MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

7220 Trade Street, Suite 295, San Diego, CA 92121 ▸ p 619-650-0010 ▸ *mulhernkulp.com*

CALCULATION PACKAGE

September 19, 2023

JayMarc Homes
Spring Residence

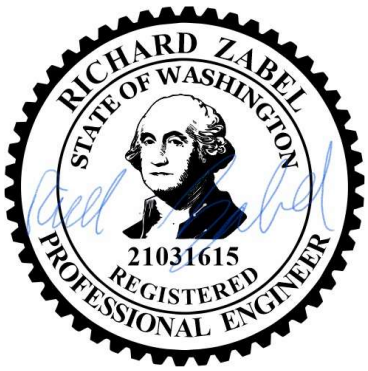
Mercer Island, Washington

MULHERN & KULP STRUCTURAL ENGINEERING, INC.

Prepared By:

Adam J. Cervantes, E.I.T. *Staff Engineer*

Richard J. Zabel, P.E. *Project Manager + Director of Engineering*



Signature, Seal & Date

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: 4740 W MERCER WAY
JAYMARC HOMES
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 11-AUG-23

BEAM & HEADER CALCULATIONS

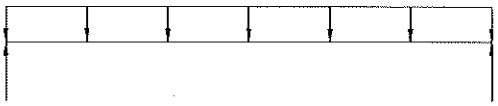
BEAM DESCRIPTION: TYP EXT HDR (WORST CASE LOAD) -ROOF

B1

PARAMETERS:

D=303
S=446

L = 6 FT
W = 0.749 KLF
P = — K



ANALYSIS:

R_{MAX} =	2.25 K	V_D =		K	< V_{ALL} =	3.50 K	☑ ADEQUATE
M_{MAX} =	3.37 K-FT	< M_{ALL} =	3.44 K-FT		CD=1.15		☑ ADEQUATE
Δ_{TL} =	0.123 IN.	L/	585	< L/240			☑ ADEQUATE

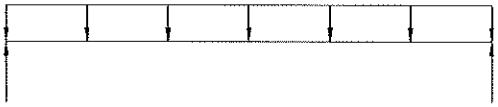
4x8 DF-L #2

BEAM DESCRIPTION: TYP EXT HDR (WORST CASE LENGTH) -ROOF

B1

PARAMETERS:

L = 10.17 FT
W = 0.084 KLF
P = — K



ANALYSIS:

R_{MAX} =	0.43 K	V_D =		K	< V_{ALL} =	3.50 K	☐ ADEQUATE
M_{MAX} =	1.09 K-FT	< M_{ALL} =	3.44 K-FT		CD=1.15		☐ ADEQUATE
Δ_{TL} =	0.114 IN.	L/	999+	< L/240			☐ ADEQUATE

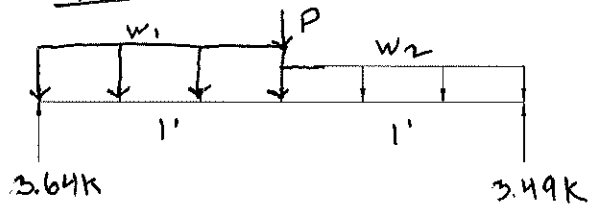
4x8 DF-L #2

BEAM DESCRIPTION: HDR @ PRIMARY - ROOF

B2

PARAMETERS:

L = 2 FT
W_1 = 0.373 KLF W_2 = 0.084
P = 6.67 K



ANALYSIS:

R_{MAX} =	3.64 K	V_D =		K	< V_{ALL} =	5.38 K	☑ ADEQUATE
M_{MAX} =	3.45 K-FT	< M_{ALL} =	3.71 K-FT		CD=1.15		☑ ADEQUATE
Δ_{TL} =	0.008 IN.	L/	999+	< L/240			☑ ADEQUATE

6x8 DF-L #2

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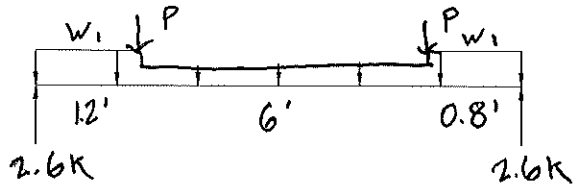
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: TYP EXT HDR - UPPER — B3

PARAMETERS:

L = 8 FT
w_1 = 0.654 KLF w_2 = 0.383
P = 0.82 K



ANALYSIS:

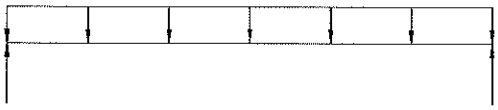
R_{MAX} =	2.63 K	V_D =		K	< V_{ALL} =	4.47 K	☑ ADEQUATE
M_{MAX} =	4.03 K-FT	< M_{ALL} =	5.17	K-FT	C_D = 1.15		☑ ADEQUATE
Δ_{TL} =	0.126 IN.	L/	762	< L/240			☑ ADEQUATE

4x10 DF-L #2

BEAM DESCRIPTION: HDR @ 8' GARAGE DOOR - UPPER — B4

PARAMETERS:

D = 194
S = 285
L = 8.25 FT
W = 0.479 KLF
P = — K



ANALYSIS:

R_{MAX} =	1.98 K	V_D =		K	< V_{ALL} =	5.43 K	☑ ADEQUATE
M_{MAX} =	4.08 K-FT	< M_{ALL} =	7.00	K-FT	C_D = 1.15		☑ ADEQUATE
Δ_{TL} =	0.075 IN.	L/	999+	< L/240			☑ ADEQUATE

4x12 DF-L #2

BEAM DESCRIPTION: HDR @ 16' GARAGE DOOR - UPPER — B5

PARAMETERS:

L = 16.25 FT
W = 0.479 KLF
P = — K

ANALYSIS:

R_{MAX} =	3.89 K	V_D =		K	< V_{ALL} =	13.4 K	☑ ADEQUATE
M_{MAX} =	15.8 K-FT	< M_{ALL} =	30.4	K-FT	C_D = 1.15		☐ ADEQUATE
Δ_{TL} =	0.527 IN.	L/	370	< L/240			☐ ADEQUATE

5 1/2" x 12" GLB

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BEAM & HEADER CALCULATIONS

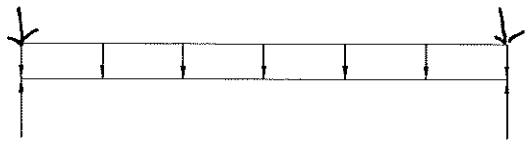
BEAM DESCRIPTION: HDR @ COVERED PATIO - UPPER

B6

PARAMETERS:

D = 241
L = 281

L = 10 FT
W = 0.522 KLF
P = 0.36 K



ANALYSIS:

R_{MAX} =	2.97 K	V_D =	K	< V_{ALL} =	7.17 K	☑ ADEQUATE
M_{MAX} =	6.53 K-FT	< M_{ALL} =	8.84 K-FT			☑ ADEQUATE
Δ_{TL} =	0.130 IN.	L/	923	< L/240		☑ ADEQUATE

6 x 12 DF-L #2

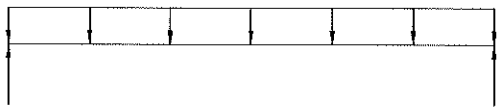
BEAM DESCRIPTION: dropped bm. @ mud rm. - upper

B7

PARAMETERS:

D = 446
L = 536

L = 3.33 FT
W = 0.982 KLF
P = — K



ANALYSIS:

R_{MAX} =	1.64 K	V_D =	K	< V_{ALL} =	3.89 K	☑ ADEQUATE
M_{MAX} =	1.36 K-FT	< M_{ALL} =	4.49 K-FT			☑ ADEQUATE
Δ_{TL} =	0.007 IN.	L/	999+	< L/240		☑ ADEQUATE

4 x 10 DF-L #2

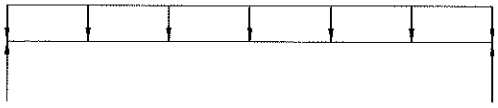
BEAM DESCRIPTION: FLUSH BOT. BM. @ PANTRY - UPPER

B8

PARAMETERS:

D = 361
L = 563

L = 5.6 FT
W = 0.924 KLF
P = — K



ANALYSIS:

R_{MAX} =	2.59 K	V_D =	K	< V_{ALL} =	3.89 K	☑ ADEQUATE
M_{MAX} =	3.62 K-FT	< M_{ALL} =	4.49 K-FT			☑ ADEQUATE
Δ_{TL} =	0.055 IN.	L/	999+	< L/240		☑ ADEQUATE

4 x 10 DF-L #2

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DATE: 11-AUG-23

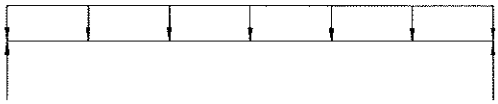
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: FLUSH BM. @ STAIR OPENING - UPPER — B9

PARAMETERS:

D=22
L=58

L = 8.17 FT
W = 0.080 KLF
P = — K



ANALYSIS:

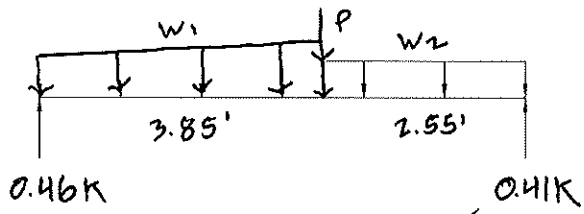
R_{MAX} =	0.33 K	V_D =	K	< V_{ALL} =	11.1 K	☑ ADEQUATE
M_{MAX} =	0.67 K-FT	< M_{ALL} =	37.8 K-FT			☑ ADEQUATE
Δ_{TL} =	0.003 IN.	L/	999+	< L/240		☑ ADEQUATE

3½" x 18" GLB

BEAM DESCRIPTION: FLUSH BM. @ STAIR OPENING - UPPER — B10

PARAMETERS:

L = 6.4 FT
W_1 = 0.115 KLF W_2 = 0.037
P = 0.33 K (B9)



ANALYSIS:

R_{MAX} =	0.46 K	V_D =	K	< V_{ALL} =	11.1 K	☑ ADEQUATE
M_{MAX} =	0.92 K-FT	< M_{ALL} =	37.8 K-FT			☑ ADEQUATE
Δ_{TL} =	0.002 IN.	L/	999+	< L/240		☑ ADEQUATE

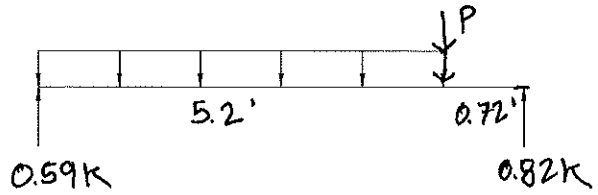
3½" x 18" GLB

BEAM DESCRIPTION: FLUSH BM. @ STAIR OPENING - UPPER — B11

PARAMETERS:

D=50
L=134

L = 5.92 FT
W = 0.184 KLF
P = 0.46 K (B10)



ANALYSIS:

R_{MAX} =	0.82 K	V_D =	K	< V_{ALL} =	11.1 K	☑ ADEQUATE
M_{MAX} =	0.95 K-FT	< M_{ALL} =	37.8 K-FT			☑ ADEQUATE
Δ_{TL} =	0.002 IN.	L/	999+	< L/240		☑ ADEQUATE

3½" x 18" GLB

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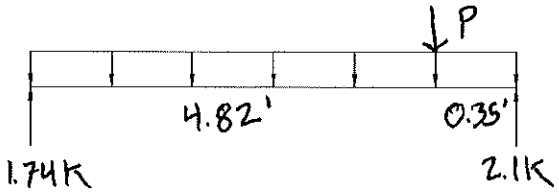
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: DROPPED BM. @ FOYER - UPPER — B12

PARAMETERS:

D=198
L=463

L =	5.17	FT
W =	0.661	KLF
P =	0.41	K



ANALYSIS:

R_{MAX} =	2.10	K	V_D =		K	< V_{ALL} = 3.89 K	✓ ADEQUATE
M_{MAX} =	2.29	K-FT	< M_{ALL} =	4.49	K-FT		✓ ADEQUATE
Δ_{TL} =	0.030	IN.	L/	999+	< L/240		✓ ADEQUATE

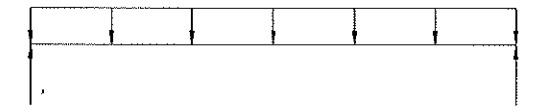
4x10 DF-L #2

BEAM DESCRIPTION: DROPPED BM. @ COVERED PATIO - UPPER — B13

PARAMETERS:

D=372
L=558

L =	14.3	FT
W =	0.930	KLF
P =	—	K



ANALYSIS:

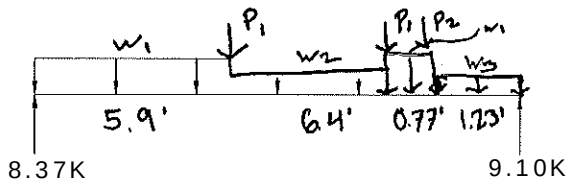
R_{MAX} =	6.65	K	V_D =		K	< V_{ALL} = 14.6 K	✓ ADEQUATE
M_{MAX} =	23.8	K-FT	< M_{ALL} =	41.3	K-FT		✓ ADEQUATE
Δ_{TL} =	0.315	IN.	L/	545	< L/240		✓ ADEQUATE

5 1/2" x 15" GLB

BEAM DESCRIPTION: DROPPED BM @ COVERED PATIO - UPPER — B14

PARAMETERS:

L =	14.3	FT	
w_1 =	1.09	KLF	w_2 = 0.690
P_1 =	1.92	K	w_3 = 0.066
			P_2 = 1.86



ANALYSIS:

R_{MAX} =	8.23	K	V_D =		K	< V_{ALL} = 16.8 K	✓ ADEQUATE
M_{MAX} =	30.4	K-FT	< M_{ALL} =	47.6	K-FT	Co = 1.15	✓ ADEQUATE
Δ_{TL} =	0.402	IN.	L/	426	< L/240		✓ ADEQUATE

5 1/2" x 15" GLB

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BEAM & HEADER CALCULATIONS

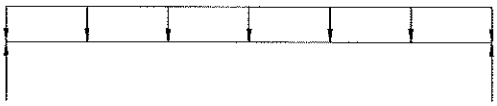
BEAM DESCRIPTION: DROPPED BM @ COVERED PATIO - UPPER

B15

PARAMETERS:

L = 14.25 FT
W = KLF
P = K

SEE ENERCALC OUTPUT



ANALYSIS:

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

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

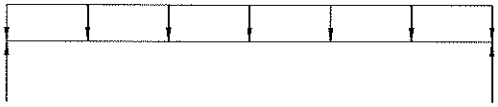
BEAM DESCRIPTION: DROPPED BM. @ COVERED PATIO - UPPER

B16

PARAMETERS:

L = 14.25 FT
W = KLF
P = K

SEE ENERCALC OUTPUT



ANALYSIS:

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

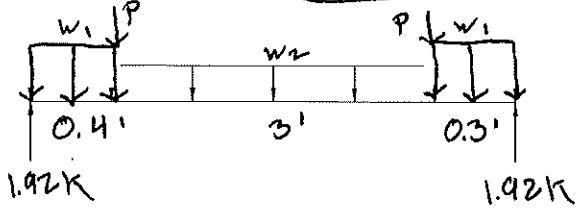
5 1/2" x 10 1/2" GLB

BEAM DESCRIPTION: FLUSH BM. @ COVERED PATIO - UPPER

B17

PARAMETERS:

L = 3.7 FT
W_1 = 1.034 KLF $W_2 = 0.463$
P = 0.86 K



ANALYSIS:

R_{MAX} =	1.92 K	V_D =	K	< V_{ALL} =	12.8 K	☑ ADEQUATE
M_{MAX} =	1.13 K-FT	< M_{ALL} =	43.5 K-FT	$C_D = 1.15$		☑ ADEQUATE
Δ_{TL} =	0.001 IN.	L/	999+ < L/240			☑ ADEQUATE

3 1/2" x 18" GLB

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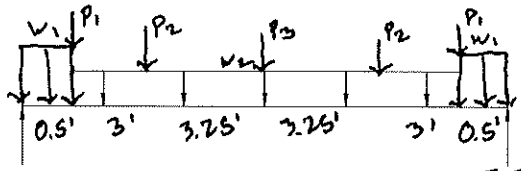
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: FLUSH BM. @ COVERED PORCH LOW ROOF - UPPER - B18

PARAMETERS:

L = 13.5 FT
W_1 = 0.85 KLF W_2 = 0.100
P_1 = 1.13 K P_2 = 2.34K
P_3 = 2.44K



5.74K 5.74K

ANALYSIS:

R_{MAX} =	5.74 K	V_D =		K	< V_{ALL} = 20.1 K	☑ ADEQUATE
M_{MAX} =	19.4 K-FT	< M_{ALL} =	68.1	K-FT		☑ ADEQUATE
Δ_{TL} =	0.132 IN.	L/	999+	< L/240		☑ ADEQUATE

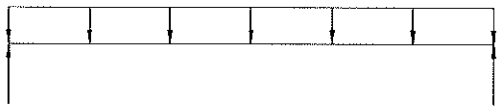
5 1/2" x 18" GLB

BEAM DESCRIPTION: FLUSH BM. @ COVERED PORCH LOW ROOF - UPPER

B19

PARAMETERS:

L = 13.54 FT
W = 0.129 KLF
P = – K



ANALYSIS:

R_{MAX} =	0.87 K	V_D =		K	< V_{ALL} = 4.54 K	☑ ADEQUATE
M_{MAX} =	2.96 K-FT	< M_{ALL} =	10.3	K-FT		☑ ADEQUATE
Δ_{TL} =	0.211 IN.	L/	770	< L/240		☑ ADEQUATE

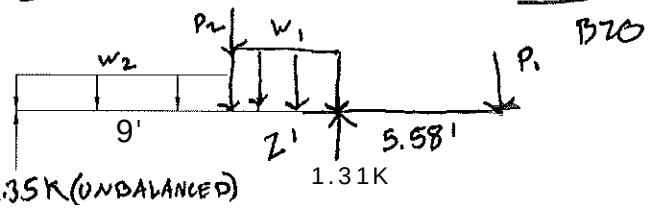
1 3/4" x 11 7/8" LVL

BEAM DESCRIPTION: CANT'D FLUSH BM @ COVERED PORCH LOW ROOF - UPPER

B20

PARAMETERS:

L = 16.58 FT
W_1 = 0.251 KLF W_2 = 0.100
P_1 = 0.87 K (B19)
P_2 = 5.42K (B18 + G.T DL)



ANALYSIS:

R_{MAX} =	5.84 K	V_D =	0.87	K	< V_{ALL} = 13.6 K	☑ ADEQUATE
M_{MAX} =	4.85 K-FT	< M_{ALL} =	30.8	K-FT	C_D = 1.15	☑ ADEQUATE
Δ_{TL} =	0.063 IN.	2L/	999+	< L/240		☑ ADEQUATE

5 1/4" x 11 7/8" LVL

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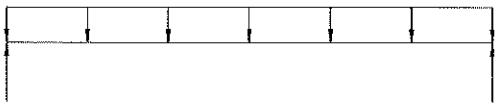
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: TYP. DROPPED GIRDER - CRAWL — B21

PARAMETERS:

L = 6 FT
W = 0.514 KLF
P = — K



ANALYSIS:

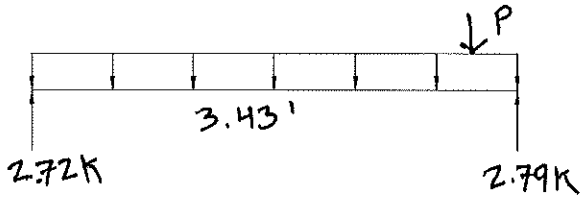
R_{MAX} =	1.54 K	V_D =	K	< V_{ALL} =	3.89 K	✓ ADEQUATE
M_{MAX} =	2.31 K-FT	< M_{ALL} =	4.49 K-FT			✓ ADEQUATE
Δ_{TL} =	0.041 IN.	L/	999+	< L/240		✓ ADEQUATE

4x10 DF-L #2

BEAM DESCRIPTION: DROPPED BM. UNDER B.W.A. - CRAWL — B22

PARAMETERS:

L = 3.77 FT
W = 1.438 KLF
P = 0.09 K



ANALYSIS:

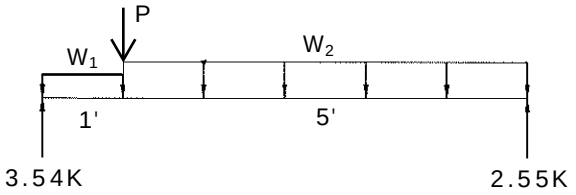
R_{MAX} =	2.79 K	V_D =	K	< V_{ALL} =	3.89 K	✓ ADEQUATE
M_{MAX} =	2.57 K-FT	< M_{ALL} =	4.49 K-FT			✓ ADEQUATE
Δ_{TL} =	0.018 IN.	L/	999+	< L/240		✓ ADEQUATE

4x10 DF-L #2

BEAM DESCRIPTION: HDR @ BED 3 - ROOF — B23

PARAMETERS:

L = 6 FT
W_1 = 0.316 KLF W_2 = 0.750
P = 2.02 K G.T.



ANALYSIS:

R_{MAX} =	3.54 K	V_D =	K	< V_{ALL} =	5.33 K	✓ ADEQUATE
M_{MAX} =	4.34 K-FT	< M_{ALL} =	7.55 K-FT	C_D = 1.15		✓ ADEQUATE
Δ_{TL} =	0.127 IN.	L/	567	< L/240		✓ ADEQUATE

3 1/2" x 7 1/2" GLB

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: 4740 W MERCER WAY
JAYMARC HOMES
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 11-AUG-23

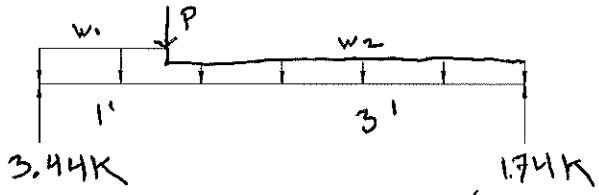
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: HDR @ KITCHEN WINDOW - UPPER

B24

PARAMETERS:

L = 4 FT
w_1 = 0.744 KLF w_2 = .475
P = 3.51 K



ANALYSIS:

R_{MAX} =	3.44 K	V_D =	K	< V_{ALL} =	4.47 K	☑ ADEQUATE
M_{MAX} =	3.07 K-FT	< M_{ALL} =	5.17 K-FT			☑ ADEQUATE
Δ_{TL} =	0.024 IN.	L/	999+	< L/240		☑ ADEQUATE

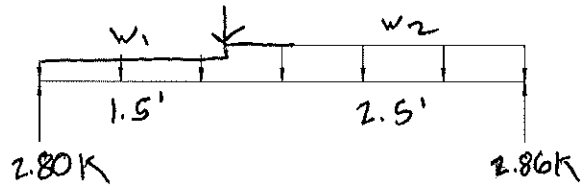
4x10 DF-L #2

BEAM DESCRIPTION: HDR @ KITCHEN WINDOW - UPPER

B25

PARAMETERS:

L = 4 FT
w_1 = 0.475 KLF w_2 = 1.113
P = 2.17 K



ANALYSIS:

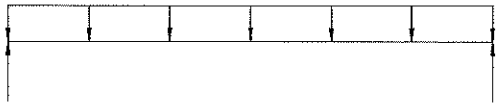
R_{MAX} =	2.86 K	V_D =	K	< V_{ALL} =	4.47 K	☑ ADEQUATE
M_{MAX} =	3.67 K-FT	< M_{ALL} =	5.17 K-FT			☑ ADEQUATE
Δ_{TL} =	0.029 IN.	L/	999+	< L/240		☑ ADEQUATE

4x10 DF-L #2

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
Δ_{TL} =	IN.	L/		< L/240		☐ ADEQUATE

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING
7220 Trade Street, Suite 350 ▸ San Diego, CA 92121
p 619-650-0010 ▸ mulhernkulp.com

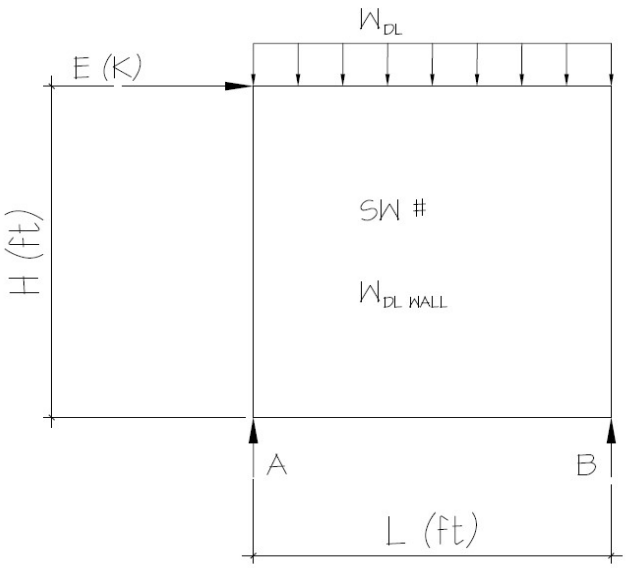
PROJECT NAME: JAYMARC HOMES SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 11-AUG-23

OVERSTRENGTH CALCULATIONS

WALL DESCRIPTION/SW #: 209

PARAMETERS:

L =	9.6	FT
H =	9.0	FT
E =	0.40	K
W_{DLWALL} =	0.10	KLF
W_{DL} =	0.034	KLF
Ω_0 =	2.5	(ASCE TABLE 12.2.1 FOOTNOTE G)
SDS =	1.152	



ANALYSIS:

$E_{MH} = \Omega_0 * E$ =	1.00 K	$E_V = 0.2*SDS*DL$ =	0.296 K
$E_M = E_{MH} + E_V$		$E_M = E_{MH} + E_V$ =	1.296 K
$E_M = E_{MH} - E_V$		$E_M = E_{MH} - E_V$ =	0.704 K

E_M (MAX) $= \sum M_A = 0$ =	1.30(9.0) + 0.134(9.6)(4.8) - R_B(9.6)	R_B =	0.6DL + 1.2E
		R_A =	0.6DL - 1.2E
E_M (MIN) $= \sum M_A = 0$ =	0.70(9.0) + 0.134(9.6)(4.8) - R_B(9.6)	R_B =	0.6DL + 0.7E
		R_A =	0.6DL - 0.7E

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

ALLOWABLE STESS PERMITTED TO BE INCREASED BY 1.2

SEE FOLLOWING BEAM CALCS FOR LOAD APPLICATION

Wood Beam

Project File: OVERSTRENGTH.ec6

DESCRIPTION: B15 - w/ Overstrength

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Stress Design
Load Combination : ASCE 7-10

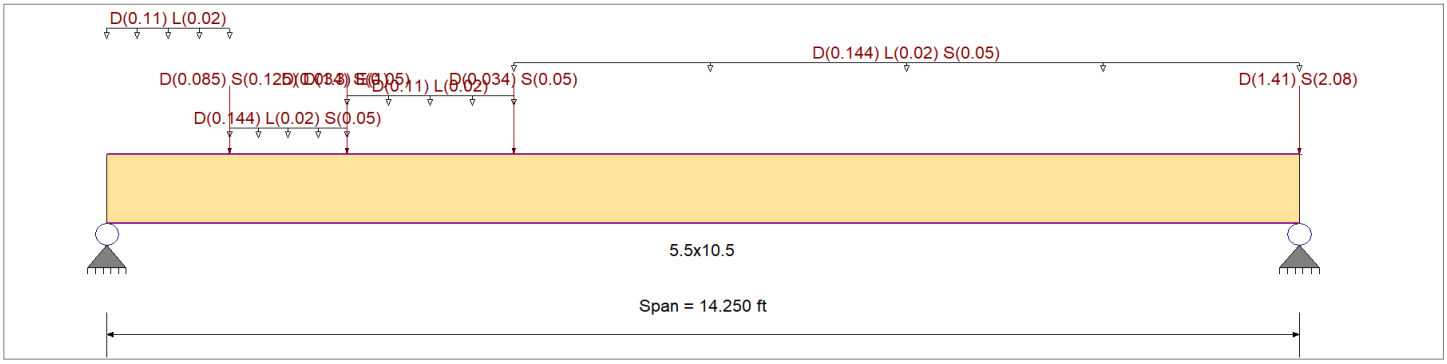
Wood Species : DF/DF
Wood Grade : 24F - V4

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

Fb +	2,880.0 psi
Fb -	2,220.0 psi
Fc - Prll	1,980.0 psi
Fc - Perp	780.0 psi
Fv	318.0 psi
Ft	1,320.0 psi

E : Modulus of Elasticity

Ebend- xx	1,800.0 ksi
Eminbend - xx	950.0 ksi
Ebend- yy	1,600.0 ksi
Eminbend - yy	850.0 ksi
Density	31.210 pcf



Applied Loads

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

Beam self weight calculated and added to loading
Load for Span Number 1
Uniform Load : D = 0.1440, L = 0.020, S = 0.050 k/ft, Extent = 1.470 -->> 2.870 ft, Tributary Width = 1.0 ft
Uniform Load : D = 0.110, L = 0.020 k/ft, Extent = 2.870 -->> 4.870 ft, Tributary Width = 1.0 ft
Uniform Load : D = 0.1440, L = 0.020, S = 0.050 k/ft, Extent = 4.870 -->> 14.250 ft, Tributary Width = 1.0 ft
Point Load : D = 0.0340, S = 0.050 k @ 2.870 ft
Point Load : D = 0.0340, S = 0.050 k @ 4.870 ft
Point Load : D = 1.30, E = 1.0 k @ 2.870 ft
Point Load : D = 1.410, S = 2.080 k @ 14.250 ft
Uniform Load : D = 0.110, L = 0.020 k/ft, Extent = 0.0 -->> 1.470 ft, Tributary Width = 1.0 ft
Point Load : D = 0.0850, S = 0.1250 k @ 1.470 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.280 : 1	Maximum Shear Stress Ratio	=	0.189 : 1
Section used for this span		5.5x10.5	Section used for this span		5.5x10.5
fb: Actual	=	725.72 psi	fv: Actual	=	54.03 psi
F'b	=	2,592.00 psi	F'v	=	286.20 psi
Load Combination		D Only	Load Combination		D Only
Location of maximum on span	=	5.409 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	0.064 in	Ratio =	2670	>=360	Span: 1 : E Only
Max Upward Transient Deflection	0 in	Ratio =	0	<360	n/a
Max Downward Total Deflection	0.345 in	Ratio =	495	>=300	Span: 1 : +1.090D+0.750L+0.750S+0.5250E
Max Upward Total Deflection	0 in	Ratio =	0	<300	n/a

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	CD	CM	C_t	CLx	C_V	Cfu	C_i	C_r	Moment Values M	fb	F'b	Shear Values V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.280	0.189	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	6.11	725.7	2,592.0	2.08	54.0	286.2
+D+L					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0

Wood Beam

Project File: OVERSTRENGTH.ec6

DESCRIPTION: B15 - w/ Overstrength

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	CD	CM	C_t	CLx	C_V	Cfu	C_i	C_r	Moment Values M	fb	F'b	Shear Values V	fv	F'v
Length = 14.250 ft	1	0.272	0.180	1.00	1.00	1.00	1.00	1.000	1.00	1.00	1.00	6.59	782.9	2,880.0	2.21	57.3	318.0
+D+Lr					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.202	0.136	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	6.11	725.7	3,600.0	2.08	54.0	397.5
+D+S					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.265	0.176	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	7.40	878.9	3,312.0	2.48	64.4	365.7
+D+0.750Lr+0.750L					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.213	0.142	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	6.47	768.5	3,600.0	2.17	56.5	397.5
+D+0.750L+0.750S					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.267	0.176	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	7.44	883.9	3,312.0	2.47	64.2	365.7
+D+0.60W					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.157	0.106	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	6.11	725.7	4,608.0	2.08	54.0	508.8
+1.126D+0.70E					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.211	0.148	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	8.18	971.1	4,608.0	2.90	75.4	508.8
+1.126D-0.70E					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.147	0.091	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	5.69	675.9	4,608.0	1.78	46.3	508.8
+D+0.750Lr+0.750L+0.450W					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.167	0.111	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	6.47	768.5	4,608.0	2.17	56.5	508.8
+D+0.750L+0.750S+0.450W					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.192	0.126	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	7.44	883.9	4,608.0	2.47	64.2	508.8
+1.090D+0.750L+0.750S+0.5					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.230	0.157	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	8.91	1,058.4	4,608.0	3.08	80.0	508.8
+1.090D+0.750L+0.750S-0.52					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.184	0.114	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	7.12	845.8	4,608.0	2.24	58.2	508.8
+0.60D+0.60W					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.094	0.064	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	3.67	435.4	4,608.0	1.25	32.4	508.8
+0.470D+0.70E					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.109	0.078	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	4.25	504.3	4,608.0	1.54	39.9	508.8
+0.470D-0.70E					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.045	0.023	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	1.76	209.2	4,608.0	0.45	11.6	508.8

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	0.3451	6.813		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	3.204	5.239
Max Upward from Load Combinations	3.204	5.239
Max Upward from Load Cases	2.182	2.793
D Only	2.182	2.793
+D+L	2.325	2.936
+D+Lr	2.182	2.793
+D+S	2.581	5.239
+D+0.750Lr+0.750L	2.289	2.900
+D+0.750L+0.750S	2.588	4.734
+D+0.60W	2.182	2.793
+1.126D+0.70E	3.016	3.286
+D+0.750Lr+0.750L+0.450W	2.289	2.900
+D+0.750L+0.750S+0.450W	2.588	4.734
+1.090D+0.750L+0.750S+0.5250E	3.204	5.091
+0.60D+0.60W	1.309	1.676
+0.470D+0.70E	1.585	1.454

DESCRIPTION: B15 - w/ Overstrength

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
D Only	2.182	2.793
L Only	0.143	0.143
S Only	0.399	2.445
E Only	0.799	0.201
H Only		

Wood Beam

Project File: OVERSTRENGTH.ec6

DESCRIPTION: B16 - w/ Overstrength

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Stress Design
Load Combination : ASCE 7-10

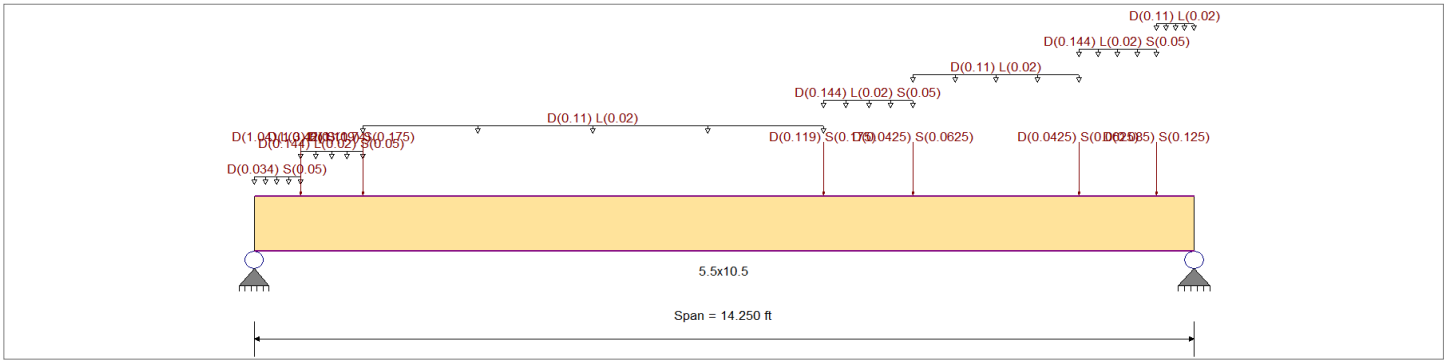
Wood Species : DF/DF
Wood Grade : 24F - V4

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

Fb +	2,880.0 psi
Fb -	2,220.0 psi
Fc - Prll	1,980.0 psi
Fc - Perp	780.0 psi
Fv	318.0 psi
Ft	1,320.0 psi

E : Modulus of Elasticity

Ebend- xx	1,800.0 ksi
Eminbend - xx	950.0 ksi
Ebend- yy	1,600.0 ksi
Eminbend - yy	850.0 ksi
Density	31.210 pcf



Applied Loads

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

Beam self weight calculated and added to loading
Load for Span Number 1
Uniform Load : D = 0.0340, S = 0.050 k/ft, Extent = 0.0 -->> 0.710 ft, Tributary Width = 1.0 ft
Uniform Load : D = 0.1440, L = 0.020, S = 0.050 k/ft, Extent = 0.710 -->> 1.650 ft, Tributary Width = 1.0 ft
Uniform Load : D = 0.110, L = 0.020 k/ft, Extent = 1.650 -->> 8.630 ft, Tributary Width = 1.0 ft
Uniform Load : D = 0.1440, L = 0.020, S = 0.050 k/ft, Extent = 8.630 -->> 10.0 ft, Tributary Width = 1.0 ft
Uniform Load : D = 0.110, L = 0.020 k/ft, Extent = 10.0 -->> 12.50 ft, Tributary Width = 1.0 ft
Uniform Load : D = 0.1440, L = 0.020, S = 0.050 k/ft, Extent = 12.50 -->> 13.680 ft, Tributary Width = 1.0 ft
Uniform Load : D = 0.110, L = 0.020 k/ft, Extent = 13.680 -->> 14.250 ft, Tributary Width = 1.0 ft
Point Load : D = 1.30, E = 1.0 k @ 0.710 ft
Point Load : D = 0.1190, S = 0.1750 k @ 1.650 ft
Point Load : D = 0.1190, S = 0.1750 k @ 8.630 ft
Point Load : D = 0.04250, S = 0.06250 k @ 10.0 ft
Point Load : D = 0.04250, S = 0.06250 k @ 12.50 ft
Point Load : D = 0.0850, S = 0.1250 k @ 13.680 ft
Point Load : D = 1.040, L = 0.420, S = 0.740 k @ 0.710 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.222 : 1	Maximum Shear Stress Ratio	=	0.104 : 1
Section used for this span		5.5x10.5	Section used for this span		5.5x10.5
fb: Actual	=	734.12 psi	fv: Actual	=	38.11 psi
F'b	=	3,312.00 psi	F'v	=	365.70 psi
Load Combination		+D+0.750L+0.750S	Load Combination		+D+0.750L+0.750S
Location of maximum on span	=	7.073 ft	Location of maximum on span	=	13.418 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.056 in	Ratio =	3060 >=360	Span: 1 : S Only
Max Upward Transient Deflection	0 in	Ratio =	0 <360	n/a
Max Downward Total Deflection	0.274 in	Ratio =	623 >=300	Span: 1 : +1.090D+0.750L+0.750S+0.5250E
Max Upward Total Deflection	0 in	Ratio =	0 <300	n/a

Wood Beam

Project File: OVERSTRENGTH.ec6

DESCRIPTION: B16 - w/ Overstrength

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	CD	CM	C_t	CLx	C_V	Cfu	C_i	C_r	Moment Values M	fb	F'b	Shear Values V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.214	0.100	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	4.68	555.7	2,592.0	1.10	28.5	286.2
+D+L					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.220	0.102	1.00	1.00	1.00	1.00	1.000	1.00	1.00	1.00	5.34	634.2	2,880.0	1.24	32.3	318.0
+D+Lr					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.154	0.072	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	4.68	555.7	3,600.0	1.10	28.5	397.5
+D+S					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.216	0.103	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	6.03	716.4	3,312.0	1.44	37.5	365.7
+D+0.750Lr+0.750L					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.171	0.079	1.25	1.00	1.00	1.00	1.000	1.00	1.00	1.00	5.18	614.6	3,600.0	1.21	31.3	397.5
+D+0.750L+0.750S					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.222	0.104	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	6.18	734.1	3,312.0	1.47	38.1	365.7
+D+0.60W					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.121	0.056	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	4.68	555.7	4,608.0	1.10	28.5	508.8
+1.126D+0.70E					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.143	0.065	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	5.54	657.3	4,608.0	1.27	33.0	508.8
+1.126D-0.70E					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.129	0.061	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	5.01	595.3	4,608.0	1.20	31.2	508.8
+D+0.750Lr+0.750L+0.450W					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.133	0.062	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	5.18	614.6	4,608.0	1.21	31.3	508.8
+D+0.750L+0.750S+0.450W					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.159	0.075	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	6.18	734.1	4,608.0	1.47	38.1	508.8
+1.090D+0.750L+0.750S+0.5					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.175	0.081	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	6.79	806.8	4,608.0	1.59	41.4	508.8
+1.090D+0.750L+0.750S-0.52					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.165	0.079	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	6.42	762.0	4,608.0	1.54	40.0	508.8
+0.60D+0.60W					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.072	0.034	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	2.81	333.4	4,608.0	0.66	17.1	508.8
+0.470D+0.70E					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.064	0.028	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	2.47	293.4	4,608.0	0.55	14.3	508.8
+0.470D-0.70E					1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 14.250 ft	1	0.050	0.025	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	1.95	231.4	4,608.0	0.48	12.5	508.8

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+1.090D+0.750L+0.750S+0.5250I	1	0.2744	6.969		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	5.253	1.922
Max Upward from Load Combinations	5.253	1.922
Max Upward from Load Cases	3.266	1.293
D Only	3.266	1.293
+D+L	3.794	1.456
+D+Lr	3.266	1.293
+D+S	4.330	1.778
+D+0.750Lr+0.750L	3.662	1.415
+D+0.750L+0.750S	4.460	1.779
+D+0.60W	3.266	1.293
+1.126D+0.70E	4.343	1.490
+D+0.750Lr+0.750L+0.450W	3.662	1.415

DESCRIPTION: B16 - w/ Overstrength

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
+D+0.750L+0.750S+0.450W	4.460	1.779
+1.090D+0.750L+0.750S+0.5250E	5.253	1.922
+0.60D+0.60W	1.960	0.776
+0.470D+0.70E	2.200	0.642
D Only	3.266	1.293
L Only	0.528	0.163
S Only	1.064	0.486
E Only	0.950	0.050
H Only		

JayMarc Homes

Spring Residence

Mercer island, WA

Shear Wall Calculations - Seismic

Reviewed By: RJZ

September 19, 2023

Parameters:

Single Family Home

Design Wind Speed: 100 MPH

wind Exposure Category: C

Seismic Design Category: D

Code & Design Standard: 2018 IBC Ch. 1609, ASCE 7-16 Ch. 26-30

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: SPRING RESIDENCE
JAYMARC HOMES
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 04-AUG-23

SEISMIC CALCULATION - ASCE 7-16

SEISMIC DESIGN CATEGORY:

USER INPUTS:

SITE CLASS	D
SPECTRAL RESPONSE ACCELERATION 0.2 SEC, S_S	1.440
SPECTRAL RESPONSE ACCELERATION 1.0 SEC, S_1	0.500
OCCUPANCY CATEGORY	II

VARIABLES:

SITE COEFFICIENT, FA	1.20
SITE COEFFICIENT, FV	1.80

CALCULATED VALUES:

MAXIMUM SPECTRAL RESPONSE ACCELERATION, S_{MS}	1.728
MAXIMUM SPECTRAL RESPONSE ACCELERATION, S_{M1}	0.900
DESIGN SPECTRAL RESPONSE ACCELERATION, S_{DS}	1.152
DESIGN SPECTRAL RESPONSE ACCELERATION, S_{D1}	0.600
SEISMIC DESIGN CATEGORY (SHORT TERM)	D
SEISMIC DESIGN CATEGORY (1.0 SECOND TERM)	D

BUILDING PERIOD DETERMINATION:

USER INPUTS:

BUILDING PERIOD COEFFICIENT, C_T	0.020
LONG-PERIOD TRANS PERIOD, T_L (SEC)	6
HT. ABV BASE TO HIGHEST LEVEL, h_N	21

CALCULATED VALUES:

APPROXIMATE FUNDAMENTAL PERIOD, T_A	0.194
T_0	0.104
T_S	0.521
SPECTRAL RESPONSE ACC., S_A (G)	1.152

SITE CLASS ASSUMPTION

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

EQUIVALENT LATERAL FORCE PROCEDURE

DEAD LOAD CALCULATION:

LEVEL	STORY HT. (FT.)	AREA (FT^2)	DEAD LOAD (PSF)	DL OF EXT WALL TRIB. TO LEVEL (KIPS)	TOTAL LEVEL DL
1	11.6	3126	15	18.0	65 K
2	9.1	2324	17	7.1	47 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 111 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	0.177	0.177

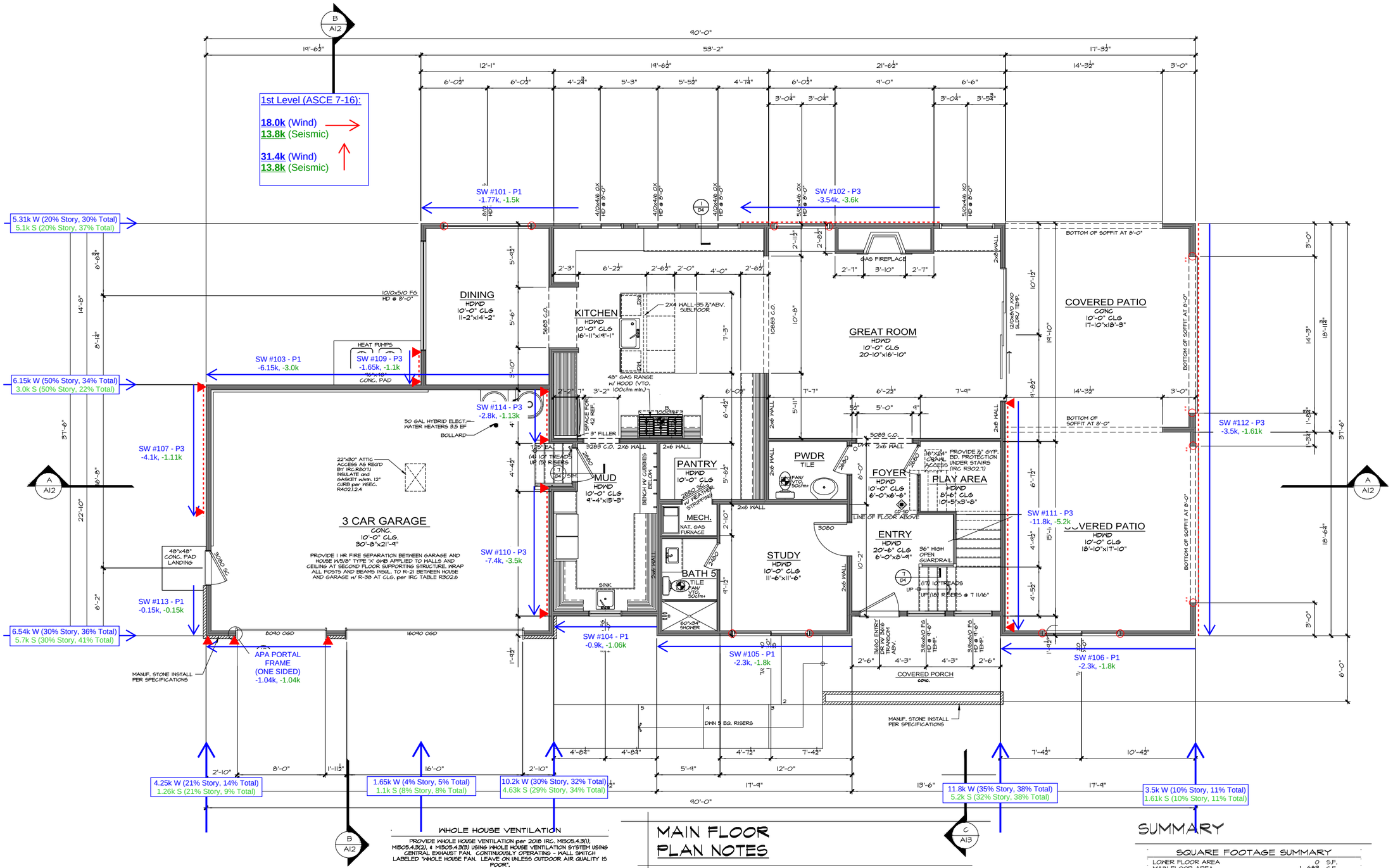
BASE SHEARS:

ULTIMATE LOADS				x 0.7 =	ALLOWABLE LOADS			
TRANSVERSE		LONGITUDINAL			TRANSVERSE		LONGITUDINAL	
20	K	20	K		13.8	K	13.8	K

STORY SHEAR CALCULATION:

DISTRIBUTION EXPONENT, k: 1.00

	ULTIMATE LOADS					x 0.7 =	ALLOWABLE LOADS					
		TRANSVERSE		LONGITUDINAL			TRANSVERSE			LONGITUDINAL		
LEVEL	VERT. DIST. FACTOR, C_{VX}	STORY SHEAR, F_x		STORY SHEAR, F_x			STORY SHEAR, F_x	Σ STORY SHEAR		STORY SHEAR, F_x	Σ STORY SHEAR	
1	0.438	8.7	K	8.7	K		6.1 K	13.8	K	6.1 K	13.8	K
2	0.562	11.1	K	11.1	K		7.8 K	7.8	K	7.8 K	7.8	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



MAIN FLOOR PLAN

1/4" = 1'-0"

WHOLE HOUSE VENTILATION

PROVIDE WHOLE HOUSE VENTILATION per 2018 IRC, M1505.4.3(1), M1505.4.3(2), & M1505.4.3(3) USING WHOLE HOUSE VENTILATION SYSTEM USING CENTRAL EXHAUST FAN. CONTINUOUSLY OPERATING - WALL SWITCH LABELED "WHOLE HOUSE FAN. LEAVE ON UNLESS OUTDOOR AIR QUALITY IS POOR".

SYMBOL	LOCATION	MIN. FAN REQUIREMENTS (ALL FANS VENT TO OUTSIDE)
FAN 50cfm+	BATH & POWDER	Min. 50cfm, INTERMITTENT at .025wg per TABLE M1505.4.4
FAN 100cfm+	KITCHEN	Min. 100cfm, INTERMITTENT at .025wg per TBL. M1503.6
		RANGE HOOD or DOWN DRAFT EXHAUST FAN RATED at min. 100cfm, at 2.0wg MAY BE USED FOR EXHAUST FAN REQMT. EXHAUST HOODS IN EXCESS OF 400cfm, SHALL BE INTERLOCKED AND PROVIDE MAKE UP AIR per M1503.6
FAN 180cfm+ MAF*	LAUNDRY ROOM	FINAL ADJUSTED RATE = 180 CFM (120 CFM PER TABLE 1505.4.3(1), ADJUSTED BY FACTOR OF 1.5 PER TABLE M1505.4.3(2)) FOR NON-BALANCED, NOT DISTRIBUTED SYSTEM.

MAIN FLOOR PLAN NOTES

PLAN SPECIFIC 2018 WSEC, SECTION R06

R406.2 ADDITIONAL ENERGY EFFICIENCY REQUIREMENTS (MANDATORY).

THIS RESIDENTIAL DWELLING SHALL COMPLY W/SUFFICIENT OPTIONS FROM TABLE R406.2 TO ACHIEVE THE FOLLOWING MIN. NUMBER OF CREDITS:

3.5 FOR a 1,501sf to 4,999sf HOME.

CREDITS PROVIDED IN THIS HOME AS FOLLOWS:

EFFICIENT BUILDING ENVELOPE 1a: 0.5 CREDITS

PRESCRIPTIVE COMPLIANCE IS BASED ON TABLE R402.1.1 with FOLLOWING MODIFICATIONS:

VERTICAL FENESTRATION U = 0.28 WINDOWS

FLOORS TO BE R-38 and SLAB ON GRADE TO BE R-10 PERIMETER and UNDER ENTIRE SLAB BELOW GRADE.

HIGH EFFICIENCY HVAC EQUIPMENT 3a: 1.0 CREDITS

GAS FURNACE WITH MINIMUM AFUE OF 94%

EFFICIENT WATER HEATING 5a: 0.5 CREDITS

ALL SHOWERHEAD and KITCHEN SINK FAUCETS INSTALLED IN THE HOUSE SHALL BE RATED AT 1.75 GPM or LESS.

ALL OTHER LAVATORY FAUCETS SHALL BE RATED AT 1.0 GPM or LESS.

EFFICIENT WATER HEATING 5c: 1.5 CREDITS

WATER HEATING SYSTEM SHALL BE:
GAS WATER HEATER WITH A MINIMUM EF OF 0.91

SUMMARY

SQUARE FOOTAGE SUMMARY

LOWER FLOOR AREA	0 S.F.
MAIN FLOOR AREA	1,683 S.F.
UPPER FLOOR AREA	2,182 S.F.
TOTAL CONDITIONED AREA	3865 S.F.
3 CAR GARAGE	716 S.F.
COVD PATIO	649 S.F.
COVD PORCH	110 S.F.
TOTAL AREA UNDER ROOF	5,340 S.F.
OVERALL WIDTH	90'-0"
OVERALL DEPTH	37'-6"

Updated : 12.09.20

Method for Calculating Square Footage - ANSI Z765-2013 except, no separate distinction of 'above-grade or below-grade' areas and each level is measured to the outside of studs not the exterior finished surface.

Square footage calculations for this house were made based on plan dimensions only and may vary from the finished square footage of the house as built.

See Sheet "CODES" for additional Zoning required Area Calculations

JAYMARC HOMES
7525 SE 24th St., 487
Mercer Island, WA
98040
425.266.9100

1 4.21.23 RKN
M.I. BUILDING COMMENTS

Spring Residence
4740 W. Mercer Way
Mercer Island, WA.
Job Number: Spring
JMC011

plan name: –
marketing name: –
plan number: –
mark sys. number: –

08.04.23
Submittal Date

Sheet Title/Description

JAYMARC HOMES
Design Firm

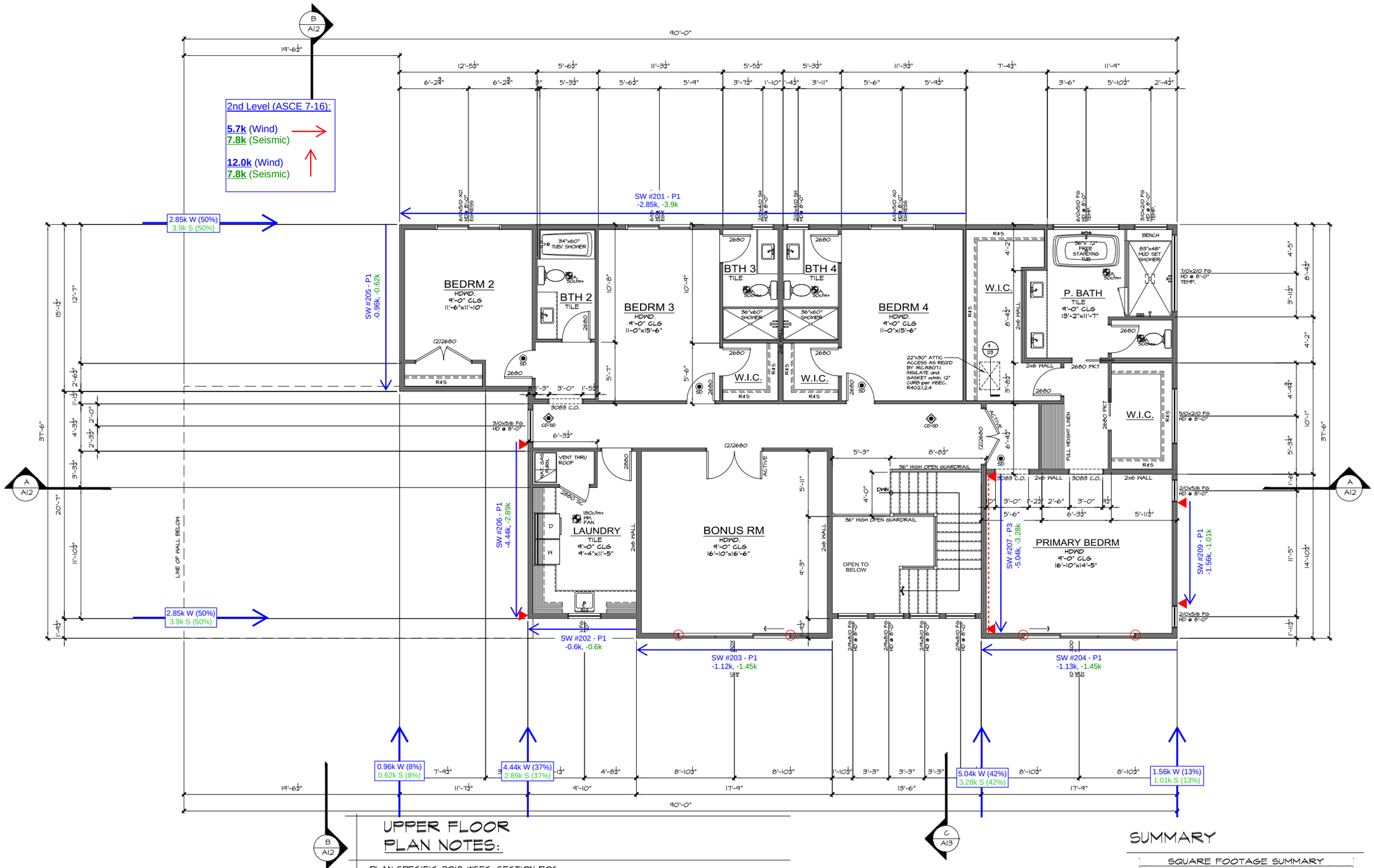
R.K.N.
Drawn by:

S.K.
Checked by:

Primary Scale

A5
of: .

Sheet Title/Description



UPPER FLOOR PLAN NOTES:

PLAN SPECIFIC 2018 WSEC, SECTION R06

R406.2 ADDITIONAL ENERGY EFFICIENCY REQUIREMENTS (MANDATORY).

THIS RESIDENTIAL DWELLING SHALL COMPLY W/SUFFICIENT OPTIONS FROM TABLE R406.2 TO ACHIEVE THE FOLLOWING MIN. NUMBER OF CREDITS:

3.5 FOR A 1,501sf to 4,999sf HOME.

CREDITS PROVIDED IN THIS HOME AS FOLLOWS:

EFFICIENT BUILDING ENVELOPE 1a: 0.5 CREDITS

PRESCRIPTIVE COMPLIANCE IS BASED ON TABLE R402.1.1 with FOLLOWING MODIFICATIONS:

VERTICAL FENESTRATION U = 0.28 WINDOWS

FLOORS TO BE R-38 and SLAB ON GRADE TO BE R-10 PERIMETER and UNDER ENTIRE SLAB BELOW GRADE.

R406.2 ADDITIONAL ENERGY EFFICIENCY REQUIREMENTS (MANDATORY).

HIGH EFFICIENCY HVAC EQUIPMENT 3a: 1.0 CREDITS

GAS FURNACE WITH MINIMUM AFUE OF 94%

EFFICIENT WATER HEATING 5a: 0.5 CREDITS

ALL SHOWERHEAD and KITCHEN SINK FAUCETS INSTALLED IN THE HOUSE SHALL BE RATED AT 1.75 GPM or LESS.

ALL OTHER LAVATORY FAUCETS SHALL BE RATED AT 1.0 GPM or LESS.

EFFICIENT WATER HEATING 5c: 1.5 CREDITS

WATER HEATING SYSTEM SHALL BE:
GAS WATER HEATER WITH A MINIMUM EF OF 0.91

SUMMARY

SQUARE FOOTAGE SUMMARY

LOWER FLOOR AREA	0	S.F.
MAIN FLOOR AREA	1,683	S.F.
UPPER FLOOR AREA	2,182	S.F.
TOTAL CONDITIONED AREA	3865	S.F.
3 CAR GARAGE	716	S.F.
COV'D PATIO	649	S.F.
COV'D PORCH	110	S.F.
TOTAL AREA UNDER ROOF	5,340	S.F.
OVERALL WIDTH	90'-0"	
OVERALL DEPTH	37'-6"	

Updated : 12.03.20

Method for Calculating Square Footage - ANSI Z765-2013 exceptn. no separate distinction of 'above-grade or below-grade' areas and each level is measured to the outside of studs not the exterior finished surface.

Square footage calculations for this house were made based on plan dimensions only and may vary from the finished square footage of the house as built.

UPPER FLOOR PLAN

1/4" = 1'-0"

JAYMARC HOMES
7525 SE 24th St., 487
Mercer Island, WA
98040
425.266.9100

1	4.21.23	RKN
	M.I. BUILDING COMMENTS	

Spring Residence
4740 W. Mercer Way
Mercer Island, WA.
Job Number: JMC011

plan name: -
marketing name: -
plan number: -
mark sys. number: -

08.04.23
Submittal Date

Sheet Title/Description

JAYMARC HOMES
Design Firm

R.K.N.
Drawn by:

S.K.
Checked by:

Primary Scale

A7
of: .

Sheet Title/Description

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 201: 2ND - REAR EXT. WALL @ BED 2, 3, 4, WIC

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, H_c	5.0	FT.		
WALL LENGTH, L	51.3	FT.	QUALIFYING WALL LENGTH, L	29.3	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
3900 LBS	<	6983 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	335	PLF	OVERTURNING MOMENT	35.1	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	536	LBS	RESISTIVE MOMENT	308.5	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 202: 2ND - FRONT EXT. WALL @ LAUNDRY

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, Hc	4.5	FT.		
WALL LENGTH, L	9.8	FT.	QUALIFYING WALL LENGTH, L	6.8	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
600 LBS	<	1638 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	134	PLF	OVERTURNING MOMENT	5.4	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	596	LBS	RESISTIVE MOMENT	8.1	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 203: 2ND - FRONT EXT. WALL @ BONUS

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, H_c	5.5	FT.		
WALL LENGTH, L	17.8	FT.	QUALIFYING WALL LENGTH, L	7.8	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1650 LBS	<	1859 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	134	PLF	OVERTURNING MOMENT	14.9	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	650	LBS	RESISTIVE MOMENT	21.5	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 204: 2ND - FRONT EXT. WALL @ PRIMARY

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, Hc	5.5	FT.		
WALL LENGTH, L	17.8	FT.	QUALIFYING WALL LENGTH, L	7.8	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1650 LBS	<	1859 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	134	PLF	OVERTURNING MOMENT	14.9	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	650	LBS	RESISTIVE MOMENT	21.5	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 205: 2ND - SIDE EXT. WALL @ BED 2

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, H_o	0.0	FT.		
WALL LENGTH, L	15.1	FT.	QUALIFYING WALL LENGTH, L	15.1	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
620 LBS	<	3627 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	134	PLF	OVERTURNING MOMENT	5.6	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	914	LBS	RESISTIVE MOMENT	19.2	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 206: 2ND - SIDE EXT. WALL @ LAUNDRY

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	16.0	FT.	QUALIFYING WALL LENGTH, L	16.0	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
2890 LBS	<	3847 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	150	PLF	OVERTURNING MOMENT	26.0	K-FT	HOLD DOWN DESIGN LOAD	682	LBS
DL AT ENDS OF WALL	225	LBS	RESISTIVE MOMENT	15.1	K-FT	HOLDOWN CAPACITY	4645	LBS

HOLD-DOWN SPECIFICATION

SIMPSON MSTC66 STRAP TIE (20" END LENGTH)

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 207: 2ND - SIDE INT. WALL @ PRIMARY

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, H_o	0.0	FT.		
WALL LENGTH, L	14.4	FT.	QUALIFYING WALL LENGTH, L	14.4	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
3280 LBS	<	6487 LBS

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	134	PLF	OVERTURNING MOMENT	29.5	K-FT	HOLD DOWN DESIGN LOAD	1150	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	12.9	K-FT	HOLDOWN CAPACITY	4645	LBS

HOLD-DOWN SPECIFICATION

SIMPSON MSTC66 STRAP TIE (20" END LENGTH)

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H	0.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	0.0	FT.	QUALIFYING WALL LENGTH, L	0.0	FT.	SHEARWALL ASSEMBLY	P0

CAPACITY EVALUATION:

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

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	0	PLF	OVERTURNING MOMENT	0.0	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	0	LBS	RESISTIVE MOMENT	0.0	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 209: 2ND - SIDE EXT. WALL @ PRIMARY

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, H_c	0.0	FT.		
WALL LENGTH, L	9.6	FT.	QUALIFYING WALL LENGTH, L	9.6	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1010 LBS	<	2298 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	134	PLF	OVERTURNING MOMENT	9.1	K-FT	HOLD DOWN DESIGN LOAD	395	LBS
DL AT ENDS OF WALL	200	LBS	RESISTIVE MOMENT	5.3	K-FT	HOLDOWN CAPACITY	1705	LBS

HOLD-DOWN SPECIFICATION

SIMPSON CS16 STRAP TIE (14" END LENGTH)

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H	0.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	0.0	FT.	QUALIFYING WALL LENGTH, L	0.0	FT.	SHEARWALL ASSEMBLY	P0

CAPACITY EVALUATION:

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

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	0	PLF	OVERTURNING MOMENT	0.0	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	0	LBS	RESISTIVE MOMENT	0.0	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 101: 1ST - REAR EXT. WALL @ DINING

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, H_c	4.5	FT.		
WALL LENGTH, L	14.3	FT.	QUALIFYING WALL LENGTH, L	6.3	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1500 LBS	<	1501 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	442	PLF	OVERTURNING MOMENT	24.8	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	1200	LBS	RESISTIVE MOMENT	41.1	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 102: 1ST - REAR EXT. WALL @ GREAT RM.

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	4.5	FT.		
WALL LENGTH, L	18.2	FT.	QUALIFYING WALL LENGTH, L	13.2	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
3600 LBS	<	5928 LBS

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	638	PLF	OVERTURNING MOMENT	36.0	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	1200	LBS	RESISTIVE MOMENT	83.7	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-Sep-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 103: 1ST - REAR EXT. WALL @ GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, H_o	0.0	FT.		
WALL LENGTH, L	31.2	FT.	QUALIFYING WALL LENGTH, L	31.2	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
3000 LBS	<	7476 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	294	PLF	OVERTURNING MOMENT	30.0	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	536	LBS	RESISTIVE MOMENT	105.0	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 104: 1ST - FRONT EXT. WALL @ MUD RM.

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	4.5	FT.		
WALL LENGTH, L	9.4	FT.	QUALIFYING WALL LENGTH, L	6.4	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1060 LBS	<	1530 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	355	PLF	OVERTURNING MOMENT	10.6	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	800	LBS	RESISTIVE MOMENT	15.2	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 105: 1ST - FRONT EXT. WALL @ STUDY

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, H_o	6.0	FT.		
WALL LENGTH, L	17.8	FT.	QUALIFYING WALL LENGTH, L	10.8	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1800 LBS	<	2581 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	369	PLF	OVERTURNING MOMENT	32.9	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	800	LBS	RESISTIVE MOMENT	47.6	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 106: 1ST - FRONT EXT. WALL @ COVERED PATIO

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	6.0	FT.		
WALL LENGTH, L	17.8	FT.	QUALIFYING WALL LENGTH, L	10.6	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1800 LBS	<	2538 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	375	PLF	OVERTURNING MOMENT	32.9	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	800	LBS	RESISTIVE MOMENT	48.2	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 107: 1ST - SIDE EXT. WALL @ GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	8.4	FT.	MAX WALL OPENING HT, H_c	0.0	FT.		
WALL LENGTH, L	12.0	FT.	QUALIFYING WALL LENGTH, L	12.0	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1110 LBS	<	2878 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	134	PLF	OVERTURNING MOMENT	9.3	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	536	LBS	RESISTIVE MOMENT	10.6	K-FT	HOLDOWN CAPACITY	3695	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H	0.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	0.0	FT.	QUALIFYING WALL LENGTH, L	0.0	FT.	SHEARWALL ASSEMBLY	P0

CAPACITY EVALUATION:

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

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	0	PLF	OVERTURNING MOMENT	0.0	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	0	LBS	RESISTIVE MOMENT	0.0	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 109: 1ST - SIDE EXT. WALL @ DINING

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, H_o	0.0	FT.		
WALL LENGTH, L	3.1	FT.	QUALIFYING WALL LENGTH, L	3.1	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1100 LBS	<	1182 LBS

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	244	PLF	OVERTURNING MOMENT	12.1	K-FT	HOLD DOWN DESIGN LOAD	2879	LBS
DL AT ENDS OF WALL	1200	LBS	RESISTIVE MOMENT	3.2	K-FT	HOLDOWN CAPACITY	3695	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

SHEARWALL 110: 1ST - SIDE INT. WALL @ GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	11.8	FT.	QUALIFYING WALL LENGTH, L	11.8	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
3500 LBS	<	5312 LBS

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	270	PLF	OVERTURNING MOMENT	35.0	K-FT	HOLD DOWN DESIGN LOAD	1655	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	15.5	K-FT	HOLDOWN CAPACITY	3695	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 111: 1ST - SIDE INT. WALL @ COVERED PATIO

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, H_c	0.0	FT.		
WALL LENGTH, L	20.8	FT.	QUALIFYING WALL LENGTH, L	20.8	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
5200 LBS	<	9376 LBS

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	244	PLF	OVERTURNING MOMENT	52.0	K-FT	HOLD DOWN DESIGN LOAD	298	LBS
DL AT ENDS OF WALL	800	LBS	RESISTIVE MOMENT	45.8	K-FT	HOLDOWN CAPACITY	3695	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

SHEARWALL 112: 1ST - SIDE EXT. WALL @ COVERED PATIO

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	8.0	FT.		
WALL LENGTH, L	37.5	FT.	QUALIFYING WALL LENGTH, L	9.0	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1610 LBS	<	3714 LBS

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	244	PLF	OVERTURNING MOMENT	16.1	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	122.8	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 113: 1ST - SIDE EXT. WALL @ GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	11.0	FT.	MAX WALL OPENING HT, H_o	0.0	FT.		
WALL LENGTH, L	4.6	FT.	QUALIFYING WALL LENGTH, L	4.6	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
150 LBS	<	1044 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	134	PLF	OVERTURNING MOMENT	1.7	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	536	LBS	RESISTIVE MOMENT	2.5	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 114: 1ST - SIDE INT. WALL @ GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	4.9	FT.	QUALIFYING WALL LENGTH, L	4.9	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1130 LBS	<	2178 LBS

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	270	PLF	OVERTURNING MOMENT	11.3	K-FT	HOLD DOWN DESIGN LOAD	1624	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	3.4	K-FT	HOLDOWN CAPACITY	3695	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

JayMarc Homes

Spring Residence

Mercer island, WA

Shear Wall Calculations - Wind

Reviewed By: RJZ

September 19, 2023

Parameters:

Single Family Home

Design Wind Speed: 100 MPH

wind Exposure Category: C

Seismic Design Category: D

Code & Design Standard: 2018 IBC Ch. 1609, ASCE 7-16 Ch. 26-30

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 04-AUG-23

WIND DESIGN SUMMARY PER ASCE 7-16

PARAMETERS:

WIND SPEED	100
EXPOSURE CATEGORY	C
RISK CATEGORY	II
WIND DIRECTIONALITY FACTOR, K_D	0.85
TOPOGRAPHIC FACTOR, K_{ZT}	1.60
GUST FACTOR, G	0.85
GROUND ELEV. ABOVE SEA LEVEL [FT]	0
DESIGN TYPE	ASD

0.60

ROOF GEOMETRY:

TRANS. ROOF PITCH	4.0	:12
LONG. ROOF PITCH	7.0	:12
MEAN ROOF HEIGHT, H	24.00	FT

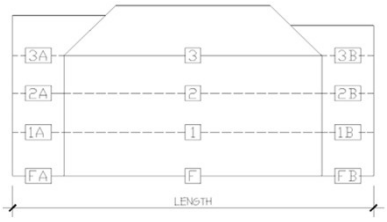
BUILDING GEOMETRY:

LENGTH	90	FT
WIDTH	38	FT
NUMBER OF STORIES	2	

TRANSVERSE DIRECTION (PERPENDICULAR TO MAIN RIDGE LINE)

TRIBUTARY DESIGN AREAS:

DIAPHRAGM LEVEL	FLOOR-TO-FLOOR HEIGHT		SECTION A	SECTION O	SECTION B	
2	9 FT	Roof Surface	0	231	0	sq ft
		Wall surface	0	462	0	sq ft
1	11.5 FT	Roof Surface	0	93	0	sq ft
		Wall surface	0	911	0	sq ft
FND		Roof Surface	0	0	0	sq ft
		Wall surface	0	0	0	sq ft



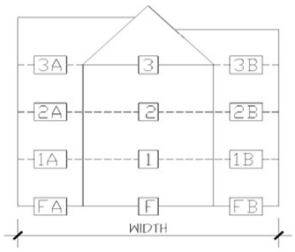
TRIBUTARY DESIGN LOADS: (0.6W)

	SECTION A	SECTION O	SECTION B	
Story Shear	0.00	11.99	0.00	kips
Total Shear	0.00	11.99	0.00	kips
		11.99		kips
Story Shear	0.00	19.45	0.00	kips
Total Shear	0.00	31.44	0.00	kips
		31.44		kips
Story Shear	0.00	0.00	0.00	kips
Total Shear	0.00	31.44	0.00	kips
		31.44		kips

LONGITUDINAL DIRECTION (PARALLEL TO MAIN RIDGE LINE)

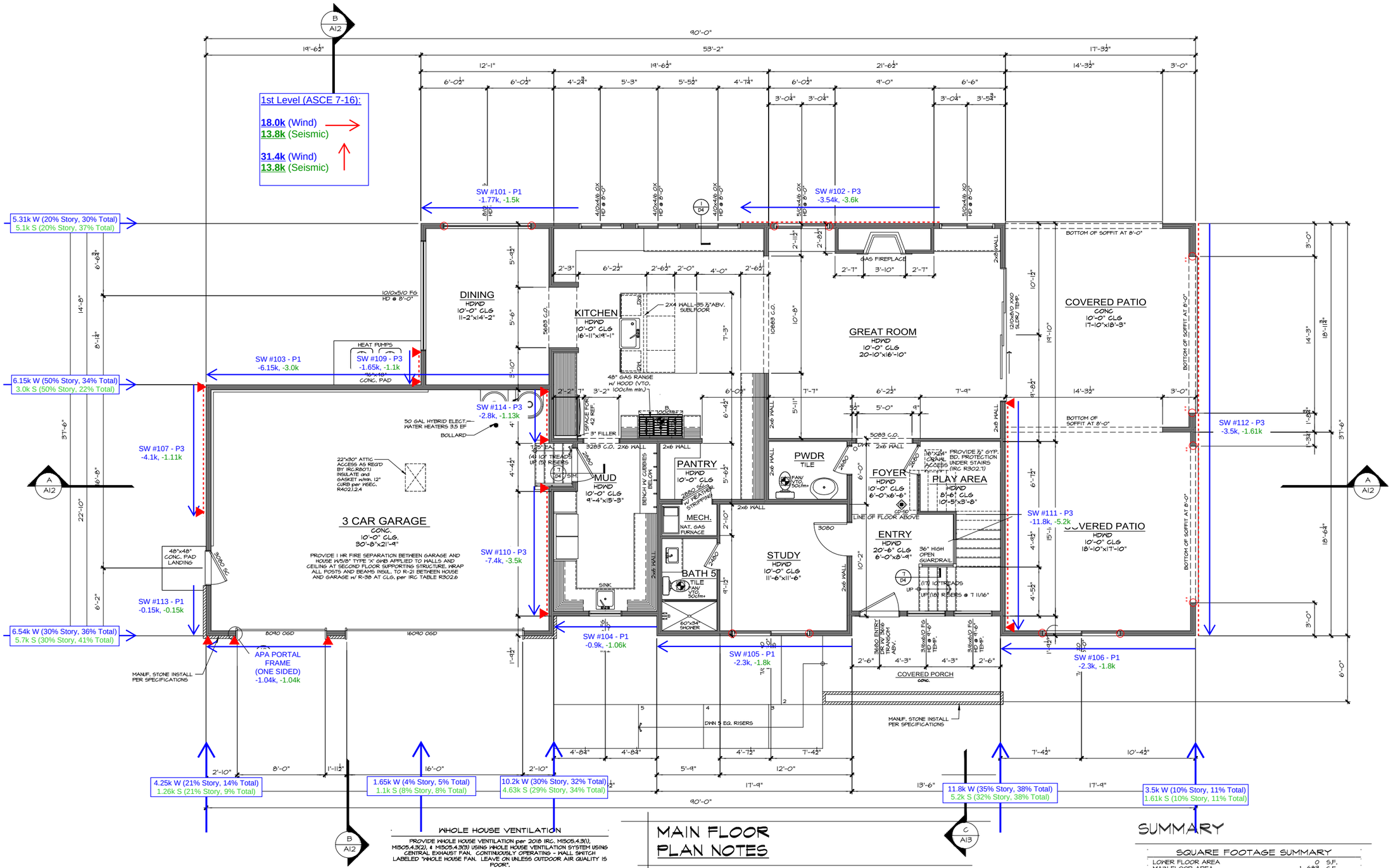
TRIBUTARY DESIGN AREAS:

DIAPHRAGM LEVEL	FLOOR-TO-FLOOR HEIGHT		SECTION A	SECTION O	SECTION B	
2	9 FT	Roof Surface	0	57	0	sq ft
		Wall surface	0	278	0	sq ft
1	11.5 FT	Roof Surface	0	289	0	sq ft
		Wall surface	0	477	0	sq ft
FND		Roof Surface	0	0	0	sq ft
		Wall surface	0	0	0	sq ft



TRIBUTARY DESIGN LOADS: (0.6W)

	SECTION A	SECTION O	SECTION B	
Story Shear	0.00	5.72	0.00	kips
Total Shear	0.00	5.72	0.00	kips
		5.72		kips
Story Shear	0.00	12.27	0.00	kips
Total Shear	0.00	17.99	0.00	kips
		17.99		kips
Story Shear	0.00	0.00	0.00	kips
Total Shear	0.00	17.99	0.00	kips
		17.99		kips



MAIN FLOOR PLAN

1/4" = 1'-0"

WHOLE HOUSE VENTILATION

PROVIDE WHOLE HOUSE VENTILATION per 2018 IRC, M1505.4.3(1), M1505.4.3(2), & M1505.4.3(3) USING WHOLE HOUSE VENTILATION SYSTEM USING CENTRAL EXHAUST FAN. CONTINUOUSLY OPERATING - WALL SWITCH LABELED "WHOLE HOUSE FAN. LEAVE ON UNLESS OUTDOOR AIR QUALITY IS POOR".

SYMBOL	LOCATION	MIN. FAN REQUIREMENTS (ALL FANS VENT TO OUTSIDE)
FAN 50cfm+	BATH & POWDER	Min. 50cfm, INTERMITTENT at .025wg per TABLE M1505.4.4
FAN 100cfm+	KITCHEN	Min. 100cfm, INTERMITTENT at .025wg per TBL. M1503.6
		RANGE HOOD or DOWN DRAFT EXHAUST FAN RATED at min. 100cfm, at 2.0wg MAY BE USED FOR EXHAUST FAN REQMT. EXHAUST HOODS IN EXCESS OF 400cfm, SHALL BE INTERLOCKED AND PROVIDE MAKE UP AIR per M1503.6
FAN 180cfm+ MAF*	LAUNDRY ROOM	FINAL ADJUSTED RATE = 180 CFM (120 CFM PER TABLE 1505.4.3(1), ADJUSTED BY FACTOR OF 1.5 PER TABLE M1505.4.3(2)) FOR NON-BALANCED, NOT DISTRIBUTED SYSTEM.

MAIN FLOOR PLAN NOTES

PLAN SPECIFIC 2018 WSEC, SECTION R06

R406.2 ADDITIONAL ENERGY EFFICIENCY REQUIREMENTS (MANDATORY).

THIS RESIDENTIAL DWELLING SHALL COMPLY W/SUFFICIENT OPTIONS FROM TABLE R406.2 TO ACHIEVE THE FOLLOWING MIN. NUMBER OF CREDITS:

3.5 FOR a 1,501sf to 4,999sf HOME.

CREDITS PROVIDED IN THIS HOME AS FOLLOWS:

EFFICIENT BUILDING ENVELOPE 1a: 0.5 CREDITS

PRESCRIPTIVE COMPLIANCE IS BASED ON TABLE R402.1.1 with FOLLOWING MODIFICATIONS:

VERTICAL FENESTRATION U = 0.28 WINDOWS

FLOORS TO BE R-38 and SLAB ON GRADE TO BE R-10 PERIMETER and UNDER ENTIRE SLAB BELOW GRADE.

HIGH EFFICIENCY HVAC EQUIPMENT 3a: 1.0 CREDITS

GAS FURNACE WITH MINIMUM AFUE OF 94%

EFFICIENT WATER HEATING 5a: 0.5 CREDITS

ALL SHOWERHEAD and KITCHEN SINK FAUCETS INSTALLED IN THE HOUSE SHALL BE RATED AT 1.75 GPM or LESS.

ALL OTHER LAVATORY FAUCETS SHALL BE RATED AT 1.0 GPM or LESS.

EFFICIENT WATER HEATING 5c: 1.5 CREDITS

WATER HEATING SYSTEM SHALL BE:
GAS WATER HEATER WITH A MINIMUM EF OF 0.91

SUMMARY

SQUARE FOOTAGE SUMMARY

LOWER FLOOR AREA	0 S.F.
MAIN FLOOR AREA	1,683 S.F.
UPPER FLOOR AREA	2,182 S.F.
TOTAL CONDITIONED AREA	3865 S.F.
3 CAR GARAGE	716 S.F.
COVD PATIO	649 S.F.
COVD PORCH	110 S.F.
TOTAL AREA UNDER ROOF	5,340 S.F.
OVERALL WIDTH	90'-0"
OVERALL DEPTH	37'-6"

Updated : 12.09.20

Method for Calculating Square Footage - ANSI Z765-2013 except, no separate distinction of 'above-grade or below-grade' areas and each level is measured to the outside of studs not the exterior finished surface.

Square footage calculations for this house were made based on plan dimensions only and may vary from the finished square footage of the house as built.

See Sheet "CODES" for additional Zoning required Area Calculations

JAYMARC HOMES
7525 SE 24th St., 487
Mercer Island, WA
98040
425.266.9100

1 4.21.23 RKN
M.I. BUILDING COMMENTS

Spring Residence
4740 W. Mercer Way
Mercer Island, WA.
Job Number: Spring
JMC011

plan name: –
marketing name: –
plan number: –
mark sys. number: –

08.04.23
Submittal Date

Sheet Title/Description

JAYMARC HOMES
Design Firm

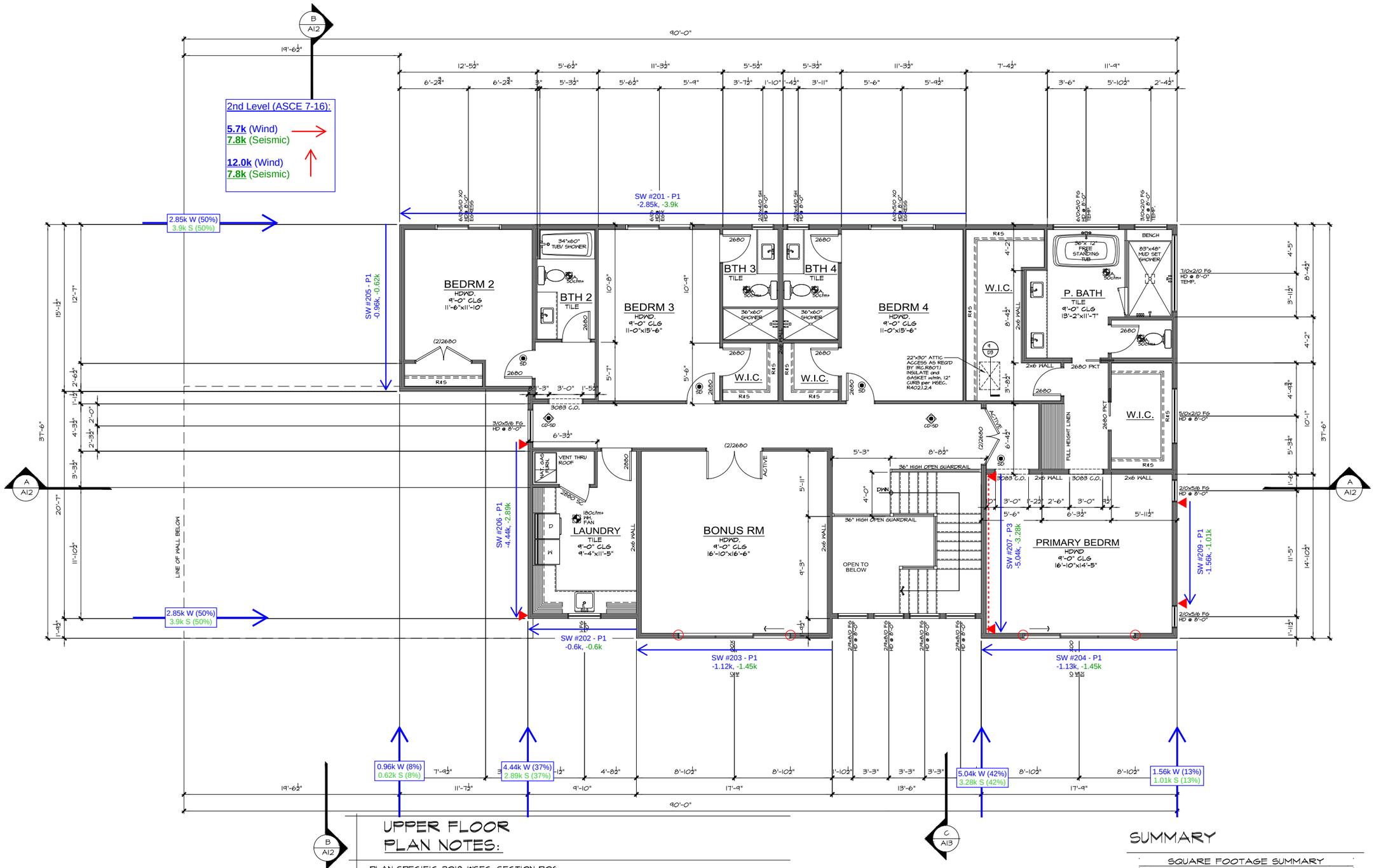
R.K.N.
Drawn by:

S.K.
Checked by:

Primary Scale

A5
of: .

Sheet Title/Description



UPPER FLOOR PLAN NOTES:

PLAN SPECIFIC 2018 WSEC, SECTION R06

R406.2 ADDITIONAL ENERGY EFFICIENCY REQUIREMENTS (MANDATORY).

THIS RESIDENTIAL DWELLING SHALL COMPLY W/SUFFICIENT OPTIONS FROM TABLE R406.2 TO ACHIEVE THE FOLLOWING MIN. NUMBER OF CREDITS:

3.5 FOR A 1,501sf to 4,999sf HOME.

CREDITS PROVIDED IN THIS HOME AS FOLLOWS:

EFFICIENT BUILDING ENVELOPE 1a: 0.5 CREDITS

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HIGH EFFICIENCY HVAC EQUIPMENT 3a: 1.0 CREDITS

GAS FURNACE WITH MINIMUM AFUE OF 94%

EFFICIENT WATER HEATING 5a: 0.5 CREDITS

ALL SHOWERHEAD and KITCHEN SINK FAUCETS INSTALLED IN THE HOUSE SHALL BE RATED AT 1.75 GPM or LESS.

ALL OTHER LAVATORY FAUCETS SHALL BE RATED AT 1.0 GPM or LESS.

EFFICIENT WATER HEATING 5c: 1.5 CREDITS

WATER HEATING SYSTEM SHALL BE:
GAS WATER HEATER WITH A MINIMUM EF OF 0.91

SUMMARY

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LOWER FLOOR AREA	0	S.F.
MAIN FLOOR AREA	1,683	S.F.
UPPER FLOOR AREA	2,182	S.F.
TOTAL CONDITIONED AREA	3865	S.F.
3 CAR GARAGE	716	S.F.
COV'D PATIO	649	S.F.
COV'D PORCH	110	S.F.
TOTAL AREA UNDER ROOF	5,340	S.F.
OVERALL WIDTH	90'-0"	
OVERALL DEPTH	37'-6"	

Updated : 12.03.20

Method for Calculating Square Footage - ANSI Z765-2013 exceptn. no separate distinction of 'above-grade or below-grade' areas and each level is measured to the outside of studs not the exterior finished surface.

Square footage calculations for this house were made based on plan dimensions only and may vary from the finished square footage of the house as built.

UPPER FLOOR PLAN

1/4" = 1'-0"

JAYMARC HOMES
7525 SE 24th St., 487
Mercer Island, WA
98040
425.266.9100

1	4.21.23	RKN
	M.I. BUILDING COMMENTS	

Spring Residence
4740 W. Mercer Way
Mercer Island, WA.
Job Number: JMC011

plan name: -
marketing name: -
plan number: -
mark sys. number: -

08.04.23
Submittal Date

Sheet Title/Description

JAYMARC HOMES
Design Firm

R.K.N.
Drawn by:

S.K.
Checked by:

Primary Scale

A7
of: .

Sheet Title/Description

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 201: 2ND - REAR EXT. WALL @ BED 2, 3, 4, WIC

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, H_c	5.0	FT.		
WALL LENGTH, L	51.3	FT.	QUALIFYING WALL LENGTH, L	29.3	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
2850 LBS	<	9776 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	335	PLF	OVERTURNING MOMENT	25.7	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	536	LBS	RESISTIVE MOMENT	422.0	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 202: 2ND - FRONT EXT. WALL @ LAUNDRY

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, Hc	4.5	FT.		
WALL LENGTH, L	9.8	FT.	QUALIFYING WALL LENGTH, L	6.8	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
600 LBS	<	2294 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	134	PLF	OVERTURNING MOMENT	5.4	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	596	LBS	RESISTIVE MOMENT	11.1	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 203: 2ND - FRONT EXT. WALL @ BONUS

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, H_c	5.5	FT.		
WALL LENGTH, L	17.8	FT.	QUALIFYING WALL LENGTH, L	7.8	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1120 LBS	<	2602 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	134	PLF	OVERTURNING MOMENT	10.1	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	25.4	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 204: 2ND - FRONT EXT. WALL @ PRIMARY

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, Hc	5.5	FT.		
WALL LENGTH, L	17.8	FT.	QUALIFYING WALL LENGTH, L	7.8	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1130 LBS	<	2602 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	134	PLF	OVERTURNING MOMENT	10.2	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	25.4	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 205: 2ND - SIDE EXT. WALL @ BED 2

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, H_o	0.0	FT.		
WALL LENGTH, L	15.1	FT.	QUALIFYING WALL LENGTH, L	15.1	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
960 LBS	<	5077 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	134	PLF	OVERTURNING MOMENT	8.6	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	914	LBS	RESISTIVE MOMENT	26.2	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 206: 2ND - SIDE EXT. WALL @ LAUNDRY

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	16.0	FT.	QUALIFYING WALL LENGTH, L	16.0	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
4440 LBS	<	5386 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	150	PLF	OVERTURNING MOMENT	40.0	K-FT	HOLD DOWN DESIGN LOAD	1206	LBS
DL AT ENDS OF WALL	225	LBS	RESISTIVE MOMENT	20.6	K-FT	HOLDOWN CAPACITY	4645	LBS

HOLD-DOWN SPECIFICATION

SIMPSON MSTC66 STRAP TIE (20" END LENGTH)

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 207: 2ND - SIDE INT. WALL @ PRIMARY

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, H_o	0.0	FT.		
WALL LENGTH, L	14.4	FT.	QUALIFYING WALL LENGTH, L	14.4	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
5040 LBS	<	9081 LBS

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	134	PLF	OVERTURNING MOMENT	45.4	K-FT	HOLD DOWN DESIGN LOAD	1919	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	17.7	K-FT	HOLDOWN CAPACITY	4645	LBS

HOLD-DOWN SPECIFICATION

SIMPSON MSTC66 STRAP TIE (20" END LENGTH)

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H	0.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	0.0	FT.	QUALIFYING WALL LENGTH, L	0.0	FT.	SHEARWALL ASSEMBLY	P0

CAPACITY EVALUATION:

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

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	0	PLF	OVERTURNING MOMENT	#DIV/0!	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	0	LBS	RESISTIVE MOMENT	0.0	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 209: 2ND - SIDE EXT. WALL @ PRIMARY

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, H_o	0.0	FT.		
WALL LENGTH, L	9.6	FT.	QUALIFYING WALL LENGTH, L	9.6	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1560 LBS	<	3217 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	134	PLF	OVERTURNING MOMENT	14.0	K-FT	HOLD DOWN DESIGN LOAD	708	LBS
DL AT ENDS OF WALL	200	LBS	RESISTIVE MOMENT	7.3	K-FT	HOLDOWN CAPACITY	1705	LBS

HOLD-DOWN SPECIFICATION

SIMPSON CS16 STRAP TIE (14" END LENGTH)

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H	0.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	0.0	FT.	QUALIFYING WALL LENGTH, L	0.0	FT.	SHEARWALL ASSEMBLY	P0

CAPACITY EVALUATION:

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

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	0	PLF	OVERTURNING MOMENT	#DIV/0!	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	0	LBS	RESISTIVE MOMENT	0.0	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 101: 1ST - REAR EXT. WALL @ DINING

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, H_o	4.5	FT.		
WALL LENGTH, L	14.3	FT.	QUALIFYING WALL LENGTH, L	6.3	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1770 LBS	<	2101 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	442	PLF	OVERTURNING MOMENT	24.9	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	1200	LBS	RESISTIVE MOMENT	56.2	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 102: 1ST - REAR EXT. WALL @ GREAT RM.

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	4.5	FT.		
WALL LENGTH, L	18.2	FT.	QUALIFYING WALL LENGTH, L	13.2	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
3540 LBS	<	8300 LBS

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	638	PLF	OVERTURNING MOMENT	35.4	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	1200	LBS	RESISTIVE MOMENT	114.4	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-Sep-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 103: 1ST - REAR EXT. WALL @ GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, H_o	0.0	FT.		
WALL LENGTH, L	31.2	FT.	QUALIFYING WALL LENGTH, L	31.2	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
6150 LBS	<	10467 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	294	PLF	OVERTURNING MOMENT	61.5	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	536	LBS	RESISTIVE MOMENT	143.6	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 104: 1ST - FRONT EXT. WALL @ MUD RM.

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	4.5	FT.		
WALL LENGTH, L	9.4	FT.	QUALIFYING WALL LENGTH, L	6.4	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
900 LBS	<	2142 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	355	PLF	OVERTURNING MOMENT	9.0	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	800	LBS	RESISTIVE MOMENT	20.8	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 105: 1ST - FRONT EXT. WALL @ STUDY

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, H_o	6.0	FT.		
WALL LENGTH, L	17.8	FT.	QUALIFYING WALL LENGTH, L	10.8	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
2300 LBS	<	3613 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	369	PLF	OVERTURNING MOMENT	33.1	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	800	LBS	RESISTIVE MOMENT	65.1	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 106: 1ST - FRONT EXT. WALL @ COVERED PATIO

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	6.0	FT.		
WALL LENGTH, L	17.8	FT.	QUALIFYING WALL LENGTH, L	10.6	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
2300 LBS	<	3553 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	375	PLF	OVERTURNING MOMENT	33.2	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	800	LBS	RESISTIVE MOMENT	65.9	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 107: 1ST - SIDE EXT. WALL @ GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	8.4	FT.	MAX WALL OPENING HT, H_c	0.0	FT.		
WALL LENGTH, L	12.0	FT.	QUALIFYING WALL LENGTH, L	12.0	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
4100 LBS	<	7562 LBS

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	134	PLF	OVERTURNING MOMENT	34.4	K-FT	HOLD DOWN DESIGN LOAD	1657	LBS
DL AT ENDS OF WALL	536	LBS	RESISTIVE MOMENT	14.5	K-FT	HOLDOWN CAPACITY	4935	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H	0.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	0.0	FT.	QUALIFYING WALL LENGTH, L	0.0	FT.	SHEARWALL ASSEMBLY	P0

CAPACITY EVALUATION:

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

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	0	PLF	OVERTURNING MOMENT	#DIV/0!	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	0	LBS	RESISTIVE MOMENT	0.0	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 109: 1ST - SIDE EXT. WALL @ DINING

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, H_o	0.0	FT.		
WALL LENGTH, L	3.1	FT.	QUALIFYING WALL LENGTH, L	3.1	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1650 LBS	<	1654 LBS

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	244	PLF	OVERTURNING MOMENT	18.3	K-FT	HOLD DOWN DESIGN LOAD	4474	LBS
DL AT ENDS OF WALL	1200	LBS	RESISTIVE MOMENT	4.4	K-FT	HOLDOWN CAPACITY	4935	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

SHEARWALL 110: 1ST - SIDE INT. WALL @ GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	11.8	FT.	QUALIFYING WALL LENGTH, L	11.8	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
7400 LBS	<	7436 LBS

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	270	PLF	OVERTURNING MOMENT	74.0	K-FT	HOLD DOWN DESIGN LOAD	4477	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	21.2	K-FT	HOLDOWN CAPACITY	4935	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 111: 1ST - SIDE INT. WALL @ COVERED PATIO

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, H_c	0.0	FT.		
WALL LENGTH, L	20.8	FT.	QUALIFYING WALL LENGTH, L	20.8	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
11800 LBS	<	13127 LBS

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	244	PLF	OVERTURNING MOMENT	118.0	K-FT	HOLD DOWN DESIGN LOAD	2658	LBS
DL AT ENDS OF WALL	800	LBS	RESISTIVE MOMENT	62.6	K-FT	HOLDOWN CAPACITY	4935	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

SHEARWALL 112: 1ST - SIDE EXT. WALL @ COVERED PATIO

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	8.0	FT.		
WALL LENGTH, L	37.5	FT.	QUALIFYING WALL LENGTH, L	9.0	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
3500 LBS	<	5199 LBS

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	244	PLF	OVERTURNING MOMENT	35.0	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	168.0	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: AJC
DATE: 19-SEP-23

SHEARWALL DESIGN SUMMARY

SHEARWALL 113: 1ST - SIDE EXT. WALL @ GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	11.0	FT.	MAX WALL OPENING HT, H_o	0.0	FT.		
WALL LENGTH, L	4.6	FT.	QUALIFYING WALL LENGTH, L	4.6	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
150 LBS	<	1462 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	134	PLF	OVERTURNING MOMENT	1.7	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	536	LBS	RESISTIVE MOMENT	3.5	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 114: 1ST - SIDE INT. WALL @ GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	4.9	FT.	QUALIFYING WALL LENGTH, L	4.9	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
2800 LBS	<	3049 LBS

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	270	PLF	OVERTURNING MOMENT	28.0	K-FT	HOLD DOWN DESIGN LOAD	4798	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	4.6	K-FT	HOLDOWN CAPACITY	4935	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN