

STRUCTURAL CALCULATIONS
GRAVITY LOAD ANALYSIS AND DESIGN
WIND AND SEISMIC ANALYSIS & DESIGN
FOUNDATION ANALYSIS AND DESIGN

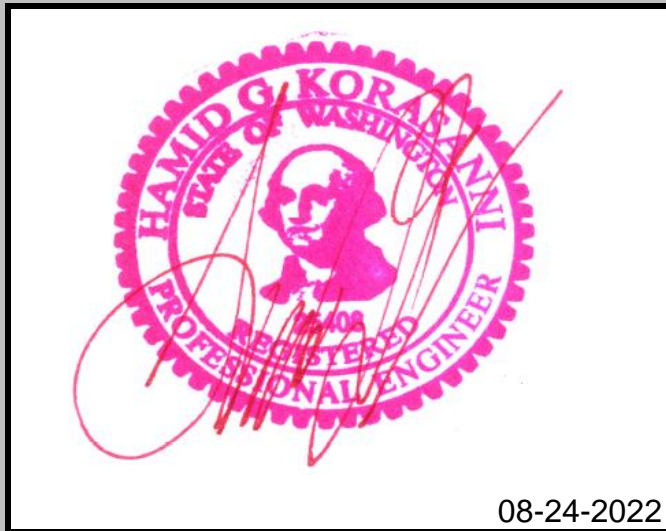
PROJECT:

KHAN RESIDENCE
4205 85th Ave SE
Mercer Island, WA 98040

ENGINEER:

SAZEI Design Group, LLC
Consulting Engineers

6608 110th Ave. N.E.
Kirkland, WA. 98033
Phone: (425) 214-2280
Fax: (425) 889-6867
E-mail: hamidkorasani@yahoo.com



08-24-2022

JOB # Khan-01-2022
DATE: 8/24/2022

HAMID G. KORASANI, P.E.

PROJECT NAME:

KHAN RESIDENCE

PROJECT ADDRESS:

**4205 85th Ave SE
Mercer Island, WA 98040**

ENGINEER:

**SAZEI Design Group, LLC
6608 110th Ave. N.E.
Kirkland, WA 98033
Tel:(425) 214-2280
e-mail: hamidkorasani@yahoo.com**

Architect:

**2S DESIGN
5454 Delridge Way SW
Seattle WA 98106
[206-778-1032](tel:206-778-1032)**

JURISDICTION:

**City of Mercer Island
Mercer Island, Washington**

PROJECT: KHAN RESIDENCE

JOB#: Khan-01-2022

Load Definitions (Per section 1602, I.B.C. 2018)

LOADS. Forces or other actions that result from the weight of building materials, occupants and their possessions, environmental effects, differential movement and restrained dimensional changes. Permanent loads are those loads in which variations over time are rare or of small magnitude, such as dead loads. All other loads are variable loads.

Symbols & Notations

D = Dead Loads.

D_i = Weight of ice in accordance with Chapter 10 of ASCE 7-16

E = Combined effect of horizontal and vertical earthquake induced forces as defined in Section 12.4.2 of ASCE 7-16

F = Load due to fluids with well-defined pressures and maximum heights.

F_a = Flood Load in accordance with Chapter 5 of ASCE 7-16

H = Load due to lateral earth pressures, ground water pressure or pressure of bulk materials.

L = Roof live load greater than 20 psf and floor live load

L_r = Roof live load of 20 psf or less

R = Rain load.

S = Snow Load.

T = Self-straining load

V_{asd} = Nominal design wind speed (3-second gust), miles per hour (mph) where applicable

V_{ult} = Ultimate design wind speed (3-second gust), miles per hour (mph) from figures 1690A, 1690B or 1690C or ASCE 7-16 figures 26.5-1A, 26.5-1B or 26.5-1C

W = Load due to wind pressure.

W_i = Wind-on-ice in accordance with Chapter 10 ASCE 7-16

PROJECT: KHAN RESIDENCE

JOB#: Khan-01-2022

General Design Requirements (Per Section 1604 of the I.B.C. 2018)

1604.1 General Building, structures and parts thereof shall be designed and constructed in accordance with allowable stress design, as permitted by the applicable materials.

1604.2 Strength. Buildings and other structures, and parts thereof, shall be design and constructed to support safely the nominal loads in load combinations defined in the I.B.C. 2018 Code without exceeding the appropriate specified allowable stresses for the materials of construction.

1604.3 Serviceability. Structural systems and members thereof shall be design to have adequate stiffness to limit deflections and lateral drift as required by Table 1604.3 of the IBC 2018 Code and Section 12.12.1 of the ASCE 7-16

Construction	L	S or W^f	D+L^{d,g}
Roof members ^e			
Supporting plaster or stucco ceiling	l/360	l/360	l/360
Supporting non plaster ceiling	l/240	l/240	l/180
Not supporting ceiling	l/180	l/180	l/120
Floor members	l/360	-----	l/240
With plaster or stucco finish	-----	l/360	-----
With other brittle material	-----	l/240	-----
With flexible finishes	-----	l/120	-----

Refer to Table 1604.3 of the I.B.C. 2018 for footnotes a,b,c,d,e,g,h, and l.

PROJECT: KHAN RESIDENCE

JOB#: Khan-01-2022

LOAD COMBINATIONS PER SECTION 1605 I.B.C. 2018

Section 1605.1 General. Buildings and other structures and portions thereof shall be designed to resist the load combinations specified in Section 1605.1

1. The load combinations specified in Section 1605.2, 1605.3.1 or 1605.3.2
2. The load combinations specified in Chapters 18 through 23, and
3. The seismic load effects including overstrength factor in accordance with Section 12.2.5.2, 12.3.3.3 or 12.10.2.1 of ASCE 7-16. With the simplified procedure of ASCE 7-16 Section 12.14, the seismic load effects including overstrength factor in accordance with Section 12.14.3.2 of the ASCE 7-16 shall be used.

Section 1605.3 Load combinations using allowable stress design

Section 1605.3.1 Basic load combinations. Where allowable stress design (working stress design), as permitted by the code, is used, structures and portions thereof shall resist the most critical effects resulting from the following combinations of loads:

$D + F$	(Equation 16-8)
$D+H+F+L$	(Equation 16-9)
$D+H+F+(L_r \text{ or } S \text{ or } R)$	(Equation 16-10)
$D+H+F+0.75(L)+0.75(L_r \text{ or } S \text{ or } R)$	(Equation 16-11)
$D+H+F+(0.6W \text{ or } 0.7E)$	(Equation 16-12)
$D+H+F+0.75(0.6W)+0.75L+0.75(L_r \text{ or } S \text{ or } R)$	(Equation 16-13)
$D+H+F+0.75(0.7E)+0.75L+0.75S$	(Equation 16-14)
$0.6D+0.6W+H$	(Equation 16-15)
$0.6(D+F)+0.7E+H$	(Equation 16-16)

Exceptions:

- 1.- Crane hook loads need not be combined with roof live load or with more than three-fourths of the snow load or one-half of the wind load
- 2.- Flat roof snow loads of 30 psf or less and roof live loads of 30 psf or less need not be combined with seismic loads. Where flat roof snow load exceeds 30 psf 20 percent shall be combined with seismic loads.

Refer to section 1605.2.1 of the IBC 2018 Code for exceptions 3, 4 and 5

PROJECT: KHAN RESIDENCE

JOB#: Khan-01-2022

Dead Loads (Per Section 1606, I.B.C. 2018)

Design dead loads. For purposes of design, the actual weights of materials of construction and fixed service equipment shall be used. In absence of definite information, values used shall be subject to the approval of the building official.

Roof Dead Loads

Roof Membrane	.....	2.50 p.s.f.
1/2" Plywood	.....	2.75 p.s.f.
Misc. Framing	.....	0.50 p.s.f.
Roof Trusses @ 24" o.c.	.....	3.50 p.s.f.
R-58 Insulation:	.....	1.50 p.s.f.
5/8" G.W.B.	.....	2.50 p.s.f.
Electrical and Mechanical	.....	<u>1.50 p.s.f.</u>
TOTAL LOADS		14.75 p.s.f.

USE: 15 p.s.f. for design

USE: 6.00 p.s.f. over the roof area to account for wall partition weight for seismic calculations

PROJECT: KHAN RESIDENCE

JOB#: Khan-01-2022

Dead Loads (Per Section 1606, I.B.C. 2018)

Design dead loads. For purposes of design, the actual weights of materials of construction and fixed service equipment shall be used. In absence of definite information, values used shall be subject to the approval of the building official.

Upper Floor Dead Loads

Carpet and Pad	.....	1.00 p.s.f.
3/4" Plywood	.....	2.40 p.s.f.
11-7/8" TJI floor framing @16" o.c.	.....	4.00 p.s.f.
R-25 Insulation	.....	1.50 p.s.f.
5/8" G.W.B.	.....	2.50 p.s.f.
Electrical and Mechanical	.....	1.50 p.s.f.
TOTAL LOADS		12.90 p.s.f.

USE: 15.00 p.s.f. for design

USE: 40.00 p.s.f. over the floor area to account for wall partition weight for seismic calculations

PROJECT: KHAN RESIDENCE

JOB#: Khan-01-2022

Dead Loads (Per Section 1606, I.B.C. 2018)

Design dead loads. For purposes of design, the actual weights of materials of construction and fixed service equipment shall be used. In absence of definite information, values used shall be subject to the approval of the building official.

Main Floor Dead Loads

Carpet and Pad or Hardwood	.....	2.00 p.s.f.
3/4" Plywood	.....	2.40 p.s.f.
11-7/8" TJI framing @16" o.c.	.....	4.00 p.s.f.
R-25 Insulation:	.....	1.50 p.s.f.
5/8" G.W.B.	.....	2.50 p.s.f.
Electrical and Mechanical	.....	1.50 p.s.f.
TOTAL LOADS		13.90 p.s.f.

USE: 15.00 p.s.f. for design or slab on grade

USE: 12.00 p.s.f. over the floor area to account for wall partition weight for seismic calculations

	PROJECT:	KHAN RESIDENCE			
	JOB#:	Khan-01-2022			
	I.- 2 X EXTERIOR WALLS				
	1/2" Plywood		1.60	p.s.f.	
	2x6 Studs @ 16" o.c.		1.75	p.s.f.	
	2x6 Top & Bottom Plates		1.00	p.s.f.	
	R-30 Insulation		1.00	p.s.f.	
	5/8" G.W.B.		2.50	p.s.f.	
	Electrical and Mechanical		1.50	p.s.f.	
	TOTAL LOADS		9.35	p.s.f.	
	USE:	10 p.s.f. for design			
	II.- LATERAL LOADS				
	Use: 5.00 p.s.f. FOR DESIGN				
	(Per I.B.C. 2018 Section 1607.14)				
	<i>*Assume 6.00 p.s.f. of roof area to account for walls and partitions for seismic calculations.</i>				
	<i>*Assume 12.00 p.s.f. of floor area to account for walls and partitions for seismic calculations</i>				

	PROJECT:	KHAN RESIDENCE		
	JOB#:	Khan-01-2022		
	I.- 2 X INTERIOR			
	<i>2x4 Studs @ 16" o.c.</i>		1.50	p.s.f.
	<i>2x4 Top & Bottom Plates</i>		0.75	p.s.f.
	<i>2x6 Top & Bottom Plates</i>		1.50	p.s.f.
	<i>5/8" G.W.B.</i>		2.50	p.s.f.
	<i>Electrical and Mechanical</i>		1.50	p.s.f.
	TOTAL LOADS		7.75	p.s.f.
	USE: 10.00 p.s.f. for design			
	II.- LATERAL LOADS			
	<i>Use: 5.00 p.s.f. FOR DESIGN</i>			
	<i>(Per I.B.C 2018 Section 1607.14)</i>			
	<i>*Assume 6.00 p.s.f. of roof area to account for walls and partitions for seismic calculations.</i>			
	<i>*Assume 12.00 p.s.f. of floor area to account for walls and partitions for seismic calculations</i>			

PROJECT: KHAN RESIDENCE

JOB#: Khan-01-2022

Live Loads (Per Section 1607, IBC 2018)

Uniform live loads. The live loads used in the design of buildings and other structures shall be the maximum loads expected by the intended use or occupancy but shall in no case be less than the minimum uniformly distributed unit loads required by Table 1607.1

Live loads per I.B.C 2018 Table 1612.1 Item 25 Residential

One and Two family dwellings

<i>Uninhabitable attics without storageⁱ</i>	<i>10 p.s.f.</i>
<i>Uninhabitable attics with storage^{i,j,k}</i>	<i>20 p.s.f.</i>
<i>Habitable attics and sleeping areas^k</i>	<i>30 p.s.f.</i>
<i>All other areas except balconies and decks areas....</i>	<i>40 p.s.f.</i>

Hotels and multifamily dwellings

<i>Private rooms and corridors serving them.....</i>	<i>40 p.s.f.</i>
<i>Public rooms and corridors serving them.....</i>	<i>100 p.s.f.</i>

Live load per I.B.C. 2018 Table 1607.1 Item 26 Roofs

<i>Ordinary flat, pitched, and curved roofs</i>	<i>20 p.s.f.</i>
---	------------------

Live load per I.B.C. 2018 Table 1607.1 Item 30 Stairs & Exits

<i>One and two family dwellings.....</i>	<i>40 p.s.f.</i>
<i>All other.....</i>	<i>100 p.s.f.</i>

Live load per I.B.C. 2018 Table 1607.1 Item 31 Storage Warehouses

Storage warehouses (shall be designed for heavier loads if required for anticipated storage)

<i>Heavy.....</i>	<i>250^m p.s.f.</i>
<i>Ligth.....</i>	<i>125^m p.s.f.</i>

Live load reductions shall be per section 1607.10 of the I.B.C. 2018

Roof live load reductions shall be per section 1607.12.2 of the I.B.C. 2018

PROJECT: KHAN RESIDENCE

JOB#: Khan-01-2022

Alternate floor live load reduction (Per section 1607.10.2 IBC 2018)

As an alternative to Section 1607.10.2, floor live loads are permitted to be reduced in accordance with the following provisions. Such reductions shall apply to slab systems, beams, girders, columns, piers, walls and foundations.

The design live load for any structural member supporting 150 Sq. Ft. or more is permitted to be reduced in accordance with the following equation.

$R=0.08(A-150)$ (Equation 16-24)

Such reduction shall not exceed

- 1.- 40 percent for horizontal members
- 2.- 60 percent for vertical members
- 3.- R as determined by the following equation

$R=23.1(1+D/L_o)$ (Equation 16-25)

A = Area of floor supported by the member in square feet
D = Dead load per square foot or area supported
L_o = Unreduced live load per square foot or area supported
R = Reduction in percent.

Reduction in roof live load (Per Section 1607.12.2 IBC 2018)

$L_r = L_o R_1 R_2$ (Equation 16-26)

where: $12 \leq L_r \leq 20$

L_o = Unreduced roof live load per square foot of horizontal projection supported by the member.

L_r = Reduced live load per square foot of horizontal projection in pounds per square foot

The reduction factors *R₁* and *R₂* shall be determined as follows:

$R_1 = 1$ for $A_t \leq 200$ Sq. Ft. (Equation 16-27)

$R_1 = 1.2 - 0.001 \cdot A_t$ for $200 < A_t < 600$ Sq. Ft. (Equation 16-28)

$R_1 = 0.6$ for $A_t > 600$ Sq. Ft. (Equation 16-29)

where:

A_t = Tributary span (span length multiplied by effective width) in square feet supported by any structural member, and

F = for a sloped roof, the number of inches of rise per foot, and

F = for an arch dome, rise-to-span ratio multiplied by 32, and

$R_2 = 1$ for $F \leq 4$ (Equation 16-30)

$R_2 = 1.2 - 0.05F$ for $4 < F < 12$ (Equation 16-31)

$R_2 = 0.6$ for $F > 12$ (Equation 16-32)

PROJECT: KHAN RESIDENCE

JOB#: Khan-01-2022

Snow Loads (Per Section 1608 IBC 2018)

1608.1 General. Design snow loads shall be determined in accordance with Chapter 7 of ASCE 7-16, but the design roof load shall not be less than determined Section 1607.

Ground snow load: $P_g = 25 \text{ psf}$ (From Fig. 7-1 or Table 7-1 ASCE-7-16)

Importance factor: $I_s = 1.00$ (From Table 1.5-2 based on Risk Category from Table 1.5-1 of ASCE 7-16)

Snow exposure factor: $C_e = 1.00$ (From Table 7-2 ASCE-7-16)
Partial Exposure B and C

Thermal factor: $C_t = 1.00$ (From Table 7-3 ASCE-7-16)

Roof slope factor: $C_s = 1.00$ (From Fig.7-2 from ASCE-7-16)

Design snow load: **$S=0.7 \cdot C_e \cdot C_t \cdot C_s \cdot P_g \cdot I_s$** (Flat & Sloped Roofs)

Use 25 psf Snow Load for Design

PROJECT: KHAN RESIDENCE

JOB#: Khan-01-2022

Wind Loads (Per Section Section 1609 IBC 2018)

1609.1 Applications. Buildings, structures and parts thereof shall be designed to withstand the minimum wind loads prescribed herein. Decreases in wind loads shall not be made for the effect of shielding by others.

1609.1.1 Determination of wind loads. Wind loads on every building shall be determined in accordance with Chapters 26 to 30 of ASCE 7-16 or provisions of the alternate all-heights method in section 1609.6. The type of opening protection required, the ultimate design wind speed, V_{ult} , and the exposure category for a site is permitted to be determined in accordance to Section 1609 or ASCE 7-16

Basic Wind Speed $V_{ult} = 110$ mph (Figure 1609A IBC 2018 or Figure 26.5-1A asce 7-16)

Surface Roughness B (Section 1609.4.2 IBC 2015 or Section 26.7.2 of the ASCE 7-16)

Exposure Category "B" (Section 1609.4.3 IBC 2018 or Section 26.7.3 of the ASCE 7-16)

Enclosure Classification Enclosed (Section 26.2 of the ASCE 7-16)

Risk Category of Building II (Section 1.5.1 and Table 1.5-2 ASCE 7-16)

Wind directionality factor $K_d = 0.85$ (Section 26.6 and Table 26.6-1 ASCE 7-16)

Topographic Factor $K_{zt} = (1+K_1 * K_2 * K_3)^2$ (Section 26.8 and Figure 26.8-1) asce 7-16
USE $K_{zt} = 1.37$

Wind loads have been calculated based on Chapter 28 Envelope Procedure

PROJECT: KHAN RESIDENCE

JOB#: Khan-01-2022

Earthquake Loads (Per Section 1613 IBC 2018)

1613.1 Scope. Every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motion in accordance with ASCE-7-16, excluding Chapter 14 and Appendix 11A. The seismic design category for a structure is permitted to be determined in accordance with Section 1613 IBC 2018 or ASCE 7-16

Risk Category of Building II (From Table 1.5-1 ASCE-7-16)	RCB	II
Site Class D (From section 11.4.2 ASCE-7-16)	SC	D
F_a Short period site coefficient (at 0.2 s-period) Section 11.4.3 ASCE 7-16	$F_a =$	1.00
F_v Long period site coefficient (at 1.0 s-period) Section 11.4.3 ASCE 7-16	$F_v =$	1.50
Mapped MCE_R 5 percent damped, spectra response acceleration parameter at short periods as defined in Section 11.4.1	$S_s =$	1.42 g
Mapped MCE_R 5 percent damped, spectra response acceleration parameter at a periods of 1 s as defined in Section 11.4.1	$S_1 =$	0.49 g
The MCE_R 5 percent damped, spectra response acceleration parameter at short adjusted for site class effects as defined in section 11.4.3		
$S_{MS} = F_a S_s$ (Equation 11.4-1)	$S_{MS} =$	1.30 g
The MCE_R 5 percent damped, spectra response acceleration parameter at a periods of 1 s adjusted for site class effects as defined in Section 11.4.3		
$S_{M1} = F_v S_1$ (Equation 11.4-2)	$S_{M1} =$	0.74 g
Design 5 percent damped, spectra response acceleration parameter at short periods as defined in Section 11.4.4		
$S_{DS} = 2/3 S_{MS}$ (Equation 11.4-3)	$S_{DS} =$	0.947 g
Design 5 percent damped, spectra response acceleration parameter at a period of 1 s as defined in Section 11.4.4		
$S_{D1} = 2/3 S_{M1}$ (Equation 11.4-4)	$S_{D1} =$	0.542 g
I_e Importance factor as prescribed in Section 11.5.1 ASCE 7-16	$I_e =$	1.00
Seismic Design Category D (From Tables 11.6-1 & 11.6-2 ASCE-7-16)	SDC	D
Response Modification Factor R=6.5 (From Table 12.2-1 ASCE-7-16)	R	6.50
System Overstrength Factor $\Omega_o = 2.5$ (From Table 12.2-1 ASCE-7-16)	$\Omega_o =$	2.50
Deflection Amplification Factor C_d = 4 (from Table 12.2-1 ASCE 7-16)	C_d	4.00

⚠ This is a beta release of the new ATC Hazards by Location website. Please [contact us](#) with feedback.

ℹ The ATC Hazards by Location website will not be updated to support ASCE 7-22. [Find out why.](#)

ATC Hazards by Location

Search Information

Address:	4205 85th Ave SE, Mercer Island, WA 98040, USA
Coordinates:	47.5706946, -122.2258596
Elevation:	303 ft
Timestamp:	2022-08-25T04:56:04.787Z
Hazard Type:	Seismic
Reference Document:	ASCE7-16
Risk Category:	II
Site Class:	D



Basic Parameters

Name	Value	Description
S_S	1.42	MCE_R ground motion (period=0.2s)
S_1	0.494	MCE_R ground motion (period=1.0s)
S_{MS}	1.42	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	0.947	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	Site amplification factor at 0.2s
F_v	* null	Site amplification factor at 1.0s
CR_S	0.902	Coefficient of risk (0.2s)
CR_1	0.897	Coefficient of risk (1.0s)
BCA	0.608	MCE_R peak ground acceleration

F_{PGA}	0.000	MCEG peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	0.669	Site modified peak ground acceleration
T_L	6	Long-period transition period (s)
SsRT	1.42	Probabilistic risk-targeted ground motion (0.2s)
SsUH	1.574	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	3.694	Factored deterministic acceleration value (0.2s)
S1RT	0.494	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.55	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	1.469	Factored deterministic acceleration value (1.0s)
PGAd	1.255	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.

Please note that the ATC Hazards by Location website will not be updated to support ASCE 7-22. [Find out why.](#)

Disclaimer

Hazard loads are provided by the U.S. Geological Survey [Seismic Design Web Services](#).

While the information presented on this website is believed to be correct, ATC and its sponsors and contributors assume no responsibility or liability for its accuracy. The material presented in the report should not be used or relied upon for any specific application without competent examination and verification of its accuracy, suitability and applicability by engineers or other licensed professionals. ATC does not intend that the use of this information replace the sound judgment of such competent professionals, having experience and knowledge in the field of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the results of the report provided by this website. Users of the information from this website assume all liability arising from such use. Use of the output of this website does not imply approval by the governing building code bodies responsible for building code approval and interpretation for the building site described by latitude/longitude location in the report.

WoodWorks® Shearwalls 10.31

Khan Residence Lateral Analysis.wsw

Aug. 25, 2022 13:48:19

Project Information

COMPANY AND PROJECT INFORMATION

Company	Project
SAZEI Design Group, LLC. Hamid Korasani, P. E. (425) 214-2280	Khan Residence Remodel Lateral Analysis 4205 8th Ave SE Mercer Island, VA 98040

DESIGN SETTINGS

Design Code IBC 2018/AWC SDPWS 2018	Wind Standard ASCE 7-16 Directional (All heights)	Seismic Standard ASCE 7-16
For Design (ASD) 0.70 Seismic 0.60 Wind	Load Combinations For Deflection (Strength) 1.00 Seismic 1.00 Wind	Building Code Capacity Modification Wind 1.00 Seismic 1.00
Duration Factor -	Service Conditions and Load Duration Temperature Range - Moisture Content Fabrication 19% Service 10%	Max Shearwall Offset [ft] Plan (within story) 0.50 Elevation (between stories) 0.50
Wood panels Wind 3.5 Seismic 3.5	Fiberboard -	Maximum Height-to-width Ratio Lumber Wind - Seismic - Gypsum Blocked 2.0 Unblocked 1.5
Ignore non-wood-panel shear resistance contribution... Wind Never	Seismic Always	Collector forces based on... Hold-downs Applied loads Drag struts Applied loads
Shearwall Relative Rigidity: Deflection-based stiffness of wall segments		
Design Shearwall Force/Length: Based on wall rigidity/length		

SITE INFORMATION

Wind ASCE 7-16 Directional (All heights)	Seismic ASCE 7-16 12.8 Equivalent Lateral Force Procedure
Design Wind Speed 110mph Exposure Exposure B Enclosure Enclosed Min Wind Loads: Walls 16 psf Roofs 8 psf	Risk Category Category II - All others Structure Type Regular Building System Bearing Wall Design Category D Site Class D
Topographic Information [ft] Shape - Height - Length - Site Location: - Elev: 0ft Avg Air density: 0.0765 lb/cu ft Rigid building - Static analysis	Spectral Response Acceleration S1: 0.494g Ss: 1.420g Fundamental Period T Used 0.182s Approximate Ta 0.182s Maximum T 0.255s
Case 2 E-W loads 15 N-S loads 15 Loaded at 75%	Response Factor R 6.50 Fa: 1.00 Fv: 1.51

Structural Data

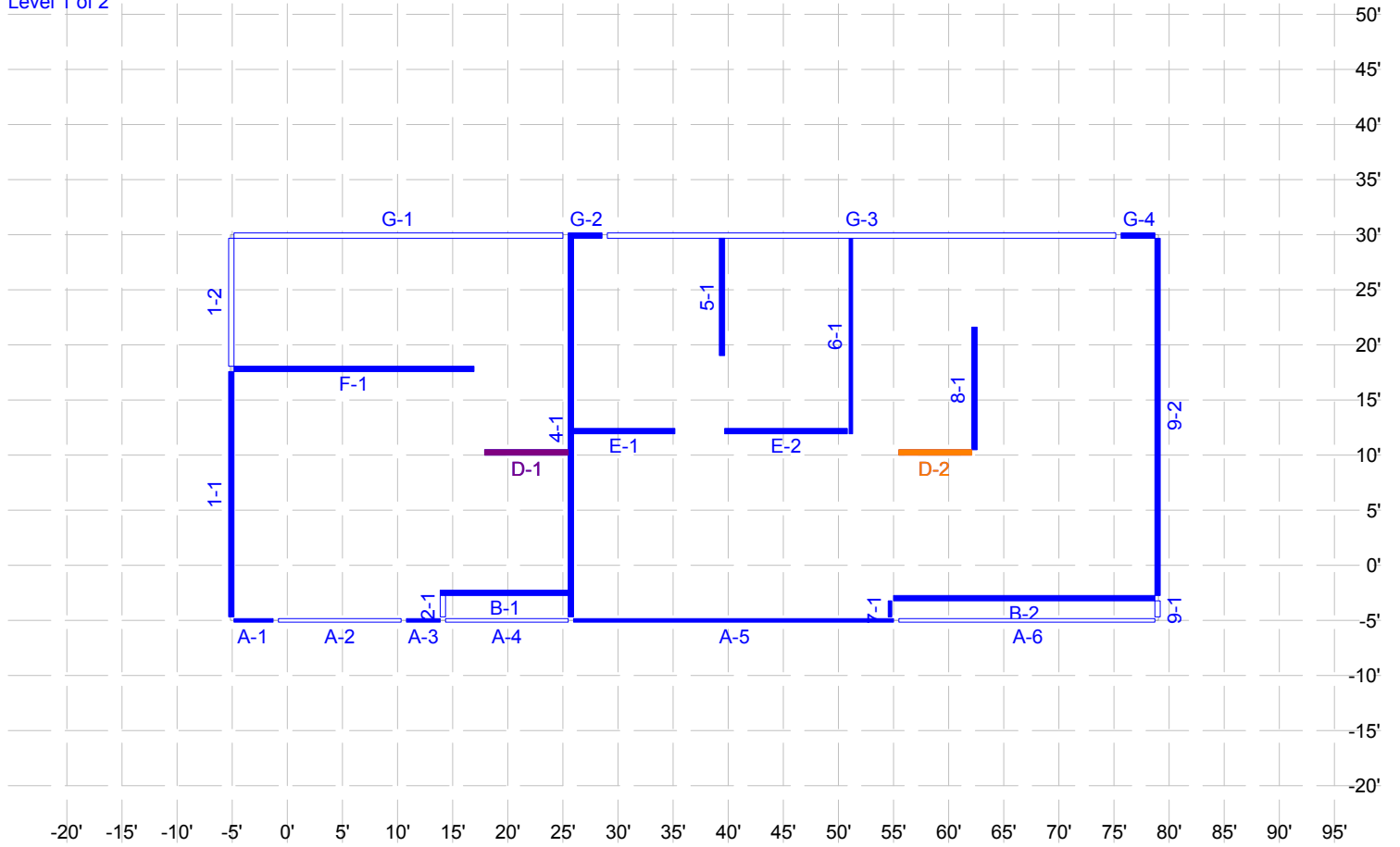
STORY INFORMATION

	Story Elev [ft]	Floor/Ceiling Depth [in]	Wall Height [ft]	Length subject to shrinkage [in]	Hold-down Bolt length [in]
Ceiling	20.50	0.0			
Level 2	10.50	12.0	10.00	15.7	16.5
Level 1	1.50	6.0	8.00	9.8	10.5
Foundation	1.00				

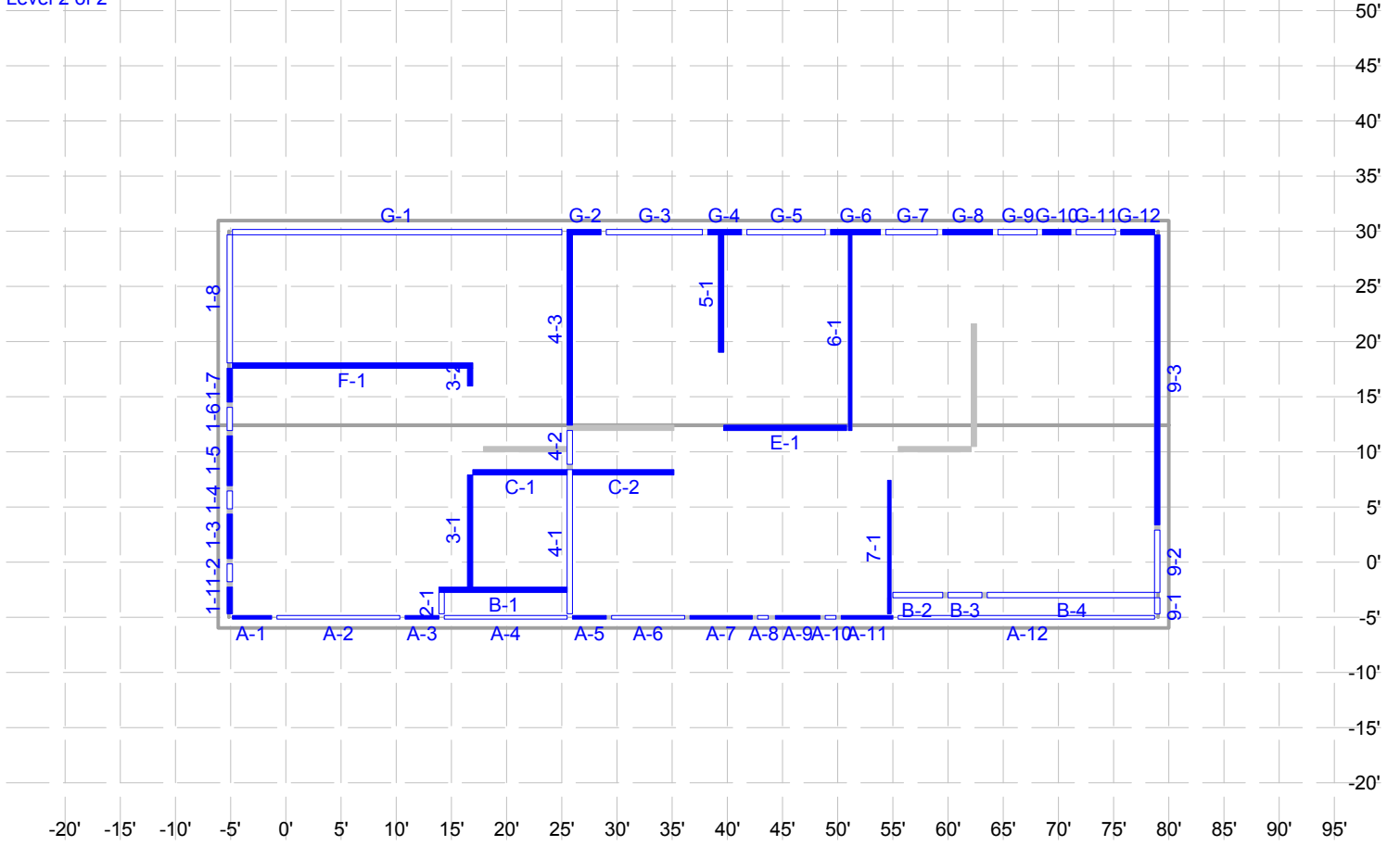
BLOCK and ROOF INFORMATION

	Block Dimensions [ft]		Face	Type	Roof Panels	
	2 Story	E-W Ridge			Slope	Overhang [ft]
Block 1						
Location X,Y =	-5.00	-5.00	North	Side	30.0	1.00
Extent X,Y =	83.00	34.50	South	Side	30.0	1.00
Ridge Y Location, Offset	12.25	0.00	East	Gable	90.0	1.00
Ridge Elevation, Height	30.46	9.96	West	Gable	90.0	1.00

Level 1 of 2



Level 2 of 2



SHEATHING MATERIALS by WALL GROUP

Grp	Surf	Material	Ratng	Sheathing				Gvtv lbs/in	Size	Fasteners					Apply Notes
				Thick in	GU in	Ply	Or			Type	Df	Eg in	Fd in	Bk	
1	Ext	Struct Sh OSB	48/24	23/32	-	3	Horz	96000	16d	Nail	N	2	2	Y	2
	Int	Gyp WB 1-ply		1/2	-	-	Horz	40000	5d	Nail	N	7	7	Y	5
2	1	Struct Sh OSB	24/16	7/16	-	3	Horz	83500	8d	Nail	N	2	12	Y	2,3
	2	Gyp WB 1-ply		1/2	-	-	Horz	40000	5d	Nail	N	7	7	Y	5
3	Ext	Struct Sh OSB	24/16	7/16	-	3	Horz	83500	8d	Nail	N	3	12	Y	2,3
	Int	Gyp WB 1-ply		1/2	-	-	Horz	40000	5d	Nail	N	7	7	Y	5
4	Ext	Struct Sh OSB	24/16	7/16	-	3	Horz	83500	8d	Nail	N	2	2	Y	2,3
	Int	Gyp WB 1-ply		1/2	-	-	Horz	40000	5d	Nail	N	7	7	Y	5
5	Ext	Struct Sh OSB	24/16	7/16	-	3	Horz	83500	8d	Nail	N	6	12	Y	3
	Int	Gyp WB 1-ply		1/2	-	-	Horz	40000	5d	Nail	N	7	7	Y	5
6	Ext	Struct Sh OSB	24/16	7/16	-	3	Horz	83500	8d	Nail	N	4	12	Y	2,3
	Int	Gyp WB 1-ply		1/2	-	-	Horz	40000	5d	Nail	N	7	7	Y	5
7	1	Struct Sh OSB	24/16	7/16	-	3	Horz	83500	8d	Nail	N	2	10	Y	2,3
	2	Gyp WB 1-ply		1/2	-	-	Horz	40000	5d	Nail	N	7	7	Y	5
8	1	Struct Sh OSB	24/16	7/16	-	3	Horz	83500	8d	Nail	N	3	10	Y	2,3
	2	Gyp WB 1-ply		1/2	-	-	Horz	40000	5d	Nail	N	7	7	Y	5

Legend:

Grp – Wall Design Group number, used to reference wall in other tables

Surf – Exterior or interior surface when applied to exterior wall

Ratng – Span rating, see SDPWS Table C4.2.2.2C

Thick – Nominal panel thickness

GU – Gypsum underlay thickness

Ply – Number of plies (or layers) in construction of plywood sheets

Or – Orientation of longer dimension of sheathing panels

Gvtv – Shear stiffness in lb/in. of depth from SDPWS Tables C4.2.2A-B

Type – Fastener type from SDPWS Tables 4.3A-D: Nail – common wire nail for structural panels and lumber, cooler or gypsum wallboard nail for GWB, plasterboard nail for gypsum lath, galvanised nail for gypsum sheathing; Box – box nail; Casing – casing nail; Roof – roofing nail; Screw – drywall screw

Size – Common, box, and casing nails: refer to SDPWS Table A1 (casing sizes = box sizes).

Gauges: 11 ga = 0.120" x 1-3/4" (gypsum sheathing, 25/32" fiberboard), 1-1/2" (lath & plaster, 1/2" fiberboard); 13 ga plasterboard = 0.92" x 1-1/8".

Cooler or gypsum wallboard nail: 5d = .086" x 1-5/8"; 6d = .092" x 1-7/8"; 8d = .113" x 2-3/8"; 6/8d = 6d base ply, 8d face ply for 2-ply GWB.

Drywall screws: No. 6, 1-1/4" long.

5/8" gypsum sheathing can also use 6d cooler or GWB nail

Df – Deformed nails (threaded or spiral), with increased withdrawal capacity

Eg – Panel edge fastener spacing

Fd – Field spacing interior to panels

Bk – Sheathing is nailed to blocking at all panel edges; Y(es) or N(o)

Apply Notes – Notes below table legend which apply to sheathing side

Notes:

2. Framing at adjoining panel edges must be 3" nominal or wider with staggered nailing according to SDPWS 4.3.7.1.4

3. Shear capacity for current design has been increased to the value for 15/32" sheathing with same nailing because stud spacing is 16" max. or panel orientation is horizontal. See SDPWS T4.3A Note 2.

5. This material does not contribute to seismic shear resistance because of the "Ignore non-wood-panel contribution for all walls" design setting.

FRAMING MATERIALS and STANDARD WALL by WALL GROUP

Wall Grp	Species	Grade	b in	d in	Spcg in	SG	E psi ⁶	Standard Wall
1	D.Fir-L	Stud	1.50	5.50	16	0.50	1.40	
2	D.Fir-L	Stud	1.50	5.50	16	0.50	1.40	
3	D.Fir-L	Stud	1.50	5.50	16	0.50	1.40	
4	D.Fir-L	Stud	1.50	5.50	16	0.50	1.40	
5	D.Fir-L	Stud	1.50	5.50	16	0.50	1.40	
6	D.Fir-L	Stud	1.50	5.50	16	0.50	1.40	
7	D.Fir-L	Stud	1.50	5.50	16	0.50	1.40	
8	D.Fir-L	Stud	1.50	5.50	16	0.50	1.40	

Legend:

Wall Grp – Wall Design Group

b – Stud breadth (thickness)

d – Stud depth (width)

Spcg – Maximum on-centre spacing of studs for design, actual spacing may be less.

SG – Specific gravity

E – Modulus of elasticity

SHEARLINE, WALL and OPENING DIMENSIONS

North-south Shearlines	Type	Wall Group	Location X [ft]	Extent [ft]		Length [ft]	FHS [ft]		Height [ft]
				Start	End		Wind	Seismic	
Line 1									
Level 2									
Line 1	Seg	6	-5.00	-5.00	29.50	34.50	5.00	16.00	10.00
Wall 1-3	Seg	6	-5.00	0.00	4.50	4.50	0.00	4.50	-
Wall 1-1	Seg	6	-5.00	-5.00	-2.00	3.00	0.00	3.00	-
Wall 1-5	Seg	6	-5.00	6.50	11.50	5.00	5.00	5.00	-
Wall 1-7	Seg	6	-5.00	14.00	17.50	3.50	0.00	3.50	-
Wall 1-6	NSW		-5.00	11.50	14.00	2.50	0.00	0.00	-
Wall 1-4	NSW		-5.00	4.50	6.50	2.00	0.00	0.00	-
Wall 1-8	NSW		-5.00	17.50	29.50	12.00	0.00	0.00	-
Wall 1-2	NSW		-5.00	-2.00	0.00	2.00	0.00	0.00	-
Level 1									
Line 1	Seg	1	-5.00	-5.00	29.50	34.50	22.50	22.50	8.00
Wall 1-1	Seg	1	-5.00	-5.00	17.50	22.50	22.50	22.50	-
Wall 1-2	NSW		-5.00	17.50	29.50	12.00	0.00	0.00	-
Line 2									
Level 2									
Line 2	NSW		14.00	-5.00	-2.50	2.50	0.00	0.00	10.00
Wall 2-1	NSW		14.00	-5.00	-2.50	2.50	0.00	0.00	-
Level 1									
Line 2	NSW		14.00	-5.00	-2.50	2.50	0.00	0.00	8.00
Wall 2-1	NSW		14.00	-5.00	-2.50	2.50	0.00	0.00	-
Line 3									
Level 2									
Line 3	Seg	3	16.50	-5.00	29.50	34.50	10.50	10.50	10.00
Wall 3-1	Seg	3	16.50	-2.50	8.00	10.50	10.50	10.50	-
Wall 3-2	Seg	3	16.50	15.50	17.50	2.00	0.00	0.00	-
Line 4									
Level 2									
Line 4	Seg	3	25.50	-5.00	29.50	34.50	17.50	17.50	10.00
Wall 4-3	Seg	3	25.50	12.00	29.50	17.50	17.50	17.50	-
Wall 4-2	NSW		25.50	8.50	12.00	3.50	0.00	0.00	-
Wall 4-1	NSW		25.50	-5.00	8.50	13.50	0.00	0.00	-
Level 1									
Line 4	Seg	1	25.50	-5.00	29.50	34.50	34.50	34.50	8.00
Wall 4-1	Seg	1	25.50	-5.00	29.50	34.50	34.50	34.50	-
Line 5									
Level 2									
Line 5	Seg	3	39.00	-5.00	29.50	34.50	11.00	11.00	10.00
Wall 5-1	Seg	3	39.00	18.50	29.50	11.00	11.00	11.00	-
Level 1									
Line 5	Seg	2	39.00	-5.00	29.50	34.50	11.00	11.00	8.00
Wall 5-1	Seg	2	39.00	18.50	29.50	11.00	11.00	11.00	-
Line 6									
Level 2									
Line 6	Seg	8	50.50	-5.00	29.50	34.50	18.00	18.00	10.00
Wall 6-1	Seg	8	50.50	11.50	29.50	18.00	18.00	18.00	-
Level 1									
Line 6	Seg	7	50.50	-5.00	29.50	34.50	18.00	18.00	8.00
Wall 6-1	Seg	7	50.50	11.50	29.50	18.00	18.00	18.00	-
Line 7									
Level 2									
Line 7	Seg	3	54.00	-5.00	29.50	34.50	12.50	12.50	10.00
Wall 7-1	Seg	3	54.00	-5.00	7.50	12.50	12.50	12.50	-
Level 1									
Line 7	Seg		54.00	-5.00	29.50	34.50	0.00	0.00	8.00
Wall 7-1	Seg		54.00	-5.00	-3.00	2.00	0.00	0.00	-
Line 8									
Level 1									
Line 8	Seg	2	61.50	-5.00	29.50	34.50	11.50	11.50	8.00
Wall 8-1	Seg	2	61.50	10.00	21.50	11.50	11.50	11.50	-
Line 9									
Level 2									
Line 9	Seg	3	78.00	-5.00	29.50	34.50	26.50	26.50	10.00
Wall 9-3	Seg	3	78.00	3.00	29.50	26.50	26.50	26.50	-
Wall 9-1	NSW		78.00	-5.00	-3.00	2.00	0.00	0.00	-
Wall 9-2	NSW		78.00	-3.00	3.00	6.00	0.00	0.00	-
Level 1									
Line 9	Seg	1	78.00	-5.00	29.50	34.50	32.50	32.50	8.00
Wall 9-2	Seg	1	78.00	-3.00	29.50	32.50	32.50	32.50	-

SHEARLINE, WALL and OPENING DIMENSIONS (continued)

Wall 9-1	NSW		78.00	-5.00	-3.00	2.00	0.00	0.00	-
East-west Shearlines	Type	Wall Group	Location Y [ft]	Extent [ft]		Length [ft]	FHS [ft]		Height [ft]
				Start	End		Wind	Seismic	
Line A									
Level 2									
Line A	Seg	2	-5.00	-5.00	78.00	83.00	11.00	26.50	10.00
Wall A-7	Seg	2	-5.00	36.00	42.00	6.00	6.00	6.00	-
Wall A-9	Seg	2	-5.00	43.50	48.00	4.50	0.00	4.50	-
Wall A-11	Seg	2	-5.00	49.50	54.50	5.00	5.00	5.00	-
Wall A-1	Seg	2	-5.00	-5.00	-1.00	4.00	0.00	4.00	-
Wall A-3	Seg	2	-5.00	10.50	14.00	3.50	0.00	3.50	-
Wall A-5	Seg	2	-5.00	25.50	29.00	3.50	0.00	3.50	-
Wall A-4	NSW		-5.00	14.00	25.50	11.50	0.00	0.00	-
Wall A-8	NSW		-5.00	42.00	43.50	1.50	0.00	0.00	-
Wall A-10	NSW		-5.00	48.00	49.50	1.50	0.00	0.00	-
Wall A-6	NSW		-5.00	29.00	36.00	7.00	0.00	0.00	-
Wall A-12	NSW		-5.00	54.50	78.00	23.50	0.00	0.00	-
Wall A-2	NSW		-5.00	-1.00	10.50	11.50	0.00	0.00	-
Level 1									
Line A	Seg	1	-5.00	-5.00	78.00	83.00	33.00	36.50	8.00
Wall A-5	Seg	1	-5.00	25.50	54.50	29.00	29.00	29.00	-
Wall A-3	Seg	1	-5.00	10.50	14.00	3.50	0.00	3.50	-
Wall A-1	Seg	1	-5.00	-5.00	-1.00	4.00	4.00	4.00	-
Wall A-2	NSW		-5.00	-1.00	10.50	11.50	0.00	0.00	-
Wall A-6	NSW		-5.00	54.50	78.00	23.50	0.00	0.00	-
Wall A-4	NSW		-5.00	14.00	25.50	11.50	0.00	0.00	-
Line B									
Level 2									
Line B	Seg	2	-2.50	-5.00	78.00	83.00	12.00	12.00	10.00
Wall B-1	Seg	2	-2.50	13.50	25.50	12.00	12.00	12.00	-
Wall B-2	NSW		-3.00	54.00	59.00	5.00	0.00	0.00	-
Wall B-4	NSW		-3.00	62.50	78.00	15.50	0.00	0.00	-
Wall B-3	NSW		-3.00	59.00	62.50	3.50	0.00	0.00	-
Level 1									
Line B	Seg	1	-2.83	-5.00	78.00	83.00	36.00	36.00	8.00
Wall B-2	Seg	1	-3.00	54.00	78.00	24.00	24.00	24.00	-
Wall B-1	Seg	1	-2.50	13.50	25.50	12.00	12.00	12.00	-
Line C									
Level 2									
Line C	Seg	3	8.00	-5.00	78.00	83.00	18.50	18.50	10.00
Wall C-1	Seg	3	8.00	16.50	25.50	9.00	9.00	9.00	-
Wall C-2	Seg	3	8.00	25.50	35.00	9.50	9.50	9.50	-
Line D									
Level 1									
Line D	Seg	1	10.00	-5.00	78.00	83.00	15.00	15.00	8.00
Wall D-2	Seg	1	10.00	54.50	61.50	7.00	7.00	7.00	-
Wall D-1	Seg	1	10.00	17.50	25.50	8.00	8.00	8.00	-
Line E									
Level 2									
Line E	Seg	3	12.00	-5.00	78.00	83.00	11.50	11.50	10.00
Wall E-1	Seg	3	12.00	39.00	50.50	11.50	11.50	11.50	-
Level 1									
Line E	Seg	2	12.00	-5.00	78.00	83.00	21.00	21.00	8.00
Wall E-2	Seg	2	12.00	39.00	50.50	11.50	11.50	11.50	-
Wall E-1	Seg	2	12.00	25.50	35.00	9.50	9.50	9.50	-
Line F									
Level 2									
Line F	Seg	3	17.50	-5.00	78.00	83.00	22.00	22.00	10.00
Wall F-1	Seg	3	17.50	-5.00	17.00	22.00	22.00	22.00	-
Level 1									
Line F	Seg	1	17.50	-5.00	78.00	83.00	22.00	22.00	8.00
Wall F-1	Seg	1	17.50	-5.00	17.00	22.00	22.00	22.00	-
Line G									
Level 2									
Line G	Seg	5	29.50	-5.00	78.00	83.00	10.00	23.50	10.00
Wall G-4	Seg	5	29.50	37.50	41.00	3.50	0.00	3.50	-
Wall G-12	Seg	5	29.50	74.50	78.00	3.50	0.00	3.50	-
Wall G-8	Seg	5	29.50	58.50	63.50	5.00	5.00	5.00	-
Wall G-10	Seg	5	29.50	67.50	70.50	3.00	0.00	3.00	-
Wall G-2	Seg	5	29.50	25.00	28.50	3.50	0.00	3.50	-

SHEARLINE, WALL and OPENING DIMENSIONS (continued)

Wall G-6	Seg	5	29.50	48.50	53.50	5.00	5.00	5.00	-
Wall G-9	NSW		29.50	63.50	67.50	4.00	0.00	0.00	-
Wall G-11	NSW		29.50	70.50	74.50	4.00	0.00	0.00	-
Wall G-3	NSW		29.50	28.50	37.50	9.00	0.00	0.00	-
Wall G-5	NSW		29.50	41.00	48.50	7.50	0.00	0.00	-
Wall G-1	NSW		29.50	-5.00	25.00	30.00	0.00	0.00	-
Wall G-7	NSW		29.50	53.50	58.50	5.00	0.00	0.00	-
Level 1									
Line G	Seg	4	29.50	-5.00	78.00	83.00	0.00	7.00	8.00
Wall G-4	Seg	4	29.50	74.50	78.00	3.50	0.00	3.50	-
Wall G-2	Seg	4	29.50	25.00	28.50	3.50	0.00	3.50	-
Wall G-3	NSW		29.50	28.50	74.50	46.00	0.00	0.00	-
Wall G-1	NSW		29.50	-5.00	25.00	30.00	0.00	0.00	-

Legend:

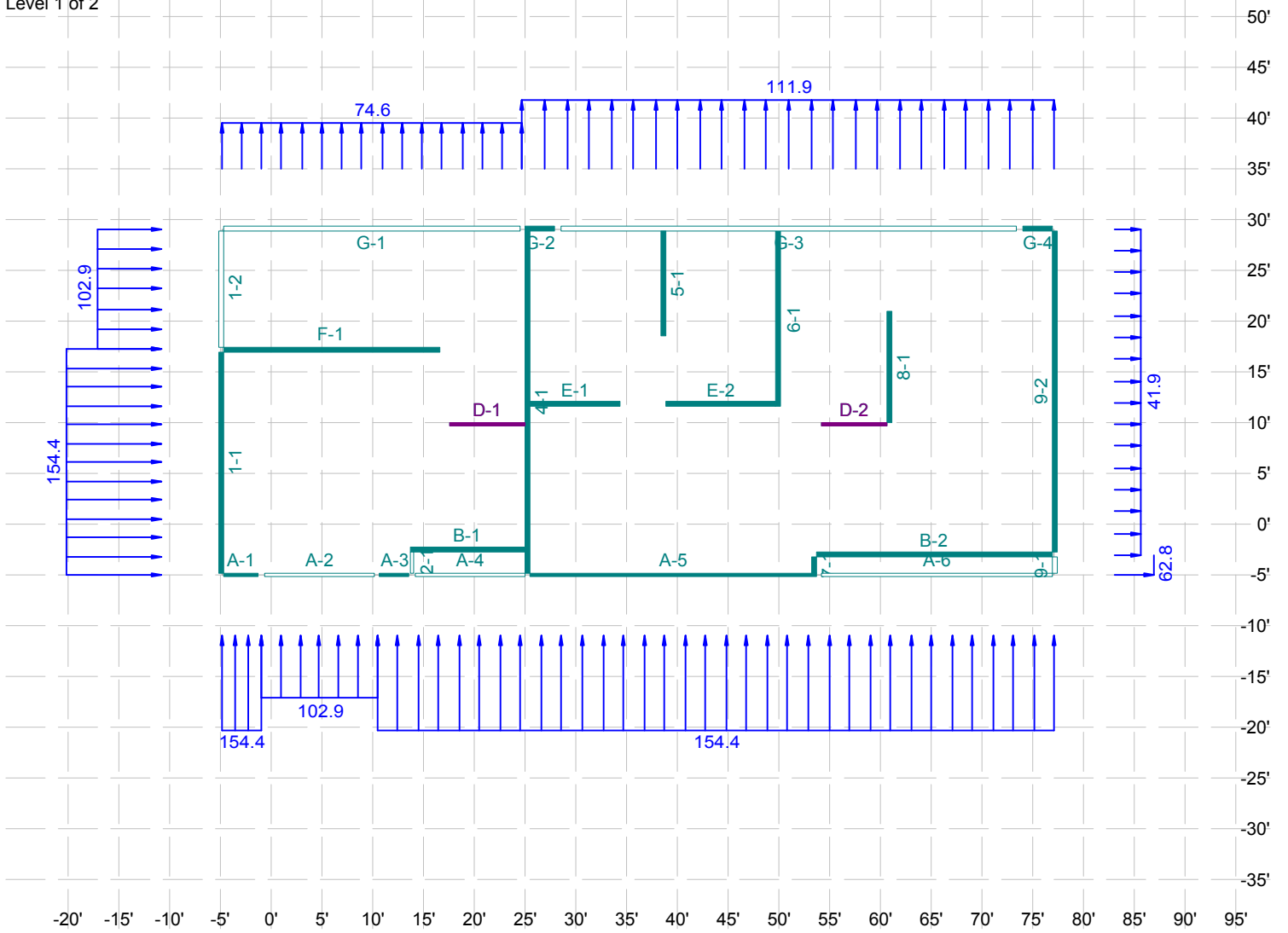
Type - Seg = segmented, Prf = perforated, NSW = non-shearwall

Location - dimension perpendicular to wall

FHS - length of full-height sheathing used to resist shear force

Wall Group - Wall design group defined in Sheathing and Framing Materials tables, where it shows associated Standard Wall

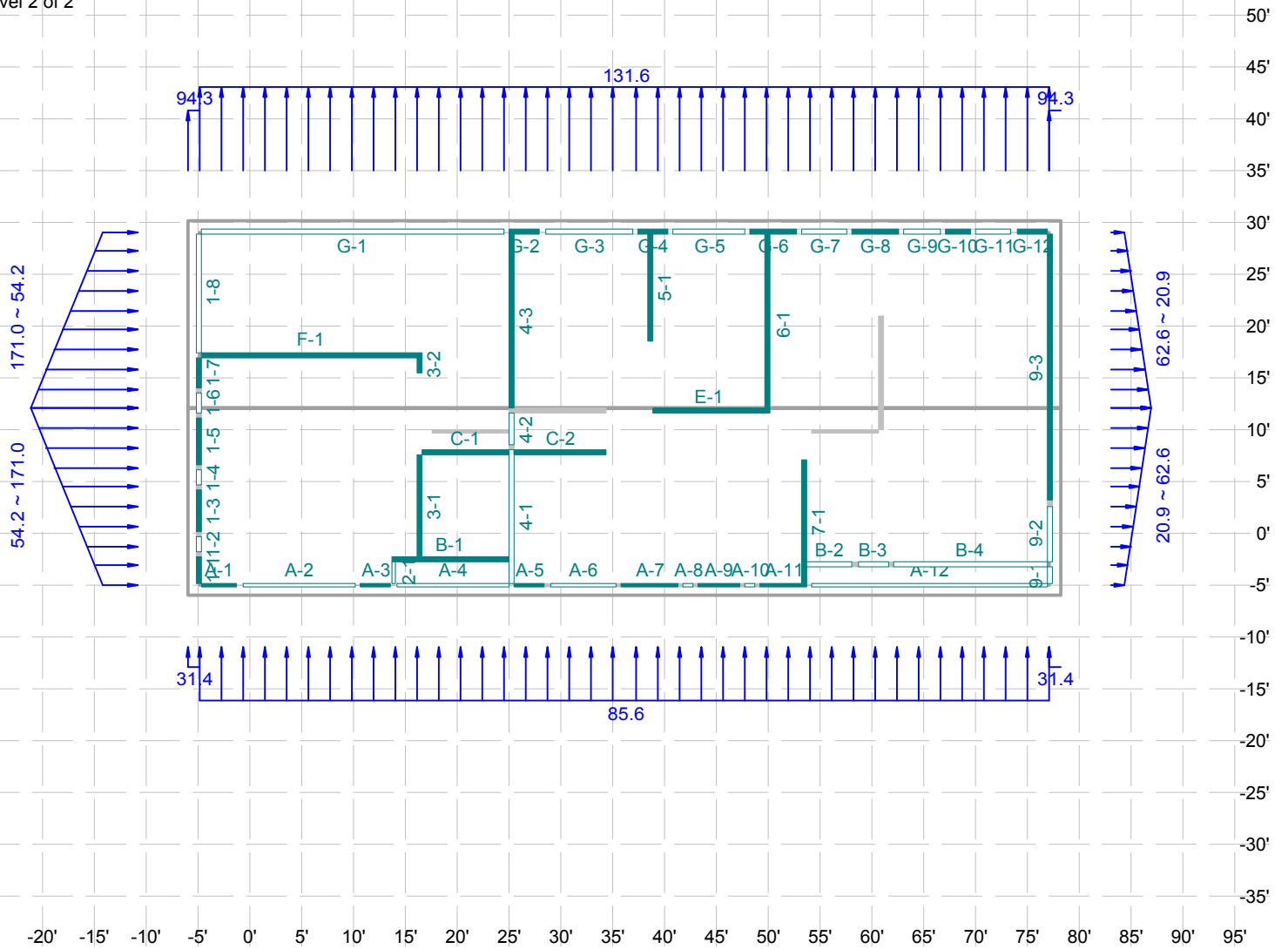
Level 1 of 2



Unfactored generated shear load (plf)

Orange = Selected wall(s)

Level 2 of 2



Loads

WIND SHEAR LOADS (as entered or generated)

Level 2		F	Element	Load Case	Wnd Dir	Surf Dir	Prof	Location [ft]		Magnitude [lbs,plf,psf]		Trib Ht [ft]
Block	Block							Start	End	Start	End	
Block 1		W	L Gable	1	W->E	Wind	Line	-5.00	12.25	0.0	116.8	
Block 1		W	Wall	Min	W->E	Wind	Line	-5.00	29.50	40.0		
Block 1		W	L Gable	Min	W->E	Wind	Line	-5.00	12.25	0.0	79.7	
Block 1		W	Wall	1	W->E	Wind	Line	-5.00	29.50	54.2		
Block 1		W	R Gable	1	W->E	Wind	Line	12.25	29.50	116.8	0.0	
Block 1		W	R Gable	Min	W->E	Wind	Line	12.25	29.50	79.7	0.0	
Block 1		E	Wall	Min	W->E	Lee	Line	-5.00	29.50	40.0		
Block 1		E	L Gable	Min	W->E	Lee	Line	-5.00	12.25	0.0	79.7	
Block 1		E	L Gable	1	W->E	Lee	Line	-5.00	12.25	0.0	41.7	
Block 1		E	Wall	1	W->E	Lee	Line	-5.00	29.50	20.9		
Block 1		E	R Gable	Min	W->E	Lee	Line	12.25	29.50	79.7	0.0	
Block 1		E	R Gable	1	W->E	Lee	Line	12.25	29.50	41.7	0.0	
Block 1		W	Wall	Min	E->W	Lee	Line	-5.00	29.50	40.0		
Block 1		W	L Gable	Min	E->W	Lee	Line	-5.00	12.25	0.0	79.7	
Block 1		W	Wall	1	E->W	Lee	Line	-5.00	29.50	20.9		
Block 1		W	L Gable	1	E->W	Lee	Line	-5.00	12.25	0.0	41.7	
Block 1		W	R Gable	1	E->W	Lee	Line	12.25	29.50	41.7	0.0	
Block 1		W	R Gable	Min	E->W	Lee	Line	12.25	29.50	79.7	0.0	
Block 1		E	L Gable	1	E->W	Wind	Line	-5.00	12.25	0.0	116.8	
Block 1		E	Wall	1	E->W	Wind	Line	-5.00	29.50	54.2		
Block 1		E	Wall	Min	E->W	Wind	Line	-5.00	29.50	40.0		
Block 1		E	L Gable	Min	E->W	Wind	Line	-5.00	12.25	0.0	79.7	
Block 1		E	R Gable	1	E->W	Wind	Line	12.25	29.50	116.8	0.0	
Block 1		E	R Gable	Min	E->W	Wind	Line	12.25	29.50	79.7	0.0	
Block 1		S	Roof	Min	S->N	Wind	Line	-6.00	79.00	42.1		
Block 1		S	Roof	1	S->N	Wind	Line	-6.00	79.00	31.4		
Block 1		S	Wall	1	S->N	Wind	Line	-5.00	78.00	54.2		
Block 1		S	Wall	Min	S->N	Wind	Line	-5.00	78.00	40.0		
Block 1		N	Roof	Min	S->N	Lee	Line	-6.00	79.00	42.1		
Block 1		N	Roof	1	S->N	Lee	Line	-6.00	79.00	94.3		
Block 1		N	Wall	1	S->N	Lee	Line	-5.00	78.00	37.3		
Block 1		N	Wall	Min	S->N	Lee	Line	-5.00	78.00	40.0		
Block 1		S	Roof	1	N->S	Lee	Line	-6.00	79.00	94.3		
Block 1		S	Roof	Min	N->S	Lee	Line	-6.00	79.00	42.1		
Block 1		S	Wall	Min	N->S	Lee	Line	-5.00	78.00	40.0		
Block 1		S	Wall	1	N->S	Lee	Line	-5.00	78.00	37.3		
Block 1		N	Roof	Min	N->S	Wind	Line	-6.00	79.00	42.1		
Block 1		N	Roof	1	N->S	Wind	Line	-6.00	79.00	31.4		
Block 1		N	Wall	1	N->S	Wind	Line	-5.00	78.00	54.2		
Block 1		N	Wall	Min	N->S	Wind	Line	-5.00	78.00	40.0		
Level 1		F	Element	Load Case	Wnd Dir	Surf Dir	Prof	Location [ft]		Magnitude [lbs,plf,psf]		Trib Ht [ft]
Block	Block							Start	End	Start	End	
Block 1		W	Wall	1	W->E	Wind	Line	-5.00	29.50	51.5		
Block 1		W	Wall	Min	W->E	Wind	Line	-5.00	17.50	40.0		
Block 1		W	Wall	Min	W->E	Wind	Line	-5.00	29.50	40.0		
Block 1		W	Wall	1	W->E	Wind	Line	-5.00	17.50	51.4		
Block 1		W	Wall	1	W->E	Wind	Line	-5.00	29.50	51.4		
Block 1		W	Wall	Min	W->E	Wind	Line	-5.00	29.50	40.0		
Block 1		E	Wall	1	W->E	Lee	Line	-5.00	-3.00	20.9		
Block 1		E	Wall	Min	W->E	Lee	Line	-5.00	-3.00	40.0		
Block 1		E	Wall	1	W->E	Lee	Line	-5.00	29.50	20.9		
Block 1		E	Wall	Min	W->E	Lee	Line	-5.00	29.50	40.0		
Block 1		E	Wall	1	W->E	Lee	Line	-5.00	29.50	20.9		
Block 1		E	Wall	Min	W->E	Lee	Line	-5.00	29.50	40.0		
Block 1		W	Wall	1	E->W	Lee	Line	-5.00	29.50	20.9		
Block 1		W	Wall	1	E->W	Lee	Line	-5.00	17.50	20.9		
Block 1		W	Wall	Min	E->W	Lee	Line	-5.00	29.50	40.0		
Block 1		W	Wall	Min	E->W	Lee	Line	-5.00	29.50	40.0		
Block 1		W	Wall	1	E->W	Lee	Line	-5.00	29.50	20.9		
Block 1		W	Wall	Min	E->W	Lee	Line	-5.00	17.50	40.0		
Block 1		E	Wall	Min	E->W	Wind	Line	-5.00	29.50	40.0		
Block 1		E	Wall	Min	E->W	Wind	Line	-5.00	-3.00	40.0		
Block 1		E	Wall	Min	E->W	Wind	Line	-5.00	29.50	40.0		
Block 1		E	Wall	1	E->W	Wind	Line	-5.00	29.50	51.4		
Block 1		E	Wall	1	E->W	Wind	Line	-5.00	29.50	51.5		
Block 1		E	Wall	1	E->W	Wind	Line	-5.00	-3.00	51.4		

WIND SHEAR LOADS (as entered or generated) (continued)

Block 1	S	Wall	Min	S->N	Wind	Line	-5.00	78.00	40.0
Block 1	S	Wall	1	S->N	Wind	Line	-5.00	78.00	51.5
Block 1	S	Wall	1	S->N	Wind	Line	-5.00	78.00	51.4
Block 1	S	Wall	1	S->N	Wind	Line	-5.00	-1.00	51.4
Block 1	S	Wall	Min	S->N	Wind	Line	-5.00	-1.00	40.0
Block 1	S	Wall	Min	S->N	Wind	Line	-5.00	78.00	40.0
Block 1	S	Wall	Min	S->N	Wind	Line	10.50	78.00	40.0
Block 1	S	Wall	1	S->N	Wind	Line	10.50	78.00	51.4
Block 1	N	Wall	Min	S->N	Lee	Line	-5.00	78.00	40.0
Block 1	N	Wall	1	S->N	Lee	Line	-5.00	78.00	37.3
Block 1	N	Wall	Min	S->N	Lee	Line	-5.00	78.00	40.0
Block 1	N	Wall	1	S->N	Lee	Line	-5.00	78.00	37.3
Block 1	N	Wall	1	S->N	Lee	Line	25.00	78.00	37.3
Block 1	N	Wall	Min	S->N	Lee	Line	25.00	78.00	40.0
Block 1	S	Wall	Min	N->S	Lee	Line	-5.00	-1.00	40.0
Block 1	S	Wall	1	N->S	Lee	Line	-5.00	-1.00	37.3
Block 1	S	Wall	1	N->S	Lee	Line	-5.00	78.00	37.3
Block 1	S	Wall	1	N->S	Lee	Line	-5.00	78.00	37.3
Block 1	S	Wall	Min	N->S	Lee	Line	-5.00	78.00	40.0
Block 1	S	Wall	Min	N->S	Lee	Line	-5.00	78.00	40.0
Block 1	S	Wall	1	N->S	Lee	Line	10.50	78.00	37.3
Block 1	S	Wall	Min	N->S	Lee	Line	10.50	78.00	40.0
Block 1	N	Wall	Min	N->S	Wind	Line	-5.00	78.00	40.0
Block 1	N	Wall	1	N->S	Wind	Line	-5.00	78.00	51.5
Block 1	N	Wall	1	N->S	Wind	Line	-5.00	78.00	51.4
Block 1	N	Wall	Min	N->S	Wind	Line	-5.00	78.00	40.0
Block 1	N	Wall	1	N->S	Wind	Line	25.00	78.00	51.4
Block 1	N	Wall	Min	N->S	Wind	Line	25.00	78.00	40.0

Legend:**Block** - Block used in load generation

Accum. = loads from one block combined with another

Manual = user-entered loads (so no block)

F - Building face (north, south, east or west)**Element** - Building surface on which loads generated or entered**Load Case** - One of the following:

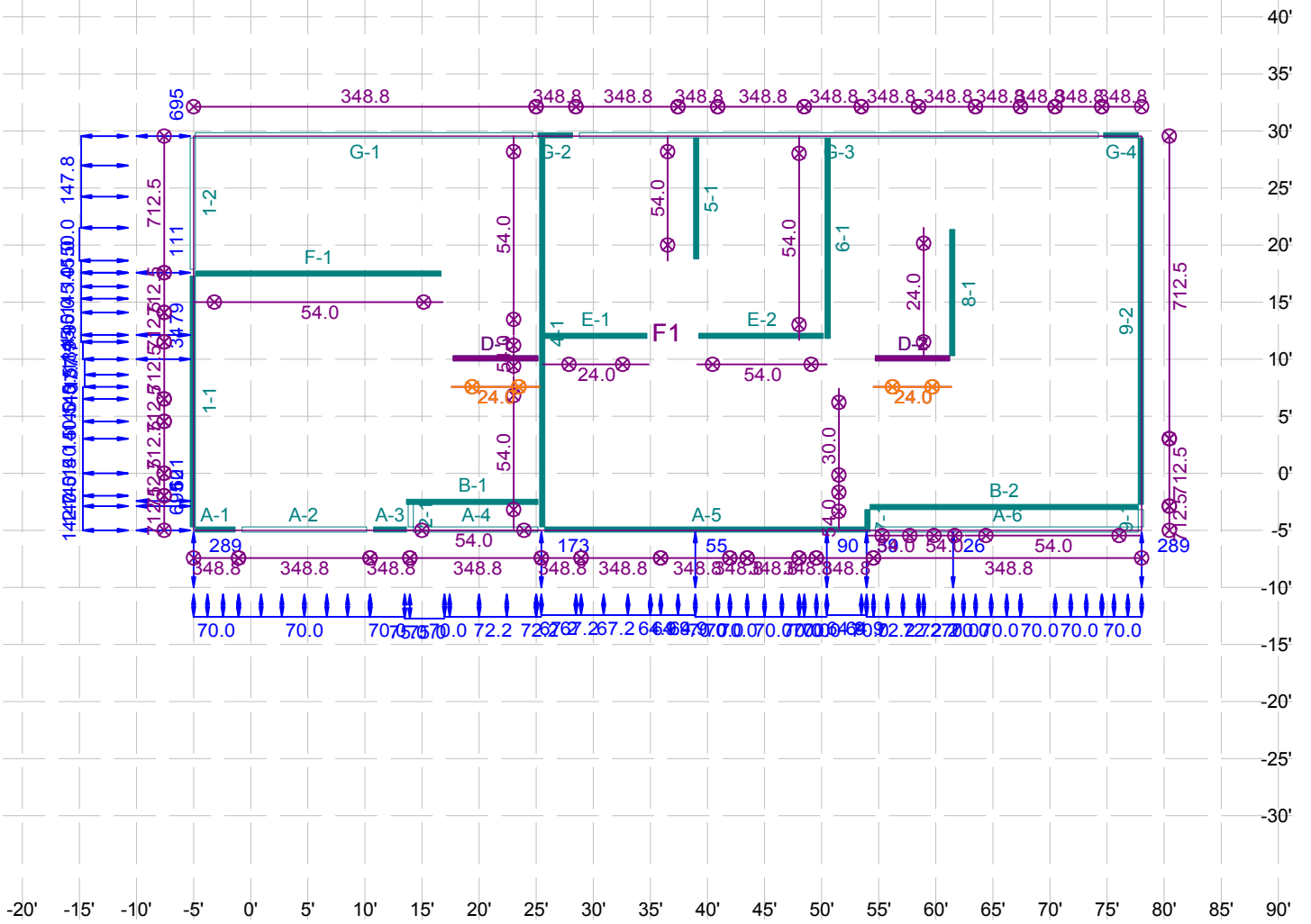
ASCE 7 All Heights: Case 1 or 2 from Fig 27.4-8 or minimum loads from 27.1.5

ASCE 7 Low-rise: Reference corner and Case A or B from Fig 28.4-1 or minimum loads from 28.4.4

Wind Dir - Direction of wind for loads with positive magnitude, also direction of MWFRS.**Surf Dir** - Windward or leeward side of the building for loads in given direction**Prof** - Profile (distribution)**Location** - Start and end points on building element**Magnitude** - Start = intensity of uniform and point loads or leftmost intensity of trapezoidal load, End = right intensity of trap load**Trib Ht** - Tributary height of area loads only**Notes:**

All loads entered by the user or generated by program are specified (unfactored) loads. The program applies a load factor of 0.60 to wind loads before distributing them to the shearlines.

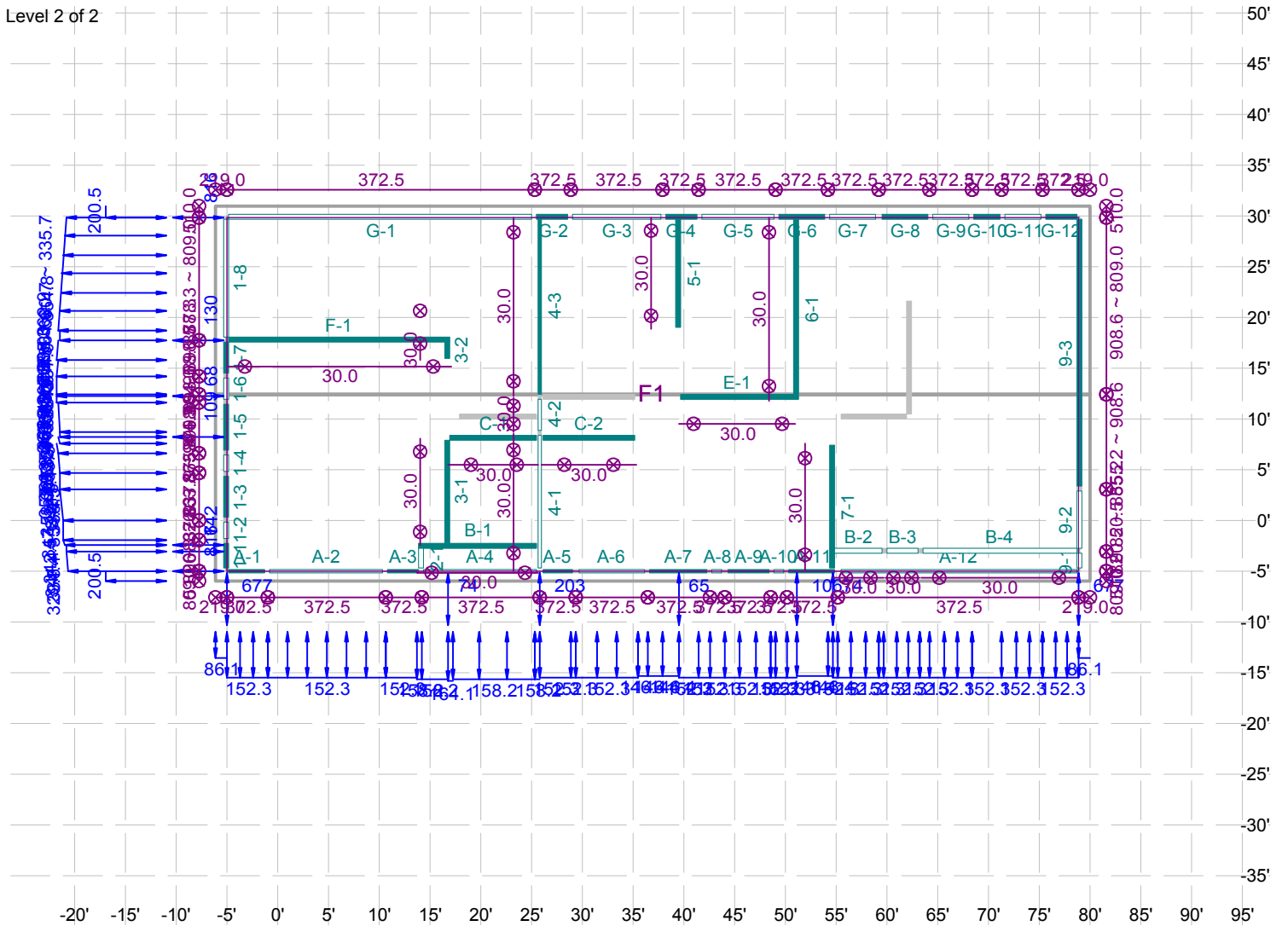
Level 1 of 2



- Unfactored generated shear load (plf)
- Generated building mass (plf,lbs)
- F1 - Floor area 1 for mass generation
- Generated point load from wall (lbs)

Orange = Selected wall(s)

Level 2 of 2



- Unfactored generated shear load (plf)
- Generated building mass (plf,lbs)
- F1 - Floor area 1 for mass generation
- Generated point load from wall (lbs)

Orange = Selected wall(s)

BUILDING MASSES

Level 2 Force Dir	Building Element	Block	Wall Line	Profile	Location [ft]		Magnitude [lbs,plf,psf]		Trib Width [ft]
					Start	End	Start	End	
E-W	Roof	Block 1	1	Line	-6.00	30.50	510.0	510.0	
E-W	Roof	Block 1	9	Line	-6.00	30.50	510.0	510.0	
E-W	Ceiling F1	n/a	1	Line	-5.00	29.50	249.0	249.0	
E-W	Ceiling F1	n/a	9	Line	-5.00	29.50	249.0	249.0	
E-W	R Gable	Block 1	1	Line	-5.00	12.25	99.6	0.0	
E-W	L Gable	Block 1	1	Line	12.25	29.50	0.0	99.6	
E-W	L Gable	Block 1	9	Line	-5.00	12.25	99.6	0.0	
E-W	R Gable	Block 1	9	Line	12.25	29.50	0.0	99.6	
N-S	Roof	Block 1	A	Line	-6.00	79.00	219.0	219.0	
N-S	Roof	Block 1	G	Line	-6.00	79.00	219.0	219.0	
N-S	Ceiling F1	n/a	A	Line	-5.00	78.00	103.5	103.5	
N-S	Ceiling F1	n/a	G	Line	-5.00	78.00	103.5	103.5	
Both	Wall 1-1	n/a	1	Line	-5.00	-2.00	50.0	50.0	
Both	Wall 1-2	n/a	1	Line	-2.00	0.00	50.0	50.0	
Both	Wall 1-3	n/a	1	Line	0.00	4.50	50.0	50.0	
Both	Wall 1-4	n/a	1	Line	4.50	6.50	50.0	50.0	
Both	Wall 1-5	n/a	1	Line	6.50	11.50	50.0	50.0	
Both	Wall 1-6	n/a	1	Line	11.50	14.00	50.0	50.0	
Both	Wall 1-7	n/a	1	Line	14.00	17.50	50.0	50.0	
Both	Wall 1-8	n/a	1	Line	17.50	29.50	50.0	50.0	
Both	Wall 2-1	n/a	2	Line	-5.00	-2.50	30.0	30.0	
Both	Wall 3-1	n/a	3	Line	-2.50	8.00	30.0	30.0	
Both	Wall 3-2	n/a	3	Line	15.50	17.50	30.0	30.0	
Both	Wall 4-1	n/a	4	Line	-5.00	8.50	30.0	30.0	
Both	Wall 4-2	n/a	4	Line	8.50	12.00	30.0	30.0	
Both	Wall 4-3	n/a	4	Line	12.00	29.50	30.0	30.0	
Both	Wall 5-1	n/a	5	Line	18.50	29.50	30.0	30.0	
Both	Wall 6-1	n/a	6	Line	11.50	29.50	30.0	30.0	
Both	Wall 7-1	n/a	7	Line	-5.00	7.50	30.0	30.0	
Both	Wall 9-1	n/a	9	Line	-5.00	-3.00	50.0	50.0	
Both	Wall 9-2	n/a	9	Line	-3.00	3.00	50.0	50.0	
Both	Wall 9-3	n/a	9	Line	3.00	29.50	50.0	50.0	
Both	Wall A-1	n/a	A	Line	-5.00	-1.00	50.0	50.0	
Both	Wall A-2	n/a	A	Line	-1.00	10.50	50.0	50.0	
Both	Wall A-3	n/a	A	Line	10.50	14.00	50.0	50.0	
Both	Wall A-4	n/a	A	Line	14.00	25.50	50.0	50.0	
Both	Wall A-5	n/a	A	Line	25.50	29.00	50.0	50.0	
Both	Wall A-6	n/a	A	Line	29.00	36.00	50.0	50.0	
Both	Wall A-7	n/a	A	Line	36.00	42.00	50.0	50.0	
Both	Wall A-8	n/a	A	Line	42.00	43.50	50.0	50.0	
Both	Wall A-9	n/a	A	Line	43.50	48.00	50.0	50.0	
Both	Wall A-10	n/a	A	Line	48.00	49.50	50.0	50.0	
Both	Wall A-11	n/a	A	Line	49.50	54.50	50.0	50.0	
Both	Wall A-12	n/a	A	Line	54.50	78.00	50.0	50.0	
Both	Wall B-2	n/a	B	Line	54.00	59.00	30.0	30.0	
Both	Wall B-3	n/a	B	Line	59.00	62.50	30.0	30.0	
Both	Wall B-4	n/a	B	Line	62.50	78.00	30.0	30.0	
Both	Wall B-1	n/a	B	Line	13.50	25.50	30.0	30.0	
Both	Wall C-1	n/a	C	Line	16.50	25.50	30.0	30.0	
Both	Wall C-2	n/a	C	Line	25.50	35.00	30.0	30.0	
Both	Wall E-1	n/a	E	Line	39.00	50.50	30.0	30.0	
Both	Wall F-1	n/a	F	Line	-5.00	17.00	30.0	30.0	
Both	Wall G-1	n/a	G	Line	-5.00	25.00	50.0	50.0	
Both	Wall G-2	n/a	G	Line	25.00	28.50	50.0	50.0	
Both	Wall G-3	n/a	G	Line	28.50	37.50	50.0	50.0	
Both	Wall G-4	n/a	G	Line	37.50	41.00	50.0	50.0	
Both	Wall G-5	n/a	G	Line	41.00	48.50	50.0	50.0	
Both	Wall G-6	n/a	G	Line	48.50	53.50	50.0	50.0	
Both	Wall G-7	n/a	G	Line	53.50	58.50	50.0	50.0	
Both	Wall G-8	n/a	G	Line	58.50	63.50	50.0	50.0	
Both	Wall G-9	n/a	G	Line	63.50	67.50	50.0	50.0	
Both	Wall G-10	n/a	G	Line	67.50	70.50	50.0	50.0	
Both	Wall G-11	n/a	G	Line	70.50	74.50	50.0	50.0	
Both	Wall G-12	n/a	G	Line	74.50	78.00	50.0	50.0	
Level 1 Force Dir	Building Element	Block	Wall Line	Profile	Location [ft]		Magnitude [lbs,plf,psf]		Trib Width [ft]
					Start	End	Start	End	

BUILDING MASSES (continued)

E-W	Floor F1	n/a	1	Line	-5.00	29.50	622.5	622.5
Both	Wall 1-1	n/a	1	Line	-5.00	-2.00	50.0	50.0
Both	Wall 1-2	n/a	1	Line	-2.00	0.00	50.0	50.0
Both	Wall 1-3	n/a	1	Line	0.00	4.50	50.0	50.0
Both	Wall 1-4	n/a	1	Line	4.50	6.50	50.0	50.0
Both	Wall 1-5	n/a	1	Line	6.50	11.50	50.0	50.0
Both	Wall 1-6	n/a	1	Line	11.50	14.00	50.0	50.0
Both	Wall 1-7	n/a	1	Line	14.00	17.50	50.0	50.0
Both	Wall 1-8	n/a	1	Line	17.50	29.50	50.0	50.0
Both	Wall 2-1	n/a	2	Line	-5.00	-2.50	30.0	30.0
Both	Wall 3-1	n/a	3	Line	-2.50	8.00	30.0	30.0
Both	Wall 3-2	n/a	3	Line	15.50	17.50	30.0	30.0
Both	Wall 4-1	n/a	4	Line	-5.00	8.50	30.0	30.0
Both	Wall 4-2	n/a	4	Line	8.50	12.00	30.0	30.0
Both	Wall 4-3	n/a	4	Line	12.00	29.50	30.0	30.0
Both	Wall 5-1	n/a	5	Line	18.50	29.50	30.0	30.0
Both	Wall 6-1	n/a	6	Line	11.50	29.50	30.0	30.0
Both	Wall 7-1	n/a	7	Line	-5.00	7.50	30.0	30.0
E-W	Floor F1	n/a	9	Line	-5.00	29.50	622.5	622.5
Both	Wall 9-1	n/a	9	Line	-5.00	-3.00	50.0	50.0
Both	Wall 9-2	n/a	9	Line	-3.00	3.00	50.0	50.0
Both	Wall 9-3	n/a	9	Line	3.00	29.50	50.0	50.0
Both	Wall A-1	n/a	A	Line	-5.00	-1.00	50.0	50.0
N-S	Floor F1	n/a	A	Line	-5.00	78.00	258.8	258.8
Both	Wall A-2	n/a	A	Line	-1.00	10.50	50.0	50.0
Both	Wall A-3	n/a	A	Line	10.50	14.00	50.0	50.0
Both	Wall A-4	n/a	A	Line	14.00	25.50	50.0	50.0
Both	Wall A-5	n/a	A	Line	25.50	29.00	50.0	50.0
Both	Wall A-6	n/a	A	Line	29.00	36.00	50.0	50.0
Both	Wall A-7	n/a	A	Line	36.00	42.00	50.0	50.0
Both	Wall A-8	n/a	A	Line	42.00	43.50	50.0	50.0
Both	Wall A-9	n/a	A	Line	43.50	48.00	50.0	50.0
Both	Wall A-10	n/a	A	Line	48.00	49.50	50.0	50.0
Both	Wall A-11	n/a	A	Line	49.50	54.50	50.0	50.0
Both	Wall A-12	n/a	A	Line	54.50	78.00	50.0	50.0
Both	Wall B-2	n/a	B	Line	54.00	59.00	30.0	30.0
Both	Wall B-3	n/a	B	Line	59.00	62.50	30.0	30.0
Both	Wall B-4	n/a	B	Line	62.50	78.00	30.0	30.0
Both	Wall B-1	n/a	B	Line	13.50	25.50	30.0	30.0
Both	Wall C-1	n/a	C	Line	16.50	25.50	30.0	30.0
Both	Wall C-2	n/a	C	Line	25.50	35.00	30.0	30.0
Both	Wall E-1	n/a	E	Line	39.00	50.50	30.0	30.0
Both	Wall F-1	n/a	F	Line	-5.00	17.00	30.0	30.0
Both	Wall G-1	n/a	G	Line	-5.00	25.00	50.0	50.0
N-S	Floor F1	n/a	G	Line	-5.00	78.00	258.8	258.8
Both	Wall G-2	n/a	G	Line	25.00	28.50	50.0	50.0
Both	Wall G-3	n/a	G	Line	28.50	37.50	50.0	50.0
Both	Wall G-4	n/a	G	Line	37.50	41.00	50.0	50.0
Both	Wall G-5	n/a	G	Line	41.00	48.50	50.0	50.0
Both	Wall G-6	n/a	G	Line	48.50	53.50	50.0	50.0
Both	Wall G-7	n/a	G	Line	53.50	58.50	50.0	50.0
Both	Wall G-8	n/a	G	Line	58.50	63.50	50.0	50.0
Both	Wall G-9	n/a	G	Line	63.50	67.50	50.0	50.0
Both	Wall G-10	n/a	G	Line	67.50	70.50	50.0	50.0
Both	Wall G-11	n/a	G	Line	70.50	74.50	50.0	50.0
Both	Wall G-12	n/a	G	Line	74.50	78.00	50.0	50.0
Both	Wall 1-1	n/a	1	Line	-5.00	17.50	40.0	40.0
Both	Wall 1-2	n/a	1	Line	17.50	29.50	40.0	40.0
Both	Wall 2-1	n/a	2	Line	-5.00	-2.50	24.0	24.0
Both	Wall 4-1	n/a	4	Line	-5.00	29.50	24.0	24.0
Both	Wall 5-1	n/a	5	Line	18.50	29.50	24.0	24.0
Both	Wall 6-1	n/a	6	Line	11.50	29.50	24.0	24.0
Both	Wall 7-1	n/a	7	Line	-5.00	-3.00	24.0	24.0
Both	Wall 8-1	n/a	8	Line	10.00	21.50	24.0	24.0
Both	Wall 9-1	n/a	9	Line	-5.00	-3.00	40.0	40.0

BUILDING MASSES (continued)

Both	Wall 9-2	n/a	9	Line	-3.00	29.50	40.0	40.0
Both	Wall A-1	n/a	A	Line	-5.00	-1.00	40.0	40.0
Both	Wall A-2	n/a	A	Line	-1.00	10.50	40.0	40.0
Both	Wall A-3	n/a	A	Line	10.50	14.00	40.0	40.0
Both	Wall A-4	n/a	A	Line	14.00	25.50	40.0	40.0
Both	Wall A-5	n/a	A	Line	25.50	54.50	40.0	40.0
Both	Wall A-6	n/a	A	Line	54.50	78.00	40.0	40.0
Both	Wall B-2	n/a	B	Line	54.00	78.00	24.0	24.0
Both	Wall B-1	n/a		Line	13.50	25.50	24.0	24.0
Both	Wall D-1	n/a	D	Line	17.50	25.50	24.0	24.0
Both	Wall D-2	n/a	D	Line	54.50	61.50	24.0	24.0
Both	Wall E-1	n/a	E	Line	25.50	35.00	24.0	24.0
Both	Wall E-2	n/a	E	Line	39.00	50.50	24.0	24.0
Both	Wall F-1	n/a	F	Line	-5.00	17.00	24.0	24.0
Both	Wall G-1	n/a	G	Line	-5.00	25.00	40.0	40.0
Both	Wall G-2	n/a	G	Line	25.00	28.50	40.0	40.0
Both	Wall G-3	n/a	G	Line	28.50	74.50	40.0	40.0
Both	Wall G-4	n/a	G	Line	74.50	78.00	40.0	40.0

Legend:

Force Dir - Direction in which the mass is used for seismic load generation, E-W, N-S, or Both

Building element - Roof, gable end, wall or floor area used to generate mass, wall line for user-applied masses, Floor F# - refer to Plan View for floor area number

Wall line - Shearline that equivalent line load is assigned to

Location - Start and end points of equivalent line load on wall line

Trib Width. - Tributary width; for user applied area loads only

SEISMIC LOADS

Level 2					
Force Dir	Profile	Location [ft]		Mag [lbs,plf,psf]	
		Start	End	Start	End
E-W	Line	-6.00	-5.00	200.5	200.5
E-W	Point	-5.00	-5.00	816	816
E-W	Line	-5.00	-3.00	329.8	334.4
E-W	Point	-3.00	-3.00	142	142
E-W	Line	-3.00	-2.50	334.4	335.5
E-W	Point	-2.50	-2.50	71	71
E-W	Line	-2.50	-2.00	341.4	342.5
E-W	Line	-2.00	0.00	342.5	347.1
E-W	Line	0.00	3.00	347.1	353.9
E-W	Line	3.00	4.50	353.9	357.3
E-W	Line	4.50	6.50	357.3	361.8
E-W	Line	6.50	7.50	361.8	364.1
E-W	Line	7.50	8.00	358.2	359.3
E-W	Point	8.00	8.00	109	109
E-W	Line	8.00	8.50	353.4	354.6
E-W	Line	8.50	11.50	354.6	361.4
E-W	Line	11.50	12.00	367.3	368.4
E-W	Point	12.00	12.00	68	68
E-W	Line	12.00	12.25	368.4	369.0
E-W	Line	12.25	14.00	369.0	365.0
E-W	Line	14.00	15.50	365.0	361.6
E-W	Line	15.50	17.50	367.5	362.9
E-W	Point	17.50	17.50	130	130
E-W	Line	17.50	18.50	357.0	354.8
E-W	Line	18.50	29.50	360.7	335.7
E-W	Point	29.50	29.50	816	816
E-W	Line	29.50	30.50	200.5	200.5
N-S	Line	-6.00	-5.00	86.1	86.1
N-S	Point	-5.00	-5.00	677	677
N-S	Line	-5.00	-1.00	152.3	152.3
N-S	Line	-1.00	10.50	152.3	152.3
N-S	Line	10.50	13.50	152.3	152.3
N-S	Line	13.50	14.00	158.2	158.2
N-S	Line	14.00	16.50	158.2	158.2
N-S	Point	16.50	16.50	74	74
N-S	Line	16.50	17.00	164.1	164.1
N-S	Line	17.00	25.00	158.2	158.2
N-S	Line	25.00	25.50	158.2	158.2
N-S	Point	25.50	25.50	203	203
N-S	Line	25.50	28.50	152.3	152.3
N-S	Line	28.50	29.00	152.3	152.3
N-S	Line	29.00	35.00	152.3	152.3
N-S	Line	35.00	36.00	146.4	146.4
N-S	Line	36.00	37.50	146.4	146.4
N-S	Line	37.50	39.00	146.4	146.4
N-S	Point	39.00	39.00	65	65
N-S	Line	39.00	41.00	152.3	152.3
N-S	Line	41.00	42.00	152.3	152.3
N-S	Line	42.00	43.50	152.3	152.3
N-S	Line	43.50	48.00	152.3	152.3
N-S	Line	48.00	48.50	152.3	152.3
N-S	Line	48.50	49.50	152.3	152.3
N-S	Line	49.50	50.50	152.3	152.3
N-S	Point	50.50	50.50	106	106
N-S	Line	50.50	53.50	146.4	146.4
N-S	Line	53.50	54.00	146.4	146.4
N-S	Point	54.00	54.00	74	74
N-S	Line	54.00	54.50	152.3	152.3
N-S	Line	54.50	58.50	152.3	152.3
N-S	Line	58.50	59.00	152.3	152.3
N-S	Line	59.00	62.50	152.3	152.3
N-S	Line	62.50	63.50	152.3	152.3
N-S	Line	63.50	67.50	152.3	152.3
N-S	Line	67.50	70.50	152.3	152.3
N-S	Line	70.50	74.50	152.3	152.3
N-S	Line	74.50	78.00	152.3	152.3
N-S	Point	78.00	78.00	677	677
N-S	Line	78.00	79.00	86.1	86.1

Level 1

SEISMIC LOADS (continued)

Force Dir	Profile	Location [ft]		Mag [lbs,plf,psf]	
		Start	End	Start	End
E-W	Point	-5.00	-5.00	695	695
E-W	Line	-5.00	-3.00	142.7	142.7
E-W	Point	-3.00	-3.00	121	121
E-W	Line	-3.00	-2.00	140.5	140.5
E-W	Point	-2.50	-2.50	60	60
E-W	Line	-2.00	0.00	140.5	140.5
E-W	Line	0.00	3.00	140.5	140.5
E-W	Line	3.00	4.50	140.5	140.5
E-W	Line	4.50	6.50	140.5	140.5
E-W	Line	6.50	7.50	140.5	140.5
E-W	Line	7.50	8.50	137.7	137.7
E-W	Point	8.00	8.00	2695	2695
E-W	Line	8.50	10.00	137.7	137.7
E-W	Point	10.00	10.00	34	34
E-W	Line	10.00	11.50	139.9	139.9
E-W	Line	11.50	12.00	145.0	145.0
E-W	Point	12.00	12.00	79	79
E-W	Line	12.00	14.00	145.0	145.0
E-W	Line	14.00	17.50	145.0	145.0
E-W	Point	17.50	17.50	111	111
E-W	Line	17.50	18.50	145.0	145.0
E-W	Line	18.50	21.50	150.0	150.0
E-W	Line	21.50	29.50	147.8	147.8
E-W	Point	29.50	29.50	695	695
N-S	Point	-5.00	-5.00	289	289
N-S	Line	-5.00	-1.00	70.0	70.0
N-S	Line	-1.00	10.50	70.0	70.0
N-S	Line	10.50	13.50	70.0	70.0
N-S	Line	13.50	14.00	75.0	75.0
N-S	Line	14.00	17.00	75.0	75.0
N-S	Point	16.50	16.50	2443	2443
N-S	Line	17.00	17.50	70.0	70.0
N-S	Line	17.50	25.00	72.2	72.2
N-S	Line	25.00	25.50	72.2	72.2
N-S	Point	25.50	25.50	173	173
N-S	Line	25.50	28.50	67.2	67.2
N-S	Line	28.50	29.00	67.2	67.2
N-S	Line	29.00	35.00	67.2	67.2
N-S	Line	35.00	36.00	64.9	64.9
N-S	Line	36.00	37.50	64.9	64.9
N-S	Line	37.50	39.00	64.9	64.9
N-S	Point	39.00	39.00	55	55
N-S	Line	39.00	41.00	70.0	70.0
N-S	Line	41.00	42.00	70.0	70.0
N-S	Line	42.00	43.50	70.0	70.0
N-S	Line	43.50	48.00	70.0	70.0
N-S	Line	48.00	48.50	70.0	70.0
N-S	Line	48.50	49.50	70.0	70.0
N-S	Line	49.50	50.50	70.0	70.0
N-S	Point	50.50	50.50	90	90
N-S	Line	50.50	53.50	64.9	64.9
N-S	Line	53.50	54.00	64.9	64.9
N-S	Point	54.00	54.00	39	39
N-S	Point	54.00	54.00	2158	2158
N-S	Line	54.00	54.50	70.0	70.0
N-S	Line	54.50	58.50	72.2	72.2
N-S	Line	58.50	59.00	72.2	72.2
N-S	Line	59.00	61.50	72.2	72.2
N-S	Point	61.50	61.50	26	26
N-S	Line	61.50	62.50	70.0	70.0
N-S	Line	62.50	63.50	70.0	70.0
N-S	Line	63.50	67.50	70.0	70.0
N-S	Line	67.50	70.50	70.0	70.0
N-S	Line	70.50	74.50	70.0	70.0
N-S	Line	74.50	78.00	70.0	70.0
N-S	Point	78.00	78.00	289	289

Legend:

Loads in table can be accumulation of loads from several building masses, so they do not correspond with a particular building element.

Design Summary**SHEARWALL DESIGN****Wind Shear Loads, Flexible Diaphragm**

All shearwalls have sufficient design capacity.

Seismic Loads, Flexible Diaphragm

All shearwalls have sufficient design capacity.

HOLDDOWN DESIGN**Wind Loads, Flexible Diaphragm**

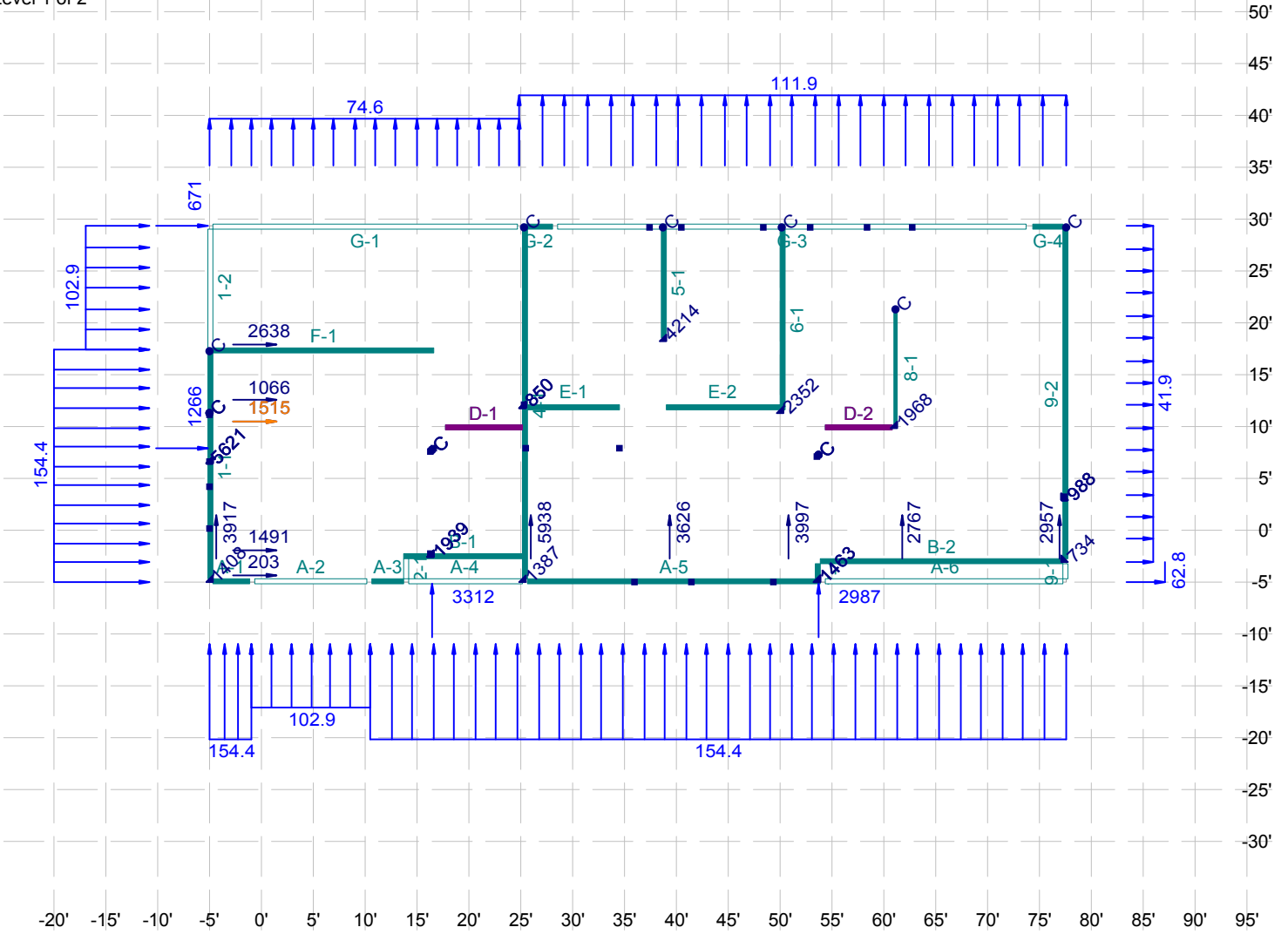
All hold-downs have sufficient design capacity.

Seismic Loads, Flexible Diaphragm

All hold-downs have sufficient design capacity.

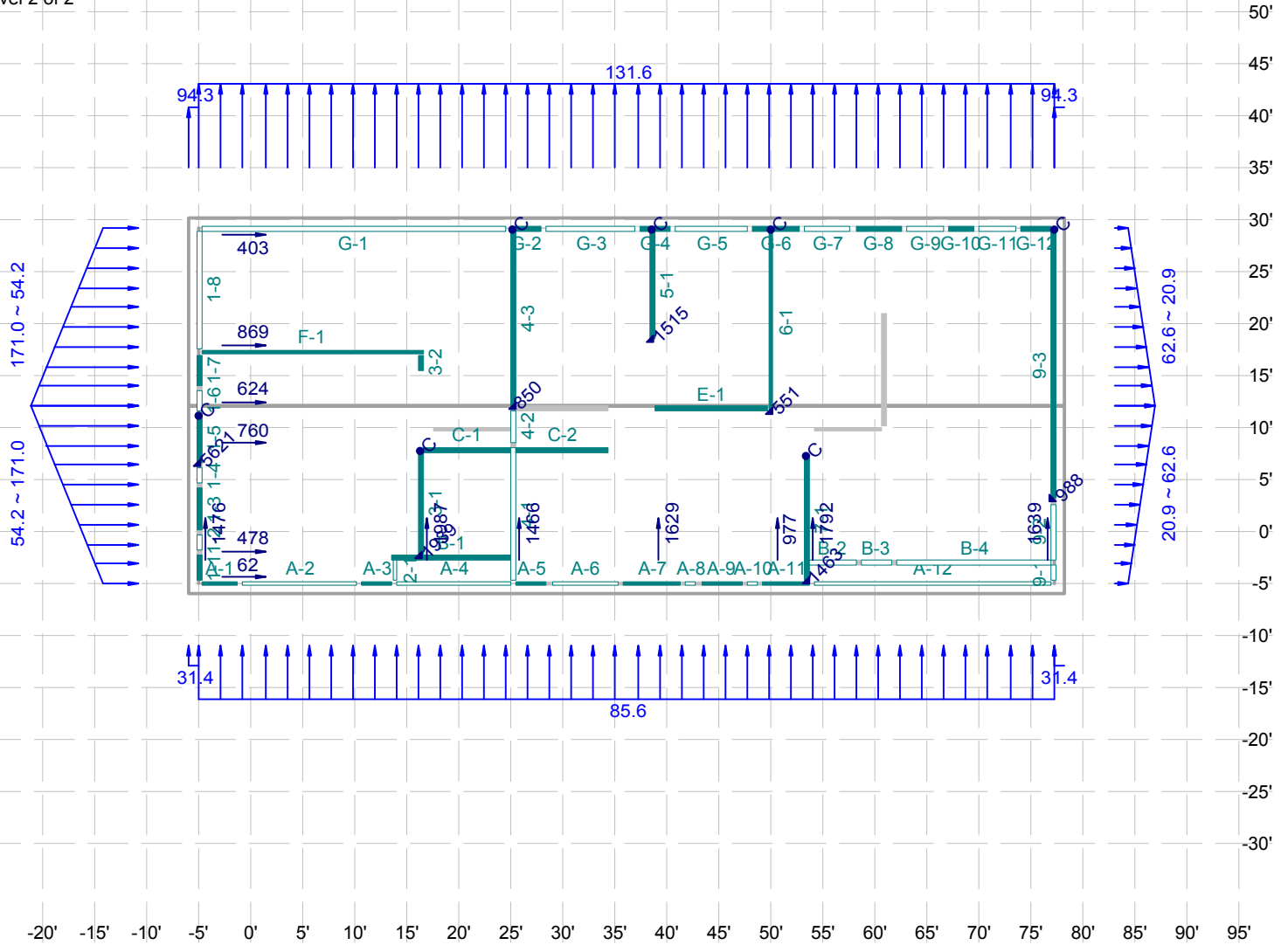
This Design Summary does not include failures that occur due to excessive story drift (NBC 4.1.8.13 (3)). Refer to Story Drift table in this report to verify this design criterion. Refer to the Deflection table for possible issues regarding fastener slippage (SDPWS Table C4.2.2D).

Level 1 of 2



- Factored shearline force (lbs)
- ▲ Factored holddown force (lbs)
- C Compression force exists
- Vertical element required
- Loadings: W; Forces: 0.6W + 0.6D.
- ↑↑↑ Unfactored applied shear load (plf)
- ⊗⊗ Unfactored dead load (plf,lbs)
- ⊙⊙ Unfactored uplift wind load (plf,lbs)
- Applied point load or discontinuous shearline force (lbs)
- Orange = Selected wall(s)

Level 2 of 2



- | | | | |
|-----|--------------------------------|-----|---|
| → | Factored shearline force (lbs) | ↑↑↑ | Unfactored applied shear load (plf) |
| ▲ | Factored holddown force (lbs) | ⊗ | Unfactored dead load (plf,lbs) |
| • C | Compression force exists | ⊙ | Unfactored uplift wind load (plf,lbs) |
| ■ | Vertical element required | → | Applied point load or discontinuous shearline force (lbs) |
- Legend:
- Orange = Selected wall(s)
- Loads Shown: W; Forces: 0.6W + 0.6D.

Flexible Diaphragm Wind Design
ASCE 7 Directional (All Heights) Loads

SHEAR RESULTS

N-S Shearlines	W Gp	For Dir	H/W-Cub		ASD Shear Force [plf]			Allowable Shear [plf]					Crit. Resp.	
			Int	Ext	V [lbs]	vmax	v	Int	Ext	Co	C	Total		V [lbs]
Line 1														
Level 2														
Ln1, Lev2	6	Both	1.0	1.0	1476	-	295.3	125	532	1.00	A	657	3285	0.45
Wall 1-3	6	Both	1.0	1.0	0			125	532	1.00		657	-	-
Wall 1-1	6	Both	1.0	1.0	0			125	532	1.00		657	-	-
Wall 1-5	6	Both	1.0	1.0	1476	295.3	295.3	125	532	1.00		657	3285	0.45
Wall 1-7	6	Both	1.0	1.0	0			125	532	1.00		657	-	-
Level 1														
Ln1, Lev1	1	S->N	1.0	1.0	3917	174.1	174.1	125	1218	1.00	A	1343	30218	0.13
	1	N->S	1.0	1.0	3854	171.3	171.3	125	1218	1.00	A	1343	30218	0.13
Line 3														
Level 2														
Ln3, Lev2	3	Both	1.0	1.0	1987	-	189.3	125	686	1.00	A	811	8516	0.23
Wall 3-1	3	Both	1.0	1.0	1987	189.3	189.3	125	686	1.00		811	8516	0.23
Wall 3-2	3	Both	1.0	1.0	0			125	686	1.00		811	-	-
Level 1														
Ln4, Lev2	3	Both	1.0	1.0	1466	83.8	83.8	125	686	1.00	A	811	14193	0.10
Level 1														
Ln4, Lev1	1	S->N	1.0	1.0	5938	172.1	172.1	125	1218	1.00	A	1343	46334	0.13
	1	N->S	1.0	1.0	5844	169.4	169.4	125	1218	1.00	A	1343	46334	0.13
Line 5														
Level 2														
Ln5, Lev2	3	Both	1.0	1.0	1629	148.1	148.1	125	686	1.00	A	811	8921	0.18
Level 1														
Ln5, Lev1	2^	Both	1.0	1.0	3626	329.6	329.6	125	896	1.00	A	1021	11231	0.32
Line 6														
Level 2														
Ln6, Lev2	8	Both	1.0	1.0	977	54.3	54.3	125	686	1.00	A	811	14598	0.07
Level 1														
Ln6, Lev1	7	Both	1.0	1.0	3997	222.0	222.0	125	896	1.00	A	1021	18378	0.22
Line 7														
Level 2														
Ln7, Lev2	3	Both	1.0	1.0	1792	143.4	143.4	125	686	1.00	A	811	10138	0.18
Line 8														
Level 1														
Ln8, Lev1	2	Both	1.0	1.0	2767	240.6	240.6	125	896	1.00	A	1021	11742	0.24
Line 9														
Level 2														
Ln9, Lev2	3	Both	1.0	1.0	1639	61.9	61.9	125	686	1.00	A	811	21492	0.08
Level 1														
Ln9, Lev1	1	Both	1.0	1.0	2957	91.0	91.0	125	1218	1.00	A	1343	43648	0.07
E-W Shearlines	W Gp	For Dir	H/W-Cub		ASD Shear Force [plf]			Allowable Shear [plf]					Crit. Resp.	
			Int	Ext	V [lbs]	vmax	v	Int	Ext	Co	C	Total		V [lbs]
Line A														
Level 2														
LnA, Lev2	2	Both	1.0	1.0	66	-	11.0	125	896	1.00	A	1021	11231	0.01
Wall A-7	2	Both	1.0	1.0	66	11.0	11.0	125	896	1.00		1021	6126	0.01
Wall A-9	2	Both	1.0	1.0	0			125	896	1.00		1021	-	-
Wall A-11	2	Both	1.0	1.0	0			125	896	1.00		1021	5105	-
Wall A-1	2	Both	1.0	1.0	0			125	896	1.00		1021	-	-
Wall A-3	2	Both	1.0	1.0	0			125	896	1.00		1021	-	-
Wall A-5	2	Both	1.0	1.0	0			125	896	1.00		1021	-	-
Level 1														
LnA, Lev1	1	Both	1.0	1.0	222	-	7.6	125	1218	1.00	A	1343	44319	0.01
Wall A-5	1	Both	1.0	1.0	222	7.6	7.6	125	1218	1.00		1343	38947	0.01
Wall A-3	1	Both	1.0	1.0	0			125	1218	1.00		1343	-	-
Wall A-1	1	Both	1.0	1.0	0			125	1218	1.00		1343	5372	-
Line B														
Level 2														
LnB, Lev2	2	Both	1.0	1.0	498	41.5	41.5	125	896	1.00	A	1021	12252	0.04
Level 1														
LnB, Lev1	1	Both	1.0	1.0	1542	-	64.3	125	1218	1.00	A	1343	48348	0.05
Wall B-2	1	Both	1.0	1.0	1542	64.3	64.3	125	1218	1.00		1343	32232	0.05
Wall B-1	1	Both	1.0	1.0	0			125	1218	1.00		1343	16116	-

SHEAR RESULTS (flexible wind design, continued)

Line C														
Level 2														
LnC, Lev2	3	Both	1.0	1.0	783	-	60.9	125	686	1.00	A	811	15004	0.08
Wall C-1	3	Both	1.0	1.0	205	22.7	22.7	125	686	1.00		811	7299	0.03
Wall C-2	3	Both	1.0	1.0	579	60.9	60.9	125	686	1.00		811	7705	0.08
Line D														
Level 1														
LnD, Lev1	1	Both	1.0	1.0	1551	-	154.0	125	1218	1.00	A	1343	20145	0.11
Wall D-2	1	Both	1.0	1.0	1078	154.0	154.0	125	1218	1.00		1343	9401	0.11
Wall D-1	1	Both	1.0	1.0	473	59.1	59.1	125	1218	1.00		1343	10744	0.04
Line E														
Level 2														
LnE, Lev2	3	Both	1.0	1.0	640	55.7	55.7	125	686	1.00	A	811	9327	0.07
Level 1														
LnE, Lev1	2	Both	1.0	1.0	1090	-	85.2	125	896	1.00	A	1021	21441	0.08
Wall E-2	2	Both	1.0	1.0	980	85.2	85.2	125	896	1.00		1021	11742	0.08
Wall E-1	2	Both	1.0	1.0	110	11.6	11.6	125	896	1.00		1021	9700	0.01
Line F														
Level 2														
LnF, Lev2	3	Both	1.0	1.0	897	40.8	40.8	125	686	1.00	A	811	17842	0.05
Level 1														
LnF, Lev1	1	Both	1.0	1.0	2800	127.3	127.3	125	1218	1.00	A	1343	29546	0.09
Line G														
Level 2														
LnG, Lev2	5	Both	1.0	1.0	421	-	84.2	125	364	1.00	A	489	4890	0.17
Wall G-4	5	Both	1.0	1.0	0			125	364	1.00		489	-	-
Wall G-12	5	Both	1.0	1.0	0			125	364	1.00		489	-	-
Wall G-8	5	Both	1.0	1.0	421	84.2	84.2	125	364	1.00		489	2445	0.17
Wall G-10	5	Both	1.0	1.0	0			125	364	1.00		489	-	-
Wall G-2	5	Both	1.0	1.0	0			125	364	1.00		489	-	-
Wall G-6	5	Both	1.0	1.0	0			125	364	1.00		489	2445	-

Legend:

Unless otherwise noted, the value in the table for a shearline is the one for wall on the line with the critical design response.

W Gp - Wall design group defined in Sheathing and Framing Materials tables, where it shows associated Standard Wall. "A" means that this wall is critical for all walls in the Standard Wall group.

For Dir - Direction of wind force along shearline.

H/W-Cub - Fibreboard height-to-width factor from SDPWS table 4.3.4 note 3, or Unblocked structural wood panel factor Cub from SDPWS 4.3.3.2 for critical segment on wall.

V - ASD factored shear force. For shearline: total shearline force. For wall: force taken by total of all segments on wall.

vmax - Base shear = ASD factored shear force per unit full height sheathing, divided by perforation factor Co as per SDPWS eqn. 4.3-8 = V/FHS/Co.

v - Design shear force = ASD factored shear force per unit full height sheathing. For wall, it is the largest force on any segment.

Int - Unit shear capacity of interior sheathing; Ext - Unit shear capacity of exterior sheathing. Includes Cub and height-to-width factors.

Co - Perforation factor from SDPWS Table 4.3.3.5.

C - Sheathing combination rule, A = Add capacities, S = Strongest side only, X = Strongest side or twice weakest.

Total - Combined int. and ext. unit shear capacity inc. perforation factor.

V - For wall: Sum of combined shear capacities for all segments on wall. For shearline: sum of all wall capacities on line.

Crit Resp - Critical response = v/Total = design shear force/unit shear capacity for critical segment on wall or shearline.

"S" indicates that the seismic design criterion was critical in selecting wall.

Notes:

Refer to Elevation View diagrams for individual level for uplift anchorage force t for perforated walls given by SDPWS 4.3.6.4.2.4.

HOLD-DOWN DESIGN (flexible wind design)

Level 1					Tensile ASD				Hold-down	Cap [lbs]	Crit Resp.
Line-Wall	Posit'n	Location [ft]		Load Case	Holddown Force [lbs]			Cmb'd			
		X	Y		Shear	Dead	Uplift				
Line 1											
1-1	L End	-5.00	-4.87	1	1408			1408	HD19(1-1/4	^19360	0.07
	V Elem	-5.00	6.63	1	5621			5621	Refer to upper level		
	V Elem	-5.00	11.38	1	5621			5621	Refer to upper level		
1-1	R End	-5.00	17.38	1	1386			1386	HD19(1-1/4	^19360	0.07
Line 3											
	V Elem	16.50	-2.37	1	1939			1939	Refer to upper level		
	V Elem	16.50	7.88	1	1939			1939	Refer to upper level		
Line 4											
4-1	L End	25.50	-4.87	1	1387			1387	HD12	^11775	0.12
	V Elem	25.50	12.13	1	850			850	Refer to upper level		
4-1	R End	25.50	29.38	1	2215			2215	HD12	^11775	0.19
Line 5											
5-1	L End	39.00	18.63	1	4214			4214	HD9	8810	0.48
5-1	R End	39.00	29.38	1	4214			4214	HD9	8810	0.48
Line 6											
6-1	L End	50.50	11.63	1	2352			2352	HD9	8810	0.27
6-1	R End	50.50	29.38	1	2352			2352	HD9	8810	0.27
Line 7											
	V Elem	54.00	-4.87	1	1463			1463	Refer to upper level		
	V Elem	54.00	7.38	1	1463			1463	Refer to upper level		
Line 8											
8-1	L End	61.50	10.13	1	1968			1968	HD9	8810	0.22
8-1	R End	61.50	21.38	1	1968			1968	HD9	8810	0.22
Line 9											
9-2	L End	78.00	-2.87	1	734			734	HD12	^11775	0.06
	V Elem	78.00	3.13	1	988			988	Refer to upper level		
9-2	R End	78.00	29.38	1	1722			1722	HD12	^11775	0.15
Line A											
A-5	L End	25.63	-5.00	Min	62			62	HD19(1-1/4	^19360	0.00
	V Elem	36.13	-5.00	Min	114			114	Refer to upper level		
	V Elem	41.88	-5.00	Min	114			114	Refer to upper level		
A-5	R End	54.38	-5.00	Min	62			62	HD19(1-1/4	^19360	0.00
Line B											
	V Elem	13.63	-2.50	Min	424			424	Refer to upper level		
	V Elem	25.38	-2.50	Min	424			424	Refer to upper level		
B-2	L End	54.13	-3.00	Min	520			520	HD19(1-1/4	^19360	0.03
B-2	R End	77.88	-3.00	Min	520			520	HD19(1-1/4	^19360	0.03
Line C											
	V Elem	16.62	8.00	Min	234			234	Refer to upper level		
	V Elem	25.38	8.00	Min	234			234	Refer to upper level		
	V Elem	25.63	8.00	Min	626			626	Refer to upper level		
	V Elem	34.88	8.00	Min	626			626	Refer to upper level		
Line D											
D-1	L End	17.63	10.00	Min	488			488	HD19(1-1/4	^19360	0.03
D-1	R End	25.38	10.00	Min	488			488	HD19(1-1/4	^19360	0.03
D-2	L End	54.63	10.00	Min	1278			1278	HD9	8810	0.15
D-2	R End	61.38	10.00	Min	1278			1278	HD9	8810	0.15
Line E											
E-1	L End	25.63	12.00	Min	95			95	HD9	8810	0.01
E-1	R End	34.88	12.00	Min	95			95	HD9	8810	0.01
E-2	L End	39.13	12.00	Min	1266			1266	HD9	8810	0.14
E-2	R End	50.38	12.00	Min	1266			1266	HD9	8810	0.14
Line F											
F-1	L End	-4.87	17.50	Min	1442			1442	HD19(1-1/4	^19360	0.07
F-1	R End	16.88	17.50	Min	1442			1442	HD19(1-1/4	^19360	0.07
Line G											
	V Elem	58.63	29.50	Min	886			886	Refer to upper level		
	V Elem	63.38	29.50	Min	886			886	Refer to upper level		
Level 2					Tensile ASD				Hold-down	Cap [lbs]	Crit Resp.
Line-Wall	Posit'n	Location [ft]		Load Case	Holddown Force [lbs]			Cmb'd			
		X	Y		Shear	Dead	Uplift				
Line 1											
1-5	L End	-5.00	6.63	1	5621			5621	HD9	8810	0.64
1-5	R End	-5.00	11.38	1	5621			5621	HD9	8810	0.64
Line 3											
3-1	L End	16.50	-2.37	1	1939			1939	HD9	8810	0.22
3-1	R End	16.50	7.88	1	1939			1939	HD9	8810	0.22

HOLD-DOWN DESIGN (flexible wind design, continued)

Line 4										
4-3	L End	25.50	12.13	1	850	850	HD7	6600	0.13	
4-3	R End	25.50	29.38	1	850	850	HD7	6600	0.13	
Line 5										
5-1	L End	39.00	18.63	1	1515	1515	HD7	6600	0.23	
5-1	R End	39.00	29.38	1	1515	1515	HD7	6600	0.23	
Line 6										
6-1	L End	50.50	11.63	1	551	551	HD7	6600	0.08	
6-1	R End	50.50	29.38	1	551	551	HD7	6600	0.08	
Line 7										
7-1	L End	54.00	-4.87	1	1463	1463	HD9	8810	0.17	
7-1	R End	54.00	7.38	1	1463	1463	HD9	8810	0.17	
Line 9										
9-3	L End	78.00	3.13	1	988	988	HD9	8810	0.11	
9-3	R End	78.00	29.38	1	988	988	HD9	8810	0.11	
Line A										
A-7	L End	36.13	-5.00	Min	114	114	HD12	^11775	0.01	
A-7	R End	41.88	-5.00	Min	114	114	HD12	^11775	0.01	
Line B										
B-1	L End	13.63	-2.50	Min	424	424	HD12	^11775	0.04	
B-1	R End	25.38	-2.50	Min	424	424	HD12	^11775	0.04	
Line C										
C-1	L End	16.62	8.00	Min	234	234	HD12	^11775	0.02	
C-1	R End	25.38	8.00	Min	234	234	HD12	^11775	0.02	
C-2	L End	25.63	8.00	Min	626	626	HD12	^11775	0.05	
C-2	R End	34.88	8.00	Min	626	626	HD12	^11775	0.05	
Line E										
E-1	L End	39.13	12.00	Min	569	569	HD12	^11775	0.05	
E-1	R End	50.38	12.00	Min	569	569	HD12	^11775	0.05	
Line F										
F-1	L End	-4.87	17.50	Min	412	412	HD7	6600	0.06	
F-1	R End	16.88	17.50	Min	412	412	HD7	6600	0.06	
Line G										
G-8	L End	58.63	29.50	Min	886	886	HD12	^11775	0.08	
G-8	R End	63.38	29.50	Min	886	886	HD12	^11775	0.08	

Legend:**Line-Wall:**

At wall or opening – Shearline and wall number At vertical element - Shearline

Posit'n - Position of stud that hold-down is attached to:

V Elem - Vertical element: column or strengthened studs required where not at wall end or opening

L or R End - At left or right wall end

L or R Op n - At left or right side of opening n

Location - Co-ordinates in Plan View

Load Case - Results are for critical load case:

ASCE 7 All Heights: Case 1 or 2 from Fig. 27.4-8

ASCE 7 Low-rise: Windward corner(s) and Case A or B from Fig. 28.4-1

ASCE 7 Minimum loads (27.1.5 / 28.4.4)

Hold-down Forces:

Shear – Wind shear overturning component, based on shearline force, includes perforation factor C_o , factored for ASD by 0.60

Dead – Dead load resisting component, factored for ASD by 0.60

Uplift - Uplift wind load component, factored for ASD by 0.60

Cmb'd - Sum of ASD factored overturning, dead and uplift forces. May also include the uplift force t for perforated walls from SDPWS 4.3.6.2.1 when openings are staggered.

Hold-down – Device used from hold-down database

Cap – Allowable ASD tension load

Crit. Resp. - Critical Response = Combined ASD force / Allowable ASD tension load

Notes:^WARNING - This hold-down does not have design capacities for the thickness of end studs selected, so additional jack studs or blocking required Refer to Shear Results table for perforation factors C_o .

Flexible Diaphragm Seismic Design

SEISMIC INFORMATION

Level	Mass [lbs]	Area [sq.ft]	Story Shear [lbs]		Diaphragm Force Fpx [lbs]	
			E-W	N-S	E-W	N-S
2	74892	2863.5	14720	14720	14720	14720
1	72572	2863.5	6757	6757	13740	13740
All	147463	-	21477	21477	-	-

Legend:

Building mass – Sum of all generated and input building masses on level = w_x in ASCE 7 equation 12.8-12.

Storey shear – Total unfactored (strength-level) shear force induced at level x , = F_x in ASCE 7 equation 12.8-11.

Diaphragm force F_{px} - Unfactored force intended for diaphragm design from Eqn 12.10-1; used by Shearwalls only for drag strut forces, see 12.10.2.1 Exception 2.

Redundancy Factor p (rho):

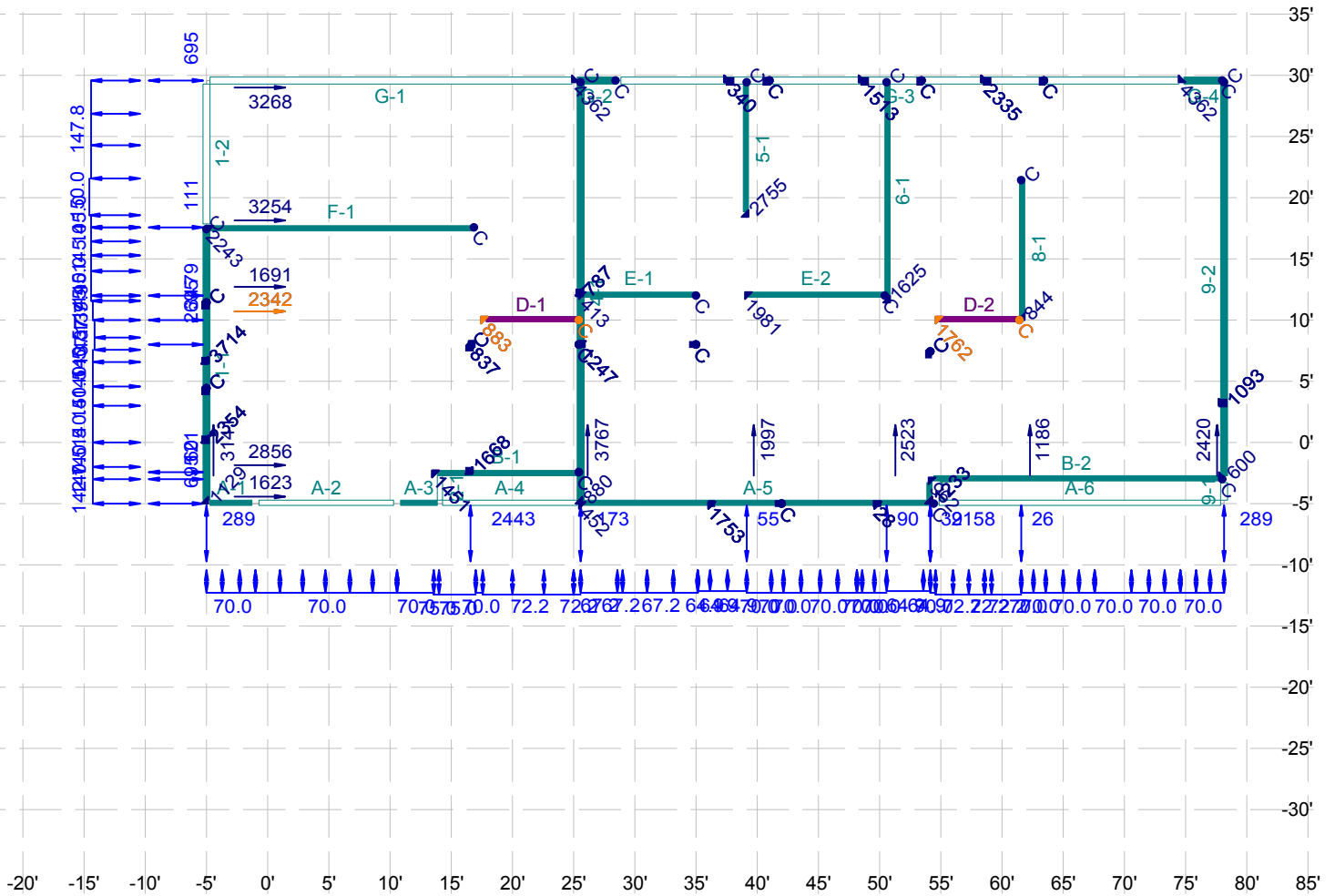
E-W 1.00, N-S 1.00

Input by user (overriding calculated value).

Vertical Earthquake Load E_v

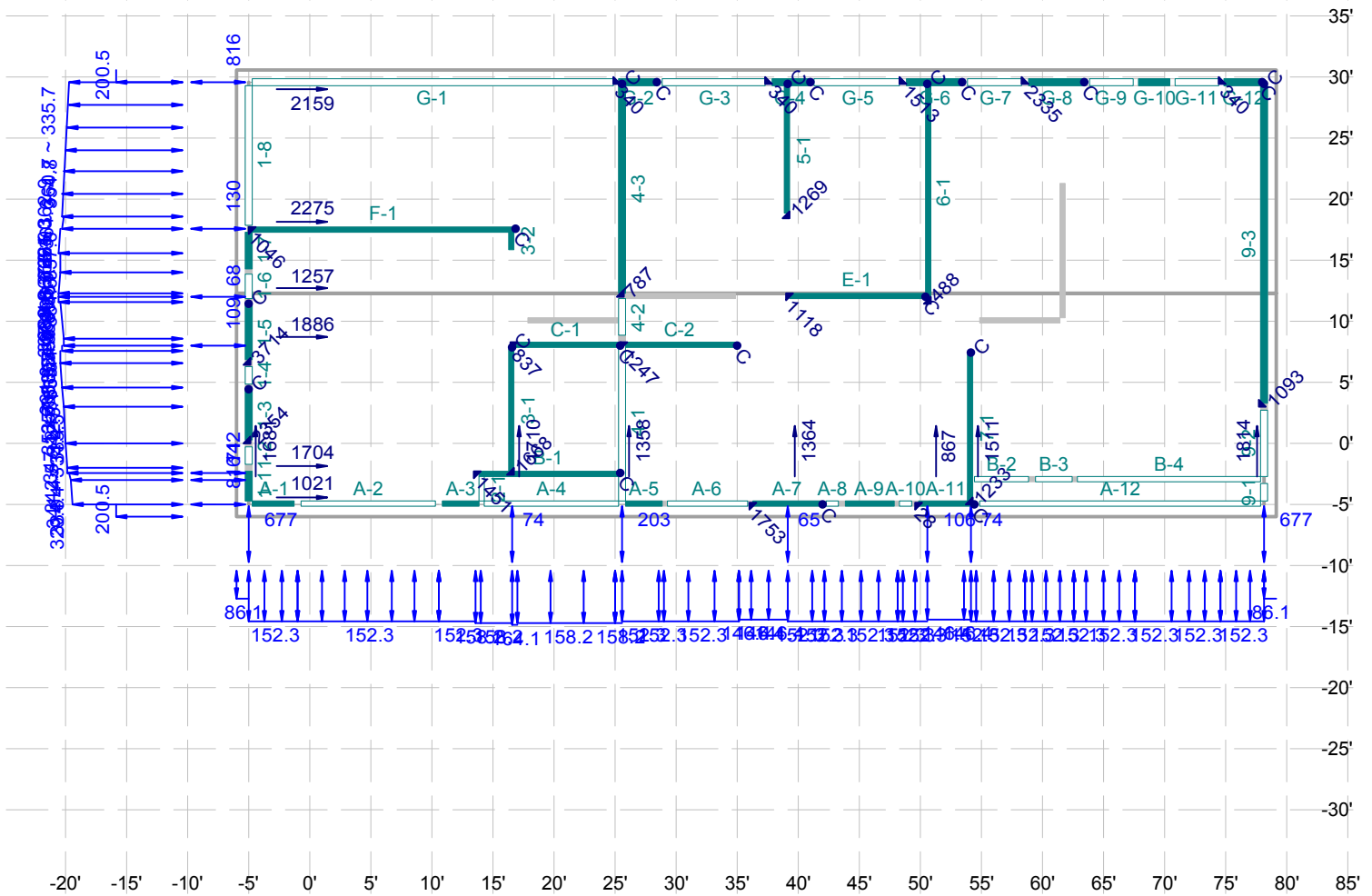
$E_v = 0.2 S_{ds} D$; $S_{ds} = 0.95$; $E_v = 0.189 D$ unfactored; $0.133 D$ factored; total dead load factor: $0.6 - 0.133 = 0.467$ tension, $1.0 + 0.133 = 1.133$ compression.

Level 1 of 2



- Factored shearline force (lbs)
 - ▲ Factored holddown force (lbs)
 - C Compression force exists
 - Vertical element required
 - ↑↑↑ Unfactored applied shear load (plf)
 - ⊗ Unfactored dead load (plf,lbs)
 - Applied point load or discontinuous shearline force (lbs)
 - Orange = Selected wall(s)
- Loads Shown: Q_e ; Forces: $0.7E + 0.6D$; $E = pQ_e + 0.2 S_d S$; $p(NS) = 1.0$; $p(EW) = 1.0$; $S_d = 0.95$.

Level 2 of 2



- Factored shearline force (lbs)
- ▲ Factored holddown force (lbs)
- C Compression force exists
- Vertical element required
- ↑↑↑ Unfactored applied shear load (plf)
- ⊗ Unfactored dead load (plf,lbs)
- ↑ Applied point load or discontinuous shearline force (lbs)

Orange = Selected wall(s)

Loads Shown: Q_e ; Forces: $0.7E + 0.6D$; $E = pQ_e + 0.2 S_d s D$; $p(NS) = 1.0$; $p(EW) = 1.0$; $S_d s = 0.95$.

SHEAR RESULTS (flexible seismic design)

N-S Shearlines	W Gp	For Dir	H/W-Cub		ASD Shear Force [plf]			Allowable Shear [plf]					V [lbs]	Crit. Resp.
			Int	Ext	V [lbs]	vmax	v	Int	Ext	Co	C	Total		
Line 1														
Level 2														
Ln1, Lev2	6^	Both	1.0	1.0	1681	-	195.1	0	380	1.00	X	380	6080	0.51
Wall 1-3	6	Both	1.0	.90	705	156.7	156.7	0	342	1.00		342	1539	0.46
Wall 1-1	6	Both	1.0	.60	0			0	228	1.00		228	684	-
Wall 1-5	6^	Both	1.0	1.0	976	195.1	195.1	0	380	1.00		380	1900	0.51
Wall 1-7	6	Both	1.0	.70	0			0	266	1.00		266	931	-
Level 1														
Ln1, Lev1	1	Both	1.0	1.0	3141	139.6	139.6	0	870	1.00	X	870	19575	0.16
Line 3														
Level 2														
Ln3, Lev2	3^	Both	1.0	1.0	1710	-	162.8	0	490	1.00	X	490	5145	0.33
Wall 3-1	3^	Both	1.0	1.0	1710	162.8	162.8	0	490	1.00		490	5145	0.33
Wall 3-2	3	Both	1.0	1.0	0			0	490	1.00		490	-	-
Line 4														
Ln4, Lev2	3	Both	1.0	1.0	1358	77.6	77.6	0	490	1.00	X	490	8575	0.16
Level 1														
Ln4, Lev1	1	Both	1.0	1.0	3767	109.2	109.2	0	870	1.00	X	870	30015	0.13
Line 5														
Level 2														
Ln5, Lev2	3	Both	1.0	1.0	1364	124.0	124.0	0	490	1.00	X	490	5390	0.25
Level 1														
Ln5, Lev1	2	Both	1.0	1.0	1997	181.5	181.5	0	640	1.00	X	640	7040	0.28
Line 6														
Level 2														
Ln6, Lev2	8^	Both	1.0	1.0	867	48.2	48.2	0	490	1.00	X	490	8820	0.10
Level 1														
Ln6, Lev1	7^	Both	1.0	1.0	2523	140.2	140.2	0	640	1.00	X	640	11520	0.22
Line 7														
Level 2														
Ln7, Lev2	3	Both	1.0	1.0	1511	120.8	120.8	0	490	1.00	X	490	6125	0.25
Line 8														
Level 1														
Ln8, Lev1	2	Both	1.0	1.0	1186	103.2	103.2	0	640	1.00	X	640	7360	0.16
Line 9														
Level 2														
Ln9, Lev2	3	Both	1.0	1.0	1814	68.4	68.4	0	490	1.00	X	490	12985	0.14
Level 1														
Ln9, Lev1	1	Both	1.0	1.0	2420	74.5	74.5	0	870	1.00	X	870	28275	0.09
E-W Shearlines	W Gp	For Dir	H/W-Cub		ASD Shear Force [plf]			Allowable Shear [plf]					V [lbs]	Crit. Resp.
			Int	Ext	V [lbs]	vmax	v	Int	Ext	Co	C	Total		
Line A														
Level 2														
LnA, Lev2	2	Both	1.0	1.0	1021	-	168.0	0	640	1.00	X	640	16960	0.26
Wall A-7	2	Both	1.0	1.0	1008	168.0	168.0	0	640	1.00		640	3840	0.26
Wall A-9	2	Both	1.0	.90	0			0	576	1.00		576	2592	-
Wall A-11	2	Both	1.0	1.0	13	2.7	2.7	0	640	1.00		640	3200	0.00
Wall A-1	2	Both	1.0	.80	0			0	512	1.00		512	2048	-
Wall A-3	2	Both	1.0	.70	0			0	448	1.00		448	1568	-
Wall A-5	2	Both	1.0	.70	0			0	448	1.00		448	1568	-
Level 1														
LnA, Lev1	1	Both	1.0	1.0	1623	-	56.0	0	870	1.00	X	870	31755	0.06
Wall A-5	1	Both	1.0	1.0	1623	56.0	56.0	0	870	1.00		870	25230	0.06
Wall A-3	1	Both	1.0	.87	0			0	761	1.00		761	2664	-
Wall A-1	1	Both	1.0	1.0	0			0	870	1.00		870	3480	-
Line B														
Level 2														
LnB, Lev2	2	Both	1.0	1.0	1704	142.0	142.0	0	640	1.00	X	640	7680	0.22
Level 1														
LnB, Lev1	1	Both	1.0	1.0	2856	-	119.0	0	870	1.00	X	870	31320	0.14
Wall B-2	1	Both	1.0	1.0	2856	119.0	119.0	0	870	1.00		870	20880	0.14
Wall B-1	1	Both	1.0	1.0	0			0	870	1.00		870	10440	-
Line C														
Level 2														
LnC, Lev2	3	Both	1.0	1.0	1886	-	121.4	0	490	1.00	X	490	9065	0.25
Wall C-1	3	Both	1.0	1.0	733	81.4	81.4	0	490	1.00		490	4410	0.17
Wall C-2	3	Both	1.0	1.0	1154	121.4	121.4	0	490	1.00		490	4655	0.25
Line D														

SHEAR RESULTS (flexible seismic design, continued)

Level 1														
LnD, Lev1	1^	Both	1.0	1.0	2342	-	212.3	0	870	1.00	X	870	13050	0.24
Wall D-2	1^	Both	1.0	1.0	1486	212.3	212.3	0	870	1.00		870	6090	0.24
Wall D-1	1	Both	1.0	1.0	856	106.9	106.9	0	870	1.00		870	6960	0.12
Line E														
Level 2														
LnE, Lev2	3	Both	1.0	1.0	1257	109.3	109.3	0	490	1.00	X	490	5635	0.22
Level 1														
LnE, Lev1	2	Both	1.0	1.0	1691	-	105.5	0	640	1.00	X	640	13440	0.16
Wall E-2	2	Both	1.0	1.0	1214	105.5	105.5	0	640	1.00		640	7360	0.16
Wall E-1	2	Both	1.0	1.0	477	50.3	50.3	0	640	1.00		640	6080	0.08
Line F														
Level 2														
LnF, Lev2	3	Both	1.0	1.0	2275	103.4	103.4	0	490	1.00	X	490	10780	0.21
Level 1														
LnF, Lev1	1	Both	1.0	1.0	3254	147.9	147.9	0	870	1.00	X	870	19140	0.17
Line G														
Level 2														
LnG, Lev2	5^	Both	1.0	1.0	2159	-	221.8	0	260	1.00	X	260	6110	0.85
Wall G-4	5	Both	1.0	.70	111	31.6	31.6	0	182	1.00		182	637	0.17
Wall G-12	5	Both	1.0	.70	111	31.6	31.6	0	182	1.00		182	637	0.17
Wall G-8	5^	Both	1.0	1.0	1109	221.8	221.8	0	260	1.00		260	1300	0.85
Wall G-10	5	Both	1.0	.60	0			0	156	1.00		156	468	-
Wall G-2	5	Both	1.0	.70	111	31.6	31.6	0	182	1.00		182	637	0.17
Wall G-6	5	Both	1.0	1.0	718	143.7	143.7	0	260	1.00		260	1300	0.55
Level 1														
LnG, Lev1	4^	Both	1.0	.87	3268	-	466.8	0	560	1.00	X	560	3920	0.83
Wall G-4	4^	Both	1.0	.87	1634	466.8	466.8	0	560	1.00		560	1960	0.83
Wall G-2	4	Both	1.0	.87	1634	466.8	466.8	0	560	1.00		560	1960	0.83

Legend:

Unless otherwise noted, the value in the table for a shearline is the one for wall on the line with the critical design response.

W Gp - Wall design group defined in Sheathing and Framing Materials tables, where it shows associated Standard Wall. "A" means that this wall is critical for all walls in the Standard Wall group.

For Dir - Direction of seismic force along shearline.

H/W-Cub - Height-to-width factor from SDPWS table 4.3.4 notes 1, 3 or unblocked structural wood panel factor Cub from SDPWS 4.3.3.2 for critical segment on wall.

V - ASD factored shear force. For shearline: total shearline force. For wall: force taken by total of all segments on wall.

vmax - Base shear = ASD factored shear force per unit full height sheathing, divided by perforation factor Co as per SDPWS eqn. 4.3-8 = V/FHS/Co.

v - Design shear force = ASD factored shear force per unit full height sheathing. For wall, it is the largest force on any segment.

Int - Unit shear capacity of interior sheathing; Ext - Unit shear capacity of exterior sheathing. Includes Cub and height-to-width factors.

Co - Perforation factor from SDPWS Table 4.3.3.5.

C - Sheathing combination rule, A = Add capacities, S = Strongest side only, X = Strongest side or twice weakest.

Total - Combined int. and ext. unit shear capacity inc. perforation factor.

V - For wall: combined shear capacity. For shearline: sum of all wall capacities on line.

Crit Resp - Critical response = v/Total = design shear force/unit shear capacity for critical segment on wall or shearline.

"W" indicates that the wind design criterion was critical in selecting wall.

HOLD-DOWN DESIGN (flexible seismic design)

Level 1 Line- Wall	Posit'n	Location [ft]		Shear	Tensile ASD Holddown Force [lbs]			Cmb'd	Hold-down	Cap [lbs]	Crit Resp.
		X	Y		Dead	Ev					
Line 1											
1-1	L End	-5.00	-4.87	1129			1129	HD19(1-1/4	^19360	0.06	
	V Elem	-5.00	0.12	2354			2354	Refer to upper level			
	V Elem	-5.00	4.38	2354			2354	Refer to upper level			
	V Elem	-5.00	6.63	3714			3714	Refer to upper level			
	V Elem	-5.00	11.38	3714			3714	Refer to upper level			
1-1	R End	-5.00	17.38	1129			1129	HD19(1-1/4	^19360	0.06	
Line 3											
	V Elem	16.50	-2.37	1668			1668	Refer to upper level			
	V Elem	16.50	7.88	1668			1668	Refer to upper level			
Line 4											
4-1	L End	25.50	-4.87	880			880	HD12	^11775	0.07	
	V Elem	25.50	12.13	787			787	Refer to upper level			
4-1	R End	25.50	29.38	1667			1667	HD12	^11775	0.14	
Line 5											
5-1	L End	39.00	18.63	2755			2755	HD9	8810	0.31	
5-1	R End	39.00	29.38	2755			2755	HD9	8810	0.31	
Line 6											
6-1	L End	50.50	11.63	1625			1625	HD9	8810	0.18	
6-1	R End	50.50	29.38	1625			1625	HD9	8810	0.18	
Line 7											
	V Elem	54.00	-4.87	1233			1233	Refer to upper level			
	V Elem	54.00	7.38	1233			1233	Refer to upper level			
Line 8											
8-1	L End	61.50	10.13	844			844	HD9	8810	0.10	
8-1	R End	61.50	21.38	844			844	HD9	8810	0.10	
Line 9											
9-2	L End	78.00	-2.87	600			600	HD12	^11775	0.05	
	V Elem	78.00	3.13	1093			1093	Refer to upper level			
9-2	R End	78.00	29.38	1693			1693	HD12	^11775	0.14	
Line A											
A-5	L End	25.63	-5.00	452			452	HD19(1-1/4	^19360	0.02	
	V Elem	36.13	-5.00	1753			1753	Refer to upper level			
	V Elem	41.88	-5.00	1753			1753	Refer to upper level			
	V Elem	49.63	-5.00	28			28	Refer to upper level			
A-5	R End	54.38	-5.00	480			480	HD19(1-1/4	^19360	0.02	
Line B											
	V Elem	13.63	-2.50	1451			1451	Refer to upper level			
	V Elem	25.38	-2.50	1451			1451	Refer to upper level			
B-2	L End	54.13	-3.00	962			962	HD19(1-1/4	^19360	0.05	
B-2	R End	77.88	-3.00	962			962	HD19(1-1/4	^19360	0.05	
Line C											
	V Elem	16.62	8.00	837			837	Refer to upper level			
	V Elem	25.38	8.00	837			837	Refer to upper level			
	V Elem	25.63	8.00	1247			1247	Refer to upper level			
	V Elem	34.88	8.00	1247			1247	Refer to upper level			
Line D											
D-1	L End	17.63	10.00	883			883	HD19(1-1/4	^19360	0.05	
D-1	R End	25.38	10.00	883			883	HD19(1-1/4	^19360	0.05	
D-2	L End	54.63	10.00	1762			1762	HD9	8810	0.20	
D-2	R End	61.38	10.00	1762			1762	HD9	8810	0.20	
Line E											
E-1	L End	25.63	12.00	413			413	HD9	8810	0.05	
E-1	R End	34.88	12.00	413			413	HD9	8810	0.05	
E-2	L End	39.13	12.00	1981			1981	HD9	8810	0.22	
E-2	R End	50.38	12.00	1981			1981	HD9	8810	0.22	
Line F											
F-1	L End	-4.87	17.50	2243			2243	HD19(1-1/4	^19360	0.12	
F-1	R End	16.88	17.50	2243			2243	HD19(1-1/4	^19360	0.12	
Line G											
G-2	L End	25.13	29.50	4362			4362	HD19(1-1/4	^19360	0.23	
G-2	R End	28.38	29.50	4362			4362	HD19(1-1/4	^19360	0.23	
	V Elem	37.62	29.50	340			340	Refer to upper level			
	V Elem	40.88	29.50	340			340	Refer to upper level			
	V Elem	48.63	29.50	1513			1513	Refer to upper level			
	V Elem	53.38	29.50	1513			1513	Refer to upper level			
	V Elem	58.63	29.50	2335			2335	Refer to upper level			
	V Elem	63.38	29.50	2335			2335	Refer to upper level			
G-4	L End	74.62	29.50	4362			4362	HD19(1-1/4	^19360	0.23	
G-4	R End	77.88	29.50	4362			4362	HD19(1-1/4	^19360	0.23	

HOLD-DOWN DESIGN (flexible seismic design, continued)

Level 2 Line-Wall	Posit'n	Location [ft]		Tensile ASD Hold-down Force [lbs]				Cmb'd	Hold-down	Cap [lbs]	Crit Resp.
		X	Y	Shear	Dead	Ev					
Line 1											
1-3	L End	-5.00	0.12	2354			2354	HD9	8810	0.27	
1-3	R End	-5.00	4.38	2354			2354	HD9	8810	0.27	
1-5	L End	-5.00	6.63	3714			3714	HD9	8810	0.42	
1-5	R End	-5.00	11.38	3714			3714	HD9	8810	0.42	
Line 3											
3-1	L End	16.50	-2.37	1668			1668	HD9	8810	0.19	
3-1	R End	16.50	7.88	1668			1668	HD9	8810	0.19	
Line 4											
4-3	L End	25.50	12.13	787			787	HD7	6600	0.12	
4-3	R End	25.50	29.38	787			787	HD7	6600	0.12	
Line 5											
5-1	L End	39.00	18.63	1269			1269	HD7	6600	0.19	
5-1	R End	39.00	29.38	1269			1269	HD7	6600	0.19	
Line 6											
6-1	L End	50.50	11.63	488			488	HD7	6600	0.07	
6-1	R End	50.50	29.38	488			488	HD7	6600	0.07	
Line 7											
7-1	L End	54.00	-4.87	1233			1233	HD9	8810	0.14	
7-1	R End	54.00	7.38	1233			1233	HD9	8810	0.14	
Line 9											
9-3	L End	78.00	3.13	1093			1093	HD9	8810	0.12	
9-3	R End	78.00	29.38	1093			1093	HD9	8810	0.12	
Line A											
A-7	L End	36.13	-5.00	1753			1753	HD12	^11775	0.15	
A-7	R End	41.88	-5.00	1753			1753	HD12	^11775	0.15	
A-11	L End	49.63	-5.00	28			28	HD12	^11775	0.00	
A-11	R End	54.38	-5.00	28			28	HD12	^11775	0.00	
Line B											
B-1	L End	13.63	-2.50	1451			1451	HD12	^11775	0.12	
B-1	R End	25.38	-2.50	1451			1451	HD12	^11775	0.12	
Line C											
C-1	L End	16.62	8.00	837			837	HD12	^11775	0.07	
C-1	R End	25.38	8.00	837			837	HD12	^11775	0.07	
C-2	L End	25.63	8.00	1247			1247	HD12	^11775	0.11	
C-2	R End	34.88	8.00	1247			1247	HD12	^11775	0.11	
Line E											
E-1	L End	39.13	12.00	1118			1118	HD12	^11775	0.09	
E-1	R End	50.38	12.00	1118			1118	HD12	^11775	0.09	
Line F											
F-1	L End	-4.87	17.50	1046			1046	HD7	6600	0.16	
F-1	R End	16.88	17.50	1046			1046	HD7	6600	0.16	
Line G											
G-2	L End	25.13	29.50	340			340	HD12	^11775	0.03	
G-2	R End	28.38	29.50	340			340	HD12	^11775	0.03	
G-4	L End	37.62	29.50	340			340	HD12	^11775	0.03	
G-4	R End	40.88	29.50	340			340	HD12	^11775	0.03	
G-6	L End	48.63	29.50	1513			1513	HD19 (1-1/4	^19360	0.08	
G-6	R End	53.38	29.50	1513			1513	HD19 (1-1/4	^19360	0.08	
G-8	L End	58.63	29.50	2335			2335	HD12	^11775	0.20	
G-8	R End	63.38	29.50	2335			2335	HD12	^11775	0.20	
G-12	L End	74.62	29.50	340			340	HD12	^11775	0.03	
G-12	R End	77.88	29.50	340			340	HD12	^11775	0.03	

Legend:

Line-Wall:

At wall or opening – Shearline and wall number

At vertical element - Shearline

Posit'n - Position of stud that hold-down is attached to:

V Elem - Vertical element: column or strengthened studs required where not at wall end or opening

L or R End - At left or right wall end

L or R Op n - At left or right side of opening n

Location - Co-ordinates in Plan View

Hold-down Forces:

Shear – Seismic shear overturning component, factored for ASD by 0.7, includes perforation factor Co.

Dead – Dead load resisting component, factored for ASD by 0.60

Ev – Vertical seismic load effect from ASCE 7 12.4.2.2 = -0.2S_{ds} x ASD seismic factor x unfactored D = 0.221 x factored D. Refer to Seismic

Project: KAHN RESIDENCE
 Beam ID: RB-01
 Description: Roof Beams
 Date: 7/12/22
 Prepared by: HK

Selection 5-1/8x 22-1/2 GLB 24F-V4 DF/DF Lu = 2.0 Ft

Min Bearing Area R1= 15.5 in² R2= 15.5 in² (1.5) DL Defl= 0.55 in Recom
 Camber= 0.82 in

Data Beam Span 27.0 Reaction 1 LL 10098 # Reaction 2 LL 6480 #
 Beam Wt per ft 28.02 Reaction 1 TL 10098 # Reaction 2 TL 6480 #
 Bm Wt Included 757 Maximum V 10098 #
 Max Moment 68163 Max V (Reduced) 8696 #
 TL Max Defl L / 240LL Max Defl L / 360

TL Actual Defl L / 269LL Actual Defl L / 495
 Attributes Section (in³) Shear (in²) TL Defl (in) LL Defl
 Actual 432.42 115.31 1.20 0.65
 Critical 372.17 54.35 1.35 0.90
 Status OK OK OK OK
 Ratio 86% 47% 89% 73%

Fb (psi) Fv (psi) E (psi x mil) Fc (psi)
 Values Reference Values 2400 240 1.8 650
 Adjusted Values 2198 240 1.8 650

Adjustments Cv Volume 0.916
 Cd Duration 1.00 1.00
 Cr Repetitive 1.00
 Ch Shear Stress N/A
 Cm Wet Use 1.00 1.00 1.00 1.00
 Cl Stability 0.9952 Rb = 6.51 Le = 4.12 Ft

Loads Uniform TL: 720 = A Uniform LL: 480

Project: KAHN RESIDENCE

Beam ID: RB-02

Description: Roof Beams

Date: 7/12/22

Prepared by: HK

Selection 3-1/2x 11-7/8 2.0E TJ Parallam W.S. PSL

Lu = 6.0 Ft

Min Bearing Area R1= 3.4 in² R2= 3.4 in² (1.5) DL Defl= 0.02 in

Data Beam Span 7.0 Reaction 1 LL 2565 # Reaction 2 LL 1680 #

Beam Wt per ft 12.99 Reaction 1 TL 2565 # Reaction 2 TL 1680 #

Bm Wt Included 91 Maximum V 2565 #

Max Moment 4490 Max V (Reduced) 1840 #

TL Max Defl L / 240LL Max Defl L / 360

TL Actual Defl L / >1000 LL Actual Defl L / >1000

Attributes Section (in³) Shear (in²) TL Defl (in) LL Defl

Actual 82.26 41.56 0.05 0.03

Critical 18.99 9.52 0.35 0.23

Status OK OK OK OK

Ratio 23% 23% 14% 11%

Values Reference Values Fb (psi) Fv (psi) E (psi x mil) Fc (psi)

Adjusted Values 2900 290 2.0 750

Adjusted Values 2836 290 2.0 750

Adjustments CF Size Factor 1.001

Cd Duration 1.00 1.00

Cr Repetitive 1.00

Ch Shear Stress N/A

Cm Wet Use 1.00 1.00 1.00 1.00

Cl Stability 0.9769 Rb = 11.99 Le = 12.36 Ft

Loads Uniform TL: 720 = A

Uniform LL: 480

Project: KAHN RESIDENCE

Beam ID: RB-03

Description: Roof Beams

Date: 7/12/22

Prepared by: HK

Selection 3-1/2x 11-7/8 2.0E TJ Parallam W.S. PSL

Lu = 6.0 Ft

Conditions NDS 2005

Min Bearing Area R1= 3.0 in² R2= 2.6 in² (1.5) DL Defl= 0.29 in

Data Beam Span 16.0 Reaction 1 LL 2267 # Reaction 2 LL 1425 #

Beam Wt per ft 12.99 Reaction 1 TL 1946 # Reaction 2 TL 1215 #

Bm Wt Included 208 Maximum V 2267 #

Max Moment 13309 Max V (Reduced) 2165 #

TL Max Defl L / 240LL Max Defl L / 360

TL Actual Defl L / 305LL Actual Defl L / 569

Attributes Section (in³) Shear (in²) TL Defl (in) LL Defl

Actual 82.26 41.56 0.63 0.34

Critical 56.31 11.20 0.80 0.53

Status OK OK OK OK

Ratio 68% 27% 79% 63%

Values Reference Values Fb (psi) Fv (psi) E (psi x mil) Fc (psi)

Adjusted Values 2900 290 2.0 750

Adjusted Values 2836 290 2.0 750

Adjustments CF Size Factor 1.001

Cd Duration 1.00 1.00

Cr Repetitive 1.00

Ch Shear Stress N/A

Cm Wet Use 1.00 1.00 1.00 1.00

Cl Stability 0.9769 Rb = 11.99 Le = 12.36 Ft

Loads Uniform TL: 90 = A Uniform LL: 60

Point LL Point TL Distance

1680 B = 2565 7.0

Project: KAHN RESIDENCE

Beam ID: RB-04

Description: Roof Beams

Date: 7/12/22

Prepared by: HK

Selection 3-1/2x 11-7/8 2.0E TJ Parallam W.S. PSL Lu = 2.0 Ft

Min Bearing Area R1= 2.3 in² R2= 2.3 in² (1.5) DL Defl= 0.56 in

Data Beam Span 23.0 Reaction 1 LL 1702 # Reaction 2 LL 1035 #

Beam Wt per ft 12.99 Reaction 1 TL 1702 # Reaction 2 TL 1035 #

Bm Wt Included 299 Maximum V 1702 #

Max Moment 9786 Max V (Reduced) 1555 #

TL Max Defl L / 240LL Max Defl L / 360

TL Actual Defl L / 242LL Actual Defl L / 477

Attributes Section (in³) Shear (in²) TL Defl (in) LL Defl

Actual 82.26 41.56 1.14 0.58

Critical 40.82 8.05 1.15 0.77

Status OK OK OK OK

Ratio 50% 19% 99% 76%

Fb (psi) Fv (psi) E (psi x mil) Fc (psi)

Values Reference Values 2900 290 2.0 750

Adjusted Values 2877 290 2.0 750

Adjustments CF Size Factor 1.001

Cd Duration 1.00 1.00

Cr Repetitive 1.00

Ch Shear Stress N/A

Cm Wet Use 1.00 1.00 1.00 1.00

Cl Stability 0.9908 Rb = 6.92 Le = 4.12 Ft

Loads Uniform TL: 135 = A Uniform LL: 90

Project: KAHN RESIDENCE

Beam ID: RB-05

Description: Roof Beams

Date: 7/12/22

Prepared by: HK

Selection 3-1/2x 11-7/8 2.0E TJ Parallam W.S. PSL Lu = 6.0 Ft
Lu @OH = 6.0 Ft

Condition, Overhang

Min Bearing Area R1= 1.0 in² R2= 2.1 in² (1.5) DL Defl= 0.09 in.

Data Beam Span 17.0 Reaction 1 LL 766 # Reaction 2 LL 446 #
Beam Wt per ft 12.99 Reaction 1 TL 1602 # Reaction 2 TL 934 #
Bm Wt Included 299 Maximum V 984 # 6.0 ft
Max Moment 2847 Max V (Reduced) 883 # 23.0 ft
TL Max Defl L / 240LL Max Defl L / 360 L / 880
TL Actual Defl L / >1000 LL Actual Defl L / >1000
L / < -1000

Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl
Actual	82.26 41.56	0.17 0.08	-0.16 -0.08	
Critical	12.26 4.56	0.85 0.57	0.60 0.40	
Status	OK OK	OK OK	OK OK	
Ratio	15% 11%	20% 14%	27% 21%	
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values Reference Values		2900 290	2.0 750	
Adjusted Values		2786 290	2.0 750	

Adjustments CF Size Factor 1.001
Cd Duration 1.00 1.00
Cr Repetitive 1.00
Ch Shear Stress N/A
Cm Wet Use 1.00 1.00 1.00 1.00
Cl Stability 0.9597 Rb = 11.99 Le = 12.36 Ft
Cl Stability @ OH 0.9790 Rb = 9.63 Le = 7.98 Ft

Loads Uniform TL: 90 = A Uniform LL: 60 (Uniform Ld on Backspan)
Par Unif LL Par Unif TL Start End
60 K = 90 (OH) 0 6.0

Project: KAHN RESIDENCE

Beam ID: RR-01

Description: Roof Rafters

Date: 7/12/22

Prepared by: HK

Selection 1-3/4x 11-7/8 2.0E TJ Parallam W.S. PSL Lu = 8.0 Ft

Min Bearing Area R1= 1.2 in² R2= 1.2 in² (1.5) DL Defl= 0.26 in

Data Beam Span 18.0 Reaction 1 LL 868 # Reaction 2 LL 540 #

Beam Wt per ft 6.49 Reaction 1 TL 868 # Reaction 2 TL 540 #

Bm Wt Included 117 Maximum V 868 #

Max Moment 3908 Max V (Reduced) 773 #

TL Max Defl L / 240LL Max Defl L / 360

TL Actual Defl L / 390LL Actual Defl L / 746

Attributes Section (in³) Shear (in²) TL Defl (in) LL Defl

Actual 41.13 20.78 0.55 0.29

Critical 41.09 4.00 0.90 0.60

Status OK OK OK OK

Ratio 100% 19% 62% 48%

Fb (psi) Fv (psi) E (psi x mil) Fc (psi)

Values Reference Values 2900 290 2.0 750

Adjusted Values 1141 290 2.0 750

Adjustments CF Size Factor 1.001

Cd Duration 1.00 1.00

Cr Repetitive 1.00

Ch Shear Stress N/A

Cm Wet Use 1.00 1.00 1.00 1.00

Cl Stability 0.3931 Rb = 27.29 Le = 16.01 Ft

Loads Uniform TL: 90 = A

Uniform LL: 60

Project: KAHN RESIDENCE

Beam ID: RR-02

Description: Roof Rafters

Date: 7/12/22

Prepared by: HK

Selection 1-3/4x 11-7/8 2.0E TJ Parallam W.S. PSL

Lu = 2.0 Ft

Min Bearing Area R1= 1.0 in² R2= 1.0 in² (1.5) DL Defl= 0.51 in

Data Beam Span 23.0 Reaction 1 LL 765 # Reaction 2 LL 460 #

Beam Wt per ft 6.49 Reaction 1 TL 765 # Reaction 2 TL 460 #

Bm Wt Included 149 Maximum V 765 #

Max Moment 4397 Max V (Reduced) 699 #

TL Max Defl L / 240LL Max Defl L / 360

TL Actual Defl L / 269LL Actual Defl L / 536

Attributes Section (in³) Shear (in²) TL Defl (in) LL Defl

Actual 41.13 20.78 1.03 0.51

Critical 19.49 3.61 1.15 0.77

Status OK OK OK OK

Ratio 47% 17% 89% 67%

Fb (psi) Fv (psi) E (psi x mil) Fc (psi)

Values Reference Values 2900 290 2.0 750

Adjusted Values 2707 290 2.0 750

Adjustments CF Size Factor 1.001

Cd Duration 1.00 1.00

Cr Repetitive 1.00

Ch Shear Stress N/A

Cm Wet Use 1.00 1.00 1.00 1.00

Cl Stability 0.9325 Rb = 13.85 Le = 4.12 Ft

Loads Uniform TL: 60 = A

Uniform LL: 40

Project: KAHN RESIDENCE
 Beam ID: MWH-01
 Description: Main Wall Headers
 Date: 7/12/22
 Prepared by: HK

Selection 5-1/4x 14 2.0E TJ Parallam W.S. PSL Lu = 5.0 Ft

Min Bearing Area	R1= 7.4 in ²	R2= 7.4 in ²	(1.5) DL Defl=	0.27 in
Data Beam Span	17.0	Reaction 1 LL 5550 #	Reaction 2 LL 3570 #	
Beam Wt per ft	22.97	Reaction 1 TL 5550 #	Reaction 2 TL 3570 #	
Bm Wt Included	390	Maximum V	5550 #	
Max Moment	23589	Max V (Reduced)	4788 #	
TL Max Defl	L / 240	LL Max Defl	L / 360	L / 880
TL Actual Defl	L / 339	LL Actual Defl	L / 622	
Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl
Actual	171.50	73.50	0.60	0.33
Critical	99.29	24.77	0.85	0.57
Status	OK	OK	OK	OK
Ratio	58%	34%	71%	58%
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values Reference Values	2900	290	2.0	750
Adjusted Values	2851	290	2.0	750
Adjustments	CF Size Factor	0.983		
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
Cl Stability	0.9873	Rb = 7.92	Le = 10.30 Ft	

Loads Uniform TL: 630 = A Uniform LL: 420

Project: KAHN RESIDENCE
 Beam ID: MWH-02
 Description: Main Wall Headers

Prepared by: HK
 Date: 7/12/22

Selection 3-1/2x 9-1/2 1.55E TJ TimberStrand LSL Lu = 5.0 Ft

Min Bearing Area	R1= 2.0 in ²	R2= 2.0 in ²	(1.5) DL Defl=	0.04 in
Data	Beam Span	8.0	Reaction 1 LL 1575 #	Reaction 2 LL 1120 #
	Beam Wt per ft	8.77	Reaction 1 TL 1575 #	Reaction 2 TL 1120 #
	Bm Wt Included	70	Maximum V	1575 #
	Max Moment	3150	Max V (Reduced)	1263 #
	TL Max Defl	L / 240	LL Max Defl	L / 360
	TL Actual Defl	L / 926	LL Actual Defl	L / >1000
Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl
Actual	52.65	33.25	0.10	0.06
Critical	16.27	6.11	0.40	0.27
Status	OK	OK	OK	OK
Ratio	31%	18%	26%	24%
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values Reference Values		2325 310	1.6 800	
Adjusted Values		2323 310	1.6 800	
Adjustments	CF Size Factor	1.022		
	Cd Duration	1.00	1.00	
	Cr Repetitive	1.00		
	Ch Shear Stress		N/A	
	Cm Wet Use	1.00	1.00	1.00
	Cl Stability	0.9780	Rb = 9.79	Le = 10.30 Ft

Loads Uniform TL: 385 = A Uniform LL: 280

Project: KAHN RESIDENCE
 Beam ID: MWH-03 & 04
 Description: Main Wall Headers
 Date: 7/12/22
 Prepared by: HK

Selection 4x 10 DF North #1 Lu = 5.0 Ft

Min Bearing Area	R1= 1.9 in ²	R2= 1.9 in ²	(1.5) DL Defl=	0.03 in
Data Beam Span	6.0	Reaction 1 LL 1173 #	Reaction 2 LL 840 #	
Beam Wt per ft	6.17	Reaction 1 TL 1173 #	Reaction 2 TL 840 #	
Bm Wt Included	37	Maximum V	1173 #	
Max Moment	1760	Max V (Reduced)	937 #	
TL Max Defl	L / 240	LL Max Defl	L / 360	
TL Actual Defl	L / 984	LL Actual Defl	L / >1000	
Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl
Actual	30.66 25.38	0.07 0.05		
Critical	19.23 7.81	0.30 0.20		
Status	OK OK	OK OK		
Ratio	63% 31%	24% 23%		
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values Reference Values	850	180	1.6	625
Adjusted Values	1098	180	1.6	625
Adjustments CF Size Factor	1.300			
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
Cl Stability	0.9938	Rb = 8.41	Le = 9.96 Ft	

Loads Uniform TL: 385 = A Uniform LL: 280

Project: KAHN RESIDENCE
 Beam ID: MWH-05
 Description: Main Wall Headers
 Date: 7/12/22
 Prepared by: HK

Selection 4x 10 DF North #1 Lu = 2.0 Ft

Min Bearing Area R1= 0.9 in² R2= 0.9 in² (1.5) DL Defl= <0.01 in.

Data	Beam Span	3.0	Reaction 1 LL	589 #	Reaction 2 LL	420 #
	Beam Wt per ft	7.87	Reaction 1 TL	589 #	Reaction 2 TL	420 #
	Bm Wt Included	24	Maximum V	589 #		
	Max Moment	442	Max V (Reduced)	286 #		
	TL Max Defl	L / 240	LL Max Defl	L / 360		
	TL Actual Defl	L / >1000	LL Actual Defl	L / >1000		
Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl		
Actual	49.91 32.38	0.00 <0.01				
Critical	5.21 2.39	0.15 0.10				
Status	OK OK	OK OK				
Ratio	10% 7%	1% 1%				
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)		
Values Reference Values		850 180	1.6 625			
Adjusted Values		1017 180	1.6 625			
Adjustments	CF Size Factor	1.200				
	Cd Duration	1.00 1.00				
	Cr Repetitive	1.00				
	Ch Shear Stress	N/A				
	Cm Wet Use	1.00 1.00 1.00 1.00				
	Cl Stability	0.9971 Rb = 6.11	Le = 4.12 Ft			

Loads Uniform TL: 385 = A Uniform LL: 280

Project: KAHN RESIDENCE
 Beam ID: MWH-06
 Description: Main Wall Headers
 Date: 7/12/22
 Prepared by: HK

Selection 4x 10 DF North #1 Lu = 3.0 Ft

Min Bearing Area R1= 1.3 in² R2= 1.3 in² (1.5) DL Defl= <0.01 in.

Data	Beam Span	4.0	Reaction 1 LL 786 #	Reaction 2 LL 560 #
	Beam Wt per ft	7.87	Reaction 1 TL 786 #	Reaction 2 TL 560 #
	Bm Wt Included	31	Maximum V 786 #	
	Max Moment 786		Max V (Reduced) 483 #	
	TL Max Defl L / 240	LL Max Defl L / 360		
	TL Actual Defl L / >1000	LL Actual Defl L / >1000		
Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl
	Actual	49.91 32.38	0.01 <0.01	
	Critical	9.28 4.02	0.20 0.13	
	Status	OK OK	OK OK	
	Ratio	19% 12%	3% 3%	
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values Reference Values		850 180	1.6 625	
Adjusted Values		1016 180	1.6 625	
Adjustments	CF Size Factor	1.200		
	Cd Duration	1.00 1.00		
	Cr Repetitive	1.00		
	Ch Shear Stress		N/A	
	Cm Wet Use	1.00 1.00 1.00	1.00	
	Cl Stability	0.9956 Rb = 7.48	Le = 6.18 Ft	

Loads Uniform TL: 385 = A Uniform LL: 280

Project: KAHN RESIDENCE
 Beam ID: MWH-07 & 08
 Description: Main Wall Headers
 Date: 7/12/22
 Prepared by: HK

Selection 4x 10 DF North #1 Lu = 6.0 Ft

Min Bearing Area	R1= 2.2 in ²	R2= 2.2 in ²	(1.5) DL Defl=	0.02 in
Data Beam Span	7.0	Reaction 1 LL 1375 #	Reaction 2 LL 980 #	
Beam Wt per ft	7.87	Reaction 1 TL 1375 #	Reaction 2 TL 980 #	
Bm Wt Included	55	Maximum V	1375 #	
Max Moment	2406	Max V (Reduced)	1072 #	
TL Max Defl	L / 240	LL Max Defl	L / 360	
TL Actual Defl	L / >1000	LL Actual Defl	L / >1000	
Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl
Actual	49.91 32.38	0.07 0.04		
Critical	28.57 8.93	0.35 0.23		
Status	OK OK	OK OK		
Ratio	57% 28%	19% 18%		
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values Reference Values	850	180	1.6	625
Adjusted Values	1011	180	1.6	625
Adjustments	CF Size Factor	1.200		
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
Cl Stability	0.9907	Rb = 10.47	Le = 12.09 Ft	

Loads Uniform TL: 385 = A Uniform LL: 280

Project: KAHN RESIDENCE
 Beam ID: MWH-09
 Description: Main Wall Headers
 Date: 7/12/22
 Prepared by: HK

Selection 3-1/2x 9-1/2 1.55E TJ TimberStrand LSL Lu = 8.0 Ft

Min Bearing Area	R1= 2.5 in ²	R2= 2.5 in ²	(1.5) DL Defl=	0.07 in
Data Beam Span	9.0	Reaction 1 LL 1997 #	Reaction 2 LL 1440 #	
Beam Wt per ft	8.77	Reaction 1 TL 1997 #	Reaction 2 TL 1440 #	
Bm Wt Included	79	Maximum V	1997 #	
Max Moment	4493	Max V (Reduced)	1646 #	
TL Max Defl	L / 240	LL Max Defl	L / 360	
TL Actual Defl	L / 580	LL Actual Defl	L / 916	
Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl
Actual	52.65 33.25	0.19 0.12		
Critical	23.65 7.96	0.45 0.30		
Status	OK OK	OK OK		
Ratio	45% 24%	41% 39%		
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values Reference Values	2325	310	1.6	800
Adjusted Values	2280	310	1.6	800
Adjustments	CF Size Factor	1.022		
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
Cl Stability	0.9597	Rb = 11.98	Le = 15.42 Ft	

Loads Uniform TL: 435 = A Uniform LL: 320

Project: KAHN RESIDENCE
 Beam ID: MWH-10
 Description: Main Wall Headers
 Date: 7/12/22
 Prepared by: HK

Selection 3-1/2x 9-1/2 1.55E TJ TimberStrand LSL Lu = 7.0 Ft

Min Bearing Area	R1= 2.2 in ²	R2= 2.2 in ²	(1.5) DL Defl=	0.04 in
Data Beam Span	8.0	Reaction 1 LL 1775 #	Reaction 2 LL 1280 #	
Beam Wt per ft	8.77	Reaction 1 TL 1775 #	Reaction 2 TL 1280 #	
Bm Wt Included	70	Maximum V	1775 #	
Max Moment	3550	Max V (Reduced)	1424 #	
TL Max Defl	L / 240	LL Max Defl	L / 360	
TL Actual Defl	L / 826	LL Actual Defl	L / >1000	
Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl
Actual	52.65 33.25	0.12 0.07		
Critical	18.56 6.89	0.40 0.27		
Status	OK OK	OK OK		
Ratio	35% 21%	29% 28%		
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values Reference Values	2325	310	1.6	800
Adjusted Values	2295	310	1.6	800
Adjustments	CF Size Factor	1.022		
Cd Duration	1.00	1.00		
Cr Repetitive	1.00			
Ch Shear Stress		N/A		
Cm Wet Use	1.00	1.00	1.00	1.00
Cl Stability	0.9663	Rb = 11.33	Le = 13.79 Ft	

Loads Uniform TL: 435 = A Uniform LL: 320

Project: KAHN RESIDENCE
 Beam ID: MWH-11
 Description: Main Wall Headers
 Date: 7/12/22
 Prepared by: HK

Selection 4x 10 DF North #1 Lu = 4.0 Ft

Min Bearing Area R1= 1.8 in² R2= 1.8 in² (1.5) DL Defl= <0.01 in.

Data	Beam Span	5.0	Reaction 1 LL 1107 #	Reaction 2 LL 800 #
	Beam Wt per ft	7.87	Reaction 1 TL 1107 #	Reaction 2 TL 800 #
	Bm Wt Included	39	Maximum V	1107 #
	Max Moment	1384	Max V (Reduced)	766 #
	TL Max Defl	L / 240	LL Max Defl	L / 360
	TL Actual Defl	L / >1000	LL Actual Defl	L / >1000
Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl
	Actual	49.91 32.38	0.02	0.01
	Critical	16.38 6.38	0.25	0.17
	Status	OK OK	OK	OK
	Ratio	33% 20%	8%	7%
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values	Reference Values	850 180	1.6	625
	Adjusted Values	1014 180	1.6	625
Adjustments	CF Size Factor	1.200		
	Cd Duration	1.00 1.00		
	Cr Repetitive	1.00		
	Ch Shear Stress		N/A	
	Cm Wet Use	1.00 1.00	1.00	1.00
	Cl Stability	0.9940	Rb = 8.64	Le = 8.24 Ft

Loads Uniform TL: 435 = A Uniform LL: 320

Project: KAHN RESIDENCE
 Beam ID: MWH-12
 Description: Main Wall Headers
 Date: 7/12/22
 Prepared by: HK

Selection 4x 8 DF North #1 Lu = 2.0 Ft

Min Bearing Area R1= 1.1 in² R2= 1.1 in² (1.5) DL Defl= <0.01 in.

Data	Beam Span	3.0	Reaction 1 LL 662 #	Reaction 2 LL 480 #
	Beam Wt per ft	6.17	Reaction 1 TL 662 #	Reaction 2 TL 480 #
	Bm Wt Included	18	Maximum V 662 #	
	Max Moment	496	Max V (Reduced)	395 #
	TL Max Defl	L / 240	LL Max Defl	L / 360
	TL Actual Defl	L / >1000	LL Actual Defl	L / >1000
Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl
	Actual	30.66 25.38	0.01	<0.01
	Critical	5.40 3.29	0.15	0.10
	Status	OK OK	OK	OK
	Ratio	18% 13%	3%	3%
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values	Reference Values	850 180	1.6 625	
	Adjusted Values	1102 180	1.6 625	
Adjustments	CF Size Factor	1.300		
	Cd Duration	1.00 1.00		
	Cr Repetitive	1.00		
	Ch Shear Stress		N/A	
	Cm Wet Use	1.00 1.00	1.00 1.00	
	Cl Stability	0.9976	Rb = 5.41	Le = 4.12 Ft

Loads Uniform TL: 435 = A Uniform LL: 320

Project: KAHN RESIDENCE
 Beam ID: MWH-13 & 14
 Description: Main Wall Headers
 Date: 7/12/22
 Prepared by: HK

Selection 4x 10 DF North #1 Lu = 3.0 Ft

Min Bearing Area R1= 1.4 in² R2= 1.4 in² (1.5) DL Defl= <0.01 in.

Data	Beam Span	4.0	Reaction 1 LL 886 #	Reaction 2 LL 640 #
	Beam Wt per ft	7.87	Reaction 1 TL 886 #	Reaction 2 TL 640 #
	Bm Wt Included	31	Maximum V 886 #	
	Max Moment 886		Max V (Reduced) 544 #	
	TL Max Defl L / 240	LL Max Defl L / 360		
	TL Actual Defl L / >1000	LL Actual Defl L / >1000		
Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl
Actual	49.91 32.38	0.01 <0.01		
Critical	10.47 4.54	0.20 0.13		
Status	OK OK	OK OK		
Ratio	21% 14%	4% 4%		
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values Reference Values		850 180	1.6 625	
Adjusted Values		1016 180	1.6 625	
Adjustments	CF Size Factor	1.200		
	Cd Duration	1.00 1.00		
	Cr Repetitive	1.00		
	Ch Shear Stress	N/A		
	Cm Wet Use	1.00 1.00 1.00 1.00		
	Cl Stability	0.9956 Rb = 7.48	Le = 6.18 Ft	

Loads Uniform TL: 435 = A Uniform LL: 320

Project: KAHN RESIDENCE
 Beam ID: MWH-15 & 16
 Description: Main Wall Headers
 Date: 7/12/22
 Prepared by: HK

Selection 3-1/2x 9-1/2 2.0E TJ Parallam W.S. PSL Lu = 6.0 Ft

Min Bearing Area	R1= 2.1 in ²	R2= 2.1 in ²	(1.5) DL Defl=	0.02 in
Data	Beam Span	7.0	Reaction 1 LL 1559 #	Reaction 2 LL 1120 #
	Beam Wt per ft	10.39	Reaction 1 TL 1559 #	Reaction 2 TL 1120 #
	Bm Wt Included	73	Maximum V	1559 #
	Max Moment	2728	Max V (Reduced)	1206 #
	TL Max Defl	L / 240	LL Max Defl	L / 360
	TL Actual Defl	L / >1000	LL Actual Defl	L / >1000
Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl
Actual	52.65 33.25	0.05 0.03		
Critical	11.31 6.24	0.35 0.23		
Status	OK OK	OK OK		
Ratio	21% 19%	16% 15%		
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values	Reference Values	2900 290	2.0 750	
	Adjusted Values	2894 290	2.0 750	
Adjustments	CF Size Factor	1.026		
	Cd Duration	1.00 1.00		
	Cr Repetitive	1.00		
	Ch Shear Stress	N/A		
	Cm Wet Use	1.00 1.00 1.00 1.00		
	Cl Stability	0.9722 Rb = 10.64	Le = 12.16 Ft	

Loads Uniform TL: 435 = A Uniform LL: 320

Project: KAHN RESIDENCE
 Beam ID: MFB-01
 Description: Main Floor Beams
 Date: 7/12/22
 Prepared by: HK

Selection 5-1/4x 14 2.0E TJ Parallam W.S. PSL Lu = 2.0 Ft

Min Bearing Area R1= 7.7 in² R2= 7.7 in² (1.5) DL Defl= 0.24 in

Data Beam Span 17.0 Reaction 1 LL 5805 # Reaction 2 LL 4080 #

Beam Wt per ft 22.97 Reaction 1 TL 5805 # Reaction 2 TL 4080 #

Bm Wt Included 390 Maximum V 5805 #

Max Moment 24672 Max V (Reduced) 5008 #

TL Max Defl L / 240LL Max Defl L / 360

TL Actual Defl L / 333LL Actual Defl L / 544

Attributes Section (in³) Shear (in²) TL Defl (in) LL Defl

Actual 171.50 73.50 0.61 0.38

Critical 103.86 25.91 0.85 0.57

Status OK OK OK OK

Ratio 61% 35% 72% 66%

Fb (psi) Fv (psi) E (psi x mil) Fc (psi)

Values Reference Values 2900 290 2.0 750

Adjusted Values 2851 290 2.0 750

Adjustments CF Size Factor 0.983

Cd Duration 1.00 1.00

Cr Repetitive 1.00

Ch Shear Stress N/A

Cm Wet Use 1.00 1.00 1.00 1.00

Cl Stability 0.9955 Rb = 5.01 Le = 4.12 Ft

Loads Uniform TL: 660 = A Uniform LL: 480

Project: KAHN RESIDENCE
 Beam ID: MFB-ZZ
 Description: Main Floor Beams
 Date: 7/12/22
 Prepared by: HK

Selection 7x 11-7/8 2.0E TJ Parallam W.S. PSL Lu = 5.0 Ft

Min Bearing Area	R1= 7.8 in ²	R2= 7.8 in ²	(1.5) DL Defl=	0.30 in
Data	Beam Span	17.0	Reaction 1 LL 5831 #	Reaction 2 LL 4080 #
	Beam Wt per ft	25.98	Reaction 1 TL 5831 #	Reaction 2 TL 4080 #
	Bm Wt Included	442	Maximum V	5831 #
	Max Moment	24781	Max V (Reduced)	5152 #
	TL Max Defl	L / 240	LL Max Defl	L / 360
	TL Actual Defl	L / 269	LL Actual Defl	L / 443
Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl
	Actual	164.52 83.13	0.76	0.46
	Critical	102.98 26.65	0.85	0.57
	Status	OK OK	OK	OK
	Ratio	63% 32%	89%	81%
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values	Reference Values	2900 290	2.0	750
	Adjusted Values	2888 290	2.0	750
Adjustments	CF Size Factor	1.001		
	Cd Duration	1.00	1.00	
	Cr Repetitive	1.00		
	Ch Shear Stress		N/A	
	Cm Wet Use	1.00	1.00	1.00
	Cl Stability	0.9946	Rb = 5.47	Le = 10.30 Ft

Loads Uniform TL: 660 = A Uniform LL: 480

Note:

This beam will be used in the living room by the fireplace at the basement level to replace existing 4 X 12 only If necessary and after contractor opens the ceiling for inspections.

As= 0.20 IN²/FTSquare Footing Design [2018 Standard Building Code] Ver. V4031283

By: Hamid Korasani, P.E. , SAZEI Design Group, LLC on: 06-01-2022

Project: KHAN RESIDENCE- Location: MAIN HOUSE

Summary:

Size: 2.5 FT x 2.5 FT x 10.00 IN

Reinforcement: #4 BARS @ 12.00 IN O.C. E/W Or (3) #4 BARS E/W

Footing Loads:

Live Load: PL= 3300 LB

Dead Load: PD= 1650 LB

Total Load: PT= 4950 LB

Ultimate factored load: Pu= 7920 LB

Footing Properties:

Allowable soil bearing pressure: Qs= 1500 PSF

Effective soil bearing pressure: Qe= 1375 PSF

Concrete compressive strength: F'c= 2500 PSI

Reinforcing steel yield strength: Fy= 40000 PSI

Concrete reinforcement cover: c= 3.00 IN

Selected Size:

Length: L= 2.5 FT

Width: W= 2.5 FT

Area: A= 6.25 SF

Ultimate bearing pressure: Qu= 1267 PSF

Column Base Dimensions:

Length: l= 4.00 IN

Width: w= 4.00 IN

Footing Size Selection:

Required footing area: Areq= 3.6 SF

Minimum footing size required: Lreq= 1.9 FT

Footing depth based on shear stresses:

Selected footing depth: $D = 10.00$ IN

Effective steel depth: $d = 6.25$ IN

Punching Stress Calculations:

Critical perimeter: $B_o = 41.00$ IN

Punching shear: $V_{u1} = 6995$ LB

Punching shear stress: $v_{u1} = 32$ PSI

Allowable punching shear stress: $v_{c1} = 200$ PSI

Beam shear stress calculations:

Beam shear: $V_{u2} = 1782$ LB

Beam shear stress: $v_{u2} = 11$ PSI

Allowable beam shear stress: $v_{c2} = 100$ PSI

Bending Requirements:

Factored moment: $M_u = 22308$ IN-LB

Concrete compressive block depth: $a = 0.06$ IN

Minimum Steel Requirements:

Steel required based on moment: $A_s(1) = 0.04$ IN²/FT

Minimum code required reinforcement: $A_s(2) = 0.05$ IN²/FT

Controlling reinforcing steel: $A_s \text{ reqd} = 0.05$ IN²/FT

Selected reinforcement: #4 BARS @ 12.00 IN. O.C.

As= 0.20 IN²/FTSquare Footing Design [2018 Standard Building Code] Ver. V4031283

By: Hamid Korasani, P.E. , SAZEI Design Group, LLC on: 06-01-2022

Project: KHAN RESIDENCE- Location: MAIN HOUSE-BASEMENT

Summary:

Size: 3.0 FT x 3.0 FT x 10.00 IN

Reinforcement: #4 BARS @ 15.00 IN O.C. E/W Or (3) #4 BARS E/W

Footing Loads:

Live Load: PL= 5600 LB

Dead Load: PD= 3800 LB

Total Load: PT= 9400 LB

Ultimate factored load: Pu= 14840 LB

Footing Properties:

Allowable soil bearing pressure: Qs= 1500 PSF

Effective soil bearing pressure: Qe= 1375 PSF

Concrete compressive strength: F'c= 2500 PSI

Reinforcing steel yield strength: Fy= 40000 PSI

Concrete reinforcement cover: c= 3.00 IN

Selected Size:

Length: L= 3.0 FT

Width: W= 3.0 FT

Area: A= 9.0 SF

Ultimate bearing pressure: Qu= 1649 PSF

Column Base Dimensions:

Length: l= 4.00 IN

Width: w= 4.00 IN

Footing Size Selection:

Required footing area: Areq= 6.84 SF

Minimum footing size required: Lreq= 2.61 FT

Footing depth based on shear stresses:

Selected footing depth: $D = 10.00$ IN

Effective steel depth: $d = 6.25$ IN

Punching Stress Calculations:

Critical perimeter: $B_o = 41.00$ IN

Punching shear: $V_{u1} = 13637$ LB

Punching shear stress: $v_{u1} = 63$ PSI

Allowable punching shear stress: $v_{c1} = 200$ PSI

Beam shear stress calculations:

Beam shear: $V_{u2} = 4019$ LB

Beam shear stress: $v_{u2} = 21$ PSI

Allowable beam shear stress: $v_{c2} = 100$ PSI

Bending Requirements:

Factored moment: $M_u = 52764$ IN-LB

Concrete compressive block depth: $a = 0.12$ IN

Minimum Steel Requirements:

Steel required based on moment: $A_s(1) = 0.08$ IN²/FT

Minimum code required reinforcement: $A_s(2) = 0.11$ IN²/FT

Controlling reinforcing steel: $A_s \text{ reqd} = 0.11$ IN²/FT

Selected reinforcement: #4 BARS @ 15.00 IN. O.C.