MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

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

CALCULATION PACKAGE

April 13, 2021

JayMarc Homes

6515 SE 30th St

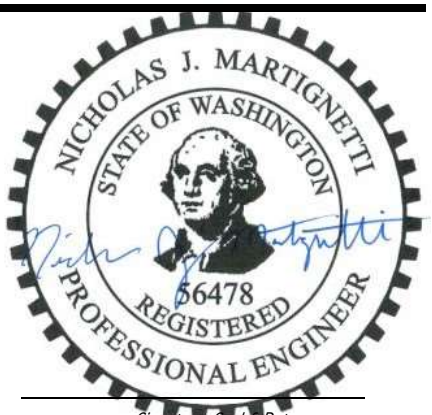
Mercer Island, Washington

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

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

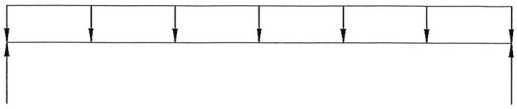
PROJECT NAME: 6515 SE 30TH
JAYMARC HOMES
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-MAR-21

BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: ROOF FRAMING - TYP. HDR (WORST CASE) B1

PARAMETERS:

L = 8 FT
W = 0.42 KLF
P = - K



ANALYSIS:

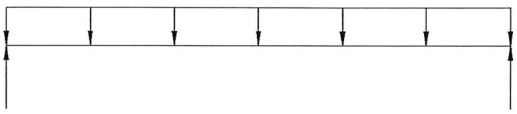
R_{MAX} =	1.7 K	V_D =	- K	< V_{ALL} =	4.5 K	✓	ADEQUATE
M_{MAX} =	3.4 K-FT	< M_{ALL} =	5.2 K-FT			✓	ADEQUATE
Δ_{TL} =	0.11 IN.	L/	872	< L/240		✓	ADEQUATE

4x10 DF #2

BEAM DESCRIPTION: ROOF FRAMING - HDR @ INTERIOR BRG. B2

PARAMETERS:

L = 5 FT
W = 0.25 KLF
P = - K



ANALYSIS:

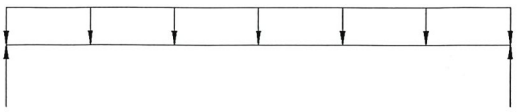
R_{MAX} =	0.6 K	V_D =	- K	< V_{ALL} =	4.5 K	✓	ADEQUATE
M_{MAX} =	0.8 K-FT	< M_{ALL} =	5.2 K-FT			✓	ADEQUATE
Δ_{TL} =	0.01 IN.	L/	1000+	< L/240		✓	ADEQUATE

4x10 DF #2

BEAM DESCRIPTION: UPPER FLOOR FRAMING - PORCH BM B3

PARAMETERS:

L = 7.5 FT
W = 0.11 KLF
P = - K



ANALYSIS:

R_{MAX} =	0.4 K	V_D =	- K	< V_{ALL} =	4.5 K	✓	ADEQUATE
M_{MAX} =	0.77 K-FT	< M_{ALL} =	5.2 K-FT			✓	ADEQUATE
Δ_{TL} =	0.02 IN.	L/	1000+	< L/240		✓	ADEQUATE

4x10 DF #2

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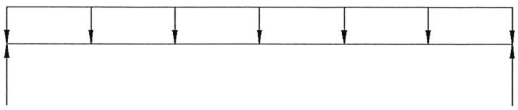
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: UPPER FLOOR FRAMING - DECK ROOF BM — B4

PARAMETERS:

L = 13 FT
W = 0.28 KLF
P = - K



ANALYSIS:

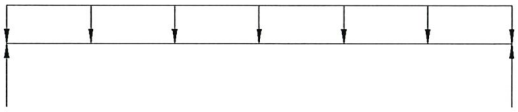
R_{MAX} =	1.8 K	V_D =	- K	< V_{ALL} =	5.4 K	✓	ADEQUATE
M_{MAX} =	5.9 K-FT	< M_{ALL} =	7.0 K-FT			✓	ADEQUATE
Δ_{TL} =	0.27 IN.	L/	577	< L/240		✓	ADEQUATE

4x12 DF#2

BEAM DESCRIPTION: UPPER FLOOR FRAMING - TYP HDR — B5

PARAMETERS:

L = 4 FT
W = 0.79 KLF
P = - K



ANALYSIS:

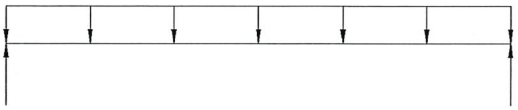
R_{MAX} =	1.6 K	V_D =	- K	< V_{ALL} =	3.9 K	✓	ADEQUATE
M_{MAX} =	1.6 K-FT	< M_{ALL} =	4.5 K-FT			✓	ADEQUATE
Δ_{TL} =	0.01 IN.	L/	1000+	< L/240		✓	ADEQUATE

4x10 DF#2

BEAM DESCRIPTION: NOT USED — B6

PARAMETERS:

L =
W =
P =



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

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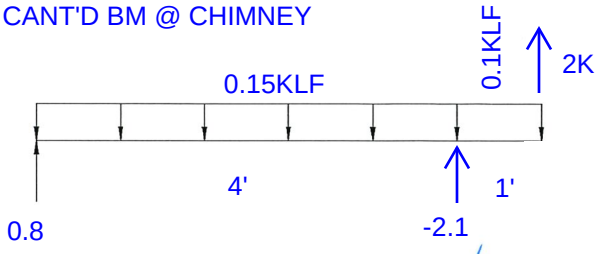
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: MAIN FLOOR FRAMING- CANT'D BM @ CHIMNEY B7

PARAMETERS:

L = 5 FT
W = → KLF
P = - K



ANALYSIS:

R_{MAX} =	2.1 K	V_D =	- K	< V_{ALL} =	7.9 K	✓	ADEQUATE
M_{MAX} =	2.0 K-FT	< M_{ALL} =	17.9 K-FT			✓	ADEQUATE
Δ_{TL} =	0.005 IN.	L/	1000+	< L/240		✓	ADEQUATE

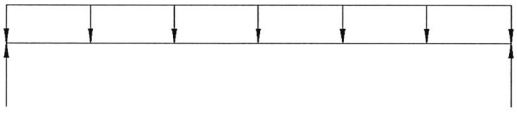
(2)1 3/4"x11 7/8" LVL

BEAM DESCRIPTION: UPPER FLOOR FRAMING - COV'D DECK BM @ WALL ABOVE (SIDE TO SIDE) B8 (CANT'D)

PARAMETERS:

L = 24 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

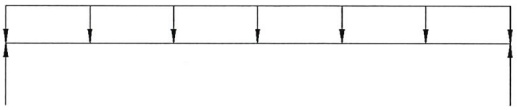
5½" x 24" GLB

BEAM DESCRIPTION: UPPER FLOOR FRAMING - KITCHEN SLIDER HDR B9

PARAMETERS:

L = 15 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

5½" x 16½" GLB

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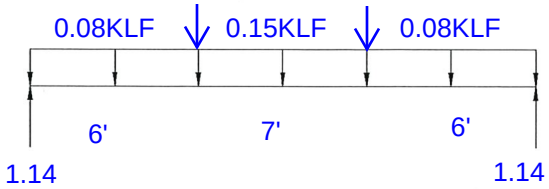
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: MAIN FLOOR FRAMING - BM @ F.P. FRAMEOUT

B10

PARAMETERS:

L = 19 FT
W = → KLF
P = 0.3 K



ANALYSIS:

R_{MAX} =	1.14 K	V_D =		K	< V_{ALL} = 7.9 K	✓ ADEQUATE
M_{MAX} =	6.0 K-FT	< M_{ALL} =	17.9	K-FT		✓ ADEQUATE
Δ_{TL} =	0.4 IN.	L/	570	< L/240		✓ ADEQUATE

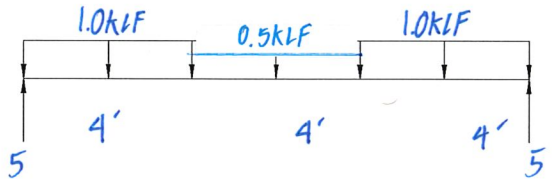
(2)1 3/4"x11 7/8" LVL

BEAM DESCRIPTION: UPPER FLOOR FRAMING - NOOK / HALL BM

B11

PARAMETERS:

L = 12 FT
W = → KLF
P = - K



ANALYSIS:

R_{MAX} =	5 K	V_D =	-	K	< V_{ALL} = 11.1 K	✓ ADEQUATE
M_{MAX} =	13 K-FT	< M_{ALL} =	37.8	K-FT		✓ ADEQUATE
Δ_{TL} =	0.11 IN.	L/	1000+	< L/240		✓ ADEQUATE

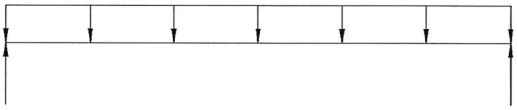
3 1/2"x18" GLB

BEAM DESCRIPTION: UPPER FLOOR FRAMING - REAR HALL HDR (PORTAL)

B12

PARAMETERS:

L = 5 FT
W = 0.13 KLF
P = - K



ANALYSIS:

R_{MAX} =	0.3 K	V_D =	-	K	< V_{ALL} = 4.7 K	☐ ADEQUATE
M_{MAX} =	0.4 K-FT	< M_{ALL} =	6.1	K-FT		☐ ADEQUATE
Δ_{TL} =	0.003 IN.	L/	1000+	< L/240		☐ ADEQUATE

4x12 DF#2

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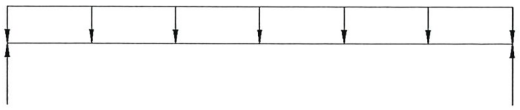
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: UPPER FLOOR FRAMING - HALL SLIDER HDR — B13

PARAMETERS:

L = 10 FT
W = .13 KLF
P = - K



ANALYSIS:

R_{MAX} =	6.7 K	V_D =	- K	< V_{ALL} =	3.9 K	✓	ADEQUATE
M_{MAX} =	1.6 K-FT	< M_{ALL} =	4.5 K-FT			✓	ADEQUATE
Δ_{TL} =	0.08 IN.	L/	1000+	< L/240		✓	ADEQUATE

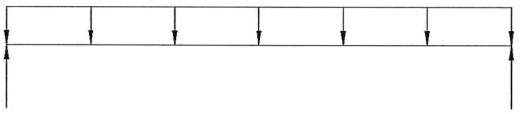
4x10 DF#2

BEAM DESCRIPTION: UPPER FLOOR FRAMING - GARAGE BM @ WALL ABOVE (CANT'D) — B14

PARAMETERS:

L = 25.5 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

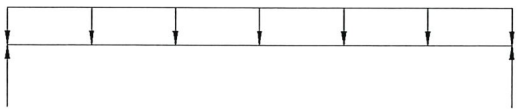
(4) 1 3/4" x 18" LVL

BEAM DESCRIPTION: UPPER FLOOR FRAMING - GARAGE HDR — B15

PARAMETERS:

L = 16 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

3 1/2" x 16 1/2" GLB

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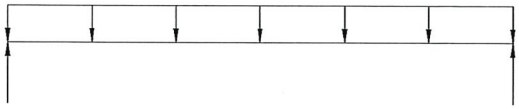
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: VPPER FLOOR FRAMING - TYP INT. BRG

B16

PARAMETERS:

L = 4 FT
W = 1.0 KLF
P = - K



ANALYSIS:

R_{MAX} =	2.0 K	V_D =	- K	< V_{ALL} =	3.9 K	✓	ADEQUATE
M_{MAX} =	2.0 K-FT	< M_{ALL} =	4.5 K-FT			✓	ADEQUATE
Δ_{TL} =	0.016 IN.	L/	1000+	< L/240		✓	ADEQUATE

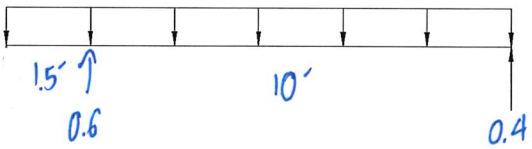
4x10 DF#2

BEAM DESCRIPTION: MAIN FLOOR FRAMING - DECK JOISTS

B17

PARAMETERS:

L = 11.5 FT
W = 0.09 KLF
P = - K



ANALYSIS:

R_{MAX} =	0.6 K	V_D =	- K	< V_{ALL} =	1.6 K	✓	ADEQUATE
M_{MAX} =	1.4 K-FT	< M_{ALL} =	1.6 K-FT			✓	ADEQUATE
Δ_{TL} =	0.18 IN.	L/	666	< L/240		✓	ADEQUATE

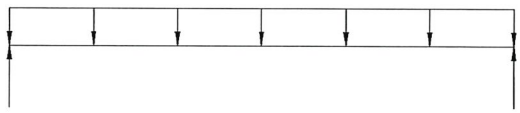
P.T. 2x10 #2 @16" O.C.

BEAM DESCRIPTION: MAIN FLOOR FRAMING - DECK BM

B18

PARAMETERS:

L = 6 FT
W = 0.5 KLF
P = - K



ANALYSIS:

R_{MAX} =	1.5 K	V_D =	- K	< V_{ALL} =	3.8 K	✓	ADEQUATE
M_{MAX} =	2.3 K-FT	< M_{ALL} =	4.0 K-FT			✓	ADEQUATE
Δ_{TL} =	0.05 IN.	L/	1000+	< L/240		✓	ADEQUATE

P.T. 4x10 #2

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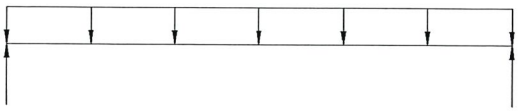
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: MAIN FLOOR FRAMING - TYP CRAWL BM @ BRG — B19

PARAMETERS:

L = 5 FT
W = 1.5 KLF
P = - K



ANALYSIS:

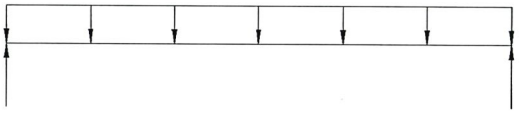
R_{MAX} =	3.8 K	V_D =	- K	< V_{ALL} =	4.5 K	✓	ADEQUATE
M_{MAX} =	4.7 K-FT	< M_{ALL} =	5.2 K-FT			✓	ADEQUATE
Δ_{TL} =	0.06 IN.	L/	1000	< L/240		✓	ADEQUATE

4x10 DF#2

BEAM DESCRIPTION: MAIN FLOOR FRAMING - TYP CRAWL BM — B20

PARAMETERS:

L = 6.5 FT
W = 0.75 KLF
P = - K



ANALYSIS:

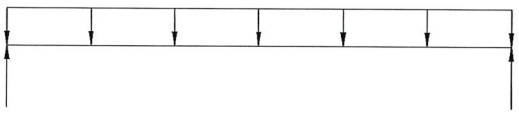
R_{MAX} =	2.4 K	V_D =	- K	< V_{ALL} =	3.9 K	✓	ADEQUATE
M_{MAX} =	3.96 K-FT	< M_{ALL} =	4.5 K-FT			✓	ADEQUATE
Δ_{TL} =	0.08 IN.	L/	975	< L/240		✓	ADEQUATE

4x10 DF#2

BEAM DESCRIPTION: MAIN FLOOR FRAMING - FLUSH BM @ DECK CANT. — B21

PARAMETERS:

L = 10 FT
W = 0.15 KLF
P = - K



ANALYSIS:

R_{MAX} =	0.75 K	V_D =	- K	< V_{ALL} =	3.2 K	✓	ADEQUATE
M_{MAX} =	1.9 K-FT	< M_{ALL} =	3.2 K-FT			✓	ADEQUATE
Δ_{TL} =	0.12 IN.	L/	1000	< L/240		✓	ADEQUATE

P.T.(2)2x10 #2

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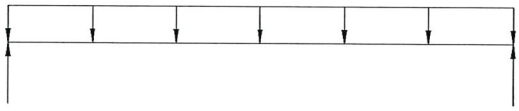
BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION: MAIN FLOOR FRAMING - DROPPED BM @ DECK CANT. B22

PARAMETERS:

L = 10 FT
W = 0.28 KLF
P = - K



ANALYSIS:

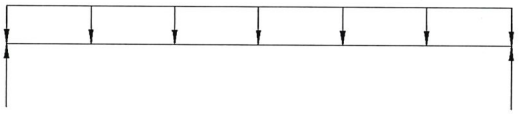
R_{MAX} =	1.4 K	V_D =	- K	< V_{ALL} =	3.9 K	☑	ADEQUATE
M_{MAX} =	3.5 K-FT	< M_{ALL} =	4.5 K-FT			☑	ADEQUATE
Δ_{TL} =	0.19 IN.	L/	630	< L/240		☑	ADEQUATE

P.T. 4x10 #2

BEAM DESCRIPTION:

PARAMETERS:

L = FT
W = KLF
P = K



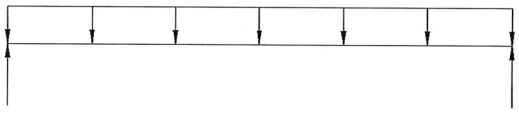
ANALYSIS:

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

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

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

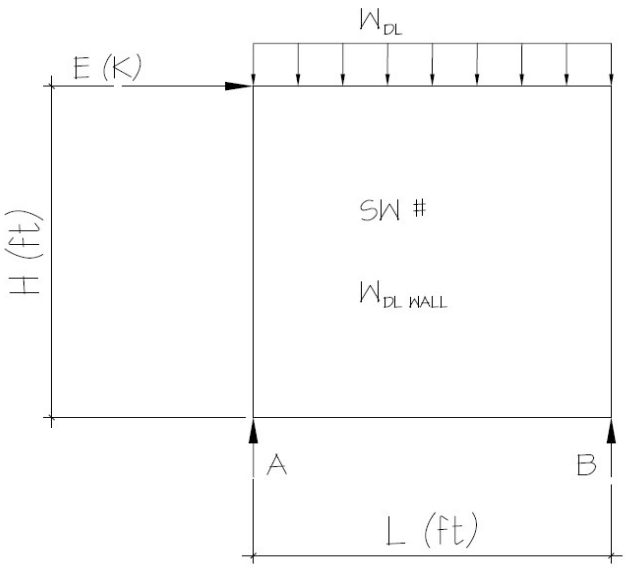
PROJECT NAME: JAYMARC
6515 SE 30TH
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 09-APR-21

OVERSTRENGTH CALCULATIONS

WALL DESCRIPTION/SW #: 109

PARAMETERS:

L =	16.3	FT
H =	10.0	FT
E =	0.65	K
W_{DLWALL} =	0.10	KLF
W_{DL} =	0.000	KLF
Ω_0 =	2.5	(ASCE TABLE 12.2.1 FOOTNOTE G)
SDS =	1.124	



ANALYSIS:

$E_{MH} = \Omega_0 * E$ =	1.63 K	$E_V = 0.2*SDS*DL$ =	0.367 K
$E_M = E_{MH} + E_V$		$E_M = E_{MH} + E_V$ =	1.992 K
$E_M = E_{MH} - E_V$		$E_M = E_{MH} - E_V$ =	1.258 K

E_M (MAX) = $\sum M_A = 0$ =	1.99(10.0) + 0.1(16.33)(8.165) - R_B(16.33)	R_B =	0.8DL + 1.2E
		R_A =	0.8DL - 1.2E
E_M (MIN) = $\sum M_A = 0$ =	1.26(10.0) + 0.1(16.33)(8.165) - R_B(16.33)	R_B =	0.8DL + 0.8E
		R_A =	0.8DL - 0.8E

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

MULHERN+KULP
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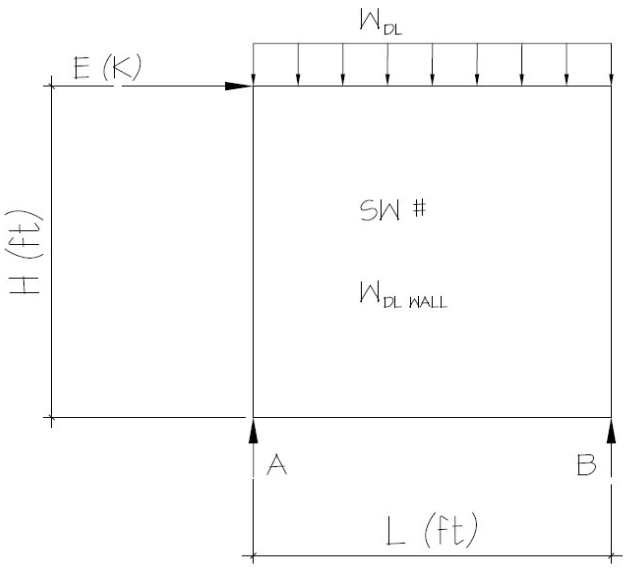
PROJECT NAME: JAYMARC
6515 SE 30TH
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 09-APR-21

OVERSTRENGTH CALCULATIONS

WALL DESCRIPTION/SW #: 201

PARAMETERS:

L =	14.4	FT
H =	9.0	FT
E =	2.85	K
W_{DLWALL} =	0.10	KLF
W_{DL} =	0.035	KLF
Ω_0 =	2.5	(ASCE TABLE 12.2.1 FOOTNOTE G)
SDS =	1.124	



ANALYSIS:

$E_{MH} = \Omega_0 * E$ =	7.13 K	$E_V = 0.2*SDS*DL$ =	0.437 K
$E_M = E_{MH} + E_V$		$E_M = E_{MH} + E_V$ =	7.562 K
$E_M = E_{MH} - E_V$		$E_M = E_{MH} - E_V$ =	6.688 K

E_M (MAX) $= \sum M_A = 0$ =	7.56(9.0) + 0.135(14.4)(7.2) - R_B(14.4)	R_B =	1.0DL + 4.7E
		R_A =	1.0DL - 4.7E
E_M (MIN) $= \sum M_A = 0$ =	6.69(9.0) + 0.135(14.4)(7.2) - R_B(14.4)	R_B =	1.0DL + 4.2E
		R_A =	1.0DL - 4.2E

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

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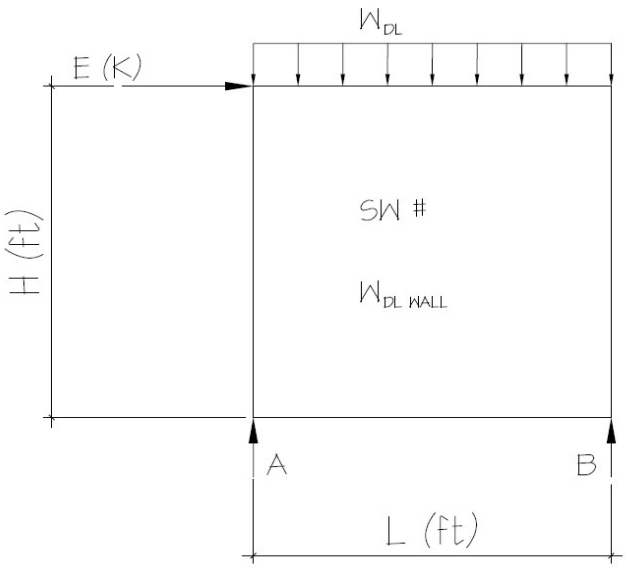
PROJECT NAME: JAYMARC
6515 SE 30TH
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 09-APR-21

OVERSTRENGTH CALCULATIONS

WALL DESCRIPTION/SW #: 202

PARAMETERS:

L =	14.0	FT
H =	9.0	FT
E =	2.25	K
W_{DLWALL} =	0.10	KLF
W_{DL} =	0.170	KLF
Ω_0 =	2.5	(ASCE TABLE 12.2.1 FOOTNOTE G)
SDS =	1.124	



ANALYSIS:

$E_{MH} = \Omega_0 * E$ =	5.63 K	$E_V = 0.2*SDS*DL$ =	0.850 K
$E_M = E_{MH} + E_V$		$E_M = E_{MH} + E_V$ =	6.475 K
$E_M = E_{MH} - E_V$		$E_M = E_{MH} - E_V$ =	4.775 K

E_M (MAX) $= \sum M_A = 0$ =	6.47(9.0) + 0.27(14)(7) - R_B(14)	R_B =	1.9DL + 4.2E
		R_A =	1.9DL - 4.2E
E_M (MIN) $= \sum M_A = 0$ =	4.78(9.0) + 0.27(14)(7) - R_B(14)	R_B =	1.9DL + 3.1E
		R_A =	1.9DL - 3.1E

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

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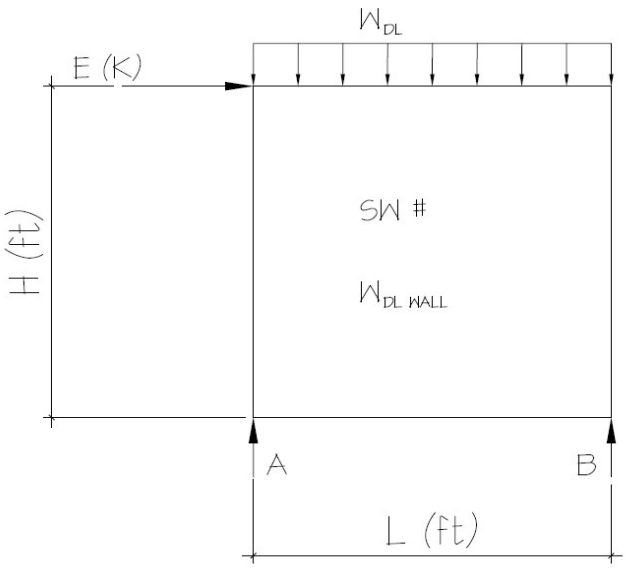
PROJECT NAME: JAYMARC
6515 SE 30TH
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 09-APR-21

OVERSTRENGTH CALCULATIONS

WALL DESCRIPTION/SW #: 207

PARAMETERS:

L =	13.5	FT
H =	9.0	FT
E =	1.25	K
W_{DLWALL} =	0.10	KLF
W_{DL} =	0.210	KLF
Ω_0 =	2.5	(ASCE TABLE 12.2.1 FOOTNOTE G)
SDS =	1.124	



ANALYSIS:

$E_{MH} = \Omega_0 * E$ =	3.13 K	$E_V = 0.2*SDS*DL$ =	0.941 K
$E_M = E_{MH} + E_V$		$E_M = E_{MH} + E_V$ =	4.066 K
$E_M = E_{MH} - E_V$		$E_M = E_{MH} - E_V$ =	2.184 K

E_M (MAX) $= \sum M_A = 0$ =	4.07(9.0) + 0.31(13.5)(6.75) - R_B(13.5)	R_B =	2.1DL + 2.7E
		R_A =	2.1DL - 2.7E
E_M (MIN) $= \sum M_A = 0$ =	2.18(9.0) + 0.31(13.5)(6.75) - R_B(13.5)	R_B =	2.1DL + 1.5E
		R_A =	2.1DL - 1.5E

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

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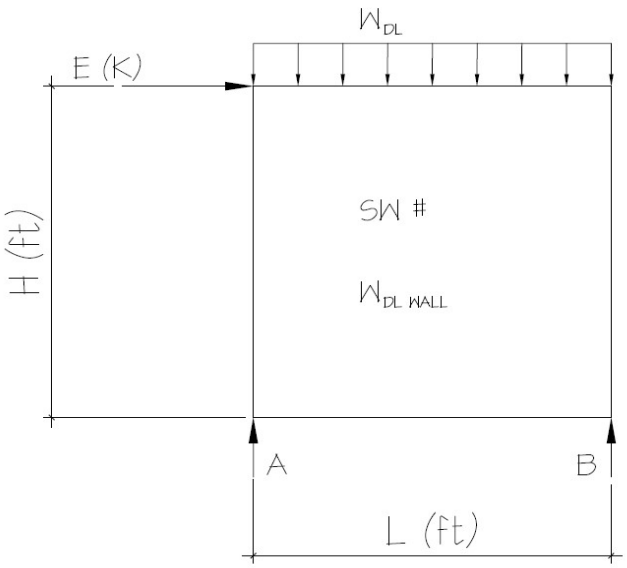
PROJECT NAME: JAYMARC
6515 SE 30TH
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 09-APR-21

OVERSTRENGTH CALCULATIONS

WALL DESCRIPTION/SW #: 208

PARAMETERS:

L =	21.0	FT
H =	9.0	FT
E =	3.80	K
W_{DLWALL} =	0.10	KLF
W_{DL} =	0.145	KLF
Ω_0 =	2.5	(ASCE TABLE 12.2.1 FOOTNOTE G)
SDS =	1.124	



ANALYSIS:

$E_{MH} = \Omega_0 * E$ =	9.50 K	$E_V = 0.2*SDS*DL$ =	1.157 K
$E_M = E_{MH} + E_V$		$E_M = E_{MH} + E_V$ =	10.657 K
$E_M = E_{MH} - E_V$		$E_M = E_{MH} - E_V$ =	8.343 K

E_M (MAX) $= \sum M_A = 0$ =	10.66(9.0) + 0.245(21)(10.5) - R_B(21)	R_B =	2.6DL + 4.6E
		R_A =	2.6DL - 4.6E
E_M (MIN) $= \sum M_A = 0$ =	8.34(9.0) + 0.245(21)(10.5) - R_B(21)	R_B =	2.6DL + 3.6E
		R_A =	2.6DL - 3.6E

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

6515 SE 30th St
JayMarc Homes
RJD
154-21007
02-03-22

Wood Beam

File: beam calcs with overstrength.ec6

Lic. # : KW-06004787
MULHERN & KULP STRUCTURAL ENGINEERING INC

DESCRIPTION: BEAM B8

CODE REFERENCES

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

Material Properties

Analysis Method : Allowable Stress Design

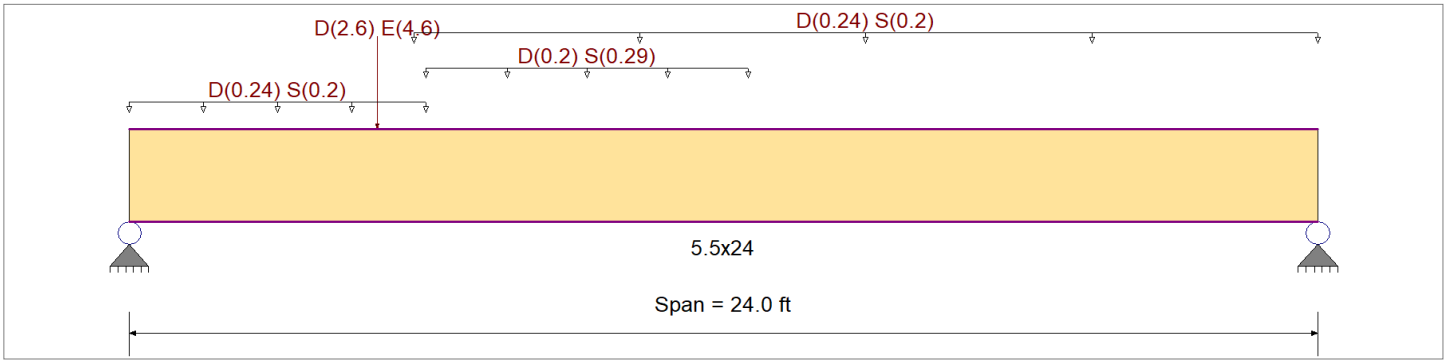
Wood Species : DF/DF
Wood Grade : 24F-V4

Fb +	2,400.0 psi
Fb -	1,850.0 psi
Fc - Prll	1,650.0 psi
Fc - Perp	650.0 psi
Fv	265.0 psi
Ft	1,100.0 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

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



Applied Loads

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

Beam self weight calculated and added to loads
Load for Span Number 1
Uniform Load : D = 0.240, S = 0.20 k/ft, Extent = 0.0 -->> 6.0 ft, Tributary Width = 1.0 ft
Uniform Load : D = 0.20, S = 0.290 k/ft, Extent = 6.0 -->> 12.50 ft, Tributary Width = 1.0 ft
Point Load : D = 2.60, E = 4.60 k @ 5.0 ft
Uniform Load : D = 0.240, S = 0.20 k/ft, Extent = 5.750 -->> 24.0 ft, Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.509 : 1	Maximum Shear Stress Ratio	=	0.329 : 1
Section used for this span		5.5x24	Section used for this span		5.5x24
fb: Actual	=	1,283.78 psi	fv: Actual	=	100.22 psi
Fb: Allowable	=	2,523.13 psi	Fv: Allowable	=	304.75 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	10.423 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	0.208 in	Ratio =	1386 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.543 in	Ratio =	530 >=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	0.5434	11.562		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	11.286	7.523
Overall MINimum	3.642	0.958
D Only	6.126	4.281
+D+L	6.126	4.281
+D+Lr	6.126	4.281
+D+S	9.722	7.419

6515 SE 30th St
JayMarc Homes
RJD
154-21007
02-03-22

Wood Beam

File: beam calcs with overstrength.ec6

Lic. # : KW-06004787
MULHERN & KULP STRUCTURAL ENGINEERING INC

DESCRIPTION: BEAM B8

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
+D+0.750Lr+0.750L	6.126	4.281
+D+0.750L+0.750S	8.823	6.635
+D+0.60W	6.126	4.281
+1.126D+0.70E	9.447	5.491
+D+0.750Lr+0.750L+0.450W	6.126	4.281
+D+0.750L+0.750S+0.450W	8.823	6.635
+1.090D+0.750L+0.750S+0.5250E	11.286	7.523
+0.60D+0.60W	3.676	2.568
+0.470D+0.70E	5.428	2.683
D Only	6.126	4.281
S Only	3.596	3.139
E Only	3.642	0.958
H Only		

6515 SE 30th St
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154-21007
02-03-22

Wood Beam

File: beam calcs with overstrength.ec6

Lic. # : KW-06004787
MULHERN & KULP STRUCTURAL ENGINEERING INC

DESCRIPTION: BEAM B9

CODE REFERENCES

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

Material Properties

Analysis Method : Allowable Stress Design

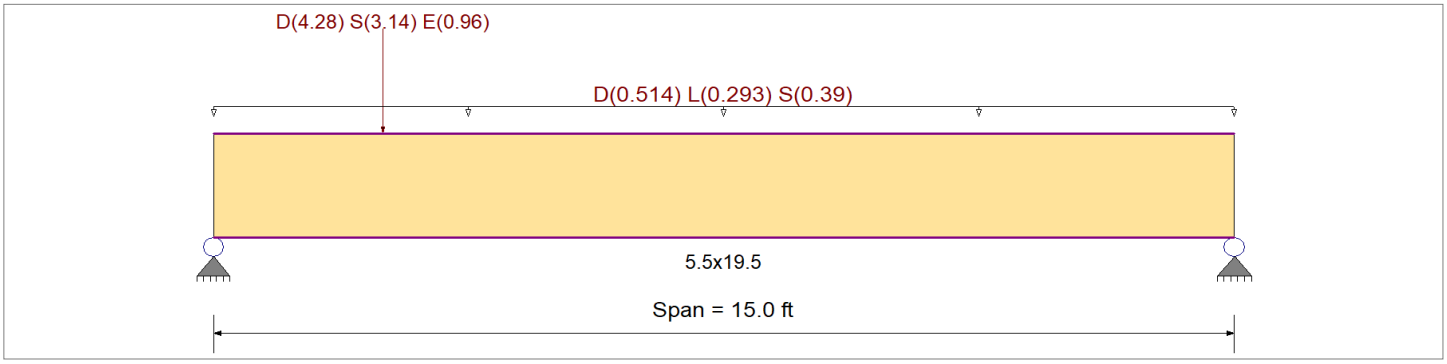
Wood Species : DF/DF
Wood Grade : 24F-V4

Fb +	2,400.0 psi
Fb -	1,850.0 psi
Fc - Prll	1,650.0 psi
Fc - Perp	650.0 psi
Fv	265.0 psi
Ft	1,100.0 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

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



Applied Loads

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

Beam self weight calculated and added to loads
Point Load : D = 4.280, S = 3.140, E = 0.960 k @ 2.50 ft, (FROM B8)
Uniform Load : D = 0.5140, L = 0.2930, S = 0.390 , Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.490 : 1	Maximum Shear Stress Ratio	=	0.539 : 1
Section used for this span		5.5x19.5	Section used for this span		5.5x19.5
fb: Actual	=	1,321.77 psi	fv: Actual	=	164.11 psi
Fb: Allowable	=	2,700.04 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	=	6.460 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	0.103 in	Ratio =	1739 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.261 in	Ratio =	690 >=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
+D+0.750L+0.750S+0.450W	1	0.2608	7.281		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	14.504	9.488
Overall MINimum	0.800	0.160
D Only	7.596	4.743
+D+L	9.794	6.940
+D+Lr	7.596	4.743
+D+S	13.138	8.191
+D+0.750Lr+0.750L	9.244	6.391
+D+0.750L+0.750S	13.400	8.977
+D+0.60W	7.596	4.743

6515 SE 30th St
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154-21007
02-03-22

Wood Beam

File: beam calcs with overstrength.ec6

Lic. # : KW-06004787

MULHERN & KULP STRUCTURAL ENGINEERING INC

DESCRIPTION: BEAM B9

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
+1.126D+0.70E	9.113	5.452
+D+0.750Lr+0.750L+0.450W	9.244	6.391
+D+0.750L+0.750S+0.450W	13.400	8.977
+1.090D+0.750L+0.750S+0.5250E	14.504	9.488
+0.60D+0.60W	4.558	2.846
+0.470D+0.70E	4.130	2.341
D Only	7.596	4.743
L Only	2.198	2.198
S Only	5.542	3.448
E Only	0.800	0.160
H Only		

6515 SE 30th St
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154-21007
02-03-22

Wood Beam

File: beam calcs with overstrength.ec6

Lic. # : KW-06004787
MULHERN & KULP STRUCTURAL ENGINEERING INC

DESCRIPTION: BEAM B6

CODE REFERENCES

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

Material Properties

Analysis Method : Allowable Stress Design

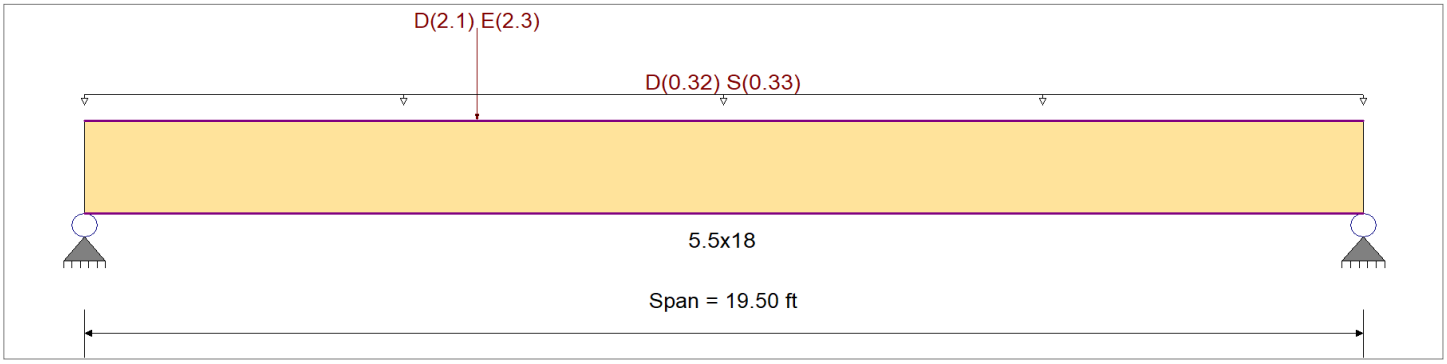
Wood Species : DF/DF
Wood Grade : 24F-V4

Fb +	2,400.0 psi
Fb -	1,850.0 psi
Fc - Prll	1,650.0 psi
Fc - Perp	650.0 psi
Fv	265.0 psi
Ft	1,100.0 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

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



Applied Loads

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

Beam self weight calculated and added to loads
Point Load : D = 2.10, E = 2.30 k @ 6.0 ft
Uniform Load : D = 0.320, S = 0.330 , Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.587 : 1	Maximum Shear Stress Ratio	=	0.348 : 1
Section used for this span		5.5x18	Section used for this span		5.5x18
fb: Actual	=	1,556.59 psi	fv: Actual	=	106.02 psi
Fb: Allowable	=	2,651.26 psi	Fv: Allowable	=	304.75 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	8.754 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	0.224 in	Ratio =	1042 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.551 in	Ratio =	424 >=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
+D+S	1	0.5514	9.608		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	8.463	7.193
Overall MINimum	1.592	0.708
D Only	4.783	3.975
+D+L	4.783	3.975
+D+Lr	4.783	3.975
+D+S	8.001	7.193
+D+0.750Lr+0.750L	4.783	3.975
+D+0.750L+0.750S	7.196	6.388
+D+0.60W	4.783	3.975

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JayMarc Homes
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154-21007
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Wood Beam

File: beam calcs with overstrength.ec6

Lic. # : KW-06004787

MULHERN & KULP STRUCTURAL ENGINEERING INC

DESCRIPTION: BEAM B6

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
+1.126D+0.70E	6.500	4.972
+D+0.750Lr+0.750L+0.450W	4.783	3.975
+D+0.750L+0.750S+0.450W	7.196	6.388
+1.090D+0.750L+0.750S+0.5250E	8.463	7.118
+0.60D+0.60W	2.870	2.385
+0.470D+0.70E	3.363	2.364
D Only	4.783	3.975
S Only	3.218	3.218
E Only	1.592	0.708
H Only		

6515 SE 30th St
JayMarc Homes
RJD
154-21007
02-03-22

Wood Beam

File: beam calcs with overstrength.ec6

Lic. # : KW-06004787
MULHERN & KULP STRUCTURAL ENGINEERING INC

DESCRIPTION: BEAM B14

CODE REFERENCES

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

Material Properties

Analysis Method : Allowable Stress Design

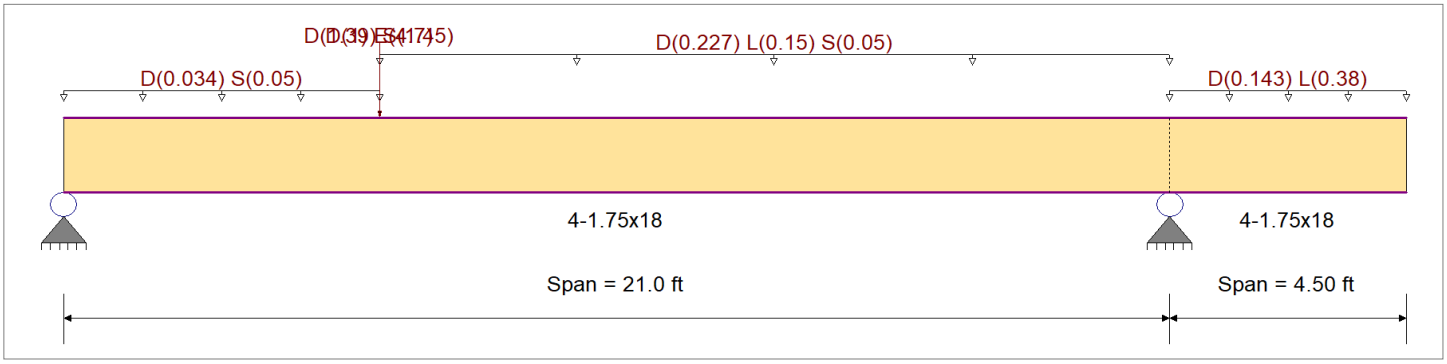
Wood Species : iLevel Truss Joist
Wood Grade : MicroLam LVL 2.0 E

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

Fb +	2600 psi
Fb -	2600 psi
Fc - Prll	2510 psi
Fc - Perp	750 psi
Fv	285 psi
Ft	1555 psi

E : Modulus of Elasticity

Ebend- xx	2000 ksi
Eminbend - xx	1016.535 ksi
Density	42.01 pcf



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
- Point Load : D = 1.0, E = 4.70 k @ 6.0 ft
- Uniform Load : D = 0.0340, S = 0.050 k/ft, Extent = 0.0 -->> 6.0 ft, Tributary Width = 1.0 ft
- Uniform Load : D = 0.2270, L = 0.150, S = 0.050 k/ft, Extent = 6.0 -->> 21.0 ft, Tributary Width = 1.0 ft
- Point Load : D = 1.390, S = 1.450 k @ 6.0 ft

Load for Span Number 2
- Uniform Load : D = 0.1430, L = 0.380 , Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.323 : 1	Maximum Shear Stress Ratio	=	0.185 : 1
Section used for this span		4-1.75x18	Section used for this span		4-1.75x18
fb: Actual	=	964.77 psi	fv: Actual	=	84.26 psi
Fb: Allowable	=	2,990.00 psi	Fv: Allowable	=	456.00 psi
Load Combination		+D+0.750L+0.750S, LL Comb Run (L*)	Load Combination		+1.090D+0.750L+0.750S+0.5250E, LL
Location of maximum on span	=	8.564 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	0.180 in	Ratio =	1399 >=360
Max Upward Transient Deflection	-0.104 in	Ratio =	1042 >=360
Max Downward Total Deflection	0.465 in	Ratio =	541 >=300
Max Upward Total Deflection	-0.288 in	Ratio =	374 >=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, L	1	0.4651	10.089		0.0000	0.000
	2	0.0000	10.089	+1.090D+0.750L+0.750S+0.5250E, L	-0.2880	4.500

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	7.239	8.473	
Overall MINimum	3.357	1.343	
D Only	3.397	4.182	

6515 SE 30th St
JayMarc Homes
RJD
154-21007
02-03-22

Wood Beam

File: beam calcs with overstrength.ec6

Lic. # : KW-06004787

MULHERN & KULP STRUCTURAL ENGINEERING INC

DESCRIPTION: BEAM B14

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)	3.214	6.076	
+D+L, LL Comb Run (L*)	4.201	5.629	
+D+L, LL Comb Run (LL)	4.018	7.522	
+D+Lr, LL Comb Run (*L)	3.397	4.182	
+D+Lr, LL Comb Run (L*)	3.397	4.182	
+D+Lr, LL Comb Run (LL)	3.397	4.182	
+D+S	4.958	5.122	
+D+0.750Lr+0.750L, LL Comb Run (*L)	3.260	5.602	
+D+0.750Lr+0.750L, LL Comb Run (L*)	4.000	5.267	
+D+0.750Lr+0.750L, LL Comb Run (LL)	3.863	6.687	
+D+0.750L+0.750S, LL Comb Run (*L)	4.430	6.307	
+D+0.750L+0.750S, LL Comb Run (L*)	5.171	5.972	
+D+0.750L+0.750S, LL Comb Run (LL)	5.033	7.392	
+D+0.60W	3.397	4.182	
+1.126D+0.70E	6.175	5.649	
+D+0.750Lr+0.750L+0.450W, LL Comb R	3.260	5.602	
+D+0.750Lr+0.750L+0.450W, LL Comb R	4.000	5.267	
+D+0.750Lr+0.750L+0.450W, LL Comb R	3.863	6.687	
+D+0.750L+0.750S+0.450W, LL Comb Ru	4.430	6.307	
+D+0.750L+0.750S+0.450W, LL Comb Ru	5.171	5.972	
+D+0.750L+0.750S+0.450W, LL Comb Ru	5.033	7.392	
+1.090D+0.750L+0.750S+0.5250E, LL C	6.499	7.388	
+1.090D+0.750L+0.750S+0.5250E, LL C	7.239	7.053	
+1.090D+0.750L+0.750S+0.5250E, LL C	7.101	8.473	
+0.60D+0.60W	2.038	2.509	
+0.470D+0.70E	3.947	2.906	
D Only	3.397	4.182	
L Only, LL Comb Run (*L)	-0.183	1.893	
L Only, LL Comb Run (L*)	0.804	1.446	
L Only, LL Comb Run (LL)	0.620	3.340	
S Only	1.561	0.939	
E Only	3.357	1.343	
H Only			

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02-03-22

Wood Beam

File: beam calcs with overstrength.ec6

Lic. # : KW-06004787
MULHERN & KULP STRUCTURAL ENGINEERING INC

DESCRIPTION: BEAM B15

CODE REFERENCES

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

Material Properties

Analysis Method : Allowable Stress Design

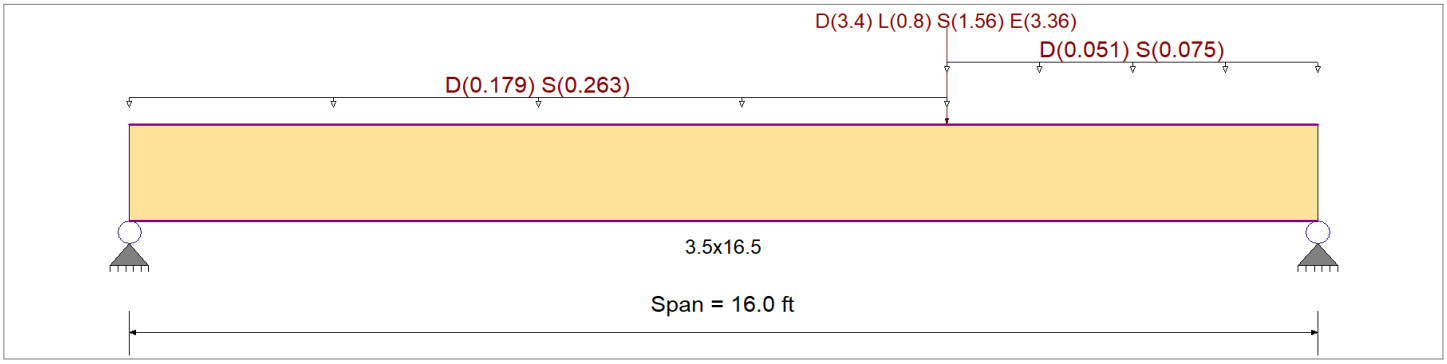
Wood Species : DF/DF
Wood Grade : 24F-V4

Fb +	2,400.0 psi
Fb -	1,850.0 psi
Fc - Prll	1,650.0 psi
Fc - Perp	650.0 psi
Fv	265.0 psi
Ft	1,100.0 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

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



Applied Loads

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

Beam self weight calculated and added to loads
Point Load : D = 3.40, L = 0.80, S = 1.560, E = 3.360 k @ 11.0 ft
Uniform Load : D = 0.1790, S = 0.2630 k/ft, Extent = 0.0 -->> 11.0 ft, Tributary Width = 1.0 ft
Uniform Load : D = 0.0510, S = 0.0750 k/ft, Extent = 11.0 -->> 16.0 ft, Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.735 : 1	Maximum Shear Stress Ratio	=	0.471 : 1
Section used for this span		3.5x16.5	Section used for this span		3.5x16.5
fb: Actual	=	2,027.87 psi	fv: Actual	=	143.56 psi
Fb: Allowable	=	2,760.00 psi	Fv: Allowable	=	304.75 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	10.861 ft	Location of maximum on span	=	14.657 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.220 in	Ratio =	874 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.590 in	Ratio =	325 >=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	0.5897	8.467		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	5.291	7.042
Overall MINimum	1.050	2.310
D Only	2.495	3.330
+D+L	2.745	3.880
+D+Lr	2.495	3.330
+D+S	4.939	5.713
+D+0.750Lr+0.750L	2.682	3.742
+D+0.750L+0.750S	4.516	5.530

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154-21007
02-03-22

Wood Beam

File: beam calcs with overstrength.ec6

Lic. # : KW-06004787
MULHERN & KULP STRUCTURAL ENGINEERING INC

DESCRIPTION: BEAM B15

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
+D+0.60W	2.495	3.330
+1.126D+0.70E	3.544	5.366
+D+0.750Lr+0.750L+0.450W	2.682	3.742
+D+0.750L+0.750S+0.450W	4.516	5.530
+1.090D+0.750L+0.750S+0.5250E	5.291	7.042
+0.60D+0.60W	1.497	1.998
+0.470D+0.70E	1.907	3.182
D Only	2.495	3.330
L Only	0.250	0.550
S Only	2.445	2.383
E Only	1.050	2.310
H Only		

JayMarc Homes

6515 SE 30th St

Mercer Island, WA

Shear Wall Calculations - Wind

Reviewed By: NJM

March 26, 2021

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

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RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: 6515 SE 30TH ST
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-MAR-21

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}	1.00	
GUST FACTOR, G	0.85	
GROUND ELEV. ABOVE SEA LEVEL [FT]	0	
DESIGN TYPE	ASD	0.60

ROOF GEOMETRY:

TRANS. ROOF PITCH	6.0	:12
LONG. ROOF PITCH	15.0	:12
MEAN ROOF HEIGHT, H	26.50	FT

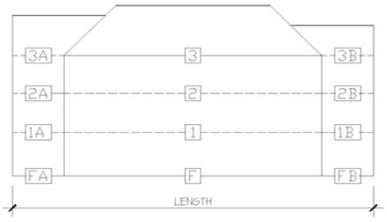
BUILDING GEOMETRY:

LENGTH	72	FT
WIDTH	44	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	365	0	sq ft
		Wall surface	0	372	0	sq ft
1	10 FT	Roof Surface	0	6	0	sq ft
		Wall surface	0	695	0	sq ft
FND		Roof Surface	0	0	0	sq ft
		Wall surface	0	0	0	sq ft



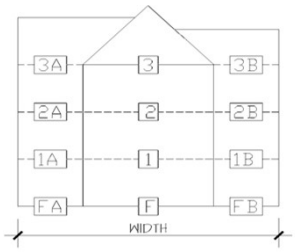
TRIBUTARY DESIGN LOADS: (0.6W)

	SECTION A	SECTION O	SECTION B	
Story Shear	0.00	7.93	0.00	kips
Total Shear	0.00	7.93	0.00	kips
		7.93		kips
Story Shear	0.00	8.98	0.00	kips
Total Shear	0.00	16.91	0.00	kips
		16.91		kips
Story Shear	0.00	0.00	0.00	kips
Total Shear	0.00	16.91	0.00	kips
		16.91		kips

LONGITUDINAL DIRECTION (PARALLEL TO MAIN RIDGE LINE)

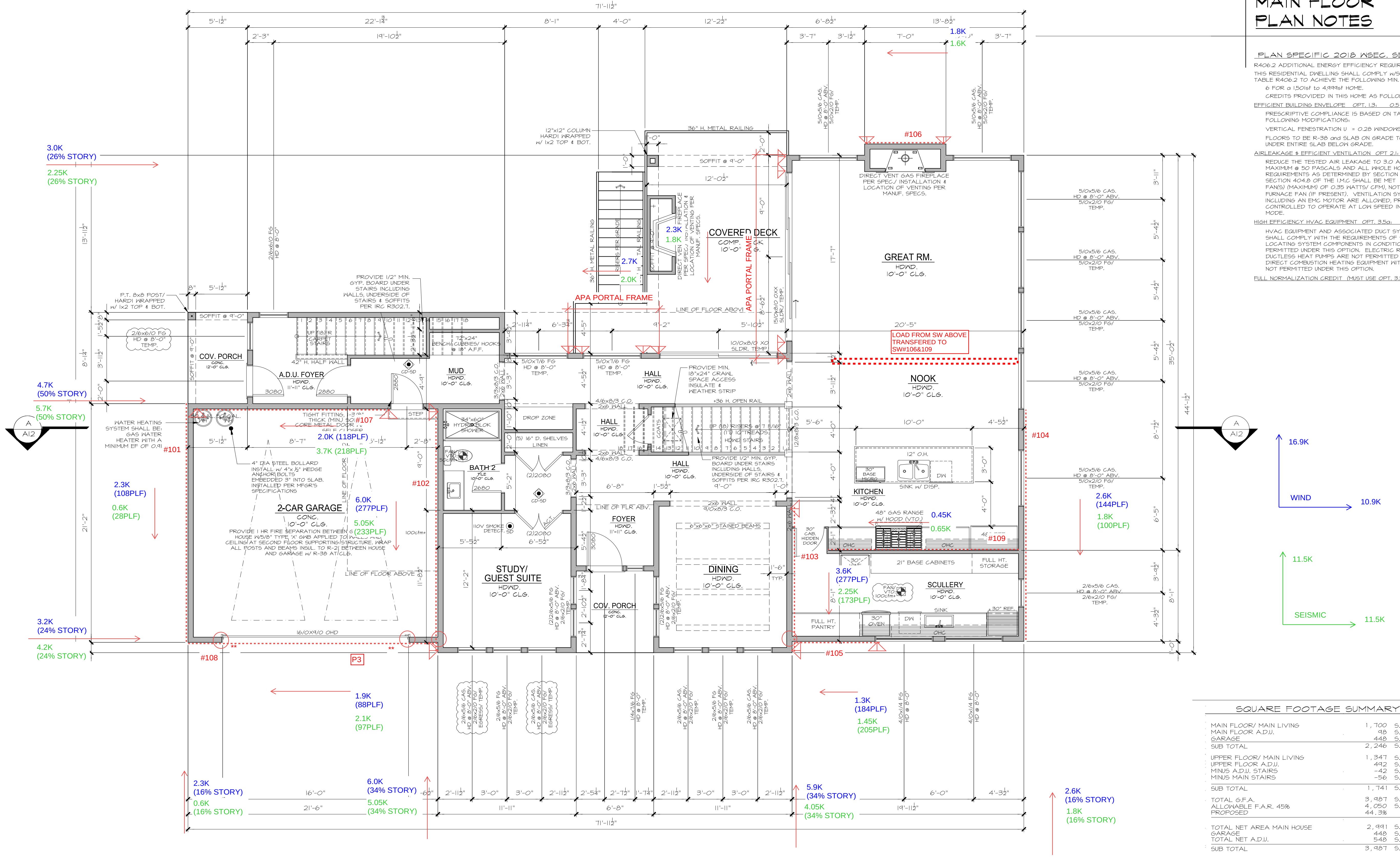
TRIBUTARY DESIGN AREAS:

DIAPHRAGM LEVEL	FLOOR-TO-FLOOR HEIGHT		SECTION A	SECTION O	SECTION B	
2	9 FT	Roof Surface	0	140	0	sq ft
		Wall surface	0	330	0	sq ft
1	10 FT	Roof Surface	0	0	0	sq ft
		Wall surface	0	465	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	5.53	0.00	kips
Total Shear	0.00	5.53	0.00	kips
		5.53		kips
Story Shear	0.00	5.35	0.00	kips
Total Shear	0.00	10.87	0.00	kips
		10.87		kips
Story Shear	0.00	0.00	0.00	kips
Total Shear	0.00	10.87	0.00	kips
		10.87		kips



MAIN FLOOR PLAN

1/4" = 1'-0"

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:

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

CREDITS PROVIDED IN THIS HOME AS FOLLOWS:

EFFICIENT BUILDING ENVELOPE OPT. 1.3: 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.

AIRLEAKAGE $ EFFICIENT VENTILATION OPT 2.1: 0.5 CREDITS

REDUCE THE TESTED AIR LEAKAGE TO 3.0 AIR CHANGES PER HOUR MAXIMUM @ 50 PASCALS AND ALL WHOLE HOUSE VENTILATION REQUIREMENTS AS DETERMINED BY SECTION M1507.3 OF THE I.R.C. OR SECTION 404.8 OF THE I.M.C SHALL BE MET WITH A HIGH EFFICIENCY FAN(S) (MAXIMUM) OF 0.35 WATTS/ CFM), NOT INTERLOCKED WITH THE FURNACE FAN (IF PRESENT). VENTILATION SYSTEMS USING A FURNACE INCLUDING AN EMC MOTOR ARE ALLOWED, PROVIDED THAT THEY ARE CONTROLLED TO OPERATE AT LOW SPEED IN THE VENTILATION ONLY MODE.

HIGH EFFICIENCY HVAC EQUIPMENT OPT. 3.5a: 1.5 CREDITS

HVAC EQUIPMENT AND ASSOCIATED DUCT SYSTEM(S) INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF SECTION R403.3.7. LOCATING SYSTEM COMPONENTS IN CONDITIONED CRAWL SPACE IS NOT PERMITTED UNDER THIS OPTION. ELECTRIC RESISTANCE HEAT AND DUCTLESS HEAT PUMPS ARE NOT PERMITTED UNDER THIS OPTION. DIRECT COMBUSTION HEATING EQUIPMENT WITH AFUE LESS THAN 80% IS NOT PERMITTED UNDER THIS OPTION.

FULL NORMALIZATION CREDIT (MUST USE OPT. 3.5a: 1.0 CREDITS

SQUARE FOOTAGE SUMMARY

MAIN FLOOR/ MAIN LIVING	1,700	S.F.
MAIN FLOOR A.D.U.	98	S.F.
GARAGE	448	S.F.
SUB TOTAL	2,246	S.F.
UPPER FLOOR/ MAIN LIVING	1,347	S.F.
UPPER FLOOR A.D.U.	492	S.F.
MINUS A.D.U. STAIRS	-42	S.F.
MINUS MAIN STAIRS	-56	S.F.
SUB TOTAL	1,741	S.F.
TOTAL G.F.A.	3,987	S.F.
ALLOWABLE F.A.R. 45%	4,050	S.F.
PROPOSED	44.3%	
TOTAL NET AREA MAIN HOUSE	2,991	S.F.
GARAGE	448	S.F.
TOTAL NET A.D.U.	548	S.F.
SUB TOTAL	3,987	S.F.
COV'D PATIO	259	S.F.
COV'D PORCH	40	S.F.
OVERALL WIDTH	71'-11 ½"	
OVERALL DEPTH	44'-1 1/2"	

Updated : 03/09/2018

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

Issue | Issue Date By | Description

6515 SE 30th St.
Mercer Island, WA.

Job Number: --

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

04.15.21
Submittal Date

Sheet Title/Description

JAYMARC HOMES
Design Firm

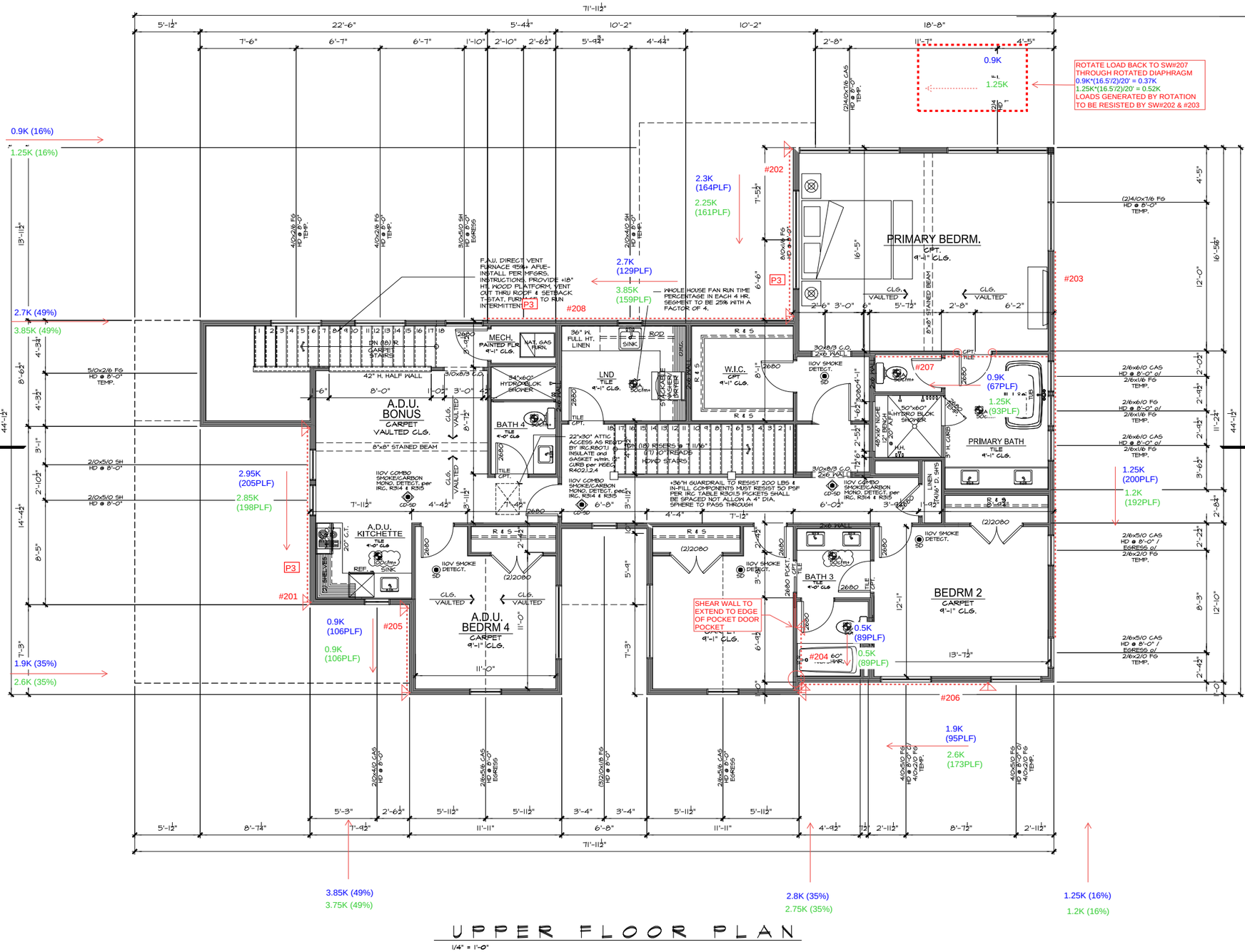
R.R.
Drawn by:

R.R./ S.K.
Checked by:

Primary Scale

Sheet Title/Description

A5
of: .



UPPER FLOOR PLAN

1/4" = 1'-0"

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:

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

CREDITS PROVIDED IN THIS HOME AS FOLLOWS:

EFFICIENT BUILDING ENVELOPE OPT. 1.3: 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.

AIRLEAKAGE & EFFICIENT VENTILATION OPT 2.1: 0.5 CREDITS

REDUCE THE TESTED AIR LEAKAGE TO 3.0 AIR CHANGES PER HOUR MAXIMUM @ 50 PASCALS AND ALL WHOLE HOUSE VENTILATION REQUIREMENTS AS DETERMINED BY SECTION M1507.3 OF THE I.R.C. OR SECTION 403.8 OF THE I.M.C SHALL BE MET WITH A HIGH EFFICIENCY FAN(S) (MAXIMUM OF 0.35 WATTS/ CFM), NOT INTERLOCKED WITH THE FURNACE FAN (IF PRESENT). VENTILATION SYSTEMS USING A FURNACE INCLUDING AN ERV, HRV MOTOR ARE ALLOWED, PROVIDED THAT THEY ARE CONTROLLED TO OPERATE AT LOW SPEED IN THE VENTILATION ONLY MODE.

HIGH EFFICIENCY HVAC EQUIPMENT OPT. 3.5a: 1.5 CREDITS

HVAC EQUIPMENT AND ASSOCIATED DUCT SYSTEM(S) INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF SECTION R403.3.7. LOCATING SYSTEM COMPONENTS IN CONDITIONED CRAWL SPACE IS NOT PERMITTED UNDER THIS OPTION. ELECTRIC RESISTANCE HEAT AND DUCTLESS HEAT PUMPS ARE NOT PERMITTED UNDER THIS OPTION. DIRECT COMBUSTION HEATING EQUIPMENT WITH AFUE LESS THAN 80% IS NOT PERMITTED UNDER THIS OPTION.

FULL NORMALIZATION CREDIT (MUST USE OPT. 3.5a): 1.0 CREDITS

HIGH EFFICENCY HVAC DISTRIBUTION OPT. 4.2: 1.0 CREDITS

HVAC EQUIPMENT AND ASSOCIATED DUCT SYSTEMS(S) SHALL COMPLY WITH THE REQUIREMENTS OF SECT R403.3.7. LOCATING SYSTEM COMPONENTS IN CONDITIONED CRAWL SPACES IS NOT PERMITTED UNDER THIS OPTION. ELECTRIC RESISTANCE HEAT AND DUCTLESS HEAT PUMPS ARE NOT PERMITTED UNDER THIS OPTION. DIRECT COMBUSTION HEATING EQUIPMENT WITH AFUE LESS THAN 80% IS NOT PERMITTED UNDER THIS OPTION.

EFFICIENT WATER HEATING 5.5: 2.0 CREDITS

WATER HEATING SYSTEMS SHALL INCLUDE ONE OF THE FOLLOWING: ELECTRIC HEAT PUMP WATER HEATER MEETING THE STANDARDS FOR TIER III OF NEEA'S ADVANCED WATER HATING SPECIFICATION. IF ONE WATER HEATER IS SERVING MORE THAN ONE DWELLING UNIT, ALL OF WATER SUPPLY AND RE-CIRCULATION PIPING SHALL BE INSULATED WITH R-8 MINIMUM PIPE INSULATION.

EFFICIENT WATER HEATING 5.6: 2.5 CREDITS

WATER HEATING SYSTEM SHALL INCLUDE ONE OF THE FOLLOWING: ELECTRIC HEAT PUMP WATER HEATER WITH A MIN. OF 2.9 AND UTILIZING A SPLIT SYSTEM CONFIGURATION WITH THE AIR-TO-REFRIGERANT HEAT EXCHANGER LOCATED OUTDOORS. EQUIPMENT SHALL MEET SECTION 4, REQUIREMENTS FOR ALL UNITS, OF THE NEEA STANDARD ADVANCED WATER HEATING SPECIFICATION WITH THE UEF NOTED ABOVE.

P3 UNIT SHEAR:
630PLF/336PLF=1.88
89PLF*1.88 =167PLF
106PLF*1.88=199PLF

P3 UNIT SHEAR:
451PLF/239PLF=1.88
54PLF*1.88=102PLF
106PLF*1.88=199PLF

JAYMARC HOMES
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Mercer Island, WA
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425.266.9100

Issue	Issue Date	By	Description
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6515 SE 30th St.
Mercer Island, WA.

Job Number: --

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

04.15.21
Submittal Date

Sheet Title/Description

JAYMARC HOMES
Design Firm

R.R.
Drawn by:

R.R./ S.K.
Checked by:

Primary Scale

A7
of: .

Sheet Title/Description

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

Project Name: JayMarc Homes
6515 SE 30th St
M&K Project #: 154-21007
Engineer: RJD
Date: 26-Mar-21

Shearwall Design Summary

Shearwall 201: 2nd - Side Exterior Bonus

Shearwall Properties:

Wall height, H	11.5	ft.	Max wall opening ht, H_c	3.5	ft.		
Wall Length, L	14.4	ft.	Qualifying Wall Length, L	9.3	ft.	Shearwall Assembly	P3

Capacity Evaluation:

Total Shear load on Wall		Allowable Shearwall Capacity
2950 lbs	<	5828 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	135	plf	Overturning Moment	33.9	k-ft	Hold Down Design Load	1533	lbs
DL at ends of wall	400	lbs	Resistive Moment	11.9	k-ft	Holdown Capacity	1705	lbs

Hold-down Specification

SIMPSON CS16 STRAP TIE (14" END LENGTH)

Shearwall 202: 2nd - Side Exterior Owners Suite @ Deck

Shearwall Properties:

Wall height, H	9.0	ft.	Max wall opening ht, Hc	1.0	ft.		
Wall Length, L	14.0	ft.	Qualifying Wall Length, L	6.0	ft.	Shearwall Assembly	P3

Capacity Evaluation:

Total Shear load on Wall		Allowable Shearwall Capacity
2300 lbs	<	3780 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	20.7	k-ft	Hold Down Design Load	303	lbs
DL at ends of wall	70	lbs	Resistive Moment	16.5	k-ft	Holdown Capacity	1705	lbs

Hold-down Specification

SIMPSON CS16 STRAP TIE (14" END LENGTH)

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

Project Name: JayMarc Homes
6515 SE 30th St
M&K Project #: 154-21007
Engineer: RJD
Date: 26-Mar-21

Shearwall Design Summary

Shearwall 203: 2nd - Side Exterior Owners Suite

Shearwall Properties:

Wall height, H	9.0	ft.	Max wall opening ht, H_c	6.0	ft.		
Wall Length, L	31.1	ft.	Qualifying Wall Length, L	20.6	ft.	Shearwall Assembly	P1

Capacity Evaluation:

Total Shear load on Wall		Allowable Shearwall Capacity
1250 lbs	<	6915 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	270	plf	Overturning Moment	11.3	k-ft	Uplift Connector Design Load	0	lbs
DL at ends of wall	215	lbs	Resistive Moment	82.4	k-ft	Holdown Capacity	0	lbs

Hold-down Specification

No Holdown Required

Shearwall 204: 2nd - Side Interior/Exterior Bath 3

Shearwall Properties:

Wall height, H	9.0	ft.	Max wall opening ht, Hc	0.0	ft.		
Wall Length, L	5.6	ft.	Qualifying Wall Length, L	5.6	ft.	Shearwall Assembly	P1

Capacity Evaluation:

Total Shear load on Wall		Allowable Shearwall Capacity
500 lbs	<	1882 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	202	plf	Overturning Moment	4.5	k-ft	Hold Down Design Load	224	lbs
DL at ends of wall	400	lbs	Resistive Moment	3.2	k-ft	Holdown Capacity	1705	lbs

Hold-down Specification

SIMPSON CS16 STRAP TIE (14" END LENGTH)

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
6515 SE 30TH ST
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-MAR-21

SHEARWALL DESIGN SUMMARY

SHEARWALL 205: 2ND - SIDE INTERIOR/EXTERIOR BED 4

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, H_c	0.0	FT.		
WALL LENGTH, L	7.3	FT.	QUALIFYING WALL LENGTH, L	7.3	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
900 LBS	<	2436 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	202	PLF	OVERTURNING MOMENT	8.1	K-FT	UPLIFT CONNECTOR DESIGN LOAD	438	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	4.9	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
6515 SE 30TH ST
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-MAR-21

SHEARWALL DESIGN SUMMARY

SHEARWALL 206: 2ND - FRONT EXTERIOR BED2/BATH3

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, H_o	5.0	FT.		
WALL LENGTH, L	15.0	FT.	QUALIFYING WALL LENGTH, L	11.0	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1900 LBS	<	3683 LBS

SHEARWALL ASSEMBLY SPECIFICATION

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

OVERTURNING EVALUATION:

RESISTIVE DL	350	PLF	OVERTURNING MOMENT	17.1	K-FT	UPLIFT CONNECTOR DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	200	LBS	RESISTIVE MOMENT	25.4	K-FT	HOLDOWN CAPACITY	1705	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 207: 2ND - REAR INTERIOR PRIMARY BATH

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, Hc	8.0	FT.		
WALL LENGTH, L	13.5	FT.	QUALIFYING WALL LENGTH, L	10.8	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
900 LBS	<	3639 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	321	PLF	OVERTURNING MOMENT	8.1	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	20.8	K-FT	HOLDOWN CAPACITY	1705	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
6515 SE 30TH ST
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-MAR-21

SHEARWALL DESIGN SUMMARY

SHEARWALL 208: 2ND - REAR EXTERIOR LND/WIC

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, H_o	4.0	FT.		
WALL LENGTH, L	24.3	FT.	QUALIFYING WALL LENGTH, L	13.1	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
2700 LBS	<	8253 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	245	PLF	OVERTURNING MOMENT	24.3	K-FT	UPLIFT CONNECTOR DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	49.0	K-FT	HOLDOWN CAPACITY	0	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	#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
6515 SE 30TH ST
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-Mar-21

SHEARWALL DESIGN SUMMARY

SHEARWALL 101: 1ST - SIDE EXTERIOR GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	11.0	FT.	MAX WALL OPENING HT, H_c	0.0	FT.		
WALL LENGTH, L	21.2	FT.	QUALIFYING WALL LENGTH, L	21.2	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
2300 LBS	<	7123 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	135	PLF	OVERTURNING MOMENT	25.3	K-FT	UPLIFT CONNECTOR DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	800	LBS	RESISTIVE MOMENT	28.4	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 102: 1ST - SIDE INTERIOR GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	21.7	FT.	QUALIFYING WALL LENGTH, L	21.7	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
6000 LBS	<	7281 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	315	PLF	OVERTURNING MOMENT	71.8	K-FT	HOLD DOWN DESIGN LOAD	1025	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	49.6	K-FT	HOLDOWN CAPACITY	4935	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
6515 SE 30TH ST
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-Mar-21

SHEARWALL DESIGN SUMMARY

SHEARWALL 103: 1ST - SIDE INTERIOR GREAT RM

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, H_c	0.0	FT.		
WALL LENGTH, L	13.0	FT.	QUALIFYING WALL LENGTH, L	13.0	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
3600 LBS	<	4368 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	535	PLF	OVERTURNING MOMENT	40.9	K-FT	UPLIFT CONNECTOR DESIGN LOAD	582	LBS
DL AT ENDS OF WALL	800	LBS	RESISTIVE MOMENT	33.4	K-FT	HOLDOWN CAPACITY	1705	LBS

HOLD-DOWN SPECIFICATION

SIMPSON CS16 STRAP TIE (14" END LENGTH)

SHEARWALL 104: 1ST - SIDE EXTERIOR KITCHEN/SCULLERY

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	5.5	FT.		
WALL LENGTH, L	20.7	FT.	QUALIFYING WALL LENGTH, L	15.5	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
2600 LBS	<	5208 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	505	PLF	OVERTURNING MOMENT	26.0	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	470	LBS	RESISTIVE MOMENT	70.6	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
6515 SE 30TH ST
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-Mar-21

SHEARWALL DESIGN SUMMARY

SHEARWALL XXX: - NOT USED

SHEARWALL PROPERTIES:

WALL HEIGHT, H	0.0	FT.	MAX WALL OPENING HT, H_c	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	UPLIFT CONNECTOR 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

SHEARWALL 105: 1ST - FRONT EXTERIOR SCULLERY

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	7.1	FT.	QUALIFYING WALL LENGTH, L	7.1	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1300 LBS	<	2379 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	480	PLF	OVERTURNING MOMENT	21.1	K-FT	HOLD DOWN DESIGN LOAD	1837	LBS
DL AT ENDS OF WALL	200	LBS	RESISTIVE MOMENT	8.1	K-FT	HOLDOWN CAPACITY	4935	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
6515 SE 30TH ST
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-MAR-21

SHEARWALL DESIGN SUMMARY

SHEARWALL 106: 1ST - REAR EXTERIOR CHIMNEY

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, H_c	0.0	FT.		
WALL LENGTH, L	7.0	FT.	QUALIFYING WALL LENGTH, L	7.0	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1800 LBS	<	2352 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	18.0	K-FT	UPLIFT CONNECTOR DESIGN LOAD	2050	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	3.6	K-FT	HOLDOWN CAPACITY	2655	LBS

HOLD-DOWN SPECIFICATION

SIMPSON MSTC40 STRAP TIE (12" END LENGTH)

SHEARWALL 107: 1ST - REAR INTERIOR GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	11.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	17.0	FT.	QUALIFYING WALL LENGTH, L	17.0	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
2000 LBS	<	5712 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	440	PLF	OVERTURNING MOMENT	22.0	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	42.2	K-FT	HOLDOWN CAPACITY	4935	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
6515 SE 30TH ST
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-Mar-21

SHEARWALL DESIGN SUMMARY

SHEARWALL 108: 1ST - FRONT EXTERIOR GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, H_o	8.0	FT.		
WALL LENGTH, L	21.6	FT.	QUALIFYING WALL LENGTH, L	5.5	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1900 LBS	<	2945 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	280	PLF	OVERTURNING MOMENT	19.0	K-FT	UPLIFT CONNECTOR DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	44.4	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 109: 1ST - FRONT INTERIOR KITCHEN

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	16.3	FT.	QUALIFYING WALL LENGTH, L	16.3	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
450 LBS	<	5487 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	100	PLF	OVERTURNING MOMENT	4.5	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	100	LBS	RESISTIVE MOMENT	9.0	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

JayMarc Homes

6515 SE 30th St

Mercer Island, WA

Shear Wall Calculations - Seismic

Reviewed By: NJM

March 26, 2021

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: 6515 SE 30TH ST
JAYMARC HOMES
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-MAR-21

SEISMIC CALCULATION - ASCE 7-16

SEISMIC DESIGN CATEGORY:

USER INPUTS:

Site Class	D
Spectral Response Acceleration 0.2 sec, **Ss**	1.405
Spectral Response Acceleration 1.0 sec, **S1**	0.489
Occupancy Category	II

VARIABLES:

Site coefficient, Fa	1.20
Site coefficient, Fv	1.81

CALCULATED VALUES:

Maximum spectral response acceleration, S_{MS}	1.686
Maximum spectral response acceleration, S_{M1}	0.886
Design spectral response acceleration, S_{DS}	1.124
Design spectral response acceleration, S_{D1}	0.590
Seismic Design Category (short term)	D
Seismic Design Category (1.0 second term)	D

BUILDING PERIOD DETERMINATION:

USER INPUTS:

Building period coefficient, C_T	0.020
Long-Period Trans Period, T_L (sec)	6
Ht. abv base to highest level, h_N	19

CALCULATED VALUES:

Approximate Fundamental Period, T_A	0.182
T_0	0.105
T_S	0.525
Spectral Response Acc., S_A (g)	1.124

SITE CLASS ASSUMPTION

Yes — Per ASCE 7-16 Section 11.4.3 the Site Class may be assumed to be D

EQUIVALENT LATERAL FORCE PROCEDURE

DEAD LOAD CALCULATION:

Level	Story Ht. (ft.)	Area (ft^2)	Dead Load (psf)	DL of ext wall trib. to level (kips)	Total level DL
1	10.0	2000	15	15.4	45 k
2	9.0	2500	17	6.8	49 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 95 Kips

SEISMIC RESPONSE COEFFICIENT:

	Transverse	Longitudinal
Response modification factor, **R**	6.5	6.5
Occupancy Importance Factor, I_E	1.00	1.00
Seismic Response Coefficient, C_s	0.173	0.173

BASE SHEARS:

Ultimate Loads		x 0.7 =	Allowable Loads	
Transverse	Longitudinal		Transverse	Longitudinal
16 k	16 k		11.5 k	11.5 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	0.326	5.3 k	5.3 k		3.7 k	11.5 k	3.7 k	11.5 k
2	0.674	11.0 k	11.0 k		7.7 k	7.7 k	7.7 k	7.7 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 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:

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

CREDITS PROVIDED IN THIS HOME AS FOLLOWS:

EFFICIENT BUILDING ENVELOPE OPT. 1.3: 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.

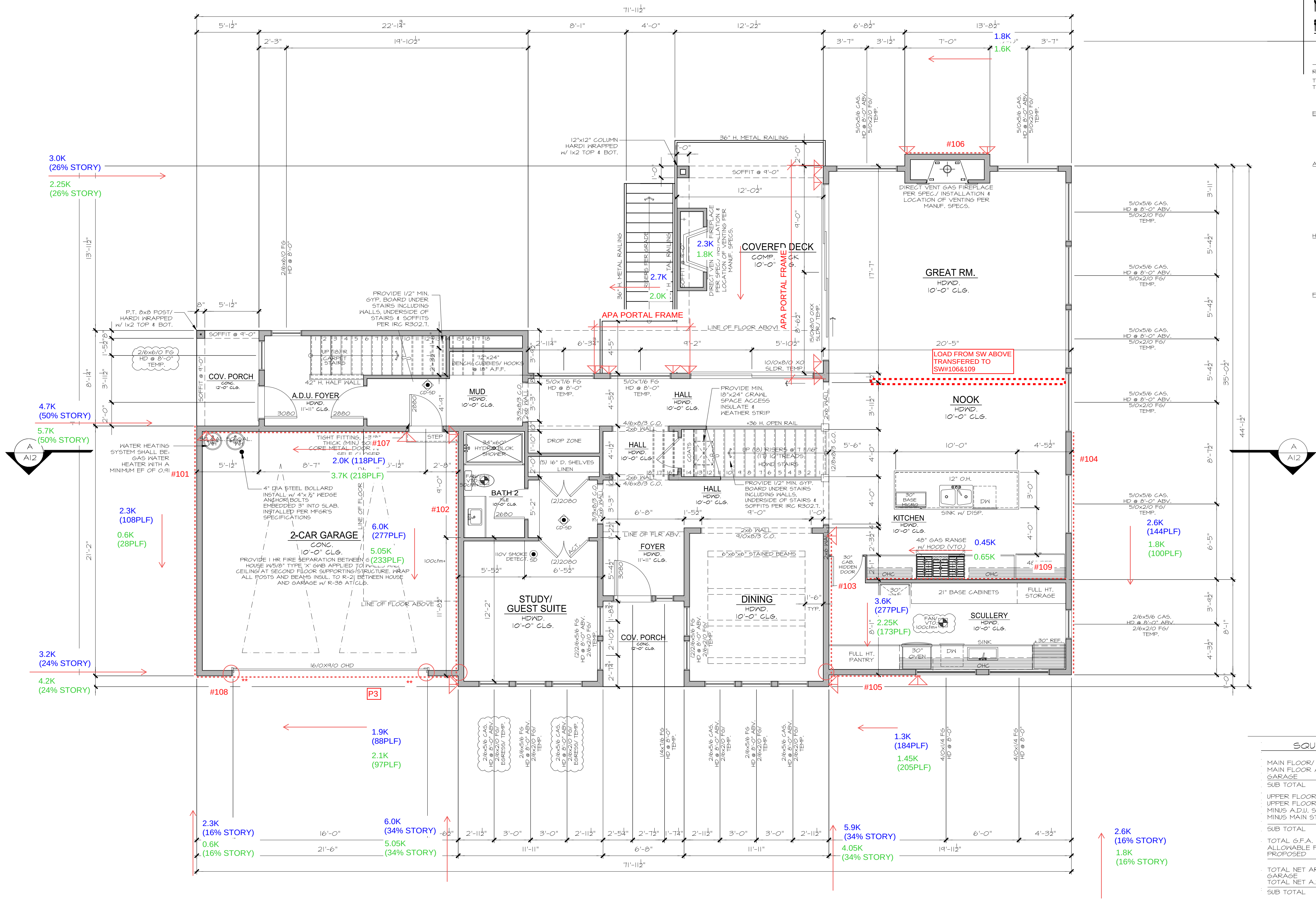
AIRLEAKAGE $ EFFICIENT VENTILATION OPT 2.1: 0.5 CREDITS

REDUCE THE TESTED AIR LEAKAGE TO 3.0 AIR CHANGES PER HOUR MAXIMUM @ 50 PASCALS AND ALL WHOLE HOUSE VENTILATION REQUIREMENTS AS DETERMINED BY SECTION M1507.3 OF THE I.R.C. OR SECTION 404.8 OF THE I.M.C SHALL BE MET WITH A HIGH EFFICIENCY FAN(S) (MAXIMUM) OF 0.35 WATTS/ CFM), NOT INTERLOCKED WITH THE FURNACE FAN (IF PRESENT). VENTILATION SYSTEMS USING A FURNACE INCLUDING AN EMC MOTOR ARE ALLOWED, PROVIDED THAT THEY ARE CONTROLLED TO OPERATE AT LOW SPEED IN THE VENTILATION ONLY MODE.

HIGH EFFICIENCY HVAC EQUIPMENT OPT. 3.5a: 1.5 CREDITS

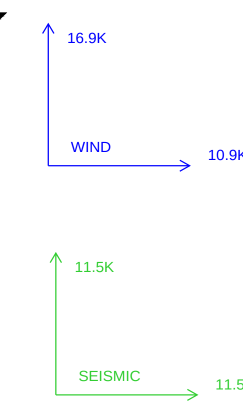
HVAC EQUIPMENT AND ASSOCIATED DUCT SYSTEM(S) INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF SECTION R403.3.7. LOCATING SYSTEM COMPONENTS IN CONDITIONED CRAWL SPACE IS NOT PERMITTED UNDER THIS OPTION. ELECTRIC RESISTANCE HEAT AND DUCTLESS HEAT PUMPS ARE NOT PERMITTED UNDER THIS OPTION. DIRECT COMBUSTION HEATING EQUIPMENT WITH AFUE LESS THAN 80% IS NOT PERMITTED UNDER THIS OPTION.

FULL NORMALIZATION CREDIT (MUST USE OPT. 3.5a: 1.0 CREDITS



MAIN FLOOR PLAN

1/4" = 1'-0"



SQUARE FOOTAGE SUMMARY

MAIN FLOOR/ MAIN LIVING	1,700	S.F.
MAIN FLOOR A.D.U.	98	S.F.
GARAGE	448	S.F.
SUB TOTAL	2,246	S.F.
UPPER FLOOR/ MAIN LIVING	1,347	S.F.
UPPER FLOOR A.D.U.	492	S.F.
MINUS A.D.U. STAIRS	-42	S.F.
MINUS MAIN STAIRS	-56	S.F.
SUB TOTAL	1,741	S.F.
TOTAL G.F.A.	3,987	S.F.
ALLOWABLE F.A.R. 45%	4,050	S.F.
PROPOSED	44.3%	
TOTAL NET AREA MAIN HOUSE	2,991	S.F.
GARAGE	448	S.F.
TOTAL NET A.D.U.	548	S.F.
SUB TOTAL	3,987	S.F.
COV'D PATIO	259	S.F.
COV'D PORCH	40	S.F.
OVERALL WIDTH	71'-11 ½"	
OVERALL DEPTH	44'-1 1/2"	

Updated : 03/09/2018

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

Issue Issue Date By Description

6515 SE 30th St. Mercer Island, WA.

Job Number: --

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

04.15.21
Submittal Date

Sheet Title/Description

JAYMARC HOMES
Design Firm

R.R.
Drawn by:

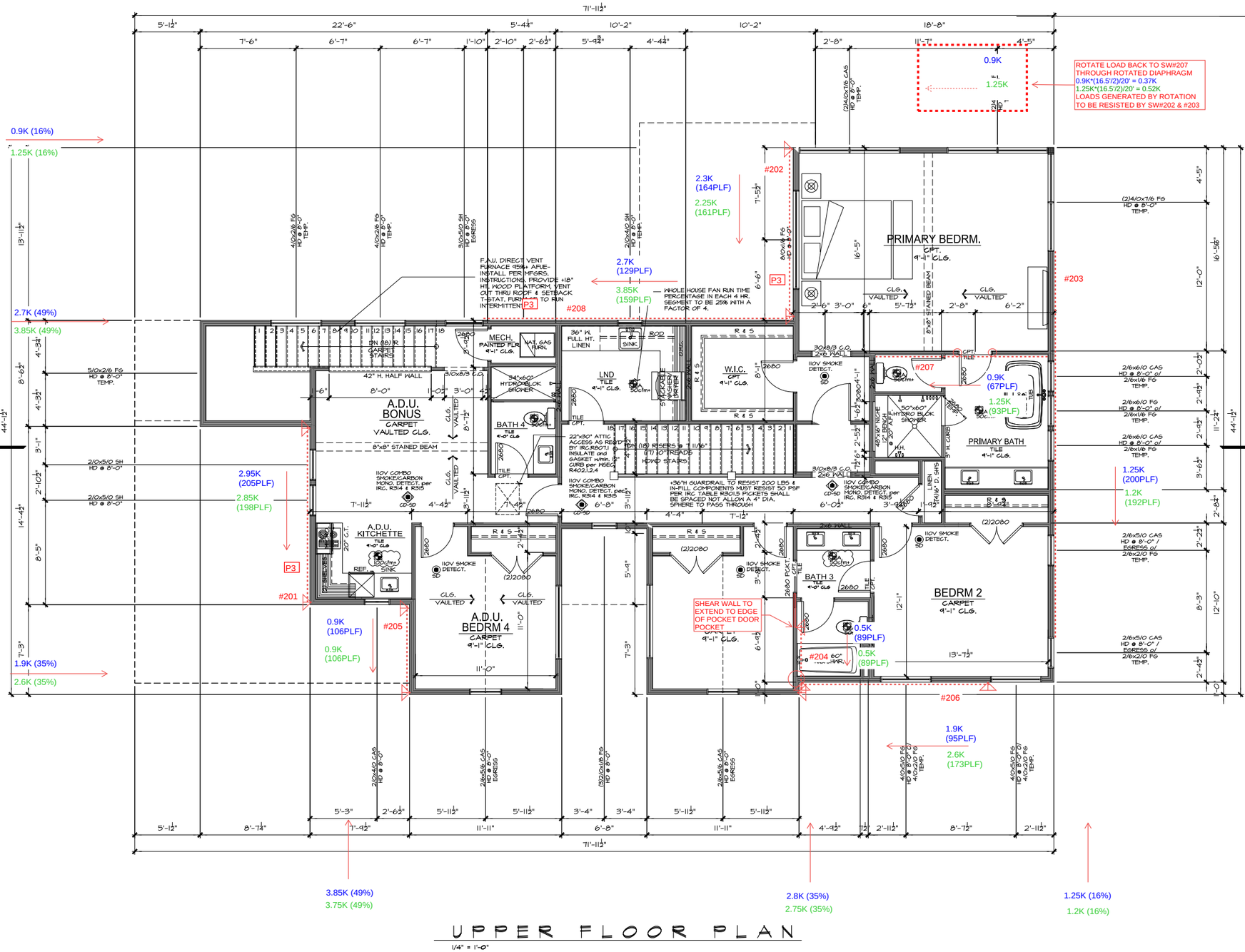
R.R./ S.K.
Checked by:

Primary Scale

Sheet Title/Description

A5

of: .



UPPER FLOOR PLAN

1/4" = 1'-0"

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:

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

CREDITS PROVIDED IN THIS HOME AS FOLLOWS:

EFFICIENT BUILDING ENVELOPE OPT. 1.3: 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.

AIRLEAKAGE & EFFICIENT VENTILATION OPT 2.1: 0.5 CREDITS

REDUCE THE TESTED AIR LEAKAGE TO 3.0 AIR CHANGES PER HOUR MAXIMUM @ 50 PASCALS AND ALL WHOLE HOUSE VENTILATION REQUIREMENTS AS DETERMINED BY SECTION M1507.3 OF THE I.R.C. OR SECTION 403.8 OF THE I.M.C SHALL BE MET WITH A HIGH EFFICIENCY FAN(S) (MAXIMUM OF 0.35 WATTS/ CFM), NOT INTERLOCKED WITH THE FURNACE FAN (IF PRESENT). VENTILATION SYSTEMS USING A FURNACE INCLUDING AN ERV, HRV MOTOR ARE ALLOWED, PROVIDED THAT THEY ARE CONTROLLED TO OPERATE AT LOW SPEED IN THE VENTILATION ONLY MODE.

HIGH EFFICIENCY HVAC EQUIPMENT OPT. 3.5a: 1.5 CREDITS

HVAC EQUIPMENT AND ASSOCIATED DUCT SYSTEM(S) INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF SECTION R403.3.7. LOCATING SYSTEM COMPONENTS IN CONDITIONED CRAWL SPACE IS NOT PERMITTED UNDER THIS OPTION. ELECTRIC RESISTANCE HEAT AND DUCTLESS HEAT PUMPS ARE NOT PERMITTED UNDER THIS OPTION. DIRECT COMBUSTION HEATING EQUIPMENT WITH AFUE LESS THAN 80% IS NOT PERMITTED UNDER THIS OPTION.

FULL NORMALIZATION CREDIT (MUST USE OPT. 3.5a): 1.0 CREDITS

HIGH EFFICENCY HVAC DISTRIBUTION OPT. 4.2: 1.0 CREDITS

HVAC EQUIPMENT AND ASSOCIATED DUCT SYSTEMS(S) SHALL COMPLY WITH THE REQUIREMENTS OF SECT R403.3.7. LOCATING SYSTEM COMPONENTS IN CONDITIONED CRAWL SPACES IS NOT PERMITTED UNDER THIS OPTION. ELECTRIC RESISTANCE HEAT AND DUCTLESS HEAT PUMPS ARE NOT PERMITTED UNDER THIS OPTION. DIRECT COMBUSTION HEATING EQUIPMENT WITH AFUE LESS THAN 80% IS NOT PERMITTED UNDER THIS OPTION.

EFFICIENT WATER HEATING 5.5: 2.0 CREDITS

WATER HEATING SYSTEMS SHALL INCLUDE ONE OF THE FOLLOWING: ELECTRIC HEAT PUMP WATER HEATER MEETING THE STANDARDS FOR TIER III OF NEEA'S ADVANCED WATER HATING SPECIFICATION. IF ONE WATER HEATER IS SERVING MORE THAN ONE DWELLING UNIT, ALL OF WATER SUPPLY AND RE-CIRCULATION PIPING SHALL BE INSULATED WITH R-8 MINIMUM PIPE INSULATION.

EFFICIENT WATER HEATING 5.6: 2.5 CREDITS

WATER HEATING SYSTEM SHALL INCLUDE ONE OF THE FOLLOWING: ELECTRIC HEAT PUMP WATER HEATER WITH A MIN. OF 2.9 AND UTILIZING A SPLIT SYSTEM CONFIGURATION WITH THE AIR-TO-REFRIGERANT HEAT EXCHANGER LOCATED OUTDOORS. EQUIPMENT SHALL MEET SECTION 4, REQUIREMENTS FOR ALL UNITS, OF THE NEEA STANDARD ADVANCED WATER HEATING SPECIFICATION WITH THE UEF NOTED ABOVE.

P3 UNIT SHEAR:
630PLF/336PLF=1.88
89PLF*1.88 =167PLF
106PLF*1.88=199PLF

P3 UNIT SHEAR:
451PLF/239PLF=1.88
54PLF*1.88=102PLF
106PLF*1.88=199PLF

JAYMARC HOMES
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Mercer Island, WA
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Issue	Issue Date	By	Description
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6515 SE 30th St.
Mercer Island, WA.

Job Number: --

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

04.15.21
Submittal Date

Sheet Title/Description

JAYMARC HOMES
Design Firm

R.R.
Drawn by:

R.R./ S.K.
Checked by:

Primary Scale

A7
of: .

Sheet Title/Description

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

Project Name: JayMarc Homes
6515 SE 30th St
M&K Project #: 154-21007
Engineer: RJD
Date: 26-Mar-21

Shearwall Design Summary

Shearwall 201: 2nd - Side Exterior Bonus

Shearwall Properties:

Wall height, H	11.5	ft.	Max wall opening ht, H_c	3.5	ft.		
Wall Length, L	14.4	ft.	Qualifying Wall Length, L	9.3	ft.	Shearwall Assembly	P3

Capacity Evaluation:

Total Shear load on Wall		Allowable Shearwall Capacity
2850 lbs	<	4172 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	135	plf	Overturning Moment	32.8	k-ft	Hold Down Design Load	1672	lbs
DL at ends of wall	400	lbs	Resistive Moment	8.7	k-ft	Holdown Capacity	1705	lbs

Hold-down Specification

SIMPSON CS16 STRAP TIE (14" END LENGTH)

Shearwall 202: 2nd - Side Exterior Owners Suite @ Deck

Shearwall Properties:

Wall height, H	9.0	ft.	Max wall opening ht, Hc	1.0	ft.		
Wall Length, L	14.0	ft.	Qualifying Wall Length, L	6.0	ft.	Shearwall Assembly	P3

Capacity Evaluation:

Total Shear load on Wall		Allowable Shearwall Capacity
2250 lbs	<	2706 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	20.3	k-ft	Hold Down Design Load	584	lbs
DL at ends of wall	70	lbs	Resistive Moment	12.1	k-ft	Holdown Capacity	1705	lbs

Hold-down Specification

SIMPSON CS16 STRAP TIE (14" END LENGTH)

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
6515 SE 30TH ST
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-MAR-21

SHEARWALL DESIGN SUMMARY

SHEARWALL 203: 2ND - SIDE EXTERIOR OWNERS SUITE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, H_c	6.0	FT.		
WALL LENGTH, L	31.1	FT.	QUALIFYING WALL LENGTH, L	20.6	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1200 LBS	<	4919 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	270	PLF	OVERTURNING MOMENT	10.8	K-FT	UPLIFT CONNECTOR DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	215	LBS	RESISTIVE MOMENT	60.4	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 204: 2ND - SIDE INTERIOR/EXTERIOR BATH 3

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	5.6	FT.	QUALIFYING WALL LENGTH, L	5.6	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
500 LBS	<	1338 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	202	PLF	OVERTURNING MOMENT	4.5	K-FT	HOLD DOWN DESIGN LOAD	379	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	2.4	K-FT	HOLDOWN CAPACITY	1705	LBS

HOLD-DOWN SPECIFICATION

SIMPSON CS16 STRAP TIE (14" END LENGTH)

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

Project Name: JayMarc Homes
6515 SE 30th St
M&K Project #: 154-21007
Engineer: RJD
Date: 26-Mar-21

Shearwall Design Summary

Shearwall 205: 2nd - Side Interior/Exterior Bed 4

Shearwall Properties:

Wall height, H	9.0	ft.	Max wall opening ht, H_c	0.0	ft.		
Wall Length, L	7.3	ft.	Qualifying Wall Length, L	7.3	ft.	Shearwall Assembly	P1

Capacity Evaluation:

Total Shear load on Wall		Allowable Shearwall Capacity
900 lbs	<	1733 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	202	plf	Overturning Moment	8.1	k-ft	Uplift Connector Design Load	619	lbs
DL at ends of wall	400	lbs	Resistive Moment	3.6	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
6515 SE 30th St
M&K Project #: 154-21007
Engineer: RJD
Date: 26-Mar-21

Shearwall Design Summary

Shearwall 206: 2nd - Front Exterior Bed2/Bath3

Shearwall Properties:

Wall height, H	9.0	ft.	Max wall opening ht, H_c	5.0	ft.		
Wall Length, L	15.0	ft.	Qualifying Wall Length, L	11.0	ft.	Shearwall Assembly	P1

Capacity Evaluation:

Total Shear load on Wall		Allowable Shearwall Capacity
2600 lbs	<	2619 lbs

Shearwall Assembly Specification

P1 - 1-side 7/16" OSB
fastened w/ 8d nails at 6"o.c. panel edges & 12"o.c. panel field - edges blocked
ADEQUATE

Overturning Evaluation:

Resistive DL	350	plf	Overturning Moment	23.4	k-ft	Uplift Connector Design Load	317	lbs
DL at ends of wall	200	lbs	Resistive Moment	18.6	k-ft	Holdown Capacity	1705	lbs

Hold-down Specification

Simpson CS16 strap tie (14" end length)

Shearwall 207: 2nd - Rear Interior Primary Bath

Shearwall Properties:

Wall height, H	9.0	ft.	Max wall opening ht, Hc	8.0	ft.		
Wall Length, L	13.5	ft.	Qualifying Wall Length, L	10.8	ft.	Shearwall Assembly	P1

Capacity Evaluation:

Total Shear load on Wall		Allowable Shearwall Capacity
1250 lbs	<	2588 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	321	plf	Overturning Moment	11.3	k-ft	Hold Down Design Load	0	lbs
DL at ends of wall	400	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
6515 SE 30TH ST
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-Mar-21

SHEARWALL DESIGN SUMMARY

SHEARWALL 208: 2ND - REAR EXTERIOR LND/WIC

SHEARWALL PROPERTIES:

WALL HEIGHT, H	9.0	FT.	MAX WALL OPENING HT, H_o	4.0	FT.		
WALL LENGTH, L	24.3	FT.	QUALIFYING WALL LENGTH, L	13.1	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
3850 LBS	<	5908 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	245	PLF	OVERTURNING MOMENT	34.7	K-FT	UPLIFT CONNECTOR DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	36.0	K-FT	HOLDOWN CAPACITY	0	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	#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
6515 SE 30TH ST
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-Mar-21

SHEARWALL DESIGN SUMMARY

SHEARWALL 101: 1ST - SIDE EXTERIOR GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	11.0	FT.	MAX WALL OPENING HT, H_c	0.0	FT.		
WALL LENGTH, L	21.2	FT.	QUALIFYING WALL LENGTH, L	21.2	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
600 LBS	<	5067 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	135	PLF	OVERTURNING MOMENT	6.6	K-FT	UPLIFT CONNECTOR 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

SHEARWALL 102: 1ST - SIDE INTERIOR GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	21.7	FT.	QUALIFYING WALL LENGTH, L	21.7	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
5050 LBS	<	5179 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	315	PLF	OVERTURNING MOMENT	62.3	K-FT	HOLD DOWN DESIGN LOAD	1197	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	36.4	K-FT	HOLDOWN CAPACITY	3695	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

Project Name: JayMarc Homes
6515 SE 30th St
M&K Project #: 154-21007
Engineer: RJD
Date: 26-Mar-21

Shearwall Design Summary

Shearwall 103: 1st - Side Interior Great Rm

Shearwall Properties:

Wall height, H	10.0	ft.	Max wall opening ht, H_c	0.0	ft.		
Wall Length, L	13.0	ft.	Qualifying Wall Length, L	13.0	ft.	Shearwall Assembly	P1

Capacity Evaluation:

Total Shear load on Wall		Allowable Shearwall Capacity
2250 lbs	<	3107 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	535	plf	Overturning Moment	27.4	k-ft	Uplift Connector Design Load	228	lbs
DL at ends of wall	800	lbs	Resistive Moment	24.5	k-ft	Holdown Capacity	1705	lbs

Hold-down Specification

Simpson CS16 strap tie (14" end length)

Shearwall 104: 1st - Side Exterior Kitchen/Scullery

Shearwall Properties:

Wall height, H	10.0	ft.	Max wall opening ht, Hc	5.5	ft.		
Wall Length, L	20.7	ft.	Qualifying Wall Length, L	15.5	ft.	Shearwall Assembly	P1

Capacity Evaluation:

Total Shear load on Wall		Allowable Shearwall Capacity
1800 lbs	<	3705 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	505	plf	Overturning Moment	18.0	k-ft	Hold Down Design Load	0	lbs
DL at ends of wall	470	lbs	Resistive Moment	51.7	k-ft	Holdown Capacity	0	lbs

Hold-down Specification

No Holdown Required

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

Project Name: JayMarc Homes
6515 SE 30th St
M&K Project #: 154-21007
Engineer: RJD
Date: 26-Mar-21

Shearwall Design Summary

Shearwall XXX: - Not Used

Shearwall Properties:

Wall height, H	0.0	ft.	Max wall opening ht, H_c	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	Uplift Connector 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

Shearwall 105: 1st - Front Exterior Scullery

Shearwall Properties:

Wall height, H	10.0	ft.	Max wall opening ht, Hc	0.0	ft.		
Wall Length, L	7.1	ft.	Qualifying Wall Length, L	7.1	ft.	Shearwall Assembly	P1

Capacity Evaluation:

Total Shear load on Wall		Allowable Shearwall Capacity
1450 lbs	<	1692 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	480	plf	Overturning Moment	25.5	k-ft	Hold Down Design Load	2772	lbs
DL at ends of wall	200	lbs	Resistive Moment	5.9	k-ft	Holdown Capacity	3695	lbs

Hold-down Specification

SIMPSON STHD14RJ HOLDOWN

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
6515 SE 30TH ST
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-Mar-21

SHEARWALL DESIGN SUMMARY

SHEARWALL 106: 1ST - REAR EXTERIOR CHIMNEY

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, H_c	0.0	FT.		
WALL LENGTH, L	7.0	FT.	QUALIFYING WALL LENGTH, L	7.0	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
1600 LBS	<	1673 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	16.0	K-FT	UPLIFT CONNECTOR DESIGN LOAD	1903	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	2.7	K-FT	HOLDOWN CAPACITY	2655	LBS

HOLD-DOWN SPECIFICATION

SIMPSON MSTC40 STRAP TIE (12" END LENGTH)

SHEARWALL 107: 1ST - REAR INTERIOR GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	11.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	17.0	FT.	QUALIFYING WALL LENGTH, L	17.0	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
3700 LBS	<	4063 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	440	PLF	OVERTURNING MOMENT	40.7	K-FT	HOLD DOWN DESIGN LOAD	573	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	31.0	K-FT	HOLDOWN CAPACITY	3695	LBS

HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
6515 SE 30TH ST
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-MAR-21

SHEARWALL DESIGN SUMMARY

SHEARWALL 108: 1ST - FRONT EXTERIOR GARAGE

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, H_o	8.0	FT.		
WALL LENGTH, L	21.6	FT.	QUALIFYING WALL LENGTH, L	5.5	FT.	SHEARWALL ASSEMBLY	P3

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
2100 LBS	<	2108 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	280	PLF	OVERTURNING MOMENT	21.0	K-FT	UPLIFT CONNECTOR DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	400	LBS	RESISTIVE MOMENT	32.5	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

SHEARWALL 109: 1ST - FRONT INTERIOR KITCHEN

SHEARWALL PROPERTIES:

WALL HEIGHT, H	10.0	FT.	MAX WALL OPENING HT, Hc	0.0	FT.		
WALL LENGTH, L	16.3	FT.	QUALIFYING WALL LENGTH, L	16.3	FT.	SHEARWALL ASSEMBLY	P1

CAPACITY EVALUATION:

TOTAL SHEAR LOAD ON WALL		ALLOWABLE SHEARWALL CAPACITY
650 LBS	<	3903 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	100	PLF	OVERTURNING MOMENT	6.5	K-FT	HOLD DOWN DESIGN LOAD	0	LBS
DL AT ENDS OF WALL	100	LBS	RESISTIVE MOMENT	6.6	K-FT	HOLDOWN CAPACITY	0	LBS

HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: 6515 SE 30TH - DECK
JAYMARC HOMES
M&K PROJECT #: 154-21007
ENGINEER: RJD
DATE: 26-MAR-21

SEISMIC CALCULATION - ASCE 7-16

SEISMIC DESIGN CATEGORY:

USER INPUTS:

Site Class	D
Spectral Response Acceleration 0.2 sec, S_S	1.405
Spectral Response Acceleration 1.0 sec, S_1	0.489
Occupancy Category	II

VARIABLES:

Site coefficient, Fa	1.20
Site coefficient, Fv	1.81

CALCULATED VALUES:

Maximum spectral response acceleration, S_{MS}	1.686
Maximum spectral response acceleration, S_{M1}	0.886
Design spectral response acceleration, S_{DS}	1.124
Design spectral response acceleration, S_{D1}	0.590
Seismic Design Category (short term)	D
Seismic Design Category (1.0 second term)	D

BUILDING PERIOD DETERMINATION:

USER INPUTS:

Building period coefficient, C_T	0.020
Long-Period Trans Period, T_L (sec)	6
Ht. abv base to highest level, h_N	5

CALCULATED VALUES:

Approximate Fundamental Period, T_A	0.067
T_0	0.105
T_S	0.525
Spectral Response Acc., S_A (g)	0.879

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	5.0	230	10	0.0	2 K
2	0.0	0	0	0.0	0 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 2 Kips

SEISMIC RESPONSE COEFFICIENT:

	Transverse	Longitudinal
Response modification factor, R	6.5	6.5
Occupancy Importance Factor, I_E	1.00	1.00
Seismic Response Coefficient, C_s	0.173	0.173

BASE SHEARS:

Ultimate Loads		x 0.7 =	Allowable Loads	
Transverse	Longitudinal		Transverse	Longitudinal
0 K	0 K		0.3 K	0.3 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	1.000	0.4 K	0.4 K			0.3 K	0.3 K	0.3 K	0.3 K
2	0.000	0.0 K	0.0 K			0.0 K	0.0 K	0.0 K	0.0 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

DECK LEDGER

GRAVITY

365 PLF APPLIED (60 PSF LIVE & 10 PSF DEAD)

- 340#/SDS SCREW PER SIMPSON

(2) 1/4" x 3 1/2" SDS SCREWS @ 16" O.C. RESIST GRAVITY

(340#)(2 SCREWS)(12"/16") = 510 PLF ALLOWABLE

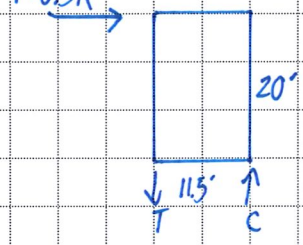
510 PLF > 365 PLF ✓ ∴ (2) 1/4" Ø x 3 1/2" LONG SDS SCREWS @ 16" O.C. ADEQUATE FOR GRAVITY

LATERAL

- CHECK CAPACITY OF DECK LEDGER AGAINST PRESCRIPTIVE REQUIREMENT.
- PER R507.2.4 HOLD DOWN TENSION DEVICE W/ 1500# PRESCRIPTIVE CAPACITY REQ'D WITHIN 24" OF EA END OF DECK. (NOT APPLICABLE IF ACTUAL APPLIED LOAD CAN BE RESISTED)

SEISMIC LOAD ON DECK = 0.3K

WORST CASE



M = 0.3K(20') = 6K'

T = C = 6K'/11.5' = 520#

520# TENSION REQ'D

ALLOWABLE

- (1) SCREW @ 16" RESIST LATERAL
- WITHDRAWL = 385#(1.6)^{CD} = 616#/SCREW

  616# > 520# ✓
- SHEAR = 340#(1.6)^{CD} = 544#/SCREW

  (12"/16")(11.5')(544#) = 4.69K > 0.3K ✓

∴ (1) 1/4" Ø x 3 1/2" LONG SDS SCREWS @ 16" O.C. ADEQUATE FOR LATERAL

⇒ (3) 1/4" Ø x 3 1/2" LONG SIMPSON SDS SCREWS @ 16" O.C. IS ADEQUATE FOR GRAVITY & LATERAL LOADS

PROJECT NAME: 6515 SE 30TH St. MERCER ISLAND
DATE: 04-13-21 SHEET: 01 DRAWN BY: RJD PROJECT NUMBER: 154-21007

MULHERN+KULP
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7220 Trade Street, Suite 350, San Diego, CA 92121 ▸ Telephone: 619-650-0010 mulhernkulp.com

ABW44Z UPLIFT CAPACITY

- ABW44Z UPLIFT CAPACITY PER SIMPSON = 1,005#
- FASTEN TO CONC. BELOW W/ SIMPSON ½"×5" TITEN HD
  - PER SIMPSON CONCRETE BREAKOUT CONTROLS (ACI 318-14 §17.4.2

CONCRETE BREAKOUT

$N_{cb} = \frac{A_{Nc}}{A_{Nco}} \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b$

$A_{Nc} = (2 \times 1.5 h_{ef})^2 = 80.5$

$A_{Nco} = 9 h_{ef}^2 = 80.5$

$N_b = k_c \lambda_a \sqrt{f'_c} h_{ef}^{1.5} = 4394.7$

$N_{cb} = \frac{80.5}{80.5}(1.0)(1.0)(1.0)(4394.7)$

$N_{cb} = 4394.7\#$

$h_{ef} = 2.99"$ PER SIMPSON

$k_c = 17$ PER SIMPSON

$f'_c = 2{,}500$ PSI

$\lambda_a = 1.0$

$\psi_{ed,N} = 1.0$

$\psi_{c,N} = 1.0$

$\psi_{cp,N} = 1.0$

$\phi_{cb} = 0.65$ PER SIMPSON

$\phi N_{cb} = 0.65(9394.7)$

$\phi N_{cb} = 2856.6\# > 1{,}005\#$ ✓

FASTENING IS ADEQUATE TO ACHIEVE FULL BASE UPLIFT CAPACITY

PROJECT NAME: 6515 SE 30TH ST
DATE: 3.21.22 SHEET: 01 DRAWN BY: RVD PROJECT NUMBER: 154-21007

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