	1838	4900	0	29477	71.8	6738	42.7	(4) 1-3/4"x11-7/8" LVL	Live	0.57	L/360	L/369	Pass	7.5	1.3
FB-14	3		28	100					780	1680	0	780	1680	0	1845	45.5	2460	73.9	(2) 2x10	Live	0.01	L/480	L/5583	Pass	1.5	1.3
FB-15	10.5		18	100					1943	3780	0	1943	3780	0	15022	77.7	5723	62.0	(3) 1-3/4"x9-1/4" LVL	Live	0.28	L/360	L/443	Pass	5.2	1.5
FB-16									0	0	0	0	0	0	0		0			Live		L/480				
FB-17									0	0	0	0	0	0	0		0			Live		L/480				
FB-18									0	0	0	0	0	0	0		0			Live		L/480				
FB-19									0	0	0	0	0	0	0		0			Live		L/480				
FB-20									0	0	0	0	0	0	0		0			Live		L/480				
FB-21									0	0	0	0	0	0	0		0			Live		L/480				
FB-22									0	0	0	0	0	0	0		0			Live		L/480				
FB-23									0	0	0	0	0	0	0		0			Live		L/480				
FB-24									0	0	0	0	0	0	0		0			Live		L/480				
FB-25									0	0	0	0	0	0	0		0			Live		L/480				
FB-26									0	0	0	0	0	0	0		0			Live		L/480				
FB-27									0	0	0	0	0	0	0		0			Live		L/480				

FOOTINGS:

ALLOWABLE BEARING PRESSURE = 1.5 KSF
Assumed Coefficient of Friction Soil to Foundation = 0.3

	Frame Line	GRAVITY DL	LL	SL	$Trib_{DL}$	$Trib_{LL}$	$Trib_{SL}$	Wall	$Trib_{Wall}$	DL	Factored LL	SL	Required FTG	Specified FTG
Grid L	L	15.0 psf	40.0 psf	35.0 psf	28.0ft	28.0ft	0.0ft	53.0 psf	17.0ft	1.3 k	1.1k		19.5 in	FC- 24
rear left	T	15.0 psf	40.0 psf	35.0 psf	28.0ft	7.0ft	21.0ft	45.0 psf	21.0ft	1.4 k	0.8k		17.0 in	FC- 20
rear right	T	15.0 psf	40.0 psf	35.0 psf	19.0ft	14.0ft	5.0ft	40.0 psf	25.0ft	1.3 k	0.6k		14.8 in	FC- 20
side	1	15.0 psf	40.0 psf	35.0 psf	10.0ft	5.0ft	5.0ft	40.0 psf	25.0ft	1.2 k	0.3k		11.5 in	FC- 20
marriage	2	15.0 psf	40.0 psf	35.0 psf	21.0ft	4.0ft	17.0ft	15.0 psf	50.0ft	1.1 k	0.6k		13.3 in	FC- 20
Grid P	P	15.0 psf	40.0 psf	35.0 psf	28.0ft	28.0ft	0.0ft	12.0 psf	17.0ft	0.6 k	1.1k		14.0 in	FC- 18
Grid 1.4	1.4	15.0 psf	40.0 psf	35.0 psf	14.0ft	5.0ft	9.0ft	12.0 psf	17.0ft	0.4 k	0.4k		6.4 in	FC- 18
SPOT FTGS														
	B	0.0 psf	0.0 psf	0.0 psf	0.0sf	0.0sf	0.0sf	0.0 psf	0.0sf	0.0 k	0.0k		0.0 in	FS- 0
F porch	C	15.0 psf	40.0 psf	35.0 psf	50.0sf	0.0sf	25.0sf	0.0 psf	0.0sf	0.8 k	0.9k		12.5 in	FS- 24
1.4 - P	D	15.0 psf	40.0 psf	35.0 psf	205.0sf	105.0sf	100.0sf	0.0 psf	0.0sf	3.1 k	5.8k		29.1 in	FS- 36

TYPICAL FOOTINGS AND REINFORCING

Soil Bearing Pressure = 1500 psf

Footing Parameters
f'c = 2500 psi
fy steel = 60 ksi
pmax = 0.016

Note: Not all footings were used on this project

Continuous Footings							Trial Reinf			
Callout	Typ Eccent	Allowable Load	Ftg Reqd	Nom Ftg	Asmin/ft	As Reqd/ft	Num Bar	Bar #	As Prov	./ As
FC-1.5	0.1%	2.2 klf	1.48'	1.5'	0.18 in^2	0.36 in^2	(2)	4	0.4	OK
FC-2.0	0.1%	3.0 klf	1.98'	2.0'	0.24 in^2	0.48 in^2	(3)	4	0.6	OK
FC-2.5	0.1%	3.7 klf	2.48'	2.5'	0.30 in^2	0.60 in^2	(3)	5	0.93	OK
FC-3.0	0.1%	4.5 klf	2.98'	3.0'	0.36 in^2	0.72 in^2	(3)	5	0.93	OK
FC-3.5	0.1%	5.2 klf	3.48'	3.5'	0.42 in^2	0.84 in^2	(3)	5	0.93	OK
FC-4.0	0.1%	6.0 klf	3.98'	4.0'	0.48 in^2	0.96 in^2	(4)	5	1.24	OK
FC-4.5	0.1%	6.7 klf	4.48'	4.5'	0.54 in^2	1.08 in^2	(4)	5	1.24	OK
FC-5.0	0.1%	7.5 klf	4.98'	5.0'	0.60 in^2	1.20 in^2	(5)	5	1.55	OK
FTS-1.5	0.1%	2.2 klf	1.48'	1.5'	0.18 in^2	0.36 in^2	(2)	4	0.4	OK
FTS-2.0	0.1%	3.0 klf	1.98'	2.0'	0.24 in^2	0.48 in^2	(3)	4	0.6	OK
FTS-2.5	0.1%	3.7 klf	2.48'	2.5'	0.30 in^2	0.60 in^2	(3)	5	0.93	OK
FTS-3.0	0.1%	4.5 klf	2.98'	3.0'	0.36 in^2	0.72 in^2	(3)	5	0.93	OK
FTS-3.5	0.1%	5.2 klf	3.48'	3.5'	0.42 in^2	0.84 in^2	(3)	5	0.93	OK

Spot Footings										Trial Reinf			
Callout	Typ Eccent	Allowable Load	Ftg Reqd	Nom Ftg	Mu	p	./ p	Asmin	As Reqd	Num Bar	Bar #	As Prov	./ As
FS-2.0	0.1%	5.9 k	1.99'	2.0'	1.02 k-ft	0.000	OK	0.43 in^2	0.05 in^2	(2)	5	0.62	OK
FS-2.5	0.1%	9.2 k	2.49'	2.5'	2.16 k-ft	0.000	OK	0.54 in^2	0.10 in^2	(3)	5	0.93	OK
FS-3.0	0.1%	13.3 k	2.99'	3.0'	3.95 k-ft	0.001	OK	0.65 in^2	0.18 in^2	(3)	5	0.93	OK
FS-3.5	0.1%	18.2 k	3.49'	3.5'	6.52 k-ft	0.000	OK	0.90 in^2	0.22 in^2	(3)	5	0.93	OK
FS-4.0	0.1%	23.8 k	3.99'	4.0'	10.02 k-ft	0.001	OK	1.03 in^2	0.33 in^2	(4)	5	1.24	OK
FS-4.5	0.1%	30.1 k	4.49'	4.5'	14.58 k-ft	0.001	OK	1.16 in^2	0.48 in^2	(4)	5	1.24	OK
FS-5.0	0.1%	37.2 k	4.99'	5.0'	19.63 k-ft	0.001	OK	1.29 in^2	0.65 in^2	(5)	5	1.55	OK
FS-5.5	0.1%	45.0 k	5.50'	5.5'	26.59 k-ft	0.001	OK	1.42 in^2	0.89 in^2	(5)	5	1.55	OK
FS-6.0	0.1%	53.5 k	5.99'	6.0'	33.81 k-ft	0.001	OK	1.60 in^2	1.07 in^2	(6)	5	1.86	OK

PUNCHING SHEAR CHECK

Note: Not all footings were used on this project

Callout	Factored Load	Min Col. Dim	factored qu		Assumed depth	d	bo	Vu	Vc	./ Capacity
FS-2.0	8.5 k	4"	2.12 ksf		10"	7.0"	44"	6.7 k	52.4 k	OK
FS-2.5	13.3 k	4"	2.13 ksf		10"	7.0"	44"	11.5 k	52.4 k	OK
FS-3.0	19.2 k	4"	2.13 ksf		10"	7.0"	44"	17.4 k	52.4 k	OK
FS-3.5	26.2 k	4"	2.14 ksf		12"	9.0"	52"	23.7 k	79.6 k	OK
FS-4.0	34.2 k	4"	2.14 ksf		12"	9.0"	52"	31.7 k	79.6 k	OK
FS-4.5	43.4 k	4"	2.14 ksf		12"	9.0"	52"	40.8 k	79.6 k	OK
FS-5.0	53.6 k	5"	2.14 ksf		12"	9.0"	56"	50.7 k	85.7 k	OK
FS-5.5	64.9 k	5"	2.14 ksf		12"	9.0"	56"	61.9 k	85.7 k	OK
FS-6.0	77.0 k	6"	2.14 ksf		12"	9.4"	62"	73.5 k	98.4 k	OK

Reeve & Associates, Inc.

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Fax: (801) 621-2666

Autumn Sky 4-plex

Lehi, Utah

Date:	Sheet	Of
	1	1

Designed By:	Project Number:
JMT	

Force Transfer Around Openings - Diekmann Technique

Shear Line: Grid T main level - ASPEN

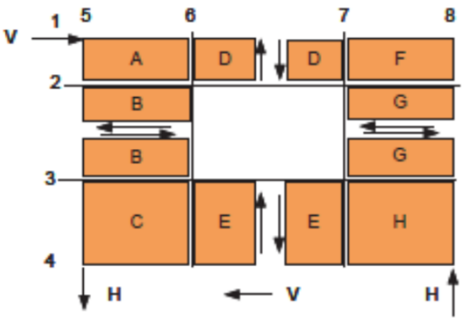
Horizontal Shear, V =	6050	lbs
Total Wall Length =	16	ft
Number of Openings =	1	
Wall Height =	9	ft
Total Pier Length =	10.0	ft
Controlling Lateral Force =	Wind	

Holdown Force, H =	3403	lbs
D,E Shear =	850.8	lb/ft
B,G Shear =	605	lb/ft
Total Tension, F =	5105	lbs
Min Strap =	**2552**	lbs
Max Strap =	**2552**	lbs
Check 1	510.5	lb/ft
Check 2	510.5	lb/ft
A,C,F,H Shear =	94.5	lb/ft

		Pier Left	Pier Right	Opening W	Opening H	Top Dist	Bot Dist	Seismic Min H/W	Seismic Red. %	D-E Sum	B-G Sum	Max Strap
1	1	5	5	6	5	2	2	1.0	100	4	10	2552
		5	5								10	

Results Summary

Level	Ht	V	Vt	SW	Adj.	SW'
-	ft	lbs	lbs	-	%	-
5	8	851	851	4	100	4
4			851			
3			851			
2			851			
1			851			



Shear Wall Capacities

		Seismic	Wind
SW-1	-	260 plf	365 plf
SW-2	-	380 plf	532 plf
SW-3	-	490 plf	685 plf
SW-4	-	640 plf	896 plf
SW-5	-	760 plf	1065 plf
SW-6	-	980 plf	1370 plf

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Phone: (801) 621-3100
Fax: (801) 621-2666

Autumn Sky 4-plex

Lehi, Utah

Date:	Sheet	Of
	1	1

Designed By:	Project Number:
JMT	

Force Transfer Around Openings - Diekmann Technique

Shear Line: Upper level Grid F

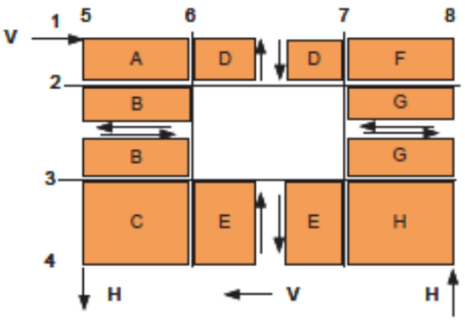
Horizontal Shear, V =	2744	lbs
Total Wall Length =	11	ft
Number of Openings =	1	
Wall Height =	8	ft
Total Pier Length =	5.0	ft
Controlling Lateral Force =	Wind	

Holdown Force, H =	1996	lbs
D,E Shear =	665.2	lb/ft
B,G Shear =	548.8	lb/ft
Total Tension, F =	3991	lbs
Min Strap =	**1996**	lbs
Max Strap =	**1996**	lbs
Check 1	798.3	lb/ft
Check 2	798.3	lb/ft
A,C,F,H Shear =	-249.5	lb/ft

	#	Pier Left	Pier Right	Opening W	Opening H	Top Dist	Bot Dist	Seismic Min H/W	Seismic Red. %	D-E Sum	B-G Sum	Max Strap
1	1	2.5	2.5	6	5	1	2	2.0	100	3	5	1996
		2.5	2.5								5	

Results Summary

Level	Ht	V	Vt	SW	Adj.	SW'
-	ft	lbs	lbs	-	%	-
5	8	665	665	3	100	3
4			665			
3			665			
2			665			
1			665			



Shear Wall Capacities

		Seismic		Wind	
SW-1	-	260	plf	365	plf
SW-2	-	380	plf	532	plf
SW-3	-	490	plf	685	plf
SW-4	-	640	plf	896	plf
SW-5	-	760	plf	1065	plf
SW-6	-	980	plf	1370	plf

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Autumn Sky 4-plex

Lehi, Utah

Date:	Sheet	Of
	1	1

Designed By:	Project Number:
JMT	

Force Transfer Around Openings - Diekmann Technique

Shear Line: Grid T upper level - ASPEN

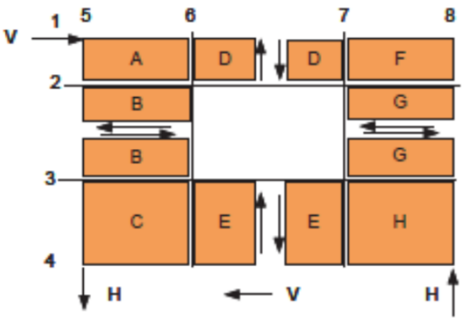
Horizontal Shear, V =	4055	lbs
Total Wall Length =	16	ft
Number of Openings =	1	
Wall Height =	8	ft
Total Pier Length =	10.0	ft
Controlling Lateral Force =	Wind	

Holdown Force, H =	2028	lbs
D,E Shear =	675.8	lb/ft
B,G Shear =	405.5	lb/ft
Total Tension, F =	4055	lbs
Min Strap =	**2028**	lbs
Max Strap =	**2028**	lbs
Check 1	405.5	lb/ft
Check 2	405.5	lb/ft
A,C,F,H Shear =	0.0	lb/ft

	#	Pier Left	Pier Right	Opening W	Opening H	Top Dist	Bot Dist	Seismic Min H/W	Seismic Red. %	D-E Sum	B-G Sum	Max Strap
1	1	5	5	6	5	1	2	1.0	100	3	10	2028
		5	5								10	

Results Summary

Level	Ht	V	Vt	SW	Adj.	SW'
-	ft	lbs	lbs	-	%	-
5	8	676	676	3	100	3
4			676			
3			676			
2			676			
1			676			



Shear Wall Capacities

		Seismic		Wind	
SW-1	-	260	plf	365	plf
SW-2	-	380	plf	532	plf
SW-3	-	490	plf	685	plf
SW-4	-	640	plf	896	plf
SW-5	-	760	plf	1065	plf
SW-6	-	980	plf	1370	plf

Reeve & Associates, Inc.

ASD Design

Design of Wood Columns Based on the NDS

(With P-Δ Effects on Displacement)

Sht Number:	
Job Number:	--
Date:	
By:	JMT

Blue Cells Must be Entered Manually

WOOD COLUMNS	WOOD		WOOD		WOOD		WOOD		WOOD		STEEL COLUMNS
Species & Grade	(1) 2x6 DF #2		(1) 2x6 DF #2		(1) 2x6 DF #2		(2) 2x6 DF #2		(2) 2x6 DF #2		Species & Grade
Designation	Column 1		Column 2		Column 3		Column 4		Column 5		Designation
Description	9' King Studs 16"oc - 25'-40 lb roof		9' King Studs 16" oc - 25' 40lb roof + 10' floor		9' King Studs - Openings to 4'		9' King Studs - Openings to 6'		9' King Studs - Openings to 8'		**Description**
L_{ux} (ft)	9.0		9.0		9.0		9.0		9.0		L_{ux} (ft)
L_{uy} (ft)	1.0		1.0		1.0		1.0		1.0		L_{uy} (ft)
P or T DL | LL(kip)	0.50	1.33	0.70	1.86	0.35	0.93	0.35	0.93	0.35	0.93	P or T DL | LL(kip)
P_u or T_u (kip)	1.83		2.56		1.28		1.28		1.28		P_u or T_u (kip)
e_x | e_y											e_x | e_y
Column γ (pcf) | SW (plf)	*34.0*	*1.9*	*34.0*	*1.9*	*34.0*	*1.9*	*34.0*	*3.9*	*34.0*	*3.9*	*Column γ (pcf) | SW (plf)*
w_x | w_y (plf)	26.60		26.60		53.30		73.30		93.30		w_x | w_y (plf)
w_{U_x} | w_{U_y} (plf)	26.60		26.60		53.30		73.30		93.30		w_{U_x} | w_{U_y} (plf)
w_{part_x} | w_{part_y} (plf)											w_{part_x} | w_{part_y} (plf)
Strt Dist From Bot											Strt Dist From Bot
End Dist From Bot											End Dist From Bot
w_{part_x} | w_{part_y} (plf)											w_{part_x} | w_{part_y} (plf)
P_{L1_x} | P_{L1_y} (lbs)											P_{L1_x} | P_{L1_y} (lbs)
Location x-x | y-y (ft)											Location x-x | y-y (ft)
P_{L1_x} | P_{L1_y} (lbs)											P_{L1_x} | P_{L1_y} (lbs)
P_{L2_x} | P_{L2_y} (lbs)											P_{L2_x} | P_{L2_y} (lbs)
Location x-x | y-y (ft)											Location x-x | y-y (ft)
P_{L2_x} | P_{L2_y} (lbs)											P_{L2_x} | P_{L2_y} (lbs)
C_{D_Vert} | C_{D_Lat}	1.00	1.60	1.00	1.60	1.00	1.60	1.00	1.60	1.00	1.60	C_b | D.N.A.
C_r | Wet Use (Y/N)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	U | A_g-A_n (in^2)
C_t | C_i	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	D.N.A.
C_T | C_{fu}	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	K_z | D.N.A.
K_{ex} | K_{ey}	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	K_x | K_y
% W_{cc} for Δ											% W_{cc} for Δ
b | d (in)	1.5	5.5	1.5	5.5	1.5	5.5	1.5	5.5	1.5	5.5	b_f | d (in)
E_X | E_Y (psi)	1,600,000.0	1,600,000.0	1,600,000.0	1,600,000.0	1,600,000.0	1,600,000.0	1,600,000.0	1,600,000.0	1,600,000.0	1,600,000.0	A_g | A_n (in)
E'_X | E'_Y (psi)	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	E_X | E_Y (psi)
$E_{min\text{-}x}$ | $E_{min\text{-}y}$ (psi)	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	r_x | r_y (in)
$E'_{min\text{-}x}$ | $E'_{min\text{-}y}$ (psi)	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	T_{ny} | T_{nr} (kips)
$C_{M\text{-}E}$ | $C_{M\text{-}Fc}$	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	$\lambda_{p\text{-}c\ FL}$ | $\lambda_{r\text{-}c\ FL}$
$C_{M\text{-}b}$ | $C_{M\text{-}Fc\_Perp}$	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	$\lambda_{p\text{-}c\ WEB}$ | $\lambda_{r\text{-}c\ WEB}$
$C_{M\text{-}t}$ | C_{Fc}	1.00	1.10	1.00	1.10	1.00	1.10	1.00	1.10	1.00	1.10	$b_F/2t_F$ or b/t | h/t_W or h/t
C_V | C_L	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.99	$Q_{s\text{-}c}$ | $Q_{a\text{-}c}$
L_{ex}/d | L_{ey}/b	19.6	8.0	19.6	8.0	19.6	8.0	19.6	8.0	19.6	8.0	KL_x/r_x | KL_y/r_y
L_e/(d or b) Max | c	50	0.80	50	0.80	50	0.80	50	0.80	50	0.80	KL/r Max | $4.71(E/F_y)^{½}$
f_c | f_t (psi)	221.7	0.0	310.3	0.0	155.2	0.0	77.6	0.0	77.6	0.0	F_{cr} | $F_{cr\text{-}FTB}$ (ksi)
F_c | F_T (psi)	1350.00	575.00	1350.00	575.00	1350.00	575.00	1350.00	575.00	1350.00	575.00	Ω_{TY} | Ω_{TR}
F'_c | F'_t (psi)	928	632.50	928	632.50	928	632.50	928	632.50	928	632.50	P_n (Kips) | Ω_c
P_{TL_ALL} | T_{TL_ALL} (kip)	P = 7.65	T = 5.22	P = 7.65	T = 5.22	P = 7.65	T = 5.22	P = 15.31	T = 10.44	P = 15.31	T = 10.44	P_n/Ω | T_n/Ω (kip)
Comp or Tension	**23.9% Stressed**		**33.5% Stressed**		**16.7% Stressed**		**8.4% Stressed**		**8.4% Stressed**		**Comp or Tension**
e_x (in) | e_y (in)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	e_x (in) | e_y (in)
$C_{F\text{-}b}$ | D.N.A.	1.30		1.30		1.30		1.30		1.30		M_{px} | M_{py} (k*ft)
F_{bx} | F_{by} (psi)	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00	M_n LTB or WLB (k*ft)
D.N.A. | D.N.A.											M_n FLB (k*ft)
I_X | I_Y (in^4)	20.80	1.55	20.80	1.55	20.80	1.55	41.59	3.09	41.59	3.09	I_X | I_Y (in^4)
Lateral Rxn (lbs) x | y	119.7	0.0	119.7	0.0	239.8	0.0	329.9	0.0	419.9	0.0	Lateral Rxn (lbs) x | y
Z_{nail} - PLT | C_{eg}/C_{tn} (lbs)	97.00	0.67	97.00	0.67	97.00	0.67	97.00	0.67	97.00	0.67	$\lambda_{p\_FL\text{-}B}$ | $\lambda_{T\_FL\text{-}B}$
Plate Nails/Mmbr	1.2	0.0	1.2	0.0	2.3	0.0	1.6	0.0	2.0	0.0	$\lambda_{p\_WEB\text{-}B}$ | $\lambda_{T\_WEB\text{-}B}$
A34 or A35 Req'd	1 A34		1 A34		1 A34		1 A34		1 A35		L_p | L_r (ft)
F^*_{bx} | F'_{bx}	1872.00	1854.21	1872.00	1854.21	1872.00	1854.21	1872.00	1854.21	1872.00	1854.21	F_y (ksi) | Ω_b
F^*_{by} | F'_{by}	1872.00	1854.21	1872.00	1854.21	1872.00	1854.21	1872.00	1854.21	1872.00	1854.21	Z_x (in^3) | Z_y (in^3)
f_{bx} | f_{by} (psi)	427.36	0.00	427.36	0.00	856.32	0.00	588.82	0.00	749.48	0.00	f_{bx} | f_{by} (ksi)
S_x | S_y (in^3)	7.56	2.06	7.56	2.06	7.56	2.06	15.13	4.13	15.13	4.13	S_x | S_y (in^3)
M_{TL_Max} (k-ft)	0.27	0.00	0.27	0.00	0.54	0.00	0.74	0.00	0.94	0.00	M_{TL_Max} (k-ft)
M_{TL_ALL} (k-ft)	1.2	0.3	1.2	0.3	1.2	0.3	2.3	0.6	2.3	0.6	M_n/Ω (k*ft)
Bending	**23.05%**		**23.05%**		**46.18%**		**31.76%**		**40.42%**		**Bending**
Max TL Δ Ratio	**L/ 150**		**L/ 150**		**L/ 150**		**L/ 240**		**L/ 180**		**Max TL Δ Ratio**
Allowable TL Δ											**Allowable TL Δ**
Δ_{TL_Max} (in)	0.121	0.000	0.119	0.000	0.238	0.000	0.170	0.000	0.217	0.000	Δ_{TL_Max} (in)
Δ_{TL_ALL} (in)	0.72	0.72	0.72	0.72	0.72	0.72	0.45	0.45	0.60	0.60	Δ_{TL_ALL} (in)
Actual TL Δ	**L/ 890**		**L/ 907**		**L/ 453**		**L/ 634**		**L/ 498**		**Actual TL Δ**
Plate Material	**DF #2**		**DF #2**		**DF #2**		**DF #2**		**DF #2**		**D.N.A.**
F_{c_Perp} | F'_{c_Perp} (psi)	625.0	625.00	625.0	625.00	625.0	625.00	625.0	625.00	625.0	625.00	F_{cr} (ksi) | Jc/S_xh_O
P_{ALL} (kip) | f_{c_Perp} (psi)	P = 5.16	221.70	P = 5.16	310.33	P = 5.16	155.15	P = 10.31	77.58	P = 10.31	77.58	D.N.A.
Plate Bearing	**35.47%**		**49.65%**		**24.82%**		**12.41%**		**12.41%**		**D.N.A.**
$L_{e\_Bending}$ (ft)	2.06	16.56	2.06	16.56	2.06	16.56	2.06	16.56	2.06	16.56	$L_{u\ Bending}$ (ft)
R_B | D.N.A.	7.77		7.77		7.77		7.77		7.77		Max | (H1-1a) or (H1-1b)
F_{bE} (psi)	11518.1		11518.1		11518.1		11518.1		11518.1		Tension or Compression
Comp$_{OR}$Tens & Bend Interaction	**33.79% Adequate**		**41.96% Adequate**		**55.61% Adequate**		**34.58% Adequate**		**43.83% Adequate**		**Comp$_{OR}$Tens & Bend Interaction**
Grade Class	DIM		DIM		DIM		DIM		DIM		Shape

Reeve & Associates, Inc.

ASD Design

Design of Wood Columns Based on the NDS

(With P-Δ Effects on Displacement)

Sht Number:	
Job Number:	--
Date:	
By:	JMT

Blue Cells Must be Entered Manually

WOOD COLUMNS	WOOD		WOOD		WOOD		WOOD		WOOD		STEEL COLUMNS
Species & Grade	(2) 2x6 DF #2		(4) 2x4 DF #2		(2) 2x6 DF #2		(2) 2x6 DF #2		(2) 2x6 DF #2		Species & Grade
Designation	Column 1		Column 2		Column 3		Column 4		Column 5		Designation
Description	**Girder load 2x6**		**Grider Load 2x4**		**basement column Grid P and 1.4**						**Description**
L_{ux} (ft)	9.0		9.0		9.0		9.0		9.0		**L_{ux} (ft)**
L_{uy} (ft)	1.0		1.0		1.0		1.0		1.0		**L_{uy} (ft)**
P or T DL | LL(kip)	2.14	5.00	2.14	5.00	3.10	5.80	0.35	0.93	0.35	0.93	**P or T DL | LL(kip)**
P_u or T_u (kip)	7.14		7.14		8.90		1.28		1.28		**P_u or T_u (kip)**
e_x | e_y											**e_x | e_y**
Column γ (pcf) | SW (plf)	*34.0*	*3.9*	*34.0*	*5.0*	*34.0*	*3.9*	*34.0*	*3.9*	*34.0*	*3.9*	*Column γ (pcf) | SW (plf)*
w_x | w_y (plf)	5.00		5.00		5.00		5.00		5.00		**w_x | w_y (plf)**
w_{U_x} | w_{U_y} (plf)	5.00		5.00		5.00		5.00		5.00		**w_{U_x} | w_{U_y} (plf)**
w_{part_x} | w_{part_y} (plf)											**w_{part_x} | w_{part_y} (plf)**
Strt Dist From Bot											**Strt Dist From Bot**
End Dist From Bot											**End Dist From Bot**
w_{part_x} | w_{part_y} (plf)											**w_{part_x} | w_{part_y} (plf)**
P_{L1_x} | P_{L1_y} (lbs)											**P_{L1_x} | P_{L1_y} (lbs)**
Location x-x | y-y (ft)											**Location x-x | y-y (ft)**
P_{L1_x} | P_{L1_y} (lbs)											**P_{L1_x} | P_{L1_y} (lbs)**
P_{L2_x} | P_{L2_y} (lbs)											**P_{L2_x} | P_{L2_y} (lbs)**
Location x-x | y-y (ft)											**Location x-x | y-y (ft)**
P_{L2_x} | P_{L2_y} (lbs)											**P_{L2_x} | P_{L2_y} (lbs)**
C_{D_Vert} | C_{D_Lat}	1.00	1.60	1.00	1.60	1.00	1.60	1.00	1.60	1.00	1.60	**C_b** | D.N.A.
C_r | Wet Use (Y/N)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**U | A_g-A_n (in^2)**
C_t | C_i	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	D.N.A.
C_T | C_{fu}	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**K_z** | D.N.A.
K_{ex} | K_{ey}	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**K_x | K_y**
% W_{cc} for Δ											**% W_{cc} for Δ**
b | d (in)	1.5	5.5	1.5	3.5	1.5	5.5	1.5	5.5	1.5	5.5	b_f | d (in)
E_X | E_Y (psi)	1,600,000.0	1,600,000.0	1,600,000.0	1,600,000.0	1,600,000.0	1,600,000.0	1,600,000.0	1,600,000.0	1,600,000.0	1,600,000.0	A_g | A_n (in)
E'_X | E'_Y (psi)	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	E_X | E_Y (psi)
E_{min-x} | E_{min-y} (psi)	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	r_x | r_y (in)
E'_{min-x} | E'_{min-y} (psi)	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	580,000.0	T_{ny} | T_{nr} (kips)
C_{M-E} | C_{M-Fc}	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	$\lambda_{p\text{-}c\ FL}$ | $\lambda_{r\text{-}c\ FL}$
C_{M-b} | C_{M-Fc_Perp}	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	$\lambda_{p\text{-}c\ WEB}$ | $\lambda_{r\text{-}c\ WEB}$
C_{M-t} | C_{F-c}	1.00	1.10	1.00	1.15	1.00	1.10	1.00	1.10	1.00	1.10	$b_F/2t_F$ or b/t | h/t_W or h/t
C_V | C_L	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.99	$Q_{s\text{-}c}$ | $Q_{a\text{-}c}$
L_{ex}/d | L_{ey}/b	19.6	8.0	30.9	8.0	19.6	8.0	19.6	8.0	19.6	8.0	KL_x/r_x | KL_y/r_y
L_e/(d or b) Max | c	50	0.80	50	0.80	50	0.80	50	0.80	50	0.80	KL/r Max | $4.71(E/F_y)^{½}$
f_c | f_t (psi)	432.7	0.0	340.0	0.0	539.4	0.0	77.6	0.0	77.6	0.0	F_{cr} | $F_{cr\text{-}FTB}$ (ksi)
F_c | F_T (psi)	1350.00	575.00	1350.00	575.00	1350.00	575.00	1350.00	575.00	1350.00	575.00	Ω_{TY} | Ω_{TR}
F'_c | F'_t (psi)	928	632.50	462	661.25	928	632.50	928	632.50	928	632.50	P_n (Kips) | Ω_c
P_{TL_ALL} | T_{TL_ALL} (kip)	P = 15.31	T = 10.44	P = 9.69	T = 13.89	P = 15.31	T = 10.44	P = 15.31	T = 10.44	P = 15.31	T = 10.44	P_n/Ω | T_n/Ω (kip)
Comp or Tension	**46.6% Stressed**		**73.7% Stressed**		**58.1% Stressed**		**8.4% Stressed**		**8.4% Stressed**		**Comp or Tension**
e_x (in) | e_y (in)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	e_x (in) | e_y (in)
C_{F-b} | D.N.A.	1.30		1.50		1.30		1.30		1.30		M_{px} | M_{py} (k*ft)
F_{bx} | F_{by} (psi)	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00	M_n LTB or WLB (k*ft)
D.N.A. | D.N.A.											M_n FLB (k*ft)
I_X | I_Y (in^4)	41.59	3.09	21.44	3.94	41.59	3.09	41.59	3.09	41.59	3.09	I_X | I_Y (in^4)
Lateral Rxn (lbs) x | y	22.5	0.0	22.5	0.0	22.5	0.0	22.5	0.0	22.5	0.0	Lateral Rxn (lbs) x | y
Z_{nail} - PLT | C_{eg}/C_{tn} (lbs)	97.00	0.67	97.00	0.67	97.00	0.67	97.00	0.67	97.00	0.67	$\lambda_{p\_FL\text{-}B}$ | $\lambda_{T\_FL\text{-}B}$
Plate Nails/Mmbr	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	$\lambda_{p\_WEB\text{-}B}$ | $\lambda_{T\_WEB\text{-}B}$
A34 or A35 Req'd	1 A34		1 A34		1 A34		1 A34		1 A34		L_p | L_r (ft)
F^*_{bx} | F'_{bx}	1872.00	1854.21	2160.00	2145.57	1872.00	1854.21	1872.00	1854.21	1872.00	1854.21	F_y (ksi) | Ω_b
F^*_{by} | F'_{by}	1872.00	1854.21	2160.00	2145.57	1872.00	1854.21	1872.00	1854.21	1872.00	1854.21	Z_x (in^3) | Z_y (in^3)
f_{bx} | f_{by} (psi)	40.17	0.00	49.59	0.00	40.17	0.00	40.17	0.00	40.17	0.00	f_{bx} | f_{by} (ksi)
S_x | S_y (in^3)	15.13	4.13	12.25	5.25	15.13	4.13	15.13	4.13	15.13	4.13	S_x | S_y (in^3)
M_{TL_Max} (k-ft)	0.05	0.00	0.05	0.00	0.05	0.00	0.05	0.00	0.05	0.00	M_{TL_Max} (k-ft)
M_{TL_ALL} (k-ft)	2.3	0.6	2.2	0.9	2.3	0.6	2.3	0.6	2.3	0.6	M_n/Ω (k*ft)
Bending	**2.17%**		**2.31%**		**2.17%**		**2.17%**		**2.17%**		**Bending**
Max TL Δ Ratio	**L/ 150**		**L/ 150**		**L/ 150**		**L/ 240**		**L/ 180**		**Max TL Δ Ratio**
Allowable TL Δ											**Allowable TL Δ**
Δ_{TL_Max} (in)	0.013	0.000	0.023	0.000	0.012	0.000	0.019	0.000	0.021	0.000	Δ_{TL_Max} (in)
Δ_{TL_ALL} (in)	0.72	0.72	0.72	0.72	0.72	0.72	0.45	0.45	0.60	0.60	Δ_{TL_ALL} (in)
Actual TL Δ	**L/ 8471**		**L/ 4795**		**L/ 8973**		**L/ 5718**		**L/ 5187**		**Actual TL Δ**
Plate Material	**DF #2**		**DF #2**		**DF #2**		**DF #2**		**DF #2**		**D.N.A.**
F_{c_Perp} | F'_{c_Perp} (psi)	625.0	625.00	625.0	625.00	625.0	625.00	625.0	625.00	625.0	625.00	F_{cr} (ksi) | Jc/S_xh_O
P_{ALL} (kip) | f_{c_Perp} (psi)	P = 10.31	432.73	P = 13.13	340.00	P = 10.31	539.39	P = 10.31	77.58	P = 10.31	77.58	D.N.A.
Plate Bearing	**69.24%**		**54.40%**		**86.30%**		**12.41%**		**12.41%**		**D.N.A.**
$L_{e\_Bending}$ (ft)	2.06	16.56	2.06	16.56	2.06	16.56	2.06	16.56	2.06	16.56	$L_{u\ Bending}$ (ft)
R_B | D.N.A.	7.77		6.20		7.77		7.77		7.77		Max | (H1-1a) or (H1-1b)
F_{bE} (psi)	11518.1		18099.9		11518.1		11518.1		11518.1		Tension or Compression
Comp$_{OR}$Tens & Bend Interaction	**46.65% Adequate**		**73.65% Adequate**		**58.15% Adequate**		**8.36% Adequate**		**8.36% Adequate**		**Comp$_{OR}$Tens & Bend Interaction**
Grade Class	DIM		DIM		DIM		DIM		DIM		Shape

Solutions you can build on

Reeve & Associates, Inc.

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