



CALCULATION PACKAGE

June 16, 2021

Architectural Innovations

Pratt Plat Lot 1

Mercer Island,
Washington

MULHERN & KULP STRUCTURAL ENGINEERING, INC.

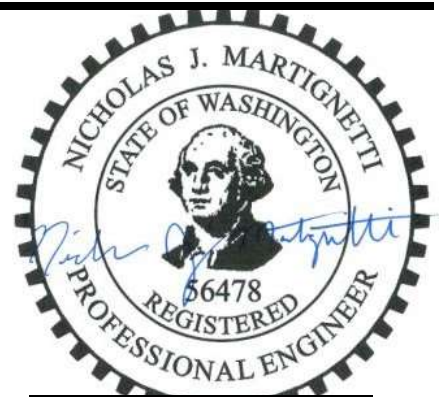
Prepared By:

Riley J. Denis, E.I.T.

Staff Engineer

Nick J. Martignetti, P.E.

Associate Owner + San Diego Office Director



Signature, Seal & Date



BEAM & HEADER CALCULATIONS

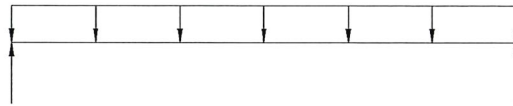
BEAM DESCRIPTION:

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

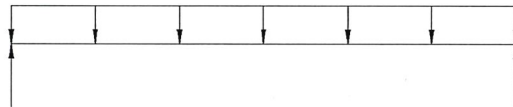
BEAM DESCRIPTION:

ROOF FRAMING - HDR @ STAIRS

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

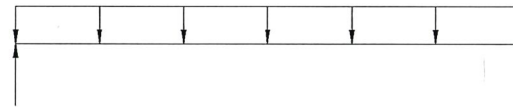
BEAM DESCRIPTION:

UPPER FLOOR FRAMING - TYP. HDR

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



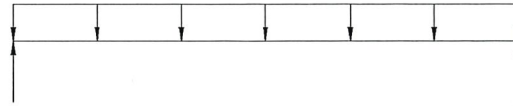
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: UPPER FLOOR FRAMING- FRONT PORCH BMS

B4

PARAMETERS:

L = 18.75 FT
W = 0.1 KLF
P = - K



ANALYSIS:

$R_{MAX} = 0.9$ K $V_D = -$ K $< V_{ALL} = 5.4$ K ADEQUATE
 $M_{MAX} = 4.9$ K-FT $< M_{ALL} = 7.0$ K-FT ADEQUATE
 $\Delta_{TL} = 0.4$ IN. $L/362 < L/240$ ADEQUATE

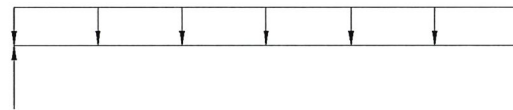
4x12 DF#2

BEAM DESCRIPTION: UPPER FLOOR FRAMING- REAR PATIO BM

B5

PARAMETERS:

L = 21 FT
W = 0.12 KLF
P = - K



ANALYSIS:

$R_{MAX} = 1.3$ K $V_D = -$ K $< V_{ALL} = 8.2$ K ADEQUATE
 $M_{MAX} = 6.6$ K-FT $< M_{ALL} = 10.2$ K-FT ADEQUATE
 $\Delta_{TL} = 0.58$ IN. $L/435 < L/240$ ADEQUATE

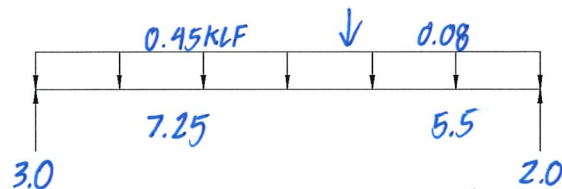
6x12 DF#2

BEAM DESCRIPTION: UPPER FLOOR FRAMING- REAR PATIO SIDE BM

B6

PARAMETERS:

L = 12.75 FT
W = -7 KLF
P = 1.3 K



ANALYSIS:

$R_{MAX} = 3.0$ K $V_D = -$ K $< V_{ALL} = 8.2$ K ADEQUATE
 $M_{MAX} = 10$ K-FT $< M_{ALL} = 10.2$ K-FT ADEQUATE
 $\Delta_{TL} = 0.32$ IN. $L/478 < L/240$ ADEQUATE

6x12 DF#2

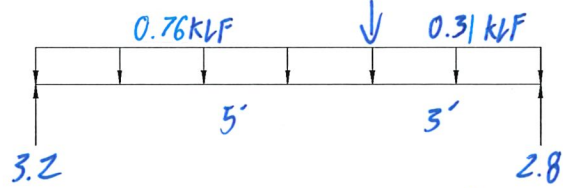


BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: UPPER FLOOR FRAMING - NOOK SLIDER HDR B7

PARAMETERS:

L = FT
W = KLF
P = K



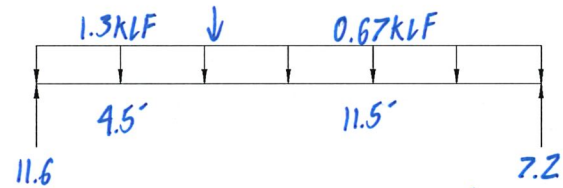
ANALYSIS:

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

BEAM DESCRIPTION: UPPER FLOOR FRAMING - REAR SLIDER HDR B8

PARAMETERS:

L = FT
W = KLF
P = K



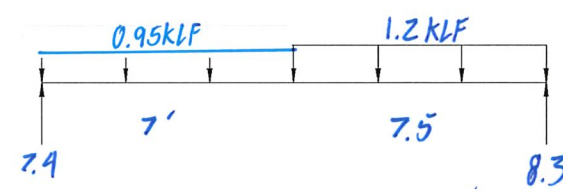
ANALYSIS:

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

BEAM DESCRIPTION: UPPER FLOOR FRAMING - KITCHEN BM B9

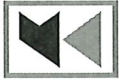
PARAMETERS:

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



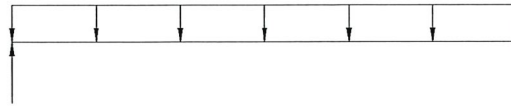
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: UPPER FLOOR FRAMING - BM @ HALL

B10

PARAMETERS:

L = 6.75 FT
W = 0.58 KLF
P = - K



ANALYSIS:

$R_{MAX} = 2.0$ K $V_D = -$ K $< V_{ALL} = 3.9$ K ADEQUATE
 $M_{MAX} = 3.3$ K-FT $< M_{ALL} = 4.5$ K-FT ADEQUATE
 $\Delta_{TL} = 0.07$ IN. $L/1000+$ $< L/240$ ADEQUATE

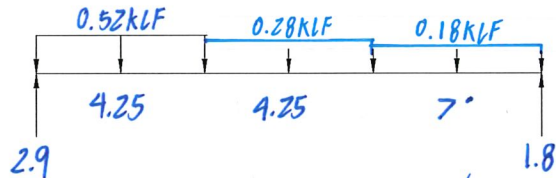
4x10 DF#2

BEAM DESCRIPTION: UPPER FLOOR FRAMING - BM @ STAIRS

B11

PARAMETERS:

L = 15.5 FT
W = 7 KLF
P = - K



ANALYSIS:

$R_{MAX} = 2.9$ K $V_D = -$ K $< V_{ALL} = 11.1$ K ADEQUATE
 $M_{MAX} = 8.5$ K-FT $< M_{ALL} = 37.8$ K-FT ADEQUATE
 $\Delta_{TL} = 0.12$ IN. $L/1000+$ $< L/240$ ADEQUATE

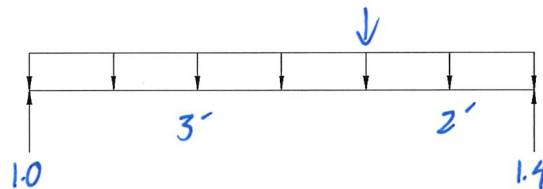
3 1/2" x 18" GLB

BEAM DESCRIPTION: UPPER FLOOR FRAMING - HDR @ STAIR BM

B12

PARAMETERS:

L = 5 FT
W = 0.11 KLF
P = 1.8 K



ANALYSIS:

$R_{MAX} = 1.4$ K $V_D = -$ K $< V_{ALL} = 3.9$ K ADEQUATE
 $M_{MAX} = 2.6$ K-FT $< M_{ALL} = 4.5$ K-FT ADEQUATE
 $\Delta_{TL} = 0.03$ IN. $L/1000+$ $< L/240$ ADEQUATE

4x10 DF#2



BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: UPPER FLOOR FRAMING - LANDING BM

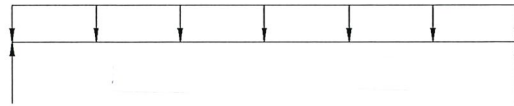
B13

PARAMETERS:

L = 8.5 FT

W = 0.28 KLF

P = - K



ANALYSIS:

$R_{MAX} = 1.2$ K $V_D = -$ K $< V_{ALL} = 3.9$ K

ADEQUATE

$M_{MAX} = 2.5$ K-FT $< M_{ALL} = 4.5$ K-FT

ADEQUATE

$\Delta_{TL} = 0.09$ IN. $L/1000+$ $< L/240$

ADEQUATE

4x10 DF#2

BEAM DESCRIPTION: UPPER FLOOR FRAMING - INT. BRG HDR

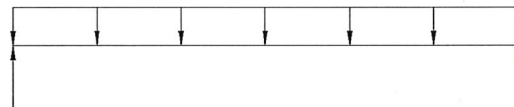
B14

PARAMETERS:

L = 3 FT

W = 0.86 KLF

P = - K



ANALYSIS:

$R_{MAX} = 1.3$ K $V_D = -$ K $< V_{ALL} = 3.9$ K

ADEQUATE

$M_{MAX} = 1.0$ K-FT $< M_{ALL} = 4.5$ K-FT

ADEQUATE

$\Delta_{TL} = 0.004$ IN. $L/1000+$ $< L/240$

ADEQUATE

4x10 DF#2

BEAM DESCRIPTION: UPPER FLOOR FRAMING - SIDE TO SIDE GARAGE BM @ WALL ABOVE

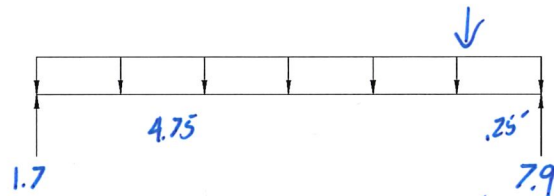
B15

PARAMETERS:

L = 5 FT

W = 0.55 KLF

P = 6.85 K



ANALYSIS:

$R_{MAX} = 7.9$ K $V_D = -$ K $< V_{ALL} = 11.1$ K

ADEQUATE

$M_{MAX} = 2.6$ K-FT $< M_{ALL} = 37.8$ K-FT

ADEQUATE

$\Delta_{TL} = 0.004$ IN. $L/1000+$ $< L/240$

ADEQUATE

3 1/2" x 18" GLB



BEAM & HEADER CALCULATIONS

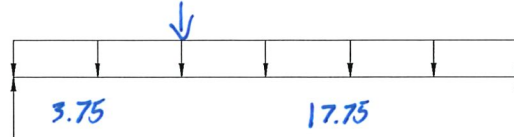
BEAM DESCRIPTION: UPPER FLOOR FRAMING - GARAGE BM @ WALL ABOVE

B16

PARAMETERS:

L = FT
W = KLF
P = K

SEE ENERCALC
OUTPUT



ANALYSIS:

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

ADEQUATE
 ADEQUATE
 ADEQUATE

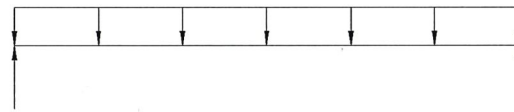
BEAM DESCRIPTION: UPPER FLOOR FRAMING - CANT'D BM @ GARAGE

B17

PARAMETERS:

L = FT
W = KLF
P = K

SEE ENERCALC
OUTPUT



ANALYSIS:

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

ADEQUATE
 ADEQUATE
 ADEQUATE

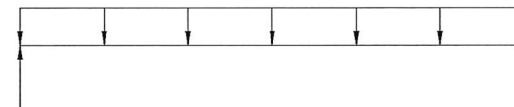
BEAM DESCRIPTION: UPPER FLOOR FRAMING - GARAGE HDR

B18

PARAMETERS:

L = FT
W = KLF
P = K

SEE ENERCALC
OUTPUT



ANALYSIS:

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

ADEQUATE
 ADEQUATE
 ADEQUATE



BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: UPPER FLOOR FRAMING- CANT'D BM @ GARAGE/STAIR

B19

PARAMETERS:

L = FT
W = KLF
P = K

SEE ENERCALC
OUTPUT



ANALYSIS:

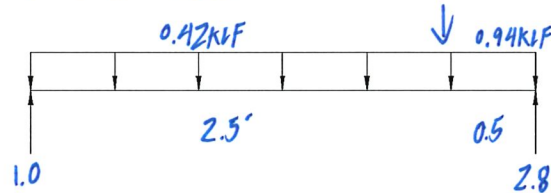
$R_{MAX} =$ K $V_o =$ K < $V_{ALL} =$ K ADEQUATE
 $M_{MAX} =$ K-FT < $M_{ALL} =$ K-FT ADEQUATE
 $\Delta_{TL} =$ IN. $L/$ < $L/240$ ADEQUATE

BEAM DESCRIPTION: UPPER FLOOR FRAMING- HDR @ G.T. ABOVE

B20

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

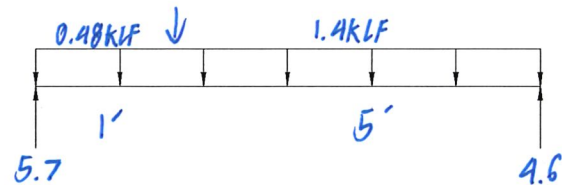
$R_{MAX} =$ K $V_o =$ K < $V_{ALL} =$ K ADEQUATE
 $M_{MAX} =$ K-FT < $M_{ALL} =$ K-FT ADEQUATE
 $\Delta_{TL} =$ IN. $L/$ < $L/240$ ADEQUATE

BEAM DESCRIPTION: MAIN FLOOR FRAMING- 6" HDR

B21

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

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



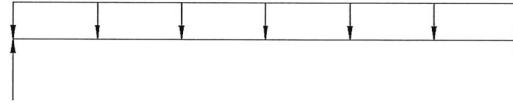
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: MAIN FLOOR FRAMING- TYP. HDR

B22

PARAMETERS:

L = 8 FT
W = 0.46 KLF
P = - K



ANALYSIS:

$R_{MAX} = 1.8$ K $V_D = -$ K $< V_{ALL} = 3.9$ K ADEQUATE
 $M_{MAX} = 3.7$ K-FT $< M_{ALL} = 4.5$ K-FT ADEQUATE
 $\Delta_{TL} = 0.12$ IN. $L/800 < L/240$ ADEQUATE

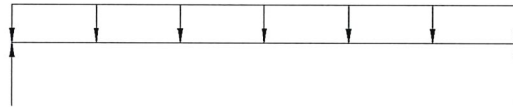
4x10 DF #2

BEAM DESCRIPTION: MAIN FLOOR FRAMING- REAR BM @ BASEMENT

B23

PARAMETERS:

L = 13 FT
W = 0.83 KLF
P = - K



ANALYSIS:

$R_{MAX} = 5.4$ K $V_D = -$ K $< V_{ALL} = 9.3$ K ADEQUATE
 $M_{MAX} = 17.5$ K-FT $< M_{ALL} = 26.3$ K-FT ADEQUATE
 $\Delta_{TL} = 0.3$ IN. $L/520 < L/240$ ADEQUATE

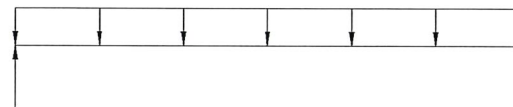
3 1/2" x 15" GLB

BEAM DESCRIPTION: MAIN FLOOR FRAMING- BASEMENT BM @ BRG

B24

PARAMETERS:

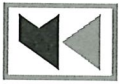
L = 8 FT
W = 1.3 KLF
P = - K



ANALYSIS:

$R_{MAX} = 5.2$ K $V_D = -$ K $< V_{ALL} = 6.5$ K ADEQUATE
 $M_{MAX} = 10.9$ K-FT $< M_{ALL} = 12.9$ K-FT ADEQUATE
 $\Delta_{TL} = 0.2$ IN. $L/980 < L/240$ ADEQUATE

3 1/2" x 10 1/2" GLB



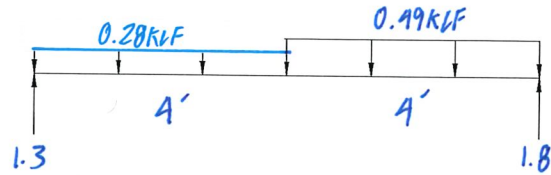
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: MAIN FLOOR FRAMING - BM @ STAIRS

B25

PARAMETERS:

L = 8 FT
W = 7 KLF
P = - K



ANALYSIS:

$R_{MAX} = 1.8$ K $V_D = -$ K $< V_{ALL} = 11.1$ K ADEQUATE
 $M_{MAX} = 3.3$ K-FT $< M_{ALL} = 37.8$ K-FT ADEQUATE
 $\Delta_{TL} = 0.01$ IN. $L/10001 < L/240$ ADEQUATE

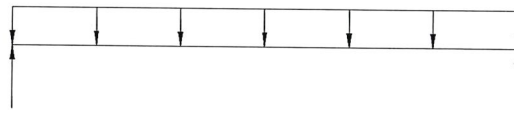
3 1/2" x 18" GLB

BEAM DESCRIPTION: MAIN FLOOR FRAMING - CRAWL BMS

B26

PARAMETERS:

L = 4.25 FT
W = 1.8 KLF
P = - K



ANALYSIS:

$R_{MAX} = 3.8$ K $V_D = -$ K $< V_{ALL} = 3.9$ K ADEQUATE
 $M_{MAX} = 4.1$ K-FT $< M_{ALL} = 4.5$ K-FT ADEQUATE
 $\Delta_{TL} = 0.04$ IN. $L/10001 < L/240$ ADEQUATE

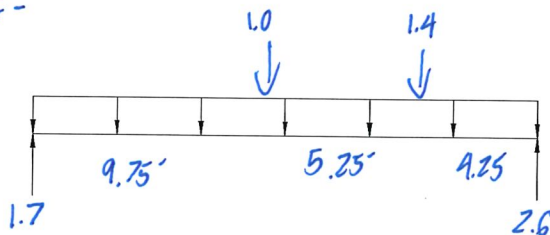
4x10 DF#2

BEAM DESCRIPTION: MAIN FLOOR FRAMING -

B27

PARAMETERS:

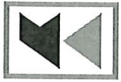
L = 19.25 FT
W = 0.1 KLF
P = 7 K



ANALYSIS:

$R_{MAX} = 2.6$ K $V_D = -$ K $< V_{ALL} =$ K ADEQUATE
 $M_{MAX} = 11.8$ K-FT $< M_{ALL} =$ K-FT ADEQUATE
 $\Delta_{TL} = 0.26$ IN. $L/888 < L/240$ ADEQUATE

3 1/2" x 18" GLB



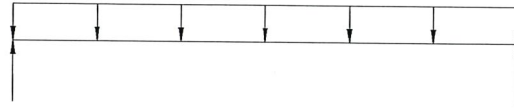
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: UPPER FLOOR FRAMING - BM @ PANTRY

B28

PARAMETERS:

L = FT
W = KLF
P = K



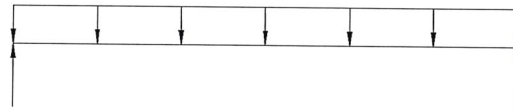
ANALYSIS:

$R_{MAX} =$ 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



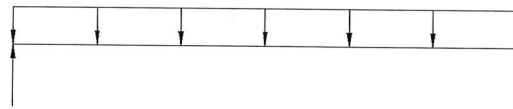
ANALYSIS:

$R_{MAX} =$ 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



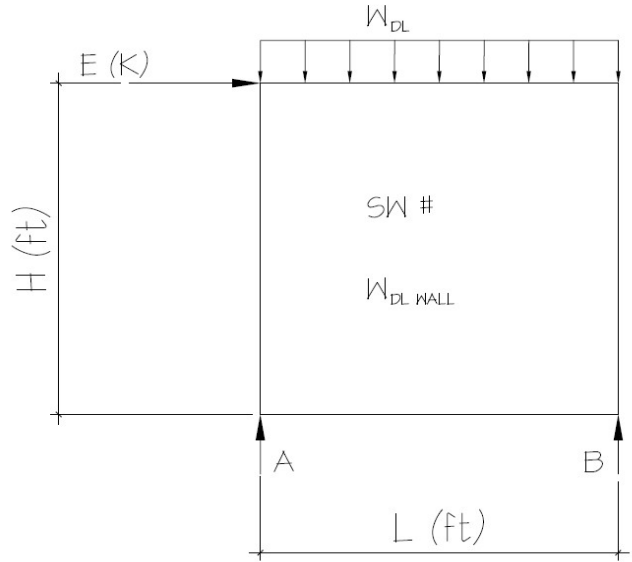
OVERSTRENGTH CALCULATIONS

WALL DESCRIPTION/SW #:

202

PARAMETERS:

- L = 14.0 FT
- H = 9.0 FT
- E = 1.50 K
- W_{DLWALL} = 0.10 KLF
- W_{DL} = 0.035 KLF
- Ω_0 = 2.5 (ASCE TABLE 12.2.1 FOOTNOTE G)
- SDS = 1.168



ANALYSIS:

$$E_{MH} = \Omega_0 * E = 3.75 \text{ K}$$

$$E_v = 0.2 * SDS * DL = 0.442 \text{ K}$$

$$E_M = E_{MH} + E_v = 4.192 \text{ K}$$

$$E_M = E_{MH} - E_v = 3.308 \text{ K}$$

$$E_M (\text{MAX}) = \sum M_A = 0 = 4.19(9.0) + 0.135(14)(7) - R_B(14)$$

$$R_B = 0.9DL + 2.7E$$

$$R_A = 0.9DL - 2.7E$$

$$E_M (\text{MIN}) = \sum M_A = 0 = 3.31(9.0) + 0.135(14)(7) - R_B(14)$$

$$R_B = 0.9DL + 2.1E$$

$$R_A = 0.9DL - 2.1E$$

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



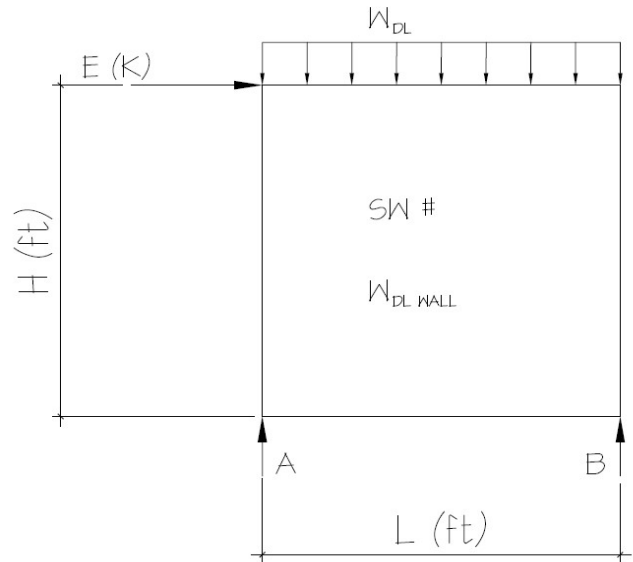
OVERSTRENGTH CALCULATIONS

WALL DESCRIPTION/SW #:

204

PARAMETERS:

L = 36.0 FT
H = 9.0 FT
E = 3.00 K
W_{DL WALL} = 0.10 KLF
W_{DL} = 0.045 KLF
Ω₀ = 2.5 (ASCE TABLE 12.2.1 FOOTNOTE G)
SDS = 1.168



ANALYSIS:

$E_{MH} = \Omega_0 * E = 7.50$ K $E_v = 0.2 * SDS * DL = 1.219$ K
 $E_M = E_{MH} + E_v = 8.719$ K
 $E_M = E_{MH} - E_v = 6.281$ K

$E_M (MAX) = \sum M_A = 0 = 8.72(9.0) + 0.145(36)(18) - R_B(36)$ $R_B = 2.6DL + 2.2E$
 $R_A = 2.6DL - 2.2E$
 $E_M (MIN) = \sum M_A = 0 = 6.28(9.0) + 0.145(36)(18) - R_B(36)$ $R_B = 2.6DL + 1.6E$
 $R_A = 2.6DL - 1.6E$

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

Wood Beam

Lic. #: KW-06004787

DESCRIPTION: B17

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16

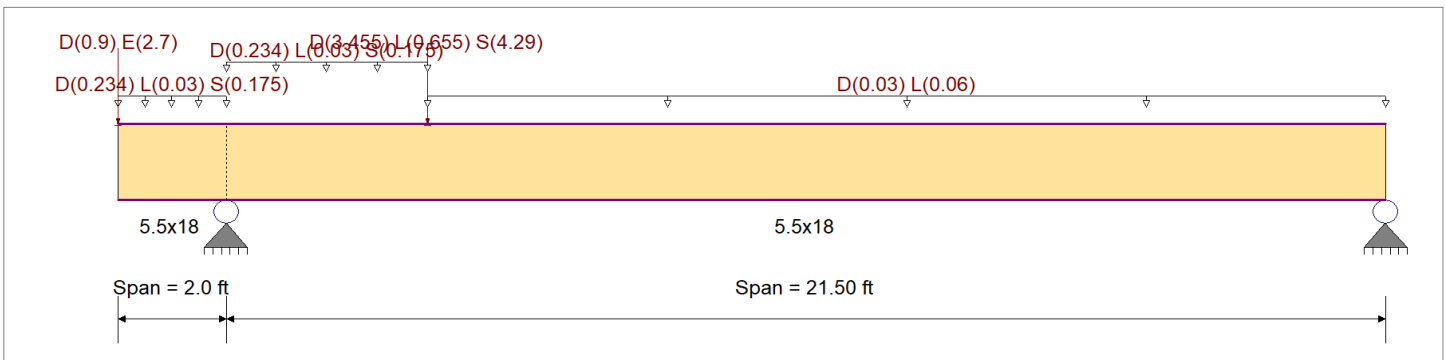
Material Properties

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

Load for Span Number 1

Uniform Load : D = 0.2340, L = 0.030, S = 0.1750 k/ft, Extent = 0.0 --> 2.0 ft, Tributary Width = 1.0 ft

Point Load : D = 0.90, E = 2.70 k @ 0.0 ft

Load for Span Number 2

Point Load : D = 3.455, L = 0.6550, S = 4.290 k @ 3.750 ft

Uniform Load : D = 0.030, L = 0.060 k/ft, Extent = 3.750 --> 21.50 ft, Tributary Width = 1.0 ft

Uniform Load : D = 0.2340, L = 0.030, S = 0.1750 k/ft, Extent = 0.0 --> 3.750 ft, Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.394	1	Maximum Shear Stress Ratio	=	0.385	: 1
Section used for this span		5.5x18		Section used for this span		5.5x18	
fb: Actual	=	1,034.38	psi	fv: Actual	=	117.39	psi
Fb: Allowable	=	2,625.49	psi	Fv: Allowable	=	304.75	psi
Load Combination		+D+S		Load Combination		+D+S	
Location of maximum on span	=	3.844	ft	Location of maximum on span	=	2.000	ft
Span # where maximum occurs	=	Span # 2		Span # where maximum occurs	=	Span # 1	
Maximum Deflection							
Max Downward Transient Deflection		0.175	in	Ratio =		1477	>=360
Max Upward Transient Deflection		-0.066	in	Ratio =		728	>=360
Max Downward Total Deflection		0.367	in	Ratio =		702	>=300
Max Upward Total Deflection		-0.128	in	Ratio =		374	>=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	0.0000	0.000	+D+0.750L+0.750S+0.450W, LL Comb	-0.1279	0.000
	2	0.3674	9.729		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum		11.917	2.269
Overall MINimum		2.951	-0.251
D Only		5.622	1.115

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 06-10-21

Wood Beam

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MULHERN & KULP STRUCTURAL ENGINEERING INC

Lic. # : KW-06004787

DESCRIPTION: B17

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
+D+L, LL Comb Run (*L)		6.705	1.864
+D+L, LL Comb Run (L*)		5.685	1.112
+D+L, LL Comb Run (LL)		6.768	1.862
+D+Lr, LL Comb Run (*L)		5.622	1.115
+D+Lr, LL Comb Run (L*)		5.622	1.115
+D+Lr, LL Comb Run (LL)		5.622	1.115
+D+S		10.129	1.904
+D+0.750Lr+0.750L, LL Comb Run (*L)		6.435	1.677
+D+0.750Lr+0.750L, LL Comb Run (L*)		5.669	1.113
+D+0.750Lr+0.750L, LL Comb Run (LL)		6.482	1.675
+D+0.750L+0.750S, LL Comb Run (*L)		9.815	2.269
+D+0.750L+0.750S, LL Comb Run (L*)		9.050	1.705
+D+0.750L+0.750S, LL Comb Run (LL)		9.862	2.267
+D+0.60W		5.622	1.115
+1.126D+0.70E		8.396	1.080
+D+0.750Lr+0.750L+0.450W, LL Comb R		6.435	1.677
+D+0.750Lr+0.750L+0.450W, LL Comb R		5.669	1.113
+D+0.750Lr+0.750L+0.450W, LL Comb R		6.482	1.675
+D+0.750L+0.750S+0.450W, LL Comb Ru		9.815	2.269
+D+0.750L+0.750S+0.450W, LL Comb Ru		9.050	1.705
+D+0.750L+0.750S+0.450W, LL Comb Ru		9.862	2.267
+1.090D+0.750L+0.750S+0.5250E, LL C		11.870	2.237
+1.090D+0.750L+0.750S+0.5250E, LL C		11.105	1.673
+1.090D+0.750L+0.750S+0.5250E, LL C		11.917	2.235
+0.60D+0.60W		3.373	0.669
+0.470D+0.70E		4.708	0.348
D Only		5.622	1.115
L Only, LL Comb Run (*L)		1.083	0.749
L Only, LL Comb Run (L*)		0.063	-0.003
L Only, LL Comb Run (LL)		1.146	0.747
S Only		4.507	0.789
E Only		2.951	-0.251
H Only			

Wood Beam

Lic. # : KW-06004787

DESCRIPTION: B19

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16

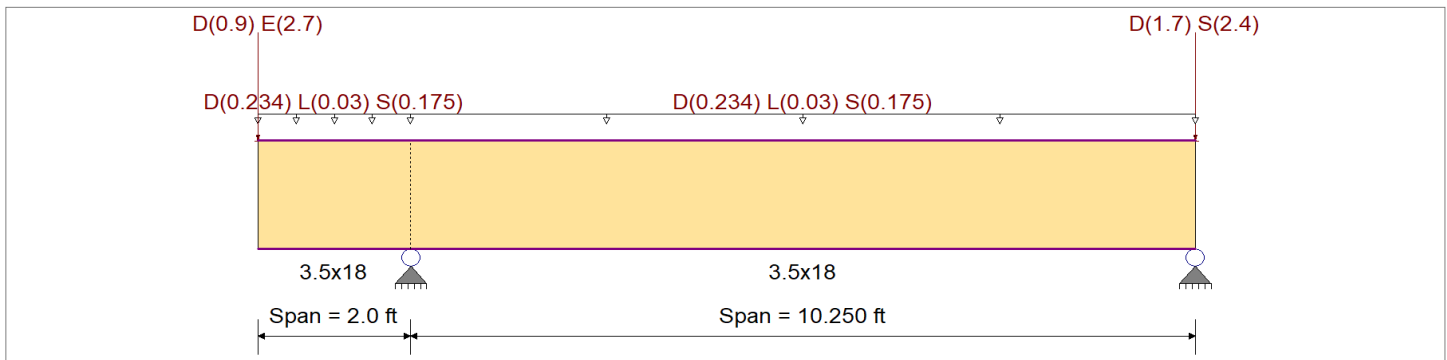
Material Properties

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

Load for Span Number 1

Uniform Load : D = 0.2340, L = 0.030, S = 0.1750 k/ft, Extent = 0.0 --> 2.0 ft, Tributary Width = 1.0 ft

Point Load : D = 0.90, E = 2.70 k @ 0.0 ft

Load for Span Number 2

Point Load : D = 1.70, S = 2.40 k @ 10.250 ft

Uniform Load : D = 0.2340, L = 0.030, S = 0.1750, Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.137 : 1	Maximum Shear Stress Ratio	=	0.187 : 1
Section used for this span		3.5x18	Section used for this span		3.5x18
fb: Actual	=	404.10psi	fv: Actual	=	79.14 psi
Fb: Allowable	=	2,960.00psi	Fv: Allowable	=	424.00 psi
Load Combination		+1.126D+0.70E	Load Combination		+1.126D+0.70E
Location of maximum on span	=	2.000ft	Location of maximum on span	=	1.508 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection		0.025 in	Ratio =		1926 >=360
Max Upward Transient Deflection		-0.021 in	Ratio =		5902 >=360
Max Downward Total Deflection		0.016 in	Ratio =		2914 >=300
Max Upward Total Deflection		-0.009 in	Ratio =		5124 >=300

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
E Only	1	0.0249	0.000	E Only	0.0000	0.000
+D+S	2	0.0247	5.440	E Only	-0.0198	3.321

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum		5.968	6.008
Overall MINimum		3.227	-0.527
D Only		2.888	2.745
+D+L, LL Comb Run (*L)		3.042	2.899

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 06-10-21

Wood Beam

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Lic. # : KW-06004787

DESCRIPTION: B19

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
+D+L, LL Comb Run (L*)		2.954	2.739
+D+L, LL Comb Run (LL)		3.108	2.893
+D+Lr, LL Comb Run (L*)		2.888	2.745
+D+Lr, LL Comb Run (L*)		2.888	2.745
+D+Lr, LL Comb Run (LL)		2.888	2.745
+D+S		4.169	6.008
+D+0.750Lr+0.750L, LL Comb Run (L*)		3.004	2.861
+D+0.750Lr+0.750L, LL Comb Run (L*)		2.938	2.741
+D+0.750Lr+0.750L, LL Comb Run (LL)		3.053	2.856
+D+0.750L+0.750S, LL Comb Run (L*)		3.965	5.308
+D+0.750L+0.750S, LL Comb Run (L*)		3.899	5.188
+D+0.750L+0.750S, LL Comb Run (LL)		4.014	5.303
+D+0.60W		2.888	2.745
+1.126D+0.70E		5.511	2.722
+D+0.750Lr+0.750L+0.450W, LL Comb R		3.004	2.861
+D+0.750Lr+0.750L+0.450W, LL Comb R		2.938	2.741
+D+0.750Lr+0.750L+0.450W, LL Comb R		3.053	2.856
+D+0.750L+0.750S+0.450W, LL Comb Ru		3.965	5.308
+D+0.750L+0.750S+0.450W, LL Comb Ru		3.899	5.188
+D+0.750L+0.750S+0.450W, LL Comb Ru		4.014	5.303
+1.090D+0.750L+0.750S+0.5250E, LL C		5.919	5.278
+1.090D+0.750L+0.750S+0.5250E, LL C		5.853	5.158
+1.090D+0.750L+0.750S+0.5250E, LL C		5.968	5.274
+0.60D+0.60W		1.733	1.647
+0.470D+0.70E		3.616	0.922
D Only		2.888	2.745
L Only, LL Comb Run (L*)		0.154	0.154
L Only, LL Comb Run (L*)		0.066	-0.006
L Only, LL Comb Run (LL)		0.220	0.148
S Only		1.281	3.263
E Only		3.227	-0.527
H Only			

Wood Beam

Lic. # : KW-06004787

DESCRIPTION: B18

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16

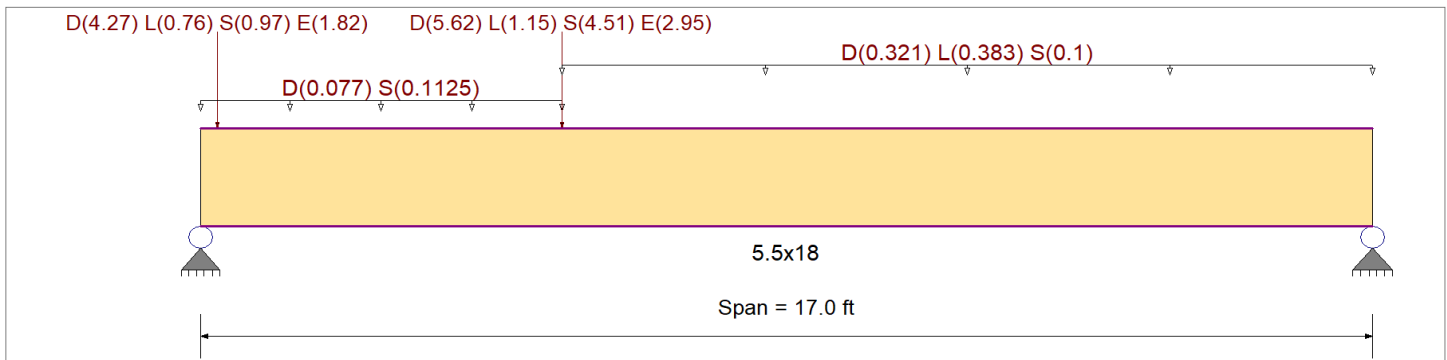
Material Properties

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

Load for Span Number 1

Uniform Load : D = 0.0770, S = 0.1125 k/ft, Extent = 0.077 --> 5.250 ft, Tributary Width = 1.0 ft

Point Load : D = 4.270, L = 0.760, S = 0.970, E = 1.820 k @ 0.250 ft

Point Load : D = 5.620, L = 1.150, S = 4.510, E = 2.950 k @ 5.250 ft

Uniform Load : D = 0.3210, L = 0.3830, S = 0.10 k/ft, Extent = 5.250 --> 17.0 ft, Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.804 : 1	Maximum Shear Stress Ratio	=	0.504 : 1
Section used for this span		5.5x18	Section used for this span		5.5x18
fb: Actual	=	2,162.17 psi	fv: Actual	=	153.60 psi
Fb: Allowable	=	2,687.88 psi	Fv: Allowable	=	304.75 psi
Load Combination		+D+0.750L+0.750S	Load Combination		+D+0.750L+0.750S
Location of maximum on span	=	5.274 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection		0.178 in	Ratio =		1145 >=360
Max Upward Transient Deflection		0.000 in	Ratio =		0 <360
Max Downward Total Deflection		0.613 in	Ratio =		332 >=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	0.6130	8.066		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	18.882	9.594
Overall MINimum	3.832	0.938
D Only	9.919	4.511
+D+L	13.018	7.823
+D+Lr	9.919	4.511
+D+S	14.898	6.779

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06-10-21

Wood Beam

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DESCRIPTION: B18

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
+D+0.750Lr+0.750L	12.243	6.995
+D+0.750L+0.750S	15.977	8.695
+D+0.60W	9.919	4.511
+1.126D+0.70E	13.852	5.736
+D+0.750Lr+0.750L+0.450W	12.243	6.995
+D+0.750L+0.750S+0.450W	15.977	8.695
+1.090D+0.750L+0.750S+0.5250E	18.882	9.594
+0.60D+0.60W	5.952	2.707
+0.470D+0.70E	7.345	2.777
D Only	9.919	4.511
L Only	3.099	3.311
S Only	4.978	2.267
E Only	3.832	0.938
H Only		

Wood Beam

Lic. # : KW-06004787

DESCRIPTION: B16

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16

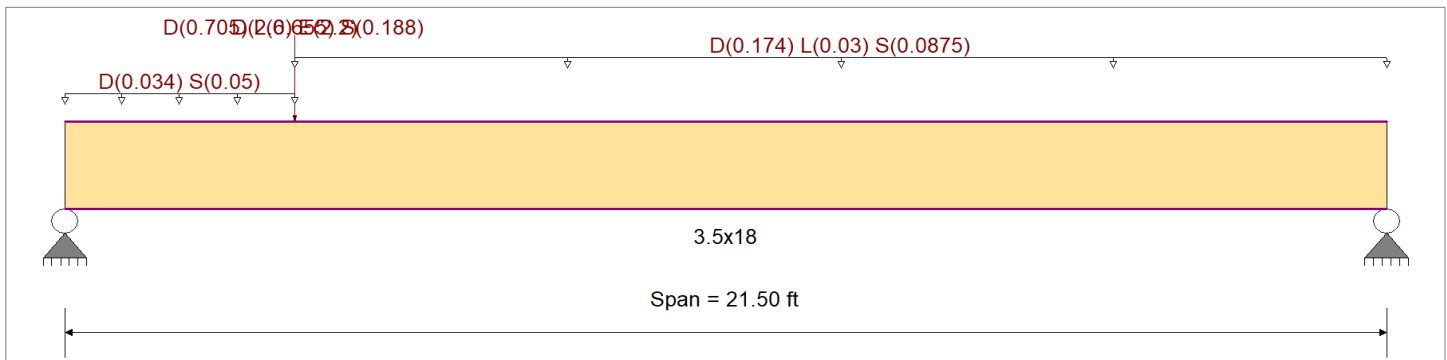
Material Properties

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 = 2.60, E = 2.20 k @ 3.750 ft, (sw)

Point Load : D = 0.7050, L = 0.6550, S = 0.1880 k @ 3.750 ft, (B15)

Uniform Load : D = 0.0340, S = 0.050 k/ft, Extent = 0.0 --> 3.750 ft, Tributary Width = 1.0 ft

Uniform Load : D = 0.1740, L = 0.030, S = 0.08750 k/ft, Extent = 3.750 --> 21.50 ft, Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.540 1	Maximum Shear Stress Ratio	=	0.445 : 1
Section used for this span		3.5x18	Section used for this span		3.5x18
fb: Actual	=	1,290.81 psi	fv: Actual	=	118.00 psi
Fb: Allowable	=	2,388.60 psi	Fv: Allowable	=	265.00 psi
Load Combination		+D+L	Load Combination		+D+L
Location of maximum on span	=	7.847ft	Location of maximum on span	=	0.000ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection		0.145 in	Ratio =		1778 >=360
Max Upward Transient Deflection		0.000 in	Ratio =		0 <360
Max Downward Total Deflection		0.760 in	Ratio =		339 >=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	0.7601	10.201		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	6.900	4.020
Overall MINimum	1.816	0.384
D Only	4.267	2.548
+D+L	5.027	2.975
+D+Lr	4.267	2.548
+D+S	5.234	3.509
+D+0.750Lr+0.750L	4.837	2.868

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06-10-21

Wood Beam

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Lic. # : KW-06004787

DESCRIPTION: B16

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
+D+0.750L+0.750S	5.563	3.589
+D+0.60W	4.267	2.548
+1.126D+0.70E	6.076	3.138
+D+0.750Lr+0.750L+0.450W	4.837	2.868
+D+0.750L+0.750S+0.450W	5.563	3.589
+1.090D+0.750L+0.750S+0.5250E	6.900	4.020
+0.60D+0.60W	2.560	1.529
+0.470D+0.70E	3.277	1.466
D Only	4.267	2.548
L Only	0.761	0.427
S Only	0.967	0.961
E Only	1.816	0.384
H Only		

ARCHITECTURAL INNOVATIONS

PRATT PLAT - LOT 1

MERCER ISLAND, WA

SHEAR WALL CALCULATIONS - WIND

REVIEWED BY: NJM

JUNE 11, 2021

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



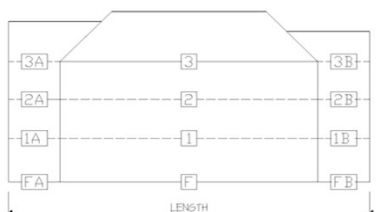
MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

WIND DESIGN SUMMARY PER ASCE 7-16

PARAMETERS:		ROOF GEOMETRY:		BUILDING GEOMETRY:	
WIND SPEED	100	TRANS. ROOF PITCH	12.0 :12	LENGTH	51 FT
EXPOSURE CATEGORY	B	LONG. ROOF PITCH	12.0 :12	WIDTH	55 FT
RISK CATEGORY	II	MEAN ROOF HEIGHT, H	24.00 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 <input type="checkbox"/> 0.60				

TRANSVERSE DIRECTION (PERPENDICULAR TO MAIN RIDGE LINE)

DIAPHRAGM LEVEL	FLOOR-TO-FLOOR HEIGHT	SECTION	TRIBUTARY DESIGN AREAS:			
			A	O	B	
2	9 FT	Roof Surface	0	250	0	sq ft
		Wall surface	0	265	0	sq ft
1	10 FT	Roof Surface	0	78	0	sq ft
		Wall surface	0	409	0	sq ft
FND		Roof Surface	0	0	0	sq ft
		Wall surface	0	0	0	sq ft

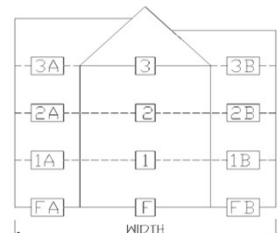


TRIBUTARY DESIGN LOADS: (0.6W)

	SECTION			kips
	A	O	B	
Story Shear	0.00	6.72	0.00	kips
Total Shear	0.00	6.72	0.00	kips
	6.72			kips
Story Shear	0.00	6.55	0.00	kips
Total Shear	0.00	13.27	0.00	kips
	13.27			kips
Story Shear	0.00	0.00	0.00	kips
Total Shear	0.00	13.27	0.00	kips
	13.27			kips

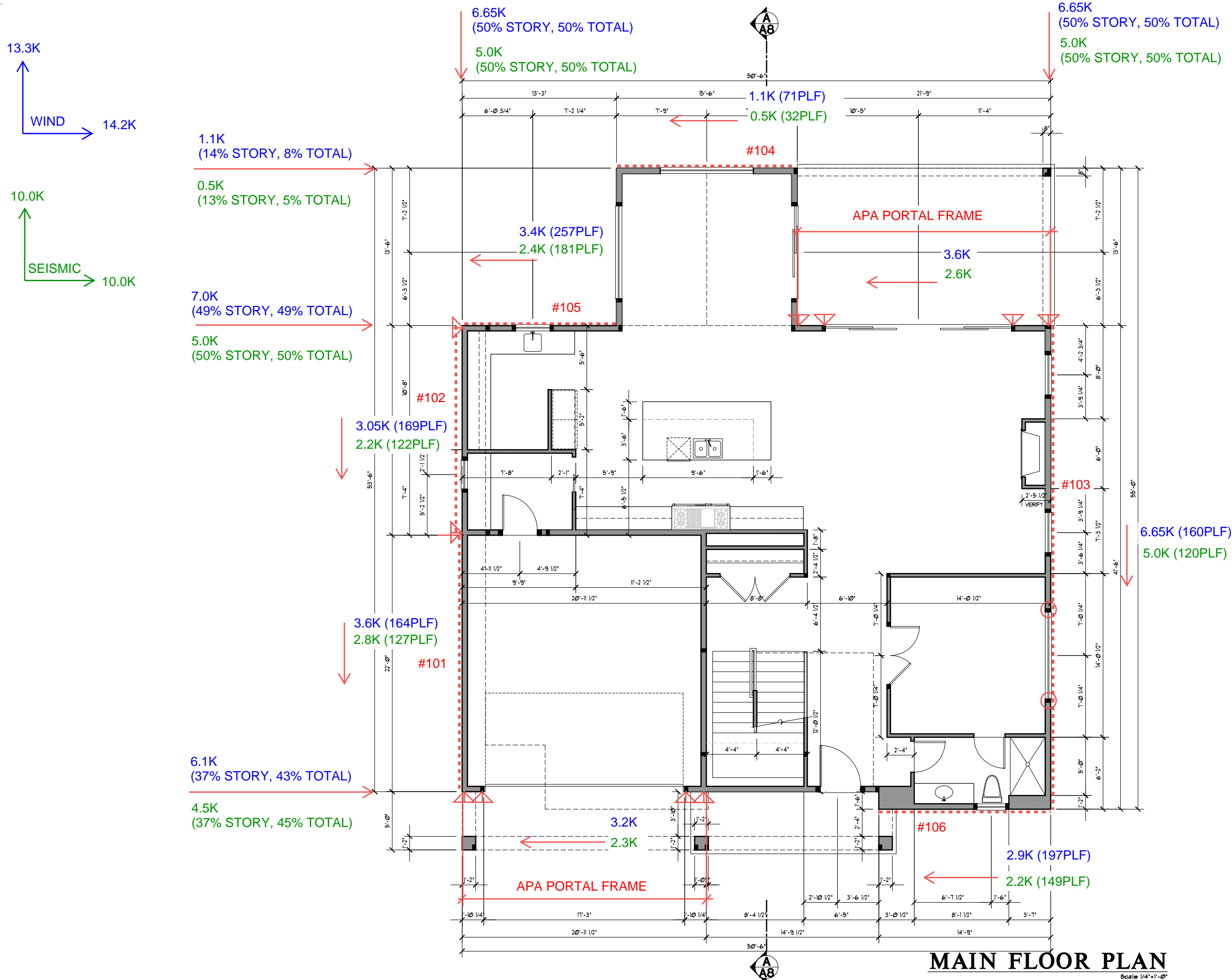
LONGITUDINAL DIRECTION (PARALLEL TO MAIN RIDGE LINE)

DIAPHRAGM LEVEL	FLOOR-TO-FLOOR HEIGHT	SECTION	TRIBUTARY DESIGN AREAS:			
			A	O	B	
2	9 FT	Roof Surface	0	293	0	sq ft
		Wall surface	0	195	0	sq ft
1	10 FT	Roof Surface	0	91	0	sq ft
		Wall surface	0	490	0	sq ft
FND		Roof Surface	0	0	0	sq ft
		Wall surface	0	0	0	sq ft



TRIBUTARY DESIGN LOADS: (0.6W)

	SECTION			kips
	A	O	B	
Story Shear	0.00	6.26	0.00	kips
Total Shear	0.00	6.26	0.00	kips
	6.26			kips
Story Shear	0.00	7.92	0.00	kips
Total Shear	0.00	14.18	0.00	kips
	14.18			kips
Story Shear	0.00	0.00	0.00	kips
Total Shear	0.00	14.18	0.00	kips
	14.18			kips



GENERAL PLAN NOTES

- SEE SHEET A-1 FOR ALL GENERAL NOTES AND REQUIREMENTS.
- ENERGY AND AIR QUALITY INFORMATION SEE DIV. 11 SHEET A-1
- SEE BUILDING ELEVATION FOR WINDOW OPERATION SEE DIV. 8 SHEET A-1
- SEE TYP. MATERIALS LIST ON SECTION SHEET
- SEE SHEET A-1 FOR ALL NOTES AND REQUIREMENTS CONCERNING MECHANICAL, PLUMBING, AND ELECTRICAL.

FLOOR PLAN KEY NOTES

- P-1 OCCUPANCY SEPARATION: APPLY (1) LAYER OF 1/2" G.I.B. TO GARAGE SIDE OF RESIDENCE, ATTIC SPACES, AND TO ALL BEAMS AND POSTS SUPPORTING A FLOOR-CEILING ASSEMBLY. APPLY (1) LAYER OF 1/2" TYPE 'X' G.I.B. TO GARAGE CEILING WHEN UNDER HABITABLE ROOMS. DUCTS THROUGH WALL OR CEILING COMMON TO HOUSE SHALL HAVE MINIMUM 26 GAUGE STEEL SEE DIV. 01002.6.A. SHEET A-1.
- P-2 1/2" MIN. SELF CLOSING SOLID WOOD CORE, HONEY-COMB CORE STEEL, OR 20-MINUTE FIRE RATED DOOR SEE DIV. 01002.6.B. SHEET A-1.
- P-3 STAIR ASSEMBLY NOTES: PER I.R.C. SECTION R301.5 AND DETAIL 12.D2.
 - A. HEADROOM MIN. 6'-8", WIDTH MIN. 3'-0".
 - B. TREADS 10" MIN. DEPTH AND MIN. WIDTH OF 36" ABOVE HANDRAIL HEIGHT, RISERS 7/8" MAX. HT. TREAD NOSING TO BE MINIMUM 3/4" AND A MAXIMUM OF 1/4" ON STAIRS WITH SOLID RISERS.
 - C. HANDRAIL MIN. 34" TO MAX 38" ABOVE TREAD NOSING. HANDRAIL TYPE I CIRCULAR TO HAVE 1 1/4" MIN. TO 2" MAX. CROSS SECTION DIMENSION AND 1 1/2" MIN. CLEAR FROM WALL. RETURN RAIL ENDS, HANDRAILS SHALL BE STRONG ENOUGH TO RESIST A 200 LBS POINT LOAD IN ANY DIRECTION PER I.R.C. TABLE R302.5.
 - D. INSTALL FIRE BLOCKING BETWEEN STRINGERS AT THE TOP AND BOTTOM OF EACH RUN PER I.R.C. SECTION R302.11.
 - E. COVER USABLE SPACE UNDER STAIR W/ 1/2" G.I.B. PER I.R.C. SECTION R302.7.
 - F. INTERMEDIATE BALUSTERS SHALL BE SPACED W/ LESS THAN 4" BETWEEN BALUSTERS.
 - G. PROVIDE STAIRWAY ILLUMINATION PER I.R.C. SECTION R302.6. SEE DIV. 01002.1 SHEET A-1.
- P-4 SAFETY GLAZING PER I.R.C. SECTION R308
 - A. WINDOWS WITHIN 18" OF FLOOR
 - B. WINDOWS WITHIN A 24" ARC OF DOORS
 - C. WINDOWS AT TUBS AND SHOWERS
 - D. GLAZING IN DOORS
 - E. LESS THAN 60" HORIZ. FROM THE BOT. STAIR TREAD NOSING, 4 BOT. EDGE OF GLAZING IS LESS THAN 36" ABV. LANDING/WALKING SURFACE SEE DIV. 02000 SHEET A-1
- P-5 EGRESS WINDOW PER I.R.C. SECTION R310 SEE DIV. 02000 SHEET A-1
- P-6 IGNITERS FOR GAS FIRED APPLIANCES IN GARAGE TO BE 18" MIN. ABOVE TOP OF SLAB. SEE DIV. 10 SHEET A-1
- P-7 COVER WALLS ADJACENT TO TUBS AND SHOWERS WITH NON-ABSORBENT MATERIAL TO 12" ABOVE DRAIN INLETS, PER I.R.C. SECTION 301.2. SEE DIV. 09250 SHEET A-1
- P-8 (2) LAYERS OF FLOOR SHEATHING OVER FRAMING.
- P-9 7/8" MAX. RISER WITH 10" MIN. RUN, IF MORE THAN (3) RISERS, HANDRAIL REQUIRED PER I.R.C. SECTION R311.2. SEE DIV. 01002.1 SHEET A-1
- P-10 18"x24" CRALL SPACE ACCESS, INSULATE AND WEATHER STRIP. SEE DIV. 01002.1 SHEET A-1
- P-11 22"x30" ATTIC SPACE ACCESS W/ 30" HEAD CLEARANCE, INSULATE AND WEATHER STRIP. SEE DIV. 01002.2 SHEET A-1
- P-12 FLOOR MATERIAL BREAK LINE
- P-13 WALL LINE ABOVE
- P-14 WALL LINE BELOW
- P-15 FIREPLACE ASSEMBLY NOTES:
 - A. DIRECT VENT GAS FIREPLACES, MUST BE LISTED, LABELED & INSTALLED PER MFG. SPECIFICATIONS, SHALL CONFORM TO I.R.C. REQUIREMENTS. SEE DIV. 01002.2 SHEET A-1
 - B. ZERO CLEARANCE FIREPLACES SHALL CONFORM TO I.R.C. REQUIREMENTS. SEE DIV. 01002.2 SHEET A-1
 - C. HEARTH SHALL CONFORM TO I.R.C. REQUIREMENT SEE DIV. 01002.2
 - D. FIREBLOCK OPENINGS AROUND PENETRATIONS EACH FLOOR PER I.R.C. SECTION R303.19
 - E. FIREPLACE MUST COMPLY WITH UL 121 TESTING
- P-16 SEE SITE PLAN FOR EXTENT OF WALKS & DRIVEWAYS
- P-17 3" DIAMETER STEEL POST
- P-18 36" GUARDRAIL PER I.R.C. SECTION R312 & TABLE R301.5 CONTRACTOR TO VERIFY TO INSPECTOR THAT ALL GUARDS & RAILINGS ARE CAPABLE OF RESISTING 200LB LOAD ON TOP RAIL ACTING IN ANY DIRECTION.
- P-19 1" VENT FOR MECHANICAL, 1" CLEARANCE ALL SIDES PER I.R.C. SECTION R302.11. SEE DIV. 15 SHEET A-1
- P-20 PLANT SHELF
- P-21 UPPER AND LOWER LINEN CABINETS
- P-22 SOFFIT AREA
- P-23 INTEGRATED MAKE UP AIR
- P-24 2x6 STUDS W/ R-21 INSULATION MIN.

Date	By	Description
09/17/19	SM	PRELIMINARY DESIGN
10/03/19	SM	ELEVATION DESIGN
10/29/19	SM	DESIGN REVISIONS
12/01/19	REY	KITCHEN REVISIONS
12/20/19	SM	ELEVATION DESIGN
02/25/21	SM	ELEVATION DESIGN
05/20/21	SM	FINAL DESIGN
05/26/21	SM	ENGINEERING SET

Pratt Plat
 Lot 1
 Mercer Island, WA 98040
 7911 SE 72nd Pl
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 Bellevue, WA 98007
 1-800-888-4517
 www.kapplerhomeplans.com

SQUARE FOOTAGE

MAIN FLOOR	1800 SF
UPPER FLOOR	1791 SF
LOWER FLOOR	1228 SF
TOTAL	4819 SF
GARAGE	451 SF
PORCH	83 SF
PATIO	294 SF

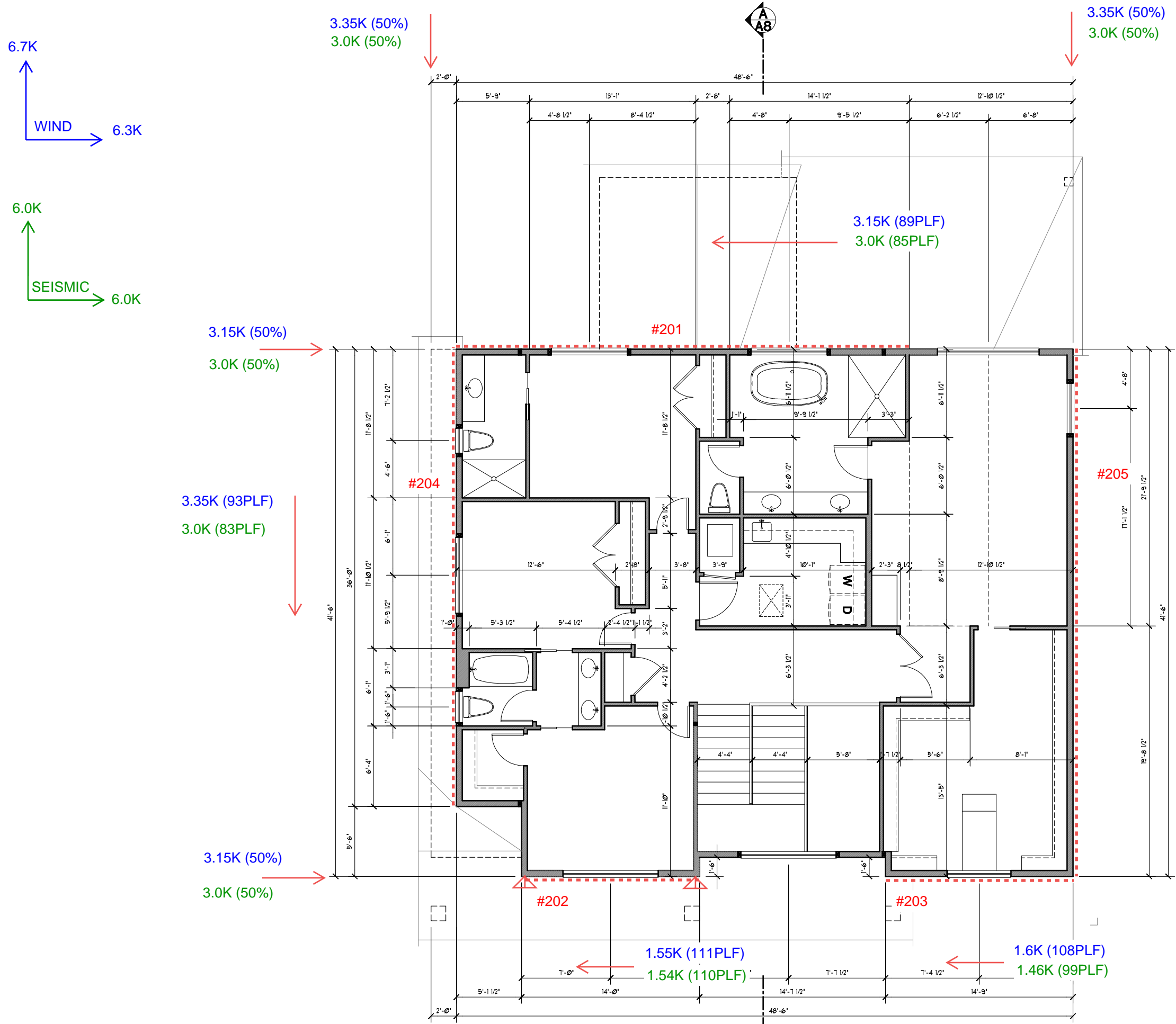
TITLE

JOB NO.: 1903405
 STARTING NO.: 1903503

SHEET

A3

MAIN FLOOR PLAN
 Scale 1/4"=1'-0"



GENERAL PLAN NOTES

- SEE SHEET A-1 FOR ALL GENERAL NOTES AND REQUIREMENTS.
- ENERGY AND AIR QUALITY INFORMATION SEE DIV. 11 SHEET A-1
- SEE BUILDING ELEVATION FOR WINDOW OPERATION SEE DIV. 8 SHEET A-1
- SEE TYP. MATERIALS LIST ON SECTION SHEET
- SEE SHEET A-1 FOR ALL NOTES AND REQUIREMENTS CONCERNING MECHANICAL, PLUMBING, AND ELECTRICAL.

FLOOR PLAN KEY NOTES

- P-1 OCCUPANCY SEPARATION: APPLY (1) LAYER OF 1/4" G.W.B. TO GARAGE SIDE OF RESIDENCE, ATTIC SPACES, AND TO ALL BEAMS AND POSTS SUPPORTING A FLOOR-CEILING ASSEMBLY. APPLY (1) LAYER OF 3/8" TYPE 'X' G.W.B. TO GARAGE CEILING WHEN UNDER HABITABLE ROOMS. DUCTS THROUGH WALL OR CEILING COMMON TO HOUSE SHALL HAVE MINIMUM 26 GAUGE STEEL SEE DIV. 01002.6.A. SHEET A-1.
- P-2 3/8" MIN. SELF CLOSING SOLID WOOD CORE, HONEY-COMB CORE STEEL, OR 20-MINUTE FIRE RATED DOOR SEE DIV. 01002.6.B. SHEET A-1
- P-3 STAIR ASSEMBLY NOTES: PER I.R.C. SECTION R311.5 AND DETAIL 12.D2.
 - A. HEADROOM MIN. 6'-8", WIDTH MIN. 3'-0".
 - B. TREADS 10" MIN. DEPTH AND MIN. WIDTH OF 36" ABOVE HANDRAIL HEIGHT, RISERS 7/8" MAX. HT. TREAD NOSING TO BE MINIMUM 3/4" AND A MAXIMUM OF 1/4" ON STAIRS WITH SOLID RISERS.
 - C. HANDRAIL MIN. 34" TO MAX 38" ABOVE TREAD NOSING. HANDRAIL TYPE I CIRCULAR TO HAVE 1 1/4" MIN. TO 2" MAX. CROSS SECTION DIMENSION AND 1 1/2" MIN. CLEAR FROM WALL. RETURN RAIL ENDS, HANDRAILS SHALL BE STRONG ENOUGH TO RESIST A 200 POUND POINT LOAD IN ANY DIRECTION PER I.R.C. TABLE R301.3
 - D. INSTALL FIRE BLOCKING BETWEEN STRINGERS AT THE TOP AND BOTTOM OF EACH RUN PER I.R.C. SECTION R302.11
 - E. COVER USABLE SPACE UNDER STAIR W/ 1/2" G.W.B. PER I.R.C. SECTION R302.1
 - F. INTERMEDIATE BALUSTERS SHALL BE SPACED W/ LESS THAN 4" BETWEEN BALUSTERS.
 - G. PROVIDE STAIRWAY ILLUMINATION PER I.R.C. SECTION R303.6
 - SEE DIV. 01002.1 SHEET A-1
- P-4 SAFETY GLAZING PER I.R.C. SECTION R308
 - A. WINDOWS WITHIN 18" OF FLOOR
 - B. WINDOWS WITHIN A 24" ARC OF DOORS
 - C. WINDOWS AT TUBS AND SHOWERS
 - D. GLAZING IN DOORS
 - E. LESS THAN 60" HORIZ. FROM THE BOT. STAIR TREAD NOSING, 4 BOT. EDGE OF GLAZING IS LESS THAN 36" ABV. LANDING/WALKING SURFACE SEE DIV. 02000 SHEET A-1
- P-5 EGRESS WINDOW PER I.R.C. SECTION R310 SEE DIV. 02000 SHEET A-1
- P-6 IGNITERS FOR GAS FIRED APPLIANCES IN GARAGE TO BE 18" MIN. ABOVE TOP OF SLAB. SEE DIV. 15 SHEET A-1
- P-7 COVER WALLS ADJACENT TO TUBS AND SHOWERS WITH NON-ABSORBENT MATERIAL TO 12" ABOVE DRAIN INLETS, PER I.R.C. SECTION 301.2. SEE DIV. 09250 SHEET A-1
- P-8 (2) LAYERS OF FLOOR SHEATHING OVER FRAMING.
 - 1 3/4" MAX. RISER WITH 10" MIN. RUN, IF MORE THAN (3) RISERS, HANDRAIL REQUIRED PER I.R.C. SECTION R311.5. SEE DIV. 01002.1 SHEET A-1
 - 18"x24" CRALL SPACE ACCESS, INSULATE AND WEATHER STRIP. SEE DIV. 01002.1 SHEET A-1
 - 22"x30" ATTIC SPACE ACCESS W/ 30" HEAD CLEARANCE, INSULATE AND WEATHER STRIP. SEE DIV. 01002.2 SHEET A-1
- P-12 FLOOR MATERIAL BREAK LINE
- P-13 WALL LINE ABOVE
- P-14 WALL LINE BELOW
- P-15 FIREPLACE ASSEMBLY NOTES:
 - A. DIRECT VENT GAS FIREPLACES, MUST BE LISTED, LABELED & INSTALLED PER MFG. SPECIFICATIONS, SHALL CONFORM TO I.R.C. REQUIREMENTS. SEE DIV. 01002.12 SHEET A-1
 - B. ZERO CLEARANCE FIREPLACES SHALL CONFORM TO I.R.C. REQUIREMENTS. SEE DIV. 01002.12 SHEET A-1
 - C. HEARTH SHALL CONFORM TO I.R.C. REQUIREMENT SEE DIV. 01002.12
 - D. FIREBLOCK OPENINGS AROUND PENETRATIONS @ EACH FLOOR PER I.R.C. SECTION R1003.13
 - E. FIREPLACE MUST COMPLY WITH UL 121 TESTING
- P-16 SEE SITE PLAN FOR EXTENT OF WALKS & DRIVEWAYS
- P-17 3" DIAMETER STEEL POST
- P-18 36" GUARDRAIL PER I.R.C. SECTION R312 & TABLE R301.5 CONTRACTOR TO VERIFY TO INSPECTOR THAT ALL GUARDS & RAILINGS ARE CAPABLE OF RESISTING 200LB LOAD ON TOP RAIL ACTING IN ANY DIRECTION.
- P-19 1" VENT FOR MECHANICAL, 1" CLEARANCE ALL SIDES PER I.R.C. SECTION R302.11. SEE DIV. 15 SHEET A-1
- P-20 PLANT SHELF
- P-21 UPPER AND LOWER LINEN CABINETS
- P-22 SOFFIT AREA
- P-23 INTEGRATED MAKE UP AIR
- P-24 2x6 STUDS W/ R-21 INSULATION MIN.

Date	By	Description
09/17/19	SM	PRELIMINARY DESIGN
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12/01/19	REY	KITCHEN REVISIONS
12/20/19	SM	ELEVATION DESIGN
02/25/21	SM	DESIGN REVISIONS
05/20/21	SM	FINAL DESIGN
05/26/21	SM	ENGINEERING SET

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TITLE
 JOB NO.: 19034.05
 STARTING NO.: 19035.03

SHEET
A5

UPPER FLOOR PLAN
 Scale 1/4"=1'-0"



SHEARWALL DESIGN SUMMARY

SHEARWALL 201: 2ND - REAR EXTERIOR BATH TO MSTR BATH

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"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

NO HOLDOWN REQUIRED

SHEARWALL 202: 2ND - FRONT EXTERIOR BED

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"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

NO HOLDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL 203: 2ND - FRONT EXTERIOR WIC

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 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 - SIDE EXTERIOR BATH TO CLOSET

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 205: 2ND - SIDE EXTERIOR MSTR BED/WIC

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 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 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 HOLDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL 101: 1ST - SIDE EXTERIOR 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 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 102: 1ST - SIDE EXTERIOR PANTRY

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 STHD14RJ HOLDOWN



SHEARWALL DESIGN SUMMARY

SHEARWALL 103: 1ST - SIDE EXTERIOR GREAT TO BATH

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"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

NO HOLDOWN REQUIRED

SHEARWALL 104: 1ST - REAR EXTERIOR NOOK

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"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

NO HOLDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL 105: 1ST - REAR EXTERIOR KITCHEN

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 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 - FRONT EXTERIOR BATH

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

ARCHITECTURAL INNOVATIONS

PRATT PLAT - LOT 1

MERCER ISLAND, WA

SHEAR WALL CALCULATIONS - SEISMIC

REVIEWED BY: NJM

JUNE 11, 2021

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	C
SPECTRAL RESPONSE ACCELERATION 0.2 SEC, S_s	1.460
SPECTRAL RESPONSE ACCELERATION 1.0 SEC, S₁	0.560
OCCUPANCY CATEGORY	II

VARIABLES:

SITE COEFFICIENT, F _A	1.20
SITE COEFFICIENT, F _V	1.44

CALCULATED VALUES:

MAXIMUM SPECTRAL RESPONSE ACCELERATION, S_{MS}	1.752
MAXIMUM SPECTRAL RESPONSE ACCELERATION, S_{M1}	0.806
DESIGN SPECTRAL RESPONSE ACCELERATION, S_{DS}	1.168
DESIGN SPECTRAL RESPONSE ACCELERATION, S_{D1}	0.538
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	19

CALCULATED VALUES:

APPROXIMATE FUNDAMENTAL PERIOD, T _A	0.182
T ₀	0.092
T _B	0.460
SPECTRAL RESPONSE ACC., S _A (G)	1.168

SITE CLASS ASSUMPTION

D 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	10.0	2251	15	10.4	44 K
2	9.0	1791	17	4.9	35 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	0.180	0.180

BASE SHEARS:

ULTIMATE LOADS

x 0.7 =

ALLOWABLE LOADS

TRANSVERSE	LONGITUDINAL	TRANSVERSE	LONGITUDINAL
14 K	14 K	10.0 K	10.0 K

STORY SHEAR CALCULATION:

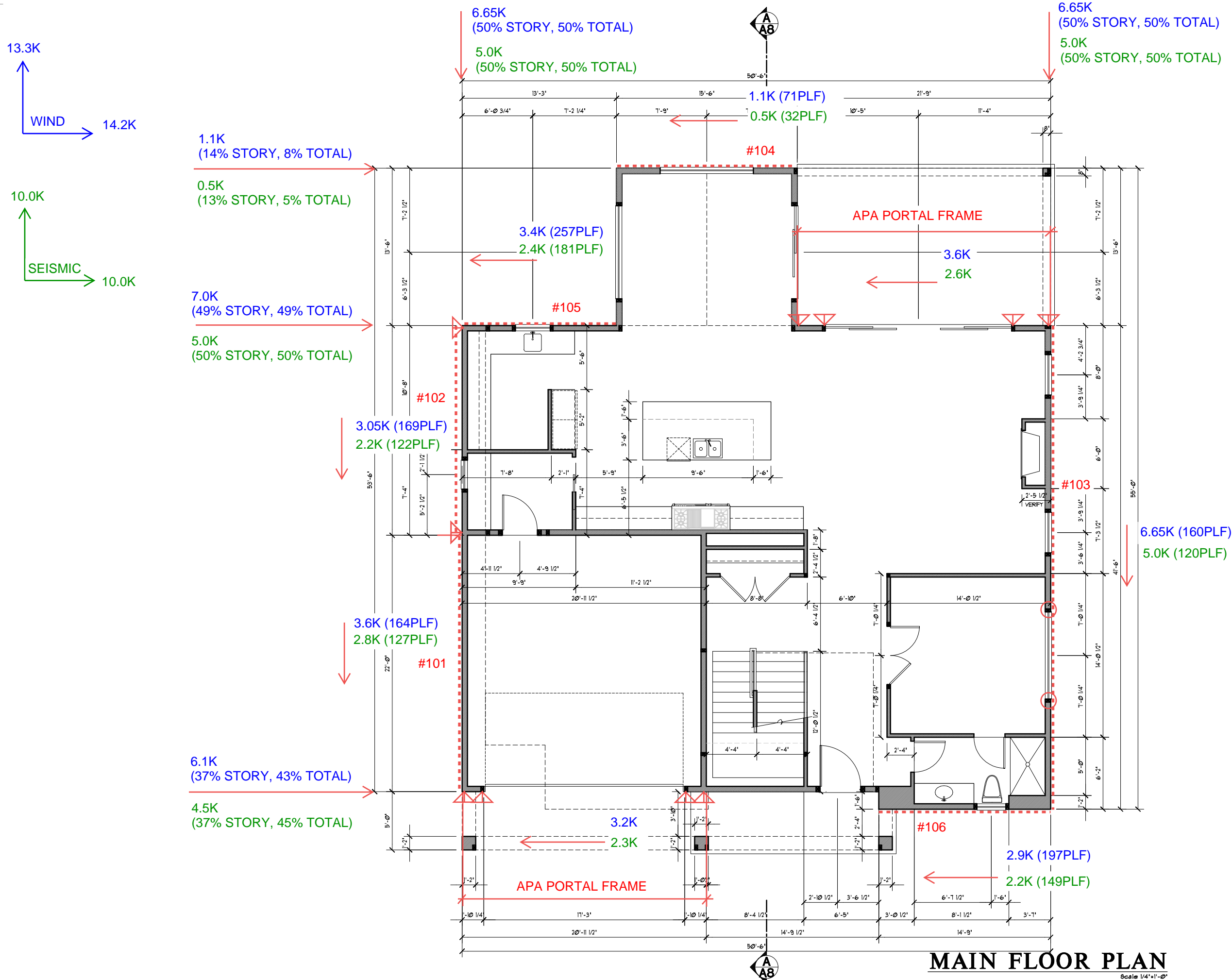
DISTRIBUTION EXPONENT, **1.00**

ULTIMATE LOADS

x 0.7 =

ALLOWABLE LOADS

LEVEL	VERT. DIST. FACTOR, C _{vk}	TRANSVERSE		LONGITUDINAL		TRANSVERSE		LONGITUDINAL	
		STORY SHEAR, F _v	STORY SHEAR, F _v	STORY SHEAR, F _v	STORY SHEAR, F _v	STORY SHEAR, F _v	STORY SHEAR, F _v	STORY SHEAR, F _v	STORY SHEAR, F _v
1	0.397	5.7 K	5.7 K	4.0 K	10.0 K	4.0 K	10.0 K		
2	0.603	8.6 K	8.6 K	6.0 K	6.0 K	6.0 K	6.0 K		
3	0.000	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
4	0.000	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
5	0.00	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
6	0.00	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
7	0.00	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
8	0.00	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
9	0.00	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
10	0.00	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
11	0.00	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
12	0.00	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
13	0.00	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
14	0.00	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
15	0.00	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
16	0.00	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
17	0.00	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
18	0.00	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
19	0.00	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		
20	0.00	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K	0.0 K		



GENERAL PLAN NOTES

- SEE SHEET A-1 FOR ALL GENERAL NOTES AND REQUIREMENTS.
- ENERGY AND AIR QUALITY INFORMATION SEE DIV. 11 SHEET A-1
- SEE BUILDING ELEVATION FOR WINDOW OPERATION SEE DIV. 8 SHEET A-1
- SEE TYP. MATERIALS LIST ON SECTION SHEET
- SEE SHEET A-1 FOR ALL NOTES AND REQUIREMENTS CONCERNING MECHANICAL, PLUMBING, AND ELECTRICAL.

FLOOR PLAN KEY NOTES

- P-1 OCCUPANCY SEPARATION: APPLY (1) LAYER OF 1/2" G.W.B. TO GARAGE SIDE OF RESIDENCE, ATTIC SPACES, AND TO ALL BEAMS AND POSTS SUPPORTING A FLOOR-CEILING ASSEMBLY. APPLY (1) LAYER OF 1/2" TYPE 'X' G.W.B. TO GARAGE CEILING WHEN UNDER HABITABLE ROOMS. DUCTS THROUGH WALL OR CEILING COMMON TO HOUSE SHALL HAVE MINIMUM 26 GAUGE STEEL SEE DIV. 01002.6.A. SHEET A-1.
- P-2 1/2" MIN. SELF CLOSING SOLID WOOD CORE, HONEY-COMB CORE STEEL, OR 20-MINUTE FIRE RATED DOOR SEE DIV. 01002.6.B. SHEET A-1.
- P-3 STAIR ASSEMBLY NOTES: PER I.R.C. SECTION R301.5 AND DETAIL 12.D2.
 - A. HEADROOM MIN. 6'-8", WIDTH MIN. 3'-0".
 - B. TREADS 10" MIN. DEPTH AND MIN. WIDTH OF 36" ABOVE HANDRAIL HEIGHT, RISERS 7/8" MAX. HT. TREAD NOSING TO BE MINIMUM 3/4" AND A MAXIMUM OF 1/4" ON STAIRS WITH SOLID RISERS.
 - C. HANDRAIL MIN. 34" TO MAX 38" ABOVE TREAD NOSING. HANDRAIL TYPE 'C' CIRCULAR TO HAVE 1 1/4" MIN. TO 2" MAX. CROSS SECTION DIMENSION AND 1 1/2" MIN. CLEAR FROM WALL. RETURN RAIL ENDS, HANDRAILS SHALL BE STRONG ENOUGH TO RESIST A 200 LBS POINT LOAD IN ANY DIRECTION PER I.R.C. TABLE R301.5.
 - D. INSTALL FIRE BLOCKING BETWEEN STRINGERS AT THE TOP AND BOTTOM OF EACH RUN PER I.R.C. SECTION R302.11.
 - E. COVER USABLE SPACE UNDER STAIR W/ 1/2" G.W.B. PER I.R.C. SECTION R302.1.
 - F. INTERMEDIATE BALUSTERS SHALL BE SPACED W/ LESS THAN 4" BETWEEN BALUSTERS.
 - G. PROVIDE STAIRWAY ILLUMINATION PER I.R.C. SECTION R303.6. SEE DIV. 01002.1 SHEET A-1.
- P-4 SAFETY GLAZING PER I.R.C. SECTION R308
 - A. WINDOWS WITHIN 18" OF FLOOR
 - B. WINDOWS WITHIN A 24" ARC OF DOORS
 - C. WINDOWS AT TUBS AND SHOWERS
 - D. GLAZING IN DOORS
 - E. LESS THAN 60" HORIZ. FROM THE BOT. STAIR TREAD NOSING, 4 BOT. EDGE OF GLAZING IS LESS THAN 36" ABV. LANDING/WALKING SURFACE SEE DIV. 08000 SHEET A-1
- P-5 EGRESS WINDOW PER I.R.C. SECTION R310 SEE DIV. 08000 SHEET A-1
- P-6 IGNITERS FOR GAS FIRED APPLIANCES IN GARAGE TO BE 18" MIN. ABOVE TOP OF SLAB. SEE DIV. 10 SHEET A-1
- P-7 COVER WALLS ADJACENT TO TUBS AND SHOWERS WITH NON-ABSORBENT MATERIAL TO 12" ABOVE DRAIN INLETS, PER I.R.C. SECTION 301.2. SEE DIV. 09250 SHEET A-1
- P-8 (2) LAYERS OF FLOOR SHEATHING OVER FRAMING.
- P-9 7/8" MAX. RISER WITH 10" MIN. RUN, IF MORE THAN (3) RISERS, HANDRAIL REQUIRED PER I.R.C. SECTION R311.2. SEE DIV. 01002.1 SHEET A-1
- P-10 18"x24" CRAWL SPACE ACCESS, INSULATE AND WEATHER STRIP. SEE DIV. 01002.1 SHEET A-1
- P-11 22"x30" ATTIC SPACE ACCESS W/ 30" HEAD CLEARANCE, INSULATE AND WEATHER STRIP. SEE DIV. 01002.2 SHEET A-1
- P-12 FLOOR MATERIAL BREAK LINE
- P-13 WALL LINE ABOVE
- P-14 WALL LINE BELOW
- P-15 FIREPLACE ASSEMBLY NOTES:
 - A. DIRECT VENT GAS FIREPLACES, MUST BE LISTED, LABELED & INSTALLED PER MFG. SPECIFICATIONS, SHALL CONFORM TO I.R.C. REQUIREMENTS. SEE DIV. 01002.2 SHEET A-1
 - B. ZERO CLEARANCE FIREPLACES SHALL CONFORM TO I.R.C. REQUIREMENTS. SEE DIV. 01002.2 SHEET A-1
 - C. HEARTH SHALL CONFORM TO I.R.C. REQUIREMENT SEE DIV. 01002.2
 - D. FIREBLOCK OPENINGS AROUND PENETRATIONS EACH FLOOR PER I.R.C. SECTION R303.13
 - E. FIREPLACE MUST COMPLY WITH UL 121 TESTING
- P-16 SEE SITE PLAN FOR EXTENT OF WALKS & DRIVEWAYS
- P-17 3" DIAMETER STEEL POST
- P-18 36" GUARDRAIL PER I.R.C. SECTION R312 & TABLE R301.5 CONTRACTOR TO VERIFY TO INSPECTOR THAT ALL GUARDS & RAILINGS ARE CAPABLE OF RESISTING 200LB LOAD ON TOP RAIL ACTING IN ANY DIRECTION.
- P-19 1" VENT FOR MECHANICAL, 1" CLEARANCE ALL SIDES PER I.R.C. SECTION R302.11. SEE DIV. 15 SHEET A-1
- P-20 PLANT SHELF
- P-21 UPPER AND LOWER LINEN CABINETS
- P-22 SOFFIT AREA
- P-23 INTEGRATED MAKE UP AIR
- P-24 2x6 STUDS W/ R-21 INSULATION MIN.

Date	By	Description
09/17/19	SM	PRELIMINARY DESIGN
10/03/19	SM	ELEVATION DESIGN
10/29/19	SM	DESIGN REVISIONS
12/01/19	REY	KITCHEN REVISIONS
12/20/19	SM	ELEVATION DESIGN
02/25/21	SM	ELEVATION DESIGN
05/20/21	SM	FINAL DESIGN
05/26/21	SM	ENGINEERING SET

Pratt Plat
 Lot 1
 Mercer Island, WA 98040
 7911 SE 72nd Pl
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SQUARE FOOTAGE

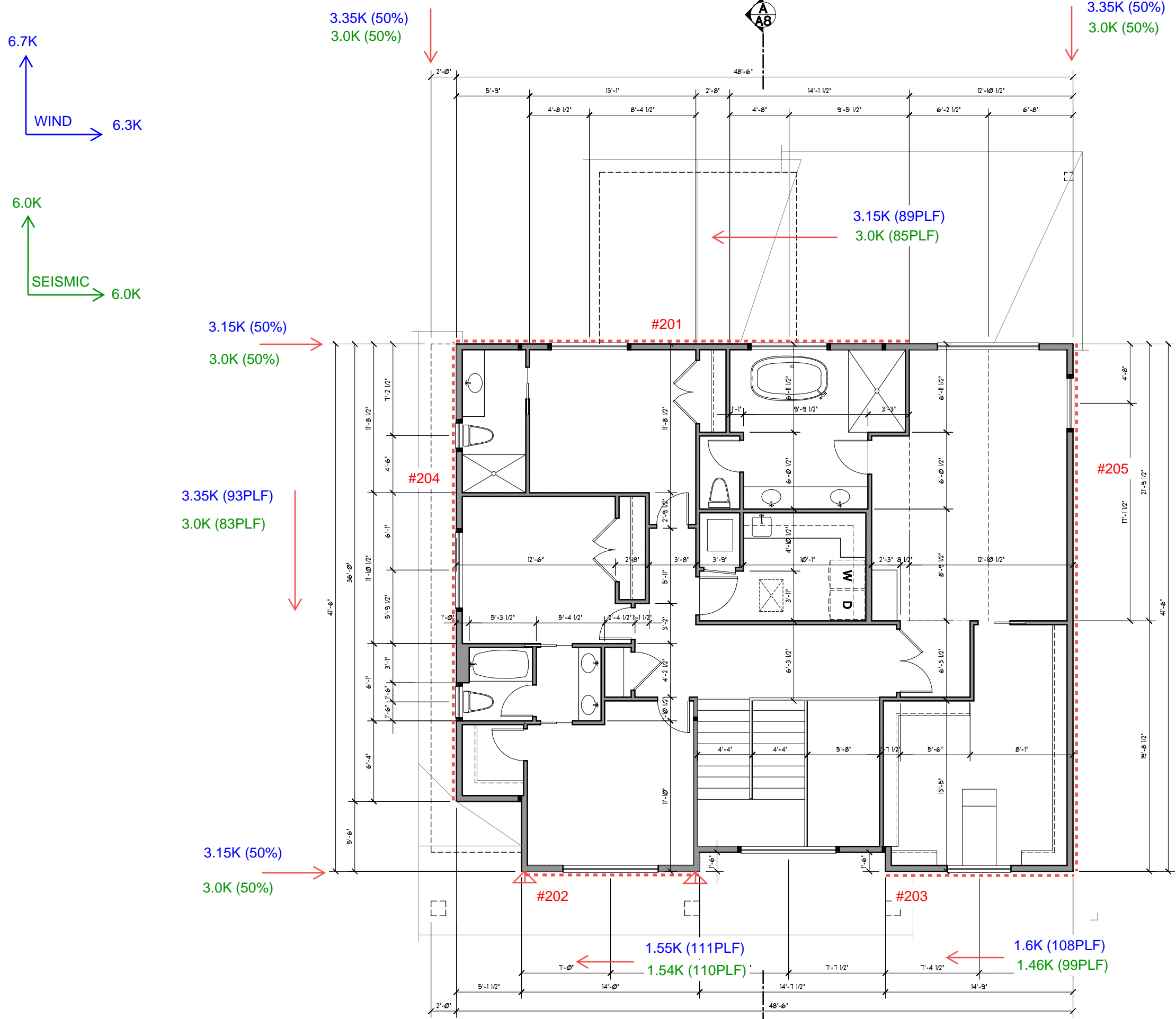
MAIN FLOOR	1800 SF
UPPER FLOOR	1791 SF
LOWER FLOOR	1228 SF
TOTAL	4819 SF
GARAGE	451 SF
PORCH	83 SF
PATIO	294 SF

TITLE

JOB NO.: 1903405
 STARTING NO.: 1903503

SHEET
A3

MAIN FLOOR PLAN
 Scale 1/4"=1'-0"



GENERAL PLAN NOTES

- SEE SHEET A-1 FOR ALL GENERAL NOTES AND REQUIREMENTS.
- ENERGY AND AIR QUALITY INFORMATION SEE DIV. 11 SHEET A-1
- SEE BUILDING ELEVATION FOR WINDOW OPERATION SEE DIV. 8 SHEET A-1
- SEE TYP. MATERIALS LIST ON SECTION SHEET
- SEE SHEET A-1 FOR ALL NOTES AND REQUIREMENTS CONCERNING MECHANICAL, PLUMBING, AND ELECTRICAL.

FLOOR PLAN KEY NOTES

- P-1 OCCUPANCY SEPARATION: APPLY (1) LAYER OF 1/4" G.W.B. TO GARAGE SIDE OF RESIDENCE, ATTIC SPACES, AND TO ALL BEAMS AND POSTS SUPPORTING A FLOOR-CEILING ASSEMBLY. APPLY (1) LAYER OF 3/8" TYPE 'X' G.W.B. TO GARAGE CEILING WHEN UNDER HABITABLE ROOMS. DUCTS THROUGH WALL OR CEILING COMMON TO HOUSE SHALL HAVE MINIMUM 26 GAUGE STEEL SEE DIV. 01002.6.A. SHEET A-1.
- P-2 3/8" MIN. SELF CLOSING SOLID WOOD CORE, HONEY-COMB CORE STEEL, OR 20-MINUTE FIRE RATED DOOR SEE DIV. 01002.6.B. SHEET A-1
- P-3 STAIR ASSEMBLY NOTES: PER I.R.C. SECTION R315 AND DETAIL 12.D2.
 - A. HEADROOM MIN. 6'-8", WIDTH MIN. 3'-0".
 - B. TREADS 10" MIN. DEPTH AND MIN. WIDTH OF 36" ABOVE HANDRAIL HEIGHT, RISERS 7/8" MAX. HT. TREAD NOSING TO BE MINIMUM 3/4" AND A MAXIMUM OF 1/4" ON STAIRS WITH SOLID RISERS.
 - C. HANDRAIL MIN. 34" TO MAX 38" ABOVE TREAD NOSING. HANDRAIL TYPE I CIRCULAR TO HAVE 1 1/4" MIN. TO 2" MAX. CROSS SECTION DIMENSION AND 1 1/2" MIN. CLEAR FROM WALL. RETURN RAIL ENDS, HANDRAILS SHALL BE STRONG ENOUGH TO RESIST A 200 LBS POINT LOAD IN ANY DIRECTION PER I.R.C. TABLE R303.5
 - D. INSTALL FIRE BLOCKING BETWEEN STRINGERS AT THE TOP AND BOTTOM OF EACH RUN PER I.R.C. SECTION R302.11
 - E. COVER USABLE SPACE UNDER STAIR W/ 1/2" G.W.B. PER I.R.C. SECTION R302.1
 - F. INTERMEDIATE BALUSTERS SHALL BE SPACED W/ LESS THAN 4" BETWEEN BALUSTERS.
 - G. PROVIDE STAIRWAY ILLUMINATION PER I.R.C. SECTION R303.6
- P-4 SAFETY GLAZING PER I.R.C. SECTION R308
 - A. WINDOWS WITHIN 18" OF FLOOR
 - B. WINDOWS WITHIN A 24" ARC OF DOORS
 - C. WINDOWS AT TUBS AND SHOWERS
 - D. GLAZING IN DOORS
 - E. LESS THAN 60" HORIZ. FROM THE BOT. STAIR TREAD NOSING, 4 BOT. EDGE OF GLAZING IS LESS THAN 36" ABV. LANDING/WALKING SURFACE SEE DIV. 02800 SHEET A-1
- P-5 EGRESS WINDOW PER I.R.C. SECTION R310 SEE DIV. 02600 SHEET A-1
- P-6 IGNITERS FOR GAS FIRED APPLIANCES IN GARAGE TO BE 18" MIN. ABOVE TOP OF SLAB. SEE DIV. 15 SHEET A-1
- P-7 COVER WALLS ADJACENT TO TUBS AND SHOWERS WITH NON-ABSORBENT MATERIAL TO 12" ABOVE DRAIN INLETS, PER I.R.C. SECTION 3012. SEE DIV. 09250 SHEET A-1
- P-8 (2) LAYERS OF FLOOR SHEATHING OVER FRAMING.
 - 1 3/4" MAX. RISER WITH 10" MIN. RUN, IF MORE THAN (3) RISERS, HANDRAIL REQUIRED PER I.R.C. SECTION R312.5. SEE DIV. 01002.1 SHEET A-1
 - 18"x24" CRALL SPACE ACCESS, INSULATE AND WEATHER STRIP. SEE DIV. 01002.1 SHEET A-1
 - 22"x30" ATTIC SPACE ACCESS W/ 30" HEAD CLEARANCE, INSULATE AND WEATHER STRIP. SEE DIV. 01002.2 SHEET A-1
- P-12 FLOOR MATERIAL BREAK LINE
- P-13 WALL LINE ABOVE
- P-14 WALL LINE BELOW
- P-15 FIREPLACE ASSEMBLY NOTES:
 - A. DIRECT VENT GAS FIREPLACES, MUST BE LISTED, LABELED & INSTALLED PER MFG. SPECIFICATIONS, SHALL CONFORM TO I.R.C. REQUIREMENTS. SEE DIV. 01002.12 SHEET A-1
 - B. ZERO CLEARANCE FIREPLACES SHALL CONFORM TO I.R.C. REQUIREMENTS. SEE DIV. 01002.12 SHEET A-1
 - C. HEARTH SHALL CONFORM TO I.R.C. REQUIREMENT SEE DIV. 01002.12
 - D. FIREBLOCK OPENINGS AROUND PENETRATIONS @ EACH FLOOR PER I.R.C. SECTION R1003.15
 - E. FIREPLACE MUST COMPLY WITH UL 121 TESTING
- P-16 SEE SITE PLAN FOR EXTENT OF WALKS & DRIVEWAYS
- P-17 3" DIAMETER STEEL POST
- P-18 36" GUARDRAIL PER I.R.C. SECTION R312 & TABLE R303.5 CONTRACTOR TO VERIFY TO INSPECTOR THAT ALL GUARDS & RAILINGS ARE CAPABLE OF RESISTING 200 LBS LOAD ON TOP RAIL ACTING IN ANY DIRECTION.
- P-19 1" VENT FOR MECHANICAL, 1" CLEARANCE ALL SIDES PER I.R.C. SECTION R302.11. SEE DIV. 15 SHEET A-1
- P-20 PLANT SHELF
- P-21 UPPER AND LOWER LINEN CABINETS
- P-22 SOFFIT AREA
- P-23 INTEGRATED MAKE UP AIR
- P-24 2x6 STUDS W/ R-21 INSULATION MIN.

Date	By	Description
09/17/19	SM	PRELIMINARY DESIGN
10/03/19	SM	ELEVATION DESIGN
10/29/19	SM	DESIGN REVISIONS
12/01/19	REY	KITCHEN REVISIONS
12/02/19	SM	ELEVATION DESIGN
02/25/21	SM	DESIGN REVISIONS
05/20/21	SM	FINAL DESIGN
05/26/21	SM	ENGINEERING SET

Pratt Plat
 Lot 1
 Mercer Island, WA 98040

7911 SE 72nd Pl
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 Bellevue, WA 98007
 1-800-888-4517
 www.kapplerhomeplans.com

TITLE
JOB NO. : 19034.05
STARTING NO. : 19035.03

SHEET
A5

UPPER FLOOR PLAN
 Scale 1/4"=1'-0"



SHEARWALL DESIGN SUMMARY

SHEARWALL 201: 2ND - REAR EXTERIOR BATH TO MSTR BATH

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 HOLDDOWN REQUIRED

SHEARWALL 202: 2ND - FRONT EXTERIOR BED

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 CS 16 STRAP TIE (14" END LENGTH)



SHEARWALL DESIGN SUMMARY

SHEARWALL 203: 2ND - FRONT EXTERIOR WIC

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 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 - SIDE EXTERIOR BATH TO CLOSET

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 205: 2ND - SIDE EXTERIOR MSTR BED/WIC

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 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 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 HOLDOWN CAPACITY LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL 101: 1ST - SIDE EXTERIOR 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 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 102: 1ST - SIDE EXTERIOR PANTRY

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 STHD14RJ HOLDOWN



SHEARWALL DESIGN SUMMARY

SHEARWALL 103: 1ST - SIDE EXTERIOR GREAT TO BATH

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"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

NO HOLDOWN REQUIRED

SHEARWALL 104: 1ST - REAR EXTERIOR NOOK

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"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

NO HOLDOWN REQUIRED



SHEARWALL DESIGN SUMMARY

SHEARWALL 105: 1ST - REAR EXTERIOR KITCHEN

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"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

NO HOLDOWN REQUIRED

SHEARWALL 106: 1ST - FRONT EXTERIOR BATH

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"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

NO HOLDOWN REQUIRED

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Cantilevered Retaining Wall

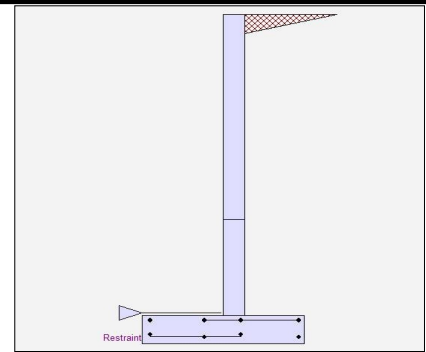
Code: IBC 2018,ACI 318-14,TMS 402-16

Criteria

Retained Height	=	10.50 ft
Wall height above soil	=	0.00 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	0.00 in
Water height over heel	=	0.0 ft

Soil Data

Allow Soil Bearing	=	3,000.0 psf
Equivalent Fluid Pressure Method		
Active Heel Pressure	=	35.0 psf/ft
	=	
Passive Pressure	=	250.0 psf/ft
Soil Density, Heel	=	110.00 pcf
Soil Density, Toe	=	0.00 pcf
Footing Soil Friction	=	0.350
Soil height to ignore for passive pressure	=	12.00 in



Surcharge Loads

Surcharge Over Heel	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0 psf
Used for Sliding & Overturning		

Lateral Load Applied to Stem

Lateral Load	=	0.0 #/ft
...Height to Top	=	0.00 ft
...Height to Bottom	=	0.00 ft
Load Type	=	Wind (W) (Service Level)
Wind on Exposed Stem	=	0.0 psf (Service Level)

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Line Load
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Axial Load Applied to Stem

Axial Dead Load	=	0.0 lbs
Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

Earth Pressure Seismic Load

Method : Uniform		
Multiplier Used	=	7.000
(Multiplier used on soil density)		
Uniform Seismic Force	=	80.500
Total Seismic Force	=	925.750

Design Summary

Wall Stability Ratios

Overturning	=	* 1.48 Ratio < 1.5!
Slab Resists All Sliding !		
Total Bearing Load	=	4,939 lbs
...resultant ecc.	=	11.60 in
Soil Pressure @ Toe	=	1,703 psf OK
Soil Pressure @ Heel	=	0 psf OK
Allowable	=	3,000 psf
Soil Pressure Less Than Allowable		
ACI Factored @ Toe	=	2,385 psf
ACI Factored @ Heel	=	0 psf
Footing Shear @ Toe	=	30.6 psi OK
Footing Shear @ Heel	=	34.9 psi OK
Allowable	=	75.0 psi

Sliding Calcs

Lateral Sliding Force	=	2,962.4 lbs
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***OVERTURNING F.S. OF ONLY 1.1 IS REQUIRED DUE TO SEISMIC LOAD**

Vertical component of active lateral soil pressure IS considered in the calculation of soil bearing pressures.

Load Factors

Building Code	IBC 2018,ACI
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.000
Seismic, E	1.000

Stem Construction

	2nd	Bottom
Design Height Above Ftg	ft = 3.33	Stem OK 0.00
Wall Material Above "Ht"	= Concrete	Stem OK Concrete
Design Method	= LFRD	LFRD
Thickness	= 8.00	8.00
Rebar Size	= # 5	# 5
Rebar Spacing	= 12.00	6.00
Rebar Placed at	= Edge	6.5 in

Design Data

fb/FB + fa/Fa	=	0.678	0.947
Total Force @ Section			
Service Level	lbs =		
Strength Level	lbs =	2,016.6	3,932.3
Moment....Actual			
Service Level	ft-# =		
Strength Level	ft-# =	5,509.5	15,242.1
Moment....Allowable	ft-# =	8,121.3	16,093.8
Shear.....Actual			
Service Level	psi =		
Strength Level	psi =	27.2	50.4
Shear.....Allowable	psi =	75.0	75.0
Anet (Masonry)	in2 =		
Rebar Depth 'd'	in =	6.19	6.50

Masonry Data

f'm	psi =		
Fs	psi =		
Solid Grouting	=		
Modular Ratio 'n'	=		
Wall Weight	psf =	100.0	100.0
Short Term Factor	=		
Equiv. Solid Thick.	=		
Masonry Block Type	=	Medium Weight	
Masonry Design Method	=	ASD	

Concrete Data

f'c	psi =	2,500.0	2,500.0
Fy	psi =	60,000.0	60,000.0

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Concrete Stem Rebar Area Details

2nd Stem	Vertical Reinforcing	Horizontal Reinforcing	
As (based on applied moment) :	0.2086 in ² /ft		
(4/3) * As :	0.2782 in ² /ft	Min Stem T&S Reinf Area 1.377 in ²	
200bd/fy : 200(12)(6.1875)/60000 :	0.2475 in ² /ft	Min Stem T&S Reinf Area per ft of stem Height : 0.192 in ² /ft	
0.0018bh : 0.0018(12)(8) :	0.1728 in ² /ft	Horizontal Reinforcing Options :	
	=====	One layer of :	Two layers of :
Required Area :	0.2475 in ² /ft	#4@ 12.50 in	#4@ 25.00 in
Provided Area :	0.31 in ² /ft	#5@ 19.38 in	#5@ 38.75 in
Maximum Area :	0.8382 in ² /ft	#6@ 27.50 in	#6@ 55.00 in

Bottom Stem	Vertical Reinforcing	Horizontal Reinforcing	
As (based on applied moment) :	0.548 in ² /ft		
(4/3) * As :	0.7306 in ² /ft	Min Stem T&S Reinf Area 0.639 in ²	
200bd/fy : 200(12)(6.5)/60000 :	0.26 in ² /ft	Min Stem T&S Reinf Area per ft of stem Height : 0.192 in ² /ft	
0.0018bh : 0.0018(12)(8) :	0.1728 in ² /ft	Horizontal Reinforcing Options :	
	=====	One layer of :	Two layers of :
Required Area :	0.548 in ² /ft	#4@ 12.50 in	#4@ 25.00 in
Provided Area :	0.62 in ² /ft	#5@ 19.38 in	#5@ 38.75 in
Maximum Area :	0.8805 in ² /ft	#6@ 27.50 in	#6@ 55.00 in

Footing Data

Toe Width	=	2.50 ft
Heel Width	=	2.50
Total Footing Width	=	5.00
Footing Thickness	=	12.00 in
Key Width	=	0.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	0.00 ft
f'c =	2,500 psi	Fy = 60,000 psi
Footing Concrete Density	=	150.00 pcf
Min. As %	=	0.0018
Cover @ Top	2.00	@ Btm.= 3.00 in

Footing Design Results

		<u>Toe</u>	<u>Heel</u>
Factored Pressure	=	2,385	0 psf
Mu' : Upward	=	73,224	254 ft-#
Mu' : Downward	=	6,750	5,628 ft-#
Mu: Design	=	5,540	5,374 ft-#
Actual 1-Way Shear	=	30.57	34.85 psi
Allow 1-Way Shear	=	75.00	75.00 psi
Toe Reinforcing	=	# 5 @ 6.00 in	
Heel Reinforcing	=	# 4 @ 9.25 in	
Key Reinforcing	=	None Spec'd	
Footing Torsion, Tu	=		0.00 ft-lbs
Footing Allow. Torsion, phi Tu	=		0.00 ft-lbs

If torsion exceeds allowable, provide supplemental design for footing torsion.

Other Acceptable Sizes & Spacings

Toe: #4@ 9.25 in, #5@ 14.35 in, #6@ 20.37 in, #7@ 27.77 in, #8@ 36.57 in, #9@ 46
 Heel: #4@ 9.25 in, #5@ 14.35 in, #6@ 20.37 in, #7@ 27.77 in, #8@ 36.57 in, #9@ 46
 Key: No key defined

Min footing T&S reinf Area	1.30	in ²
Min footing T&S reinf Area per foot	0.26	in ² /ft
If one layer of horizontal bars:	If two layers of horizontal bars:	
#4@ 9.26 in	#4@ 18.52 in	
#5@ 14.35 in	#5@ 28.70 in	
#6@ 20.37 in	#6@ 40.74 in	

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Cantilevered Retaining Wall

Code: IBC 2018,ACI 318-14,TMS 402-16

Summary of Overturning & Resisting Forces & Moments

ItemOVERTURNING.....		RESISTING.....			
	Force lbs	Distance ft	Moment ft-#	Force lbs	Distance ft	Moment ft-#	
HL Act Pres (ab water tbl)	2,314.4	3.83	8,871.8	Soil Over HL (ab. water tbl)	2,117.5	4.08	8,646.5
HL Act Pres (be water tbl)				Soil Over HL (bel. water tbl)		4.08	8,646.5
Hydrostatic Force				Watre Table			
Buoyant Force =				Sloped Soil Over Heel =			
Surcharge over Heel =				Surcharge Over Heel =			
Surcharge Over Toe =				Adjacent Footing Load =			
Adjacent Footing Load =				Axial Dead Load on Stem =			
Added Lateral Load =				* Axial Live Load on Stem =			
Load @ Stem Above Soil =				Soil Over Toe =			
Seismic Earth Load =	648.0	5.75	3,726.1	Surcharge Over Toe =			
=				Stem Weight(s) =	1,050.0	2.83	2,975.0
Total =	2,962.4	O.T.M.	= 12,597.9	Earth @ Stem Transitions =			
				Footing Weight =	750.0	2.50	1,875.0
				Key Weight =			
				Vert. Component =	1,021.6	5.00	5,108.0
Resisting/Overturning Ratio			= 1.48	Total =	4,939.1 lbs	R.M.=	18,604.5
Vertical Loads used for Soil Pressure =		4,939.1	lbs				

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

If seismic is included, the OTM and sliding ratios may be 1.1 per section 1807.2.3 of IBC.

Vertical component of active lateral soil pressure IS considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

Soil Spring Reaction Modulus 250.0 pci
Horizontal Defl @ Top of Wall (approximate only) 0.099 in

The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe, because the wall would then tend to rotate into the retained soil.

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Cantilevered Retaining Wall

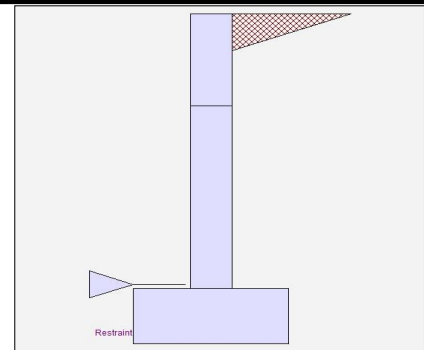
Code: IBC 2018,ACI 318-14,TMS 402-16

Criteria

Retained Height	=	5.00 ft
Wall height above soil	=	0.00 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	0.00 in
Water height over heel	=	0.0 ft

Soil Data

Allow Soil Bearing	=	3,000.0 psf
Equivalent Fluid Pressure Method		
Active Heel Pressure	=	35.0 psf/ft
	=	
Passive Pressure	=	350.0 psf/ft
Soil Density, Heel	=	110.00 pcf
Soil Density, Toe	=	0.00 pcf
Footing Soil Friction	=	0.350
Soil height to ignore for passive pressure	=	12.00 in



Surcharge Loads

Surcharge Over Heel	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0 psf
Used for Sliding & Overturning		

Lateral Load Applied to Stem

Lateral Load	=	0.0 #/ft
...Height to Top	=	0.00 ft
...Height to Bottom	=	0.00 ft
Load Type	=	Wind (W) (Service Level)
Wind on Exposed Stem	=	0.0 psf (Service Level)

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type	=	Line Load
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Axial Load Applied to Stem

Axial Dead Load	=	0.0 lbs
Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

Earth Pressure Seismic Load

Method	:	Uniform
Multiplier Used	=	7.000
(Multiplier used on soil density)		

Uniform Seismic Force	=	42.000
Total Seismic Force	=	252.000

Design Summary

Wall Stability Ratios

Overturning	=	1.58 OK
Slab Resists All Sliding !		

Total Bearing Load	=	1,657 lbs
...resultant ecc.	=	6.05 in

Soil Pressure @ Toe	=	1,232 psf OK
Soil Pressure @ Heel	=	0 psf OK
Allowable	=	3,000 psf
Soil Pressure Less Than Allowable		

ACI Factored @ Toe	=	1,725 psf
ACI Factored @ Heel	=	0 psf
Footing Shear @ Toe	=	2.5 psi OK
Footing Shear @ Heel	=	8.7 psi OK
Allowable	=	75.0 psi

Sliding Calcs

Lateral Sliding Force	=	806.4 lbs
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Stem Construction

	2nd	Bottom
Design Height Above Ftg	ft = 3.33	0.00
Wall Material Above "Ht"	= Concrete	Concrete
Design Method	= LFRD	LFRD
Thickness	= 8.00	8.00
Rebar Size	= # 5	# 5
Rebar Spacing	= 16.00	16.00
Rebar Placed at	= Edge	Edge

Design Data

fb/FB + fa/Fa	=	0.016	0.273
---------------	---	-------	-------

Total Force @ Section

Service Level	lbs =		
Strength Level	lbs =	148.2	910.0

Moment....Actual

Service Level	ft-# =		
Strength Level	ft-# =	102.0	1,691.7

Moment....Allowable	ft-# =	6,186.6	6,186.6
---------------------	--------	---------	---------

Shear.....Actual

Service Level	psi =		
Strength Level	psi =	2.0	12.3

Shear.....Allowable	psi =	75.0	75.0
---------------------	-------	------	------

Anet (Masonry)	in2 =		
----------------	-------	--	--

Rebar Depth 'd'	in =	6.19	6.19
-----------------	------	------	------

Masonry Data

f'm	psi =		
Fs	psi =		
Solid Grouting	=		
Modular Ratio 'n'	=		

Wall Weight	psf =	100.0	100.0
-------------	-------	-------	-------

Short Term Factor	=		
-------------------	---	--	--

Equiv. Solid Thick.	=		
---------------------	---	--	--

Masonry Block Type	=	Medium Weight	
--------------------	---	---------------	--

Masonry Design Method	=	ASD	
-----------------------	---	-----	--

Concrete Data

f'c	psi =	2,500.0	2,500.0
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Fy	psi =	60,000.0	60,000.0
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Vertical component of active lateral soil pressure IS considered in the calculation of soil bearing pressures.

Load Factors

Building Code	IBC 2018,ACI
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.000
Seismic, E	1.000

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Cantilevered Retaining Wall

Code: IBC 2018,ACI 318-14,TMS 402-16

Concrete Stem Rebar Area Details

2nd Stem	Vertical Reinforcing	Horizontal Reinforcing	
As (based on applied moment) :	0.0039 in2/ft		
(4/3) * As :	0.0052 in2/ft	Min Stem T&S Reinf Area 0.321 in2	
200bd/fy : 200(12)(6.1875)/60000 :	0.2475 in2/ft	Min Stem T&S Reinf Area per ft of stem Height : 0.192 in2/ft	
0.0018bh : 0.0018(12)(8) :	0.1728 in2/ft	Horizontal Reinforcing Options :	
	=====	One layer of :	Two layers of :
Required Area :	0.1728 in2/ft	#4@ 12.50 in	#4@ 25.00 in
Provided Area :	0.2325 in2/ft	#5@ 19.38 in	#5@ 38.75 in
Maximum Area :	0.8382 in2/ft	#6@ 27.50 in	#6@ 55.00 in

Bottom Stem	Vertical Reinforcing	Horizontal Reinforcing	
As (based on applied moment) :	0.0641 in2/ft		
(4/3) * As :	0.0854 in2/ft	Min Stem T&S Reinf Area 0.639 in2	
200bd/fy : 200(12)(6.1875)/60000 :	0.2475 in2/ft	Min Stem T&S Reinf Area per ft of stem Height : 0.192 in2/ft	
0.0018bh : 0.0018(12)(8) :	0.1728 in2/ft	Horizontal Reinforcing Options :	
	=====	One layer of :	Two layers of :
Required Area :	0.1728 in2/ft	#4@ 12.50 in	#4@ 25.00 in
Provided Area :	0.2325 in2/ft	#5@ 19.38 in	#5@ 38.75 in
Maximum Area :	0.8382 in2/ft	#6@ 27.50 in	#6@ 55.00 in

Footing Data

Toe Width	=	0.92 ft
Heel Width	=	1.58
Total Footing Width	=	2.50
Footing Thickness	=	12.00 in
Key Width	=	0.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	0.00 ft
f'c =	2,500 psi	Fy = 60,000 psi
Footing Concrete Density	=	150.00 pcf
Min. As %	=	0.0018
Cover @ Top	2.00	@ Btm.= 3.00 in

Footing Design Results

		Toe	Heel
Factored Pressure	=	1,725	0 psf
Mu' : Upward	=	7,510	36 ft-#
Mu' : Downward	=	908	761 ft-#
Mu: Design	=	550	725 ft-#
Actual 1-Way Shear	=	2.54	8.75 psi
Allow 1-Way Shear	=	40.00	40.00 psi
Toe Reinforcing	=	None Spec'd	
Heel Reinforcing	=	None Spec'd	
Key Reinforcing	=	None Spec'd	
Footing Torsion, Tu	=		0.00 ft-lbs
Footing Allow. Torsion, phi Tu	=		0.00 ft-lbs

If torsion exceeds allowable, provide supplemental design for footing torsion.

Other Acceptable Sizes & SpacingsToe: $\phi I M_n = \phi I' 5' \lambda \sqrt{f_c} S_m$ Heel: $\phi I M_n = \phi I' 5' \lambda \sqrt{f_c} S_m$

Key: No key defined

Min footing T&S reinf Area	0.65	in2
Min footing T&S reinf Area per foot	0.26	in2 /ft
If one layer of horizontal bars:		If two layers of horizontal bars:
#4@ 9.26 in		#4@ 18.52 in
#5@ 14.35 in		#5@ 28.70 in
#6@ 20.37 in		#6@ 40.74 in

This Wall in File: P:\Client Files\203 - Architectural Innovations\2021\21002 - Pratt Plat - Lot 1 -

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Cantilevered Retaining Wall

Code: IBC 2018,ACI 318-14,TMS 402-16

Summary of Overturning & Resisting Forces & Moments

ItemOVERTURNING.....		RESISTING.....			
	Force lbs	Distance ft	Moment ft-#	Force lbs	Distance ft	Moment ft-#	
HL Act Pres (ab water tbl)	630.0	2.00	1,260.0	Soil Over HL (ab. water tbl)	504.2	2.04	1,029.3
HL Act Pres (be water tbl)				Soil Over HL (bel. water tbl)		2.04	1,029.3
Hydrostatic Force				Watre Table			
Buoyant Force =				Sloped Soil Over Heel =			
Surcharge over Heel =				Surcharge Over Heel =			
Surcharge Over Toe =				Adjacent Footing Load =			
Adjacent Footing Load =				Axial Dead Load on Stem =			
Added Lateral Load =				* Axial Live Load on Stem =			
Load @ Stem Above Soil =				Soil Over Toe =			
Seismic Earth Load =	176.4	3.00	529.2	Surcharge Over Toe =			
=				Stem Weight(s) =	500.0	1.25	625.0
Total =	806.4	O.T.M.	= 1,789.2	Earth @ Stem Transitions =			
				Footing Weight =	375.0	1.25	468.8
				Key Weight =			
				Vert. Component =	278.1	2.50	695.2
Resisting/Overturning Ratio			= 1.58	Total =	1,657.3 lbs	R.M.=	2,818.3
Vertical Loads used for Soil Pressure =		1,657.3	lbs				

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

If seismic is included, the OTM and sliding ratios may be 1.1 per section 1807.2.3 of IBC.

Vertical component of active lateral soil pressure IS considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

Soil Spring Reaction Modulus 250.0 pci
Horizontal Defl @ Top of Wall (approximate only) 0.068 in

The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe, because the wall would then tend to rotate into the retained soil.

Concrete Beam

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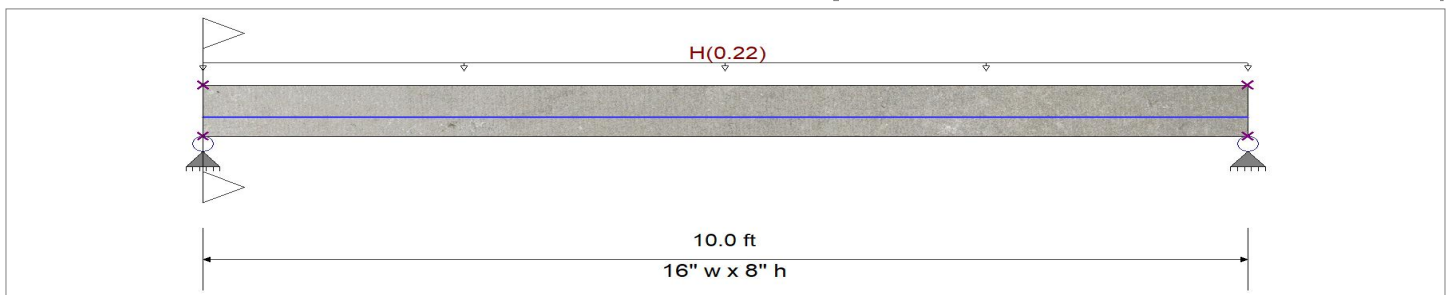
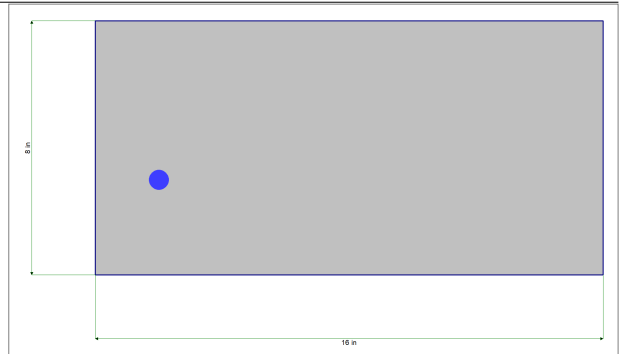
DESCRIPTION: SPANNING WALL @ WINDOW WELLS

CODE REFERENCES

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
 Load Combination Set : ASCE 7-16

Material Properties

f'_c	=	3.0 ksi	ϕ Phi Values	Flexure :	0.90
$f_r = f'_c^{1/2} * 7.50$	=	410.792 psi		Shear :	0.750
ψ Density	=	145.0 pcf	β_1	=	0.850
λ LtWt Factor	=	1.0			
Elastic Modulus	=	3,122.0 ksi	Fy - Stirrups	=	40.0 ksi
fy - Main Rebar	=	60.0 ksi	E - Stirrups	=	29,000.0 ksi
E - Main Rebar	=	29,000.0 ksi	Stirrup Bar Size #	=	3
			Number of Resisting Legs Per Stirrup =	=	2



Cross Section & Reinforcing Details

Rectangular Section, Width = 16.0 in, Height = 8.0 in
 Span #1 Reinforcing....
 1-#5 at 3.0 in from Bottom, from 0.0 to 10.0 ft in this span

Load for Span Number 1
 Uniform Load : H = 0.220 k/ft, Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.661 : 1	Maximum Deflection	
Section used for this span	Typical Section	Max Downward Transient Deflection	0.023 in Ratio = 5168 >=360.
Mu : Applied	4.40 k-ft	Max Upward Transient Deflection	0.000 in Ratio = 0 <360.0
Mn * Phi : Allowable	6.657 k-ft	Max Downward Total Deflection	0.023 in Ratio = 5168 >=180.
Location of maximum on span	5.009 ft	Max Upward Total Deflection	0.000 in Ratio = 0 <180.0
Span # where maximum occurs	Span # 1		

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
Overall MAXimum	1.100	1.100
Overall MINimum	0.660	0.660
+D+H	1.100	1.100
+D+L+H	1.100	1.100
+D+Lr+H	1.100	1.100
+D+S+H	1.100	1.100
+D+0.750Lr+0.750L+H	1.100	1.100
+D+0.750L+0.750S+H	1.100	1.100
+D+0.60W+H	1.100	1.100
+D+0.750Lr+0.750L+0.450W+H	1.100	1.100
+D+0.750L+0.750S+0.450W+H	1.100	1.100
+0.60D+0.60W+0.60H	0.660	0.660
+D+0.70E+0.60H	0.660	0.660
+D+0.750L+0.750S+0.5250E+H	1.100	1.100

Concrete Beam

Lic. #: KW-06004787

DESCRIPTION: SPANNING WALL @ WINDOW WELLS

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
+0.60D+0.70E+H	1.100	1.100
H Only	1.100	1.100

Detailed Shear Information

Load Combination	Span Number	Distance (ft)	'd' (in)	Vu (k)		Mu (k-ft)	d*Vu/Mu	Phi*Vc (k)	Comment	Phi*Vs (k)	Phi*Vn (k)	Spacing (in)	
				Actual	Design							Req'd	Suggest
+1.20D+L+0.20S+E+1.60H	1	0.00	5.00	1.76	1.76	0.00	1.00	6.83	Vu < PhiVc/2	lot Reqd 9.6.	6.8	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	0.11	5.00	1.72	1.72	0.19	1.00	6.83	Vu < PhiVc/2	lot Reqd 9.6.	6.8	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	0.22	5.00	1.68	1.68	0.38	1.00	6.83	Vu < PhiVc/2	lot Reqd 9.6.	6.8	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	0.33	5.00	1.64	1.64	0.56	1.00	6.83	Vu < PhiVc/2	lot Reqd 9.6.	6.8	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	0.44	5.00	1.61	1.61	0.74	0.91	6.77	Vu < PhiVc/2	lot Reqd 9.6.	6.8	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	0.55	5.00	1.57	1.57	0.91	0.72	6.66	Vu < PhiVc/2	lot Reqd 9.6.	6.7	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	0.66	5.00	1.53	1.53	1.08	0.59	6.59	Vu < PhiVc/2	lot Reqd 9.6.	6.6	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	0.77	5.00	1.49	1.49	1.24	0.50	6.53	Vu < PhiVc/2	lot Reqd 9.6.	6.5	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	0.87	5.00	1.45	1.45	1.40	0.43	6.49	Vu < PhiVc/2	lot Reqd 9.6.	6.5	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	0.98	5.00	1.41	1.41	1.56	0.38	6.46	Vu < PhiVc/2	lot Reqd 9.6.	6.5	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	1.09	5.00	1.38	1.38	1.71	0.33	6.44	Vu < PhiVc/2	lot Reqd 9.6.	6.4	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	1.20	5.00	1.34	1.34	1.86	0.30	6.42	Vu < PhiVc/2	lot Reqd 9.6.	6.4	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	1.31	5.00	1.30	1.30	2.01	0.27	6.40	Vu < PhiVc/2	lot Reqd 9.6.	6.4	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	1.42	5.00	1.26	1.26	2.15	0.24	6.39	Vu < PhiVc/2	lot Reqd 9.6.	6.4	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	1.53	5.00	1.22	1.22	2.28	0.22	6.37	Vu < PhiVc/2	lot Reqd 9.6.	6.4	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	1.64	5.00	1.18	1.18	2.41	0.20	6.36	Vu < PhiVc/2	lot Reqd 9.6.	6.4	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	1.75	5.00	1.14	1.14	2.54	0.19	6.35	Vu < PhiVc/2	lot Reqd 9.6.	6.4	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	1.86	5.00	1.11	1.11	2.66	0.17	6.34	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	1.97	5.00	1.07	1.07	2.78	0.16	6.34	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	2.08	5.00	1.03	1.03	2.90	0.15	6.33	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	2.19	5.00	0.99	0.99	3.01	0.14	6.32	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	2.30	5.00	0.95	0.95	3.11	0.13	6.32	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	2.40	5.00	0.91	0.91	3.21	0.12	6.31	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	2.51	5.00	0.88	0.88	3.31	0.11	6.31	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	2.62	5.00	0.84	0.84	3.41	0.10	6.30	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	2.73	5.00	0.80	0.80	3.49	0.10	6.30	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	2.84	5.00	0.76	0.76	3.58	0.09	6.30	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	2.95	5.00	0.72	0.72	3.66	0.08	6.29	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	3.06	5.00	0.68	0.68	3.74	0.08	6.29	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	3.17	5.00	0.64	0.64	3.81	0.07	6.28	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	3.28	5.00	0.61	0.61	3.88	0.07	6.28	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	3.39	5.00	0.57	0.57	3.94	0.06	6.28	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	3.50	5.00	0.53	0.53	4.00	0.06	6.28	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	3.61	5.00	0.49	0.49	4.06	0.05	6.27	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	3.72	5.00	0.45	0.45	4.11	0.05	6.27	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	3.83	5.00	0.41	0.41	4.16	0.04	6.27	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	3.93	5.00	0.38	0.38	4.20	0.04	6.27	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	4.04	5.00	0.34	0.34	4.24	0.03	6.26	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	4.15	5.00	0.30	0.30	4.27	0.03	6.26	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	4.26	5.00	0.26	0.26	4.30	0.03	6.26	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	4.37	5.00	0.22	0.22	4.33	0.02	6.26	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	4.48	5.00	0.18	0.18	4.35	0.02	6.25	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	4.59	5.00	0.14	0.14	4.37	0.01	6.25	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	4.70	5.00	0.11	0.11	4.38	0.01	6.25	Vu < PhiVc/2	lot Reqd 9.6.	6.2	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	4.81	5.00	0.07	0.07	4.39	0.01	6.25	Vu < PhiVc/2	lot Reqd 9.6.	6.2	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	4.92	5.00	0.03	0.03	4.40	0.00	6.25	Vu < PhiVc/2	lot Reqd 9.6.	6.2	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	5.03	5.00	-0.01	0.01	4.40	0.00	6.24	Vu < PhiVc/2	lot Reqd 9.6.	6.2	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	5.14	5.00	-0.05	0.05	4.40	0.00	6.25	Vu < PhiVc/2	lot Reqd 9.6.	6.2	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	5.25	5.00	-0.09	0.09	4.39	0.01	6.25	Vu < PhiVc/2	lot Reqd 9.6.	6.2	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	5.36	5.00	-0.13	0.13	4.38	0.01	6.25	Vu < PhiVc/2	lot Reqd 9.6.	6.3	0.0	0.0

Concrete Beam

Lic. #: KW-06004787

DESCRIPTION: SPANNING WALL @ WINDOW WELLS

Detailed Shear Information

Load Combination	Span Number	Distance (ft)	'd' (in)	Vu Actual (k)	Vu Design (k)	Mu (k-ft)	d*Vu/Mu	Phi*Vc (k)	Comment	Phi*Vs (k)	Phi*Vn (k)	Spacing (in) Req'd Suggest	
+1.20D+L+0.20S+E+1.60H	1	5.46	5.00	-0.16	0.16	4.36	0.02	6.25	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	5.57	5.00	-0.20	0.20	4.34	0.02	6.26	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	5.68	5.00	-0.24	0.24	4.32	0.02	6.26	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	5.79	5.00	-0.28	0.28	4.29	0.03	6.26	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	5.90	5.00	-0.32	0.32	4.26	0.03	6.26	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	6.01	5.00	-0.36	0.36	4.22	0.04	6.26	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	6.12	5.00	-0.39	0.39	4.18	0.04	6.27	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	6.23	5.00	-0.43	0.43	4.13	0.04	6.27	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	6.34	5.00	-0.47	0.47	4.08	0.05	6.27	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	6.45	5.00	-0.51	0.51	4.03	0.05	6.27	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	6.56	5.00	-0.55	0.55	3.97	0.06	6.28	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	6.67	5.00	-0.59	0.59	3.91	0.06	6.28	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	6.78	5.00	-0.63	0.63	3.84	0.07	6.28	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	6.89	5.00	-0.66	0.66	3.77	0.07	6.29	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	6.99	5.00	-0.70	0.70	3.70	0.08	6.29	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	7.10	5.00	-0.74	0.74	3.62	0.09	6.29	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	7.21	5.00	-0.78	0.78	3.54	0.09	6.30	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	7.32	5.00	-0.82	0.82	3.45	0.10	6.30	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	7.43	5.00	-0.86	0.86	3.36	0.11	6.31	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	7.54	5.00	-0.89	0.89	3.26	0.11	6.31	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	7.65	5.00	-0.93	0.93	3.16	0.12	6.32	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	7.76	5.00	-0.97	0.97	3.06	0.13	6.32	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	7.87	5.00	-1.01	1.01	2.95	0.14	6.33	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	7.98	5.00	-1.05	1.05	2.84	0.15	6.33	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	8.09	5.00	-1.09	1.09	2.72	0.17	6.34	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	8.20	5.00	-1.13	1.13	2.60	0.18	6.35	Vu < PhiVc/2	lot Req'd 9.6.	6.3	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	8.31	5.00	-1.16	1.16	2.48	0.20	6.36	Vu < PhiVc/2	lot Req'd 9.6.	6.4	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	8.42	5.00	-1.20	1.20	2.35	0.21	6.37	Vu < PhiVc/2	lot Req'd 9.6.	6.4	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	8.52	5.00	-1.24	1.24	2.21	0.23	6.38	Vu < PhiVc/2	lot Req'd 9.6.	6.4	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	8.63	5.00	-1.28	1.28	2.08	0.26	6.39	Vu < PhiVc/2	lot Req'd 9.6.	6.4	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	8.74	5.00	-1.32	1.32	1.93	0.28	6.41	Vu < PhiVc/2	lot Req'd 9.6.	6.4	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	8.85	5.00	-1.36	1.36	1.79	0.32	6.43	Vu < PhiVc/2	lot Req'd 9.6.	6.4	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	8.96	5.00	-1.39	1.39	1.64	0.35	6.45	Vu < PhiVc/2	lot Req'd 9.6.	6.5	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	9.07	5.00	-1.43	1.43	1.48	0.40	6.48	Vu < PhiVc/2	lot Req'd 9.6.	6.5	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	9.18	5.00	-1.47	1.47	1.32	0.46	6.51	Vu < PhiVc/2	lot Req'd 9.6.	6.5	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	9.29	5.00	-1.51	1.51	1.16	0.54	6.56	Vu < PhiVc/2	lot Req'd 9.6.	6.6	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	9.40	5.00	-1.55	1.55	0.99	0.65	6.62	Vu < PhiVc/2	lot Req'd 9.6.	6.6	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	9.51	5.00	-1.59	1.59	0.82	0.80	6.71	Vu < PhiVc/2	lot Req'd 9.6.	6.7	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	9.62	5.00	-1.63	1.63	0.65	1.00	6.83	Vu < PhiVc/2	lot Req'd 9.6.	6.8	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	9.73	5.00	-1.66	1.66	0.47	1.00	6.83	Vu < PhiVc/2	lot Req'd 9.6.	6.8	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	9.84	5.00	-1.70	1.70	0.28	1.00	6.83	Vu < PhiVc/2	lot Req'd 9.6.	6.8	0.0	0.0
+1.20D+L+0.20S+E+1.60H	1	9.95	5.00	-1.74	1.74	0.10	1.00	6.83	Vu < PhiVc/2	lot Req'd 9.6.	6.8	0.0	0.0

Maximum Forces & Stresses for Load Combinations

Load Combination Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft)		
			Mu : Max	Phi*Mnx	Stress Ratio
MAXimum BENDING Envelope					
Span # 1	1	10.000	4.40	6.66	0.66
+1.40D+1.60H					
Span # 1	1	10.000	4.40	6.66	0.66
+1.20D+0.50Lr+1.60L+1.60H					
Span # 1	1	10.000	4.40	6.66	0.66
+1.20D+1.60L+0.50S+1.60H					
Span # 1	1	10.000	4.40	6.66	0.66
+1.20D+1.60Lr+L+1.60H					
Span # 1	1	10.000	4.40	6.66	0.66
+1.20D+1.60Lr+0.50W+1.60H					
Span # 1	1	10.000	4.40	6.66	0.66

Pratt Plat Lot 1
 Architectural Innovations
 203-21002
 RJD
 06-10-21

Concrete Beam

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DESCRIPTION: SPANNING WALL @ WINDOW WELLS

Load Combination Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft)		
			Mu : Max	Phi*Mnx	Stress Ratio
Span # 1	1	10.000	4.40	6.66	0.66
+1.20D+L+1.60S+1.60H Span # 1	1	10.000	4.40	6.66	0.66
+1.20D+1.60S+0.50W+1.60H Span # 1	1	10.000	4.40	6.66	0.66
+1.20D+0.50Lr+L+W+1.60H Span # 1	1	10.000	4.40	6.66	0.66
+1.20D+L+0.50S+W+1.60H Span # 1	1	10.000	4.40	6.66	0.66
+0.90D+W+1.60H Span # 1	1	10.000	4.40	6.66	0.66
+1.20D+L+0.20S+E+1.60H Span # 1	1	10.000	4.40	6.66	0.66
+0.90D+E+0.90H Span # 1	1	10.000	2.47	6.66	0.37

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl (in)	Location in Span (ft)	Load Combination	Max. "+" Defl (in)	Location in Span (ft)
H Only	1	0.0232	5.000		0.0000	0.000