

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

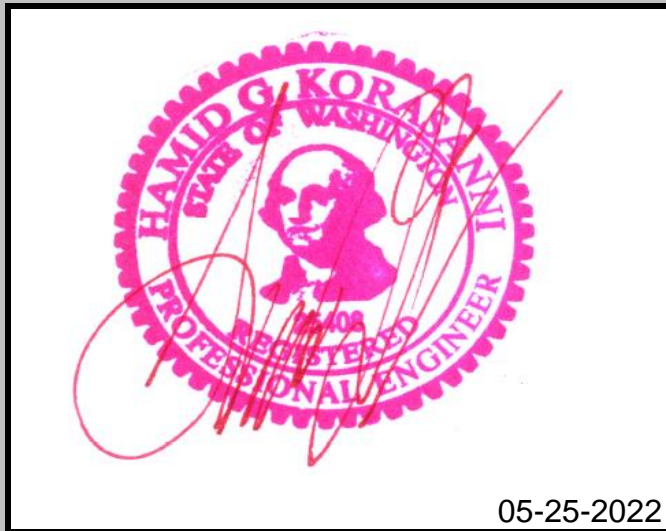
PROJECT:

Davinder RESIDENCE
6121 84th Ave SE
Mercer Island, WA 98040

ENGINEER:

SAZEI Design Group, LLC
Consulting Engineers

6608 110th Ave. N.E.
Kirkland, WA. 98033
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JOB # Davinder-01-2022
DATE: 5/23/2022

HAMID G. KORASANI, P.E.

PROJECT NAME:

Davinder RESIDENCE

PROJECT ADDRESS:

**6121 84th Ave SE
Mercer Island, WA 98040**

ENGINEER:

**SAZEI Design Group, LLC
6608 110th Ave. N.E.
Kirkland, WA 98033
Tel:(425) 214-2280
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Architect:

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

JURISDICTION:

**City of Mercer Island
Bellevue, Washington**

PROJECT: DAVINDER RESIDENCE

JOB#: Davinder-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.

Fa = 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

Lr = 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

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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

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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	.....	1.50 p.s.f.
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

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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

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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:	Davinder RESIDENCE					
	JOB#:	Davinder-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:	Davinder RESIDENCE		
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I.- 2 X INTERIOR			
	2x4 Studs @ 16" o.c.	1.50	p.s.f.
	2x4 Top & Bottom Plates	0.75	p.s.f.
	2x6 Top & Bottom Plates	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	7.75	p.s.f.
	USE: 10.00 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>		

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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>
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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

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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)

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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: $S = 0.7 * C_e * C_t * C_s * P_g * I_s$ (Flat & Sloped Roofs)

Use 25 psf Snow Load for Design

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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: DAVINDER RESIDENCE

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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	$S_s =$	1.46 g
Mapped MCE_R 5 percent damped, spectra response acceleration parameter at a periods of 1 s as defined in Section 11.4.1	$S_1 =$	0.56 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)	$S_{M1} =$	0.84 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)	$S_{DS} =$	0.86 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)	$S_{D1} =$	0.56 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



DAVINDER RESIDENCE

6121 84th Ave SE, Mercer Island, WA 98040, USA

Latitude, Longitude: 47.547829, -122.2273642



Date	5/27/2022, 1:28:14 AM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Stiff Soil

Type	Value	Description
S_S	1.458	MCE_R ground motion. (for 0.2 second period)
S_1	0.559	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.458	Site-modified spectral acceleration value
S_{M1}	0.839	Site-modified spectral acceleration value
S_{DS}	0.972	Numeric seismic design value at 0.2 second SA
S_{D1}	0.559	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	D	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	1.5	Site amplification factor at 1.0 second
PGA	0.607	MCE_G peak ground acceleration
F_{PGA}	1	Site amplification factor at PGA
PGA_M	0.607	Site modified peak ground acceleration
T_L	6	Long-period transition period in seconds
$SsRT$	1.458	Probabilistic risk-targeted ground motion. (0.2 second)
$SsUH$	1.54	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	3.584	Factored deterministic acceleration value. (0.2 second)
$S1RT$	0.559	Probabilistic risk-targeted ground motion. (1.0 second)
$S1UH$	0.603	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
$S1D$	1.308	Factored deterministic acceleration value. (1.0 second)
PGAd	1.369	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.947	Mapped value of the risk coefficient at short periods

WoodWorks® Shearwalls 10.31

Davinder Residence Lateral Analysis.wsw

Jun. 1, 2022 18:14:09

Project Information

COMPANY AND PROJECT INFORMATION

Company	Project
SAZEI Design Group, LLC. Hamid Korasani, P. E. (425) 214-2280	Davinder Residence 6121 84th Ave SE Mercer Island WA 98040

DESIGN SETTINGS

Design Code		Wind Standard		Seismic Standard	
IBC 2018/AWC SDPWS 2018		ASCE 7-16 Directional (All heights)		ASCE 7-16	
For Design (ASD)		Load Combinations		Building Code Capacity Modification	
0.70 Seismic		For Deflection (Strength)		Wind	
0.60 Wind		1.00 Seismic		1.00	
		1.00 Wind		Seismic	
				1.00	
Service Conditions and Load Duration				Max Shearwall Offset [ft]	
Duration	Temperature	Moisture Content		Plan	Elevation
Factor	Range	Fabrication	Service	(within story)	(between stories)
-	-	19%	10%	0.50	0.83
Maximum Height-to-width Ratio					
Wood panels		Fiberboard		Gypsum	
Wind	Seismic	Wind	Seismic	Blocked	Unblocked
3.5	3.5	-	-	2.0	1.5
Ignore non-wood-panel shear resistance contribution...				Collector forces based on...	
Wind		Seismic		Hold-downs	Applied loads
Never		Always		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			Seismic		
ASCE 7-16 Directional (All heights)			ASCE 7-16 12.8 Equivalent Lateral Force Procedure		
Design Wind Speed	110mph		Risk Category	Category II - All others	
Exposure	Exposure B		Structure Type	Regular	
Enclosure	Enclosed		Building System	Bearing Wall	
Min Wind Loads: Walls	16 psf		Design Category	D	
Roofs	8 psf		Site Class	D	
Topographic Information [ft]			Spectral Response Acceleration		
Shape	Height	Length	S1: 0.560g Ss: 1.460g		
-	-	-	Fundamental Period	E-W	N-S
Site Location: -			T Used	0.189s	0.189s
Elev: 0ft Avg Air density: 0.0765 lb/cu ft			Approximate Ta	0.189s	0.189s
Rigid building - Static analysis			Maximum T	0.265s	0.265s
Case 2	E-W loads	N-S loads	Response Factor R	6.50	6.50
Eccentricity (%)	15	15	Fa: 1.00	Fv: 1.50	
Loaded at	75%				

Structural Data

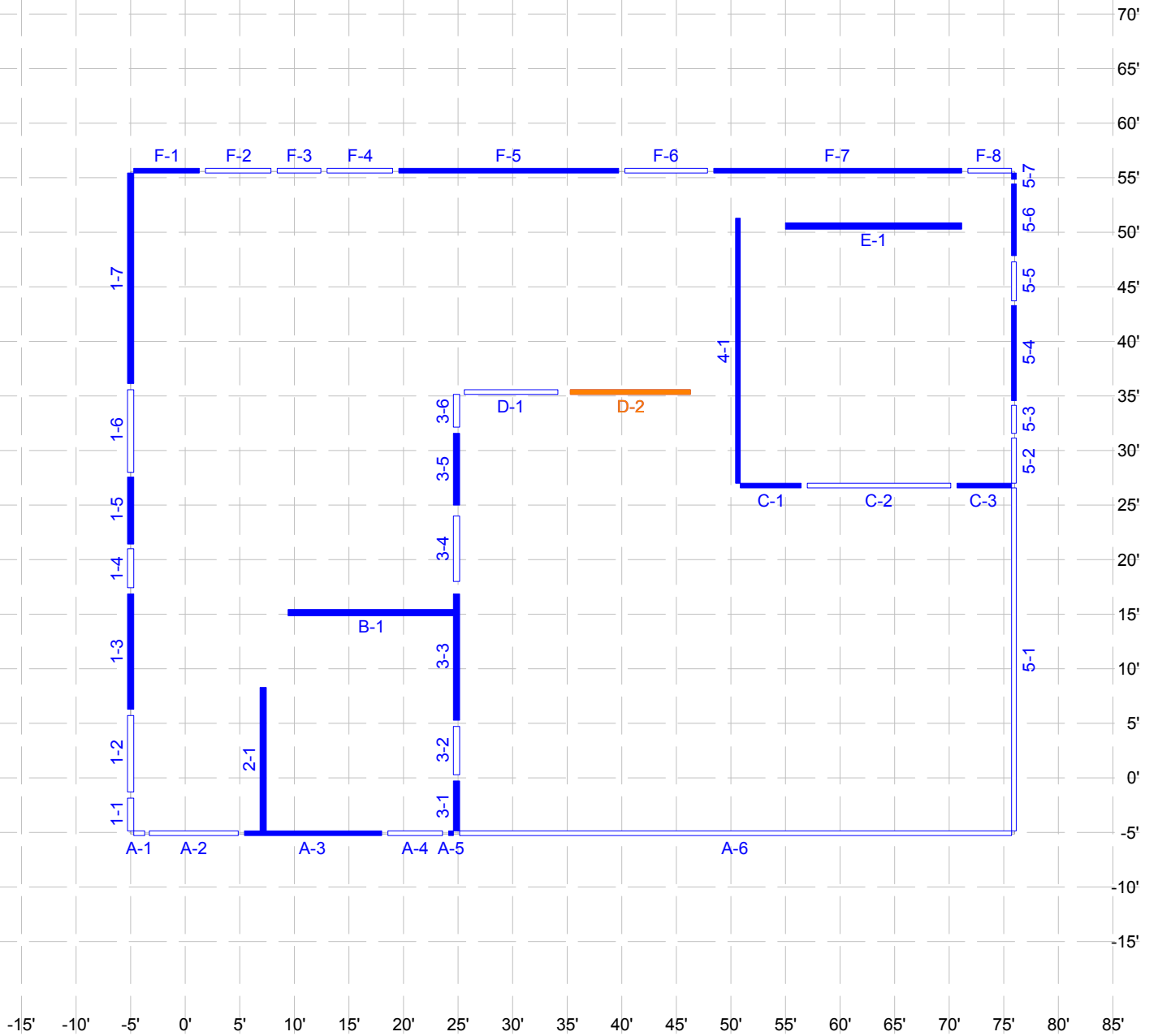
STORY INFORMATION

	Story Elev [ft]	Floor/Ceiling Depth [in]	Wall Height [ft]	Length subject to shrinkage [in]	Hold-down Bolt length [in]
Ceiling	22.83	0.0			
Level 2	13.83	12.0	9.00	15.7	16.5
Level 1	2.83	10.0	10.00	13.8	14.5
Foundation	2.00				

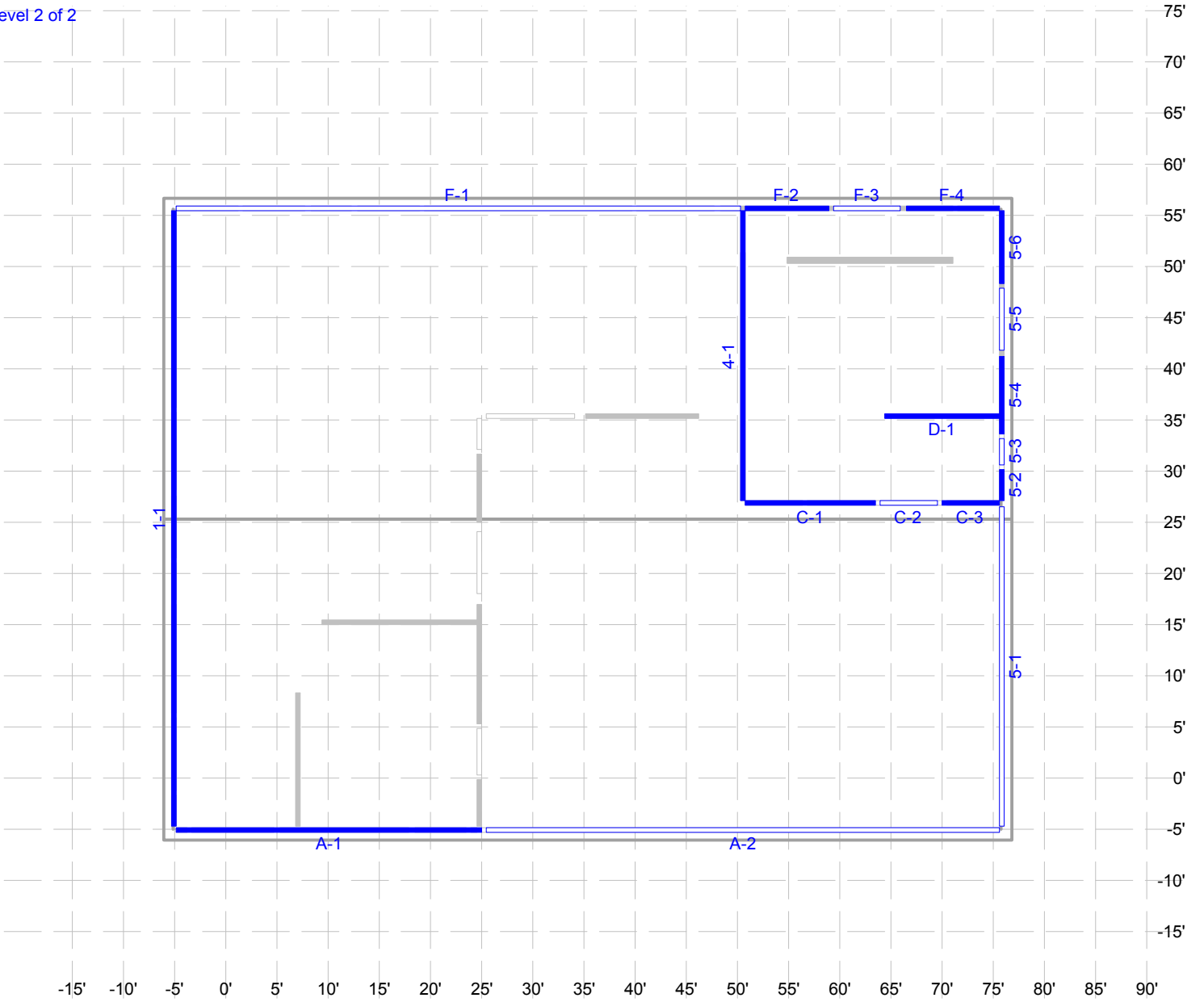
BLOCK and ROOF INFORMATION

	Block Dimensions [ft]		E-W Ridge	Face	Type	Roof Panels	
	2 Story					Slope	Overhang [ft]
Block 1							
Location X,Y =	-5.00	-5.00		North	Side	30.0	1.00
Extent X,Y =	80.00	60.00		South	Side	30.0	1.00
Ridge Y Location, Offset	25.00	0.00		East	Gable	90.0	1.00
Ridge Elevation, Height	40.15	17.32		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	1	Struct Sh OSB	24/16	7/16	-	3	Horz	83500	8d	Nail	N	3	12	Y	2,3
	2	Gyp WB 1-ply		1/2	-	-	Horz	40000	5d	Nail	N	7	7	Y	5
2	Ext	Structural I	24/0	5/16	-	3	Horz	32500	8d	Nail	N	6	12	Y	
	Int	Gyp WB 1-ply		1/2	-	-	Horz	40000	5d	Nail	N	7	7	Y	5
3	Both	Struct Sh OSB	24/16	7/16	-	3	Horz	83500	8d	Nail	N	2	12	Y	2,3
4	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
5	Ext	Struct Sh OSB	24/16	7/16	-	3	Horz	83500	8d	Nail	N	3	10	Y	2,3
	Int	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	Interior Segmented
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	

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

Standard Wall - Standard wall designed as group.

Notes:

Check manufacture requirements for stud size, grade and specific gravity (G) for all shearwall hold-downs.

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	2	-5.00	-5.00	55.00	60.00	60.00	60.00	9.00
Wall 1-1	Seg	2	-5.00	-5.00	55.00	60.00	60.00	60.00	-
Level 1									
Line 1	Seg	1	-5.00	-5.00	55.00	60.00	37.00	37.00	10.00
Wall 1-3	Seg	1	-5.00	6.00	17.00	11.00	11.00	11.00	-
Wall 1-7	Seg	1	-5.00	35.50	55.00	19.50	19.50	19.50	-
Wall 1-5	Seg	1	-5.00	21.00	27.50	6.50	6.50	6.50	-
Wall 1-6	NSW		-5.00	27.50	35.50	8.00	0.00	0.00	-
Wall 1-4	NSW		-5.00	17.00	21.00	4.00	0.00	0.00	-
Wall 1-2	NSW		-5.00	-1.50	6.00	7.50	0.00	0.00	-
Wall 1-1	NSW		-5.00	-5.00	-1.50	3.50	0.00	0.00	-
Line 2									
Level 1									
Line 2	Seg	1	7.00	-5.00	55.00	60.00	13.50	13.50	10.00
Wall 2-1	Seg	1	7.00	-5.00	8.50	13.50	13.50	13.50	-
Line 3									
Level 1									
Line 3	Seg	4	24.50	-5.00	55.00	60.00	24.00	24.00	10.00
Wall 3-5	Seg	4	24.50	24.50	31.50	7.00	7.00	7.00	-
Wall 3-1	Seg	4	24.50	-5.00	0.00	5.00	5.00	5.00	-
Wall 3-3	Seg	4	24.50	5.00	17.00	12.00	12.00	12.00	-
Wall 3-2	NSW		24.50	0.00	5.00	5.00	0.00	0.00	-
Wall 3-4	NSW		24.50	17.50	24.00	6.50	0.00	0.00	-
Wall 3-6	NSW		24.50	31.50	35.00	3.50	0.00	0.00	-
Line 4									
Level 2									
Line 4	Seg	4	50.00	-5.00	55.00	60.00	28.50	28.50	9.00
Wall 4-1	Seg	4	50.00	26.50	55.00	28.50	28.50	28.50	-
Level 1									
Line 4	Seg	1	50.00	-5.00	55.00	60.00	24.50	24.50	10.00
Wall 4-1	Seg	1	50.00	26.50	51.00	24.50	24.50	24.50	-
Line 5									
Level 2									
Line 5	Seg	4	75.00	-5.00	55.00	60.00	15.50	19.00	9.00
Wall 5-6	Seg	4	75.00	47.50	55.00	7.50	7.50	7.50	-
Wall 5-2	Seg	4	75.00	26.50	30.00	3.50	0.00	3.50	-
Wall 5-4	Seg	4	75.00	33.00	41.00	8.00	8.00	8.00	-
Wall 5-1	NSW		75.00	-5.00	26.50	31.50	0.00	0.00	-
Wall 5-5	NSW		75.00	41.00	47.50	6.50	0.00	0.00	-
Wall 5-3	NSW		75.00	30.00	33.00	3.00	0.00	0.00	-
Level 1									
Line 5	Seg	5	75.00	-5.00	55.00	60.00	16.00	16.00	10.00
Wall 5-7	Seg	5	75.00	54.00	55.00	1.00	0.00	0.00	-
Wall 5-6	Seg	5	75.00	47.00	54.00	7.00	7.00	7.00	-
Wall 5-4	Seg	5	75.00	34.00	43.00	9.00	9.00	9.00	-
Wall 5-2	NSW		75.00	26.50	31.00	4.50	0.00	0.00	-
Wall 5-1	NSW		75.00	-5.00	26.50	31.50	0.00	0.00	-
Wall 5-5	NSW		75.00	43.00	47.00	4.00	0.00	0.00	-
Wall 5-3	NSW		75.00	31.00	34.00	3.00	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	75.00	80.00	30.00	30.00	9.00
Wall A-1	Seg	2	-5.00	-5.00	25.00	30.00	30.00	30.00	-
Wall A-2	NSW		-5.00	25.00	75.00	50.00	0.00	0.00	-
Level 1									
Line A	Seg	1	-5.00	-5.00	75.00	80.00	13.00	13.00	10.00
Wall A-5	Seg	1	-5.00	23.50	24.50	1.00	0.00	0.00	-
Wall A-3	Seg	1	-5.00	5.00	18.00	13.00	13.00	13.00	-
Wall A-6	NSW		-5.00	24.50	75.00	50.50	0.00	0.00	-
Wall A-4	NSW		-5.00	18.00	23.50	5.50	0.00	0.00	-
Wall A-1	NSW		-5.00	-5.00	-3.50	1.50	0.00	0.00	-
Wall A-2	NSW		-5.00	-3.50	5.00	8.50	0.00	0.00	-
Line B									
Level 1									
Line B	Seg	1	15.00	-5.00	75.00	80.00	15.50	15.50	10.00

SHEARLINE, WALL and OPENING DIMENSIONS (continued)

Wall B-1	Seg	1	15.00	9.00	24.50	15.50	15.50	15.50	-
Line C									
Level 2									
Line C	Seg	4	26.50	-5.00	75.00	80.00	19.00	19.00	9.00
Wall C-3	Seg	4	26.50	69.00	75.00	6.00	6.00	6.00	-
Wall C-1	Seg	4	26.50	50.00	63.00	13.00	13.00	13.00	-
Wall C-2	NSW		26.50	63.00	69.00	6.00	0.00	0.00	-
Level 1									
Line C	Seg	3	26.50	-5.00	75.00	80.00	11.50	11.50	10.00
Wall C-3	Seg	3	26.50	69.50	75.00	5.50	5.50	5.50	-
Wall C-1	Seg	3	26.50	50.00	56.00	6.00	6.00	6.00	-
Wall C-2	NSW		26.50	56.00	69.50	13.50	0.00	0.00	-
Line D									
Level 2									
Line D	Seg	1	35.00	-5.00	75.00	80.00	11.50	11.50	9.00
Wall D-1	Seg	1	35.00	63.50	75.00	11.50	11.50	11.50	-
Level 1									
Line D	Seg	1	35.00	-5.00	75.00	80.00	11.50	11.50	10.00
Wall D-2	Seg	1	35.00	34.50	46.00	11.50	11.50	11.50	-
Wall D-1	NSW		35.00	25.00	34.00	9.00	0.00	0.00	-
Line E									
Level 1									
Line E	Seg	1	50.00	-5.00	75.00	80.00	16.50	16.50	10.00
Wall E-1	Seg	1	50.00	54.00	70.50	16.50	16.50	16.50	-
Line F									
Level 2									
Line F	Seg	4	55.00	-5.00	75.00	80.00	18.00	18.00	9.00
Wall F-2	Seg	4	55.00	50.00	58.50	8.50	8.50	8.50	-
Wall F-4	Seg	4	55.00	65.50	75.00	9.50	9.50	9.50	-
Wall F-1	NSW		55.00	-5.00	50.00	55.00	0.00	0.00	-
Wall F-3	NSW		55.00	58.50	65.50	7.00	0.00	0.00	-
Level 1									
Line F	Seg	1	55.00	-5.00	75.00	80.00	50.00	50.00	10.00
Wall F-1	Seg	1	55.00	-5.00	1.50	6.50	6.50	6.50	-
Wall F-5	Seg	1	55.00	19.00	39.50	20.50	20.50	20.50	-
Wall F-7	Seg	1	55.00	47.50	70.50	23.00	23.00	23.00	-
Wall F-3	NSW		55.00	8.00	12.50	4.50	0.00	0.00	-
Wall F-2	NSW		55.00	1.50	8.00	6.50	0.00	0.00	-
Wall F-6	NSW		55.00	39.50	47.50	8.00	0.00	0.00	-
Wall F-8	NSW		55.00	70.50	75.00	4.50	0.00	0.00	-
Wall F-4	NSW		55.00	12.50	19.00	6.50	0.00	0.00	-

Legend:

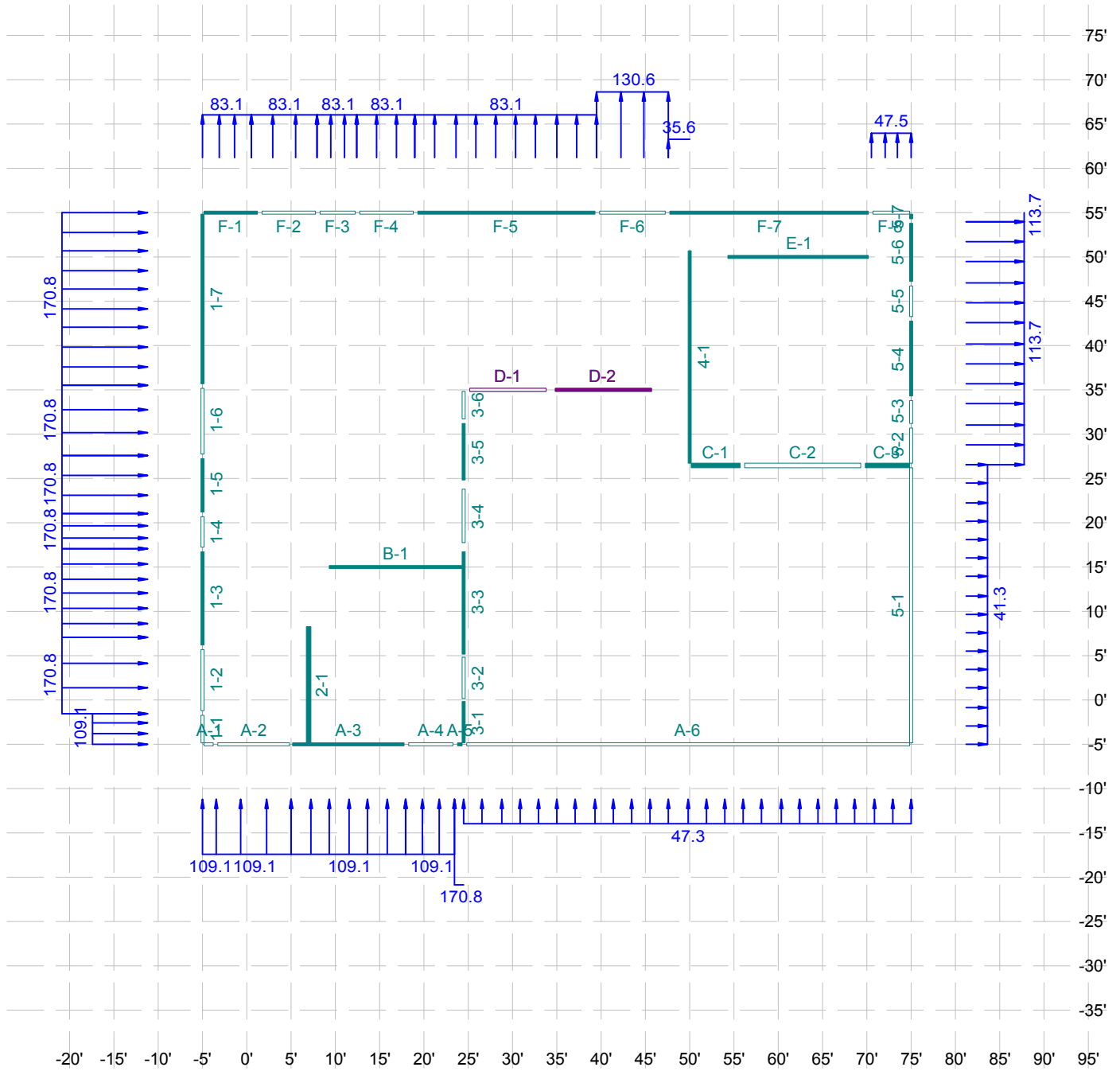
Type - Seg = segmented, Prf = perforated, NSW = non-shearwall

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

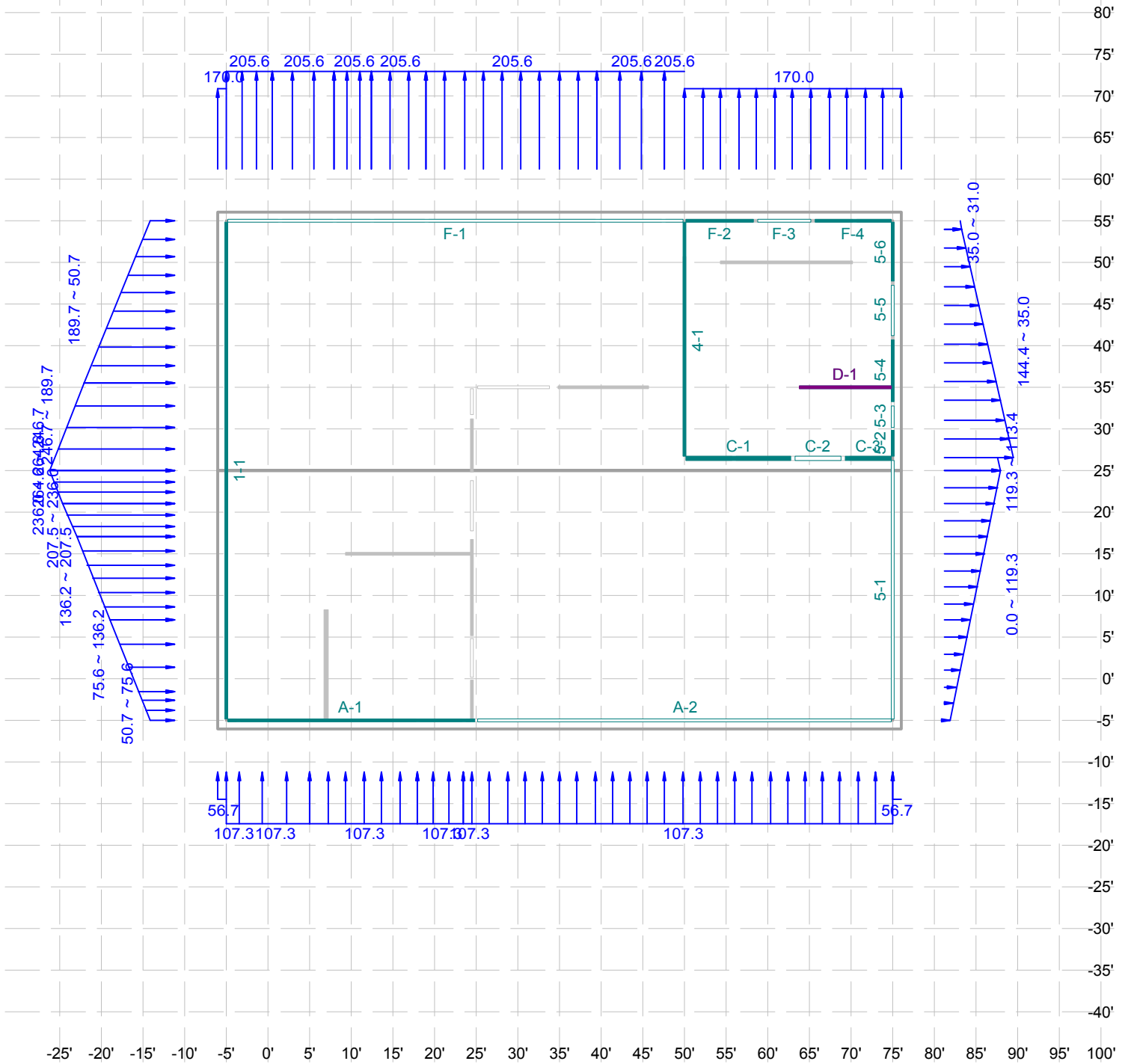
Level 1 of 2



Unfactored generated shear load (plf)

Orange = Selected wall(s)

Level 2 of 2



Unfactored generated shear load (plf)

Orange = Selected wall(s)

Loads

WIND SHEAR LOADS (as entered or generated)

Level 2 Block	F	Element	Load Case	Wnd Dir	Surf Dir	Prof	Location [ft]		Magnitude [lbs,plf,psf]		Trib Ht [ft]
							Start	End	Start	End	
Block 1	W	Wall	Min	W->E	Wind	Line	-5.00	-1.50	36.0		
Block 1	W	L Gable	1	W->E	Wind	Line	-5.00	25.00	0.0	213.9	
Block 1	W	Wall	1	W->E	Wind	Line	-5.00	-1.50	50.7		
Block 1	W	L Gable	Min	W->E	Wind	Line	-5.00	25.00	0.0	138.6	
Block 1	W	Wall	1	W->E	Wind	Line	-1.50	7.00	50.7		
Block 1	W	Wall	Min	W->E	Wind	Line	-1.50	7.00	36.0		
Block 1	W	Wall	Min	W->E	Wind	Line	7.00	17.00	36.0		
Block 1	W	Wall	1	W->E	Wind	Line	7.00	17.00	50.7		
Block 1	W	Wall	Min	W->E	Wind	Line	17.00	21.00	36.0		
Block 1	W	Wall	1	W->E	Wind	Line	17.00	21.00	50.7		
Block 1	W	Wall	Min	W->E	Wind	Line	21.00	27.50	36.0		
Block 1	W	Wall	1	W->E	Wind	Line	21.00	27.50	50.7		
Block 1	W	R Gable	Min	W->E	Wind	Line	25.00	55.00	138.6	0.0	
Block 1	W	R Gable	1	W->E	Wind	Line	25.00	55.00	213.9	0.0	
Block 1	W	Wall	Min	W->E	Wind	Line	27.50	35.50	36.0		
Block 1	W	Wall	1	W->E	Wind	Line	27.50	35.50	50.7		
Block 1	W	Wall	1	W->E	Wind	Line	35.50	55.00	50.7		
Block 1	W	Wall	Min	W->E	Wind	Line	35.50	55.00	36.0		
Block 1	E	L Gable	Min	W->E	Lee	Line	-5.00	25.00	0.0	138.6	
Block 1	E	L Gable	1	W->E	Lee	Line	-5.00	25.00	0.0	119.3	
Block 1	E	R Gable	1	W->E	Lee	Line	25.00	55.00	119.3	0.0	
Block 1	E	R Gable	Min	W->E	Lee	Line	25.00	55.00	138.6	0.0	
Block 1	E	Wall	Min	W->E	Lee	Line	26.50	54.00	36.0		
Block 1	E	Wall	1	W->E	Lee	Line	26.50	54.00	31.0		
Block 1	E	Wall	1	W->E	Lee	Line	54.00	55.00	31.0		
Block 1	E	Wall	Min	W->E	Lee	Line	54.00	55.00	36.0		
Block 1	W	Wall	Min	E->W	Lee	Line	-5.00	-1.50	36.0		
Block 1	W	Wall	1	E->W	Lee	Line	-5.00	-1.50	31.0		
Block 1	W	L Gable	1	E->W	Lee	Line	-5.00	25.00	0.0	119.3	
Block 1	W	L Gable	Min	E->W	Lee	Line	-5.00	25.00	0.0	138.6	
Block 1	W	Wall	Min	E->W	Lee	Line	-1.50	7.00	36.0		
Block 1	W	Wall	1	E->W	Lee	Line	-1.50	7.00	31.0		
Block 1	W	Wall	1	E->W	Lee	Line	7.00	17.00	31.0		
Block 1	W	Wall	Min	E->W	Lee	Line	7.00	17.00	36.0		
Block 1	W	Wall	1	E->W	Lee	Line	17.00	21.00	31.0		
Block 1	W	Wall	Min	E->W	Lee	Line	17.00	21.00	36.0		
Block 1	W	Wall	1	E->W	Lee	Line	21.00	27.50	31.0		
Block 1	W	Wall	Min	E->W	Lee	Line	21.00	27.50	36.0		
Block 1	W	R Gable	Min	E->W	Lee	Line	25.00	55.00	138.6	0.0	
Block 1	W	R Gable	1	E->W	Lee	Line	25.00	55.00	119.3	0.0	
Block 1	W	Wall	1	E->W	Lee	Line	27.50	35.50	31.0		
Block 1	W	Wall	Min	E->W	Lee	Line	27.50	35.50	36.0		
Block 1	W	Wall	Min	E->W	Lee	Line	35.50	55.00	36.0		
Block 1	W	Wall	1	E->W	Lee	Line	35.50	55.00	31.0		
Block 1	E	L Gable	1	E->W	Wind	Line	-5.00	25.00	0.0	213.9	
Block 1	E	L Gable	Min	E->W	Wind	Line	-5.00	25.00	0.0	138.6	
Block 1	E	R Gable	1	E->W	Wind	Line	25.00	55.00	213.9	0.0	
Block 1	E	R Gable	Min	E->W	Wind	Line	25.00	55.00	138.6	0.0	
Block 1	E	Wall	Min	E->W	Wind	Line	26.50	54.00	36.0		
Block 1	E	Wall	1	E->W	Wind	Line	26.50	54.00	50.7		
Block 1	E	Wall	1	E->W	Wind	Line	54.00	55.00	50.7		
Block 1	E	Wall	Min	E->W	Wind	Line	54.00	55.00	36.0		
Block 1	S	Roof	1	S->N	Wind	Line	-6.00	76.00	56.7		
Block 1	S	Roof	Min	S->N	Wind	Line	-6.00	76.00	71.6		
Block 1	S	Wall	1	S->N	Wind	Line	-5.00	-3.50	50.7		
Block 1	S	Wall	Min	S->N	Wind	Line	-5.00	-3.50	36.0		
Block 1	S	Wall	1	S->N	Wind	Line	-3.50	5.00	50.7		
Block 1	S	Wall	Min	S->N	Wind	Line	-3.50	5.00	36.0		
Block 1	S	Wall	1	S->N	Wind	Line	5.00	18.00	50.7		
Block 1	S	Wall	Min	S->N	Wind	Line	5.00	18.00	36.0		
Block 1	S	Wall	Min	S->N	Wind	Line	18.00	23.50	36.0		
Block 1	S	Wall	1	S->N	Wind	Line	18.00	23.50	50.7		
Block 1	S	Wall	1	S->N	Wind	Line	23.50	24.50	50.7		
Block 1	S	Wall	Min	S->N	Wind	Line	23.50	24.50	36.0		
Block 1	S	Wall	Min	S->N	Wind	Line	24.50	75.00	36.0		
Block 1	S	Wall	1	S->N	Wind	Line	24.50	75.00	50.7		
Block 1	N	Roof	Min	S->N	Lee	Line	-6.00	76.00	71.6		
Block 1	N	Roof	1	S->N	Lee	Line	-6.00	76.00	170.0		
Block 1	N	Wall	1	S->N	Lee	Line	-5.00	0.50	35.6		

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

Block 1	N	Wall	Min	S->N	Lee	Line	-5.00	0.50	36.0
Block 1	N	Wall	1	S->N	Lee	Line	0.50	8.00	35.6
Block 1	N	Wall	Min	S->N	Lee	Line	0.50	8.00	36.0
Block 1	N	Wall	1	S->N	Lee	Line	8.00	12.50	35.6
Block 1	N	Wall	Min	S->N	Lee	Line	8.00	12.50	36.0
Block 1	N	Wall	1	S->N	Lee	Line	12.50	19.00	35.6
Block 1	N	Wall	Min	S->N	Lee	Line	12.50	19.00	36.0
Block 1	N	Wall	1	S->N	Lee	Line	19.00	39.50	35.6
Block 1	N	Wall	Min	S->N	Lee	Line	19.00	39.50	36.0
Block 1	N	Wall	Min	S->N	Lee	Line	39.50	47.50	36.0
Block 1	N	Wall	1	S->N	Lee	Line	39.50	47.50	35.6
Block 1	N	Wall	Min	S->N	Lee	Line	47.50	50.00	36.0
Block 1	N	Wall	1	S->N	Lee	Line	47.50	50.00	35.6
Block 1	S	Roof	1	N->S	Lee	Line	-6.00	76.00	170.0
Block 1	S	Roof	Min	N->S	Lee	Line	-6.00	76.00	71.6
Block 1	S	Wall	Min	N->S	Lee	Line	-5.00	-3.50	36.0
Block 1	S	Wall	1	N->S	Lee	Line	-5.00	-3.50	35.6
Block 1	S	Wall	Min	N->S	Lee	Line	-3.50	5.00	36.0
Block 1	S	Wall	1	N->S	Lee	Line	-3.50	5.00	35.6
Block 1	S	Wall	1	N->S	Lee	Line	5.00	18.00	35.6
Block 1	S	Wall	Min	N->S	Lee	Line	5.00	18.00	36.0
Block 1	S	Wall	Min	N->S	Lee	Line	18.00	23.50	36.0
Block 1	S	Wall	1	N->S	Lee	Line	18.00	23.50	35.6
Block 1	S	Wall	1	N->S	Lee	Line	23.50	24.50	35.6
Block 1	S	Wall	Min	N->S	Lee	Line	23.50	24.50	36.0
Block 1	S	Wall	Min	N->S	Lee	Line	24.50	75.00	36.0
Block 1	S	Wall	1	N->S	Lee	Line	24.50	75.00	35.6
Block 1	N	Roof	1	N->S	Wind	Line	-6.00	76.00	56.7
Block 1	N	Roof	Min	N->S	Wind	Line	-6.00	76.00	71.6
Block 1	N	Wall	Min	N->S	Wind	Line	-5.00	0.50	36.0
Block 1	N	Wall	1	N->S	Wind	Line	-5.00	0.50	50.7
Block 1	N	Wall	1	N->S	Wind	Line	0.50	8.00	50.7
Block 1	N	Wall	Min	N->S	Wind	Line	0.50	8.00	36.0
Block 1	N	Wall	Min	N->S	Wind	Line	8.00	12.50	36.0
Block 1	N	Wall	1	N->S	Wind	Line	8.00	12.50	50.7
Block 1	N	Wall	1	N->S	Wind	Line	12.50	19.00	50.7
Block 1	N	Wall	Min	N->S	Wind	Line	12.50	19.00	36.0
Block 1	N	Wall	1	N->S	Wind	Line	19.00	39.50	50.7
Block 1	N	Wall	Min	N->S	Wind	Line	19.00	39.50	36.0
Block 1	N	Wall	1	N->S	Wind	Line	39.50	47.50	50.7
Block 1	N	Wall	Min	N->S	Wind	Line	39.50	47.50	36.0
Block 1	N	Wall	Min	N->S	Wind	Line	47.50	50.00	36.0
Block 1	N	Wall	1	N->S	Wind	Line	47.50	50.00	50.7

Level 1 Block	F	Element	Load Case	Wnd Dir	Surf Dir	Prof	Location [ft]		Magnitude [lbs,plf,psf]		Trib Ht [ft]
							Start	End	Start	End	
Block 1	W	Wall	Min	W->E	Wind	Line	-5.00	-1.50	36.0		
Block 1	W	Wall	Min	W->E	Wind	Line	-5.00	55.00	48.0		
Block 1	W	Wall	1	W->E	Wind	Line	-5.00	-1.50	47.3		
Block 1	W	Wall	1	W->E	Wind	Line	-5.00	55.00	61.7		
Block 1	W	Wall	Min	W->E	Wind	Line	-1.50	55.00	48.0		
Block 1	W	Wall	Min	W->E	Wind	Line	-1.50	7.00	36.0		
Block 1	W	Wall	1	W->E	Wind	Line	-1.50	7.00	47.3		
Block 1	W	Wall	1	W->E	Wind	Line	-1.50	55.00	61.7		
Block 1	W	Wall	1	W->E	Wind	Line	7.00	17.00	47.3		
Block 1	W	Wall	Min	W->E	Wind	Line	7.00	17.00	36.0		
Block 1	W	Wall	1	W->E	Wind	Line	17.00	21.00	47.3		
Block 1	W	Wall	Min	W->E	Wind	Line	17.00	21.00	36.0		
Block 1	W	Wall	Min	W->E	Wind	Line	21.00	27.50	36.0		
Block 1	W	Wall	1	W->E	Wind	Line	21.00	27.50	47.3		
Block 1	W	Wall	1	W->E	Wind	Line	27.50	35.50	47.3		
Block 1	W	Wall	Min	W->E	Wind	Line	27.50	35.50	36.0		
Block 1	W	Wall	Min	W->E	Wind	Line	35.50	55.00	36.0		
Block 1	W	Wall	1	W->E	Wind	Line	35.50	55.00	47.3		
Block 1	E	Wall	Min	W->E	Lee	Line	-5.00	55.00	48.0		
Block 1	E	Wall	1	W->E	Lee	Line	-5.00	55.00	41.3		
Block 1	E	Wall	Min	W->E	Lee	Line	26.50	54.00	36.0		
Block 1	E	Wall	1	W->E	Lee	Line	26.50	55.00	41.3		
Block 1	E	Wall	Min	W->E	Lee	Line	26.50	55.00	48.0		
Block 1	E	Wall	1	W->E	Lee	Line	26.50	54.00	31.0		
Block 1	E	Wall	1	W->E	Lee	Line	54.00	55.00	31.0		
Block 1	E	Wall	Min	W->E	Lee	Line	54.00	55.00	36.0		
Block 1	W	Wall	Min	E->W	Lee	Line	-5.00	55.00	48.0		
Block 1	W	Wall	1	E->W	Lee	Line	-5.00	-1.50	31.0		

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

Block 1	W	Wall	Min	E->W	Lee	Line	-5.00	-1.50	36.0
Block 1	W	Wall	1	E->W	Lee	Line	-5.00	55.00	41.3
Block 1	W	Wall	Min	E->W	Lee	Line	-1.50	7.00	36.0
Block 1	W	Wall	1	E->W	Lee	Line	-1.50	55.00	41.3
Block 1	W	Wall	Min	E->W	Lee	Line	-1.50	55.00	48.0
Block 1	W	Wall	1	E->W	Lee	Line	-1.50	7.00	31.0
Block 1	W	Wall	1	E->W	Lee	Line	7.00	17.00	31.0
Block 1	W	Wall	Min	E->W	Lee	Line	7.00	17.00	36.0
Block 1	W	Wall	Min	E->W	Lee	Line	17.00	21.00	36.0
Block 1	W	Wall	1	E->W	Lee	Line	17.00	21.00	31.0
Block 1	W	Wall	1	E->W	Lee	Line	21.00	27.50	31.0
Block 1	W	Wall	Min	E->W	Lee	Line	21.00	27.50	36.0
Block 1	W	Wall	1	E->W	Lee	Line	27.50	35.50	31.0
Block 1	W	Wall	Min	E->W	Lee	Line	27.50	35.50	36.0
Block 1	W	Wall	Min	E->W	Lee	Line	35.50	55.00	36.0
Block 1	W	Wall	1	E->W	Lee	Line	35.50	55.00	31.0
Block 1	E	Wall	1	E->W	Wind	Line	-5.00	55.00	61.7
Block 1	E	Wall	Min	E->W	Wind	Line	-5.00	55.00	48.0
Block 1	E	Wall	Min	E->W	Wind	Line	26.50	55.00	48.0
Block 1	E	Wall	1	E->W	Wind	Line	26.50	55.00	61.7
Block 1	E	Wall	Min	E->W	Wind	Line	26.50	54.00	36.0
Block 1	E	Wall	1	E->W	Wind	Line	26.50	54.00	47.3
Block 1	E	Wall	Min	E->W	Wind	Line	54.00	55.00	36.0
Block 1	E	Wall	1	E->W	Wind	Line	54.00	55.00	47.3
Block 1	S	Wall	1	S->N	Wind	Line	-5.00	24.50	61.7
Block 1	S	Wall	Min	S->N	Wind	Line	-5.00	-3.50	36.0
Block 1	S	Wall	1	S->N	Wind	Line	-5.00	-3.50	47.3
Block 1	S	Wall	Min	S->N	Wind	Line	-5.00	24.50	48.0
Block 1	S	Wall	1	S->N	Wind	Line	-3.50	5.00	47.3
Block 1	S	Wall	Min	S->N	Wind	Line	-3.50	5.00	36.0
Block 1	S	Wall	Min	S->N	Wind	Line	5.00	18.00	36.0
Block 1	S	Wall	1	S->N	Wind	Line	5.00	18.00	47.3
Block 1	S	Wall	Min	S->N	Wind	Line	18.00	23.50	36.0
Block 1	S	Wall	1	S->N	Wind	Line	18.00	23.50	47.3
Block 1	S	Wall	Min	S->N	Wind	Line	23.50	24.50	36.0
Block 1	S	Wall	1	S->N	Wind	Line	23.50	24.50	61.7
Block 1	S	Wall	Min	S->N	Wind	Line	23.50	24.50	48.0
Block 1	S	Wall	1	S->N	Wind	Line	23.50	24.50	47.3
Block 1	S	Wall	Min	S->N	Wind	Line	24.50	75.00	36.0
Block 1	S	Wall	1	S->N	Wind	Line	24.50	75.00	47.3
Block 1	N	Wall	1	S->N	Lee	Line	-5.00	0.50	35.6
Block 1	N	Wall	Min	S->N	Lee	Line	-5.00	0.50	36.0
Block 1	N	Wall	1	S->N	Lee	Line	-5.00	47.50	47.5
Block 1	N	Wall	Min	S->N	Lee	Line	-5.00	47.50	48.0
Block 1	N	Wall	1	S->N	Lee	Line	0.50	8.00	35.6
Block 1	N	Wall	Min	S->N	Lee	Line	0.50	8.00	36.0
Block 1	N	Wall	Min	S->N	Lee	Line	8.00	12.50	36.0
Block 1	N	Wall	1	S->N	Lee	Line	8.00	12.50	35.6
Block 1	N	Wall	Min	S->N	Lee	Line	12.50	19.00	36.0
Block 1	N	Wall	1	S->N	Lee	Line	12.50	19.00	35.6
Block 1	N	Wall	1	S->N	Lee	Line	19.00	39.50	35.6
Block 1	N	Wall	Min	S->N	Lee	Line	19.00	39.50	36.0
Block 1	N	Wall	1	S->N	Lee	Line	39.50	47.50	47.5
Block 1	N	Wall	Min	S->N	Lee	Line	39.50	47.50	36.0
Block 1	N	Wall	1	S->N	Lee	Line	39.50	47.50	35.6
Block 1	N	Wall	Min	S->N	Lee	Line	39.50	47.50	48.0
Block 1	N	Wall	Min	S->N	Lee	Line	47.50	50.00	36.0
Block 1	N	Wall	1	S->N	Lee	Line	47.50	50.00	35.6
Block 1	N	Wall	1	S->N	Lee	Line	70.50	75.00	47.5
Block 1	N	Wall	Min	S->N	Lee	Line	70.50	75.00	48.0
Block 1	S	Wall	1	N->S	Lee	Line	-5.00	75.00	47.5
Block 1	S	Wall	1	N->S	Lee	Line	-5.00	-3.50	35.6
Block 1	S	Wall	Min	N->S	Lee	Line	-5.00	-3.50	36.0
Block 1	S	Wall	Min	N->S	Lee	Line	-5.00	24.50	48.0
Block 1	S	Wall	Min	N->S	Lee	Line	-5.00	75.00	48.0
Block 1	S	Wall	1	N->S	Lee	Line	-5.00	24.50	47.5
Block 1	S	Wall	1	N->S	Lee	Line	-3.50	5.00	35.6
Block 1	S	Wall	Min	N->S	Lee	Line	-3.50	5.00	36.0
Block 1	S	Wall	1	N->S	Lee	Line	5.00	18.00	35.6
Block 1	S	Wall	Min	N->S	Lee	Line	5.00	18.00	36.0
Block 1	S	Wall	1	N->S	Lee	Line	18.00	23.50	35.6
Block 1	S	Wall	Min	N->S	Lee	Line	18.00	23.50	36.0
Block 1	S	Wall	1	N->S	Lee	Line	23.50	24.50	35.6

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

Block 1	S	Wall	Min	N->S	Lee	Line	23.50	24.50	36.0
Block 1	S	Wall	Min	N->S	Lee	Line	24.50	75.00	36.0
Block 1	S	Wall	1	N->S	Lee	Line	24.50	75.00	35.6
Block 1	N	Wall	Min	N->S	Wind	Line	-5.00	75.00	48.0
Block 1	N	Wall	1	N->S	Wind	Line	-5.00	0.50	47.3
Block 1	N	Wall	1	N->S	Wind	Line	-5.00	75.00	61.7
Block 1	N	Wall	Min	N->S	Wind	Line	-5.00	0.50	36.0
Block 1	N	Wall	1	N->S	Wind	Line	0.50	8.00	47.3
Block 1	N	Wall	Min	N->S	Wind	Line	0.50	8.00	36.0
Block 1	N	Wall	Min	N->S	Wind	Line	8.00	47.50	48.0
Block 1	N	Wall	1	N->S	Wind	Line	8.00	47.50	61.7
Block 1	N	Wall	Min	N->S	Wind	Line	8.00	12.50	36.0
Block 1	N	Wall	1	N->S	Wind	Line	8.00	12.50	47.3
Block 1	N	Wall	1	N->S	Wind	Line	12.50	19.00	47.3
Block 1	N	Wall	Min	N->S	Wind	Line	12.50	19.00	36.0
Block 1	N	Wall	Min	N->S	Wind	Line	19.00	39.50	36.0
Block 1	N	Wall	1	N->S	Wind	Line	19.00	39.50	47.3
Block 1	N	Wall	1	N->S	Wind	Line	39.50	47.50	47.3
Block 1	N	Wall	Min	N->S	Wind	Line	39.50	47.50	36.0
Block 1	N	Wall	1	N->S	Wind	Line	47.50	50.00	47.3
Block 1	N	Wall	Min	N->S	Wind	Line	47.50	50.00	36.0
Block 1	N	Wall	Min	N->S	Wind	Line	70.50	75.00	48.0
Block 1	N	Wall	1	N->S	Wind	Line	70.50	75.00	61.7

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

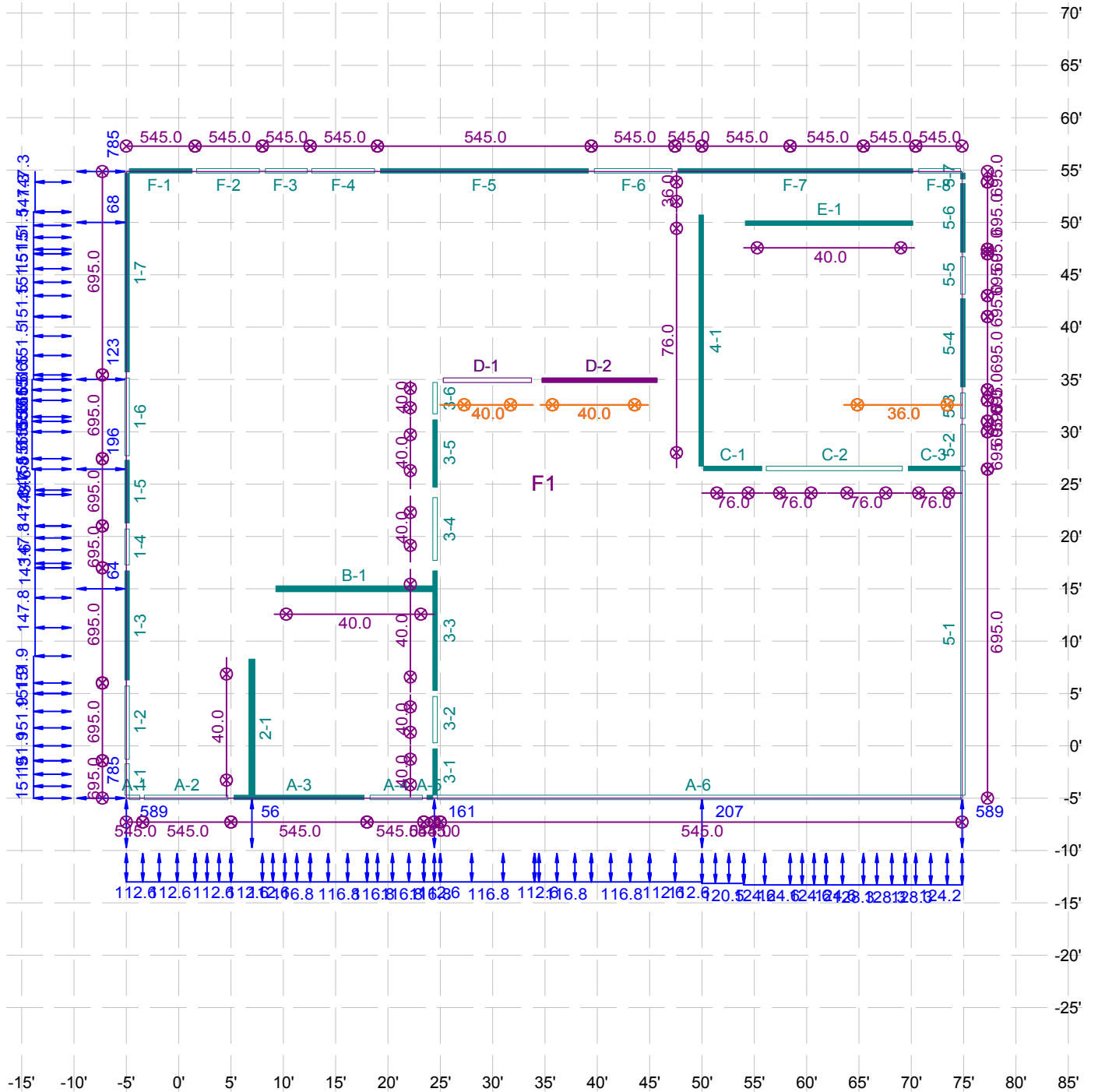
Magnitude - Start = intensity of uniform and point loads or leftmost intensity of trapezoidal load, End = right intensity of trap load

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)

BUILDING MASSES

Level 2				Profile	Location [ft]		Magnitude [lbs,plf,psf]		Trib Width [ft]
Force Dir	Building Element	Block	Wall Line		Start	End	Start	End	
E-W	Roof	Block 1	1		Line	-6.00	56.00	615.0		615.0
E-W	Roof	Block 1	5	Line	-6.00	56.00	615.0	615.0	
E-W	Ceiling F1	n/a	1	Line	-5.00	55.00	240.0	240.0	
E-W	Ceiling F1	n/a	5	Line	-5.00	55.00	240.0	240.0	
E-W	R Gable	Block 1	1	Line	-5.00	25.00	173.2	0.0	
E-W	L Gable	Block 1	1	Line	25.00	55.00	0.0	173.2	
E-W	L Gable	Block 1	5	Line	-5.00	25.00	173.2	0.0	
E-W	R Gable	Block 1	5	Line	25.00	55.00	0.0	173.2	
N-S	Roof	Block 1	A	Line	-6.00	76.00	465.0	465.0	
N-S	Roof	Block 1	F	Line	-6.00	76.00	465.0	465.0	
N-S	Ceiling F1	n/a	A	Line	-5.00	75.00	180.0	180.0	
N-S	Ceiling F1	n/a	F	Line	-5.00	75.00	180.0	180.0	
Both	Wall 1-1	n/a	1	Line	-5.00	55.00	45.0	45.0	
Both	Wall 4-1	n/a	4	Line	26.50	55.00	36.0	36.0	
Both	Wall 5-1	n/a	5	Line	-5.00	26.50	45.0	45.0	
Both	Wall 5-2	n/a	5	Line	26.50	30.00	45.0	45.0	
Both	Wall 5-3	n/a	5	Line	30.00	33.00	45.0	45.0	
Both	Wall 5-4	n/a	5	Line	33.00	41.00	45.0	45.0	
Both	Wall 5-5	n/a	5	Line	41.00	47.50	45.0	45.0	
Both	Wall 5-6	n/a	5	Line	47.50	55.00	45.0	45.0	
Both	Wall A-1	n/a	A	Line	-5.00	25.00	45.0	45.0	
Both	Wall A-2	n/a	A	Line	25.00	75.00	45.0	45.0	
Both	Wall C-1	n/a	C	Line	50.00	62.00	36.0	36.0	
Both	Wall C-2	n/a	C	Line	62.00	69.50	36.0	36.0	
Both	Wall C-3	n/a	C	Line	69.50	75.00	36.0	36.0	
Both	Wall D-1	n/a	D	Line	63.50	75.00	36.0	36.0	
Both	Wall F-1	n/a	F	Line	-5.00	50.00	45.0	45.0	
Both	Wall F-2	n/a	F	Line	50.00	58.50	45.0	45.0	
Both	Wall F-3	n/a	F	Line	58.50	65.50	45.0	45.0	
Both	Wall F-4	n/a	F	Line	65.50	75.00	45.0	45.0	
Level 1				Profile	Location [ft]		Magnitude [lbs,plf,psf]		Trib Width [ft]
Force Dir	Building Element	Block	Wall Line		Start	End	Start	End	
Both	Wall 1-1	n/a	1		Line	-5.00	55.00	45.0	
E-W	Floor F1	n/a	1	Line	-5.00	55.00	600.0	600.0	
Both	Wall 4-1	n/a	4	Line	26.50	55.00	36.0	36.0	
E-W	Floor F1	n/a	5	Line	-5.00	55.00	600.0	600.0	
Both	Wall 5-1	n/a	5	Line	-5.00	26.50	45.0	45.0	
Both	Wall 5-2	n/a	5	Line	26.50	30.00	45.0	45.0	
Both	Wall 5-3	n/a	5	Line	30.00	33.00	45.0	45.0	
Both	Wall 5-4	n/a	5	Line	33.00	41.00	45.0	45.0	
Both	Wall 5-5	n/a	5	Line	41.00	47.50	45.0	45.0	
Both	Wall 5-6	n/a	5	Line	47.50	55.00	45.0	45.0	
N-S	Floor F1	n/a	A	Line	-5.00	75.00	450.0	450.0	
Both	Wall A-1	n/a	A	Line	-5.00	25.00	45.0	45.0	
Both	Wall A-2	n/a	A	Line	25.00	75.00	45.0	45.0	
Both	Wall C-1	n/a	C	Line	50.00	62.00	36.0	36.0	
Both	Wall C-2	n/a	C	Line	62.00	69.50	36.0	36.0	
Both	Wall C-3	n/a	C	Line	69.50	75.00	36.0	36.0	
Both	Wall D-1	n/a	D	Line	63.50	75.00	36.0	36.0	
N-S	Floor F1	n/a	F	Line	-5.00	75.00	450.0	450.0	
Both	Wall F-1	n/a	F	Line	-5.00	50.00	45.0	45.0	
Both	Wall F-2	n/a	F	Line	50.00	58.50	45.0	45.0	
Both	Wall F-3	n/a	F	Line	58.50	65.50	45.0	45.0	
Both	Wall F-4	n/a	F	Line	65.50	75.00	45.0	45.0	
Both	Wall 1-1	n/a	1	Line	-5.00	-1.50	50.0	50.0	
Both	Wall 1-2	n/a	1	Line	-1.50	6.00	50.0	50.0	
Both	Wall 1-3	n/a	1	Line	6.00	17.00	50.0	50.0	

BUILDING MASSES (continued)

Both	Wall	1-4	n/a	1	Line	17.00	21.00	50.0	50.0
Both	Wall	1-5	n/a	1	Line	21.00	27.50	50.0	50.0
Both	Wall	1-6	n/a	1	Line	27.50	35.50	50.0	50.0
Both	Wall	1-7	n/a	1	Line	35.50	55.00	50.0	50.0
Both	Wall	2-1	n/a	2	Line	-5.00	8.50	40.0	40.0
Both	Wall	3-1	n/a	3	Line	-5.00	0.00	40.0	40.0
Both	Wall	3-2	n/a	3	Line	0.00	5.00	40.0	40.0
Both	Wall	3-3	n/a	3	Line	5.00	17.00	40.0	40.0
Both	Wall	3-4	n/a	3	Line	17.50	24.00	40.0	40.0
Both	Wall	3-5	n/a	3	Line	24.50	31.50	40.0	40.0
Both	Wall	3-6	n/a	3	Line	31.50	35.00	40.0	40.0
Both	Wall	4-1	n/a	4	Line	26.50	51.00	40.0	40.0
Both	Wall	5-1	n/a	5	Line	-5.00	26.50	50.0	50.0
Both	Wall	5-2	n/a	5	Line	26.50	31.00	50.0	50.0
Both	Wall	5-3	n/a	5	Line	31.00	34.00	50.0	50.0
Both	Wall	5-4	n/a	5	Line	34.00	43.00	50.0	50.0
Both	Wall	5-5	n/a	5	Line	43.00	47.00	50.0	50.0
Both	Wall	5-6	n/a	5	Line	47.00	54.00	50.0	50.0
Both	Wall	5-7	n/a	5	Line	54.00	55.00	50.0	50.0
Both	Wall	A-1	n/a	A	Line	-5.00	-3.50	50.0	50.0
Both	Wall	A-2	n/a	A	Line	-3.50	5.00	50.0	50.0
Both	Wall	A-3	n/a	A	Line	5.00	18.00	50.0	50.0
Both	Wall	A-4	n/a	A	Line	18.00	23.50	50.0	50.0
Both	Wall	A-5	n/a	A	Line	23.50	24.50	50.0	50.0
Both	Wall	A-6	n/a	A	Line	24.50	75.00	50.0	50.0
Both	Wall	B-1	n/a	B	Line	9.00	24.50	40.0	40.0
Both	Wall	C-1	n/a	C	Line	50.00	56.00	40.0	40.0
Both	Wall	C-2	n/a	C	Line	56.00	69.50	40.0	40.0
Both	Wall	C-3	n/a	C	Line	69.50	75.00	40.0	40.0
Both	Wall	D-1	n/a	D	Line	25.00	34.00	40.0	40.0
Both	Wall	D-2	n/a	D	Line	34.50	45.00	40.0	40.0
Both	Wall	E-1	n/a	E	Line	54.00	70.50	40.0	40.0
Both	Wall	F-1	n/a	F	Line	-5.00	1.50	50.0	50.0
Both	Wall	F-2	n/a	F	Line	1.50	8.00	50.0	50.0
Both	Wall	F-3	n/a	F	Line	8.00	12.50	50.0	50.0
Both	Wall	F-4	n/a	F	Line	12.50	19.00	50.0	50.0
Both	Wall	F-5	n/a	F	Line	19.00	39.50	50.0	50.0
Both	Wall	F-6	n/a	F	Line	39.50	47.50	50.0	50.0
Both	Wall	F-7	n/a	F	Line	47.50	70.50	50.0	50.0
Both	Wall	F-8	n/a	F	Line	70.50	75.00	50.0	50.0

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	231.1	231.1
E-W	Point	-5.00	-5.00	676	676
E-W	Line	-5.00	25.00	338.2	403.2
E-W	Line	25.00	26.50	403.2	400.0
E-W	Point	26.50	26.50	169	169
E-W	Line	26.50	30.00	406.7	399.1
E-W	Line	30.00	33.00	399.1	392.6
E-W	Line	33.00	41.00	392.6	375.3
E-W	Point	35.00	35.00	78	78
E-W	Line	41.00	47.50	375.3	361.2
E-W	Line	47.50	55.00	361.2	344.9
E-W	Point	55.00	55.00	676	676
E-W	Line	55.00	56.00	231.1	231.1
N-S	Line	-6.00	-5.00	174.7	174.7
N-S	Point	-5.00	-5.00	1483	1483
N-S	Line	-5.00	25.00	259.3	259.3
N-S	Line	25.00	50.00	259.3	259.3
N-S	Point	50.00	50.00	193	193
N-S	Line	50.00	58.50	266.0	266.0
N-S	Line	58.50	62.00	266.0	266.0
N-S	Line	62.00	63.50	266.0	266.0
N-S	Line	63.50	65.50	272.8	272.8
N-S	Line	65.50	69.50	272.8	272.8
N-S	Line	69.50	75.00	272.8	272.8
N-S	Point	75.00	75.00	1483	1483
N-S	Line	75.00	76.00	174.7	174.7
Level 1					
Force Dir	Profile	Location [ft]		Mag [lbs,plf,psf]	
		Start	End	Start	End
E-W	Point	-5.00	-5.00	785	785
E-W	Line	-5.00	-1.50	151.9	151.9
E-W	Line	-1.50	0.00	151.9	151.9
E-W	Line	0.00	5.00	151.9	151.9
E-W	Line	5.00	6.00	151.9	151.9
E-W	Line	6.00	8.50	151.9	151.9
E-W	Line	8.50	17.00	147.8	147.8
E-W	Point	15.00	15.00	64	64
E-W	Line	17.00	17.50	143.6	143.6
E-W	Line	17.50	21.00	147.8	147.8
E-W	Line	21.00	24.00	147.8	147.8
E-W	Line	24.00	24.50	143.6	143.6
E-W	Line	24.50	26.50	147.8	147.8
E-W	Point	26.50	26.50	196	196
E-W	Line	26.50	27.50	155.6	155.6
E-W	Line	27.50	30.00	155.6	155.6
E-W	Line	30.00	31.00	155.6	155.6
E-W	Line	31.00	31.50	155.6	155.6
E-W	Line	31.50	33.00	155.6	155.6
E-W	Line	33.00	34.00	155.6	155.6
E-W	Line	34.00	35.00	155.6	155.6
E-W	Point	35.00	35.00	123	123
E-W	Line	35.00	35.50	151.5	151.5
E-W	Line	35.50	41.00	151.5	151.5
E-W	Line	41.00	43.00	151.5	151.5
E-W	Line	43.00	47.00	151.5	151.5
E-W	Line	47.00	47.50	151.5	151.5
E-W	Line	47.50	51.00	151.5	151.5
E-W	Point	50.00	50.00	68	68
E-W	Line	51.00	54.00	147.3	147.3
E-W	Line	54.00	55.00	147.3	147.3
E-W	Point	55.00	55.00	785	785
N-S	Point	-5.00	-5.00	589	589
N-S	Line	-5.00	-3.50	112.6	112.6
N-S	Line	-3.50	1.50	112.6	112.6
N-S	Line	1.50	5.00	112.6	112.6

SEISMIC LOADS (continued)

N-S	Line	5.00	8.00	112.6	112.6
N-S	Point	7.00	7.00	56	56
N-S	Line	8.00	9.00	112.6	112.6
N-S	Line	9.00	12.50	116.8	116.8
N-S	Line	12.50	18.00	116.8	116.8
N-S	Line	18.00	19.00	116.8	116.8
N-S	Line	19.00	23.50	116.8	116.8
N-S	Line	23.50	24.50	116.8	116.8
N-S	Point	24.50	24.50	161	161
N-S	Line	24.50	25.00	112.6	112.6
N-S	Line	25.00	34.00	116.8	116.8
N-S	Line	34.00	34.50	112.6	112.6
N-S	Line	34.50	39.50	116.8	116.8
N-S	Line	39.50	45.00	116.8	116.8
N-S	Line	45.00	47.50	112.6	112.6
N-S	Line	47.50	50.00	112.6	112.6
N-S	Point	50.00	50.00	207	207
N-S	Line	50.00	54.00	120.5	120.5
N-S	Line	54.00	56.00	124.6	124.6
N-S	Line	56.00	58.50	124.6	124.6
N-S	Line	58.50	62.00	124.6	124.6
N-S	Line	62.00	63.50	124.6	124.6
N-S	Line	63.50	65.50	128.3	128.3
N-S	Line	65.50	69.50	128.3	128.3
N-S	Line	69.50	70.50	128.3	128.3
N-S	Line	70.50	75.00	124.2	124.2
N-S	Point	75.00	75.00	589	589

Legend:

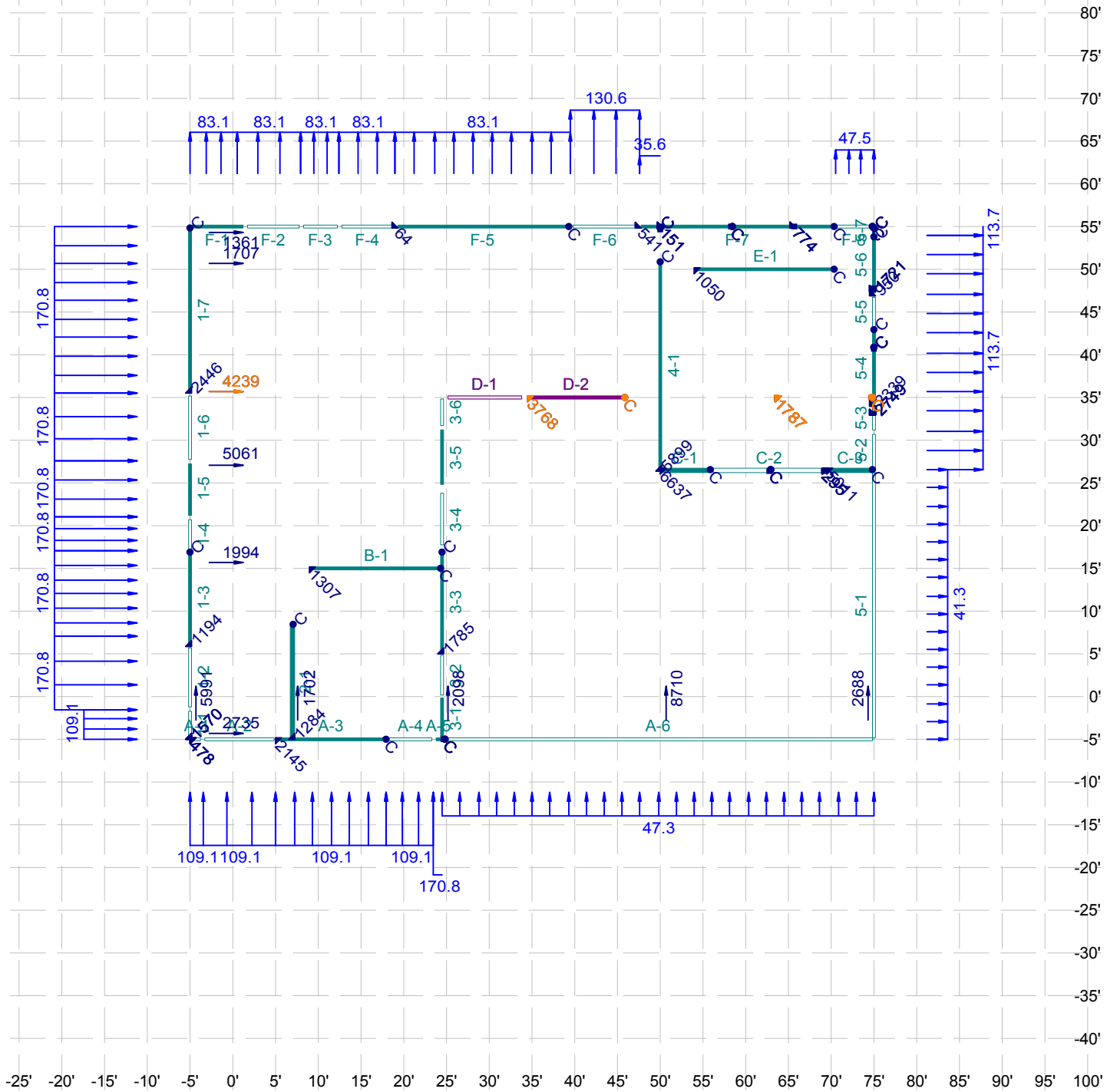
Loads in table can be accumulation of loads from several building masses, so they do not correspond with a particular building element.

Location - Start and end of load in direction perpendicular to seismic force direction

Notes:

All loads entered by the user or generated by program are specified (unfactored) loads. The program applies a load factor of 0.70 and redundancy factor to seismic loads before distributing them to the shearlines.

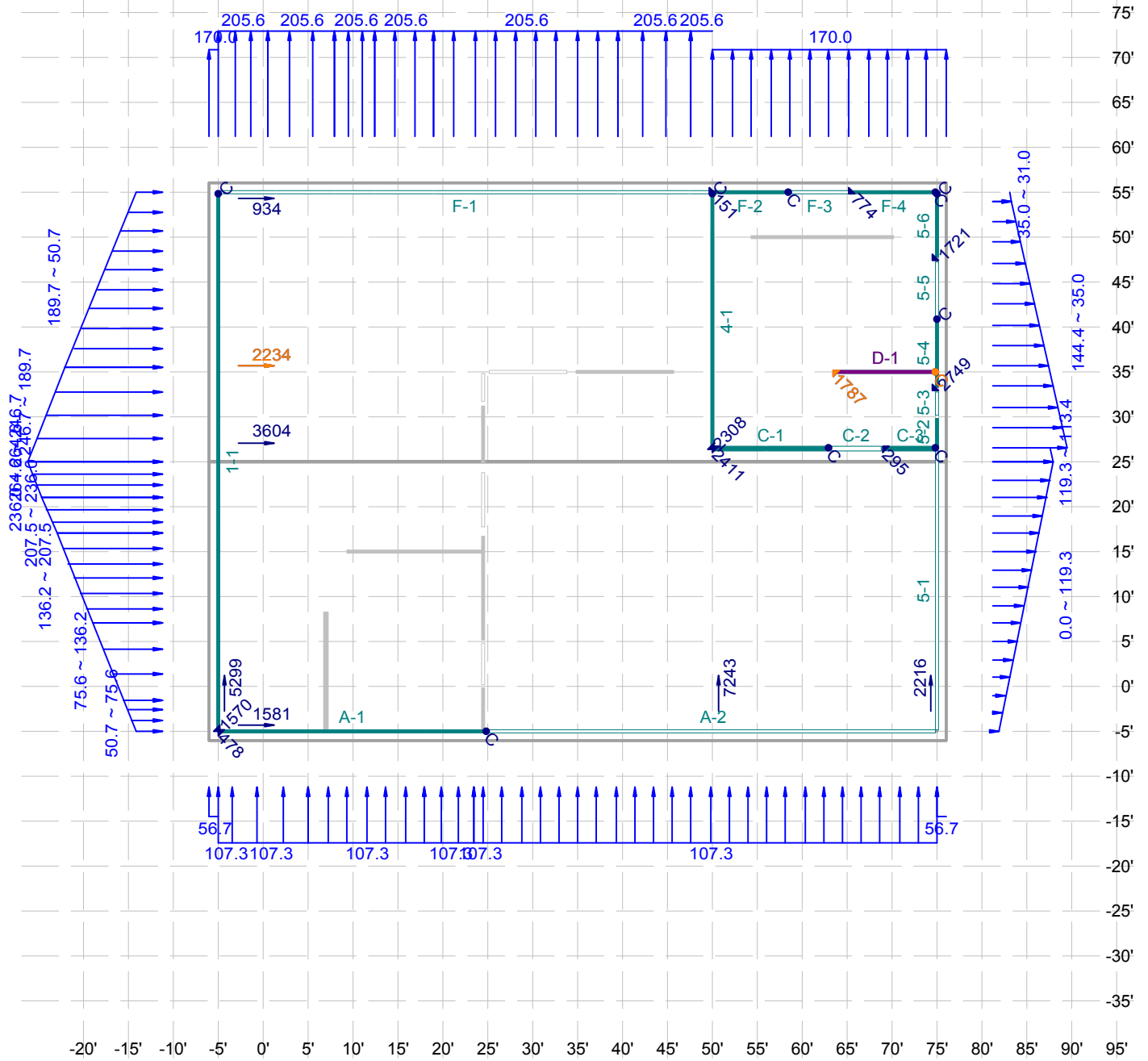
Level 1 of 2



- 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)
 - ⊙ Unfactored uplift wind load (plf,lbs)
 - Applied point load or discontinuous shearline force (lbs)
- Loads Shown: W; Forces: 0.6W + 0.6D.

Orange = Selected wall(s)

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)
 - ⊙⊙ Unfactored uplift wind load (plf,lbs)
 - Applied point load or discontinuous shearline force (lbs)
- Loads Shown: W; Forces: 0.6W + 0.6D.

Orange = Selected wall(s)

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).

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	2	Both	1.0	1.0	5299	88.3	88.3	125	280	1.00	A	405	24300	0.22S
Level 1														
Ln1, Lev1	1	S->N	1.0	1.0	5991	-	241.4	125	686	1.00	A	811	30007	0.30
	1	N->S	1.0	1.0	6162	-	222.0	125	686	1.00	A	811	30007	0.27
Wall 1-3	1	S->N	1.0	1.0	1283	116.7	116.7	125	686	1.00	A	811	8921	0.14
	1	N->S	1.0	1.0	1833	166.7	166.7	125	686	1.00	A	811	8921	0.21
Wall 1-7	1	S->N	1.0	1.0	4708	241.4	241.4	125	686	1.00	A	811	15815	0.30
	1	N->S	1.0	1.0	4329	222.0	222.0	125	686	1.00	A	811	15815	0.27
Wall 1-5	1	Both	1.0	1.0	0			125	686	1.00	A	811	5272	-
Line 2														
Level 2														
Ln2, Lev1	1	S->N	1.0	1.0	1702	126.1	126.1	125	686	1.00	A	811	10949	0.16
	1	N->S	1.0	1.0	2409	178.5	178.5	125	686	1.00	A	811	10949	0.22
Level 1														
Ln3, Lev1	4	S->N	1.0	1.0	2098	-	174.8	125	532	1.00	A	657	15768	0.27
	4	N->S	1.0	1.0	3519	-	253.3	125	532	1.00	A	657	15768	0.39
Wall 3-5	4	S->N	1.0	1.0	0			125	532	1.00	A	657	4599	-
	4	N->S	1.0	1.0	480	68.5	68.5	125	532	1.00	A	657	4599	0.10
Wall 3-1	4	Both	1.0	1.0	0			125	532	1.00	A	657	3285	-
Wall 3-3	4	S->N	1.0	1.0	2098	174.8	174.8	125	532	1.00	A	657	7884	0.27
	4	N->S	1.0	1.0	3040	253.3	253.3	125	532	1.00	A	657	7884	0.39
Line 4														
Level 2														
Ln4, Lev2	4	S->N	1.0	1.0	7243	254.2	254.2	125	532	1.00	A	657	18725	0.39
	4	N->S	1.0	1.0	7131	250.2	250.2	125	532	1.00	A	657	18725	0.38
Level 1														
Ln4, Lev1	1	S->N	1.0	1.0	8710	355.5	355.5	125	686	1.00	A	811	19870	0.44
	1	N->S	1.0	1.0	10086	411.7	411.7	125	686	1.00	A	811	19870	0.51
Line 5														
Level 2														
Ln5, Lev2	4	S->N	1.0	1.0	2216	-	149.0	125	532	1.00	A	657	10184	0.23
	4	N->S	1.0	1.0	2103	-	141.0	125	532	1.00	A	657	10184	0.21
Wall 5-6	4	S->N	1.0	1.0	1117	149.0	149.0	125	532	1.00	A	657	4928	0.23
	4	N->S	1.0	1.0	1057	141.0	141.0	125	532	1.00	A	657	4928	0.21
Wall 5-2	4	Both	1.0	1.0	0			125	532	1.00	A	657	-	-
Wall 5-4	4	S->N	1.0	1.0	1099	137.3	137.3	125	532	1.00	A	657	5256	0.21
	4	N->S	1.0	1.0	1046	130.7	130.7	125	532	1.00	A	657	5256	0.20
Level 1														
Ln5, Lev1	5	S->N	1.0	1.0	2688	-	227.4	125	686	1.00	A	811	12976	0.28
	5	N->S	1.0	1.0	3341	-	262.2	125	686	1.00	A	811	12976	0.32
Wall 5-7	5	Both	1.0	1.0	0			125	686	1.00	A	811	-	-
Wall 5-6	5	S->N	1.0	1.0	641	91.6	91.6	125	686	1.00	A	811	5677	0.11
	5	N->S	1.0	1.0	982	140.2	140.2	125	686	1.00	A	811	5677	0.17
Wall 5-4	5	S->N	1.0	1.0	2046	227.4	227.4	125	686	1.00	A	811	7299	0.28
	5	N->S	1.0	1.0	2359	262.2	262.2	125	686	1.00	A	811	7299	0.32
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	W->E	1.0	1.0	1581	52.7	52.7	125	280	1.00	A	405	12150	0.13S
	2	E->W	1.0	1.0	1395	46.5	46.5	125	280	1.00	A	405	12150	0.11S
Level 1														
LnA, Lev1	1	W->E	1.0	1.0	2735	-	210.4	125	686	1.00	A	811	10543	0.26
	1	E->W	1.0	1.0	2368	-	182.2	125	686	1.00	A	811	10543	0.22
Wall A-5	1	Both	1.0	1.0	0			125	686	1.00	A	811	-	-
Wall A-3	1	W->E	1.0	1.0	2735	210.4	210.4	125	686	1.00	A	811	10543	0.26
	1	E->W	1.0	1.0	2368	182.2	182.2	125	686	1.00	A	811	10543	0.22
Line B														
LnB, Lev1	1	W->E	1.0	1.0	1994	128.6	128.6	125	686	1.00	A	811	12571	0.16
	1	E->W	1.0	1.0	1692	109.2	109.2	125	686	1.00	A	811	12571	0.13
Line C														
Level 2														
LnC, Lev2	4	W->E	1.0	1.0	3604	-	262.7	125	532	1.00	A	657	12483	0.40
	4	E->W	1.0	1.0	3418	-	253.7	125	532	1.00	A	657	12483	0.39

SHEAR RESULTS (flexible wind design, continued)

Wall C-3	4	W->E	1.0	1.0	189	31.4	31.4	125	532	1.00	657	3942	0.05	
	4	E->W	1.0	1.0	119	19.9	19.9	125	532	1.00	657	3942	0.03	
Wall C-1	4	W->E	1.0	1.0	3415	262.7	262.7	125	532	1.00	657	8541	0.40	
	4	E->W	1.0	1.0	3298	253.7	253.7	125	532	1.00	657	8541	0.39	
Level 1														
LnC, Lev1	3	W->E	1.0	1.0	5061	-	478.3	896	896	1.00	A	1792	20608	0.27
	3	E->W	1.0	1.0	4748	-	455.3	896	896	1.00	A	1792	20608	0.25
Wall C-3	3	W->E	1.0	1.0	2631	478.3	478.3	896	896	1.00		1792	9856	0.27
	3	E->W	1.0	1.0	2017	366.7	366.7	896	896	1.00		1792	9856	0.20
Wall C-1	3	W->E	1.0	1.0	2430	405.1	405.1	896	896	1.00		1792	10752	0.23
	3	E->W	1.0	1.0	2732	455.3	455.3	896	896	1.00		1792	10752	0.25
Line D														
Level 2														
LnD, Lev2	1	Both	1.0	1.0	2234	194.2	194.2	125	686	1.00	A	811	9327	0.24
Level 1														
LnD, Lev1	1	Both	1.0	1.0	4239	368.6	368.6	125	686	1.00	A	811	9327	0.45
Line E														
LnE, Lev1	1	Both	1.0	1.0	1707	103.5	103.5	125	686	1.00	A	811	13382	0.13
Line F														
Level 2														
LnF, Lev2	4	Both	1.0	1.0	934	-	83.8	125	532	1.00	A	657	11826	0.13
Wall F-2	4	Both	1.0	1.0	138	16.3	16.3	125	532	1.00		657	5585	0.02
Wall F-4	4	Both	1.0	1.0	796	83.8	83.8	125	532	1.00		657	6242	0.13
Level 1														
LnF, Lev1	1	Both	1.0	1.0	1361	-	53.5	125	686	1.00	A	811	40550	0.07
Wall F-1	1	Both	1.0	1.0	0			125	686	1.00		811	5272	-
Wall F-5	1	Both	1.0	1.0	130	6.4	6.4	125	686	1.00		811	16626	0.01
Wall F-7	1	Both	1.0	1.0	1231	53.5	53.5	125	686	1.00		811	18653	0.07

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 Line- Wall	Posit'n	Location [ft]		Load Case	Tensile ASD Holddown Force [lbs]				Hold-down	Cap [lbs]	Crit Resp.
		X	Y		Shear	Dead	Uplift	Cmb'd			
Line 1											
	V Elem	-5.00	-4.87	1	1570			1570	Refer to upper level		
1-3	L End	-5.00	6.13	1	1194			1194	HD9	8810	0.14
1-3	R End	-5.00	16.88	1	1705			1705	HD9	8810	0.19
1-7	L End	-5.00	35.63	1	2446			2446	HD5	4055	0.60
1-7	R End	-5.00	54.88	1	3818			3818	HD5	4055	0.94
Line 2											
2-1	L End	7.00	-4.87	1	1284			1284	HD12	^11775	0.11
2-1	R End	7.00	8.38	1	1818			1818	HD12	^11775	0.15
Line 3											
3-3	L End	24.50	5.13	1	1785			1785	HD9	8810	0.20
3-3	R End	24.50	16.88	1	2587			2587	HD9	8810	0.29
3-5	L End	24.50	24.63	1	-711						
3-5	R End	24.50	31.38	1	711			711	HD9	8810	0.08
Line 4											
4-1	L End	50.00	26.63	1	5899			5899	HD9	^8810	0.67
4-1	R End	50.00	50.88	1	4159			4159	HD9	^8810	0.47
	V Elem	50.00	54.88	1	2272			2272	Refer to upper level		
Line 5											
	V Elem	75.00	33.13	1	2749			2749	Refer to upper level		
5-4	L End	75.00	34.13	1	2339			2339	HD9	8810	0.27
	V Elem	75.00	40.88	1	2616			2616	Refer to upper level		
5-4	R End	75.00	42.88	1	2697			2697	HD9	8810	0.31
5-6	L End	75.00	47.13	1	950			950	HD9	8810	0.11
	V Elem	75.00	47.63	1	1721			1721	Refer to upper level		
5-6	R End	75.00	53.88	1	1454			1454	HD9	8810	0.17
	V Elem	75.00	54.88	1	1629			1629	Refer to upper level		
Line A											
	V Elem	-4.87	-5.00	1	478			478	Refer to upper level		
A-3	L End	5.13	-5.00	1	2145			2145	HD9	8810	0.24
A-3	R End	17.87	-5.00	1	1857			1857	HD9	8810	0.21
	V Elem	24.88	-5.00	1	422			422	Refer to upper level		
Line B											
B-1	L End	9.13	15.00	Min	1307			1307	HD12	^11775	0.11
B-1	R End	24.38	15.00	Min	1110			1110	HD12	^11775	0.09
Line C											
C-1	L End	50.13	26.50	1	6637			6637	HD12	^11775	0.56
C-1	R End	55.88	26.50	1	4751			4751	HD12	^11775	0.40
	V Elem	62.88	26.50	1	2328			2328	Refer to upper level		
	V Elem	69.13	26.50	1	295			295	Refer to upper level		
C-3	L End	69.62	26.50	1	5011			5011	HD19 (1-1/	21965	0.23
C-3	R End	74.88	26.50	1	4028			4028	HD19 (1-1/	21965	0.18
Line D											
D-2	L End	34.63	35.00	1	3768			3768	HD9	8810	0.43
D-2	R End	45.88	35.00	1	3768			3768	HD9	8810	0.43
	V Elem	63.63	35.00	1	1787			1787	Refer to upper level		
	V Elem	74.88	35.00	1	1787			1787	Refer to upper level		
Line E											
E-1	L End	54.13	50.00	1	1050			1050	HD9	8810	0.12
E-1	R End	70.38	50.00	1	1050			1050	HD9	8810	0.12
Line F											
F-5	L End	19.12	55.00	1	64			64	HD7	6600	0.01
F-5	R End	39.38	55.00	1	64			64	HD7	6600	0.01
F-7	L End	47.63	55.00	1	541			541	HD9	8810	0.06
	V Elem	50.13	55.00	1	151			151	Refer to upper level		
	V Elem	58.38	55.00	1	151			151	Refer to upper level		
	V Elem	65.63	55.00	1	774			774	Refer to upper level		
F-7	R End	70.38	55.00	1	541			541	HD9	8810	0.06
	V Elem	74.88	55.00	1	774			774	Refer to upper level		
Level 2											
Level 2 Line- Wall	Posit'n	Location [ft]		Load Case	Tensile ASD Holddown Force [lbs]				Hold-down	Cap [lbs]	Crit Resp.
		X	Y		Shear	Dead	Uplift	Cmb'd			
Line 1											
1-1	L End	-5.00	-4.87	1	1570			1570	HD7	6600	0.24
1-1	R End	-5.00	54.88	1	1570			1570	HD7	6600	0.24
Line 4											
4-1	L End	50.00	26.63	1	2308			2308	HD5	2405	0.96
4-1	R End	50.00	54.88	1	2272			2272	HD5	2405	0.94
Line 5											

HOLD-DOWN DESIGN (flexible wind design, continued)

5-4	L End	75.00	33.13	1	2749	2749	HD7	6600	0.42
5-4	R End	75.00	40.88	1	2616	2616	HD7	6600	0.40
5-6	L End	75.00	47.63	1	1721	1721	HD7	6600	0.26
5-6	R End	75.00	54.88	1	1629	1629	HD7	6600	0.25
Line A									
A-1	L End	-4.87	-5.00	1	478	478	HD7	6600	0.07
A-1	R End	24.88	-5.00	1	422	422	HD7	6600	0.06
Line C									
C-1	L End	50.13	26.50	1	2411	2411	HD5	2405	1.00
C-1	R End	62.88	26.50	1	2328	2328	HD5	2405	0.97
C-3	L End	69.13	26.50	1	295	295	HD5	2405	0.12
C-3	R End	74.88	26.50	1	187	187	HD5	2405	0.08
Line D									
D-1	L End	63.63	35.00	1	1787	1787	HD19 (1-1/4	^19360	0.09
D-1	R End	74.88	35.00	1	1787	1787	HD19 (1-1/4	^19360	0.09
Line F									
F-2	L End	50.13	55.00	1	151	151	HD7	6600	0.02
F-2	R End	58.38	55.00	1	151	151	HD7	6600	0.02
F-4	L End	65.63	55.00	1	774	774	HD7	6600	0.12
F-4	R End	74.88	55.00	1	774	774	HD7	6600	0.12

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

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	130392	4800.0	24496	24496	25383	25383
1	107080	4800.0	11064	11064	20845	20845
All	237472	-	35560	35560	-	-

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 ρ (rho):

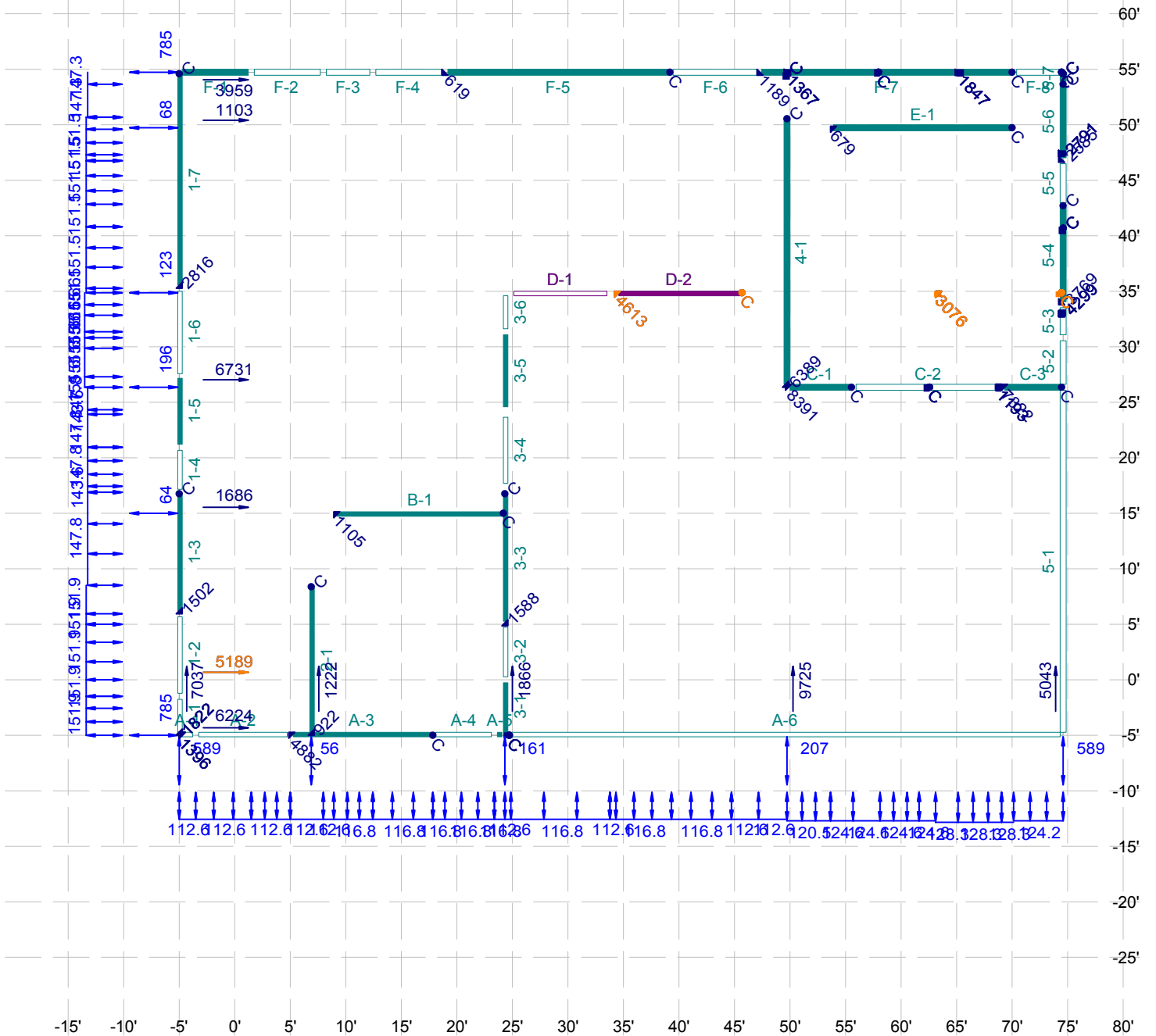
E-W 1.00, N-S 1.00

Input by user (overriding calculated value).

Vertical Earthquake Load E_v

$E_v = 0.2 S_{ds} D$; $S_{ds} = 0.97$; $E_v = 0.195 D$ unfactored; $0.136 D$ factored; total dead load factor: $0.6 - 0.136 = 0.464$ tension, $1.0 + 0.136 = 1.136$ compression.

Level 1 of 2

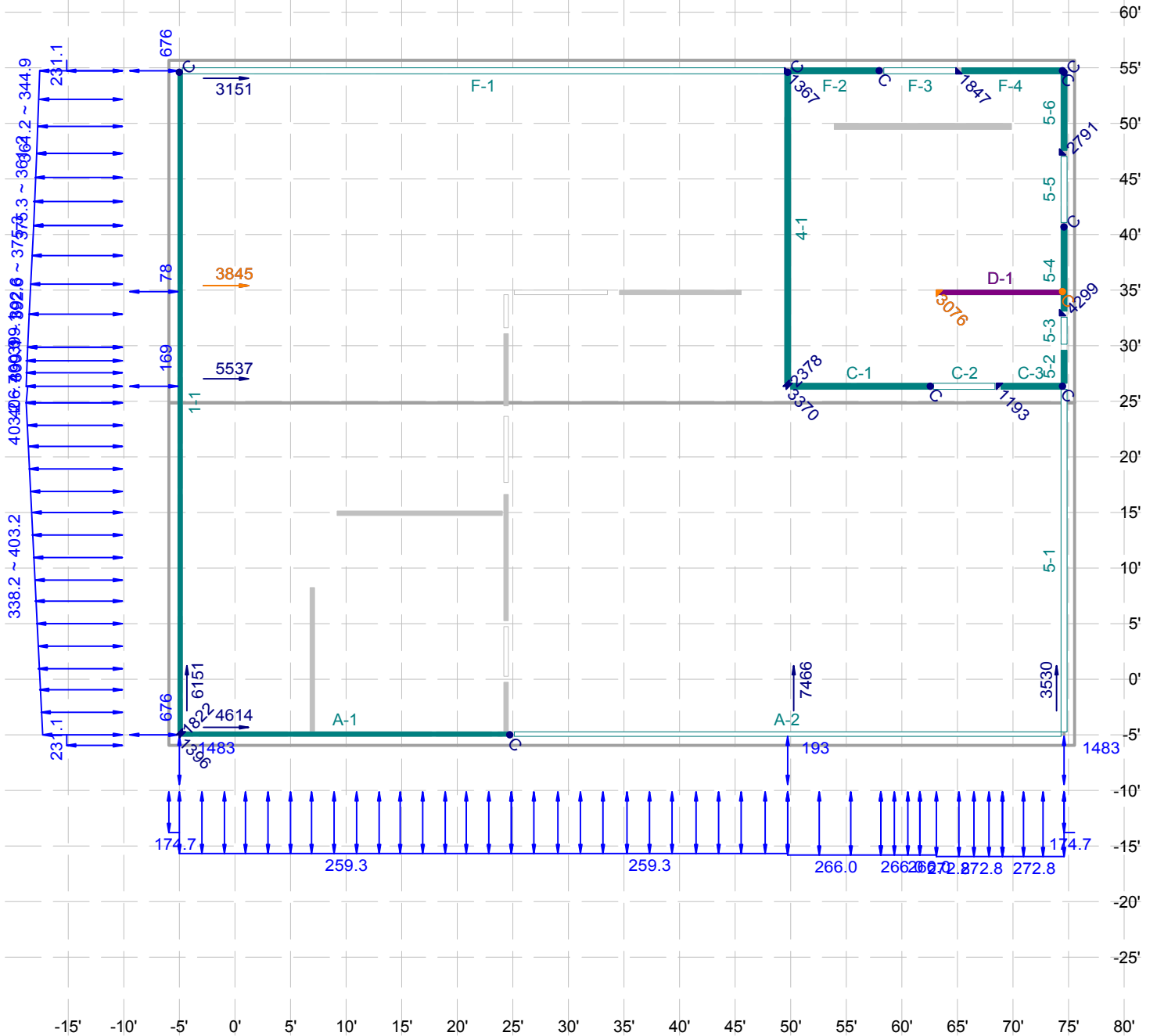


- Factored shearline force (lbs)
- ▲ Factored holddown force (lbs)
- C Compression force exists
- Vertical element required
- ▮ Unfactored applied shear load (plf)
- ⊗ Unfactored dead load (plf, lbs)
- Applied point load or discontinuous shearline force (lbs)

Loads Shown: Q_e ; Forces: $0.7E + 0.6D$; $E = pQ_e + 0.2 S_d s D$; $p(NS) = 1.0$; $p(EW) = 1.0$; $S_d s = 0.97$.

Orange = Selected wall(s)

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)

Loads Shown: Qe; Forces: 0.7E + 0.6D; E = pQe + 0.2 Sds D; p(NS) = 1.0; p(EW) = 1.0; Sds = 0.97.

Orange = Selected wall(s)

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	2	Both	1.0	1.0	6151	102.5	102.5	0	200	1.00	X	200	12000	0.51	
Level 1															
Ln1, Lev1	1	S->N	1.0	1.0	7037	-	278.0	0	490	1.00	X	490	18130	0.57	
	1	N->S	1.0	1.0	7037	-	247.3	0	490	1.00	X	490	18130	0.50	
Wall 1-3	1	S->N	1.0	1.0	1615	146.8	146.8	0	490	1.00		490	5390	0.30	
	1	N->S	1.0	1.0	2214	201.3	201.3	0	490	1.00		490	5390	0.41	
Wall 1-7	1	S->N	1.0	1.0	5421	278.0	278.0	0	490	1.00		490	9555	0.57	
	1	N->S	1.0	1.0	4822	247.3	247.3	0	490	1.00		490	9555	0.50	
Wall 1-5	1	Both	1.0	1.0	0			0	490	1.00		490	3185	-	
Line 2															
Ln2, Lev1	1	Both	1.0	1.0	1222	90.5	90.5	0	490	1.00	X	490	6615	0.18	
Line 3															
Ln3, Lev1	4	Both	1.0	1.0	1866	-	155.5	0	380	1.00	X	380	9120	0.41	
Wall 3-5	4	Both	1.0	1.0	0			0	380	1.00		380	2660	-	
Wall 3-1	4	Both	1.0	1.0	0			0	380	1.00		380	1900	-	
Wall 3-3	4	Both	1.0	1.0	1866	155.5	155.5	0	380	1.00		380	4560	0.41	
Line 4															
Level 2															
Ln4, Lev2	4	Both	1.0	1.0	7466	262.0	262.0	0	380	1.00	X	380	10830	0.69	
Level 1															
Ln4, Lev1	1	Both	1.0	1.0	9725	396.9	396.9	0	490	1.00	X	490	12005	0.81	
Line 5															
Level 2															
Ln5, Lev2	4	Both	1.0	1.0	3530	-	241.6	0	380	1.00	X	380	7220	0.64	
Wall 5-6	4	Both	1.0	1.0	1812	241.6	241.6	0	380	1.00		380	2850	0.64	
Wall 5-2	4	Both	1.0	.78	0			0	296	1.00		296	1034	-	
Wall 5-4	4	Both	1.0	1.0	1718	214.7	214.7	0	380	1.00		380	3040	0.57	
Level 1															
Ln5, Lev1	5^	Both	1.0	1.0	5043	-	366.5	0	490	1.00	X	490	7840	0.75	
Wall 5-7	5	Both	1.0	1.0	0			0	490	1.00		490	-	-	
Wall 5-6	5	Both	1.0	1.0	1745	249.3	249.3	0	490	1.00		490	3430	0.51	
Wall 5-4	5^	Both	1.0	1.0	3298	366.5	366.5	0	490	1.00		490	4410	0.75	
E-W															
Shearlines	W	For	H/W-Cub		ASD Shear Force [plf]			Allowable Shear [plf]					Crit.		
	Gp	Dir	Int	Ext	V [lbs]	vmax	v	Int	Ext	Co	C	Total	V [lbs]	Resp.	
Line A															
Level 2															
LnA, Lev2	2^	Both	1.0	1.0	4614	153.8	153.8	0	200	1.00	X	200	6000	0.77	
Level 1															
LnA, Lev1	1^	Both	1.0	1.0	6224	-	478.8	0	490	1.00	X	490	6370	0.98	
Wall A-5	1	Both	1.0	1.0	0			0	490	1.00		490	-	-	
Wall A-3	1^	Both	1.0	1.0	6224	478.8	478.8	0	490	1.00		490	6370	0.98	
Line B															
LnB, Lev1	1	Both	1.0	1.0	1686	108.7	108.7	0	490	1.00	X	490	7595	0.22	
Line C															
Level 2															
LnC, Lev2	4^	Both	1.0	1.0	5537	-	367.3	0	380	1.00	X	380	7220	0.97	
Wall C-3	4	Both	1.0	1.0	762	127.1	127.1	0	380	1.00		380	2280	0.33	
Wall C-1	4^	Both	1.0	1.0	4775	367.3	367.3	0	380	1.00		380	4940	0.97	
Level 1															
LnC, Lev1	3^	W->E	1.0	1.0	6731	-	698.9	640	640	1.00	A	1280	14720	0.55	
	3^	E->W	1.0	1.0	6731	-	593.5	640	640	1.00	A	1280	14720	0.46	
Wall C-3	3^	W->E	1.0	1.0	3844	698.9	698.9	640	640	1.00		1280	7040	0.55	
	3^	E->W	1.0	1.0	3169	576.3	576.3	640	640	1.00		1280	7040	0.45	
Wall C-1	3	W->E	1.0	1.0	2887	481.2	481.2	640	640	1.00		1280	7680	0.38	
	3	E->W	1.0	1.0	3561	593.5	593.5	640	640	1.00		1280	7680	0.46	
Line D															
Level 2															
LnD, Lev2	1	Both	1.0	1.0	3845	334.3	334.3	0	490	1.00	X	490	5635	0.68	
Level 1															
LnD, Lev1	1	Both	1.0	1.0	5189	451.2	451.2	0	490	1.00	X	490	5635	0.92	
Line E															
LnE, Lev1	1	Both	1.0	1.0	1103	66.9	66.9	0	490	1.00	X	490	8085	0.14	
Line F															
Level 2															
LnF, Lev2	4	Both	1.0	1.0	3151	-	199.8	0	380	1.00	X	380	6840	0.53	
Wall F-2	4	Both	1.0	1.0	1253	147.4	147.4	0	380	1.00		380	3230	0.39	

SHEAR RESULTS (flexible seismic design, continued)

Wall F-4	4	Both	1.0	1.0	1898	199.8	199.8	0	380	1.00	380	3610	0.53	
Level 1														
LnF, Lev1	1	Both	1.0	1.0	3959	-	117.6	0	490	1.00	X	490	24500	0.24
Wall F-1	1	Both	1.0	1.0	0			0	490	1.00		490	3185	-
Wall F-5	1	Both	1.0	1.0	1254	61.2	61.2	0	490	1.00		490	10045	0.12
Wall F-7	1	Both	1.0	1.0	2705	117.6	117.6	0	490	1.00		490	11270	0.24

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.

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.

The contribution to shear resistance from gypsum, fiberboard, or lumber sheathing is taken as zero because of the "Ignore non-wood-panel contribution..." Design Setting. Refer to the Sheathing Materials table for the wall groups affected.

HOLD-DOWN DESIGN (flexible seismic design)

Level 1 Line- Wall	Posit'n	Location [ft]		Tensile ASD Holddown Force [lbs]				Cmb'd	Hold-down	Cap [lbs]	Crit Resp.
		X	Y	Shear	Dead	Ev					
Line 1											
	V Elem	-5.00	-4.87	1822			1822	Refer to upper level			
1-3	L End	-5.00	6.13	1502			1502	HD9	8810	0.17	
1-3	R End	-5.00	16.88	2060			2060	HD9	8810	0.23	
1-7	L End	-5.00	35.63	2816			2816	HD5	4055	0.69	
1-7	R End	-5.00	54.88	4327			4327	HD5	4055	1.07*	
Line 2											
2-1	L End	7.00	-4.87	922			922	HD12	^11775	0.08	
2-1	R End	7.00	8.38	922			922	HD12	^11775	0.08	
Line 3											
3-3	L End	24.50	5.13	1588			1588	HD9	8810	0.18	
3-3	R End	24.50	16.88	1588			1588	HD9	8810	0.18	
Line 4											
4-1	L End	50.00	26.63	6389			6389	HD9	^8810	0.73	
4-1	R End	50.00	50.88	4010			4010	HD9	^8810	0.46	
	V Elem	50.00	54.88	2378			2378	Refer to upper level			
Line 5											
	V Elem	75.00	33.13	4299			4299	Refer to upper level			
5-4	L End	75.00	34.13	3769			3769	HD9	8810	0.43	
	V Elem	75.00	40.88	4299			4299	Refer to upper level			
5-4	R End	75.00	42.88	3769			3769	HD9	8810	0.43	
5-6	L End	75.00	47.13	2585			2585	HD9	8810	0.29	
	V Elem	75.00	47.63	2791			2791	Refer to upper level			
5-6	R End	75.00	53.88	2585			2585	HD9	8810	0.29	
	V Elem	75.00	54.88	2791			2791	Refer to upper level			
Line A											
	V Elem	-4.87	-5.00	1396			1396	Refer to upper level			
A-3	L End	5.13	-5.00	4882			4882	HD9	8810	0.55	
A-3	R End	17.87	-5.00	4882			4882	HD9	8810	0.55	
	V Elem	24.88	-5.00	1396			1396	Refer to upper level			
Line B											
B-1	L End	9.13	15.00	1105			1105	HD12	^11775	0.09	
B-1	R End	24.38	15.00	1105			1105	HD12	^11775	0.09	
Line C											
C-1	L End	50.13	26.50	8391			8391	HD12	^11775	0.71	
C-1	R End	55.88	26.50	6194			6194	HD12	^11775	0.53	
	V Elem	62.88	26.50	3370			3370	Refer to upper level			
	V Elem	69.13	26.50	1193			1193	Refer to upper level			
C-3	L End	69.62	26.50	7322			7322	HD19 (1-1/	21965	0.33	
C-3	R End	74.88	26.50	7230			7230	HD19 (1-1/	21965	0.33	
Line D											
D-2	L End	34.63	35.00	4613			4613	HD9	8810	0.52	
D-2	R End	45.88	35.00	4613			4613	HD9	8810	0.52	
	V Elem	63.63	35.00	3076			3076	Refer to upper level			
	V Elem	74.88	35.00	3076			3076	Refer to upper level			
Line E											
E-1	L End	54.13	50.00	679			679	HD9	8810	0.08	
E-1	R End	70.38	50.00	679			679	HD9	8810	0.08	
Line F											
F-5	L End	19.12	55.00	619			619	HD7	6600	0.09	
F-5	R End	39.38	55.00	619			619	HD7	6600	0.09	
F-7	L End	47.63	55.00	1189			1189	HD9	8810	0.13	
	V Elem	50.13	55.00	1367			1367	Refer to upper level			
	V Elem	58.38	55.00	1367			1367	Refer to upper level			
	V Elem	65.63	55.00	1847			1847	Refer to upper level			
F-7	R End	70.38	55.00	1189			1189	HD9	8810	0.13	
	V Elem	74.88	55.00	1847			1847	Refer to upper level			
Level 2											
Level 2 Line- Wall	Posit'n	Location [ft]		Tensile ASD Holddown Force [lbs]				Cmb'd	Hold-down	Cap [lbs]	Crit Resp.
		X	Y	Shear	Dead	Ev					
Line 1											
1-1	L End	-5.00	-4.87	1822			1822	HD7	6600	0.28	
1-1	R End	-5.00	54.88	1822			1822	HD7	6600	0.28	
Line 4											
4-1	L End	50.00	26.63	2378			2378	HD5	2405	0.99	
4-1	R End	50.00	54.88	2378			2378	HD5	2405	0.99	
Line 5											
5-4	L End	75.00	33.13	4299			4299	HD7	6600	0.65	
5-4	R End	75.00	40.88	4299			4299	HD7	6600	0.65	

HOLD-DOWN DESIGN (flexible seismic design, continued)

5-6	L End	75.00	47.63	2791	2791	HD7	6600	0.42
5-6	R End	75.00	54.88	2791	2791	HD7	6600	0.42
Line A								
A-1	L End	-4.87	-5.00	1396	1396	HD7	6600	0.21
A-1	R End	24.88	-5.00	1396	1396	HD7	6600	0.21
Line C								
C-1	L End	50.13	26.50	3370	3370	HD5	2405	1.40*
C-1	R End	62.88	26.50	3370	3370	HD5	2405	1.40*
C-3	L End	69.13	26.50	1193	1193	HD5	2405	0.50
C-3	R End	74.88	26.50	1193	1193	HD5	2405	0.50
Line D								
D-1	L End	63.63	35.00	3076	3076	HD19 (1-1/4	^19360	0.16
D-1	R End	74.88	35.00	3076	3076	HD19 (1-1/4	^19360	0.16
Line F								
F-2	L End	50.13	55.00	1367	1367	HD7	6600	0.21
F-2	R End	58.38	55.00	1367	1367	HD7	6600	0.21
F-4	L End	65.63	55.00	1847	1847	HD7	6600	0.28
F-4	R End	74.88	55.00	1847	1847	HD7	6600	0.28

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 = $-0.2Sds \times \text{ASD seismic factor} \times \text{unfactored } D = 0.227 \times \text{factored } D$. Refer to Seismic Information table for more details.Cmb'd - Sum of ASD-factored overturning, dead and vertical seismic 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

Project: Davinder Residence
 Beam ID: RB-01 and 02
 Description: Roof Beams
 Date: 5/23/22
 Prepared by: HK

Selection 3-1/2x 11-7/8 2.0E TJ Parallam W.S. PSL Lu = 15.0 Ft

Min Bearing Area R1= 2.0 in² R2= 2.0 in² (1.5) DL Defl= 0.47 in
 Data Beam Span 22.0 Reaction 1 LL 1463 # Reaction 2 LL 825 #
 Beam Wt per ft 12.99 Reaction 1 TL 1463 # Reaction 2 TL 825 #
 Bm Wt Included 286 Maximum V 1463 #
 Max Moment 8046 Max V (Reduced) 1331 #
 TL Max Defl L / 240 LL Max Defl L / 360
 TL Actual Defl L / 303 LL Actual Defl L / 653
 Attributes Section (in³) Shear (in²) TL Defl (in) LL Defl
 Actual 82.26 41.56 0.87 0.40
 Critical 41.86 6.89 1.10 0.73
 Status OK OK OK OK
 Ratio 51% 17% 79% 55%
 Fb (psi) Fv (psi) E (psi x mil) Fc (psi)
 Values Reference Values 2900 290 2.0 750
 Adjusted Values 2306 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 0.7944 Rb = 17.86 Le = 27.42 Ft

Loads Uniform TL: 120 = A Uniform LL: 75

Project: Davinder Residence
 Beam ID: RB-03 and 04
 Description: Roof Beams
 Date: 5/23/22
 Prepared by: HK

Selection 3-1/2x 11-7/8 2.0E TJ Parallam W.S. PSL Lu = 10.0 Ft

Min Bearing Area	R1= 1.2 in ²	R2= 1.2 in ²	(1.5) DL Defl=	0.08 in
Data	Beam Span	14.0	Reaction 1 LL 931 #	Reaction 2 LL 525 #
	Beam Wt per ft	12.99	Reaction 1 TL 931 #	Reaction 2 TL 525 #
	Bm Wt Included	182	Maximum V	931 #
	Max Moment	3258	Max V (Reduced)	799 #
	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	82.26	41.56	0.14	0.07
Critical	14.85	4.13	0.70	0.47
Status	OK	OK	OK	OK
Ratio	18%	10%	20%	14%
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values	Reference Values	2900	290	2.0 750
	Adjusted Values	2633	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	0.9069	Rb = 14.97	Le = 19.27 Ft

Loads Uniform TL: 120 = A Uniform LL: 75

Project: Davinder Residence
 Beam ID: Roof girder or MWH-01
 Description: Roof Beams
 Date: 5/23/22
 Prepared by: HK

Selection 5-1/4x 14 2.0E TJ Parallam W.S. PSL Lu = 12.0 Ft

Min Bearing Area	R1= 6.2 in ²	R2= 6.2 in ²	(1.5) DL Defl=	0.23 in
Data	Beam Span	14.0	Reaction 1 LL 4616 #	Reaction 2 LL 2800 #
	Beam Wt per ft	19.48	Reaction 1 TL 4616 #	Reaction 2 TL 2800 #
	Bm Wt Included	273	Maximum V	4616 #
	Max Moment	16157	Max V (Reduced)	3964 #
	TL Max Defl	L / 240	LL Max Defl	L / 360
	TL Actual Defl	L / 361	LL Actual Defl	L / 713
Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl
Actual	123.39	62.34	0.46	0.24
Critical	68.78	20.50	0.70	0.47
Status	OK	OK	OK	OK
Ratio	56%	33%	66%	50%
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values	Reference Values	2900	290	2.0 750
	Adjusted Values	2819	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	0.9710	Rb = 10.79	Le = 22.53 Ft

Loads Uniform TL: 640 = A Uniform LL: 400

Project: Davinder Residence
 Beam ID: RB-05 and 06
 Description: Roof Beams
 Date: 5/23/22
 Prepared by: HK

Selection 5-1/4x 11-7/8 2.0E TJ Parallam W.S. PSL Lu = 23.0 Ft

Min Bearing Area R1= 2.4 in² R2= 2.4 in² (1.5) DL Defl= 0.68 in

Data Beam Span 26.0 Reaction 1 LL 1813 # Reaction 2 LL 975 #
 Beam Wt per ft 19.48 Reaction 1 TL 1813 # Reaction 2 TL 975 #
 Bm Wt Included 507 Maximum V 1813 #
 Max Moment 11786 Max V (Reduced) 1675 #
 TL Max Defl L / 240LL Max Defl L / 360

TL Actual Defl L / 259LL Actual Defl L / 594
 Attributes Section (in³) Shear (in²) TL Defl (in) LL Defl
 Actual 123.39 62.34 1.20 0.53
 Critical 52.97 8.67 1.30 0.87
 Status OK OK OK OK
 Ratio 43% 14% 93% 61%

Fb (psi) Fv (psi) E (psi x mil) Fc (psi)
 Values Reference Values 2900 290 2.0 750
 Adjusted Values 2670 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 0.9196 Rb = 14.46 Le = 40.46 Ft

Loads Uniform TL: 120 = A Uniform LL: 75

Project: Davinder Residence
 Beam ID: Rafter over bouns room amd master bedroom
 Description: Roof rafters
 Date: 5/23/22
 Prepared by: HK

Selection 3-1/2x 11-7/8 2.0E TJ Parallam W.S. PSL Lu = 18.0 Ft

Min Bearing Area	R1= 1.2 in ²	R2= 1.2 in ²	(1.5) DL Defl=	0.50 in	
Data	Beam Span	26.0	Reaction 1 LL 871 #	Reaction 2 LL 455 #	
	Beam Wt per ft	12.99	Reaction 1 TL 871 #	Reaction 2 TL 455 #	
	Bm Wt Included	338	Maximum V	871 #	
	Max Moment	5661	Max V (Reduced)	805 #	
	TL Max Defl	L / 240	LL Max Defl	L / 360	
	TL Actual Defl	L / 358	LL Actual Defl	L / 848	
Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl	
Actual	82.26	41.56	0.87	0.37	
Critical	32.73	4.16	1.30	0.87	
Status	OK	OK	OK	OK	
Ratio	40%	10%	67%	42%	
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)	
Values	Reference Values	2900	290	2.0	750
	Adjusted Values	2075	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	0.7148	Rb = 19.39	Le = 32.31 Ft	

Loads Uniform TL: 54 = A Uniform LL: 35

Project: Davinder Residence
 Beam ID: UWH-01 and 04
 Description: Upper Wall Headers
 Date: 5/23/22
 Prepared by: HK

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

Min Bearing Area	R1= 1.3 in ²	R2= 1.3 in ²	(1.5) DL Defl=	0.03 in
Data Beam Span	8.0	Reaction 1 LL 831 #	Reaction 2 LL 500 #	
Beam Wt per ft	7.87	Reaction 1 TL 831 #	Reaction 2 TL 500 #	
Bm Wt Included	63	Maximum V	831 #	
Max Moment	1663	Max V (Reduced)	671 #	
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	0.06 0.03		
Critical	19.72 5.59	0.40 0.27		
Status	OK OK	OK OK		
Ratio	40% 17%	16% 12%		
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values Reference Values	850	180	1.6	625
Adjusted Values	1012	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	0.9923	Rb = 9.66	Le = 10.30 Ft	

Loads Uniform TL: 200 = A Uniform LL: 125

Project: Davinder Residence
 Beam ID: UWH-02 and 03
 Description: Upper Wall Headers
 Date: 5/23/22
 Prepared by: HK

Selection 3-1/2x 11-7/8 2.0E TJ W.S. LVL Lu = 7.0 Ft

Min Bearing Area R1= 3.1 in² R2= 3.1 in² (1.5) DL Defl= 0.03 in
 Data Beam Span 8.0 Reaction 1 LL 2292 # Reaction 2 LL 1400 #
 Beam Wt per ft 12.99 Reaction 1 TL 2292 # Reaction 2 TL 1400 #
 Bm Wt Included 104 Maximum V 2292 #
 Max Moment 4584 Max V (Reduced) 1725 #
 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 0.06 0.03
 Critical 19.99 8.92 0.40 0.27
 Status OK OK OK OK
 Ratio 24% 21% 16% 12%
 Values Reference Values Fb (psi) Fv (psi) E (psi x mil) Fc (psi)
 Reference Values 2900 290 2.0 750
 Adjusted Values 2752 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 0.9478 Rb = 12.93 Le = 14.38 Ft

Loads Uniform TL: 560 = A Uniform LL: 350

Project: Davinder Residence
 Beam ID: UFB-01
 Description: Upper Floor Beams
 Date: 5/23/22
 Prepared by: HK

Selection 5-1/4x 11-7/8 2.0E TJ Parallam W.S. PSL or LVL Lu = 7.0 Ft

Min Bearing Area R1= 3.6 in² R2= 3.6 in² (1.5) DL Defl= 0.65 in
 Data Beam Span 21.0 Reaction 1 LL 2672 # Reaction 2 LL 1208 #
 Beam Wt per ft 19.48 Reaction 1 TL 2672 # Reaction 2 TL 1208 #
 Bm Wt Included 409 Maximum V 2672 #
 Max Moment 14028 Max V (Reduced) 2420 #
 TL Max Defl L / 240LL Max Defl L / 360

TL Actual Defl L / 250LL Actual Defl L / 708
 Attributes Section (in³) Shear (in²) TL Defl (in) LL Defl
 Actual 123.39 62.34 1.01 0.36
 Critical 58.91 12.52 1.05 0.70
 Status OK OK OK OK
 Ratio 48% 20% 96% 51%

Fb (psi) Fv (psi) E (psi x mil) Fc (psi)
 Values Reference Values 2900 290 2.0 750
 Adjusted Values 2858 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 0.9843 Rb = 8.62 Le = 14.38 Ft

Loads Uniform TL: 55 = A Uniform LL: 40
 Par Unif LL Par Unif TL Start End
 H = 60 0 21.0
 75 I = 1200 21.0

Project: Davinder Residence
 Beam ID: UFB-02 & 03
 Description: Upper Floor Beams
 Date: 5/23/22
 Prepared by: HK

Selection 3-1/2x 11-7/8 2.0E TJ Parallam W.S. PSL Lu = 1.0 Ft
 Lu @OH = 3.0 Ft

Min Bearing Area R1= 0.4 in² R2= 5.8 in² (1.5) DL Defl= 0.21 in.

Data Beam Span 21.0 Reaction 1 LL 295 # Reaction 2 LL 237 #
 Beam Wt per ft 12.99 Reaction 1 TL 4324 # Reaction 2 TL 1961 #
 Bm Wt Included 312 Maximum V 3191 # Overhang Length 3.0 ft
 Max Moment 8794 Max V (Reduced) 3020 # Total Beam Length 24.0 ft
 TL Max Defl L / 240LL Max Defl L / 360OH TL Actual Defl L / 258
 TL Actual Defl L / < -1000 LL Actual Defl L / < -1000
 L / 969

Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl	OH TL Defl
Actual	82.26 41.56	-0.20 -0.01	0.28 0.07		
Critical	36.90 15.62	1.05 0.70	0.30 0.20		
Status	OK OK	OK OK	OK OK		
Ratio	45% 38%	19% 2%	93% 37%		
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)	
Values Reference Values		2900 290	2.0 750		
Adjusted Values		2860 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 0.9957 Rb = 4.90 Le = 2.06 Ft
 Cl Stability @ OH 0.9849 Rb = 8.48 Le = 6.18 Ft

Loads Uniform TL: 55 = A Uniform LL: 40 (Uniform Ld on Backspan)
 Point LL Point TL Distance Par Unif LL Par Unif TL Start End
 1208 F = 2672 (OH) 3.0 K = 80 (OH) 0 3.0
 50 L = 80 (OH) 0 3.0

Project: Davinder Residence
 Beam ID: UFB-04
 Description: Upper Floor Beams
 Date: 5/23/22
 Prepared by: HK

Selection 5-1/4x 16 2.0E TJ Parallam W.S. PSL Lu = 3.0 Ft

Min Bearing Area R1= 6.4 in² R2= 6.4 in² (1.5) DL Defl= 0.31 in

Data Beam Span 22.0 Reaction 1 LL 4832 # Reaction 2 LL 3300 #
 Beam Wt per ft 26.25 Reaction 1 TL 4832 # Reaction 2 TL 3300 #
 Bm Wt Included 578 Maximum V 4832 #
 Max Moment 26575 Max V (Reduced) 4246 #
 TL Max Defl L / 240 LL Max Defl L / 360

TL Actual Defl L / 353 LL Actual Defl L / 599
 Attributes Section (in³) Shear (in²) TL Defl (in) LL Defl
 Actual 224.00 84.00 0.75 0.44
 Critical 113.54 21.96 1.10 0.73
 Status OK OK OK OK
 Ratio 51% 26% 68% 60%

Fb (psi) Fv (psi) E (psi x mil) Fc (psi)
 Values Reference Values 2900 290 2.0 750
 Adjusted Values 2809 290 2.0 750

Adjustments CF Size Factor 0.969
 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 0.9918 Rb = 6.56 Le = 6.18 Ft

Loads Uniform TL: 413 = A Uniform LL: 300

Project: Davinder Residence
 Beam ID: UFB-05
 Description: Upper Floor Beams
 Date: 5/23/22
 Prepared by: HK

Selection 3-1/2x 11-7/8 2.0E TJ Parallam W.S. PSL Lu = 3.0 Ft

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

Data Beam Span 5.0 Reaction 1 LL 657 # Reaction 2 LL 250 #
 Beam Wt per ft 12.99 Reaction 1 TL 657 # Reaction 2 TL 250 #
 Bm Wt Included 65 Maximum V 657 #
 Max Moment 822 Max V (Reduced) 397 #
 TL Max Defl L / 240LL 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	82.26 41.56	0.00 <0.01		
Critical	3.45 2.05	0.25 0.17		
Status	OK OK	OK OK		
Ratio	4% 5%	2% 1%		

Values	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Reference Values	2900 290	2.0 750		
Adjusted Values	2860 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 0.9849 Rb = 8.48 Le = 6.18 Ft

Loads Uniform TL: 250 = A Uniform LL: 100

Project: Davinder Residence
 Beam ID: MWH-01
 Description: Main Wall Headers
 Date: 5/23/22
 Prepared by: HK

Selection 5-1/4x 14 2.0E TJ Parallam W.S. PSL Lu = 12.0 Ft

Min Bearing Area	R1= 6.2 in ²	R2= 6.2 in ²	(1.5) DL Defl=	0.14 in
Data Beam Span	14.0	Reaction 1 LL 4641 #	Reaction 2 LL 2800 #	
Beam Wt per ft	22.97	Reaction 1 TL 4641 #	Reaction 2 TL 2800 #	
Bm Wt Included	322	Maximum V	4641 #	
Max Moment	16243	Max V (Reduced)	3867 #	
TL Max Defl	L / 240	LL Max Defl	L / 360	
TL Actual Defl	L / 588	LL Actual Defl	L / >1000	
Attributes	Section (in ³)	Shear (in ²)	TL Defl (in)	LL Defl
Actual	171.50	73.50	0.29	0.14
Critical	69.93	20.00	0.70	0.47
Status	OK	OK	OK	OK
Ratio	41%	27%	41%	31%
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values Reference Values	2900	290	2.0	750
Adjusted Values	2787	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
Cl	Stability	0.9612	Rb = 11.86	Le = 23.06 Ft

Loads Uniform TL: 640 = A Uniform LL: 400

Project: Davinder Residence
 Beam ID: MWH-02 & 03 & 05 & 06
 Description: Main Wall Headers
 Date: 5/23/22
 Prepared by: HK

Selection 4x 12 DF North #1 Lu = 8.0 Ft

Min Bearing Area	R1= 1.9 in ²	R2= 1.9 in ²	(1.5) DL Defl=	0.06 in
Data	Beam Span	9.0	Reaction 1 LL 1213 #	Reaction 2 LL 450 #
	Beam Wt per ft	9.57	Reaction 1 TL 1213 #	Reaction 2 TL 450 #
	Bm Wt Included	86	Maximum V	1213 #
	Max Moment	2729	Max V (Reduced)	960 #
	TL Max Defl	L / 240LL 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	73.83 39.38	0.08 0.02		
Critical	35.55 8.00	0.45 0.30		
Status	OK OK	OK OK		
Ratio	48% 20%	18% 7%		
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values Reference Values		850 180	1.6 625	
Adjusted Values		921 180	1.6 625	
Adjustments	CF Size Factor	1.100		
	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	0.9853 Rb = 13.22	Le = 15.85 Ft	

Loads Uniform TL: 160 = A Uniform LL: 100
 Par Unif TL Start End
 H = 100 0 9.0

Project: Davinder Residence
 Beam ID: MWH-04
 Description: Main Wall Headers
 Date: 5/23/22
 Prepared by: HK

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

Min Bearing Area R1= 4.3 in² R2= 4.3 in² (1.5) DL Defl= 0.08 in
 Data Beam Span 9.0 Reaction 1 LL 3208 # Reaction 2 LL 1688 #
 Beam Wt per ft 12.99 Reaction 1 TL 3208 # Reaction 2 TL 1688 #
 Bm Wt Included 117 Maximum V 3208 #
 Max Moment 7219 Max V (Reduced) 2503 #
 TL Max Defl L / 240LL Max Defl L / 360
 TL Actual Defl L / 804LL Actual Defl L / >1000
 Attributes Section (in³) Shear (in²) TL Defl (in) LL Defl
 Actual 82.26 41.56 0.13 0.06
 Critical 31.87 12.95 0.45 0.30
 Status OK OK OK OK
 Ratio 39% 31% 30% 19%
 Fb (psi) Fv (psi) E (psi x mil) Fc (psi)
 Values Reference Values 2900 290 2.0 750
 Adjusted Values 2718 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 0.9362 Rb = 13.65 Le = 16.01 Ft

Loads Uniform TL: 600 = A Uniform LL: 375
 Par Unif TL Start End
 H = 100 0 9.0

Project: Davinder Residence
 Beam ID: MWH-07
 Description: Main Wall Headers
 Date: 5/23/22
 Prepared by: HK

Selection 3-1/2x 11-7/8 2.0E TJ Parallam W.S. PSL Lu = 7.0 Ft

Min Bearing Area	R1= 3.8 in ²	R2= 3.8 in ²	(1.5) DL Defl=	0.05 in	
Data	Beam Span	8.0	Reaction 1 LL 2852 #	Reaction 2 LL 1500 #	
	Beam Wt per ft	12.99	Reaction 1 TL 2852 #	Reaction 2 TL 1500 #	
	Bm Wt Included	104	Maximum V	2852 #	
	Max Moment	5704	Max V (Reduced)	2146 #	
	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	82.26	41.56	0.08	0.04	
Critical	24.87	11.10	0.40	0.27	
Status	OK	OK	OK	OK	
Ratio	30%	27%	21%	13%	
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)	
Values	Reference Values	2900	290	2.0	750
	Adjusted Values	2752	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	0.9478	Rb = 12.93	Le = 14.38 Ft	

Loads Uniform TL: 600 = A Uniform LL: 375
 Par Unif TL Start End
 H = 100 0 8.0

Project: Davinder Residence
 Beam ID: MWH-08
 Description: Main Wall Headers
 Date: 5/23/22
 Prepared by: HK

Selection 5-1/4x 14 2.0E TJ Parallam W.S. PSL Lu = 15.0 Ft

Min Bearing Area R1= 5.9 in² R2= 5.9 in² (1.5) DL Defl= 0.31 in

Data Beam Span 18.0 Reaction 1 LL 4437 # Reaction 2 LL 2610 #
 Beam Wt per ft 22.97 Reaction 1 TL 4437 # Reaction 2 TL 2610 #
 Bm Wt Included 413 Maximum V 4437 #
 Max Moment 19965 Max V (Reduced) 3862 #
 TL Max Defl L / 240 LL Max Defl L / 360

TL Actual Defl L / 363 LL Actual Defl L / 751
 Attributes Section (in³) Shear (in²) TL Defl (in) LL Defl
 Actual 171.50 73.50 0.59 0.29
 Critical 87.33 19.97 0.90 0.60
 Status OK OK OK OK
 Ratio 51% 27% 66% 48%

Fb (psi) Fv (psi) E (psi x mil) Fc (psi)
 Values Reference Values 2900 290 2.0 750
 Adjusted Values 2743 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 0.9460 Rb = 13.05 Le = 27.95 Ft

Loads Uniform TL: 330 = A Uniform LL: 240
 Par Unif LL Par Unif TL Start End
 H = 60 0 18.0
 50 I = 80 0 18.0

Project: Davinder Residence
 Beam ID: MWH-09
 Description: Main Wall Headers
 Date: 5/23/22
 Prepared by: HK

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

Min Bearing Area R1= 3.1 in² R2= 3.1 in² (1.5) DL Defl= <0.01 in.

Data Beam Span 3.0 Reaction 1 LL 1909 # Reaction 2 LL 705 #
 Beam Wt per ft 7.87 Reaction 1 TL 1909 # Reaction 2 TL 705 #
 Bm Wt Included 24 Maximum V 1909 #
 Max Moment 1432 Max V (Reduced) 928 #
 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	16.89 7.73	0.15 0.10		
Status	OK OK	OK OK		
Ratio	34% 24%	6% 2%		

Values	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
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:	165 = A	Uniform LL:	120	Start	End
	Par Unif LL	Par Unif TL				
		H = 100	0	3.0		
		I = 1000	0	3.0		

Project: Davinder Residence
 Beam ID: MWH-10
 Description: Main Wall Headers
 Date: 5/23/22
 Prepared by: HK

Selection 3-1/2x 11-7/8 2.0E TJ Parallam W.S. PSL Lu = 3.0 Ft

Min Bearing Area R1= 1.6 in² R2= 1.6 in² (1.5) DL Defl= <0.01 in.

Data	Beam Span	4.0	Reaction 1 LL 1216 #	Reaction 2 LL 640 #
	Beam Wt per ft	12.99	Reaction 1 TL 1216 #	Reaction 2 TL 640 #
	Bm Wt Included	52	Maximum V	1216 #
	Max Moment 1216		Max V (Reduced)	614 #
	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	82.26	41.56	0.00	<0.01
Critical	5.10	3.18	0.20	0.13
Status	OK	OK	OK	OK
Ratio	6%	8%	2%	1%
	Fb (psi)	Fv (psi)	E (psi x mil)	Fc (psi)
Values Reference Values		2900 290	2.0 750	
Adjusted Values		2860 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	0.9849 Rb = 8.48	Le = 6.18 Ft	

Loads	Uniform TL:	330 = A	Uniform LL:	240
	Par Unif LL	Par Unif TL	Start	End
		H = 100	0	4.0
	80	I = 1650	4.0	

Project: Davinder Residence
 Beam ID: MWH-11
 Description: Main Wall Headers
 Date: 5/23/22
 Prepared by: HK

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

Min Bearing Area R1= 1.9 in² R2= 1.9 in² (1.5) DL Defl= <0.01 in.

Data Beam Span 4.0 Reaction 1 LL 1206 # Reaction 2 LL 640 #
 Beam Wt per ft 7.87 Reaction 1 TL 1206 # Reaction 2 TL 640 #
 Bm Wt Included 31 Maximum V 1206 #
 Max Moment 1206 Max V (Reduced) 741 #
 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 49.91 32.38 0.01 <0.01
 Critical 14.25 6.18 0.20 0.13
 Status OK OK OK OK
 Ratio 29% 19% 6% 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: 330 = A Uniform LL: 240
 Par Unif LL Par Unif TL Start End
 H = 100 0 4.0
 80 I = 1650 4.0

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: Davinder - Location: Garage

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: Davinder - Location: Master Bedroom

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.