



# CALCULATION PACKAGE

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June 09, 2021

**Yen Design**

**7511 SE 76th St.**

Mercer Island,  
Washington

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**MULHERN & KULP STRUCTURAL ENGINEERING, INC.**

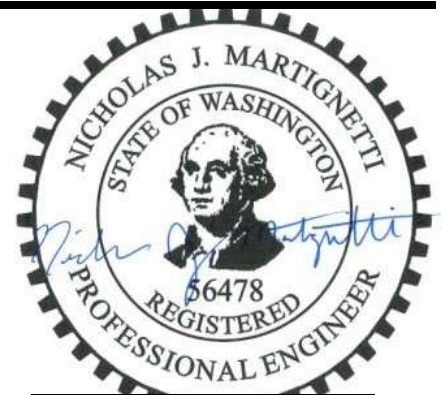
Prepared By:

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*Staff Engineer*

Nick J. Martignetti, P.E.

*Associate Owner + San Diego Office Director*



*Signature, Seal & Date*



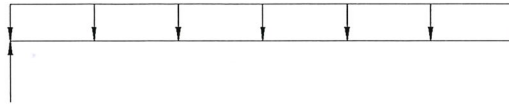
**BEAM & HEADER CALCULATIONS**

BEAM DESCRIPTION: ROOF FRAMING - TYP. HDR

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  ADEQUATE  
 $\Delta_{TL} =$  IN.  $L/$   $< L/240$   ADEQUATE

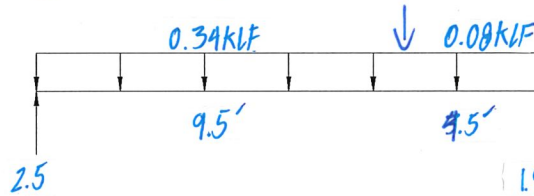
4x6 DF#2

BEAM DESCRIPTION: ROOF FRAMING - BM @ DEMOED BRG (LONG)

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  ADEQUATE  
 $\Delta_{TL} =$  IN.  $L/$   $< L/240$   ADEQUATE

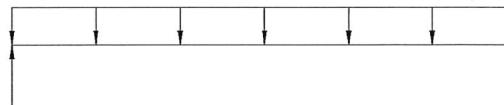
5 1/2" x 10 1/2" GLB

BEAM DESCRIPTION: ROOF FRAMING - BM @ DEMOED BRG (SHORT)

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  ADEQUATE  
 $\Delta_{TL} =$  IN.  $L/$   $< L/240$   ADEQUATE

4x8 DF#2



**BEAM & HEADER CALCULATIONS**

BEAM DESCRIPTION: UPPER FLOOR FRAMING - TYP. HDR

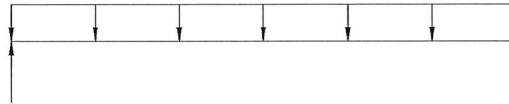
B3

PARAMETERS:

L =  FT

W =  KLF

P =  K



ANALYSIS:

R<sub>MAX</sub> =  K

V<sub>D</sub> =  K

< V<sub>ALL</sub> =  K

ADEQUATE

M<sub>MAX</sub> =  K-FT

< M<sub>ALL</sub> =  K-FT

ADEQUATE

Δ<sub>TL</sub> =  IN.

L/  < L/240

ADEQUATE

**4x6 DF#2**

BEAM DESCRIPTION: UPPER FLOOR FRAMING - BM @ BUMPOUT

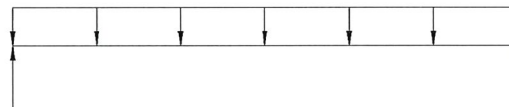
B4

PARAMETERS:

L =  FT

W =  KLF

P =  K



ANALYSIS:

R<sub>MAX</sub> =  K

V<sub>D</sub> =  K

< V<sub>ALL</sub> =  K

ADEQUATE

M<sub>MAX</sub> =  K-FT

< M<sub>ALL</sub> =  K-FT

ADEQUATE

Δ<sub>TL</sub> =  IN.

L/  < L/240

ADEQUATE

**4x6 DF#2**

BEAM DESCRIPTION: UPPER FLOOR FRAMING - BM @ S.W. ABOVE

B9

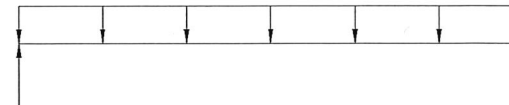
PARAMETERS:

L =  FT

W =  KLF

P =  K

SEE ENERCALC  
OUTPUT



ANALYSIS:

R<sub>MAX</sub> =  K

V<sub>D</sub> =  K

< V<sub>ALL</sub> =  K

ADEQUATE

M<sub>MAX</sub> =  K-FT

< M<sub>ALL</sub> =  K-FT

ADEQUATE

Δ<sub>TL</sub> =  IN.

L/  < L/240

ADEQUATE

**(2) 3/4"x11 1/4" LVL**



**BEAM & HEADER CALCULATIONS**

BEAM DESCRIPTION: UPPER FLOOR FRAMING-EXISTING REAR KITCHEN DOOR HDR B5

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  ADEQUATE  
 $\Delta_{TL} =$  IN.  $L/$   $< L/240$   ADEQUATE

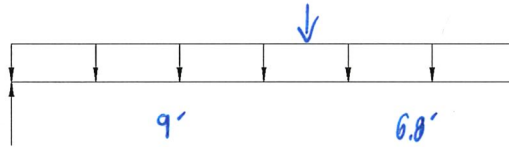
(E) 5 1/4" x 16" PSL

BEAM DESCRIPTION: UPPER FLOOR FRAMING- REAR PATIO BM (WORST) EXISTING B6

PARAMETERS:

L =  FT  
W =  KLF  
P =  K

SEE ENERCALC  
OUTPUT



ANALYSIS:

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

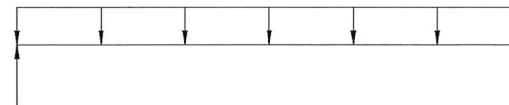
(E) 5 1/8" x 12" GLB

BEAM DESCRIPTION: UPPER FLOOR FRAMING- REAR PATIO CANT'D BM B7

PARAMETERS:

L =  FT  
W =  KLF  
P =  K

SEE ENERCALC  
OUTPUT



ANALYSIS:

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

(4) 3/4" x 11 3/8" LVL





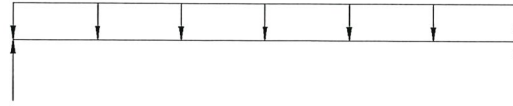
**BEAM & HEADER CALCULATIONS**

**BEAM DESCRIPTION:** UPPER FLOOR FRAMING- FASCIA @ WALL ABOVE

310

PARAMETERS:

L =  FT  
W =  KLF  
P =  K



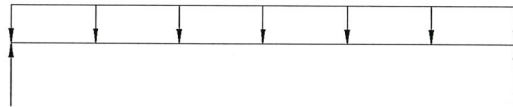
ANALYSIS:

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

**BEAM DESCRIPTION:**

PARAMETERS:

L =  FT  
W =  KLF  
P =  K



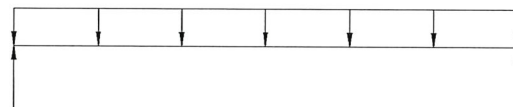
ANALYSIS:

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

**BEAM DESCRIPTION:**

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      ADEQUATE  
 $\Delta_{TL} =$  IN.      $L/$   $< L/240$       ADEQUATE

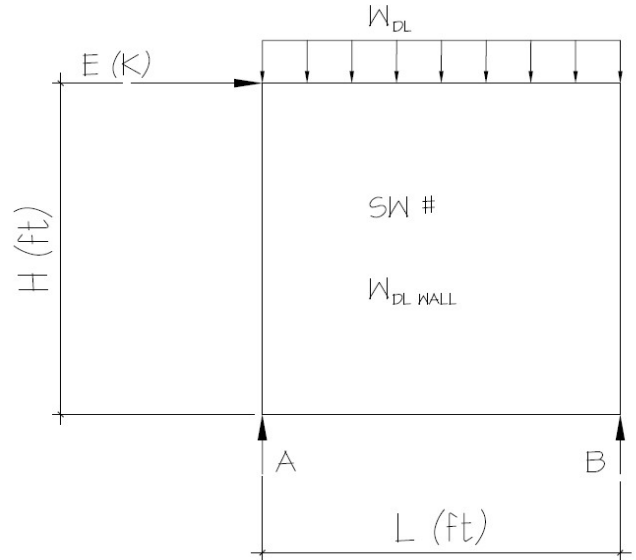
**OVERSTRENGTH CALCULATIONS**

**WALL DESCRIPTION/SW #:**

110

**PARAMETERS:**

L = 9.0 FT  
 H = 10.0 FT  
 E = 0.350 K  
 W<sub>DLWALL</sub> = 0.100 KLF  
 W<sub>DL</sub> = 0.220 KLF  
 Ω<sub>0</sub> = 2.5 (ASCE TABLE 12.2.1 FOOTNOTE G)  
 SDS = 0.979



**ANALYSIS:**

$E_{MH} = \Omega_0 * E = 0.88$  K       $E_v = 0.2 * SDS * DL = 0.564$  K  
 $E_M = E_{MH} + E_v = 1.439$  K  
 $E_M = E_{MH} - E_v = 0.311$  K

$E_M (MAX) = \sum M_A = 0 = -4.087(9.1) - 0.121(16)(8) + R_B(16)$        $R_B = .968DL + 2.32E$   
 $R_A = .968DL - 2.32E$   
 $E_M (MIN) = \sum M_A = 0 = -3.363(9.1) - 0.121(16)(8) + R_B(16)$        $R_B = .968DL + 1.91E$   
 $R_A = .968DL - 1.91E$

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

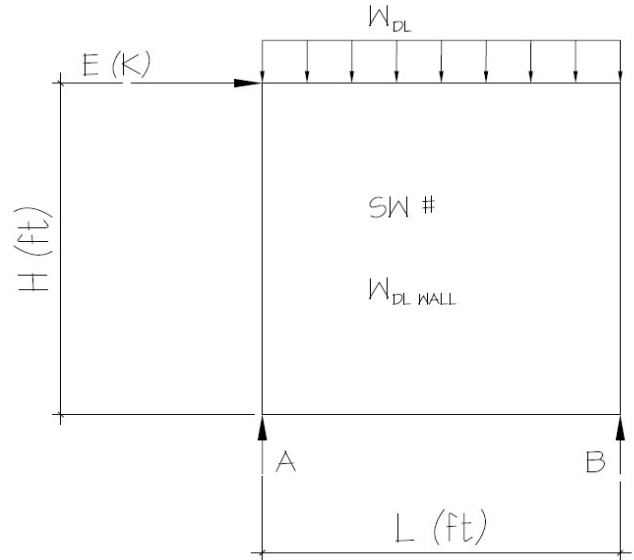
**OVERSTRENGTH CALCULATIONS**

**WALL DESCRIPTION/SW #:**

202

**PARAMETERS:**

L = 22.5 FT  
 H = 9.0 FT  
 E = 1.140 K  
 W<sub>DLWALL</sub> = 0.100 KLF  
 W<sub>DL</sub> = 0.200 KLF  
 Ω<sub>0</sub> = 2.5 (ASCE TABLE 12.2.1 FOOTNOTE G)  
 SDS = 0.979



**ANALYSIS:**

$E_{MH} = \Omega_0 * E = 2.85$  K       $E_v = 0.2 * SDS * DL = 1.322$  K  
 $E_M = E_{MH} + E_v = 4.172$  K  
 $E_M = E_{MH} - E_v = 1.528$  K

$E_M (MAX) = \sum M_A = 0 = -2.7(9.1) - 0.121(12.5)(6.25) + R_B(12.5)$        $R_B = .756DL + 1.97E$   
 $R_A = .756DL - 1.97E$

$E_M (MIN) = \sum M_A = 0 = -2.135(9.1) - 0.121(12.5)(6.25) + R_B(12.5)$        $R_B = .756DL + 1.55E$   
 $R_A = .756DL - 1.55E$

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





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 Yen Design  
 251-21001  
 RJD  
 01-18-21

## Wood Beam

Lic. # : KW-06004787

File: beam calcs with overstrength.ec6  
 Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.17  
 MULHERN & KULP STRUCTURAL ENGINEERING INC

DESCRIPTION: Existing Patio Bm (B6)

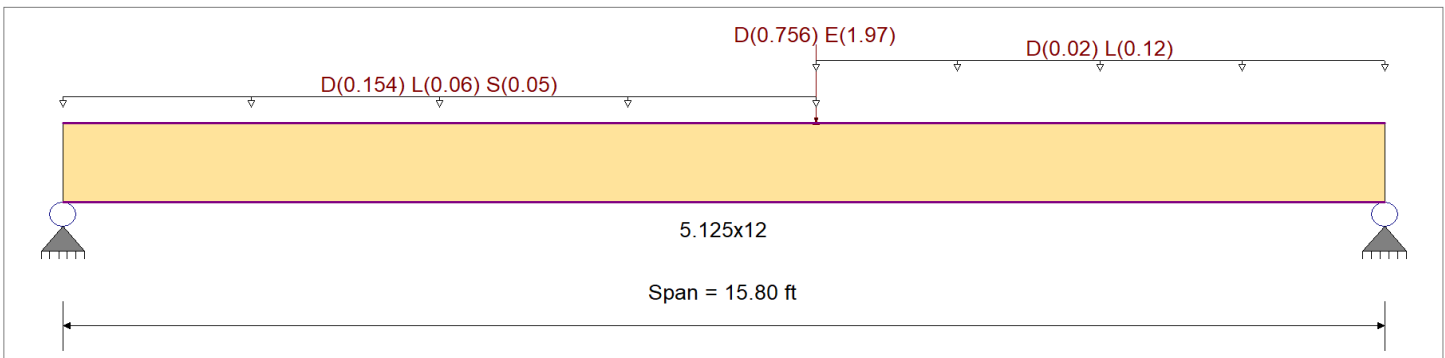
### Material Properties

Analysis Method : Allowable Stress Design

Wood Species : DF/DF  
 Wood Grade : 24F-V4

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb + 2,400.0 psi E : Modulus of Elasticity  
 Fb - 1,850.0 psi Ebend- xx 1,800.0ksi  
 Fc - Prll 1,650.0 psi Eminbend - xx 950.0ksi  
 Fc - Perp 650.0 psi Ebend- yy 1,600.0ksi  
 Fv 265.0 psi Eminbend - yy 850.0ksi  
 Ft 1,100.0 psi Density 31.210pcf



### Applied Loads

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

Beam self weight calculated and added to loads

Point Load : D = 0.7560, E = 1.970 k @ 9.0 ft, (SW)

Uniform Load : D = 0.1540, L = 0.060, S = 0.050 k/ft, Extent = 0.0 --> 9.0 ft, Tributary Width = 1.0 ft

Uniform Load : D = 0.020, L = 0.120 k/ft, Extent = 9.0 --> 15.80 ft, Tributary Width = 1.0 ft

### DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	<b>0.362</b>	1	Maximum Shear Stress Ratio	=	<b>0.165</b>	: 1
Section used for this span		<b>5.125x12</b>		Section used for this span		<b>5.125x12</b>	
fb: Actual	=	869.50psi		fv: Actual	=	43.66 psi	
Fb: Allowable	=	2,400.00psi		Fv: Allowable	=	265.00 psi	
Load Combination		+D+L		Load Combination		+D+L	
Location of maximum on span	=	8.880ft		Location of maximum on span	=	0.000 ft	
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
<b>Maximum Deflection</b>							
Max Downward Transient Deflection		0.206 in	Ratio =	918	>=	360	
Max Upward Transient Deflection		0.000 in	Ratio =	0	<	360	
Max Downward Total Deflection		0.418 in	Ratio =	453	>=	300	
Max Upward Total Deflection		0.000 in	Ratio =	0	<	300	

### 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	0.4181	8.015		0.0000	0.000

### Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	2.690	2.412
Overall MINimum	0.848	1.122
D Only	1.451	1.037
+D+L	2.013	1.832
+D+Lr	1.451	1.037
+D+S	1.773	1.166
+D+0.750Lr+0.750L	1.873	1.633
+D+0.750L+0.750S	2.114	1.729

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## Wood Beam

File: beam calcs with overstrength.ec6  
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.17  
MULHERN & KULP STRUCTURAL ENGINEERING INC

Lic. # : KW-06004787

DESCRIPTION: Existing Patio Bm (B6)

Load Combination	Support notation : Far left is #1		Values in KIPS
	Support 1	Support 2	
+D+0.60W	1.451	1.037	
+1.126D+0.70E	2.228	1.954	
+D+0.750Lr+0.750L+0.450W	1.873	1.633	
+D+0.750L+0.750S+0.450W	2.114	1.729	
+1.090D+0.750L+0.750S+0.5250E	2.690	2.412	
+0.60D+0.60W	0.871	0.622	
+0.470D+0.70E	1.276	1.273	
D Only	1.451	1.037	
L Only	0.562	0.794	
S Only	0.322	0.128	
E Only	0.848	1.122	
H Only			

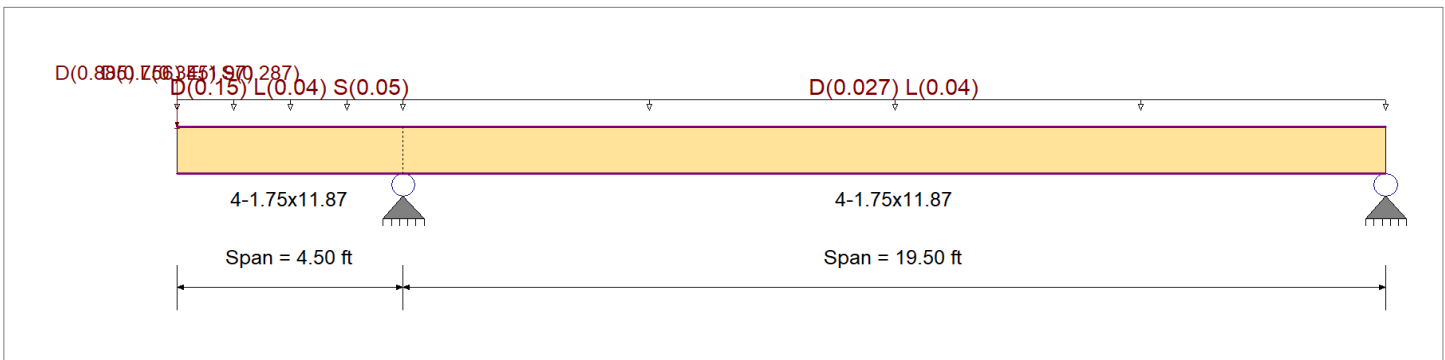
**Wood Beam**

Lic. # : KW-06004787

DESCRIPTION: **New Cant'd Beam (B7)**

**Material Properties**

Analysis Method : <b>Allowable Stress Design</b>	Fb +	2600 psi	E : Modulus of Elasticity	
	Fb -	2600 psi	Ebend- xx	2000ksi
	Fc - Prll	2510 psi	Eminbend - xx	1016.535ksi
Wood Species : <b>iLevel Truss Joist</b>	Fc - Perp	750 psi		
Wood Grade : <b>MicroLam LVL 2.0 E</b>	Fv	285 psi		
	Ft	1555 psi	Density	42.01 pcf
Beam Bracing : <b>Beam is Fully Braced against lateral-torsional buckling</b>				



**Applied Loads**

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

Beam self weight calculated and added to loads

Load for Span Number 1

- Uniform Load : D = 0.150, L = 0.040, S = 0.050, Tributary Width = 1.0 ft
- Point Load : D = 0.7560, E = 1.970 k @ 0.0 ft, (From SW)
- Point Load : D = 0.8850, L = 0.3450, S = 0.2870 k @ 0.0 ft, (From Bm)

Load for Span Number 2

- Uniform Load : D = 0.0270, L = 0.040, Tributary Width = 1.0 ft

**DESIGN SUMMARY**

**Design OK**

<b>Maximum Bending Stress Ratio</b>	=	<b>0.312</b>	1	<b>Maximum Shear Stress Ratio</b>	=	<b>0.173</b>	1
Section used for this span		<b>4-1.75x11.87</b>		Section used for this span		<b>4-1.75x11.87</b>	
fb: Actual	=	810.10psi		fv: Actual	=	49.44 psi	
Fb: Allowable	=	2,600.00psi		Fv: Allowable	=	285.00 psi	
Load Combination		+D+L, LL Comb Run (LL)		Load Combination		+D+L, LL Comb Run (L*)	
Location of maximum on span	=	4.500ft		Location of maximum on span	=	3.520 ft	
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
<b>Maximum Deflection</b>							
Max Downward Transient Deflection		0.062 in	Ratio = 1748 >=360				
Max Upward Transient Deflection		-0.049 in	Ratio = 2194 >=360				
Max Downward Total Deflection		0.315 in	Ratio = 342 >=300				
Max Upward Total Deflection		-0.179 in	Ratio = 1303 >=300				

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.450W, LL Comb	1	0.3146	0.000	+D+0.750L+0.750S+0.450W, LL Comb	0.0000	0.000
	2	0.0000	0.000		-0.1795	7.517

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum		6.187	-0.455
Overall MINimum		2.425	-0.092
D Only		3.394	0.031
+D+L, LL Comb Run (L*)		3.784	0.421

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**Wood Beam**

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Lic. # : KW-06004787

DESCRIPTION: **New Cant'd Beam (B7)**

Load Combination	Support notation : Far left is #1			Values in KIPS
	Support 1	Support 2	Support 3	
+D+L, LL Comb Run (L*)		4.019	-0.070	
+D+L, LL Comb Run (LL)		4.409	0.320	
+D+Lr, LL Comb Run (L*)		3.394	0.031	
+D+Lr, LL Comb Run (L*)		3.394	0.031	
+D+Lr, LL Comb Run (LL)		3.394	0.031	
+D+S		3.998	-0.062	
+D+0.750Lr+0.750L, LL Comb Run (L*)		3.686	0.323	
+D+0.750Lr+0.750L, LL Comb Run (L*)		3.863	-0.045	
+D+0.750Lr+0.750L, LL Comb Run (LL)		4.156	0.248	
+D+0.750L+0.750S, LL Comb Run (L*)		4.140	0.254	
+D+0.750L+0.750S, LL Comb Run (L*)		4.316	-0.114	
+D+0.750L+0.750S, LL Comb Run (LL)		4.609	0.179	
+D+0.60W		3.394	0.031	
+1.126D+0.70E		5.519	-0.284	
+D+0.750Lr+0.750L+0.450W, LL Comb R		3.686	0.323	
+D+0.750Lr+0.750L+0.450W, LL Comb R		3.863	-0.045	
+D+0.750Lr+0.750L+0.450W, LL Comb R		4.156	0.248	
+D+0.750L+0.750S+0.450W, LL Comb Ru		4.140	0.254	
+D+0.750L+0.750S+0.450W, LL Comb Ru		4.316	-0.114	
+D+0.750L+0.750S+0.450W, LL Comb Ru		4.609	0.179	
+1.090D+0.750L+0.750S+0.5250E, LL C		5.718	0.018	
+1.090D+0.750L+0.750S+0.5250E, LL C		5.895	-0.350	
+1.090D+0.750L+0.750S+0.5250E, LL C		6.187	-0.057	
+0.60D+0.60W		2.036	0.018	
+0.470D+0.70E		3.292	-0.304	
D Only		3.394	0.031	
L Only, LL Comb Run (L*)		0.390	0.390	
L Only, LL Comb Run (L*)		0.625	-0.100	
L Only, LL Comb Run (LL)		1.015	0.290	
S Only		0.604	-0.092	
E Only		2.425	-0.455	
H Only				

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## Wood Beam

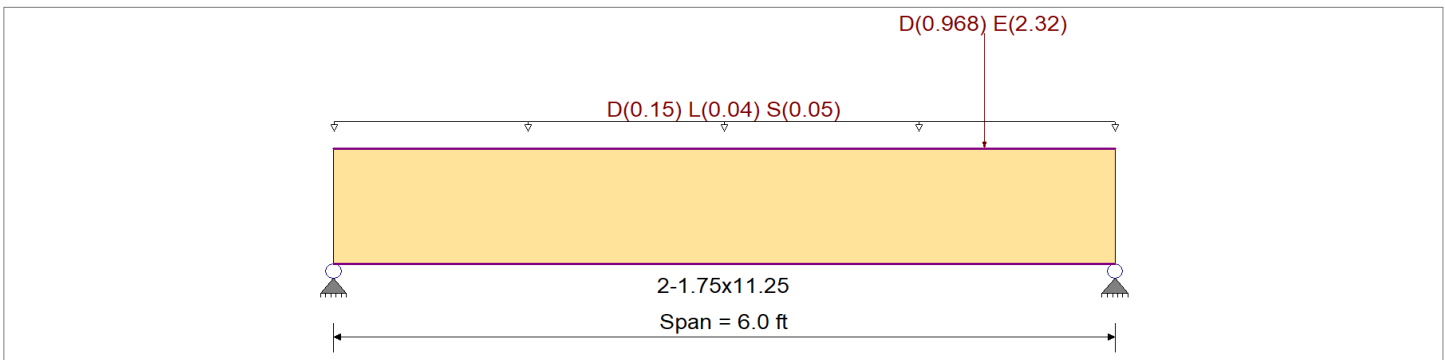
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DESCRIPTION: Beam @ SW Above (B9)

### Material Properties

Analysis Method : Allowable Stress Design	Fb +	2,600.0 psi	E : Modulus of Elasticity	
	Fb -	2,600.0 psi	Ebend- xx	2,000.0ksi
	Fc - Prll	2,510.0 psi	Eminbend - xx	1,016.54ksi
Wood Species : iLevel Truss Joist	Fc - Perp	750.0 psi		
Wood Grade : MicroLam LVL 2.0 E	Fv	285.0 psi		
	Ft	1,555.0 psi	Density	42.010pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



### Applied Loads

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

Beam self weight calculated and added to loads

Uniform Load : D = 0.150, L = 0.040, S = 0.050, Tributary Width = 1.0 ft

Point Load : D = 0.9680, E = 2.320 k @ 5.0 ft, (From SW)

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio	=	<b>0.106</b> : 1	Maximum Shear Stress Ratio	=	<b>0.221</b> : 1
Section used for this span		<b>2-1.75x11.25</b>	Section used for this span		<b>2-1.75x11.25</b>
fb: Actual	=	441.39psi	fv: Actual	=	100.57 psi
Fb: Allowable	=	4,160.00psi	Fv: Allowable	=	456.00 psi
Load Combination		+1.126D+0.70E	Load Combination		+1.126D+0.70E
Location of maximum on span	=	4.993ft	Location of maximum on span	=	5.080 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
<b>Maximum Deflection</b>					
Max Downward Transient Deflection		0.011 in	Ratio =		6705 >=360
Max Upward Transient Deflection		0.000 in	Ratio =		0 <360
Max Downward Total Deflection		0.019 in	Ratio =		3786 >=300
Max Upward Total Deflection		0.000 in	Ratio =		0 <300

### 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	0.0190	3.241		0.0000	0.000

### Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	1.109	2.807
Overall MINimum	0.387	1.933
D Only	0.646	1.291
+D+L	0.766	1.411
+D+Lr	0.646	1.291
+D+S	0.796	1.441
+D+0.750Lr+0.750L	0.736	1.381
+D+0.750L+0.750S	0.848	1.494
+D+0.60W	0.646	1.291

7511 SE 76th St  
Yen Design  
251-21001  
RJD  
01-18-21

## Wood Beam

Lic. # : KW-06004787

File: beam calcs with overstrength.ec6  
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.17  
MULHERN & KULP STRUCTURAL ENGINEERING INC

DESCRIPTION: Beam @ SW Above (B9)

Load Combination	Support notation : Far left is #1		Values in KIPS
	Support 1	Support 2	
+1.126D+0.70E	0.998	2.807	
+D+0.750Lr+0.750L+0.450W	0.736	1.381	
+D+0.750L+0.750S+0.450W	0.848	1.494	
+1.090D+0.750L+0.750S+0.5250E	1.109	2.625	
+0.60D+0.60W	0.387	0.775	
+0.470D+0.70E	0.574	1.960	
D Only	0.646	1.291	
L Only	0.120	0.120	
S Only	0.150	0.150	
E Only	0.387	1.933	
H Only			



YEN DESIGN  
7511 SE 76TH ST

MERCER ISLAND, WA

SHEAR WALL CALCULATIONS - WIND

*REVIEWED BY: NJM*

*JANUARY 19, 2021*

*PARAMETERS:*

*SINGLE FAMILY HOME*

*DESIGN WIND SPEED: 100 MPH*

*WIND EXPOSURE CATEGORY: B/C*

*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	4.0 :12	LENGTH	53 FT
EXPOSURE CATEGORY	B	LONG. ROOF PITCH	6.0 :12	WIDTH	36 FT
RISK CATEGORY	II	MEAN ROOF HEIGHT, H	27.00 FT	NUMBER OF STORIES	2
WIND DIRECTIONALITY FACTOR, $K_D$	0.85				
TOPOGRAPHIC FACTOR, $K_{ZT}$	1.90				
GUST FACTOR, G	0.85				
GROUND ELEV. ABOVE SEA LEVEL (FT)	0				
DESIGN TYPE	ASD 0.60				

**TRANSVERSE DIRECTION (PERPENDICULAR TO MAIN RIDGE LINE)**

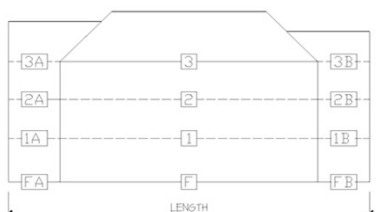
DIAPHRAGM LEVEL	FLOOR-TO-FLOOR HEIGHT	SURFACE	SECTION			sq ft
			A	O	B	
2	9 FT	Roof Surface	0	92	0	sq ft
		Wall surface	0	310	0	sq ft
1	10 FT	Roof Surface	0	2	0	sq ft
		Wall surface	0	515	0	sq ft
FND		Roof Surface	0	0	0	sq ft
		Wall surface	0	0	0	sq ft

DIAPHRAGM LEVEL	FLOOR-TO-FLOOR HEIGHT	SURFACE	SECTION			sq ft
			A	O	B	
2	9 FT	Roof Surface	0	92	0	sq ft
		Wall surface	0	310	0	sq ft
1	10 FT	Roof Surface	0	2	0	sq ft
		Wall surface	0	515	0	sq ft
FND		Roof Surface	0	0	0	sq ft
		Wall surface	0	0	0	sq ft

TRIBUTARY DESIGN LOADS: (0.6W)						
DIAPHRAGM LEVEL	FLOOR-TO-FLOOR HEIGHT	SECTION			kips	
		A	O	B		
2	9 FT	Story Shear	0.00	6.20	0.00	kips
		Total Shear	0.00	6.20	0.00	kips
1	10 FT	Story Shear	0.00	8.70	0.00	kips
		Total Shear	0.00	14.90	0.00	kips
FND		Story Shear	0.00	0.00	0.00	kips
		Total Shear	0.00	14.90	0.00	kips

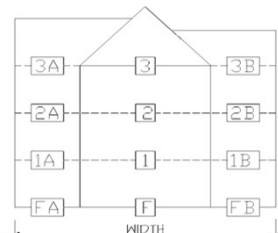
  

  

**LONGITUDINAL DIRECTION (PARALLEL TO MAIN RIDGE LINE)**

DIAPHRAGM LEVEL	FLOOR-TO-FLOOR HEIGHT	SURFACE	SECTION			sq ft
			A	O	B	
2	9 FT	Roof Surface	0	0	0	sq ft
		Wall surface	0	0	0	sq ft
1	10 FT	Roof Surface	0	0	0	sq ft
		Wall surface	0	0	0	sq ft
FND		Roof Surface	0	0	0	sq ft
		Wall surface	0	0	0	sq ft

TRIBUTARY DESIGN LOADS: (0.6W)						
DIAPHRAGM LEVEL	FLOOR-TO-FLOOR HEIGHT	SECTION			kips	
		A	O	B		
2	9 FT	Story Shear	0.00	0.00	0.00	kips
		Total Shear	0.00	0.00	0.00	kips
1	10 FT	Story Shear	0.00	0.00	0.00	kips
		Total Shear	0.00	0.00	0.00	kips
FND		Story Shear	0.00	0.00	0.00	kips
		Total Shear	0.00	0.00	0.00	kips

**WIND DESIGN SUMMARY PER ASCE 7-16**

PARAMETERS:			ROOF GEOMETRY:			BUILDING GEOMETRY:		
WIND SPEED	100		TRANS. ROOF PITCH	4.0	:12	LENGTH	53	FT
EXPOSURE CATEGORY	C		LONG. ROOF PITCH	6.0	:12	WIDTH	36	FT
RISK CATEGORY	II		MEAN ROOF HEIGHT, H	27.00	FT	NUMBER OF STORIES	2	
WIND DIRECTIONALITY FACTOR, $K_D$	0.85							
TOPOGRAPHIC FACTOR, $K_{ZT}$	1.90							
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		TRIBUTARY DESIGN AREAS:			sq ft	TRIBUTARY DESIGN LOADS: (0.6W)			kips
			A	O	B		A	O	B	
2	9	FT	Roof Surface	0	0	0	0.00	0.00	0.00	0.00
			Wall surface	0	0	0	0.00	0.00	0.00	0.00
1	10	FT	Roof Surface	0	0	0	0.00	0.00	0.00	0.00
			Wall surface	0	0	0	0.00	0.00	0.00	0.00
FND			Roof Surface	0	0	0	0.00	0.00	0.00	0.00
			Wall surface	0	0	0	0.00	0.00	0.00	0.00

LONGITUDINAL DIRECTION (PARALLEL TO MAIN RIDGE LINE)										
DIAPHRAGM LEVEL	FLOOR-TO-FLOOR HEIGHT		TRIBUTARY DESIGN AREAS:			sq ft	TRIBUTARY DESIGN LOADS: (0.6W)			kips
			A	O	B		A	O	B	
2	9	FT	Roof Surface	0	130	0	0.00	5.82	0.00	5.82
			Wall surface	0	160	0	0.00	5.82	0.00	5.82
1	10	FT	Roof Surface	0	115	0	0.00	9.18	0.00	9.18
			Wall surface	0	325	0	0.00	15.01	0.00	15.01
FND			Roof Surface	0	0	0	0.00	0.00	0.00	0.00
			Wall surface	0	0	0	0.00	15.01	0.00	15.01



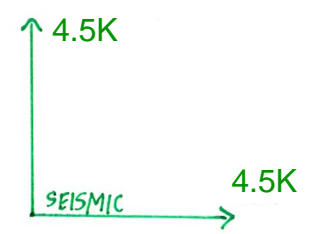
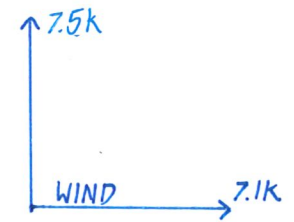
M&K project number: 251-2  
project mgr:  
drawn by:  
issue date: 01

REVISIONS:  
date:

YEN DESIGN

ROOF FRAMING PLAN  
7511 SE 76TH  
MERCER ISLAND, WASHINGTON

sheet:

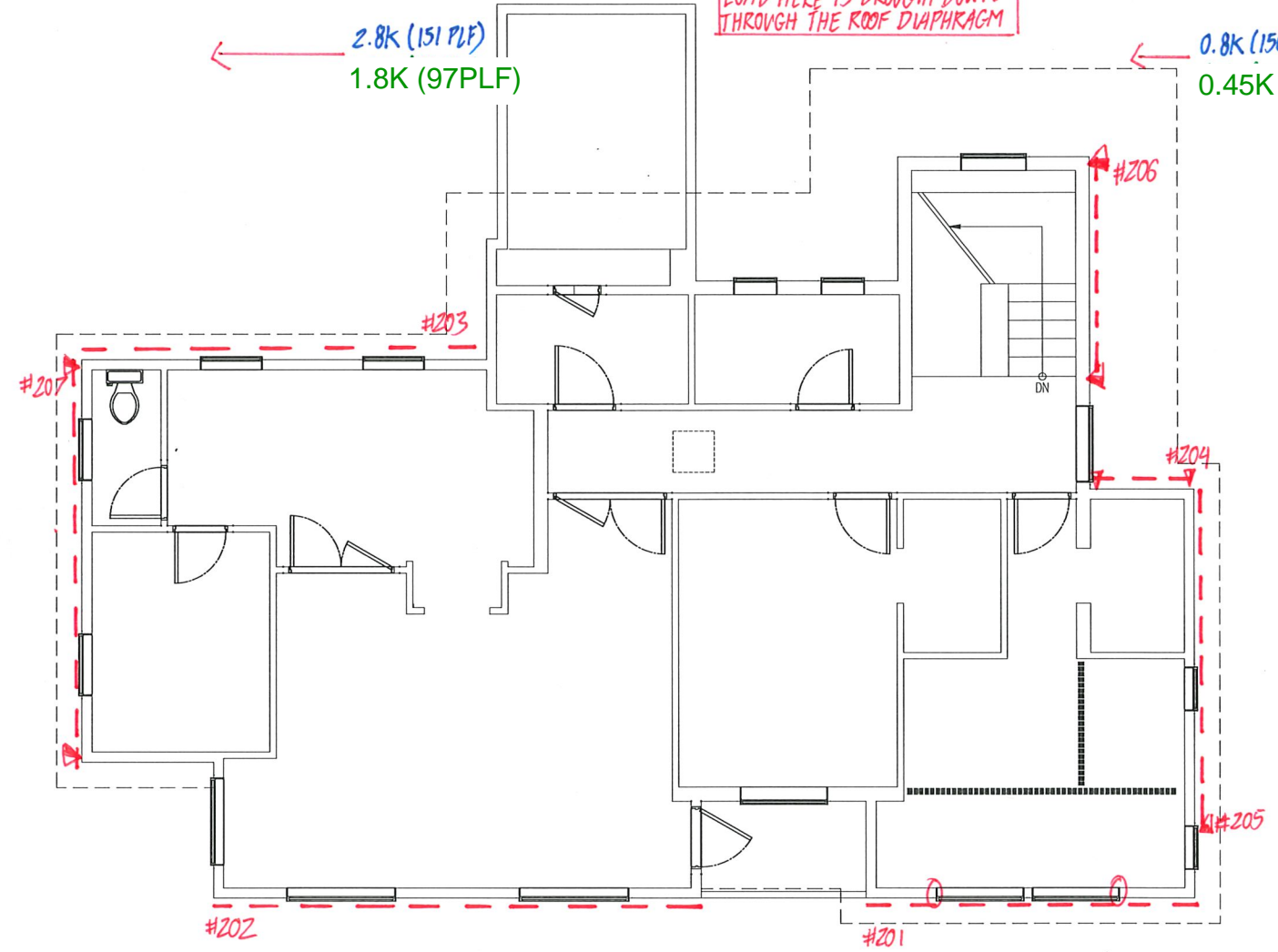


FRONT STORAGE AREA FRAMING  
TO REMAIN - ALL LATERAL  
LOAD HERE IS BROUGHT DOWN  
THROUGH THE ROOF DIAPHRAGM

3.6K (50%)

3.8K (203 PLF)  
2.25K (122 PLF)

3.6K (50%)



2.8K (151 PLF)  
1.8K (97 PLF)

0.8K (150 PLF)  
0.45K (90 PLF)

1.5K (149 PLF)  
0.9K (92 PLF)

2.3K (148 PLF)  
1.35K (96 PLF)

2.1K (95 PLF)  
1.35K (60 PLF)

1.4K (95 PLF)  
0.9K (60 PLF)

3.8K (50%)

3.8K (50%)

\* W/ EXISTING HOUSE ORIENTATION, SHORTEST  
DISTANCE FROM TRANSVERSE FACE TO LAKE  
(PERPENDICULAR) IS GREATER THAN 1500 FT.

1 ROOF FRAMING PLAN  
SCALE: 1/4"=1'-0"

LEGEND	
	INTERIOR BEARING WALL
	BEARING WALL ABOVE (BWA), OR SHEARWALL ABOVE (SWA)
	BEAM / HEADER
	INTERIOR SHEAR WALL PANEL OR EXTERIOR SHEAR WALL w/ 3" o.c. EDGE NAILING
	INDICATES AREA OF ROOF OVERFRAMING
	JL METAL HANGER
	* INDICATES POST ABOVE. PROVIDE SOLID BLOCKING UNDER POST OR JAMB ABOVE.
	INDICATES HOLDDOWN

REFER TO S-O FOR TYPICAL STRUCTURAL



project number: 251-2

project mgr:

drawn by:

issue date: 01

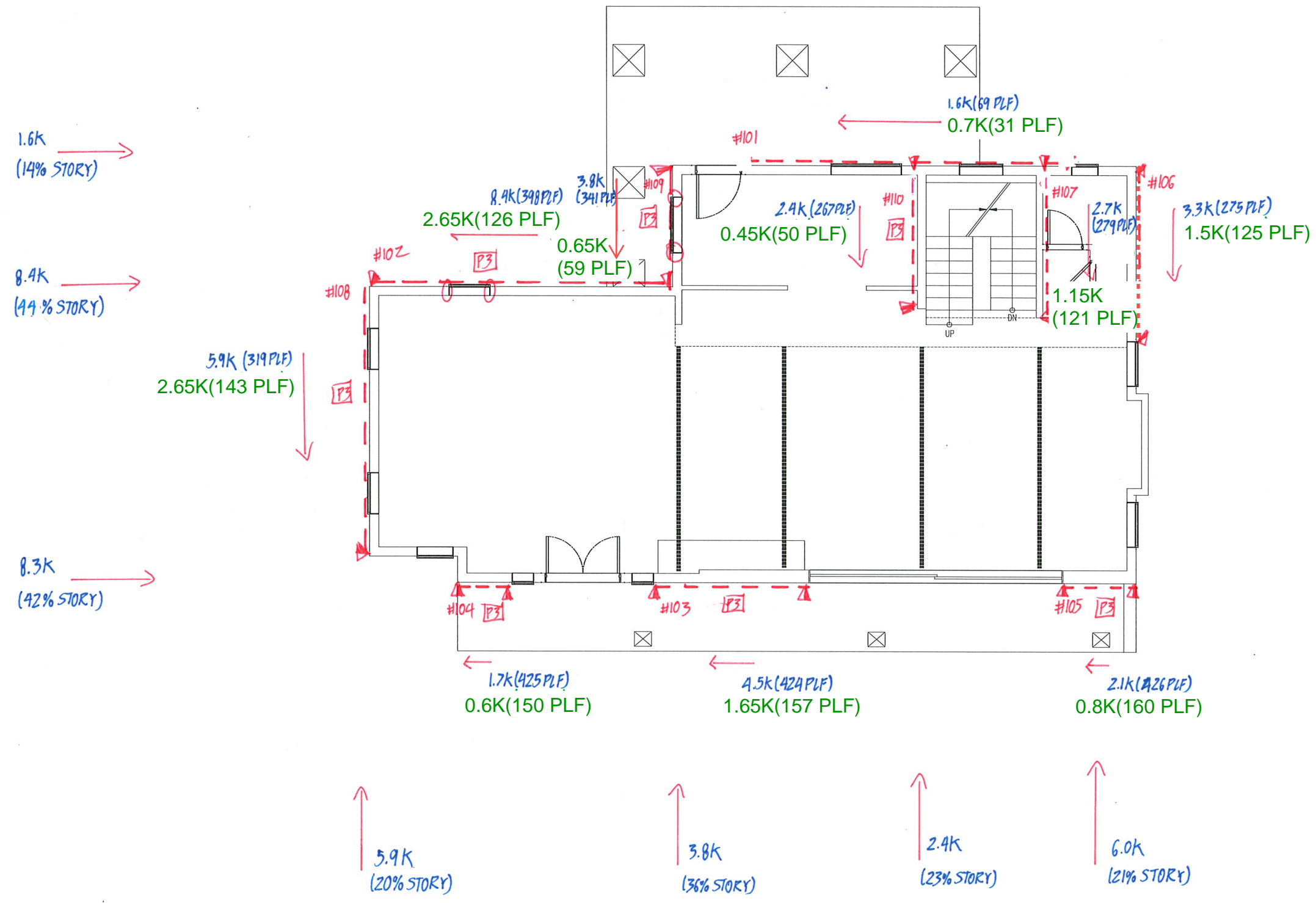
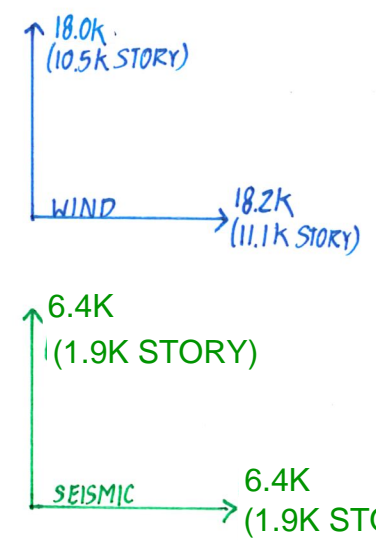
REVISIONS:

date:

YEN DESIGN

2ND FLOOR FRAMING PLAN  
7511 SE 76TH  
MERCER ISLAND, WASHINGTON

sheet:



LEGEND	
•	INTERIOR BEARING WALL
—	BEARING WALL ABOVE (BWA), OR SHEARWALL ABOVE (SWA)
---	BEAM / HEADER
---	INTERIOR SHEAR WALL PANEL OR EXTERIOR SHEAR WALL w/ 3" o.c. EDGE NAILING
•••••	INDICATES AREA OF ROOF OVERFRAMING
JL	METAL HANGER
*	INDICATES POST ABOVE. PROVIDE SOLID BLOCKING UNDER POST OR JAMB ABOVE.
▶	INDICATES HOLDOWN

REFER TO S-O FOR TYPICAL STRUCTURAL

1 2ND FLOOR FRAMING PLAN  
SCALE: 1/4"=1'-0"



**SHEARWALL DESIGN SUMMARY**

**SHEARWALL 201: 2ND - REAR EXTERIOR BED 3**

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  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 HOLDDOWN REQUIRED**

**SHEARWALL 202: 2ND - REAR EXTERIOR MASTER SUITE**

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  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 HOLDDOWN REQUIRED**





**SHEARWALL DESIGN SUMMARY**

**SHEARWALL 203:** 2ND - FRONT EXTERIOR MASTER BATH

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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      UPLIFT CONNECTOR DESIGN LOAD  LBS  
DL AT ENDS OF WALL  LBS      RESISTIVE MOMENT  K-FT      HOLDOWN CAPACITY  LBS

**HOLD-DOWN SPECIFICATION**

**NO HOLDOWN REQUIRED**

**SHEARWALL 204:** 2ND - FRONT EXTERIOR W.I.C.

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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 CS 16 STRAP TIE (14" END LENGTH)**



**SHEARWALL DESIGN SUMMARY**

**SHEARWALL XXX: - NOT USED**

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  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 UPLIFT CONNECTOR DESIGN LOAD  LBS  
DL AT ENDS OF WALL  LBS RESISTIVE MOMENT  K-FT HOLDOWN CAPACITY  LBS

**HOLD-DOWN SPECIFICATION**

**NO HOLDOWN REQUIRED**

**SHEARWALL 205: 2ND - SIDE EXTERIOR BED 3**

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  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 CS 16 STRAP TIE (14" END LENGTH)**



**SHEARWALL DESIGN SUMMARY**

**SHEARWALL 206:** 2ND - SIDE EXTERIOR STAIRS

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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      UPLIFT CONNECTOR DESIGN LOAD  LBS  
DL AT ENDS OF WALL  LBS      RESISTIVE MOMENT  K-FT      HOLDOWN CAPACITY  LBS

**HOLD-DOWN SPECIFICATION**

**SIMPSON MSTC52 STRAP TIE**

**SHEARWALL 207:** 2ND - SIDE EXTERIOR W.I.C. & MASTER BATH

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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 CS 16 STRAP TIE (14" END LENGTH)**



**SHEARWALL DESIGN SUMMARY**

**SHEARWALL XXX: - NOT USED**

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  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 UPLIFT CONNECTOR DESIGN LOAD  LBS  
DL AT ENDS OF WALL  LBS RESISTIVE MOMENT  K-FT HOLDOWN CAPACITY  LBS

**HOLD-DOWN SPECIFICATION**

**NO HOLDOWN REQUIRED**

**SHEARWALL 101: 1ST - FRONT EXTERIOR FOYER**

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  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 102:** 1ST - FRONT EXTERIOR KITCHEN

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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**

**P3 - 1-SIDE 7/16" OSB**  
FASTENED W/ 8D NAILS AT 3"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED  
**ADEQUATE**

**OVERTURNING EVALUATION:**

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

**HOLD-DOWN SPECIFICATION**

**SIMPSON STHD8 HOLDOWN**

**SHEARWALL 103:** 1ST - REAR EXTERIOR DINING

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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**

**P3 - 1-SIDE 7/16" OSB**  
FASTENED W/ 8D NAILS AT 3"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 MSTC66 STRAP TIE (24" END LENGTH)**



**SHEARWALL DESIGN SUMMARY**

**SHEARWALL 104:** 1ST - REAR EXTERIOR KITCHEN

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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**

**P3 - 1-SIDE 7/16" OSB**  
FASTENED W/ 8D NAILS AT 3"D.C. PANEL EDGES & 12"D.C. PANEL FIELD - EDGES BLOCKED  
**ADEQUATE**

**OVERTURNING EVALUATION:**

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

**HOLD-DOWN SPECIFICATION**

**SIMPSON STDH14RJ HOLDOWN**

**SHEARWALL 105:** 1ST - REAR EXTERIOR LIVING

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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**

**P3 - 1-SIDE 7/16" OSB**  
FASTENED W/ 8D NAILS AT 3"D.C. PANEL EDGES & 12"D.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 MSTC52 STRAP TIE**





**SHEARWALL DESIGN SUMMARY**

**SHEARWALL XXX:** - NOT USED

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  FT.  
WALL LENGTH, L  FT. QUALIFYING WALL LENGTH, L  FT. SHEARWALL ASSEMBLY

**CAPACITY EVALUATION:**

TOTAL SHEAR LOAD ON WALL  LBS ALLOWABLE SHEARWALL CAPACITY  LBS  
 LBS **###**  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 UPLIFT CONNECTOR DESIGN LOAD  LBS  
DL AT ENDS OF WALL  LBS RESISTIVE MOMENT  K-FT HOLDOWN CAPACITY  LBS

**HOLD-DOWN SPECIFICATION**

NO HOLDOWN REQUIRED

**SHEARWALL 106:** 1ST - SIDE EXTERIOR BATH

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  FT.  
WALL LENGTH, L  FT. QUALIFYING WALL LENGTH, L  FT. SHEARWALL ASSEMBLY

**CAPACITY EVALUATION:**

TOTAL SHEAR LOAD ON WALL  LBS ALLOWABLE SHEARWALL CAPACITY  LBS  
 LBS <  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 STHD8 HOLDOWN



**SHEARWALL DESIGN SUMMARY**

**SHEARWALL 107:** 1ST - SIDE INTERIOR BATH

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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      UPLIFT CONNECTOR DESIGN LOAD  LBS  
DL AT ENDS OF WALL  LBS      RESISTIVE MOMENT  K-FT      HOLDOWN CAPACITY  LBS

**HOLD-DOWN SPECIFICATION**

**SIMPSON MSTC66 STRAP TIE (24" END LENGTH)**

**SHEARWALL 108:** 1ST - SIDE EXTERIOR KITCHEN

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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**

**P3 - 1-SIDE 7/16" OSB**  
FASTENED W/ 8D NAILS AT 3"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 STHD8 HOLDOWN**



**SHEARWALL DESIGN SUMMARY**

**SHEARWALL 109:** 1ST - SIDE EXTERIOR FOYER

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  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**

P3 - 1-SIDE 7/16" OSB  
FASTENED W/ 8D NAILS AT 3"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED  
**ADEQUATE**

**OVERTURNING EVALUATION:**

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

**HOLD-DOWN SPECIFICATION**

**SIMPSON STHD8 HOLDOWN**

**SHEARWALL 110:** 1ST - SIDE INTERIOR FOYER

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  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**

P3 - 1-SIDE 7/16" OSB  
FASTENED W/ 8D NAILS AT 3"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 MSTC52 STRAP TIE**

YEN DESIGN  
7511 SE 76TH ST

MERCER ISLAND, WA

SHEAR WALL CALCULATIONS - SEISMIC

*REVIEWED BY: NJM*

*JANUARY 19, 2021*

*PARAMETERS:*

*SINGLE FAMILY HOME*

*DESIGN WIND SPEED: 100 MPH*

*WIND EXPOSURE CATEGORY: B/C*

*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, <b>S<sub>B</sub></b>	1.469
SPECTRAL RESPONSE ACCELERATION 1.0 SEC, <b>S<sub>1</sub></b>	0.561
OCCUPANCY CATEGORY	II

VARIABLES:

SITE COEFFICIENT, F <sub>A</sub>	1.20
SITE COEFFICIENT, F <sub>V</sub>	1.74

CALCULATED VALUES:

MAXIMUM SPECTRAL RESPONSE ACCELERATION, <b>S<sub>MS</sub></b>	1.763
MAXIMUM SPECTRAL RESPONSE ACCELERATION, <b>S<sub>M1</sub></b>	0.976
DESIGN SPECTRAL RESPONSE ACCELERATION, <b>S<sub>DS</sub></b>	1.175
DESIGN SPECTRAL RESPONSE ACCELERATION, <b>S<sub>D1</sub></b>	0.650
SEISMIC DESIGN CATEGORY (SHORT TERM)	D
SEISMIC DESIGN CATEGORY (1.0 SECOND TERM)	D

**BUILDING PERIOD DETERMINATION:**

USER INPUTS:

BUILDING PERIOD COEFFICIENT, C <sub>T</sub>	0.020
LONG-PERIOD TRANS PERIOD, T <sub>L</sub> (SEC)	6
HT. ABV BASE TO HIGHEST LEVEL, h <sub>N</sub>	19

CALCULATED VALUES:

APPROXIMATE FUNDAMENTAL PERIOD, T <sub>A</sub>	0.182
T <sub>0</sub>	0.111
T <sub>S</sub>	0.553
SPECTRAL RESPONSE ACC., S <sub>A</sub> (G)	1.175

**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 <sup>2</sup> )	DEAD LOAD (PSF)	DL OF EXT WALL TRIB. TO LEVEL (KIPS)	TOTAL LEVEL DL
1	10.0	1195	10	10.6	23 K
2	9.0	1355	17	5.1	28 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** 51 KIPS

SEISMIC RESPONSE COEFFICIENT:

	TRANSVERSE	LONGITUDINAL
RESPONSE MODIFICATION FACTOR, R	6.5	6.5
OCCUPANCY IMPORTANCE FACTOR, I <sub>e</sub>	1.00	1.00
SEISMIC RESPONSE COEFFICIENT, C <sub>s</sub>	0.181	0.181

BASE SHEARS:

**ULTIMATE LOADS**

x 0.7 =

**ALLOWABLE LOADS**

TRANSVERSE	LONGITUDINAL	TRANSVERSE	LONGITUDINAL
9 K	9 K	6.4 K	6.4 K

STORY SHEAR CALCULATION:

DISTRIBUTION EXPONENT, **1.00**

**ULTIMATE LOADS**

x 0.7 =

**ALLOWABLE LOADS**

LEVEL	VERT. DIST. FACTOR, C <sub>vk</sub>	TRANSVERSE		LONGITUDINAL		TRANSVERSE		LONGITUDINAL	
		STORY SHEAR, F <sub>v</sub>	STORY SHEAR, F <sub>v</sub>	STORY SHEAR, F <sub>v</sub>	STORY SHEAR, F <sub>v</sub>	STORY SHEAR, F <sub>v</sub>	STORY SHEAR, F <sub>v</sub>		
1	0.297	2.7	2.7	1.9	6.4	1.9	6.4		
2	0.703	6.4	6.4	4.5	4.5	4.5	4.5		
3	0.000	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		
5	0.00	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		
7	0.00	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		
9	0.00	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		
11	0.00	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		
13	0.00	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		
15	0.00	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		
17	0.00	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		
19	0.00	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		



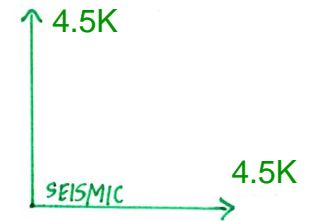
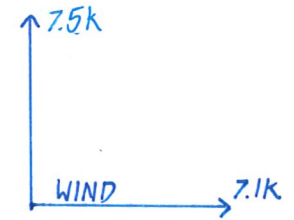
M&K project number: 251-2  
project mgr:  
drawn by:  
issue date: 01

REVISIONS:  
date:

YEN DESIGN

ROOF FRAMING PLAN  
7511 SE 76TH  
MERCER ISLAND, WASHINGTON

sheet:

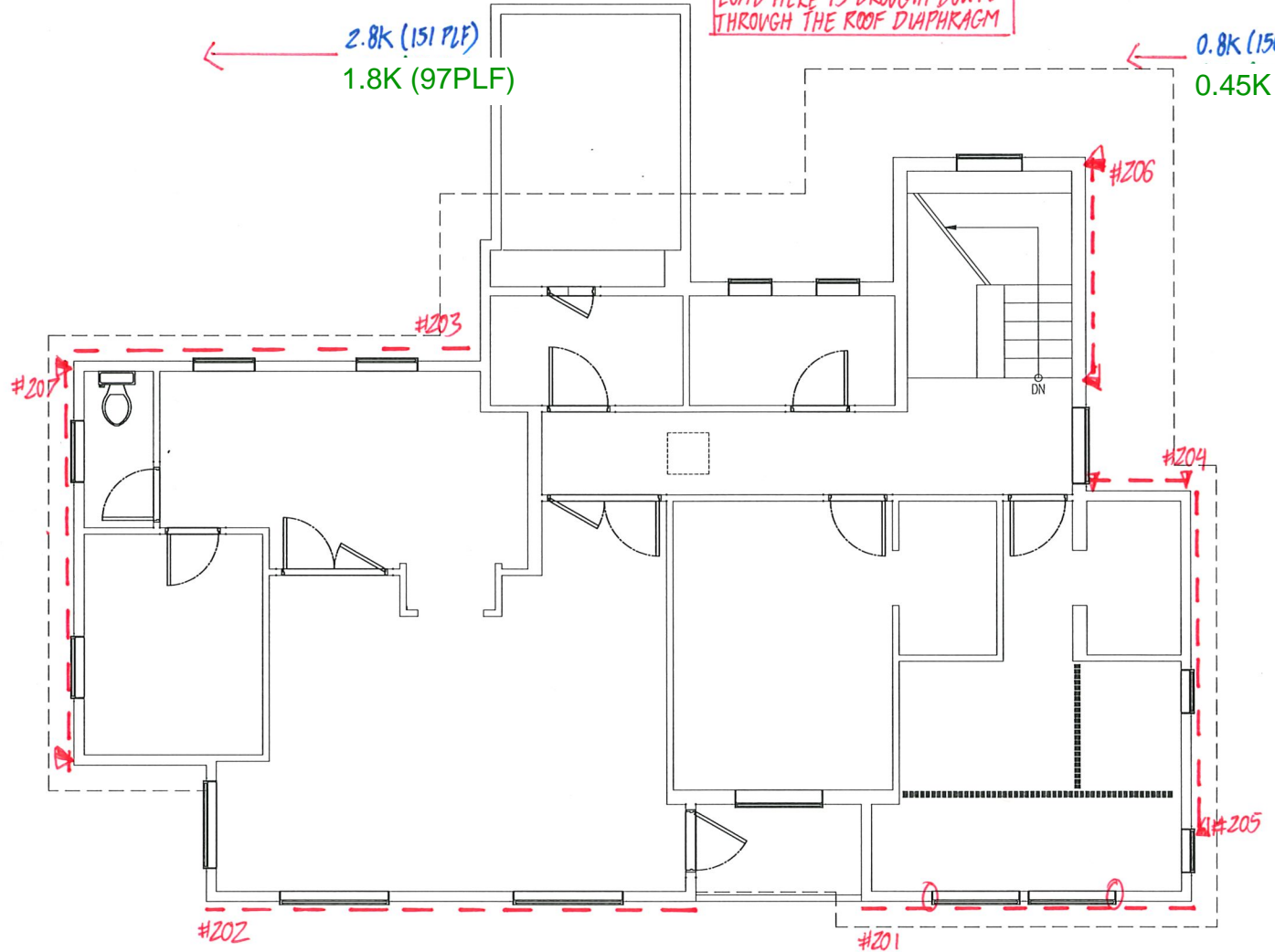


FRONT STORAGE AREA FRAMING  
TO REMAIN - ALL LATERAL  
LOAD HERE IS BROUGHT DOWN  
THROUGH THE ROOF DIAPHRAGM

3.6K (50%) →

3.8K (203 PLF)  
2.25K (122 PLF) ↓

3.6K (50%) →



1.5K (149 PLF)  
0.9K (92 PLF) ↓

2.3K (148 PLF)  
1.35K (96 PLF) ↓

2.1K (95 PLF)  
1.35K (60 PLF) ←

1.4K (95 PLF)  
0.9K (60 PLF) ←

3.8K (50%) ↑

3.8K (50%) ↑

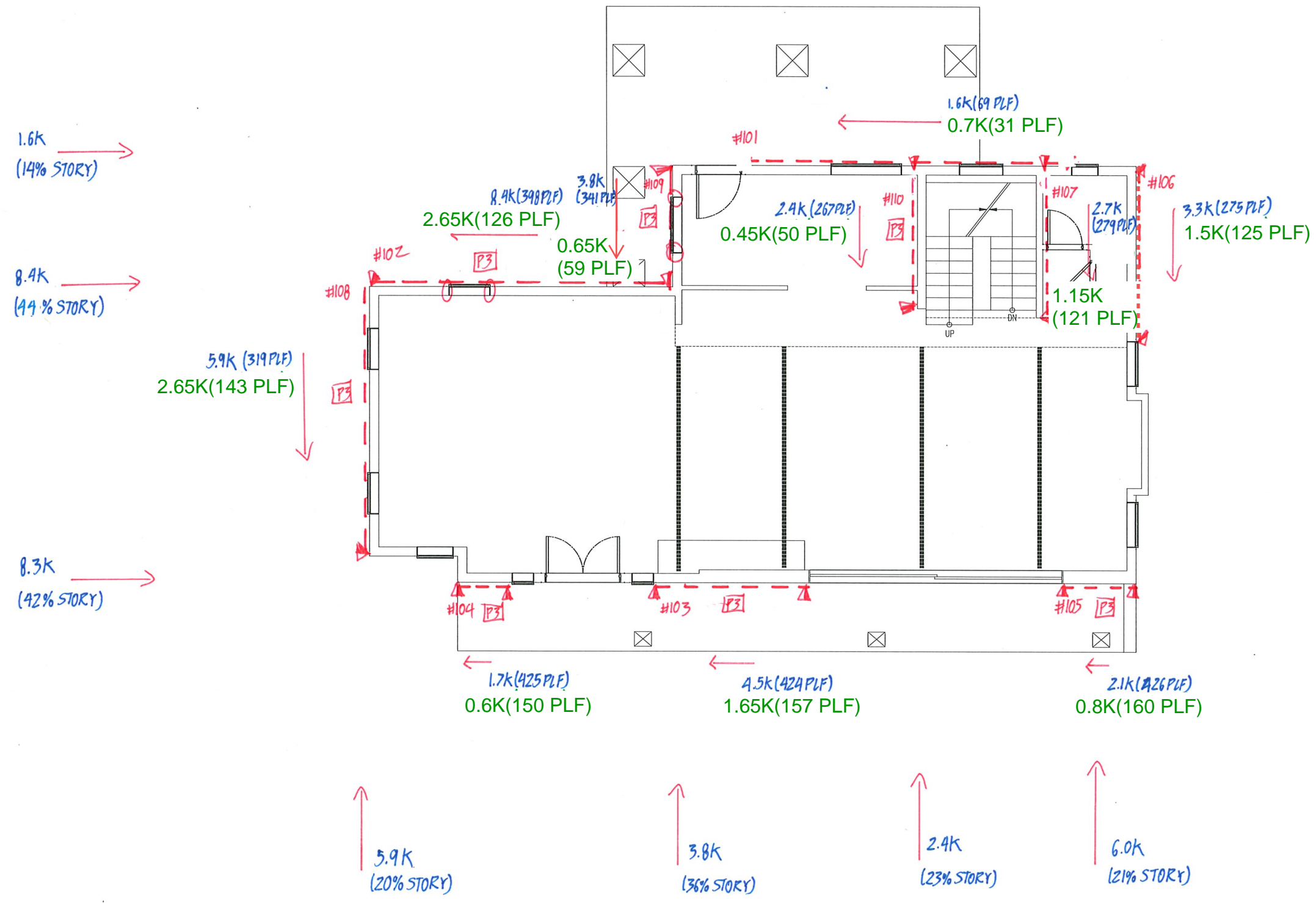
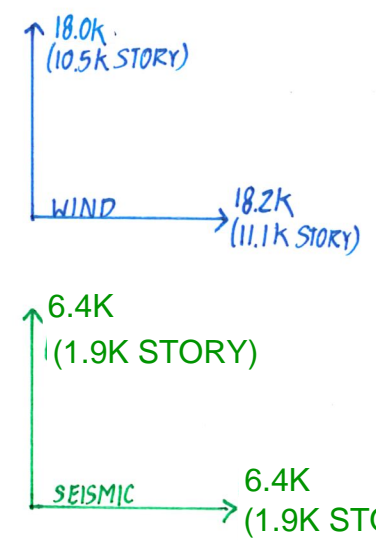
1 ROOF FRAMING PLAN  
SCALE: 1/4"=1'-0"

LEGEND	
▬	INTERIOR BEARING WALL
▬	BEARING WALL ABOVE (BHA), OR SHEARWALL ABOVE (SHA)
▬	BEAM / HEADER
▬	INTERIOR SHEAR WALL PANEL OR EXTERIOR SHEAR WALL w/ 3" o.c. EDGE NAILING
▬	INDICATES AREA OF ROOF OVERFRAMING
JL	METAL HANGER
*	INDICATES POST ABOVE. PROVIDE SOLID BLOCKING UNDER POST OR JAMB ABOVE.
▶	INDICATES HOLD-DOWN

REFER TO S-O FOR TYPICAL STRUCTURAL

\* W/ EXISTING HOUSE ORIENTATION, SHORTEST DISTANCE FROM TRANSVERSE FACE TO LAKE (PERPENDICULAR) IS GREATER THAN 1500 FT.





LEGEND	
•	INTERIOR BEARING WALL
□	BEARING WALL ABOVE (BWA), OR SHEARWALL ABOVE (SWA)
—	BEAM / HEADER
—	INTERIOR SHEAR WALL PANEL OR EXTERIOR SHEAR WALL w/ 3" o.c. EDGE NAILING
•	INDICATES AREA OF ROOF OVERFRAMING
JL	METAL HANGER
*	INDICATES POST ABOVE. PROVIDE SOLID BLOCKING UNDER POST OR JAMB ABOVE.
▶	INDICATES HOLDOWN

REFER TO S-O FOR TYPICAL STRUCTURAL

1 2ND FLOOR FRAMING PLAN  
SCALE: 1/4"=1'-0"



**SHEARWALL DESIGN SUMMARY**

**SHEARWALL 201: 2ND - REAR EXTERIOR BED 3**

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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"D.C. PANEL EDGES & 12"D.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 HOLDDOWN REQUIRED**

**SHEARWALL 202: 2ND - REAR EXTERIOR MASTER SUITE**

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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"D.C. PANEL EDGES & 12"D.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 HOLDDOWN REQUIRED**



**SHEARWALL DESIGN SUMMARY**

**SHEARWALL 203:** 2ND - FRONT EXTERIOR MASTER BATH

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  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 UPLIFT CONNECTOR DESIGN LOAD  LBS  
DL AT ENDS OF WALL  LBS RESISTIVE MOMENT  K-FT HOLDOWN CAPACITY  LBS

**HOLD-DOWN SPECIFICATION**

**NO HOLDOWN REQUIRED**

**SHEARWALL 204:** 2ND - FRONT EXTERIOR W.I.C.

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  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 CS 16 STRAP TIE (14" END LENGTH)**



**SHEARWALL DESIGN SUMMARY**

**SHEARWALL XXX: - NOT USED**

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  FT.  
WALL LENGTH, L  FT. QUALIFYING WALL LENGTH, L  FT. SHEARWALL ASSEMBLY

**CAPACITY EVALUATION:**

TOTAL SHEAR LOAD ON WALL  LBS ALLOWABLE SHEARWALL CAPACITY  LBS  
 LBS **###**  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 UPLIFT CONNECTOR DESIGN LOAD  LBS  
DL AT ENDS OF WALL  LBS RESISTIVE MOMENT  K-FT HOLDOWN CAPACITY  LBS

**HOLD-DOWN SPECIFICATION**

**NO HOLDOWN REQUIRED**

**SHEARWALL 205: 2ND - SIDE EXTERIOR BED 3**

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  FT.  
WALL LENGTH, L  FT. QUALIFYING WALL LENGTH, L  FT. SHEARWALL ASSEMBLY

**CAPACITY EVALUATION:**

TOTAL SHEAR LOAD ON WALL  LBS ALLOWABLE SHEARWALL CAPACITY  LBS  
 LBS <  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 CS 16 STRAP TIE (14" END LENGTH)**



**SHEARWALL DESIGN SUMMARY**

**SHEARWALL 206:** 2ND - SIDE EXTERIOR STAIRS

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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      UPLIFT CONNECTOR DESIGN LOAD  LBS  
DL AT ENDS OF WALL  LBS      RESISTIVE MOMENT  K-FT      HOLDOWN CAPACITY  LBS

**HOLD-DOWN SPECIFICATION**

**SIMPSON MSTC52 STRAP TIE**

**SHEARWALL 207:** 2ND - SIDE EXTERIOR W.I.C. & MASTER BATH

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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 CS 16 STRAP TIE (14" END LENGTH)**



**SHEARWALL DESIGN SUMMARY**

**SHEARWALL XXX:** - NOT USED

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  FT.  
WALL LENGTH, L  FT. QUALIFYING WALL LENGTH, L  FT. SHEARWALL ASSEMBLY

**CAPACITY EVALUATION:**

TOTAL SHEAR LOAD ON WALL  LBS ALLOWABLE SHEARWALL CAPACITY  LBS  
 LBS **###**  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 UPLIFT CONNECTOR DESIGN LOAD  LBS  
DL AT ENDS OF WALL  LBS RESISTIVE MOMENT  K-FT HOLDOWN CAPACITY  LBS

**HOLD-DOWN SPECIFICATION**

**NO HOLDOWN REQUIRED**

**SHEARWALL 101:** 1ST - FRONT EXTERIOR FOYER

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  FT.  
WALL LENGTH, L  FT. QUALIFYING WALL LENGTH, L  FT. SHEARWALL ASSEMBLY

**CAPACITY EVALUATION:**

TOTAL SHEAR LOAD ON WALL  LBS ALLOWABLE SHEARWALL CAPACITY  LBS  
 LBS <  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 102:** 1ST - FRONT EXTERIOR KITCHEN

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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**

**P3 - 1-SIDE 7/16" OSB**  
FASTENED W/ 8D NAILS AT 3"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED  
**ADEQUATE**

**OVERTURNING EVALUATION:**

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

**HOLD-DOWN SPECIFICATION**

**NO HOLDOWN REQUIRED**

**SHEARWALL 103:** 1ST - REAR EXTERIOR DINING

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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**

**P3 - 1-SIDE 7/16" OSB**  
FASTENED W/ 8D NAILS AT 3"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 MSTC66 STRAP TIE (24" END LENGTH)**



**SHEARWALL DESIGN SUMMARY**

**SHEARWALL 104:** 1ST - REAR EXTERIOR KITCHEN

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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**

P3 - 1-SIDE 7/16" OSB  
FASTENED W/ 8D NAILS AT 3"D.C. PANEL EDGES & 12"D.C. PANEL FIELD - EDGES BLOCKED  
**ADEQUATE**

**OVERTURNING EVALUATION:**

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

**HOLD-DOWN SPECIFICATION**

**SIMPSON STHD14RJ HOLDOWN**

**SHEARWALL 105:** 1ST - REAR EXTERIOR LIVING

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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**

P3 - 1-SIDE 7/16" OSB  
FASTENED W/ 8D NAILS AT 3"D.C. PANEL EDGES & 12"D.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 MSTC52 STRAP TIE**





**SHEARWALL DESIGN SUMMARY**

**SHEARWALL XXX:** - NOT USED

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  FT.  
WALL LENGTH, L  FT. QUALIFYING WALL LENGTH, L  FT. SHEARWALL ASSEMBLY

**CAPACITY EVALUATION:**

TOTAL SHEAR LOAD ON WALL  LBS ALLOWABLE SHEARWALL CAPACITY  LBS  
 LBS **###**  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 UPLIFT CONNECTOR DESIGN LOAD  LBS  
DL AT ENDS OF WALL  LBS RESISTIVE MOMENT  K-FT HOLDOWN CAPACITY  LBS

**HOLD-DOWN SPECIFICATION**

**NO HOLDOWN REQUIRED**

**SHEARWALL 106:** 1ST - SIDE EXTERIOR BATH

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  FT.  
WALL LENGTH, L  FT. QUALIFYING WALL LENGTH, L  FT. SHEARWALL ASSEMBLY

**CAPACITY EVALUATION:**

TOTAL SHEAR LOAD ON WALL  LBS ALLOWABLE SHEARWALL CAPACITY  LBS  
 LBS <  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 STHD8 HOLDOWN**



**SHEARWALL DESIGN SUMMARY**

**SHEARWALL 107:** 1ST - SIDE INTERIOR BATH

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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      UPLIFT CONNECTOR DESIGN LOAD  LBS  
DL AT ENDS OF WALL  LBS      RESISTIVE MOMENT  K-FT      HOLDOWN CAPACITY  LBS

**HOLD-DOWN SPECIFICATION**

**SIMPSON MSTC66 STRAP TIE (24" END LENGTH)**

**SHEARWALL 108:** 1ST - SIDE EXTERIOR KITCHEN

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT.      MAX WALL OPENING HT, H<sub>c</sub>  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**

P3 - 1-SIDE 7/16" OSB  
FASTENED W/ 8D NAILS AT 3"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 STHD8 HOLDOWN**



**SHEARWALL DESIGN SUMMARY**

**SHEARWALL 109:** 1ST - SIDE EXTERIOR FOYER

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  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**

P3 - 1-SIDE 7/16" OSB  
FASTENED W/ 8D NAILS AT 3"O.C. PANEL EDGES & 12"O.C. PANEL FIELD - EDGES BLOCKED  
**ADEQUATE**

**OVERTURNING EVALUATION:**

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

**HOLD-DOWN SPECIFICATION**

**NO HOLDOWN REQUIRED**

**SHEARWALL 110:** 1ST - SIDE INTERIOR FOYER

**SHEARWALL PROPERTIES:**

WALL HEIGHT, H  FT. MAX WALL OPENING HT, H<sub>c</sub>  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**

P3 - 1-SIDE 7/16" OSB  
FASTENED W/ 8D NAILS AT 3"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**