



MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

7220 Trade Street, Suite 350, San Diego, CA 92121 ▶ p 619-650-0010 ▶ mulhernkulp.com

CALCULATION PACKAGE

May 20, 2022

Design Built Homes BLA 86th Ave SE

Mercer Island, WA

MULHERN & KULP STRUCTURAL ENGINEERING, INC.

Prepared By:

John C. Leone

Staff Engineer

Richard J. Zabel, P.E.

Project Manager + Director of Engineering





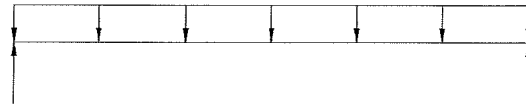
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: RF FRMG - TYP EXT FLUSH WNDW HDR (WORST CASE)

B1

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

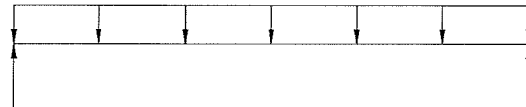
$R_{MAX} =$ K $V_D =$ K $< V_{ALL} =$ K ADEQUATE
 $M_{MAX} =$ K-FT $< M_{ALL} =$ K-FT ($C_D=1.15$) ADEQUATE
 $\Delta_{TL} =$ IN. L/ < L/240 ADEQUATE

BEAM DESCRIPTION: RF/FLR FRMG - TYP INT DR HDR - WORST CASE

B2

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

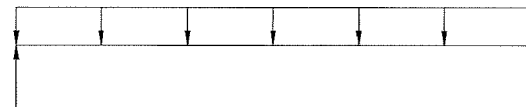
$R_{MAX} =$ K $V_D =$ K $< V_{ALL} =$ K ADEQUATE
 $M_{MAX} =$ K-FT $< M_{ALL} =$ K-FT ($C_D=1.0$) ADEQUATE
 $\Delta_{TL} =$ IN. L/ < L/240 ADEQUATE

BEAM DESCRIPTION: RF FRMG - FLUSH BM @ STAIRS

B3

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

$R_{MAX} =$ K $V_D =$ K $< V_{ALL} =$ K ADEQUATE
 $M_{MAX} =$ K-FT $< M_{ALL} =$ K-FT ($C_D=1.15$) ADEQUATE
 $\Delta_{TL} =$ IN. L/ < L/240 ADEQUATE



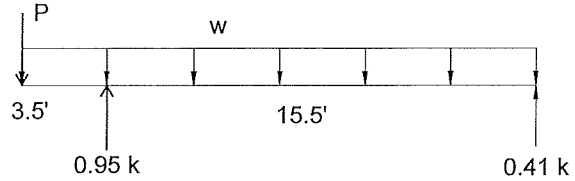
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: RF FRMG - FLUSH STRUCTURAL FASCIA CANT'D @ BR3 SIDE

B4

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

$R_{MAX} =$ K $V_D =$ K $< V_{ALL} =$ K
 $M_{MAX} =$ K-FT $< M_{ALL} =$ K-FT ($C_D=1.15$)
 $\Delta_{TL} =$ IN. $2L/$ $< L/240$

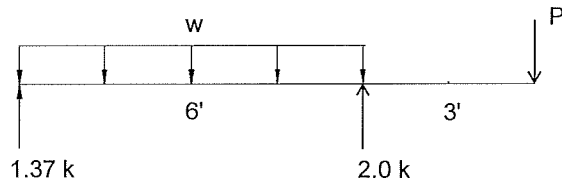
ADEQUATE
 ADEQUATE
 ADEQUATE

BEAM DESCRIPTION: RF FRMG - FLUSH CANT'D BM @ BR3 SIDE

B5

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

$R_{MAX} =$ K $V_D =$ K $< V_{ALL} =$ K
 $M_{MAX} =$ K-FT $< M_{ALL} =$ K-FT ($C_D=1.15$)
 $\Delta_{TL} =$ IN. $2L/$ $< L/240$

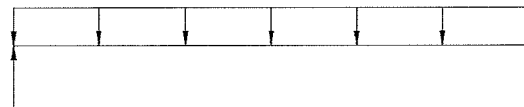
ADEQUATE
 ADEQUATE
 ADEQUATE

BEAM DESCRIPTION: RF FRMG - FLUSH BEAM @ BR3 / BR4

B6

PARAMETERS:

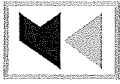
L = FT
W = KLF
P = K



ANALYSIS:

$R_{MAX} =$ K $V_D =$ K $< V_{ALL} =$ K
 $M_{MAX} =$ K-FT $< M_{ALL} =$ K-FT ($C_D=1.15$)
 $\Delta_{TL} =$ IN. $L/$ $< L/240$

ADEQUATE
 ADEQUATE
 ADEQUATE



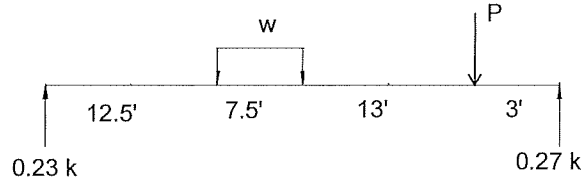
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: RF FRMG - FLUSH STRUCTURAL FASCIA @ BR3 FRONT

B7

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

$R_{MAX} =$ K $V_D =$ K $< V_{ALL} =$ K ADEQUATE
 $M_{MAX} =$ K-FT $< M_{ALL} =$ K-FT ($C_D=1.15$) ADEQUATE
 $\Delta_{TL} =$ IN. $L/$ $< L/240$ ADEQUATE

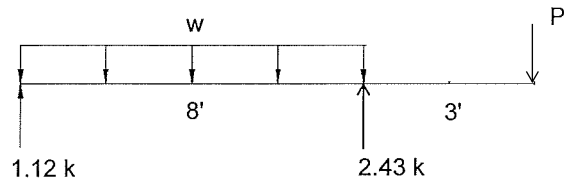
5 1/4"x11 7/8" LVL

BEAM DESCRIPTION: RF FRMG - FLUSH CANT'D BM @ BR3 FRONT

B8

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

$R_{MAX} =$ K $V_D =$ K $< V_{ALL} =$ K ADEQUATE
 $M_{MAX} =$ K-FT $< M_{ALL} =$ K-FT ($C_D=1.15$) ADEQUATE
 $\Delta_{TL} =$ IN. $L/$ $< L/240$ ADEQUATE

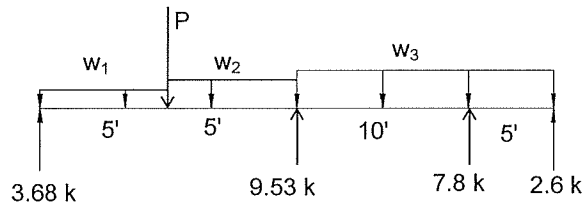
3 1/2"x11 7/8" LVL

BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH BTTM HDR @ KIT / DINING

B9

PARAMETERS:

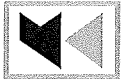
L = FT
 $W_1 =$ KLF $W_2=0.81$
 $W_3=1.04$
P = K



ANALYSIS:

$R_{MAX} =$ K $V_D =$ K $< V_{ALL} =$ K ADEQUATE
 $M_{MAX} =$ K-FT $< M_{ALL} =$ K-FT ($C_D=1.15$) ADEQUATE
 $\Delta_{TL} =$ IN. $L/$ $< L/240$ ADEQUATE

5 1/2"x12" GLB



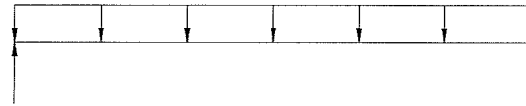
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: 2ND FLR FRMG - TYP FLUSH BTTM HDR - WORST LOAD

B10

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

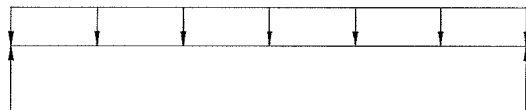
$R_{MAX} =$ K $V_D =$ K $< V_{ALL} =$ K ADEQUATE
 $M_{MAX} =$ K-FT $< M_{ALL} =$ K-FT ($C_D=1.0$) ADEQUATE
 $\Delta_{TL} =$ IN. $L/$ $< L/240$ ADEQUATE

BEAM DESCRIPTION: 2ND FLR FRMG - TYP FLUSH BTTM HDR - WORST LENGTH

B10

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

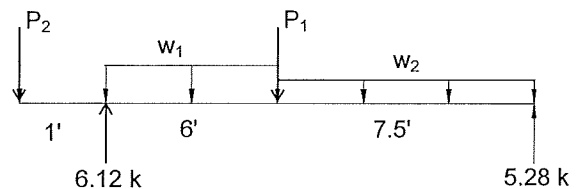
$R_{MAX} =$ K $V_D =$ K $< V_{ALL} =$ K ADEQUATE
 $M_{MAX} =$ K-FT $< M_{ALL} =$ K-FT ($C_D=1.0$) ADEQUATE
 $\Delta_{TL} =$ IN. $L/$ $< L/240$ ADEQUATE

BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH BM CANT'D @ REAR DECK

B11

PARAMETERS:

L = FT
 $W_1 =$ KLF $W_2=0.65$
 $P_1 =$ K $P_2=0.25$



ANALYSIS:

$R_{MAX} =$ K $V_D =$ K $< V_{ALL} =$ K ADEQUATE
 $M_{MAX} =$ K-FT $< M_{ALL} =$ K-FT ($C_D=1.15$) ADEQUATE
 $\Delta_{TL} =$ IN. $L/$ $< L/240$ ADEQUATE



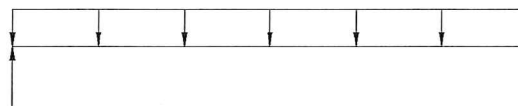
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH BM @ DECK / F.P.

B12

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

$R_{MAX} =$ K $V_D =$ K < $V_{ALL} =$ K ADEQUATE
 $M_{MAX} =$ K-FT < $M_{ALL} =$ K-FT ($C_D=1.15$) ADEQUATE
 $\Delta_{TL} =$ IN. $L/$ < $L/240$ ADEQUATE

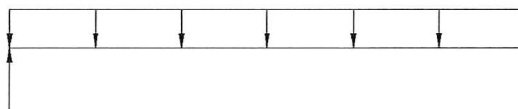
3 1/2"x18" GLB

BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH HDR @ GREAM RM SGD

B13

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

$R_{MAX} =$ K $V_D =$ K < $V_{ALL} =$ K ADEQUATE
 $M_{MAX} =$ K-FT < $M_{ALL} =$ K-FT ($C_D=1.0$) ADEQUATE
 $\Delta_{TL} =$ IN. $2L/$ < $L/240$ ADEQUATE

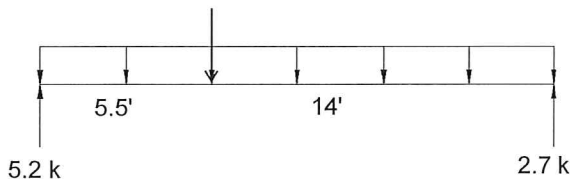
6 x 10

BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH BM @ DINING

B14

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

$R_{MAX} =$ K $V_D =$ K < $V_{ALL} =$ K ADEQUATE
 $M_{MAX} =$ K-FT < $M_{ALL} =$ K-FT ($C_D=1.15$) ADEQUATE
 $\Delta_{TL} =$ IN. $L/$ < $L/240$ ADEQUATE

3 1/2"x18" GLB



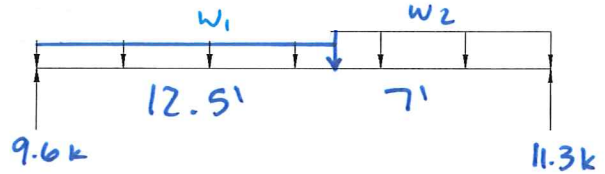
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH BM @ STAIRS

B15

PARAMETERS:

L = FT
W₁ = KLF W₂ = 1.22
P = K



ANALYSIS:

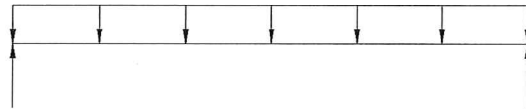
R_{MAX} = K V_D = K < V_{ALL} = K ADEQUATE
M_{MAX} = K-FT < M_{ALL} = K-FT (C_D = 1.15) ADEQUATE
Δ_{TL} = IN. L/ < L/240 ADEQUATE

BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH BM @ ENTRY

B16

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

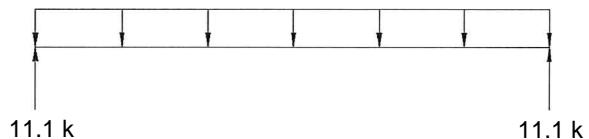
R_{MAX} = K V_D = K < V_{ALL} = K ADEQUATE
M_{MAX} = K-FT < M_{ALL} = K-FT (C_D = 1.0) ADEQUATE
Δ_{TL} = IN. L/ < L/240 ADEQUATE

BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH BM @ GARAGE

B17

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

R_{MAX} = K V_D = K < V_{ALL} = K ADEQUATE
M_{MAX} = K-FT < M_{ALL} = K-FT (C_D = 1.15) ADEQUATE
Δ_{TL} = IN. L/ < L/240 ADEQUATE



BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: 2ND FLR FRM& - STRUCT. FASCIA @ PORCH

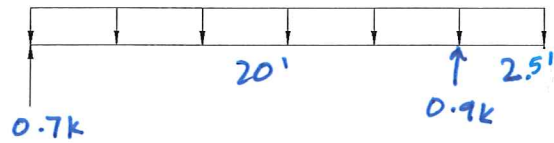
B18

PARAMETERS:

L = FT

W = KLF

P = K



ANALYSIS:

R_{MAX} = K

V_D = K < V_{ALL} = K

ADEQUATE

M_{MAX} = K-FT

< M_{ALL} = K-FT (C_D=1.15)

ADEQUATE

Δ_{TL} = IN.

2 L / < L/240

ADEQUATE

BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH BM CANT'D @ PORCH

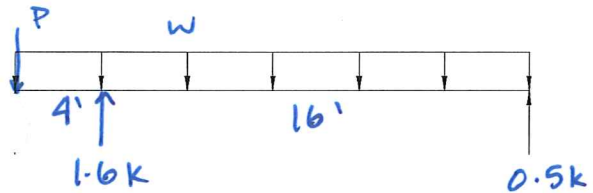
B19

PARAMETERS:

L = FT

W = KLF

P = K



ANALYSIS:

R_{MAX} = K

V_D = K < V_{ALL} = K

ADEQUATE

M_{MAX} = K-FT

< M_{ALL} = K-FT (C_D=1.15)

ADEQUATE

Δ_{TL} = IN.

2 L / < L/240

ADEQUATE

BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH BM CANT'D @ PORCH/GARAGE

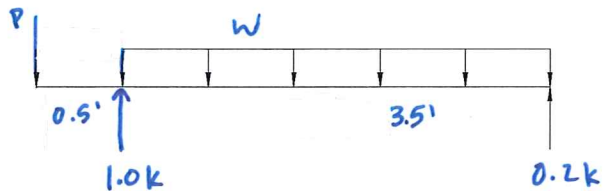
B20

PARAMETERS:

L = FT

W = KLF

P = K



ANALYSIS:

R_{MAX} = K

V_D = K < V_{ALL} = K

ADEQUATE

M_{MAX} = K-FT

< M_{ALL} = K-FT (C_D=1.15)

ADEQUATE

Δ_{TL} = IN.

2L / < L/240

ADEQUATE



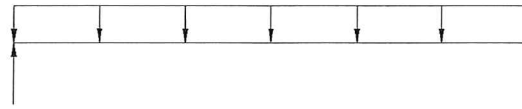
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: 2ND FLR FRMG - GARAGE DR HDR

B21

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

$R_{MAX} =$ K $V_D =$ K $< V_{ALL} =$ K
 $M_{MAX} =$ K-FT $< M_{ALL} =$ K-FT ($C_D=1.15$)
 $\Delta_{TL} =$ IN. $L/$ $< L/240$

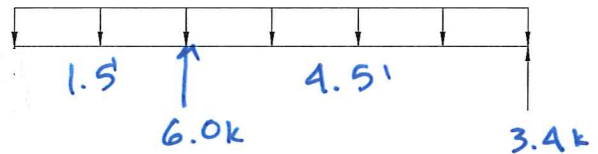
ADEQUATE
 ADEQUATE
 ADEQUATE

BEAM DESCRIPTION: 1ST FL FRMG - DROP CRAWL BRG

B22

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

$R_{MAX} =$ K $V_D =$ K $< V_{ALL} =$ K
 $M_{MAX} =$ K-FT $< M_{ALL} =$ K-FT ($C_D=1.0$)
 $\Delta_{TL} =$ IN. $L/$ $< L/240$

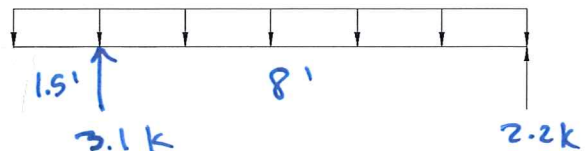
ADEQUATE
 ADEQUATE
 ADEQUATE

BEAM DESCRIPTION: 1ST FLR FRMG - DROP CRAWL NO BRG

B23

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

$R_{MAX} =$ K $V_D =$ K $< V_{ALL} =$ K
 $M_{MAX} =$ K-FT $< M_{ALL} =$ K-FT ($C_D=1.0$)
 $\Delta_{TL} =$ IN. $2L/$ $< L/240$

ADEQUATE
 ADEQUATE
 ADEQUATE



BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: **1ST FLR FRMG - TYP. DECK JOIST**

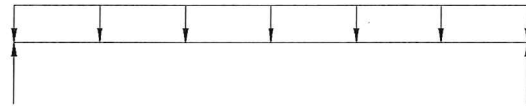
B24

PARAMETERS:

L = FT

W = KLF

P = K



ANALYSIS:

R_{MAX} = K

V_D = K

< V_{ALL} = K

ADEQUATE

M_{MAX} = K-FT

< M_{ALL} = K-FT (C_D=1.0)

ADEQUATE

Δ_{TL} = IN.

L/ < L/240

ADEQUATE

BEAM DESCRIPTION: **1ST FLR FRAMING - DROP GRDR DECK REAR**

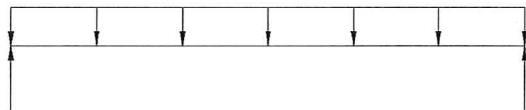
B25

PARAMETERS:

L = FT

W = KLF

P = K



ANALYSIS:

R_{MAX} = K

V_D = K

< V_{ALL} = K

ADEQUATE

M_{MAX} = K-FT

< M_{ALL} = K-FT (C_D=1.0)

ADEQUATE

Δ_{TL} = IN.

L/ < L/240

ADEQUATE

BEAM DESCRIPTION: **1ST FLR FRMG - DROP GRDR DECK MIDDLE**

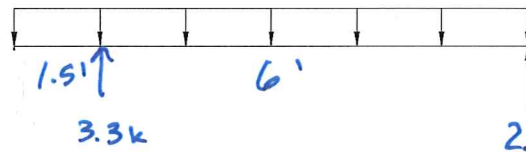
B26

PARAMETERS:

L = FT

W = KLF

P = K



ANALYSIS:

R_{MAX} = K

V_D = K

< V_{ALL} = K

ADEQUATE

M_{MAX} = K-FT

< M_{ALL} = K-FT (C_D=1.0)

ADEQUATE

Δ_{TL} = IN.

2L/ < L/240

ADEQUATE



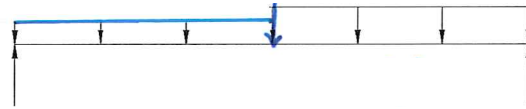
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: 2ND FLR FRMG - INT DR HDR @ GARAGE

B27

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

R_{MAX} = K V_D = K < V_{ALL} = K
M_{MAX} = K-FT < M_{ALL} = K-FT (C_D=1.0)
Δ_{TL} = IN. L/ < L/240

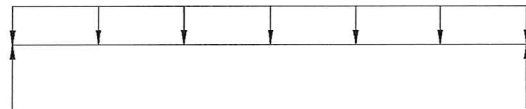
ADEQUATE
 ADEQUATE
 ADEQUATE

BEAM DESCRIPTION:

B28

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

R_{MAX} = K V_D = K < V_{ALL} = K
M_{MAX} = K-FT < M_{ALL} = K-FT (C_D=)
Δ_{TL} = IN. L/ < L/240

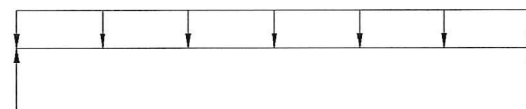
ADEQUATE
 ADEQUATE
 ADEQUATE

BEAM DESCRIPTION:

B29

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

R_{MAX} = K V_D = K < V_{ALL} = K
M_{MAX} = K-FT < M_{ALL} = K-FT (C_D=)
Δ_{TL} = IN. 2L/ < L/240

ADEQUATE
 ADEQUATE
 ADEQUATE



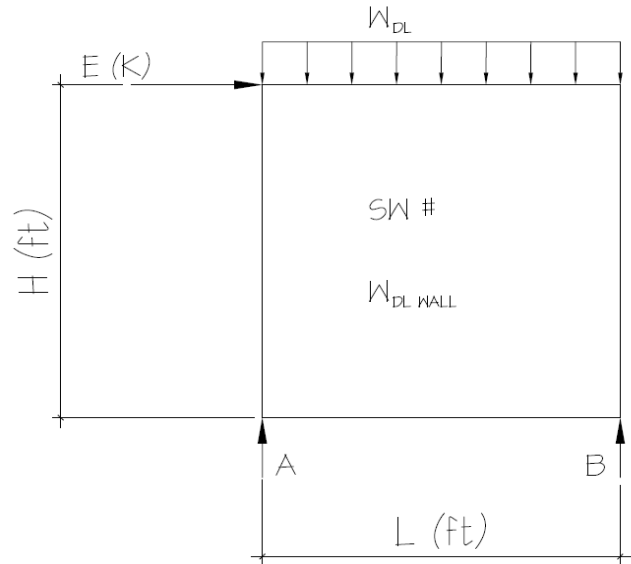
OVERSTRENGTH CALCULATIONS

WALL DESCRIPTION/SW #:

206

PARAMETERS:

- L = 29.5 FT
- H = 9.1 FT
- E = 1.90 K
- $W_{DL WALL}$ = 0.10 KLF
- W_{DL} = 0.130 KLF
- Ω_0 = 2.5 (ASCE TABLE 12.2.1 FOOTNOTE G)
- SDS = 1.124



ANALYSIS:

$$E_{MH} = \Omega_0 * E = 4.75 \text{ K} \quad E_v = 0.2 * SDS * DL = 1.525 \text{ K}$$

$$E_M = E_{MH} + E_v = 6.275 \text{ K}$$

$$E_M = E_{MH} - E_v = 3.225 \text{ K}$$

$$E_M (\text{MAX}) = \sum M_A = 0 = 6.28(9.1) + 0.23(29.5)(14.75) - R_B(29.5) \quad R_B = 3.4DL + 1.9E$$

$$R_A = 3.4DL - 1.9E$$

$$E_M (\text{MIN}) = \sum M_A = 0 = 3.22(9.1) + 0.23(29.5)(14.75) - R_B(29.5) \quad R_B = 3.4DL + 1.0E$$

$$R_A = 3.4DL - 1.0E$$

CHECK BEAMS FOR AXIAL FORCES SHOWN USING LOAD COMBOS PER SECTION 12.4.3.1 (ASD)

ALLOWABLE STRESS PERMITTED TO BE INCREASED BY 1.2

SEE FOLLOWING BEAM
CALCS FOR LOAD
APPLICATION



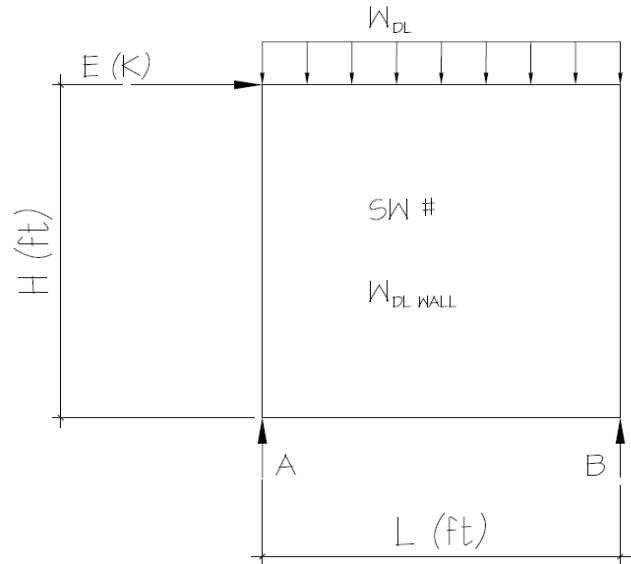
OVERSTRENGTH CALCULATIONS

WALL DESCRIPTION/SW #:

209

PARAMETERS:

- L = 8.0 FT
- H = 9.1 FT
- E = 0.50 K
- W_{DL WALL} = 0.10 KLF
- W_{DL} = 0.080 KLF
- Ω₀ = 2.5 (ASCE TABLE 12.2.1 FOOTNOTE G)
- SDS = 1.124



ANALYSIS:

$$E_{MH} = \Omega_0 * E = 1.25 \text{ K}$$

$$E_v = 0.2 * SDS * DL = 0.324 \text{ K}$$

$$E_M = E_{MH} + E_v = 1.574 \text{ K}$$

$$E_M = E_{MH} - E_v = 0.926 \text{ K}$$

$$E_M (\text{MAX}) = \sum M_A = 0 = 1.57(9.1) + 0.18(8)(4) - R_B(B)$$

$$R_B = 0.7DL + 1.8E$$

$$R_A = 0.7DL - 1.8E$$

$$E_M (\text{MIN}) = \sum M_A = 0 = 0.93(9.1) + 0.18(8)(4) - R_B(B)$$

$$R_B = 0.7DL + 1.1E$$

$$R_A = 0.7DL - 1.1E$$

CHECK BEAMS FOR AXIAL FORCES SHOWN USING LOAD COMBOS PER SECTION 12.4.3.1 (ASD)

ALLOWABLE STRESS PERMITTED TO BE INCREASED BY 1.2

SEE FOLLOWING BEAM
CALCS FOR LOAD
APPLICATION

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Wood Beam

Project File: beam calcs with overstrength.ec

LIC# : KW-06004787, Build:20.22.5.16

MULHERN & KULP STRUCTURAL ENGINEERING INC

(c) ENERCALC INC 1983-2022

DESCRIPTION: B17 - 2ND FLR FRMG - FLUSH BM @ GARAGE

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios								Moment Values			Shear Values		
			M	V	C _d	C _{F/V}	C _i	C _r	C _m	C _t	C _L	M	fb	F'b	V	f _v
Length = 22.50 ft	1	0.453	0.287	1.15	0.920	1.00	1.00	1.00	1.00	1.00	60.79	1,381.70	3047.36	9.23	104.88	365.70
+D+0.60W					0.920	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.50 ft	1	0.157	0.103	1.60	0.920	1.00	1.00	1.00	1.00	1.00	29.33	666.69	4239.81	4.60	52.29	508.80
+1.126D+0.70E					0.920	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.50 ft	1	0.206	0.111	1.60	0.920	1.00	1.00	1.00	1.00	1.00	38.40	872.77	4239.81	4.96	56.41	508.80
+1.126D-0.70E					0.920	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.50 ft	1	0.149	0.126	1.60	0.920	1.00	1.00	1.00	1.00	1.00	27.77	631.22	4239.81	5.63	63.97	508.80
+D+0.750Lr+0.750L+0.450W					0.920	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.50 ft	1	0.218	0.140	1.60	0.920	1.00	1.00	1.00	1.00	1.00	40.68	924.45	4239.81	6.27	71.27	508.80
+D+0.750L+0.750S+0.450W					0.920	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.50 ft	1	0.326	0.206	1.60	0.920	1.00	1.00	1.00	1.00	1.00	60.79	1,381.70	4239.81	9.23	104.88	508.80
+1.090D+0.750L+0.750S+0.52E					0.920	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.50 ft	1	0.361	0.208	1.60	0.920	1.00	1.00	1.00	1.00	1.00	67.43	1,532.46	4239.81	9.34	106.08	508.80
+1.090D+0.750L+0.750S-0.52E					0.920	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.50 ft	1	0.319	0.223	1.60	0.920	1.00	1.00	1.00	1.00	1.00	59.55	1,353.44	4239.81	9.98	113.41	508.80
+0.60D+0.60W					0.920	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.50 ft	1	0.094	0.062	1.60	0.920	1.00	1.00	1.00	1.00	1.00	17.60	400.02	4239.81	2.76	31.37	508.80
+0.470D+0.70E					0.920	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.50 ft	1	0.103	0.057	1.60	0.920	1.00	1.00	1.00	1.00	1.00	19.16	435.42	4239.81	2.54	28.87	508.80
+0.470D-0.70E					0.920	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.50 ft	1	0.049	0.058	1.60	0.920	1.00	1.00	1.00	1.00	1.00	9.20	209.06	4239.81	2.61	29.67	508.80

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+1.090D+0.750L+0.750S+0.5250E	1	0.5283	11.250		0.0000	0.000

Vertical Reactions

Load Combination	Support notation : Far left is #1		Values in KIPS	
	Support 1	Support 2		
Overall MAXimum	11.125	11.153		
Overall MINimum	-0.640	0.640		
D Only	5.367	4.776		
+D+L	8.067	7.476		
+D+Lr	5.367	4.776		
+D+S	10.149	9.558		
+D+0.750Lr+0.750L	7.392	6.801		
+D+0.750L+0.750S	10.978	10.387		
+D+0.60W	5.367	4.776		
+1.126D+0.70E	5.596	5.826		
+D+0.750Lr+0.750L+0.450W	7.392	6.801		
+D+0.750L+0.750S+0.450W	10.978	10.387		
+1.090D+0.750L+0.750S+0.5250E	11.125	11.153		
+0.60D+0.60W	3.220	2.866		
+0.470D+0.70E	2.075	2.693		
D Only	5.367	4.776		
L Only	2.700	2.700		
S Only	4.781	4.781		
E Only	-0.640	0.640		
H Only				

DESIGN BUILT HOMES

86TH AVE SE

MERCER ISLAND, WA

SHEAR WALL CALCULATIONS - WIND

REVIEWED BY: RJZ

MAY 17, 2022

PARAMETERS:

SINGLE FAMILY HOME

DESIGN WIND SPEED: 100 MPH

WIND EXPOSURE CATEGORY: B

SEISMIC DESIGN CATEGORY: D

CODE & DESIGN STANDARD: 2018 IBC CH. 1609, ASCE 7-16 CH. 26-30

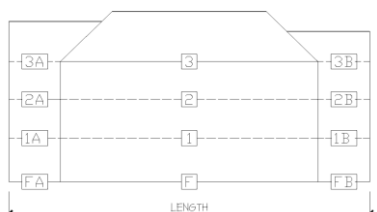


MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

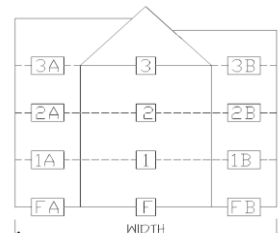
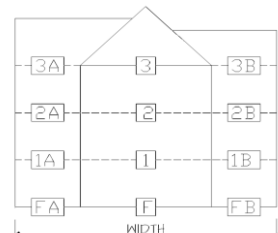
WIND DESIGN SUMMARY PER ASCE 7-16

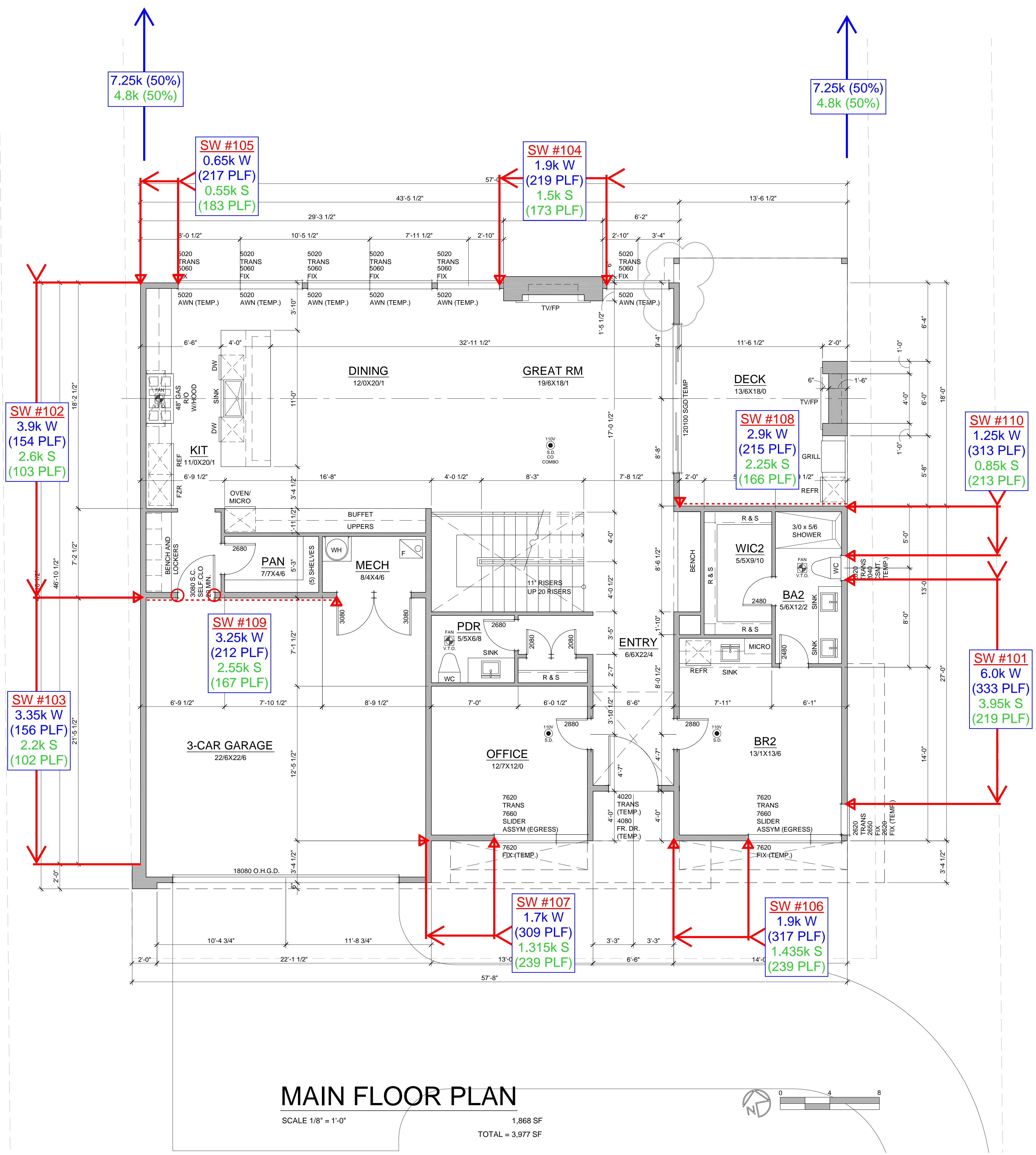
PARAMETERS:		ROOF GEOMETRY:		BUILDING GEOMETRY:	
WIND SPEED	100	TRANS. ROOF PITCH	0.3 : 12	LENGTH	57 FT
EXPOSURE CATEGORY	B	LONG. ROOF PITCH	0.3 : 12	WIDTH	48 FT
RISK CATEGORY	II	MEAN ROOF HEIGHT, H	22.00 FT	NUMBER OF STORIES	2
WIND DIRECTIONALITY FACTOR, K_D	0.85				
TOPOGRAPHIC FACTOR, K_{ZT}	1.60				
GUST FACTOR, G	0.85				
GROUND ELEV. ABOVE SEA LEVEL (FT)	0				
DESIGN TYPE	ASD 0.60				

TRANSVERSE DIRECTION (PERPENDICULAR TO MAIN RIDGE LINE)

DIAPHRAGM LEVEL	FLOOR-TO-FLOOR HEIGHT		SECTION				SECTION				
			A	O	B		A	O	B		
2	9.1 FT	Roof Surface	0	0	0	sq ft	Story Shear	0.00	5.30	0.00	kips
		Wall surface	0	361	0	sq ft		Total Shear	0.00	5.30	0.00
											
1	1.2 FT	Roof Surface	0	0	0	sq ft	Story Shear	0.00	9.15	0.00	kips
		Wall surface	0	660	0	sq ft		Total Shear	0.00	14.45	0.00
											
FND		Roof Surface	0	0	0	sq ft	Story Shear	0.00	0.00	0.00	kips
		Wall surface	0	0	0	sq ft		Total Shear	0.00	14.45	0.00

LONGITUDINAL DIRECTION (PARALLEL TO MAIN RIDGE LINE)

DIAPHRAGM LEVEL	FLOOR-TO-FLOOR HEIGHT		SECTION				SECTION				
			A	O	B		A	O	B		
2	9.1 FT	Roof Surface	0	0	0	sq ft	Story Shear	0.00	4.55	0.00	kips
		Wall surface	0	319	0	sq ft		Total Shear	0.00	4.55	0.00
											
1	1.2 FT	Roof Surface	0	0	0	sq ft	Story Shear	0.00	7.71	0.00	kips
		Wall surface	0	574	0	sq ft		Total Shear	0.00	12.26	0.00
											
FND		Roof Surface	0	0	0	sq ft	Story Shear	0.00	0.00	0.00	kips
		Wall surface	0	0	0	sq ft		Total Shear	0.00	12.26	0.00

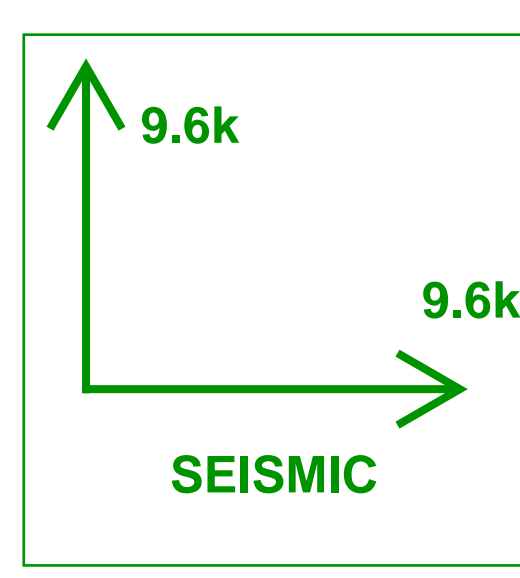
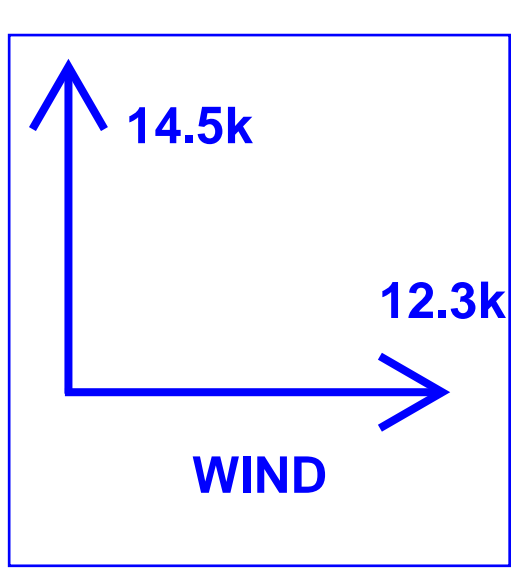


- GENERAL NOTES:**
- PLATE HEIGHT @ CLERESTORY IS 15'-1", U.N.O.
 - PLATE HEIGHT @ MAIN FLOOR IS 11'-0", U.N.O.
 - PLATE HEIGHT @ LOWER FLOOR IS 10'-1" U.N.P.
 - DIMENSION LINES ARE TO FACE OF STUD U.N.O.
 - WINDOW SIZES & ROUGH OPENINGS TO BE VERIFIED BY CONTRACTOR.
 - WINDOW HEAD HEIGHT AT MAIN FLOOR IS 8'-0" ABOVE SUBFLOOR, U.N.O. IF NOMINAL DOOR AND WINDOW HEIGHTS ARE SIMILAR, COORDINATE WITH DOOR AND WINDOW SPEC'S TO LOCATE FINAL ELEVATION OF THE HEAD HEIGHTS SO THAT ALL DOOR AND WINDOW TRIM ALIGN.
 - WINDOW AND DOOR SIZES ARE DIMENSIONED IN FEET AND INCHES (E.G. 2828x 2'-8 1/2" X 2'-8 1/2")
 - EXTERIOR WALLS TO BE 2x6 STUDS AT 16" O.C., INTERIOR WALLS TO BE 2x4 STUDS AT 16" O.C., U.N.O.
 - FIREBLOCK ALL PLUMBING PENETRATIONS AND STAIR RUNS PER IRC SEC. R302.11.
 - SAFETY GLAZING PER IRC SEC. R308.4.
 - ALL WOOD IN CONTACT WITH CONCRETE TO BE PRESSURE TREATED PER IRC SEC. R317.1.
 - PROVIDE UNDER-STAIR PROTECTION (1/2" GWB) PER IRC SEC. R302.7.
 - PROVIDE (1) LAYER OF 1/2" GWB AT THE GARAGE SIDE OF ALL WALLS SEPARATING THE GARAGE FROM THE RESIDENCE, ALL WALLING ASSEMBLY BETWEEN THE GARAGE AND ITS CEILING SHALL BE 2x4 STUDS @ 16" O.C. GARAGE CEILING IF APPLICABLE.
 - 3/4" THICK WOOD SOLID CORE, OR CORE STEEL DOOR, OR ALUMINUM SLIP CLOSING DEVICE.
 - PENETRATING THE WALLS AND CEILING SEPARATING THE DWELLING FROM THE GARAGE SHALL BE MIN. 26 GAUGE GALVANIZED STEEL.
 - PER IRC SEC R311.7.5. MAX. RISER HEIGHT SHALL BE 7-3/4". MIN. TREAD DEPTH SHALL BE 10". STAIR NOSINGS: 3/4" MIN., 1-1/4" MAX. RADIUS @ LEADING EDGE OF TREAD: 9/16" MAX.
 - PROVIDE HANDRAILS PER IRC SEC. R311.7.8. TOP OF HANDRAIL SHALL BE NOT LESS THAN 34" OR MORE THAN 38" ABOVE THE TREAD NOSINGS. HANDRAILS SHALL BE CONTINUOUS THE FULL LENGTH OF THE FLIGHT PER R311.7.7.2. THE HANDRAIL GRIP-SIZE SHALL BE PROVIDED PER R311.7.7.3.
 - PROVIDE GUARDS (MIN. 36" HEIGHT) IN LOCATIONS PER IRC SEC. R312.
 - FACTORY BUILT FIREPLACES & CHIMNEYS SHALL BE LISTED & LABELED AND SHALL BE INSTALLED & TERMINATED IN ACCORDANCE TO THE CONDITIONS OF THE LISTINGS. FACTORY BUILT FIREPLACES SHALL MEET EMISSION STANDARDS PER CH. 51-51 WAC.
 - PROVIDE EXTERIOR AIR SUPPLY TO ANY FACTORY-BUILT FIREPLACE PER IRC SEC R1006.

- STRUCTURAL NOTES:**
- PROVIDE 7/16" OSB OR 15/32" PLYWOOD SHEATHING & FASTEN PER STANDARD EXTERIOR WALL SHEATHING SPECIFICATIONS.
 - FRAMING IN CONTACT TO FOUNDATION SHALL BE FASTENED TO FOUNDATION WITH 7" DIAMETER ANCHORS WITH 7" LONG SETBACK.
 - FASTENED TO BOTTOM OF STUDS THRU BOLTS.
 - GLB BEAM OPT: PROVIDE 12"x5 1/2"x1/2" OFFSET CAP PLATE FASTENED TO BOTTOM OF BEAM W(4) 1/4"x2 1/2" LONG SDS SCREWS
 - PACKOUT STEEL BEAM AS REQUIRED W/ SOLID 2X MATERIAL THRU-BOLTED TO WEB WITH (2) 1/2" DIAMETER THRU-BOLTS @ 24" O.C. STAGGERED. FASTEN TOP PLATE TO STEEL BEAM PER SPEC ON S-0

3.6k (27% story, 29% total)
2.75k (24% story, 29% total)

2.55k (23% story, 21% total)
2.05k (26% story, 21% total)

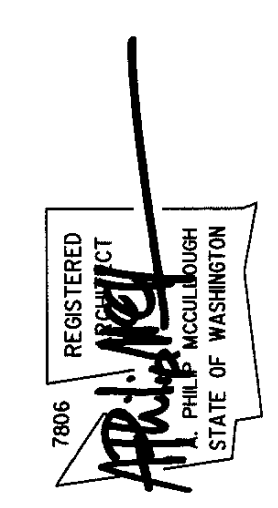


Comment: X

Revisions: 00.00.2022

Date: 04.29.2022
 Job No: xx-xxxx
 Project No: 00000
 Drawn: BAK
 Approved: APM

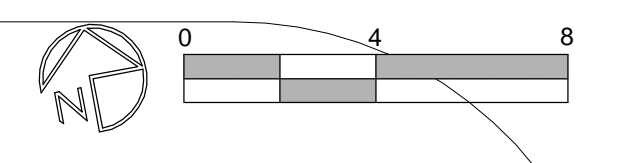
Owner: Design Built Homes

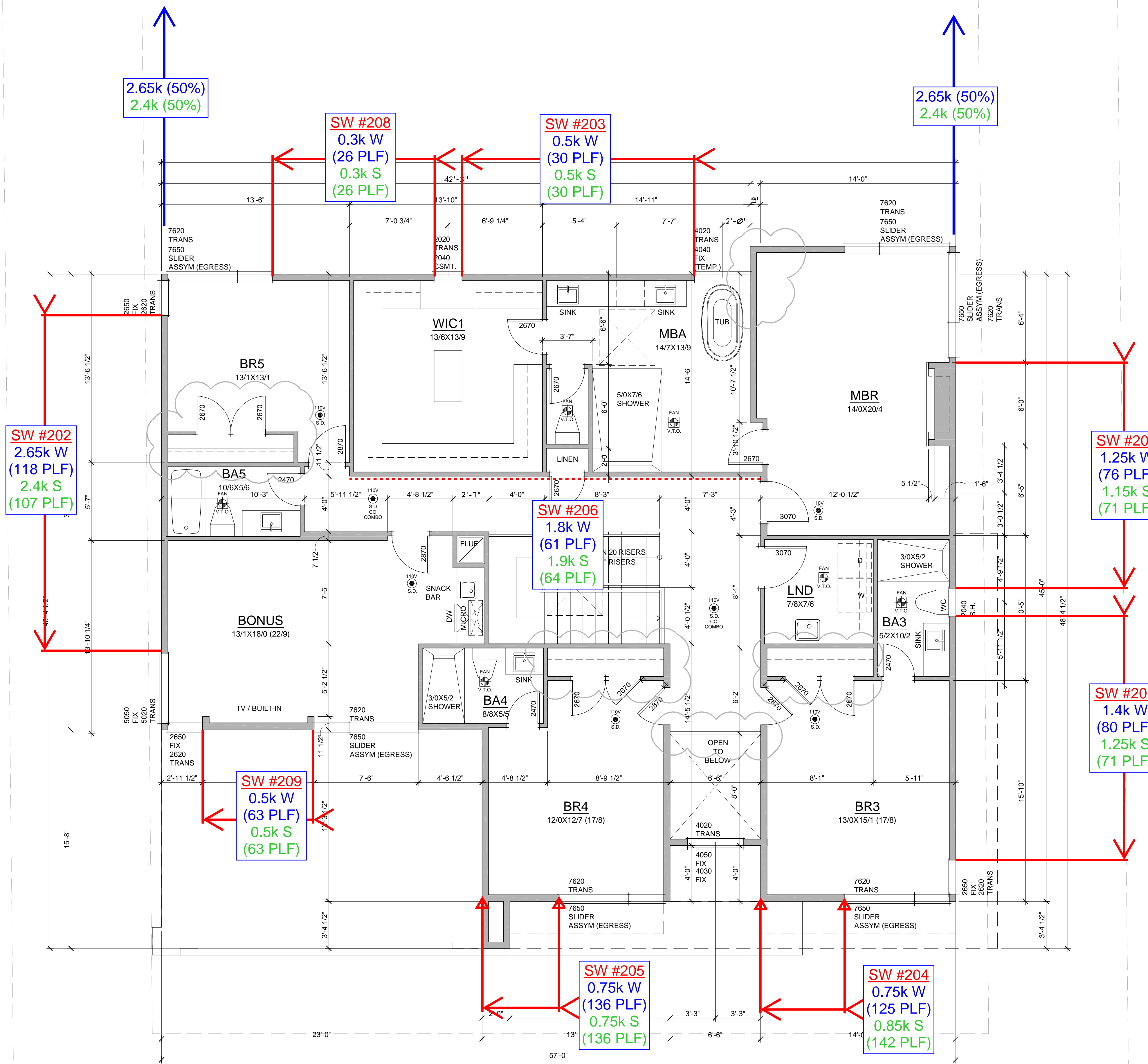


BLA-86th Ave SE
 Mercer Island, Washington

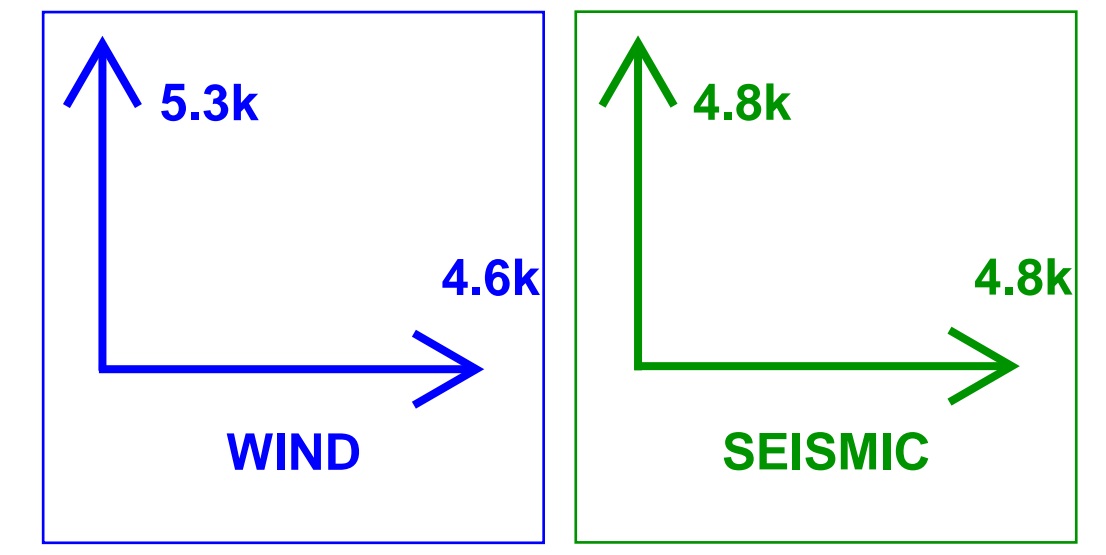
MAIN FLOOR PLAN

SCALE 1/8" = 1'-0" 1,868 SF TOTAL = 3,977 SF

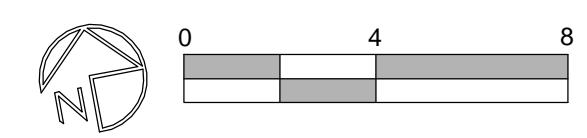




- GENERAL NOTES:**
- PLATE HEIGHT @ CLERESTORY IS 15'-1", U.N.O.
 - PLATE HEIGHT @ MAIN FLOOR IS 11'-0", U.N.O.
 - PLATE HEIGHT @ LOWER FLOOR IS 10'-1" U.N.P.
 - DIMENSION LINES ARE TO FACE OF STUD U.N.O.
 - WINDOW SIZES & ROUGH OPENINGS TO BE VERIFIED BY CONTRACTOR.
 - WINDOW HEAD HEIGHT AT MAIN FLOOR IS 8'-0" ABOVE SUBFLOOR, U.N.O. IF NOMINAL DOOR AND WINDOW HEIGHTS ARE SIMILAR, COORDINATE WITH DOOR AND WINDOW SPECS TO LOCATE FINAL ELEVATION OF THE HEAD HEIGHTS SO THAT ALL DOOR AND WINDOW TRIM ALIGN.
 - WINDOW AND DOOR SIZES ARE DIMENSIONED IN FEET AND INCHES (E.G. 2828= 2'-8"W X 2'-8"H)
 - EXTERIOR WALLS TO BE 2X6 STUDS AT 16" O.C., INTERIOR WALLS TO BE 2X4 STUDS AT 16" O.C., U.N.O.
 - FIREBLOCK ALL PLUMBING PENETRATIONS AND STAIR RUNS PER IRC SEC. R302.11
 - SAFETY GLAZINGS PER IRC SEC. R308.4.
 - ALL WOOD IN CONTACT WITH CONCRETE TO BE PRESSURE TREATED PER IRC SEC. R317.1.
 - PROVIDE UNDER-STAIR PROTECTION (1/2" GWB) PER IRC SEC. R302.7.
 - PROVIDE (1) LAYER OF 1/2" GWB AT THE GARAGE SIDE OF ALL WALLS AND CEILING ASSEMBLY BETWEEN THE GARAGE AND BELOW HABITABLE ROOMS.
 - HOUSE/GARAGE DOOR SHALL BE 1-3/8" THICK WOOD SOLID CORE, OR 1-3/8" THICK SOLID OR HONEYCOMB CORE STEEL DOOR, OR 20-MINUTE RATED FIRE DOOR W/ SELF CLOSING DEVICE.
 - DUCTS IN THE GARAGE AND DUCTS PENETRATING THE WALLS AND CEILINGS SEPARATING THE DWELLING FROM THE GARAGE SHALL BE MIN. 26 GAUGE GALVANIZED STEEL.
 - PER IRC SEC R311.7.5. MAX. RISER HEIGHT SHALL BE 7-3/4", MIN. TREAD DEPTH SHALL BE 10". STAIR NOSINGS: 3/4" MIN., 1-1/4" MAX. RADIUS @ LEADING EDGE OF TREAD: 9/16" MAX.
 - PROVIDE HANDRAILS PER IRC SEC. R311.7.8. TOP OF HANDRAIL SHALL BE NOT LESS THAN 34" OR MORE THAN 38" ABOVE THE TREAD NOSINGS. HANDRAILS SHALL BE CONTINUOUS THE FULL LENGTH OF THE FLIGHT PER R311.7.7.2. THE HANDRAIL GRIP-SIZE SHALL BE PROVIDED PER R311.7.3.
 - PROVIDE GUARDS (MIN. 36" HEIGHT) IN LOCATIONS PER IRC SEC. R312.
 - FANUCES AND CHIMNEYS SHALL BE LISTED & INSTALLED & TERMINATED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ALL CHIMNEYS SHALL MEET EMISSIONS REQUIREMENTS PER 1 WAC 51-10-010.
 - PROVIDE EXTERIOR AIR SUPPLY TO ANY FACTORY-BUILT FIREPLACE PER IRC SEC R1006.

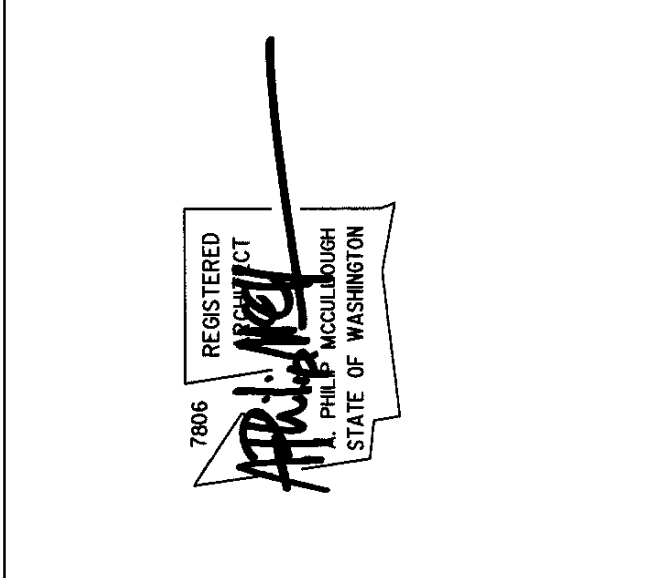


UPPER FLOOR PLAN
 SCALE 1/4" = 1'-0"
 2,109 SF



McCULLOUGH ARCHITECTS
 5601 6th Ave South
 Suite 371
 Seattle, WA, 98108
 206.443.1181
 mccullougharchitects.com
 UNPUBLISHED WORK
 2021 © McCullough Architects

Date:	04.29.2022
Job No:	xx-xxxx
Project No:	00000
Drawn:	BAK
Approved:	APM
Owner:	Design Built Homes



BLA-86th Ave SE
 Mercer Island, Washington



SHEARWALL DESIGN SUMMARY

SHEARWALL 201: 2ND - SIDE EXT BR3/MBR

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 202: 2ND - SIDE EXT BR5/BONUS

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL 203: 2ND - REAR EXT BR5/MBA

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="9.1"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="0.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="16.7"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="16.7"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6" O.C. PANEL EDGES & 12" O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="170"/>	PLF	OVERTURNING MOMENT	<input type="text" value="4.6"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="0"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="400"/>	LBS	RESISTIVE MOMENT	<input type="text" value="18.2"/>	K-FT	HOLD DOWN CAPACITY	<input type="text" value="0"/>	LBS

HOLD-DOWN SPECIFICATION

NO HOLDDOWN REQUIRED

SHEARWALL 204: 2ND - FRONT EXT BR3

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="9.1"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="0.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="6.0"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="6.0"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6" O.C. PANEL EDGES & 12" O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="190"/>	PLF	OVERTURNING MOMENT	<input type="text" value="6.8"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="556"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="400"/>	LBS	RESISTIVE MOMENT	<input type="text" value="3.5"/>	K-FT	HOLD DOWN CAPACITY	<input type="text" value="1705"/>	LBS

HOLD-DOWN SPECIFICATION

SIMPSON CS16 STRAP TIE (14" END LENGTH)



SHEARWALL DESIGN SUMMARY

SHEARWALL 205: 2ND - FRONT EXT BR4

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="9.1"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="0.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="5.5"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="5.5"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL	<input type="text" value="750"/>	LBS	<	ALLOWABLE SHEARWALL CAPACITY	<input type="text" value="1847"/>	LBS
--------------------------	----------------------------------	-----	---	------------------------------	-----------------------------------	-----

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6" O.C. PANEL EDGES & 12" O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="190"/>	PLF	OVERTURNING MOMENT	<input type="text" value="6.8"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="687"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="400"/>	LBS	RESISTIVE MOMENT	<input type="text" value="3.0"/>	K-FT	HOLDDOWN CAPACITY	<input type="text" value="1705"/>	LBS

HOLD-DOWN SPECIFICATION

SIMPSON GS16 STRAP TIE (14" END LENGTH)

SHEARWALL 206: 2ND - FRONT INT HALL

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="9.1"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="7.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="29.5"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="27.0"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL	<input type="text" value="1800"/>	LBS	<	ALLOWABLE SHEARWALL CAPACITY	<input type="text" value="9067"/>	LBS
--------------------------	-----------------------------------	-----	---	------------------------------	-----------------------------------	-----

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6" O.C. PANEL EDGES & 12" O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="230"/>	PLF	OVERTURNING MOMENT	<input type="text" value="16.4"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="0"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="100"/>	LBS	RESISTIVE MOMENT	<input type="text" value="61.8"/>	K-FT	HOLDDOWN CAPACITY	<input type="text" value="0"/>	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

PO - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - UNBLOCKED
#DIV/0!

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 101: 1ST - SIDE EXT BR2

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS ALLOWABLE SHEARWALL CAPACITY LBS
 <

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN



SHEARWALL DESIGN SUMMARY

SHEARWALL 102: 1ST - SIDE EXT KIT/PAN

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="10.1"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="0.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="25.3"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="25.3"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL	<input type="text" value="3900"/>	LBS	<	ALLOWABLE SHEARWALL CAPACITY	<input type="text" value="8506"/>	LBS
--------------------------	-----------------------------------	-----	---	------------------------------	-----------------------------------	-----

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="249"/>	PLF	OVERTURNING MOMENT	<input type="text" value="39.4"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="0"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="1050"/>	LBS	RESISTIVE MOMENT	<input type="text" value="63.9"/>	K-FT	HOLDDOWN CAPACITY	<input type="text" value="0"/>	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 103: 1ST - SIDE EXT GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="11.0"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="0.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="21.5"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="21.5"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL	<input type="text" value="3350"/>	LBS	<	ALLOWABLE SHEARWALL CAPACITY	<input type="text" value="7220"/>	LBS
--------------------------	-----------------------------------	-----	---	------------------------------	-----------------------------------	-----

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="174"/>	PLF	OVERTURNING MOMENT	<input type="text" value="36.9"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="0"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="1110"/>	LBS	RESISTIVE MOMENT	<input type="text" value="38.4"/>	K-FT	HOLDDOWN CAPACITY	<input type="text" value="0"/>	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL 104: 1ST - REAR EXT FIREPLACE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="10.1"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="0.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="8.7"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="8.7"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL	<input type="text" value="1900"/>	LBS	<	ALLOWABLE SHEARWALL CAPACITY	<input type="text" value="2911"/>	LBS
--------------------------	-----------------------------------	-----	---	------------------------------	-----------------------------------	-----

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="405"/>	PLF	OVERTURNING MOMENT	<input type="text" value="19.2"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="680"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="800"/>	LBS	RESISTIVE MOMENT	<input type="text" value="13.3"/>	K-FT	HOLDDOWN CAPACITY	<input type="text" value="4935"/>	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

SHEARWALL 105: 1ST - REAR EXT KIT

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="10.1"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="0.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="3.0"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="3.0"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL	<input type="text" value="650"/>	LBS	<	ALLOWABLE SHEARWALL CAPACITY	<input type="text" value="835"/>	LBS
--------------------------	----------------------------------	-----	---	------------------------------	----------------------------------	-----

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="405"/>	PLF	OVERTURNING MOMENT	<input type="text" value="6.6"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="1104"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="1200"/>	LBS	RESISTIVE MOMENT	<input type="text" value="3.3"/>	K-FT	HOLDDOWN CAPACITY	<input type="text" value="4935"/>	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN



SHEARWALL DESIGN SUMMARY

SHEARWALL 106: 1ST - FRONT EXT BR2

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.1	FT.	MAX WALL OPENING HT, H _c	0.0	FT.		
WALL LENGTH, L	6.0	FT.	QUALIFYING WALL LENGTH, L	6.0	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL ALLOWABLE SHEARWALL CAPACITY
 1900 LBS < 2015 LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6" O.C. PANEL EDGES & 12" O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	370	PLF	OVERTURNING MOMENT	19.2	K-FT	HOLD DOWN DESIGN LOAD	1902	LBS
DL AT ENDS OF WALL	1050	LBS	RESISTIVE MOMENT	7.8	K-FT	HOLD DOWN CAPACITY	4935	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

SHEARWALL 107: 1ST - FRONT EXT OFFICE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.1	FT.	MAX WALL OPENING HT, H _c	0.0	FT.		
WALL LENGTH, L	5.5	FT.	QUALIFYING WALL LENGTH, L	5.5	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL ALLOWABLE SHEARWALL CAPACITY
 1700 LBS < 1847 LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6" O.C. PANEL EDGES & 12" O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	350	PLF	OVERTURNING MOMENT	17.2	K-FT	HOLD DOWN DESIGN LOAD	1974	LBS
DL AT ENDS OF WALL	950	LBS	RESISTIVE MOMENT	6.3	K-FT	HOLD DOWN CAPACITY	4935	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN



SHEARWALL DESIGN SUMMARY

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

PO - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - UNBLOCKED
#DIV/0!

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 108: 1ST - REAR EXT WIC2/BA2

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS ALLOWABLE SHEARWALL CAPACITY LBS
 <

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN



SHEARWALL DESIGN SUMMARY

SHEARWALL 109: 1ST - FRONT INT GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

SIMPSON STDH14RJ HOLDOWN

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS ####! ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P0 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - UNBLOCKED
#DIV/0!

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL 207: 2ND - SIDE EXT MBR

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6" O.C. PANEL EDGES & 12" O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 208: 2ND - REAR EXT BR5/WID1

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6" O.C. PANEL EDGES & 12" O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL 209: 2ND - FRONT EXT BONUS

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS ####! ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P0 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - UNBLOCKED
#DIV/0!

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL 110: 1ST - SIDE EXT BA2

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

SIMPSON STDH14RJ HOLDOWN

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS ####! ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P0 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - UNBLOCKED
#DIV/0!

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

DESIGN BUILT HOMES

86TH AVE SE

MERCER ISLAND, WA

SHEAR WALL CALCULATIONS - SEISMIC

REVIEWED BY: RJZ

MAY 17, 2022

PARAMETERS:

SINGLE FAMILY HOME

DESIGN WIND SPEED: 100 MPH

WIND EXPOSURE CATEGORY: B

SEISMIC DESIGN CATEGORY: D

CODE & DESIGN STANDARD: 2018 IBC CH. 1609, ASCE 7-16 CH. 26-30



MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

SEISMIC CALCULATION - ASCE 7-16

SEISMIC DESIGN CATEGORY:

USER INPUTS:

SITE CLASS	D
SPECTRAL RESPONSE ACCELERATION 0.2 SEC, S_s	1.405
SPECTRAL RESPONSE ACCELERATION 1.0 SEC, S₁	0.489
OCCUPANCY CATEGORY	II

VARIABLES:

SITE COEFFICIENT, F _A	1.20
SITE COEFFICIENT, F _V	1.81

CALCULATED VALUES:

MAXIMUM SPECTRAL RESPONSE ACCELERATION, S_M	1.686
MAXIMUM SPECTRAL RESPONSE ACCELERATION, S_{M1}	0.886
DESIGN SPECTRAL RESPONSE ACCELERATION, S_D	1.124
DESIGN SPECTRAL RESPONSE ACCELERATION, S_{D1}	0.590
SEISMIC DESIGN CATEGORY (SHORT TERM)	D
SEISMIC DESIGN CATEGORY (1.0 SECOND TERM)	D

BUILDING PERIOD DETERMINATION:

USER INPUTS:

BUILDING PERIOD COEFFICIENT, C _T	0.020
LONG-PERIOD TRANS PERIOD, T _L (SEC)	6
HT. ABV BASE TO HIGHEST LEVEL, h _N	21

CALCULATED VALUES:

APPROXIMATE FUNDAMENTAL PERIOD, T _A	0.197
T ₀	0.105
T _B	0.525
SPECTRAL RESPONSE ACC., S _A (G)	1.124

SITE CLASS ASSUMPTION

YES PER ASCE 7-16 SECTION 11.4.3 THE SITE CLASS MAY BE ASSUMED TO BE D

EQUIVALENT LATERAL FORCE PROCEDURE

DEAD LOAD CALCULATION:

LEVEL	STORY HT. (FT.)	AREA (FT ²)	DEAD LOAD (PSF)	DL OF EXT WALL TRIB. TO LEVEL (KIPS)	TOTAL LEVEL DL
1	12.0	2590	15	11.4	50 K
2	9.1	2310	10	5.7	29 K
3	0.0	0	0	0.0	0 K
4	0.0	0	0	0.0	0 K
5	0.0	0	0	0.0	0 K
6	0.0	0	0	0.0	0 K
7	0.0	0	0	0.0	0 K
8	0.0	0	0	0.0	0 K
9	0.0	0	0	0.0	0 K
10	0.0	0	0	0.0	0 K
11	0.0	0	0	0.0	0 K
12	0.0	0	0	0.0	0 K
13	0.0	0	0	0.0	0 K
14	0.0	0	0	0.0	0 K
15	0.0	0	0	0.0	0 K
16	0.0	0	0	0.0	0 K
17	0.0	0	0	0.0	0 K
18	0.0	0	0	0.0	0 K
19	0.0	0	0	0.0	0 K
20	0.0	0	0	0.0	0 K

TOTAL DEAD LOAD OF STRUCTURE 79 KIPS

SEISMIC RESPONSE COEFFICIENT:

	TRANSVERSE	LONGITUDINAL
RESPONSE MODIFICATION FACTOR, R	6.5	6.5
OCCUPANCY IMPORTANCE FACTOR, I _e	1.00	1.00
SEISMIC RESPONSE COEFFICIENT, C _s	0.173	0.173

BASE SHEARS:

ULTIMATE LOADS

x 0.7 =

ALLOWABLE LOADS

TRANSVERSE	LONGITUDINAL	TRANSVERSE	LONGITUDINAL
14 K	14 K	9.6 K	9.6 K

STORY SHEAR CALCULATION:

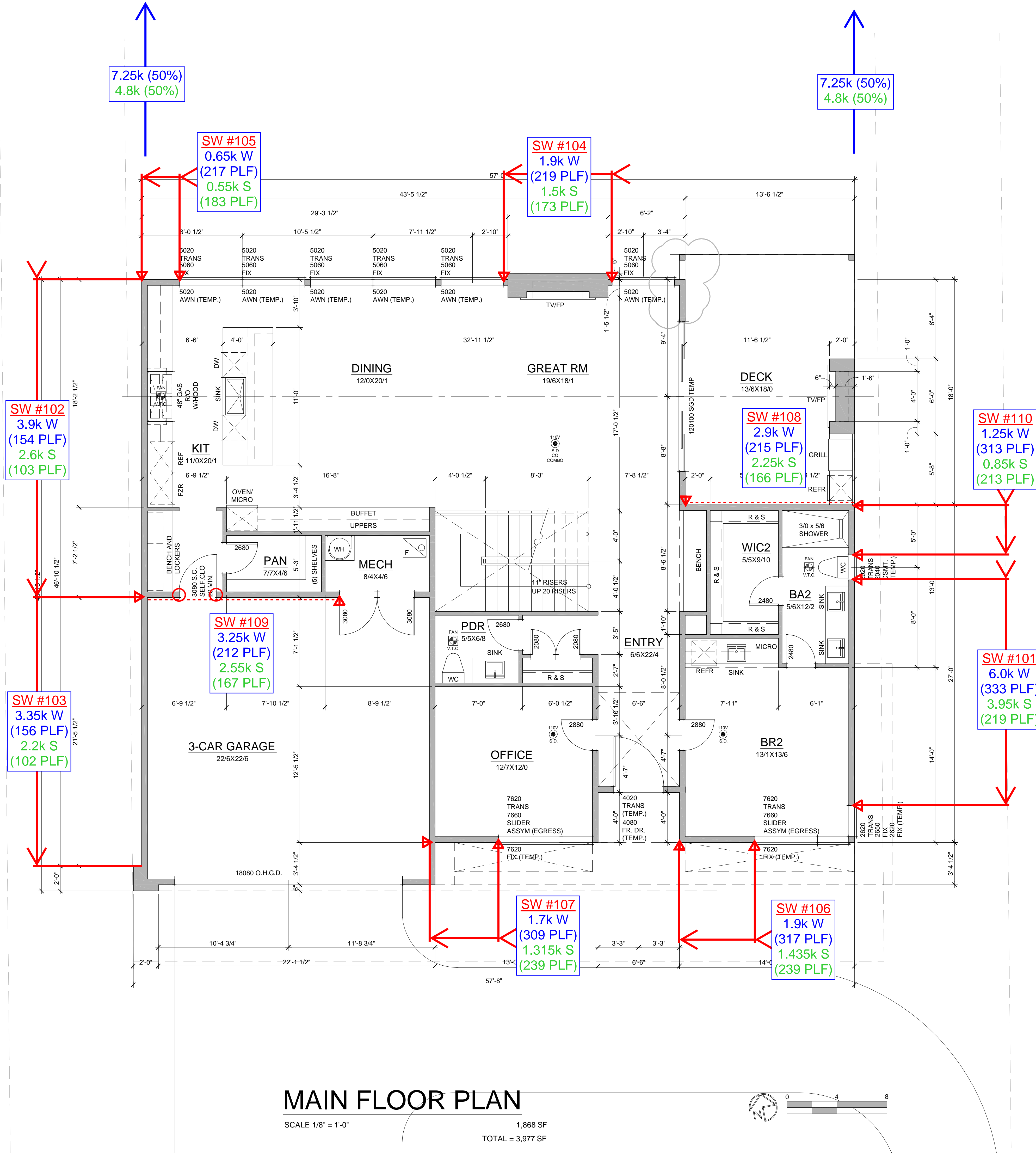
DISTRIBUTION EXPONENT, k 1.00

ULTIMATE LOADS

x 0.7 =

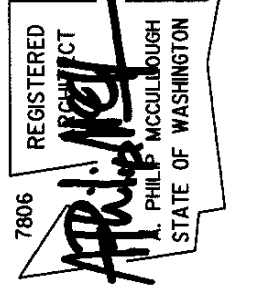
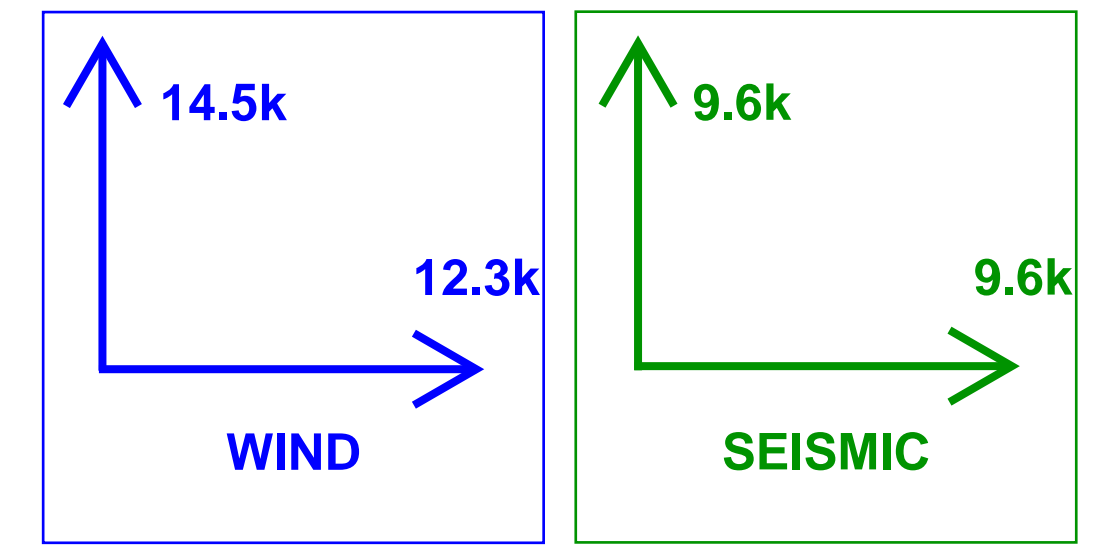
ALLOWABLE LOADS

LEVEL	VERT. DIST. FACTOR, C _{vk}	TRANSVERSE		LONGITUDINAL		TRANSVERSE		LONGITUDINAL	
		STORY SHEAR, F _x	STORY SHEAR, F _y	STORY SHEAR, F _x	STORY SHEAR, F _y	STORY SHEAR, F _x	STORY SHEAR, F _y	STORY SHEAR, F _x	STORY SHEAR, F _y
1	0.498	6.8	6.8	4.8	4.8	9.6	9.6	4.8	4.8
2	0.502	6.9	6.9	4.8	4.8	4.8	4.8	4.8	4.8
3	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



- GENERAL NOTES:**
1. PLATE HEIGHT @ CLERESTORY IS 15'-1", U.N.O.
 2. PLATE HEIGHT @ MAIN FLOOR IS 11'-0", U.N.O.
 3. PLATE HEIGHT @ LOWER FLOOR IS 10'-1" U.N.P.
 4. DIMENSION LINES ARE TO FACE OF STUD U.N.O.
 5. WINDOW SIZES & ROUGH OPENINGS TO BE VERIFIED BY CONTRACTOR.
 6. WINDOW HEAD HEIGHT AT MAIN FLOOR IS 8'-0" ABOVE SUBFLOOR, U.N.O. IF NOMINAL DOOR AND WINDOW HEIGHTS ARE SIMILAR, COORDINATE WITH DOOR AND WINDOW SPECS TO LOCATE FINAL ELEVATION OF THE HEAD HEIGHTS SO THAT ALL DOOR AND WINDOW TRIM ALIGN.
 7. WINDOW AND DOOR SIZES ARE DIMENSIONED IN FEET AND INCHES (E.G. 2828x 2'-8 1/2" X 2'-8 1/2").
 8. EXTERIOR WALLS TO BE 2X6 STUDS AT 16" O.C., INTERIOR WALLS TO BE 2X4 STUDS AT 16" O.C., U.N.O.
 9. FIREBLOCK ALL PLUMBING PENETRATIONS AND STAIR RUNS PER IRC SEC. R302.11.
 10. SAFETY GLAZING PER IRC SEC. R308.4.
 11. ALL WOOD IN CONTACT WITH CONCRETE TO BE PRESSURE TREATED PER IRC SEC. R317.1.
 12. PROVIDE UNDER-STAIR PROTECTION (1/2" GWB) PER IRC SEC. R302.7.
 13. PROVIDE (1) LAYER OF 1/2" GWB AT THE GARAGE SIDE OF ALL WALLS SEPARATING THE GARAGE FROM THE RESIDENCE, ALL WALLS SEPARATING THE GARAGE FROM THE RESIDENCE, ALL WALLS SEPARATING THE GARAGE FROM THE RESIDENCE, ALL WALLS SEPARATING THE GARAGE FROM THE RESIDENCE.
 14. PER IRC SEC R311.7.5. MAX. RISER HEIGHT SHALL BE 7-3/4". MIN. TREAD DEPTH SHALL BE 10". STAIR NOSINGS: 3/4" MIN., 1-1/4" MAX. RADIUS @ LEADING EDGE OF TREAD: 9/16" MAX.
 15. PROVIDE HANDRAILS PER IRC SEC. R311.7.8. TOP OF HANDRAIL SHALL BE NOT LESS THAN 34" OR MORE THAN 38" ABOVE THE TREAD NOSINGS. HANDRAILS SHALL BE CONTINUOUS THE FULL LENGTH OF THE FLIGHT PER R311.7.7.2. THE HANDRAIL GRIP-SIZE SHALL BE PROVIDED PER R311.7.7.3.
 16. PROVIDE GUARDS (MIN. 36" HEIGHT) IN LOCATIONS PER IRC SEC. R312.
 17. FACTORY BUILT FIREPLACES & CHIMNEYS SHALL BE LISTED & LABELED AND SHALL BE INSTALLED & TERMINATED IN ACCORDANCE TO THE CONDITIONS OF THE LISTINGS. FACTORY BUILT FIREPLACES SHALL MEET EMISSION STANDARDS PER CH. 51-51 WAC.
 18. PROVIDE EXTERIOR AIR SUPPLY TO ANY FACTORY-BUILT FIREPLACE PER IRC SEC R1006.

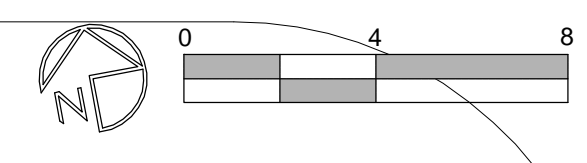
- STRUCTURAL NOTES:**
1. PROVIDE 7/16" OSB OR 15/32" PLYWOOD SHEATHING & FASTEN PER STANDARD EXTERIOR WALL SHEATHING SPECIFICATIONS.
 2. PROVIDE 12"X5 1/2"X1/2" OFFSET CAP PLATE FASTENED TO BOTTOM OF BEAM W(4) 1/4"X2 1/2" LONG SDS SCREWS.
 3. PACKOUT STEEL BEAM AS REQUIRED W/ SOLID 2X MATERIAL THRU-BOLTED TO WEB WITH (2) 1/2" DIAMETER THRU-BOLTS @ 24" O.C. STAGGERED. FASTEN TOP PLATE TO STEEL BEAM PER SPEC ON S-0.

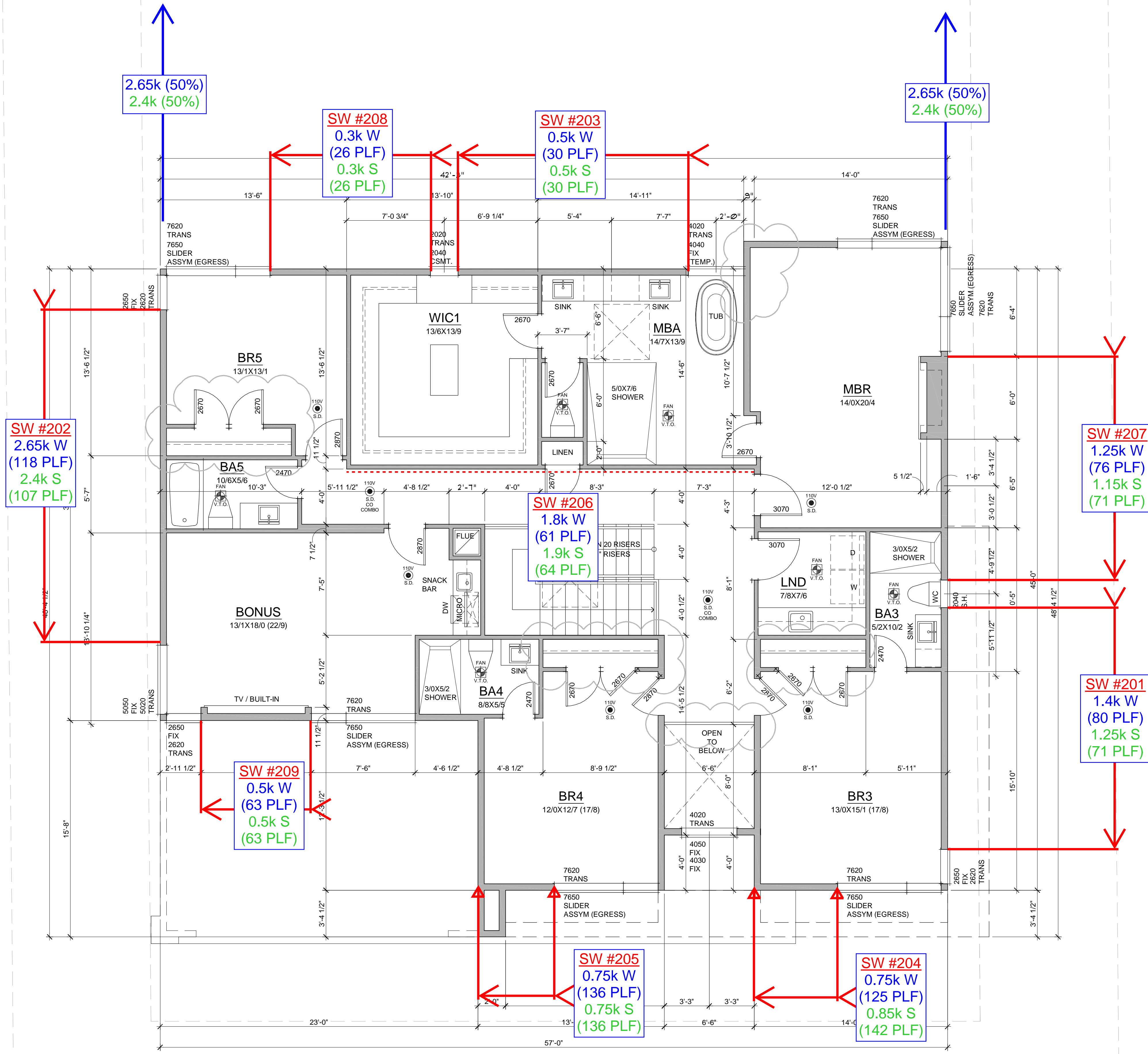


MAIN FLOOR PLAN

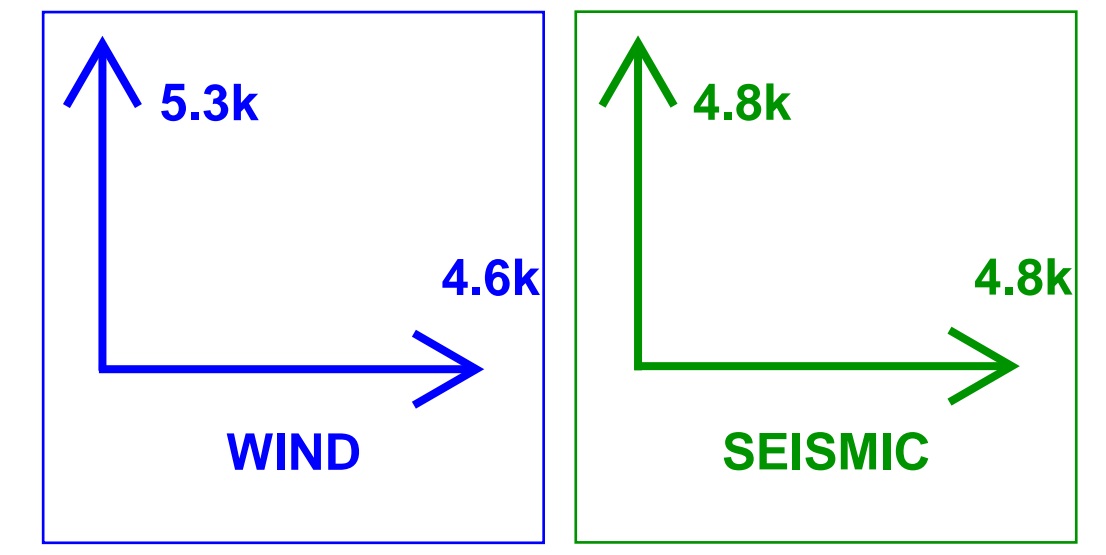
SCALE 1/8" = 1'-0"

1,868 SF
TOTAL = 3,977 SF



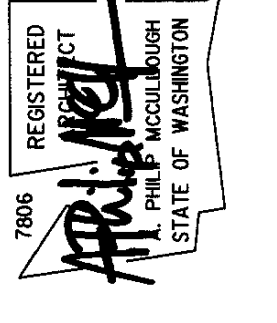


- GENERAL NOTES:**
- PLATE HEIGHT @ CLERESTORY IS 15'-1", U.N.O.
PLATE HEIGHT @ MAIN FLOOR IS 11'-0", U.N.O.
PLATE HEIGHT @ LOWER FLOOR IS 10'-1" U.N.P.
 - DIMENSION LINES ARE TO FACE OF STUD U.N.O.
 - WINDOW SIZES & ROUGH OPENINGS TO BE VERIFIED BY CONTRACTOR.
 - WINDOW HEAD HEIGHT AT MAIN FLOOR IS 8'-0" ABOVE SUBFLOOR, U.N.O. IF NOMINAL DOOR AND WINDOW HEIGHTS ARE SIMILAR, COORDINATE WITH DOOR AND WINDOW SPECS TO LOCATE FINAL ELEVATION OF THE HEAD HEIGHTS SO THAT ALL DOOR AND WINDOW TRIM ALIGN.
 - WINDOW AND DOOR SIZES ARE DIMENSIONED IN FEET AND INCHES
(E.G. 2828= 2'-8"W X 2'-8"H)
 - EXTERIOR WALLS TO BE 2X6 STUDS AT 16" O.C., INTERIOR WALLS TO BE 2X4 STUDS AT 16" O.C., U.N.O.
 - FIREBLOCK ALL PLUMBING PENETRATIONS AND STAIR RUNS PER IRC SEC. R302.11
 - SAFETY GLAZINGS PER IRC SEC. R308.4.
 - ALL WOOD IN CONTACT WITH CONCRETE TO BE PRESSURE TREATED PER IRC SEC. R317.1.
 - PROVIDE UNDER-STAIR PROTECTION (1/2" GWB) PER IRC SEC R302.7.
 - PROVIDE (1) LAYER OF 1/2" GWB AT THE GARAGE SIDE OF ALL WALLS AND CEILING ASSEMBLY BETWEEN THE GARAGE AND BELOW HABITABLE ROOMS.
 - HOUSE/GARAGE DOOR SHALL BE 1-3/8" THICK WOOD SOLID CORE, OR 1-3/8" THICK SOLID OR HONEYCOMB CORE STEEL DOOR, OR 20-MINUTE RATED FIRE DOOR W/ SELF CLOSING DEVICE.
 - DUCTS IN THE GARAGE AND DUCTS PENETRATING THE WALLS AND CEILING SEPARATING THE DWELLING FROM THE GARAGE SHALL BE MIN. 26 GAUGE GALVANIZED STEEL.
 - PER IRC SEC R311.7.5. MAX. RISER HEIGHT SHALL BE 7-3/4", MIN. TREAD DEPTH SHALL BE 10". STAIR NOSINGS: 3/4" MIN., 1-1/4" MAX. RADIUS @ LEADING EDGE OF TREAD: 9/16" MAX.
 - PROVIDE HANDRAILS PER IRC SEC. R311.7.8. TOP OF HANDRAIL SHALL BE NOT LESS THAN 34" OR MORE THAN 38" ABOVE THE TREAD NOSINGS. HANDRAILS SHALL BE CONTINUOUS THE FULL LENGTH OF THE FLIGHT PER R311.7.7.2. THE HANDRAIL GRIP-SIZE SHALL BE PROVIDED PER R311.7.3.
 - PROVIDE GUARDS (MIN. 36" HEIGHT) IN LOCATIONS PER IRC SEC. R312.
 - FANUCES AND CHIMNEYS SHALL BE LISTED & INSTALLED & TERMINATED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ALL EXHAUST SYSTEMS SHALL MEET EMISSIONS REQUIREMENTS PER 1 WAC 51-10-010.
 - PROVIDE EXTERIOR AIR SUPPLY TO ANY FACTORY-BUILT FIREPLACE PER IRC SEC R1006.



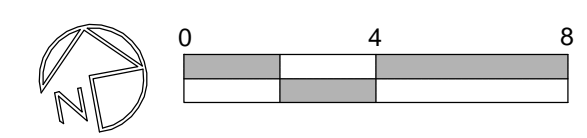
McCULLOUGH ARCHITECTS
 5601 6th Ave South
 Suite 371
 Seattle, WA, 98108
 206.443.1181
 mccullougharchitects.com
 UNPUBLISHED WORK
 2021 © McCullough Architects

Date:	04.29.2022
Job No:	xx-xxxx
Project No:	00000
Drawn:	BAK
Approved:	APM
Owner:	Design Built Homes



BLA-86th Ave SE
 Mercer Island, Washington

UPPER FLOOR PLAN
 SCALE 1/4" = 1'-0"
 2,109 SF





SHEARWALL DESIGN SUMMARY

SHEARWALL 201: 2ND - SIDE EXT BR3/MBR

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 202: 2ND - SIDE EXT BR5/BONUS

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL 203: 2ND - REAR EXT BR5/MBA

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="9.1"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="0.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="16.7"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="16.7"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL	<input type="text" value="500"/>	LBS	<	ALLOWABLE SHEARWALL CAPACITY	<input type="text" value="3998"/>	LBS
--------------------------	----------------------------------	-----	---	------------------------------	-----------------------------------	-----

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="170"/>	PLF	OVERTURNING MOMENT	<input type="text" value="4.6"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="0"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="400"/>	LBS	RESISTIVE MOMENT	<input type="text" value="13.6"/>	K-FT	HOLDDOWN CAPACITY	<input type="text" value="0"/>	LBS

HOLD-DOWN SPECIFICATION

NO HOLDDOWN REQUIRED

SHEARWALL 204: 2ND - FRONT EXT BR3

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="9.1"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="0.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="6.0"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="6.0"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL	<input type="text" value="850"/>	LBS	<	ALLOWABLE SHEARWALL CAPACITY	<input type="text" value="1439"/>	LBS
--------------------------	----------------------------------	-----	---	------------------------------	-----------------------------------	-----

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="190"/>	PLF	OVERTURNING MOMENT	<input type="text" value="7.7"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="853"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="400"/>	LBS	RESISTIVE MOMENT	<input type="text" value="2.6"/>	K-FT	HOLDDOWN CAPACITY	<input type="text" value="1705"/>	LBS

HOLD-DOWN SPECIFICATION

SIMPSON CS16 STRAP TIE (14" END LENGTH)



SHEARWALL DESIGN SUMMARY

SHEARWALL 205: 2ND - FRONT EXT BR4

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="9.1"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="0.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="5.5"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="5.5"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6" O.C. PANEL EDGES & 12" O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="190"/>	PLF	OVERTURNING MOMENT	<input type="text" value="6.8"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="826"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="400"/>	LBS	RESISTIVE MOMENT	<input type="text" value="2.3"/>	K-FT	HOLDDOWN CAPACITY	<input type="text" value="1705"/>	LBS

HOLD-DOWN SPECIFICATION

SIMPSON GS16 STRAP TIE (14" END LENGTH)

SHEARWALL 206: 2ND - FRONT INT HALL

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="9.1"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="7.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="29.5"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="27.0"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6" O.C. PANEL EDGES & 12" O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="230"/>	PLF	OVERTURNING MOMENT	<input type="text" value="17.3"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="0"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="100"/>	LBS	RESISTIVE MOMENT	<input type="text" value="46.4"/>	K-FT	HOLDDOWN CAPACITY	<input type="text" value="0"/>	LBS

HOLD-DOWN SPECIFICATION

NO HOLDDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS ALLOWABLE SHEARWALL CAPACITY LBS
#DIV/0!

SHEARWALL ASSEMBLY SPECIFICATION

PO - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - UNBLOCKED
#DIV/0!

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 101: 1ST - SIDE EXT BR2

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN



SHEARWALL DESIGN SUMMARY

SHEARWALL 102: 1ST - SIDE EXT KIT/PAN

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="10.1"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="0.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="25.3"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="25.3"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL	<input type="text" value="2600"/>	LBS	<	ALLOWABLE SHEARWALL CAPACITY	<input type="text" value="6076"/>	LBS
--------------------------	-----------------------------------	-----	---	------------------------------	-----------------------------------	-----

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="249"/>	PLF	OVERTURNING MOMENT	<input type="text" value="26.3"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="0"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="1050"/>	LBS	RESISTIVE MOMENT	<input type="text" value="47.9"/>	K-FT	HOLDDOWN CAPACITY	<input type="text" value="0"/>	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 103: 1ST - SIDE EXT GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="11.0"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="0.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="21.5"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="21.5"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL	<input type="text" value="2200"/>	LBS	<	ALLOWABLE SHEARWALL CAPACITY	<input type="text" value="5157"/>	LBS
--------------------------	-----------------------------------	-----	---	------------------------------	-----------------------------------	-----

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="174"/>	PLF	OVERTURNING MOMENT	<input type="text" value="24.2"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="0"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="1110"/>	LBS	RESISTIVE MOMENT	<input type="text" value="28.8"/>	K-FT	HOLDDOWN CAPACITY	<input type="text" value="0"/>	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL 104: 1ST - REAR EXT FIREPLACE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="10.1"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="0.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="8.7"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="8.7"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL	<input type="text" value="1500"/>	LBS	<	ALLOWABLE SHEARWALL CAPACITY	<input type="text" value="2080"/>	LBS
--------------------------	-----------------------------------	-----	---	------------------------------	-----------------------------------	-----

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="405"/>	PLF	OVERTURNING MOMENT	<input type="text" value="15.2"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="597"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="800"/>	LBS	RESISTIVE MOMENT	<input type="text" value="10.0"/>	K-FT	HOLDDOWN CAPACITY	<input type="text" value="3695"/>	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

SHEARWALL 105: 1ST - REAR EXT KIT

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="10.1"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="0.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="3.0"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="3.0"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL	<input type="text" value="550"/>	LBS	<	ALLOWABLE SHEARWALL CAPACITY	<input type="text" value="597"/>	LBS
--------------------------	----------------------------------	-----	---	------------------------------	----------------------------------	-----

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="405"/>	PLF	OVERTURNING MOMENT	<input type="text" value="5.6"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="1038"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="1200"/>	LBS	RESISTIVE MOMENT	<input type="text" value="2.4"/>	K-FT	HOLDDOWN CAPACITY	<input type="text" value="3695"/>	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN



SHEARWALL DESIGN SUMMARY

SHEARWALL 106: 1ST - FRONT EXT BR2

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="10.1"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="0.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="6.0"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="6.0"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL	<input type="text" value="1435"/>	LBS	<	ALLOWABLE SHEARWALL CAPACITY	<input type="text" value="1439"/>	LBS
--------------------------	-----------------------------------	-----	---	------------------------------	-----------------------------------	-----

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="370"/>	PLF	OVERTURNING MOMENT	<input type="text" value="14.5"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="1444"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="1050"/>	LBS	RESISTIVE MOMENT	<input type="text" value="5.8"/>	K-FT	HOLDDOWN CAPACITY	<input type="text" value="3695"/>	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STDH14RJ HOLDOWN

SHEARWALL 107: 1ST - FRONT EXT OFFICE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	<input type="text" value="10.1"/>	FT.	MAX WALL OPENING HT, H _c	<input type="text" value="0.0"/>	FT.		
WALL LENGTH, L	<input type="text" value="5.5"/>	FT.	QUALIFYING WALL LENGTH, L	<input type="text" value="5.5"/>	FT.	SHEARWALL ASSEMBLY	<input type="text" value="P1"/>

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL	<input type="text" value="1315"/>	LBS	<	ALLOWABLE SHEARWALL CAPACITY	<input type="text" value="1319"/>	LBS
--------------------------	-----------------------------------	-----	---	------------------------------	-----------------------------------	-----

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL	<input type="text" value="350"/>	PLF	OVERTURNING MOMENT	<input type="text" value="13.3"/>	K-FT	HOLD DOWN DESIGN LOAD	<input type="text" value="1554"/>	LBS
DL AT ENDS OF WALL	<input type="text" value="950"/>	LBS	RESISTIVE MOMENT	<input type="text" value="4.7"/>	K-FT	HOLDDOWN CAPACITY	<input type="text" value="3695"/>	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STDH14RJ HOLDOWN



SHEARWALL DESIGN SUMMARY

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

PO - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - UNBLOCKED
#DIV/0!

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 108: 1ST - REAR EXT WIC2/BA2

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS ALLOWABLE SHEARWALL CAPACITY LBS
 <

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN



SHEARWALL DESIGN SUMMARY

SHEARWALL 109: 1ST - FRONT INT GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

SIMPSON STDH14RJ HOLDDOWN

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS ####! ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

PO - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - UNBLOCKED
#DIV/0!

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL 207: 2ND - SIDE EXT MBR

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6" O.C. PANEL EDGES & 12" O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 208: 2ND - REAR EXT BR5/WID1

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6" O.C. PANEL EDGES & 12" O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL 209: 2ND - FRONT EXT BONUS

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS ####! ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P0 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - UNBLOCKED
#DIV/0!

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL 110: 1ST - SIDE EXT BA2

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS < ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

P1 - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED
ADEQUATE

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

SIMPSON STDH14RJ HOLDOWN

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H FT. MAX WALL OPENING HT, H_c FT.
WALL LENGTH, L FT. QUALIFYING WALL LENGTH, L FT. SHEARWALL ASSEMBLY

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL LBS ####! ALLOWABLE SHEARWALL CAPACITY LBS

SHEARWALL ASSEMBLY SPECIFICATION

PO - 1-SIDE 7/16" OSB
FASTENED W/ 8D NAILS AT 6"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - UNBLOCKED
#DIV/0!

OVERTURNING EVALUATION:

RESISTIVE DL PLF OVERTURNING MOMENT K-FT HOLD DOWN DESIGN LOAD LBS
DL AT ENDS OF WALL LBS RESISTIVE MOMENT K-FT HOLDDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED