MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

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

# CALCULATION PACKAGE

November 7, 2022

## JayMarc Homes
## Spring Residence

Mercer Island, Washington

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

Prepared By:

**John C. Leone, E.I.T.** *Staff Engineer*

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*Signature, Seal & Date*

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: SPRING RESIDENCE
JAYMARC HOMES
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 1-NOV-22

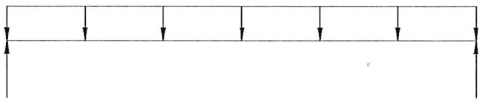
# BEAM & HEADER CALCULATIONS

## BEAM DESCRIPTION: RF FRMG - TYP EXT HDR - WORST CASE LENGTH

B1

PARAMETERS:

L = 10 FT
W = 0.175 KLF
P = — K



ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 0.88 K | $V_D$ = | K | < $V_{ALL}$ = | 3.5 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 2.2 K-FT | < $M_{ALL}$ = | 3.44 K-FT | ($C_D$=1.15) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.223 IN. | L/ | 539 | < L/240 | | ☑ ADEQUATE |

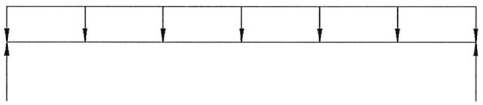
4 x 8

## BEAM DESCRIPTION: RF FRMG - TYP EXT HDR - WORST CASE LOAD

B1

PARAMETERS:

L = 6 FT
W = 0.509 KLF
P = — K



ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 1.5 K | $V_D$ = | K | < $V_{ALL}$ = | 3.5 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 2.3 K-FT | < $M_{ALL}$ = | 3.44 K-FT | ($C_D$=1.15) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.084 IN. | L/ | 859 | < L/240 | | ☑ ADEQUATE |

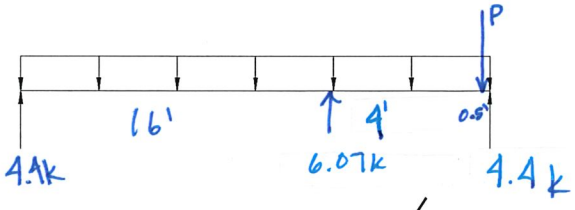
4 x 8

## BEAM DESCRIPTION: RF FRMG - FLUSH BTTM BM 2-SPAN @ BED 2

B2

PARAMETERS:

L = 20.5 FT
W = 0.563 KLF
P = 3.6 K




ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 6.07 K | $V_D$ = | K | < $V_{ALL}$ = | 13.62 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 17.7 K-FT | < $M_{ALL}$ = | 30.79 K-FT | ($C_D$=1.15) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.304 IN. | L/ | 631 | < L/240 | | ☑ ADEQUATE |

5 1/4 x 11 7/8 LVL

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DATE: 1-Nov-22

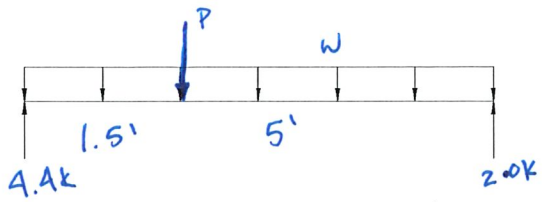
# BEAM & HEADER CALCULATIONS

## BEAM DESCRIPTION: RF FRMG - INT HDR @ BONUS

B3

PARAMETERS:

L = 6.5 FT
W = 0.315 KLF
P = 4.4 K




ANALYSIS:

$R_{MAX}$ = 4.4 K  $V_D$ = [ ] K  < $V_{ALL}$ = 5.43 K  ☑ ADEQUATE
$M_{MAX}$ = 6.25 K-FT  < $M_{ALL}$ = 7.0 K-FT ($C_D$=1.15)  ☑ ADEQUATE
$\Delta_{TL}$ = 0.072 IN.  L/ 999+ < L/240  ☑ ADEQUATE

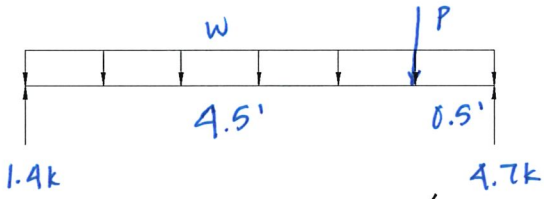
4x12

## BEAM DESCRIPTION: RF FRMG - FLUSH BTTM BM @ HALL

B4

PARAMETERS:

L = 5 FT
W = 0.378 KLF
P = 4.2 K




ANALYSIS:

$R_{MAX}$ = 4.7 K  $V_D$ = [ ] K  < $V_{ALL}$ = 9.1 K  ☑ ADEQUATE
$M_{MAX}$ = 2.5 K-FT  < $M_{ALL}$ = 20.5 K-FT ($C_D$=1.15)  ☑ ADEQUATE
$\Delta_{TL}$ = 0.012 IN.  L/ 999+ < L/240  ☑ ADEQUATE

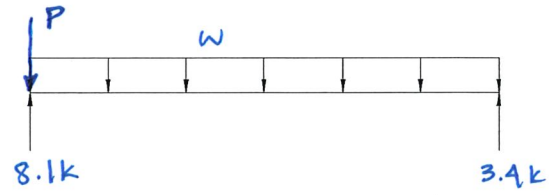
3 1/2 x 11 7/8 LVL

## BEAM DESCRIPTION: RF FRMG - DROPPED BM @ BED 3/4 ENTRY

B5

PARAMETERS:

L = 8.25 FT
W = 0.82 KLF
P = 4.7 K




ANALYSIS:

$R_{MAX}$ = 8.1 K  $V_D$ = 3.4 K  < $V_{ALL}$ = 10.06 K  ☑ ADEQUATE
$M_{MAX}$ = 7.0 K-FT  < $M_{ALL}$ = 17.08 K-FT ($C_D$=1.15)  ☑ ADEQUATE
$\Delta_{TL}$ = 0.143 IN.  L/ 694 < L/240  ☑ ADEQUATE

5 1/2 x 9 GLB

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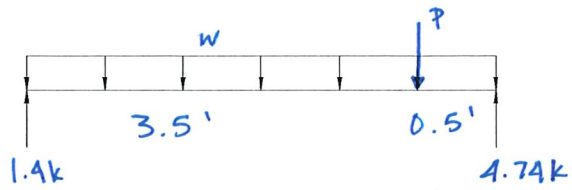
# BEAM & HEADER CALCULATIONS

## BEAM DESCRIPTION: RF FRMG - FLUSH BTTM BM @ PRIMARY BED

B6

PARAMETERS:

L = 4 FT
W = 0.4 KLF
P = 4.5 K




ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 4.74 K | $V_D$ = | K | < $V_{ALL}$ = | 9.08 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 2.3 K-FT | < $M_{ALL}$ = | 20.53 K-FT | ($C_D$=1.15) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.007 IN. | L/ | 999+ | < L/240 | | ☑ ADEQUATE |

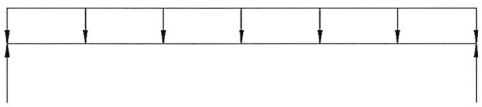
**3 1/2 x 11 7/8 LVL**

## BEAM DESCRIPTION: 2ND FLR FRMG - DROPPED BM @ REAR COVERED PATIO

B7

PARAMETERS:

L = 15.5 FT
W = 1.03 KLF
P = — K



ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 8.0 K | $V_D$ = | K | < $V_{ALL}$ = | 12.8 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 30.93 K-FT | < $M_{ALL}$ = | 43.47 K-FT | ($C_D$=1.15) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.437 IN. | L/ | 426 | < L/240 | | ☑ ADEQUATE |

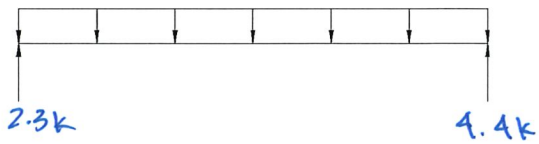
**3 1/2 x 18 GLB**

## BEAM DESCRIPTION: 2ND FLR FRMG - DROPPED BM @ SIDE COVERED PATIO REAR

B8

PARAMETERS:

L = 20 FT (SEE ENERCALC OUTPUT)
W = KLF
P = K




ANALYSIS:

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

**3 1/2 x 12 GLB**

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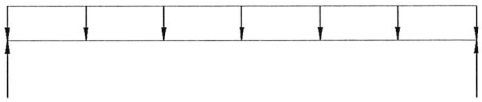
# BEAM & HEADER CALCULATIONS

## BEAM DESCRIPTION: 2ND FLR FRMG - DROPPED BM @ MIDDLE COVERED PATIO

B9

PARAMETERS:

L = 14.33 FT
W = 1.21 KLF
P = -- K



ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 8.67 K | $V_D$ = | K | < $V_{ALL}$ = | 14.6 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 31.06 K-FT | < $M_{ALL}$ = | 41.3 K-FT | ($C_D$=1.0) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.412 IN. | L/ | 417 | < L/240 | | ☑ ADEQUATE |

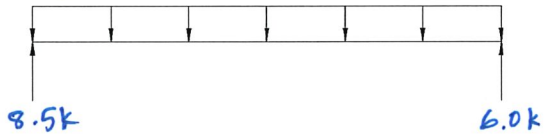
5 1/2 x 15 GLB

## BEAM DESCRIPTION: 2ND FLR FRMG - DROPPED BM @ SIDE COVERED PATIO FRONT

B10

PARAMETERS:

L = 13.75 FT (SEE ENERCALC OUTPUT)
W = KLF
P = K




ANALYSIS:

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

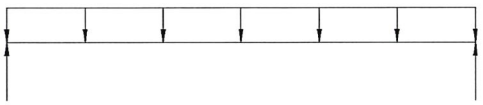
3 1/2 x 18 GLB

## BEAM DESCRIPTION: 2ND FLR FRMG - DROPPED BM @ FRONT COVERED PATIO

B11

PARAMETERS:

L = 10.75 FT
W = 0.864 KLF
P = -- K



ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 4.64 K | $V_D$ = | K | < $V_{ALL}$ = | 7.42 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 12.5 K-FT | < $M_{ALL}$ = | 16.8 K-FT | ($C_D$=1.0) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.287 IN. | L/ | 450 | < L/240 | | ☑ ADEQUATE |

3 1/2 x 12 GLB

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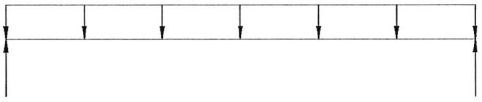
# BEAM & HEADER CALCULATIONS

## BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH BM @ FRONT PORCH

B12

PARAMETERS:

L = 18 FT
W = 0.14 KLF
P = -- K



ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 1.26 K | $V_D$ = | K | < $V_{ALL}$ = | 9.1 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 5.67 K-FT | < $M_{ALL}$ = | 20.5 K-FT | ($C_D$=1.15) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.34 IN. | L/ | 638 | < L/240 | | ☑ ADEQUATE |

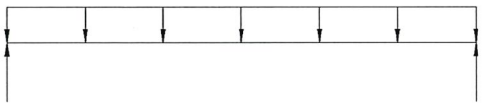
3 1/2 x 11 7/8 LVL

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

B13

PARAMETERS:

L = 4 FT
W = 0.1 KLF
P = -- K



ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 0.2 K | $V_D$ = | K | < $V_{ALL}$ = | 3.89 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 0.2 K-FT | < $M_{ALL}$ = | 4.49 K-FT | ($C_D$=1.0 ) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.001 IN. | L/ | 999+ | < L/240 | | ☑ ADEQUATE |

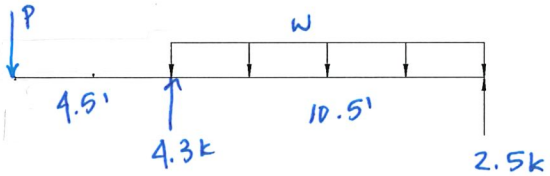
4 x 10

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

B14

PARAMETERS:

L = 15 FT
W = 0.478 KLF
P = 1.26 K




ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 4.3 K | $V_D$ = | K | < $V_{ALL}$ = | 13.62 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 6.59 K-FT | < $M_{ALL}$ = | 30.79 K-FT | ($C_D$=1.15) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.151 IN. | 2 L/ | 717 | < L/240 | | ☑ ADEQUATE |

5 1/4 x 11 7/8 LVL

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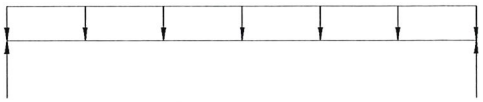
# BEAM & HEADER CALCULATIONS

## BEAM DESCRIPTION: 2ND FLR FRMG - DROPPED BM @ ENTRY / FOYER

B15

PARAMETERS:

L = 7 FT
W = 0.28 KLF
P = -- K



ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 1.0 K | $V_D$ = | | K | < $V_{ALL}$ = 3.89 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 1.72 K-FT | < $M_{ALL}$ = | 4.49 | K-FT | ($C_D$=1.0 ) | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.041 IN. | L/ | 999+ | < L/240 | | ☑ ADEQUATE |

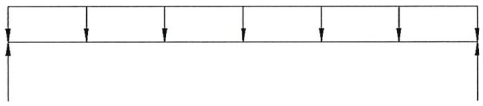
4 x 10

## BEAM DESCRIPTION: 2ND FLR FRMG - DROPPED BM @ FOYER / GREAT ROOM

B16

PARAMETERS:

L = 8.5 FT
W = 0.83 KLF
P = -- K



ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 3.5 K | $V_D$ = | | K | < $V_{ALL}$ = 7.17 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 7.5 K-FT | < $M_{ALL}$ = | 8.83 | K-FT | ($C_D$=1.0 ) | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.108 IN. | L/ | 948 | < L/240 | | ☑ ADEQUATE |

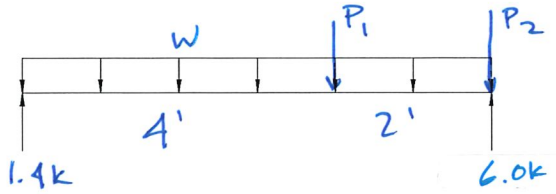
6x12

## BEAM DESCRIPTION: 2ND FLR FRMG - INT HDR @ WIC / FOYER

B17

PARAMETERS:

L = 6 FT
W = 0.073 KLF
$P_1$ = 3.4 K $P_2$ = 3.5




ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 6.0 K | $V_D$ = | 2.5 | K | < $V_{ALL}$ = 4.47 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 5.02 K-FT | < $M_{ALL}$ = | 5.16 | K-FT | ($C_D$=1.15) | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.688 IN. | L/ | 817 | < L/240 | | ☑ ADEQUATE |

4 x 10

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# BEAM & HEADER CALCULATIONS

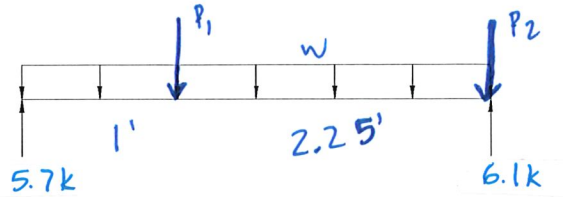
## BEAM DESCRIPTION: 2ND FLR FRMG - INT HDR @ PWDR / FOYER

B18

PARAMETERS:

| | | |
|---|---|---|
| L = | 3.25 | FT |
| W = | 0.073 | KLF |
| P = | 8.1 | K |

$P_2 = 3.5$




ANALYSIS:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 6.1 | K | $V_D$ = | 5.7 | K | < $V_{ALL}$ = 6.4 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 5.67 | K-FT | < $M_{ALL}$ = | 10.9 | K-FT | ($C_D$=1.15) | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.022 | IN. | L/ | 999+ | < L/240 | | ☑ ADEQUATE |

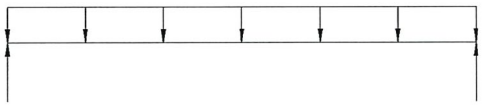
**3½ x 9 GLB**

## BEAM DESCRIPTION: 2ND FLR FRMG - EXT SGD HDR @ GREAT ROOM

B19

PARAMETERS:

| | | |
|---|---|---|
| L = | 15 | FT |
| W = | 0.073 | KLF |
| P = | -- | K |



ANALYSIS:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 0.55 | K | $V_D$ = | | K | < $V_{ALL}$ = 7.2 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 2.05 | K-FT | < $M_{ALL}$ = | 8.83 | K-FT | ($C_D$=1.0 ) | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.125 | IN. | L/ | 999+ | < L/240 | | ☑ ADEQUATE |

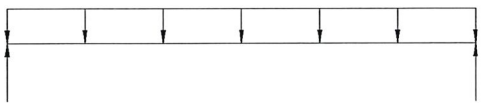
**6 x 12**

## BEAM DESCRIPTION: 2ND FLR FRMG - EXT WNDW HDR @ STUDY

B20

PARAMETERS:

| | | |
|---|---|---|
| L = | 10 | FT |
| W = | 0.67 | KLF |
| P = | -- | K |



ANALYSIS:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 3.4 | K | $V_D$ = | | K | < $V_{ALL}$ = 8.24 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 8.4 | K-FT | < $M_{ALL}$ = | 10.16 | K-FT | ($C_D$=1.15) | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.167 | IN. | L/ | 719 | < L/240 | | ☑ ADEQUATE |

**6 x 12**

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: SPRING RESIDENCE
JAYMARC HOMES
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 1-NOV-22

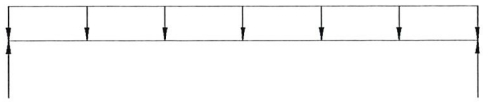
# BEAM & HEADER CALCULATIONS

## BEAM DESCRIPTION: 2ND FLR FRMG - INT HDR @ PANTRY & MUD

B21

PARAMETERS:

L = 3 FT
W = 1.23 KLF
P = -- K



ANALYSIS:

$R_{MAX}$ = 1.85 K  $V_D$ = [ ] K  < $V_{ALL}$ = 3.89 K  ☑ ADEQUATE
$M_{MAX}$ = 1.4 K-FT  < $M_{ALL}$ = 4.49 K-FT ($C_D$=1.0 )  ☑ ADEQUATE
$\Delta_{TL}$ = 0.006 IN.  L/ 999+ < L/240  ☑ ADEQUATE

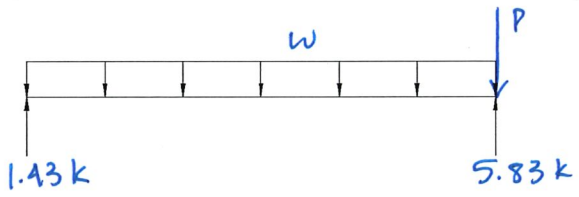
**4 x 10**

## BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH BM @ MUD

B22

PARAMETERS:

L = 9 FT
W = 0.317 KLF
P = 4.4k K




ANALYSIS:

$R_{MAX}$ = 5.83 K  $V_D$ = 1.43 K  < $V_{ALL}$ = 12.8 K  ☑ ADEQUATE
$M_{MAX}$ = 3.21 K-FT  < $M_{ALL}$ = 43.47 K-FT ($C_D$=1.15)  ☑ ADEQUATE
$\Delta_{TL}$ = 0.015 IN.  L/ 999+ < L/240  ☑ ADEQUATE

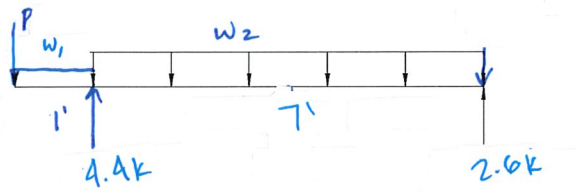
**3 1/2 x 18 GLB**

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

B23

PARAMETERS:

L = 21 FT
$W_1$ = 0.258 KLF  $W_2$ = 0.725
P = 1.43 K




ANALYSIS:

$R_{MAX}$ = 4.4 K  $V_D$ = [ ] K  < $V_{ALL}$ = 12.8 K  ☑ ADEQUATE
$M_{MAX}$ = 4.7 K-FT  < $M_{ALL}$ = 43.47 K-FT ($C_D$=1.15)  ☑ ADEQUATE
$\Delta_{TL}$ = 0.009 IN.  2L/ 999+ < L/240  ☑ ADEQUATE

**3 1/2 x 18 GLB**

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: SPRING RESIDENCE
JAYMARC HOMES
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 1-NOV-22

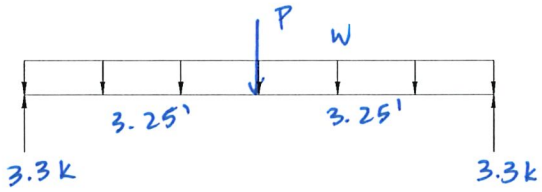
# BEAM & HEADER CALCULATIONS

## BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH BM @ MUD / MECH

B24

PARAMETERS:

| | | |
|---|---|---|
| L = | 6.5 | FT |
| W = | 0.073 | KLF |
| P = | 6.07 | K |




ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 3.3 K | $V_D$ = | K | < $V_{ALL}$ = | 12.8 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 10.34 K-FT | < $M_{ALL}$ = | 43.47 K-FT | ($C_D$=1.15) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.021 IN. | L/ | 999+ | < L/240 | | ☑ ADEQUATE |

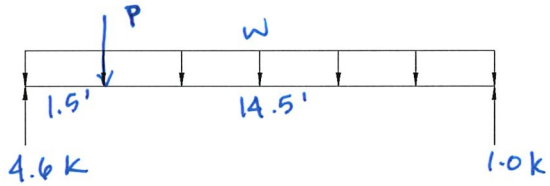
**3 1/2 x 18 GLB**

## BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH BM @ KITCHEN

B25

PARAMETERS:

| | | |
|---|---|---|
| L = | 16 | FT |
| W = | 0.073 | KLF |
| P = | 4.4 | K |




ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 4.6 K | $V_D$ = | K | < $V_{ALL}$ = | 12.8 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 6.85 K-FT | < $M_{ALL}$ = | 43.47 K-FT | ($C_D$=1.15) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.082 IN. | L/ | 999+ | < L/240 | | ☑ ADEQUATE |

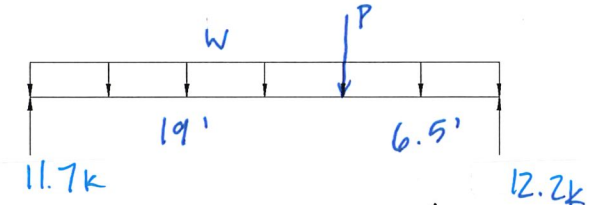
**3 1/2 x 18 GLB**

## BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH BTTM BM @ DINING / KITCHEN

B26

PARAMETERS:

| | | |
|---|---|---|
| L = | 25.5 | FT |
| W = | 0.9 | KLF |
| P = | 1.0 | K |




ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 12.2 K | $V_D$ = | K | < $V_{ALL}$ = | 30.2 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 76.44 K-FT | < $M_{ALL}$ = | 138.0 K-FT | ($C_D$=1.15) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.55 IN. | L/ | 555 | < L/240 | | ☑ ADEQUATE |

**5 1/2 x 27 GLB**

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: SPRING RESIDENCE
JAYMARC HOMES
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 1-NOV-22

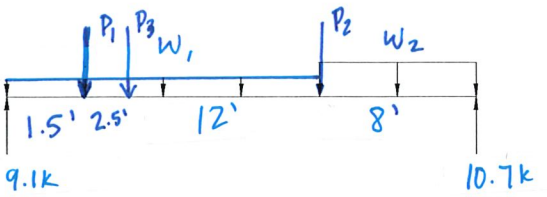
# BEAM & HEADER CALCULATIONS

## BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH BM UNDER EXT WALL @ KITCHEN

B27

PARAMETERS:

L = 24 FT
$W_1$ = 0.1 KLF $W_2 = 0.23$
$P_1$ = 2.0 K $P_2 = 12.2$ $P_3 = 2.15$




ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 10.7 K | $V_D$ = | K | < $V_{ALL}$ = | 93.8 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 78.24 K-FT | < $M_{ALL}$ = | 160 K-FT | ($C_D$=1.15) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.514 IN. | L/ | 560 | < L/240 | | ☑ ADEQUATE |

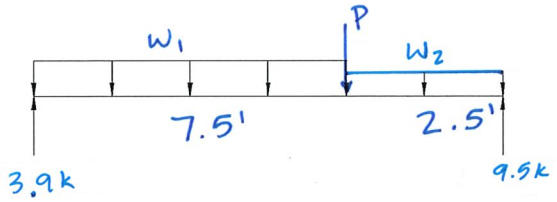
W16 x 36

## BEAM DESCRIPTION: 2ND FLR FRMG - EXT WNDW HDR @ DINING

B28

PARAMETERS:

L = 10 FT
$W_1$ = 0.2 KLF $W_2 = 0.084$
P = 11.7 K




ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 9.5 K | $V_D$ = | K | < $V_{ALL}$ = | 13.41 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 23.6 K-FT | < $M_{ALL}$ = | 30.36 K-FT | ($C_D$=1.15) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.298 IN. | L/ | 403 | < L/240 | | ☑ ADEQUATE |

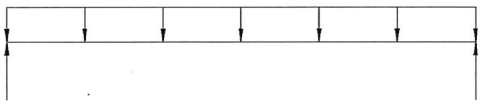
5 1/2 x 12 GLB

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

B29

PARAMETERS:

L = 11.25 FT
w = 0.5 KLF
P = — K



ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 2.81 K | $V_D$ = | K | < $V_{ALL}$ = | 12.8 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 7.9 K-FT | < $M_{ALL}$ = | 43.47 K-FT | ($C_D$=1.15) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.059 IN. | L/ | 999+ | < L/240 | | ☑ ADEQUATE |

3 1/2 x 18 GLB

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: SPRING RESIDENCE
JAYMARC HOMES
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 1-Nov-22

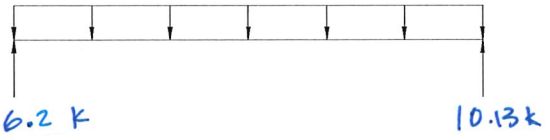
# BEAM & HEADER CALCULATIONS

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

B30

PARAMETERS:

L = 21.75 FT (SEE ENERCALC OUTPUT)
W = KLF
P = K




ANALYSIS:

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

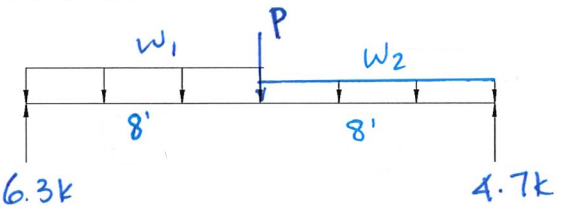
5 1/2 x 19 1/2 GLB

## BEAM DESCRIPTION: 2ND FLR FRMG - EXT LONG GARAGE HDR

B31

PARAMETERS:

L = 16 FT
$W_1$ = 0.5 KLF $W_2$ = 0.1
P = 6.2 K




ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 6.3 K | $V_D$ = | K | < $V_{ALL}$ = | 18.44 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 34.4 K-FT | < $M_{ALL}$ = | 56.73 K-FT | ($C_D$=1.15) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.428 IN. | L/ | 449 | < L/240 | | ☑ ADEQUATE |

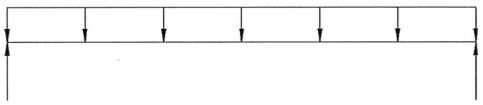
5 1/2 x 16 1/2 GLB

## BEAM DESCRIPTION: 2ND FLR FRMG - EXT SHORT GARAGE HDR

B32

PARAMETERS:

L = 8 FT
W = 0.5 KLF
P = -- K



ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 2.0 K | $V_D$ = | K | < $V_{ALL}$ = | 5.43 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 4.0 K-FT | < $M_{ALL}$ = | 7.01 K-FT | ($C_D$=1.15) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.125 IN. | L/ | 769 | < L/240 | | ☑ ADEQUATE |

4 x 12

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: SPRING RESIDENCE
JAYMARC HOMES
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 1-NOV-22

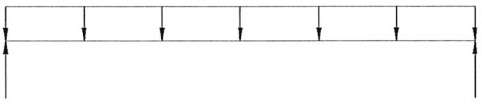
# BEAM & HEADER CALCULATIONS

## BEAM DESCRIPTION: 2ND FLR FRMG - TYP EXT HDR - WORST CASE LOAD

B33

PARAMETERS:

L = 6 FT
W = 0.99 KLF
P = — K



ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 2.97 K | $V_D$ = | K | < $V_{ALL}$ = | 3.89 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 4.46 K-FT | < $M_{ALL}$ = | 4.49 K-FT | ($C_D$=1.0 ) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.078 IN. | L/ | 920 | < L/240 | | ☑ ADEQUATE |

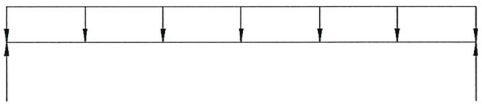
**4 x 10**

## BEAM DESCRIPTION: 2ND FLR FRMG - TYP EXT HDR - WORST CASE LENGTH

B33

PARAMETERS:

L = 8 FT
W = 0.168 KLF
P = — K



ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 0.67 K | $V_D$ = | K | < $V_{ALL}$ = | 3.89 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 1.34 K-FT | < $M_{ALL}$ = | 4.49 K-FT | ($C_D$=1.0 ) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.042 IN. | L/ | 999+ | < L/240 | | ☑ ADEQUATE |

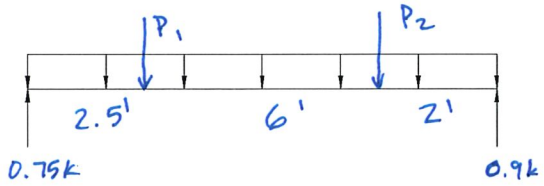
**4 x 10**

## BEAM DESCRIPTION: 2NDFLR FRMG - STAIR LANDING (LOW)

B34

PARAMETERS:

L = 10.5 FT
W = 0.1 KLF
$P_1$ = 0.2 K $P_2$=0.4




ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 0.9 K | $V_D$ = | K | < $V_{ALL}$ = | 3.09 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 2.05 K-FT | < $M_{ALL}$ = | 3.0 K-FT | ($C_D$=1.0 ) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.229 IN. | L/ | 550 | < L/240 | | ☑ ADEQUATE |

**4 x 8**

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: SPRING RESIDENCE
JAYMARC HOMES
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 1-Nov-22

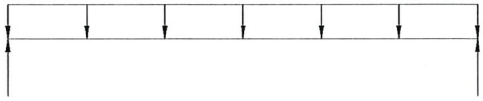
# BEAM & HEADER CALCULATIONS

## BEAM DESCRIPTION: 1ST FLR FRMG - TYP DROPPED CRAWL GRDR NO BRG

B35

PARAMETERS:

L = 7 FT
W = 0.6 KLF
P = — K



ANALYSIS:

$R_{MAX}$ = 2.1 K  $V_D$ = [ ] K  < $V_{ALL}$ = 3.89 K  ☑ ADEQUATE
$M_{MAX}$ = 3.68 K-FT  < $M_{ALL}$ = 4.49 K-FT ($C_D$=1.0 )  ☑ ADEQUATE
$\Delta_{TL}$ = 0.088 IN.  L/ 956 < L/240  ☑ ADEQUATE

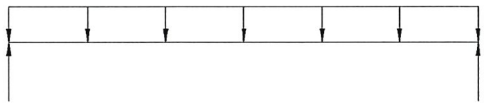
**4 x 10**

## BEAM DESCRIPTION: 1ST FLR FRMG - TYP DROPPED CRAWL GRDR BRG 1 LEVEL

B35

PARAMETERS:

L = 5 FT
W = 1.4 KLF
P = — K



ANALYSIS:

$R_{MAX}$ = 3.5 K  $V_D$ = [ ] K  < $V_{ALL}$ = 3.89 K  ☑ ADEQUATE
$M_{MAX}$ = 4.38 K-FT  < $M_{ALL}$ = 4.49 K-FT ($C_D$=1.0 )  ☑ ADEQUATE
$\Delta_{TL}$ = 0.053 IN.  L/ 999+ < L/240  ☑ ADEQUATE

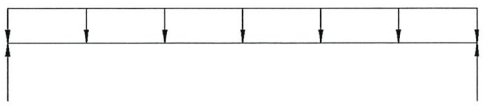
**4 x 10**

## BEAM DESCRIPTION: 1ST FLR FRMG - TYP DROPPED CRAWL GRDR BRG 2 LEVEL

B35

PARAMETERS:

L = 4.25 FT
W = 1.8 KLF
P = — K



ANALYSIS:

$R_{MAX}$ = 3.83 K  $V_D$ = [ ] K  < $V_{ALL}$ = 3.89 K  ☑ ADEQUATE
$M_{MAX}$ = 4.06 K-FT  < $M_{ALL}$ = 4.49 K-FT ($C_D$=1.0 )  ☑ ADEQUATE
$\Delta_{TL}$ = 0.036 IN.  L/ 999+ < L/240  ☑ ADEQUATE

**4 x 10**

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: SPRING RESIDENCE
JAYMARC HOMES
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 1-NOV-22

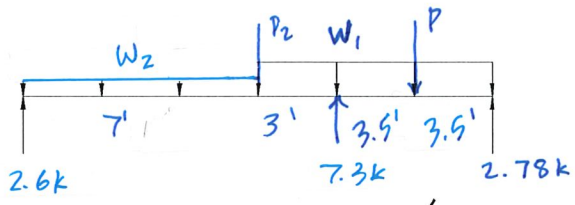
# BEAM & HEADER CALCULATIONS

## BEAM DESCRIPTION: 1ST FLR FRMG - FLUSH BM 2-SPAN @ BRG ABOVE

B36

PARAMETERS:

L = 17 FT
$W_1$ = 0.593 KLF $W_2 = 0.15$
$P_1$ = 1.4 K $P_2 = 2.5$




ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 7.3 K | $V_D$ = | K | < $V_{ALL}$ = | 13.62 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 14.53 K-FT | < $M_{ALL}$ = | 30.79 K-FT | ($C_D$=1.15) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.179 IN. | L/ | 672 | < L/240 | | ☑ ADEQUATE |

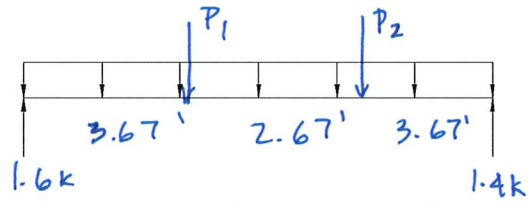
5 1/4 x 11 7/8 LVL

## BEAM DESCRIPTION: 1ST FLR FRMG - FLUSH BM @ STAIRS

B37

PARAMETERS:

L = 10 FT
W = 0.2 KLF
$P_1$ = 0.8 K $P_2 = 0.2$




ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 1.6 K | $V_D$ = | K | < $V_{ALL}$ = | 3.95 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 4.54 K-FT | < $M_{ALL}$ = | 8.93 K-FT | ($C_D$=1.0) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.017 IN. | L/ | 717 | < L/240 | | ☑ ADEQUATE |

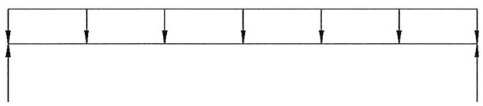
13/4 x 11 7/8 LVL

## BEAM DESCRIPTION: 2ND FLR FRMG - FLUSH BTTM BM @ KITCHEN

B38

PARAMETERS:

L = 6.5 FT
W = 0.66 KLF
P = — K



ANALYSIS:

| | | | | | | |
|---|---|---|---|---|---|---|
| $R_{MAX}$ = | 2.15 K | $V_D$ = | K | < $V_{ALL}$ = | 3.89 K | ☑ ADEQUATE |
| $M_{MAX}$ = | 3.5 K-FT | < $M_{ALL}$ = | 4.49 K-FT | ($C_D$=1.0) | | ☑ ADEQUATE |
| $\Delta_{TL}$ = | 0.072 IN. | L/ | 999+ | < L/240 | | ☑ ADEQUATE |

4x10

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING
7220 Trade Street, Suite 350 ▸ San Diego, CA 92121
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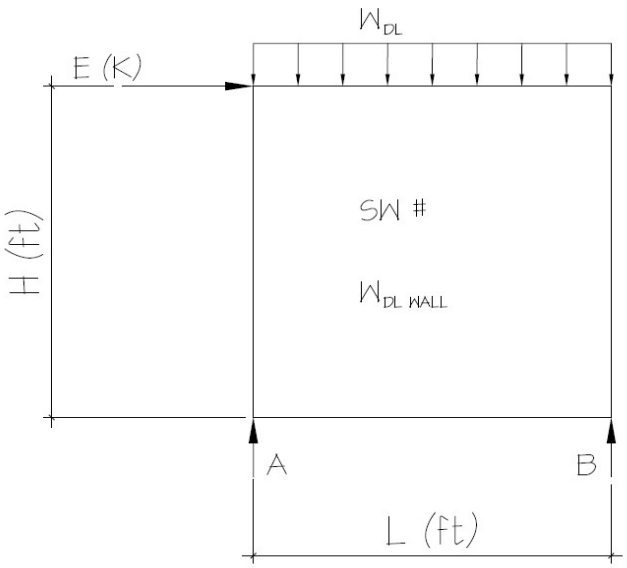
**PROJECT NAME:** JAYMARC HOMES SPRING RESIDENCE
**M&K PROJECT #:** 154-22026
**ENGINEER:** JCL
**DATE:** 03-Nov-22

# OVERSTRENGTH CALCULATIONS

## WALL DESCRIPTION/SW #: 204

PARAMETERS:

| | | |
|---|---|---|
| L = | 25.8 | FT |
| H = | 9.0 | FT |
| E = | 1.20 | K |
| $W_{DLWALL}$ = | 0.10 | KLF |
| $W_{DL}$ = | 0.094 | KLF |
| $\Omega_0$ = | 2.5 | (ASCE TABLE 12.2.1 FOOTNOTE G) |
| SDS = | 1.152 | |




ANALYSIS:

| | | | |
|---|---|---|---|
| $E_{MH} = \Omega_0 * E$ = | 3.00 K | $E_V = 0.2*SDS*DL$ = | 1.151 K |
| $E_M = E_{MH} + E_V$ | | $E_M = E_{MH} + E_V$ = | 4.151 K |
| $E_M = E_{MH} - E_V$ | | $E_M = E_{MH} - E_V$ = | 1.849 K |

$E_M$ (MAX) $= \sum M_A = 0$ = 4.15(9.0) + 0.194(25.75)(12.875) - $R_B$(25.75)

$R_B$ = 2.5DL + 1.5E

$R_A$ = 2.5DL - 1.5E

$E_M$ (MIN) $= \sum M_A = 0$ = 1.85(9.0) + 0.194(25.75)(12.875) - $R_B$(25.75)

$R_B$ = 2.5DL + 0.6E

$R_A$ = 2.5DL - 0.6E

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

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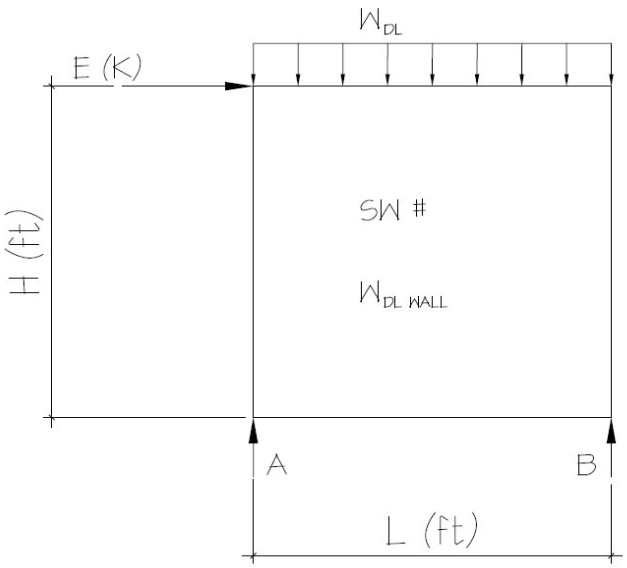
# OVERSTRENGTH CALCULATIONS

## WALL DESCRIPTION/SW #: 206

PARAMETERS:

| | | |
|---|---|---|
| L = | 15.5 | FT |
| H = | 9.0 | FT |
| E = | 2.50 | K |
| $W_{DLWALL}$ = | 0.10 | KLF |
| $W_{DL}$ = | 0.034 | KLF |
| $\Omega_0$ = | 2.5 | (ASCE TABLE 12.2.1 FOOTNOTE G) |
| SDS = | 1.152 | |




ANALYSIS:

| | | | |
|---|---|---|---|
| $E_{MH} = \Omega_0 * E$ = | 6.25 K | $E_V = 0.2*SDS*DL$ = | 0.479 K |
| $E_M = E_{MH} + E_V$ | | $E_M = E_{MH} + E_V$ = | 6.729 K |
| $E_M = E_{MH} - E_V$ | | $E_M = E_{MH} - E_V$ = | 5.771 K |

| | | | |
|---|---|---|---|
| $E_M$ (MAX) = $\sum M_A = 0$ = | 6.73(9.0) + 0.134(15.5)(7.75) - $R_B$(15.5) | $R_B$ = | 1.0DL + 3.9E |
| | | $R_A$ = | 1.0DL - 3.9E |
| $E_M$ (MIN) = $\sum M_A = 0$ = | 5.77(9.0) + 0.134(15.5)(7.75) - $R_B$(15.5) | $R_B$ = | 1.0DL + 3.4E |
| | | $R_A$ = | 1.0DL - 3.4E |

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

ALLOWABLE STESS PERMITTED TO BE INCREASED BY 1.2

SEE FOLLOWING BEAM CALCS FOR LOAD APPLICATION

# Wood Beam

Project File: OVERSTRENGTH.ec6



**DESCRIPTION:** B8 - 2ND FLR FRMG - DROPPED BM @ SIDE COVERED PATIO REAR

## CODE REFERENCES

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

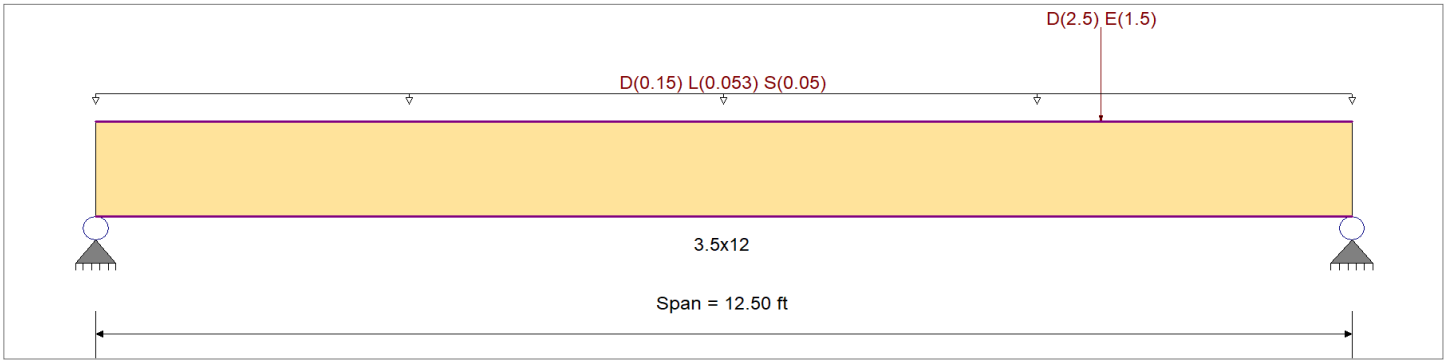
## Material Properties

| | |
|---|---|
| Analysis Method : | Allowable Stress Design |
| Load Combination : | ASCE 7-16 |
| Wood Species : | DF/DF |
| Wood Grade : | 24F - V4 |
| Beam Bracing : | Beam is Fully Braced against lateral-torsional buckling |

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

*E : Modulus of Elasticity*

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




## Applied Loads

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

Beam self weight calculated and added to loading
Uniform Load : D = 0.150, L = 0.0530, S = 0.050 , Tributary Width = 1.0 ft, (WALL)
Point Load : D = 2.50, E = 1.50 k @ 10.0 ft, (SW 204)

## DESIGN SUMMARY

**Design OK**

| | | | | | |
|---|---|---|---|---|---|
| Maximum Bending Stress Ratio | = | 0.390 : 1 | Maximum Shear Stress Ratio | = | 0.355 : 1 |
| Section used for this span | | 3.5x12 | Section used for this span | | 3.5x12 |
| fb: Actual | = | 1,122.42 psi | fv: Actual | = | 101.50 psi |
| Fb: Allowable | = | 2,880.00 psi | Fv: Allowable | = | 286.20 psi |
| Load Combination | | +D+L | Load Combination | | D Only |
| Location of maximum on span | = | 8.622 ft | Location of maximum on span | = | 11.542 ft |
| Span # where maximum occurs | = | Span # 1 | Span # where maximum occurs | = | Span # 1 |

### Maximum Deflection

| | | | | | |
|---|---|---|---|---|---|
| Max Downward Transient Deflection | 0.068 in | Ratio = | 2216 | >=360 | Span: 1 : E Only |
| Max Upward Transient Deflection | 0 in | Ratio = | 0 | <360 | n/a |
| Max Downward Total Deflection | 0.310 in | Ratio = | 484 | >=300 | Span: 1 : +1.090D+0.750L+0.750S+0.5250E |
| Max Upward Total Deflection | 0 in | Ratio = | 0 | <300 | n/a |

## Maximum Forces & Stresses for Load Combinations

| Load Combination | | Max Stress Ratios | | | | | | | | | Moment Values | | | Shear Values | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Segment Length | Span # | M | V | $C_d$ | $C_{F/V}$ | $C_i$ | $C_r$ | $C_m$ | $C_t$ | $C_L$ | M | fb | F'b | V | fv | F'v |
| D Only | | | | | | | | | | | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 12.50 ft | 1 | 0.387 | 0.355 | 0.90 | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 7.02 | 1,002.59 | 2592.00 | 2.84 | 101.50 | 286.20 |
| +D+L | | | | | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 12.50 ft | 1 | 0.390 | 0.351 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 7.86 | 1,122.42 | 2880.00 | 3.12 | 111.52 | 318.00 |
| +D+Lr | | | | | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 12.50 ft | 1 | 0.278 | 0.255 | 1.25 | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 7.02 | 1,002.59 | 3600.00 | 2.84 | 101.50 | 397.50 |
| +D+S | | | | | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 12.50 ft | 1 | 0.337 | 0.303 | 1.15 | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 7.81 | 1,115.26 | 3312.00 | 3.11 | 110.95 | 365.70 |
| +D+0.750Lr+0.750L | | | | | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 12.50 ft | 1 | 0.303 | 0.274 | 1.25 | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 7.64 | 1,091.06 | 3600.00 | 3.05 | 109.01 | 397.50 |
| +D+0.750L+0.750S | | | | | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 12.50 ft | 1 | 0.357 | 0.317 | 1.15 | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 8.27 | 1,181.44 | 3312.00 | 3.25 | 116.10 | 365.70 |

# Wood Beam

Project File: OVERSTRENGTH.ec6



**DESCRIPTION:** B8 - 2ND FLR FRMG - DROPPED BM @ SIDE COVERED PATIO REAR

## Maximum Forces & Stresses for Load Combinations

| Load Combination / Segment Length | Span # | Max Stress Ratios M | V | $C_d$ | $C_{F/V}$ | $C_i$ | $C_r$ | $C_m$ | $C_t$ | $C_L$ | Moment Values M | fb | F'b | Shear Values V | fv | F'v |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| +D+0.60W | | | | | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 12.50 ft | 1 | 0.218 | 0.199 | 1.60 | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 7.02 | 1,002.59 | 4608.00 | 2.84 | 101.50 | 508.80 |
| +1.126D+0.70E | | | | | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 12.50 ft | 1 | 0.309 | 0.284 | 1.60 | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 9.97 | 1,424.06 | 4608.00 | 4.04 | 144.29 | 508.80 |
| +1.126D-0.70E | | | | | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 12.50 ft | 1 | 0.188 | 0.166 | 1.60 | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 6.05 | 864.72 | 4608.00 | 2.36 | 84.29 | 508.80 |
| +D+0.750Lr+0.750L+0.450W | | | | | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 12.50 ft | 1 | 0.237 | 0.214 | 1.60 | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 7.64 | 1,091.06 | 4608.00 | 3.05 | 109.01 | 508.80 |
| +D+0.750L+0.750S+0.450W | | | | | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 12.50 ft | 1 | 0.256 | 0.228 | 1.60 | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 8.27 | 1,181.44 | 4608.00 | 3.25 | 116.10 | 508.80 |
| +1.090D+0.750L+0.750S+0.5 | | | | | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 12.50 ft | 1 | 0.318 | 0.290 | 1.60 | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 10.27 | 1,467.27 | 4608.00 | 4.14 | 147.73 | 508.80 |
| +1.090D+0.750L+0.750S-0.52 | | | | | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 12.50 ft | 1 | 0.236 | 0.202 | 1.60 | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 7.62 | 1,088.19 | 4608.00 | 2.88 | 102.73 | 508.80 |
| +0.60D+0.60W | | | | | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 12.50 ft | 1 | 0.131 | 0.120 | 1.60 | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 4.21 | 601.55 | 4608.00 | 1.71 | 60.90 | 508.80 |
| +0.470D+0.70E | | | | | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 12.50 ft | 1 | 0.167 | 0.153 | 1.60 | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 5.38 | 769.03 | 4608.00 | 2.18 | 77.70 | 508.80 |
| +0.470D-0.70E | | | | | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 12.50 ft | 1 | 0.050 | 0.035 | 1.60 | 1.000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.62 | 231.56 | 4608.00 | 0.50 | 17.70 | 508.80 |

## Overall Maximum Deflections

| Load Combination | Span | Max. "-" Defl | Location in Span | Load Combination | Max. "+" Defl | Location in Span |
|---|---|---|---|---|---|---|
| +1.090D+0.750L+0.750S+0.5250I | 1 | 0.3096 | 6.661 | | 0.0000 | 0.000 |

## Vertical Reactions

Support notation : Far left is #1 Values in KIPS

| Load Combination | Support 1 | Support 2 |
|---|---|---|
| Overall MAXimum | 2.269 | 4.377 |
| Overall MINimum | 0.300 | 1.200 |
| D Only | 1.494 | 2.994 |
| +D+L | 1.826 | 3.326 |
| +D+Lr | 1.494 | 2.994 |
| +D+S | 1.807 | 3.307 |
| +D+0.750Lr+0.750L | 1.743 | 3.243 |
| +D+0.750L+0.750S | 1.977 | 3.477 |
| +D+0.60W | 1.494 | 2.994 |
| +1.126D+0.70E | 1.893 | 4.212 |
| +D+0.750Lr+0.750L+0.450W | 1.743 | 3.243 |
| +D+0.750L+0.750S+0.450W | 1.977 | 3.477 |
| +1.090D+0.750L+0.750S+0.5250E | 2.269 | 4.377 |
| +0.60D+0.60W | 0.897 | 1.797 |
| +0.470D+0.70E | 0.912 | 2.247 |
| D Only | 1.494 | 2.994 |
| L Only | 0.331 | 0.331 |
| S Only | 0.313 | 0.313 |
| E Only | 0.300 | 1.200 |
| H Only | | |

# Wood Beam

Project File: OVERSTRENGTH.ec6



**DESCRIPTION:** B10 - 2ND FLR FRMG - DROPPED BM @ SIDE COVERED PATIO FRONT

## CODE REFERENCES

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

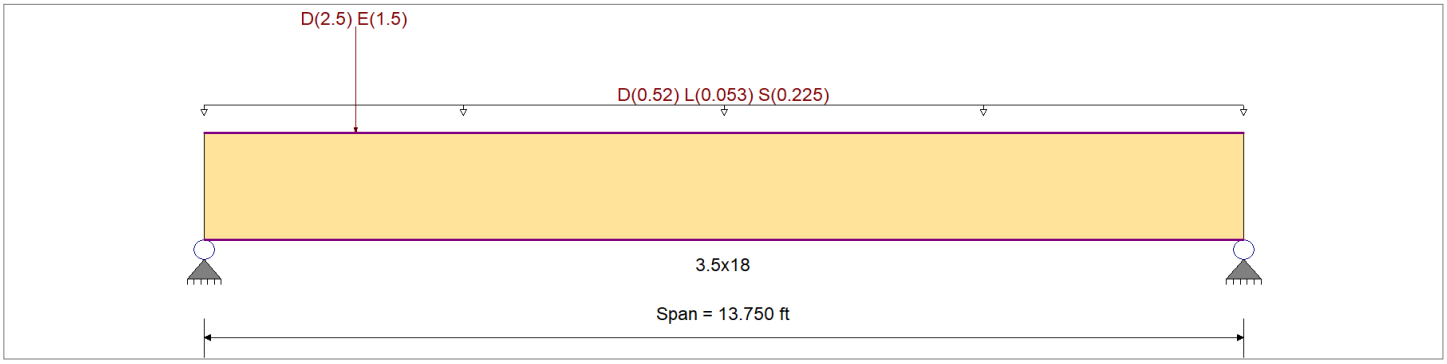
## Material Properties

| | |
|---|---|
| Analysis Method : | Allowable Stress Design |
| Load Combination : | ASCE 7-16 |
| Wood Species : | DF/DF |
| Wood Grade : | 24F - V4 |
| Beam Bracing : | Beam is Fully Braced against lateral-torsional buckling |

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

*E : Modulus of Elasticity*

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




## Applied Loads

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

Beam self weight calculated and added to loading
Uniform Load : D = 0.520, L = 0.0530, S = 0.2250 , Tributary Width = 1.0 ft
Point Load : D = 2.50, E = 1.50 k @ 2.0 ft

## DESIGN SUMMARY

**Design OK**

| | | | | | |
|---|---|---|---|---|---|
| Maximum Bending Stress Ratio | = | 0.393 : 1 | Maximum Shear Stress Ratio | = | 0.418 : 1 |
| Section used for this span | | 3.5x18 | Section used for this span | | 3.5x18 |
| fb: Actual | = | 1,302.61 psi | fv: Actual | = | 119.73 psi |
| F'b | = | 3,312.00 psi | F'v | = | 286.20 psi |
| Load Combination | | +D+S | Load Combination | | D Only |
| Location of maximum on span | = | 6.373 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 | 0.059 in | Ratio = | 2775 >=360 | Span: 1 : S Only |
| Max Upward Transient Deflection | 0 in | Ratio = | 0 <360 | n/a |
| Max Downward Total Deflection | 0.255 in | Ratio = | 647 >=300 | Span: 1 : +1.090D+0.750L+0.750S+0.5250E |
| Max Upward Total Deflection | 0 in | Ratio = | 0 <300 | n/a |

## Maximum Forces & Stresses for Load Combinations

| Load Combination / Segment Length | Span # | Max Stress Ratios M | V | CD | CM | $C_t$ | CLx | $C_V$ | Cfu | $C_i$ | $C_r$ | Moment Values M | fb | F'b | Shear Values V | fv | F'v |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D Only | | | | | | | | | | | | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 13.750 ft | 1 | 0.373 | 0.418 | 0.90 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 15.24 | 967.3 | 2,592.0 | 5.03 | 119.7 | 286.2 |
| +D+L | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 13.750 ft | 1 | 0.363 | 0.398 | 1.00 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 16.48 | 1,046.2 | 2,880.0 | 5.32 | 126.6 | 318.0 |
| +D+Lr | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 13.750 ft | 1 | 0.269 | 0.301 | 1.25 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 15.24 | 967.3 | 3,600.0 | 5.03 | 119.7 | 397.5 |
| +D+S | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 13.750 ft | 1 | 0.393 | 0.407 | 1.15 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 20.52 | 1,302.6 | 3,312.0 | 6.25 | 148.8 | 365.7 |
| +D+0.750Lr+0.750L | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |

# Wood Beam

Project File: OVERSTRENGTH.ec6



**DESCRIPTION:** B10 - 2ND FLR FRMG - DROPPED BM @ SIDE COVERED PATIO FRONT

## Maximum Forces & Stresses for Load Combinations

| Load Combination | | Max Stress Ratios | | | | | | | | | | Moment Values | | | Shear Values | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Segment Length | Span # | M | V | CD | CM | $C_t$ | CLx | $C_V$ | Cfu | $C_i$ | $C_r$ | M | fb | F'b | V | fv | F'v |
| Length = 13.750 ft | 1 | 0.285 | 0.314 | 1.25 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 16.17 | 1,026.4 | 3,600.0 | 5.24 | 124.9 | 397.5 |
| +D+0.750L+0.750S | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 13.750 ft | 1 | 0.386 | 0.401 | 1.15 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 20.13 | 1,278.0 | 3,312.0 | 6.16 | 146.6 | 365.7 |
| +D+0.60W | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 13.750 ft | 1 | 0.210 | 0.235 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 15.24 | 967.3 | 4,608.0 | 5.03 | 119.7 | 508.8 |
| +1.126D+0.70E | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 13.750 ft | 1 | 0.253 | 0.307 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 18.33 | 1,163.7 | 4,608.0 | 6.56 | 156.2 | 508.8 |
| +1.126D-0.70E | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 13.750 ft | 1 | 0.221 | 0.223 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 16.02 | 1,017.2 | 4,608.0 | 4.76 | 113.5 | 508.8 |
| +D+0.750Lr+0.750L+0.450W | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 13.750 ft | 1 | 0.223 | 0.245 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 16.17 | 1,026.4 | 4,608.0 | 5.24 | 124.9 | 508.8 |
| +D+0.750L+0.750S+0.450W | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 13.750 ft | 1 | 0.277 | 0.288 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 20.13 | 1,278.0 | 4,608.0 | 6.16 | 146.6 | 508.8 |
| +1.090D+0.750L+0.750S+0.5 | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 13.750 ft | 1 | 0.308 | 0.341 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 22.35 | 1,419.2 | 4,608.0 | 7.28 | 173.4 | 508.8 |
| +1.090D+0.750L+0.750S-0.5 | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 13.750 ft | 1 | 0.285 | 0.278 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 20.66 | 1,311.9 | 4,608.0 | 5.94 | 141.4 | 508.8 |
| +0.60D+0.60W | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 13.750 ft | 1 | 0.126 | 0.141 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 9.14 | 580.4 | 4,608.0 | 3.02 | 71.8 | 508.8 |
| +0.470D+0.70E | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 13.750 ft | 1 | 0.115 | 0.153 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 8.36 | 530.9 | 4,608.0 | 3.26 | 77.6 | 508.8 |
| +0.470D-0.70E | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 13.750 ft | 1 | 0.083 | 0.069 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 6.05 | 384.3 | 4,608.0 | 1.47 | 34.9 | 508.8 |

## Overall Maximum Deflections

| Load Combination | Span | Max. "-" Defl | Location in Span | Load Combination | Max. "+" Defl | Location in Span |
|---|---|---|---|---|---|---|
| +1.090D+0.750L+0.750S+0.5250I | 1 | 0.2548 | 6.724 | | 0.0000 | 0.000 |

## Vertical Reactions

Support notation : Far left is #1 Values in KIPS

| Load Combination | Support 1 | Support 2 |
|---|---|---|
| Max Upward from all Load Conditions | 8.434 | 5.943 |
| Max Upward from Load Combinations | 8.434 | 5.943 |
| Max Upward from Load Cases | 5.805 | 4.033 |
| D Only | 5.805 | 4.033 |
| +D+L | 6.170 | 4.397 |
| +D+Lr | 5.805 | 4.033 |
| +D+S | 7.352 | 5.579 |
| +D+0.750Lr+0.750L | 6.079 | 4.306 |
| +D+0.750L+0.750S | 7.239 | 5.466 |
| +D+0.60W | 5.805 | 4.033 |
| +1.126D+0.70E | 7.434 | 4.693 |
| +D+0.750Lr+0.750L+0.450W | 6.079 | 4.306 |
| +D+0.750L+0.750S+0.450W | 7.239 | 5.466 |
| +1.090D+0.750L+0.750S+0.5250E | 8.434 | 5.943 |
| +0.60D+0.60W | 3.483 | 2.420 |
| +0.470D+0.70E | 3.626 | 2.048 |
| D Only | 5.805 | 4.033 |
| L Only | 0.364 | 0.364 |
| S Only | 1.547 | 1.547 |
| E Only | 1.282 | 0.218 |
| H Only | | |

# Wood Beam

Project File: OVERSTRENGTH.ec6



**DESCRIPTION:** B30 - 2ND FLR FRMG - FLUSH BTTM BM @ GARAGE

## CODE REFERENCES

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

## Material Properties

Analysis Method : Allowable Stress Design
Load Combination : ASCE 7-16

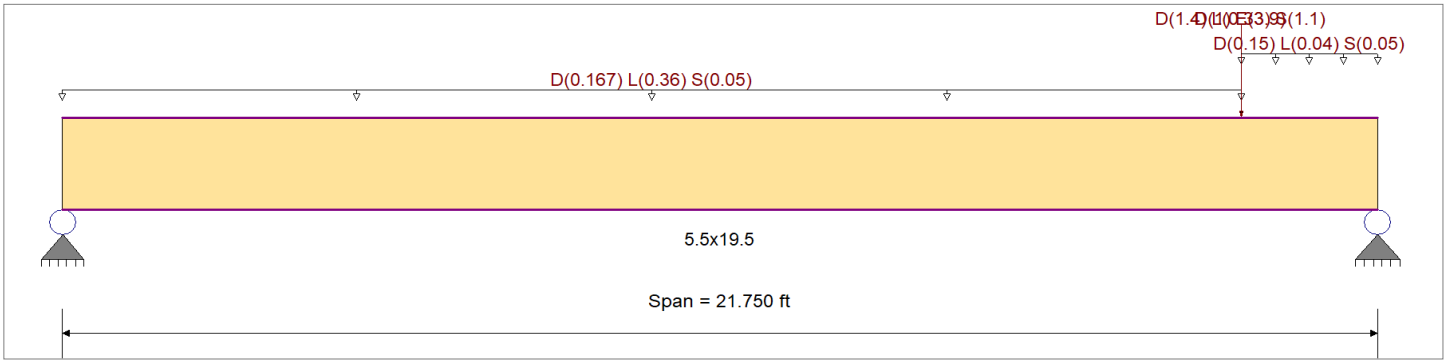
Wood Species : DF/DF
Wood Grade : 24F - V4

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

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

*E : Modulus of Elasticity*

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




## Applied Loads

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

Beam self weight calculated and added to loading
Load for Span Number 1
Uniform Load : D = 0.1670, L = 0.360, S = 0.050 k/ft, Extent = 0.0 -->> 19.50 ft, Tributary Width = 1.0 ft, (DECK)
Uniform Load : D = 0.150, L = 0.040, S = 0.050 k/ft, Extent = 19.50 -->> 21.750 ft, Tributary Width = 1.0 ft, (WALL ABOVE)
Point Load : D = 1.40, L = 0.330, S = 1.10 k @ 19.50 ft, (B29)
Point Load : D = 1.0, E = 3.90 k @ 19.50 ft, (SW 206)

## DESIGN SUMMARY

**Design OK**

| | | | | | |
|---|---|---|---|---|---|
| Maximum Bending Stress Ratio | = | 0.447 : 1 | Maximum Shear Stress Ratio | = | 0.324 : 1 |
| Section used for this span | | 5.5x19.5 | Section used for this span | | 5.5x19.5 |
| fb: Actual | = | 1,213.06 psi | fv: Actual | = | 103.13 psi |
| Fb: Allowable | = | 2,714.67 psi | Fv: Allowable | = | 318.00 psi |
| Load Combination | | +D+L | Load Combination | | +D+L |
| Location of maximum on span | = | 11.351 ft | Location of maximum on span | = | 20.162 ft |
| Span # where maximum occurs | = | Span # 1 | Span # where maximum occurs | = | Span # 1 |

Maximum Deflection

| | | | | |
|---|---|---|---|---|
| Max Downward Transient Deflection | 0.297 in | Ratio = | 877 >=360 | Span: 1 : L Only |
| Max Upward Transient Deflection | 0 in | Ratio = | 0 <360 | n/a |
| Max Downward Total Deflection | 0.528 in | Ratio = | 494 >=300 | Span: 1 : +1.090D+0.750L+0.750S+0.5250E |
| Max Upward Total Deflection | 0 in | Ratio = | 0 <300 | n/a |

## Maximum Forces & Stresses for Load Combinations

| Load Combination | | Max Stress Ratios | | | | | | | | | Moment Values | | | Shear Values | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Segment Length | Span # | M | V | $C_d$ | $C_{F/V}$ | $C_i$ | $C_r$ | $C_m$ | $C_t$ | $C_L$ | M | fb | F'b | V | fv | F'v |
| D Only | | | | | | | | | | | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 21.750 ft | 1 | 0.199 | 0.191 | 0.90 | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 14.09 | 484.99 | 2443.20 | 3.91 | 54.68 | 286.20 |
| +D+L | | | | | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 21.750 ft | 1 | 0.447 | 0.324 | 1.00 | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 35.24 | 1,213.06 | 2714.67 | 7.37 | 103.13 | 318.00 |
| +D+Lr | | | | | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 21.750 ft | 1 | 0.143 | 0.138 | 1.25 | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 14.09 | 484.99 | 3393.33 | 3.91 | 54.68 | 397.50 |
| +D+S | | | | | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 21.750 ft | 1 | 0.203 | 0.205 | 1.15 | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 18.39 | 633.19 | 3121.86 | 5.36 | 74.96 | 365.70 |
| +D+0.750Lr+0.750L | | | | | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |

# Wood Beam

Project File: OVERSTRENGTH.ec6



**DESCRIPTION:** B30 - 2ND FLR FRMG - FLUSH BTTM BM @ GARAGE

## Maximum Forces & Stresses for Load Combinations

| Load Combination / Segment Length | Span # | Max Stress Ratios M | V | $C_d$ | $C_{F/V}$ | $C_i$ | $C_r$ | $C_m$ | $C_t$ | $C_L$ | Moment Values M | fb | F'b | Shear Values V | fv | F'v |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Length = 21.750 ft | 1 | 0.304 | 0.229 | 1.25 | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 29.93 | 1,030.52 | 3393.33 | 6.51 | 91.02 | 397.50 |
| +D+0.750L+0.750S | | | | | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 21.750 ft | 1 | 0.365 | 0.290 | 1.15 | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 33.12 | 1,140.33 | 3121.86 | 7.60 | 106.23 | 365.70 |
| +D+0.60W | | | | | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 21.750 ft | 1 | 0.112 | 0.107 | 1.60 | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 14.09 | 484.99 | 4343.46 | 3.91 | 54.68 | 508.80 |
| +1.126D+0.70E | | | | | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 21.750 ft | 1 | 0.154 | 0.188 | 1.60 | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 19.49 | 670.84 | 4343.46 | 6.85 | 95.80 | 508.80 |
| +1.126D-0.70E | | | | | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 21.750 ft | 1 | 0.100 | 0.055 | 1.60 | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 12.61 | 434.19 | 4343.46 | 1.98 | 27.75 | 508.80 |
| +D+0.750Lr+0.750L+0.450W | | | | | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 21.750 ft | 1 | 0.237 | 0.179 | 1.60 | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 29.93 | 1,030.52 | 4343.46 | 6.51 | 91.02 | 508.80 |
| +D+0.750L+0.750S+0.450W | | | | | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 21.750 ft | 1 | 0.263 | 0.209 | 1.60 | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 33.12 | 1,140.33 | 4343.46 | 7.60 | 106.23 | 508.80 |
| +1.090D+0.750L+0.750S+0.5 | | | | | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 21.750 ft | 1 | 0.292 | 0.269 | 1.60 | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 36.88 | 1,269.65 | 4343.46 | 9.78 | 136.83 | 508.80 |
| +1.090D+0.750L+0.750S-0.52 | | | | | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 21.750 ft | 1 | 0.254 | 0.168 | 1.60 | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 31.98 | 1,101.09 | 4343.46 | 6.11 | 85.48 | 508.80 |
| +0.60D+0.60W | | | | | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 21.750 ft | 1 | 0.067 | 0.064 | 1.60 | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 8.45 | 291.00 | 4343.46 | 2.35 | 32.81 | 508.80 |
| +0.470D+0.70E | | | | | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 21.750 ft | 1 | 0.083 | 0.118 | 1.60 | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 10.50 | 361.62 | 4343.46 | 4.28 | 59.93 | 508.80 |
| +0.470D-0.70E | | | | | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 21.750 ft | 1 | 0.029 | 0.026 | 1.60 | 0.943 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 3.63 | 124.98 | 4343.46 | 0.93 | 13.05 | 508.80 |

## Overall Maximum Deflections

| Load Combination | Span | Max. "-" Defl | Location in Span | Load Combination | Max. "+" Defl | Location in Span |
|---|---|---|---|---|---|---|
| +1.090D+0.750L+0.750S+0.5250I | 1 | 0.5280 | 11.193 | | 0.0000 | 0.000 |

## Vertical Reactions

Support notation : Far left is #1 Values in KIPS

| Load Combination | Support 1 | Support 2 |
|---|---|---|
| Overall MAXimum | 6.227 | 10.190 |
| Overall MINimum | 0.403 | 3.497 |
| D Only | 2.315 | 4.184 |
| +D+L | 6.227 | 7.712 |
| +D+Lr | 2.315 | 4.184 |
| +D+S | 2.973 | 5.714 |
| +D+0.750Lr+0.750L | 5.249 | 6.830 |
| +D+0.750L+0.750S | 5.742 | 7.978 |
| +D+0.60W | 2.315 | 4.184 |
| +1.126D+0.70E | 2.889 | 7.159 |
| +D+0.750Lr+0.750L+0.450W | 5.249 | 6.830 |
| +D+0.750L+0.750S+0.450W | 5.742 | 7.978 |
| +1.090D+0.750L+0.750S+0.5250E | 6.162 | 10.190 |
| +0.60D+0.60W | 1.389 | 2.511 |
| +0.470D+0.70E | 1.371 | 4.414 |
| D Only | 2.315 | 4.184 |
| L Only | 3.912 | 3.528 |
| S Only | 0.658 | 1.530 |
| E Only | 0.403 | 3.497 |
| H Only | | |

# JayMarc Homes

# Spring Residence

Mercer island, WA

## Shear Wall Calculations - Wind

*Reviewed By: RJZ*

*November 1, 2022*

***Parameters:***

*Single Family Home*

*Design Wind Speed: 100 MPH*

*wind Exposure Category: C*

*Seismic Design Category: D*

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

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

**PROJECT NAME:** SPRING RESIDENCE
**M&K PROJECT #:** 154-22026
**ENGINEER:** JCL
**DATE:** 28-OCT-22

# WIND DESIGN SUMMARY PER ASCE 7-16

## PARAMETERS:

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

0.60

## ROOF GEOMETRY:

| | | |
|---|---|---|
| TRANS. ROOF PITCH | 6.0 | :12 |
| LONG. ROOF PITCH | 7.0 | :12 |
| MEAN ROOF HEIGHT, H | 24.00 | FT |

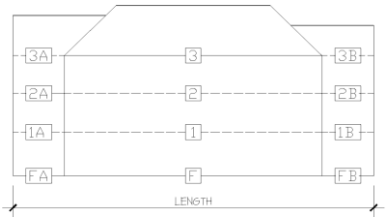
## BUILDING GEOMETRY:

| | | |
|---|---|---|
| LENGTH | 95 | FT |
| WIDTH | 45 | 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 | 300 | 0 | sq ft |
| | | Wall surface | 0 | 450 | 0 | sq ft |
| 1 | 11.5 FT | Roof Surface | 0 | 75 | 0 | sq ft |
| | | Wall surface | 0 | 930 | 0 | sq ft |
| FND | | Roof Surface | 0 | 0 | 0 | sq ft |
| | | Wall surface | 0 | 0 | 0 | sq ft |



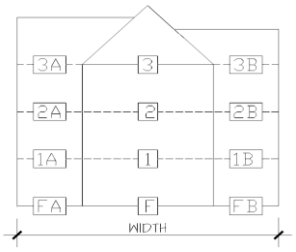

### TRIBUTARY DESIGN LOADS: (0.6W)

| | SECTION A | SECTION O | SECTION B | |
|---|---|---|---|---|
| Story Shear | 0.00 | 13.49 | 0.00 | kips |
| Total Shear | 0.00 | 13.49 | 0.00 | kips |
| | | 13.49 | | kips |
| Story Shear | 0.00 | 19.94 | 0.00 | kips |
| Total Shear | 0.00 | 33.43 | 0.00 | kips |
| | | 33.43 | | kips |
| Story Shear | 0.00 | 0.00 | 0.00 | kips |
| Total Shear | 0.00 | 33.43 | 0.00 | kips |
| | | 33.43 | | kips |

## LONGITUDINAL DIRECTION (PARALLEL TO MAIN RIDGE LINE)

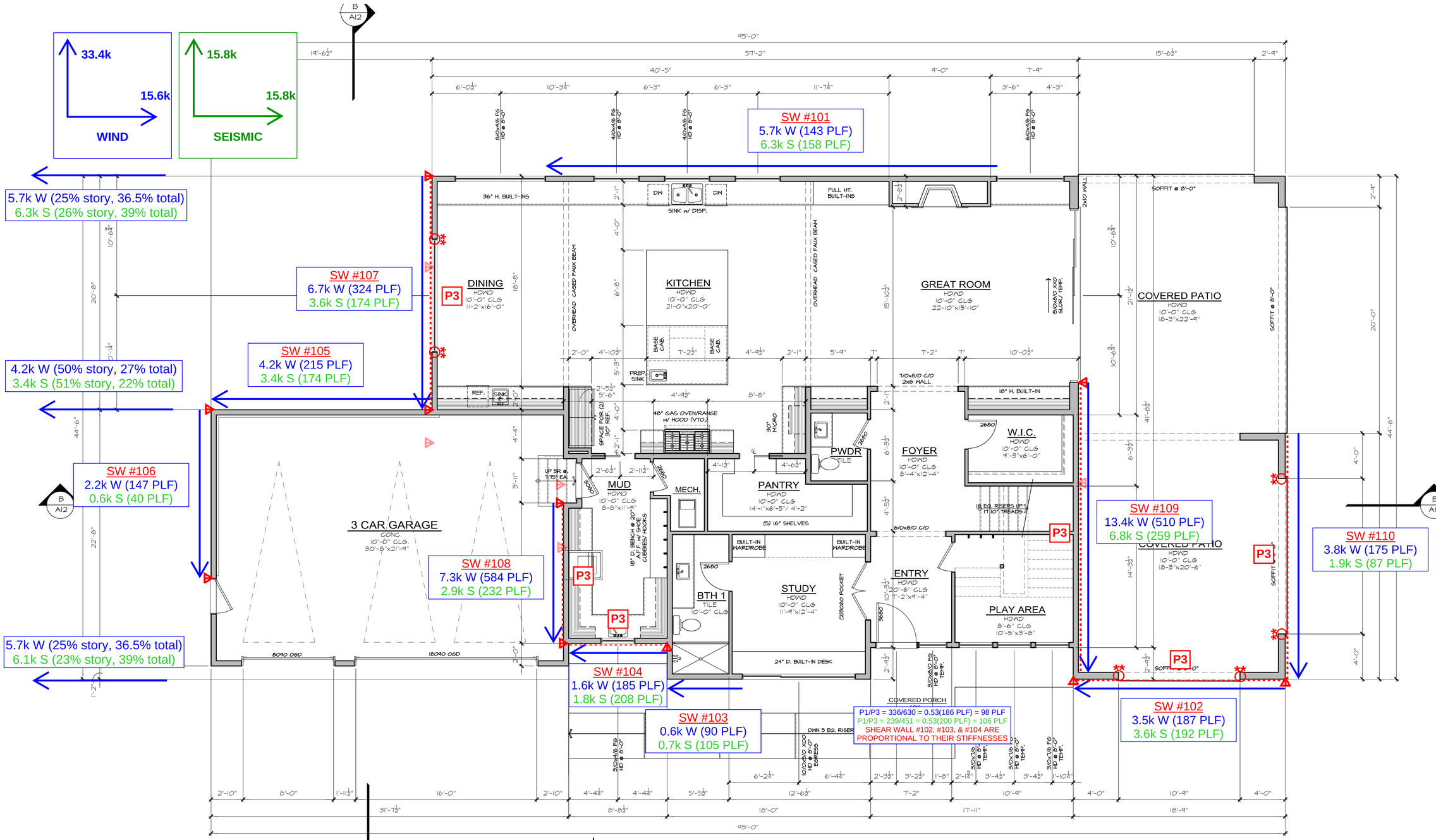
### TRIBUTARY DESIGN AREAS:

| DIAPHRAGM LEVEL | FLOOR-TO-FLOOR HEIGHT | | SECTION A | SECTION O | SECTION B | |
|---|---|---|---|---|---|---|
| 2 | 9 FT | Roof Surface | 0 | 150 | 0 | sq ft |
| | | Wall surface | 0 | 278 | 0 | sq ft |
| 1 | 11.5 FT | Roof Surface | 0 | 0 | 0 | sq ft |
| | | Wall surface | 0 | 495 | 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 | 7.19 | 0.00 | kips |
| Total Shear | 0.00 | 7.19 | 0.00 | kips |
| | | 7.19 | | kips |
| Story Shear | 0.00 | 8.39 | 0.00 | kips |
| Total Shear | 0.00 | 15.58 | 0.00 | kips |
| | | 15.58 | | kips |
| Story Shear | 0.00 | 0.00 | 0.00 | kips |
| Total Shear | 0.00 | 15.58 | 0.00 | kips |
| | | 15.58 | | kips |




# MAIN FLOOR PLAN NOTES

...SECTION R06

...EQUIREMENTS (MANDATORY).

...W/SUFFICIENT OPTIONS FROM TABLE R406.2 TO ACHIEVE THE FOLLOWING MIN. NUMBER OF CREDITS:

3.5 FOR A 1501sf to 4,999sf HOME.

CREDITS PROVIDED IN THIS HOME AS FOLLOWS:

EFFICIENT BUILDING ENVELOPE 1a: .05 CREDITS

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

VERTICAL FENESTRATION U = 0.28 WINDOWS

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

HIGH EFFICIENCY HVAC EQUIPMENT 3a: 0.5 CREDITS

GAS FURNACE WITH MINIMUM AFUE

EFFICIENT WATER HEATING 5a: 0.5 CREDITS

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

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

EFFICIENT WATER HEATING 5c: 1.5 CREDITS

WATER HEATING SYSTEM SHALL BE:

GAS WATER HEATER WITH A MINIMUM EF OF 0.91

## SUMMARY

...H WHOLE HOUSE VENTILATION

PROVIDE WHOLE HOUSE VENTILATION per 2015 IRC, M1507 and IMC R403.8 USING LAUNDRY ROOM EXHAUST FAN INTEGRATED INTO FORCED AIR SYSTEM (FAU) PROVIDING OUTDOOR AIR CONTACT EQUIPMENT RETURN SIDE OF THE AIR HANDLER.

| SYMBOL | LOCATION | Fan CFM | AREA |
|---|---|---|---|
| | LAUNDRY | | 95 S.F. |
| 180cfm | 2 CAR GARAGE | 102 | S.F. |
| 100cfm | KITCHEN PWDR | 18751 | S.F. |
| | COVID FORCE | 57 | S.F. |
| | RANGE HOOD or DOWN DRAFT EXHAUST FAN RATED AT MIN. 100CFM OR GREATER | | |
| | EXTERIOR WALL MAKE UP AIR per M1507.3.3 | | |
| | TOTAL AREA UNDER ROOF | 2,414 | S.F. |
| 180cfm MIN. | LAUNDRY MIN. 180cfm, INTERMITTENT at .025wg TO FUNCTION AS OVERALL WHOLE HOUSE FAN (WHF) | 95'-0" | |
| | OVERALL DEPTH | 44'-8" | |

MECHANICAL CONTRACTOR TO SIZE WHF, FAN and SET OPERATING TIMER per TABLE M1507.3.3(2) FOR A 3,001-4,500sf, DWELLING w/4-5 BEDRMS, TO OPERATE INTERMITTENTLY and CONTINUOUSLY per TABLE M1507.3.3(2). Alternatively, no separate CONTROLS FOR WHF per M1507.3.3. PROVIDE LABEL TO CONTROLS THAT READS "WHOLE HOUSE VENTILATION - SEE OPERATING INSTRUCTIONS"

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

# MAIN FLOOR PLAN

1/4" = 1'-0"

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

| Issue | Issue Date | By | Description |
|---|---|---|---|
| | | | |

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

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



11.22.22
Submittal Date

Sheet Title/Description

JAYMARC HOMES
Design Firm

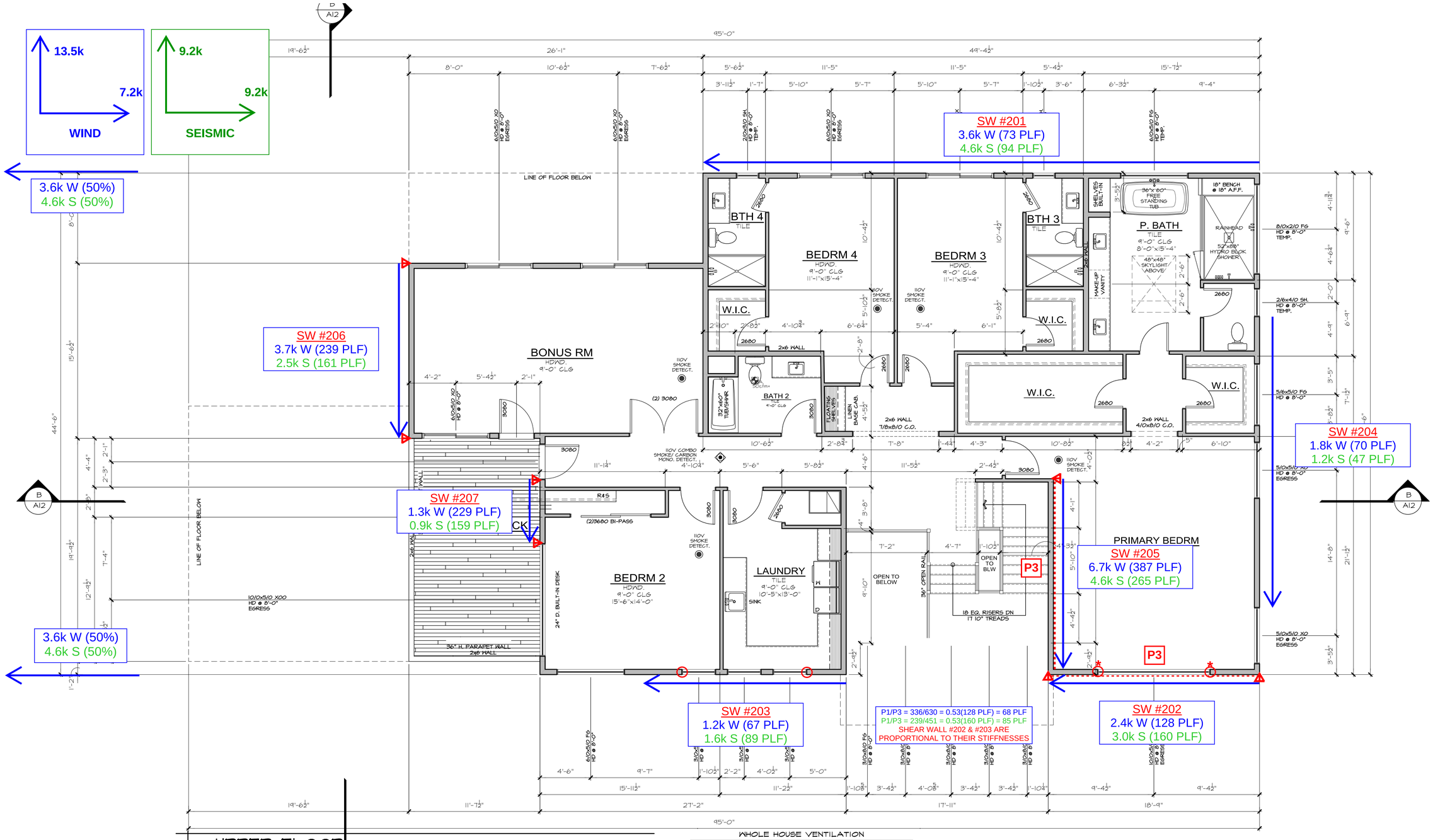
R.K.N.
Drawn by:

Checked by:

Primary Scale

Sheet Title/Description

A5
of: .




# UPPER FLOOR PLAN NOTES: B A12

## PLAN SPECIFIC 2015 WSEC, SECTI

R406.2 ADDITIONAL ENERGY EFFICIENCY REQUIREMEN
THIS RESIDENTIAL DWELLING SHALL COMPLY W/SUFFICI
TABLE R406.2 TO ACHIEVE THE FOLLOWING MIN. NUMBE
3.5 FOR A 1,501sf to 4,999sf HOME.
CREDITS PROVIDED IN THIS HOME AS FOLLOWS:

EFFICIENT BUILDING ENVELOPE 1a: 0.5 CREDITS
PRESCRIPTIVE COMPLIANCE IS BASED ON TABLE R402.1.1 with FOLLOWING MODIFICATIONS:
VERTICAL FENESTRATION U = 0.28 WINDOWS
FLOORS TO BE R-38 and SLAB ON GRADE TO BE R-10 PERIMETER and UNDER ENTIRE SLAB BELOW GRADE.

5.0k W (37%)
3.4k S (37%)

R406.2 ADDITIONAL ENERGY EFFICIENCY REQUIREMENTS (MANDATORY).
4 EFFICIENCY HVAC EQUIPMENT 3a: 1.0 CREDITS
GAS FURNACE WITH MINIMUM AFUE OF 94%

EFFICIENT WATER HEATING 5a: 0.5 CREDITS
ALL SHOWERHEAD and KITCHEN SINK FAUCETS INSTALLED IN THE HOUSE SHALL BE RATED AT 1.75 GPM or LESS.
ALL OTHER LAVATORY FAUCETS SHALL BE RATED AT 1.0 GPM or LESS.

EFFICIENT WATER HEATING 5c: 1.5 CREDITS
WATER HEATING SYSTEM SHALL BE:
GAS WATER HEATER WITH A MINIMUM EF OF 0.91

## WHOLE HOUSE VENTILATION

PROVIDE WHOLE HOUSE VENTILATION per 2015 IRC, M1507 and IMC R403.8 USING LAUNDRY ROOM EXHAUST FAN INTEGRATED INTO FORCED AIRE SYSTEM (FAU.) PROVIDE OUTDOOR FRESH AIR W/DUCTS CONNECTED TO THE RETURN SIDE OF THE AIR HANDLER.

| SYMBOL | LOCATION | MIN. FAN REQUIREMENTS (ALL FANS VENT TO OUTDIDE) |
|---|---|---|
| 50cfm+ | BATH & POWDER | Min. 50cfm, INTERMITTENT at .025ng per TABLE M1507.4 |
| | KITCHEN | Min. 100cfm, INTERMITTENT at .025ng per TBL. M1507.4 |
| 100cfm+ | | RANGE HOOD'or DOWN DRAFT EXHAUST FAN RATED at min. 100cfm, at 0.1ing MAY BE USED FOR EXHAUST FAN REQMT. EXHAUST HOODS IN EXCESS OF 400cfm, SHALL BE INTERLOCKED and PROVIDE MAKE UP AIR per M1503.4 |
| 180cfm+ WHF. | LAUNDRY ROOM | MIN. 180cfm, INTERMITTENT at .025ng TO FUNCTION AS WHOLE HOUSE FAN (WHF.) |

MECHANICAL CONTRACTOR TO SIZE WHF. FAN and SET OPERATING TIMER per TABLE M1507.3.3(1) FOR A 3,001-4,500sf. DWELLING w/4-5 BEDRMS, TO OPERATE INTERMITTENTLY and CONTINUOSLY per TABLE M1507.3.3(2)

PROVIDE CONTROLS FOR WHF. per M1507.3.2 AFFIX LABEL TO CONTROLS THAT READS "WHOLE HOUSE VENTILATION - SEE OPERATING INSTRUCTIONS"

6.7k W (50%)
4.6k S (50%)

## SUMMARY

### SQUARE FOOTAGE SUMMARY

1.8k W (13%)
1.2k S (13%)

| | | |
|---|---|---|
| LOWER FLOOR AREA | | S.F. |
| MAIN FLOOR AREA | | S.F. |
| UPPER FLOOR AREA | | S.F. |
| TOTAL CONDITIONED AREA | | S.F. |
| 2 CAR GARAGE | 702 | S.F. |
| COV'D PATIO | 815 | S.F. |
| COV'D PORCH | 57 | S.F. |
| TOTAL AREA UNDER ROOF | 6,414 | S.F. |
| OVERALL WIDTH | 95'-0" | |
| OVERALL DEPTH | 44'-8" | |

Updated : 12.03.20

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

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

# UPPER FLOOR PLAN

1/4" = 1'-0"


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


| Issue | Issue Date | By | Description |
|---|---|---|---|
| △ | | | |

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

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

Conditions not specifically represented graphically or in writing or which conflict with the current International Residential Code (IRC.) or those of the local municipality then the current standards and requirements of each respectively shall govern.

The drawings in this set are instruments of service and shall remain the property of JayMarc Homes, LLC.



11.22.22
Submittal Date

Sheet Title/Description

JAYMARC HOMES
Design Firm

R.K.N.
Drawn by:

Checked by:

Primary Scale

A7
of: .

Sheet Title/Description

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# SHEARWALL DESIGN SUMMARY

## SHEARWALL 201: 2ND - REAR EXT BED 4 TO PRIMARY BATH

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 9.0 | FT. | MAX WALL OPENING HT, $H_c$ | 5.0 | FT. | | |
| WALL LENGTH, L | 49.0 | FT. | QUALIFYING WALL LENGTH, L | 27.0 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 3600 LBS | < | 9067 LBS |

### SHEARWALL ASSEMBLY SPECIFICATION

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

### OVERTURNING EVALUATION:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| RESISTIVE DL | 296 | PLF | OVERTURNING MOMENT | 32.4 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 200 | LBS | RESISTIVE MOMENT | 168.3 | K-FT | HOLDOWN CAPACITY | 0 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**

## SHEARWALL 202: 2ND - FRONT EXT PRIMARY BEDROOM

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 9.0 | FT. | MAX WALL OPENING HT, Hc | 5.0 | FT. | | |
| WALL LENGTH, L | 18.8 | FT. | QUALIFYING WALL LENGTH, L | 8.7 | FT. | SHEARWALL ASSEMBLY | P3 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 2400 LBS | < | 5464 LBS |

### SHEARWALL ASSEMBLY SPECIFICATION

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

### OVERTURNING EVALUATION:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| RESISTIVE DL | 134 | PLF | OVERTURNING MOMENT | 21.6 | K-FT | HOLD DOWN DESIGN LOAD | 250 | LBS |
| DL AT ENDS OF WALL | 700 | LBS | RESISTIVE MOMENT | 16.9 | 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
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# SHEARWALL DESIGN SUMMARY

## SHEARWALL 203: 2ND - FRONT EXT BED 2 / LAUNDRY

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 9.0 | FT. | MAX WALL OPENING HT, $H_c$ | 5.0 | FT. | | |
| WALL LENGTH, L | 18.0 | FT. | QUALIFYING WALL LENGTH, L | 7.0 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 1200 LBS | < | 2351 LBS |

### SHEARWALL ASSEMBLY SPECIFICATION

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

### OVERTURNING EVALUATION:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| RESISTIVE DL | 134 | PLF | OVERTURNING MOMENT | 10.8 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 1200 | LBS | RESISTIVE MOMENT | 20.0 | K-FT | HOLDOWN CAPACITY | 0 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**

## SHEARWALL 204: 2ND - SIDE EXT PRIMARY BEDROOM / BATH

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 9.0 | FT. | MAX WALL OPENING HT, Hc | 5.0 | FT. | | |
| WALL LENGTH, L | 25.8 | FT. | QUALIFYING WALL LENGTH, L | 13.8 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 1800 LBS | < | 4617 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 | 194 | PLF | OVERTURNING MOMENT | 16.2 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 50 | LBS | RESISTIVE MOMENT | 30.2 | K-FT | HOLDOWN CAPACITY | 0 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# SHEARWALL DESIGN SUMMARY

## SHEARWALL 205: 2ND - SIDE INT PRIMARY BEDROOM

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 9.0 | FT. | MAX WALL OPENING HT, $H_o$ | 0.0 | FT. | | |
| WALL LENGTH, L | 17.3 | FT. | QUALIFYING WALL LENGTH, L | 17.3 | FT. | SHEARWALL ASSEMBLY | P3 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 6700 LBS | < | 10921 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 | 253 | PLF | OVERTURNING MOMENT | 60.3 | K-FT | HOLD DOWN DESIGN LOAD | 2284 | LBS |
| DL AT ENDS OF WALL | 400 | LBS | RESISTIVE MOMENT | 20.7 | K-FT | HOLDOWN CAPACITY | 4645 | LBS |

### HOLD-DOWN SPECIFICATION

**SIMPSON MSTC66 STRAP TIE (20" END LENGTH)**

## SHEARWALL 206: 2ND - SIDE EXT BONUS

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 9.0 | FT. | MAX WALL OPENING HT, Hc | 0.0 | FT. | | |
| WALL LENGTH, L | 15.5 | FT. | QUALIFYING WALL LENGTH, L | 15.5 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 3700 LBS | < | 5205 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 | 33.3 | K-FT | HOLD DOWN DESIGN LOAD | 1347 | LBS |
| DL AT ENDS OF WALL | 700 | LBS | RESISTIVE MOMENT | 12.4 | 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
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# SHEARWALL DESIGN SUMMARY

## SHEARWALL 207: 2ND - SIDE EXT BED 2

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 9.0 | FT. | MAX WALL OPENING HT, $H_c$ | 0.0 | FT. | | |
| WALL LENGTH, L | 5.7 | FT. | QUALIFYING WALL LENGTH, L | 5.7 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 1300 LBS | < | 1904 LBS |

### SHEARWALL ASSEMBLY SPECIFICATION

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

### OVERTURNING EVALUATION:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| RESISTIVE DL | 150 | PLF | OVERTURNING MOMENT | 11.7 | K-FT | HOLD DOWN DESIGN LOAD | 1683 | LBS |
| DL AT ENDS OF WALL | 400 | LBS | RESISTIVE MOMENT | 2.2 | K-FT | HOLDOWN CAPACITY | 1705 | LBS |

### HOLD-DOWN SPECIFICATION

**SIMPSON CS16 STRAP TIE (14" END LENGTH)**

## SHEARWALL 101: 1ST - REAR EXT GREAT ROOM

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 10.0 | FT. | MAX WALL OPENING HT, Hc | 4.5 | FT. | | |
| WALL LENGTH, L | 40.0 | FT. | QUALIFYING WALL LENGTH, L | 28.0 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 5700 LBS | < | 9402 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 | 57.0 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 400 | LBS | RESISTIVE MOMENT | 136.5 | K-FT | HOLDOWN CAPACITY | 0 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# SHEARWALL DESIGN SUMMARY

## SHEARWALL 102: 1ST - FRONT EXT COVERED PATIO

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 10.0 | FT. | MAX WALL OPENING HT, $H_o$ | 8.0 | FT. | | |
| WALL LENGTH, L | 18.8 | FT. | QUALIFYING WALL LENGTH, L | 8.0 | FT. | SHEARWALL ASSEMBLY | P3 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 3500 LBS | < | 5042 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 | 392 | PLF | OVERTURNING MOMENT | 35.0 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 1200 | LBS | RESISTIVE MOMENT | 42.1 | K-FT | HOLDOWN CAPACITY | 0 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**

## SHEARWALL 103: 1ST - FRONT EXT BATH 1

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 10.0 | FT. | MAX WALL OPENING HT, Hc | 0.0 | FT. | | |
| WALL LENGTH, L | 6.7 | FT. | QUALIFYING WALL LENGTH, L | 6.7 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 600 LBS | < | 2240 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 | 332 | PLF | OVERTURNING MOMENT | 6.0 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 1200 | LBS | RESISTIVE MOMENT | 7.1 | K-FT | HOLDOWN CAPACITY | 0 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# SHEARWALL DESIGN SUMMARY

## SHEARWALL 104: 1ST - FRONT EXT MUD

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 10.0 | FT. | MAX WALL OPENING HT, $H_c$ | 4.5 | FT. | | |
| WALL LENGTH, L | 8.7 | FT. | QUALIFYING WALL LENGTH, L | 5.7 | FT. | SHEARWALL ASSEMBLY | P3 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 1600 LBS | < | 3573 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 | 243 | PLF | OVERTURNING MOMENT | 16.0 | K-FT | HOLD DOWN DESIGN LOAD | 1175 | LBS |
| DL AT ENDS OF WALL | 400 | LBS | RESISTIVE MOMENT | 5.8 | K-FT | HOLDOWN CAPACITY | 4935 | LBS |

### HOLD-DOWN SPECIFICATION

**SIMPSON STHD14RJ HOLDOWN**

## SHEARWALL 105: 1ST - REAR EXT GARAGE

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 8.0 | FT. | MAX WALL OPENING HT, Hc | 0.0 | FT. | | |
| WALL LENGTH, L | 19.5 | FT. | QUALIFYING WALL LENGTH, L | 19.5 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 4200 LBS | < | 6548 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 | 287 | PLF | OVERTURNING MOMENT | 33.6 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 1000 | LBS | RESISTIVE MOMENT | 34.1 | K-FT | HOLDOWN CAPACITY | 0 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# 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 | 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

## SHEARWALL 106: 1ST - SIDE EXT GARAGE

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 8.0 | FT. | MAX WALL OPENING HT, Hc | 0.0 | FT. | | |
| WALL LENGTH, L | 15.0 | FT. | QUALIFYING WALL LENGTH, L | 15.0 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 2200 LBS | < | 5037 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 | 17.6 | K-FT | HOLD DOWN DESIGN LOAD | 618 | LBS |
| DL AT ENDS OF WALL | 200 | LBS | RESISTIVE MOMENT | 8.3 | K-FT | HOLDOWN CAPACITY | 4935 | LBS |

### HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# SHEARWALL DESIGN SUMMARY

## SHEARWALL 107: 1ST - SIDE EXT DINING

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 10.0 | FT. | MAX WALL OPENING HT, $H_c$ | 5.0 | FT. | | |
| WALL LENGTH, L | 20.7 | FT. | QUALIFYING WALL LENGTH, L | 10.7 | FT. | SHEARWALL ASSEMBLY | P3 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 6700 LBS | < | 6724 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 | 249 | PLF | OVERTURNING MOMENT | 67.0 | K-FT | HOLD DOWN DESIGN LOAD | 1871 | LBS |
| DL AT ENDS OF WALL | 400 | LBS | RESISTIVE MOMENT | 28.3 | K-FT | HOLDOWN CAPACITY | 4935 | LBS |

### HOLD-DOWN SPECIFICATION

**SIMPSON STHD14RJ HOLDOWN**

## SHEARWALL 108: 1ST - SIDE INT GARAGE

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 10.0 | FT. | MAX WALL OPENING HT, Hc | 0.0 | FT. | | |
| WALL LENGTH, L | 12.5 | FT. | QUALIFYING WALL LENGTH, L | 12.5 | FT. | SHEARWALL ASSEMBLY | P3 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 7300 LBS | < | 7878 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 | 388 | PLF | OVERTURNING MOMENT | 73.0 | K-FT | HOLD DOWN DESIGN LOAD | 4169 | LBS |
| DL AT ENDS OF WALL | 1200 | LBS | RESISTIVE MOMENT | 20.9 | K-FT | HOLDOWN CAPACITY | 4935 | LBS |

### HOLD-DOWN SPECIFICATION

**SIMPSON STHD14RJ HOLDOWN**

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# SHEARWALL DESIGN SUMMARY

## SHEARWALL 109: 1ST - SIDE EXT STAIRS / GREAT ROOM

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 10.0 | FT. | MAX WALL OPENING HT, $H_o$ | 0.0 | FT. | | |
| WALL LENGTH, L | 26.3 | FT. | QUALIFYING WALL LENGTH, L | 26.3 | FT. | SHEARWALL ASSEMBLY | P3 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 13400 LBS | < | 16543 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 | 368 | PLF | OVERTURNING MOMENT | 134.0 | K-FT | HOLD DOWN DESIGN LOAD | 2325 | LBS |
| DL AT ENDS OF WALL | 1200 | LBS | RESISTIVE MOMENT | 73.0 | K-FT | HOLDOWN CAPACITY | 4935 | LBS |

### HOLD-DOWN SPECIFICATION

**SIMPSON STHD14RJ HOLDOWN**

## SHEARWALL 110: 1ST - SIDE EXT COVERED PATIO

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 10.0 | FT. | MAX WALL OPENING HT, Hc | 8.0 | FT. | | |
| WALL LENGTH, L | 21.8 | FT. | QUALIFYING WALL LENGTH, L | 8.0 | FT. | SHEARWALL ASSEMBLY | P3 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 3800 LBS | < | 5042 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 | 309 | PLF | OVERTURNING MOMENT | 38.0 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 1200 | LBS | RESISTIVE MOMENT | 45.7 | K-FT | HOLDOWN CAPACITY | 0 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**

# JayMarc Homes

# Spring Residence

Mercer island, WA

## Shear Wall Calculations - Seismic

*Reviewed By: RJZ*

*November 1, 2022*

***Parameters:***

*Single Family Home*

*Design Wind Speed: 100 MPH*

*wind Exposure Category: C*

*Seismic Design Category: D*

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

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

**PROJECT NAME:** SPRING RESIDENCE
JAYMARC HOMES
**M&K PROJECT #:** 154-22026
**ENGINEER:** JCL
**DATE:** 28-OCT-22

# SEISMIC CALCULATION - ASCE 7-16

## SEISMIC DESIGN CATEGORY:

*USER INPUTS:*

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

*VARIABLES:*

| | |
|---|---|
| SITE COEFFICIENT, FA | 1.20 |
| SITE COEFFICIENT, FV | 1.80 |

*CALCULATED VALUES:*

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

## BUILDING PERIOD DETERMINATION:

*USER INPUTS:*

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

*CALCULATED VALUES:*

| | |
|---|---|
| APPROXIMATE FUNDAMENTAL PERIOD, $T_A$ | 0.193 |
| $T_0$ | 0.104 |
| $T_S$ | 0.521 |
| SPECTRAL RESPONSE ACC., $S_A$ (G) | 1.152 |

## SITE CLASS ASSUMPTION

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

## EQUIVALENT LATERAL FORCE PROCEDURE

*DEAD LOAD CALCULATION:*

| LEVEL | STORY HT. (FT.) | AREA ($FT^2$) | DEAD LOAD (PSF) | DL OF EXT WALL TRIB. TO LEVEL (KIPS) | TOTAL LEVEL DL |
|---|---|---|---|---|---|
| 1 | 11.5 | 3700 | 15 | 16.2 | 72 K |
| 2 | 9.1 | 2846 | 17 | 7.5 | 56 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** 128 KIPS

*SEISMIC RESPONSE COEFFICIENT:*

| | TRANSVERSE | LONGITUDINAL |
|---|---|---|
| RESPONSE MODIFICATION FACTOR, R | 6.5 | 6.5 |
| OCCUPANCY IMPORTANCE FACTOR, $I_E$ | 1.00 | 1.00 |
| SEISMIC RESPONSE COEFFICIENT, $C_s$ | 0.177 | 0.177 |

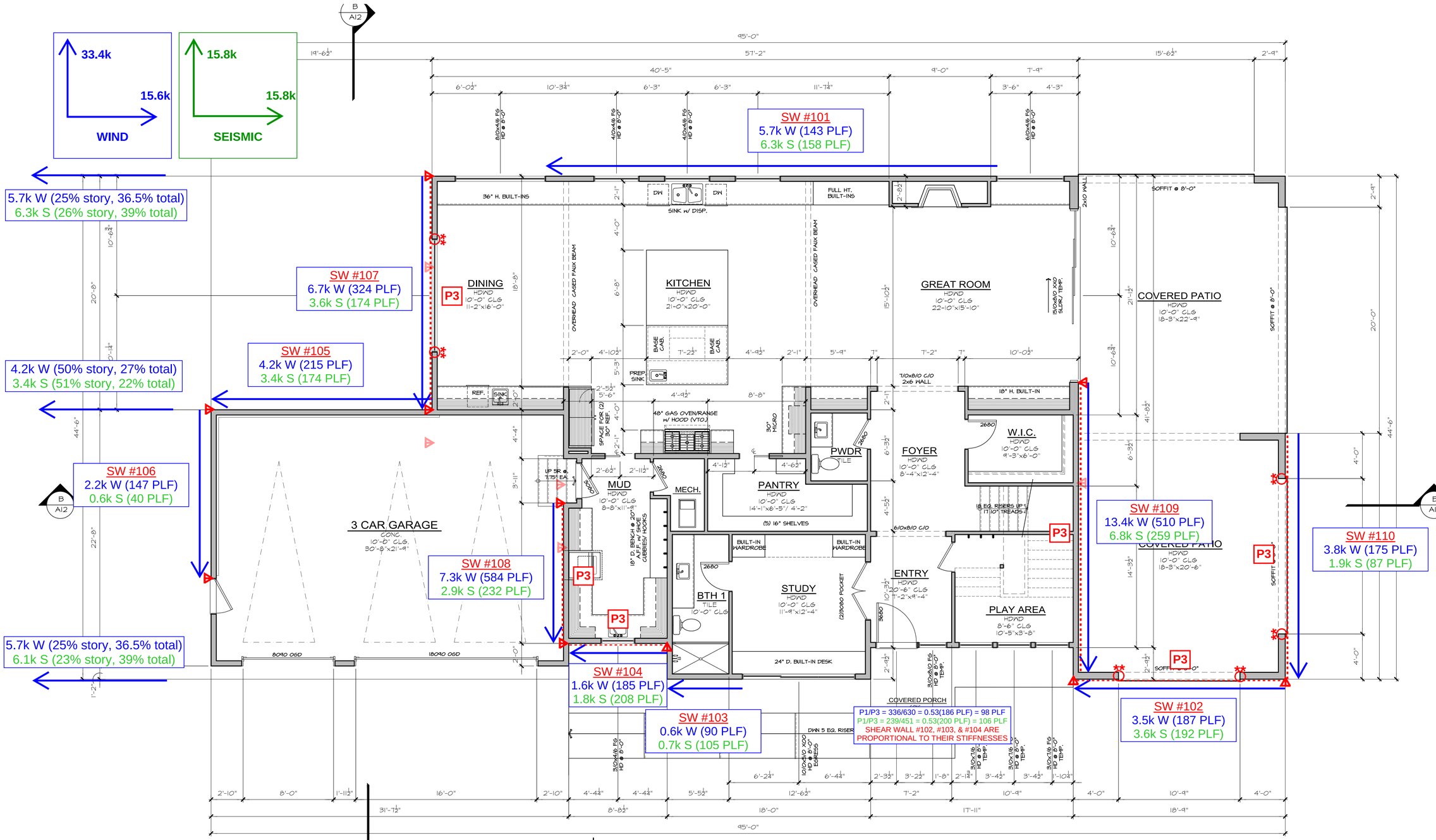
*BASE SHEARS:*

| ULTIMATE LOADS | | | | x 0.7 = | ALLOWABLE LOADS | | |
|---|---|---|---|---|---|---|---|
| TRANSVERSE | | LONGITUDINAL | | | TRANSVERSE | | LONGITUDINAL |
| 23 | K | 23 | K | | 15.8 | K | 15.8 K |

*STORY SHEAR CALCULATION:*

DISTRIBUTION EXPONENT, k: 1.00

| | | ULTIMATE LOADS | | | | x 0.7 = | ALLOWABLE LOADS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | TRANSVERSE | | | LONGITUDINAL | | |
| LEVEL | VERT. DIST. FACTOR, $C_{VX}$ | TRANSVERSE STORY SHEAR, $F_x$ | | LONGITUDINAL STORY SHEAR, $F_x$ | | | STORY SHEAR, $F_x$ | $\Sigma$ STORY SHEAR | | STORY SHEAR, $F_x$ | $\Sigma$ STORY SHEAR | |
| 1 | 0.417 | 9.4 | K | 9.4 | K | | 6.6 K | 15.8 | K | 6.6 K | 15.8 | K |
| 2 | 0.583 | 13.2 | K | 13.2 | K | | 9.2 K | 9.2 | K | 9.2 K | 9.2 | 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

...SECTION R06

...EQUIREMENTS (MANDATORY).

...W/SUFFICIENT OPTIONS FROM TABLE R406.2 TO ACHIEVE THE FOLLOWING MIN. NUMBER OF CREDITS:

3.5 FOR A 1501sf to 4,999sf HOME.

CREDITS PROVIDED IN THIS HOME AS FOLLOWS:

EFFICIENT BUILDING ENVELOPE 1a: .05 CREDITS

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

VERTICAL FENESTRATION U = 0.28 WINDOWS

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

HIGH EFFICIENCY HVAC EQUIPMENT 3a: 0.5 CREDITS

GAS FURNACE WITH MINIMUM AFUE

EFFICIENT WATER HEATING 5a: 0.5 CREDITS

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

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

EFFICIENT WATER HEATING 5c: 1.5 CREDITS

WATER HEATING SYSTEM SHALL BE:

GAS WATER HEATER WITH A MINIMUM EF OF 0.91

## SUMMARY

...H WHOLE HOUSE VENTILATION

PROVIDE WHOLE HOUSE VENTILATION per 2015 IRC, M1507 and IMC R403.8 USING LAUNDRY ROOM EXHAUST FAN INTEGRATED INTO FORCED AIR SYSTEM (FAU) PROVIDING OUTDOOR AIR CONTACT EQUIPMENT RETURN SIDE OF THE AIR HANDLER.

| SYMBOL | LOCATION | Fan CFM | AREA |
|---|---|---|---|
| | LAUNDRY | | 95 S.F. |
| 180cfm | 2 CAR GARAGE | 102 | S.F. |
| 100cfm | KITCHEN PWDR | 18751 | S.F. |
| | COVID FORCE | 57 | S.F. |
| | RANGE HOOD or DOWN DRAFT EXHAUST FAN RATED AT MIN. 100CFM OR GREATER | | |
| | EXTERIOR WALL MAKE UP AIR per M1507.3.3 | | |
| | TOTAL AREA UNDER ROOF | 2,414 | S.F. |
| 180cfm MIN. | LAUNDRY MIN. 180cfm, INTERMITTENT at .025wg TO FUNCTION AS OVERALL WHOLE HOUSE FAN (WHF) | 95'-0" | |
| | OVERALL DEPTH | 44'-8" | |

MECHANICAL CONTRACTOR TO SIZE WHF, FAN and SET OPERATING TIMER per TABLE M1507.3.3(2) FOR A 3,001-4,500sf, DWELLING w/4-5 BEDRMS, TO OPERATE INTERMITTENTLY and CONTINUOUSLY per TABLE M1507.3.3(2). Alternatively, no separate CONTROLS FOR WHF per M1507.3.3. PROVIDE LABEL TO CONTROLS THAT READS "WHOLE HOUSE VENTILATION - SEE OPERATING INSTRUCTIONS"

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

# MAIN FLOOR PLAN

1/4" = 1'-0"

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

| Issue | Issue Date | By | Description |
|---|---|---|---|
| | | | |

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

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



11.22.22
Submittal Date

Sheet Title/Description

JAYMARC HOMES
Design Firm

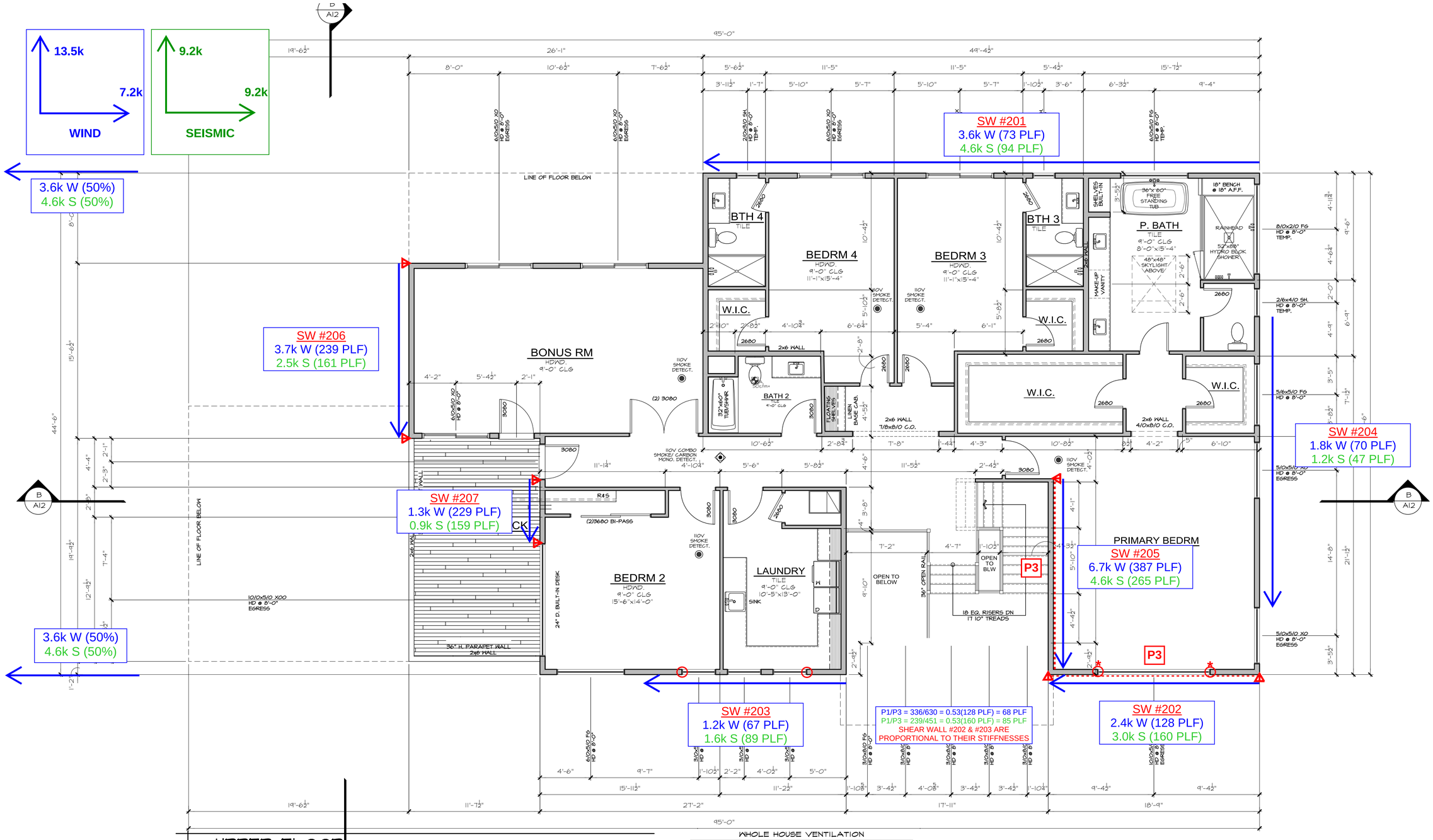
R.K.N.
Drawn by:

Checked by:

Primary Scale

Sheet Title/Description

A5
of: .




# UPPER FLOOR PLAN NOTES: B A12

## PLAN SPECIFIC 2015 WSEC, SECTI

R406.2 ADDITIONAL ENERGY EFFICIENCY REQUIREMEN
THIS RESIDENTIAL DWELLING SHALL COMPLY W/SUFFICI
TABLE R406.2 TO ACHIEVE THE FOLLOWING MIN. NUMBE
3.5 FOR A 1,501sf to 4,999sf HOME.
CREDITS PROVIDED IN THIS HOME AS FOLLOWS:

EFFICIENT BUILDING ENVELOPE 1a: 0.5 CREDITS
PRESCRIPTIVE COMPLIANCE IS BASED ON TABLE R402.1.1 with FOLLOWING MODIFICATIONS:
VERTICAL FENESTRATION U = 0.28 WINDOWS
FLOORS TO BE R-38 and SLAB ON GRADE TO BE R-10 PERIMETER and UNDER ENTIRE SLAB BELOW GRADE.

5.0k W (37%)
3.4k S (37%)

R406.2 ADDITIONAL ENERGY EFFICIENCY REQUIREMENTS (MANDATORY).
4 EFFICIENCY HVAC EQUIPMENT 3a: 1.0 CREDITS
GAS FURNACE WITH MINIMUM AFUE OF 94%

EFFICIENT WATER HEATING 5a: 0.5 CREDITS
ALL SHOWERHEAD and KITCHEN SINK FAUCETS INSTALLED IN THE HOUSE SHALL BE RATED AT 1.75 GPM or LESS.
ALL OTHER LAVATORY FAUCETS SHALL BE RATED AT 1.0 GPM or LESS.

EFFICIENT WATER HEATING 5c: 1.5 CREDITS
WATER HEATING SYSTEM SHALL BE:
GAS WATER HEATER WITH A MINIMUM EF OF 0.91

## WHOLE HOUSE VENTILATION

PROVIDE WHOLE HOUSE VENTILATION per 2015 IRC, M1507 and IMC R403.8 USING LAUNDRY ROOM EXHAUST FAN INTEGRATED INTO FORCED AIRE SYSTEM (FAU.) PROVIDE OUTDOOR FRESH AIR W/DUCTS CONNECTED TO THE RETURN SIDE OF THE AIR HANDLER.

| SYMBOL | LOCATION | MIN. FAN REQUIREMENTS (ALL FANS VENT TO OUTDIDE) |
|---|---|---|
| 50cfm+ | BATH & POWDER | Min. 50cfm, INTERMITTENT at .025ng per TABLE M1507.4 |
| | KITCHEN | Min. 100cfm, INTERMITTENT at .025ng per TBL. M1507.4 |
| 100cfm+ | | RANGE HOOD'or DOWN DRAFT EXHAUST FAN RATED at min. 100cfm, at 0.1ing MAY BE USED FOR EXHAUST FAN REQMT. EXHAUST HOODS IN EXCESS OF 400cfm, SHALL BE INTERLOCKED and PROVIDE MAKE UP AIR per M1503.4 |
| 180cfm+ WHF. | LAUNDRY ROOM | MIN. 180cfm, INTERMITTENT at .025ng TO FUNCTION AS WHOLE HOUSE FAN (WHF.) |

MECHANICAL CONTRACTOR TO SIZE WHF. FAN and SET OPERATING TIMER per TABLE M1507.3.3(1) FOR A 3,001-4,500sf. DWELLING w/4-5 BEDRMS, TO OPERATE INTERMITTENTLY and CONTINUOSLY per TABLE M1507.3.3(2)

PROVIDE CONTROLS FOR WHF. per M1507.3.2 AFFIX LABEL TO CONTROLS THAT READS "WHOLE HOUSE VENTILATION - SEE OPERATING INSTRUCTIONS"

6.7k W (50%)
4.6k S (50%)

## SUMMARY

### SQUARE FOOTAGE SUMMARY

1.8k W (13%)
1.2k S (13%)

| | | |
|---|---|---|
| LOWER FLOOR AREA | | S.F. |
| MAIN FLOOR AREA | | S.F. |
| UPPER FLOOR AREA | | S.F. |
| TOTAL CONDITIONED AREA | | S.F. |
| 2 CAR GARAGE | 702 | S.F. |
| COV'D PATIO | 815 | S.F. |
| COV'D PORCH | 57 | S.F. |
| TOTAL AREA UNDER ROOF | 6,414 | S.F. |
| OVERALL WIDTH | 95'-0" | |
| OVERALL DEPTH | 44'-8" | |

Updated : 12.03.20

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

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

# UPPER FLOOR PLAN

1/4" = 1'-0"


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


| Issue | Issue Date | By | Description |
|---|---|---|---|
| △ | | | |

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

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

Conditions not specifically represented graphically or in writing or which conflict with the current International Residential Code (IRC.) or those of the local municipality then the current standards and requirements of each respectively shall govern.

The drawings in this set are instruments of service and shall remain the property of JayMarc Homes, LLC.



11.22.22
Submittal Date

Sheet Title/Description

JAYMARC HOMES
Design Firm

R.K.N.
Drawn by:

Checked by:

Primary Scale

A7
of: .

Sheet Title/Description

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# SHEARWALL DESIGN SUMMARY

## SHEARWALL 201: 2ND - REAR EXT BED 4 TO PRIMARY BATH

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 9.0 | FT. | MAX WALL OPENING HT, $H_c$ | 5.0 | FT. | | |
| WALL LENGTH, L | 49.0 | FT. | QUALIFYING WALL LENGTH, L | 27.0 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 4600 LBS | < | 6476 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 | 296 | PLF | OVERTURNING MOMENT | 41.4 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 200 | LBS | RESISTIVE MOMENT | 168.3 | K-FT | HOLDOWN CAPACITY | 0 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**

## SHEARWALL 202: 2ND - FRONT EXT PRIMARY BEDROOM

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 9.0 | FT. | MAX WALL OPENING HT, Hc | 5.0 | FT. | | |
| WALL LENGTH, L | 18.8 | FT. | QUALIFYING WALL LENGTH, L | 8.7 | FT. | SHEARWALL ASSEMBLY | P3 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 3000 LBS | < | 3903 LBS |

### SHEARWALL ASSEMBLY SPECIFICATION

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

### OVERTURNING EVALUATION:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| RESISTIVE DL | 134 | PLF | OVERTURNING MOMENT | 27.0 | K-FT | HOLD DOWN DESIGN LOAD | 538 | LBS |
| DL AT ENDS OF WALL | 700 | LBS | RESISTIVE MOMENT | 16.9 | 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
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# SHEARWALL DESIGN SUMMARY

## SHEARWALL 203: 2ND - FRONT EXT BED 2 / LAUNDRY

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 9.0 | FT. | MAX WALL OPENING HT, $H_c$ | 5.0 | FT. | | |
| WALL LENGTH, L | 18.0 | FT. | QUALIFYING WALL LENGTH, L | 7.0 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 1600 LBS | < | 1679 LBS |

### SHEARWALL ASSEMBLY SPECIFICATION

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

### OVERTURNING EVALUATION:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| RESISTIVE DL | 134 | PLF | OVERTURNING MOMENT | 14.4 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 1200 | LBS | RESISTIVE MOMENT | 20.0 | K-FT | HOLDOWN CAPACITY | 0 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**

## SHEARWALL 204: 2ND - SIDE EXT PRIMARY BEDROOM / BATH

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 9.0 | FT. | MAX WALL OPENING HT, Hc | 5.0 | FT. | | |
| WALL LENGTH, L | 25.8 | FT. | QUALIFYING WALL LENGTH, L | 13.8 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 1200 LBS | < | 3298 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 | 194 | PLF | OVERTURNING MOMENT | 10.8 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 50 | LBS | RESISTIVE MOMENT | 30.2 | K-FT | HOLDOWN CAPACITY | 0 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# SHEARWALL DESIGN SUMMARY

## SHEARWALL 205: 2ND - SIDE INT PRIMARY BEDROOM

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 9.0 | FT. | MAX WALL OPENING HT, $H_o$ | 0.0 | FT. | | |
| WALL LENGTH, L | 17.3 | FT. | QUALIFYING WALL LENGTH, L | 17.3 | FT. | SHEARWALL ASSEMBLY | P3 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 4600 LBS | < | 7801 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 | 253 | PLF | OVERTURNING MOMENT | 41.4 | K-FT | HOLD DOWN DESIGN LOAD | 1194 | LBS |
| DL AT ENDS OF WALL | 400 | LBS | RESISTIVE MOMENT | 20.7 | K-FT | HOLDOWN CAPACITY | 4645 | LBS |

### HOLD-DOWN SPECIFICATION

**SIMPSON MSTC66 STRAP TIE (20" END LENGTH)**

## SHEARWALL 206: 2ND - SIDE EXT BONUS

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 9.0 | FT. | MAX WALL OPENING HT, Hc | 0.0 | FT. | | |
| WALL LENGTH, L | 15.5 | FT. | QUALIFYING WALL LENGTH, L | 15.5 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 2500 LBS | < | 3718 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 | 22.5 | K-FT | HOLD DOWN DESIGN LOAD | 650 | LBS |
| DL AT ENDS OF WALL | 700 | LBS | RESISTIVE MOMENT | 12.4 | 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
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# SHEARWALL DESIGN SUMMARY

## SHEARWALL 207: 2ND - SIDE EXT BED 2

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 9.0 | FT. | MAX WALL OPENING HT, $H_c$ | 0.0 | FT. | | |
| WALL LENGTH, L | 5.7 | FT. | QUALIFYING WALL LENGTH, L | 5.7 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 900 LBS | < | 1360 LBS |

### SHEARWALL ASSEMBLY SPECIFICATION

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

### OVERTURNING EVALUATION:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| RESISTIVE DL | 150 | PLF | OVERTURNING MOMENT | 8.1 | K-FT | HOLD DOWN DESIGN LOAD | 1048 | LBS |
| DL AT ENDS OF WALL | 400 | LBS | RESISTIVE MOMENT | 2.2 | K-FT | HOLDOWN CAPACITY | 1705 | LBS |

### HOLD-DOWN SPECIFICATION

**SIMPSON CS16 STRAP TIE (14" END LENGTH)**

## SHEARWALL 101: 1ST - REAR EXT GREAT ROOM

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 10.0 | FT. | MAX WALL OPENING HT, Hc | 4.5 | FT. | | |
| WALL LENGTH, L | 40.0 | FT. | QUALIFYING WALL LENGTH, L | 28.0 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 6300 LBS | < | 6716 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 | 63.0 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 400 | LBS | RESISTIVE MOMENT | 136.5 | K-FT | HOLDOWN CAPACITY | 0 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# SHEARWALL DESIGN SUMMARY

## SHEARWALL 102: 1ST - FRONT EXT COVERED PATIO

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 10.0 | FT. | MAX WALL OPENING HT, $H_c$ | 8.0 | FT. | | |
| WALL LENGTH, L | 18.8 | FT. | QUALIFYING WALL LENGTH, L | 8.0 | FT. | SHEARWALL ASSEMBLY | P3 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 3600 LBS | < | 3601 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 | 392 | PLF | OVERTURNING MOMENT | 36.0 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 1200 | LBS | RESISTIVE MOMENT | 42.1 | K-FT | HOLDOWN CAPACITY | 0 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**

## SHEARWALL 103: 1ST - FRONT EXT BATH 1

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 10.0 | FT. | MAX WALL OPENING HT, Hc | 0.0 | FT. | | |
| WALL LENGTH, L | 6.7 | FT. | QUALIFYING WALL LENGTH, L | 6.7 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 700 LBS | < | 1600 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 | 332 | PLF | OVERTURNING MOMENT | 7.0 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 1200 | LBS | RESISTIVE MOMENT | 7.1 | K-FT | HOLDOWN CAPACITY | 0 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# SHEARWALL DESIGN SUMMARY

## SHEARWALL 104: 1ST - FRONT EXT MUD

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 10.0 | FT. | MAX WALL OPENING HT, $H_c$ | 4.5 | FT. | | |
| WALL LENGTH, L | 8.7 | FT. | QUALIFYING WALL LENGTH, L | 5.7 | FT. | SHEARWALL ASSEMBLY | P3 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 1800 LBS | < | 2552 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 | 243 | PLF | OVERTURNING MOMENT | 18.0 | K-FT | HOLD DOWN DESIGN LOAD | 1406 | LBS |
| DL AT ENDS OF WALL | 400 | LBS | RESISTIVE MOMENT | 5.8 | K-FT | HOLDOWN CAPACITY | 3695 | LBS |

### HOLD-DOWN SPECIFICATION

**SIMPSON STHD14RJ HOLDOWN**

## SHEARWALL 105: 1ST - REAR EXT GARAGE

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 8.0 | FT. | MAX WALL OPENING HT, Hc | 0.0 | FT. | | |
| WALL LENGTH, L | 19.5 | FT. | QUALIFYING WALL LENGTH, L | 19.5 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 3400 LBS | < | 4677 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 | 287 | PLF | OVERTURNING MOMENT | 27.2 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 1000 | LBS | RESISTIVE MOMENT | 34.1 | K-FT | HOLDOWN CAPACITY | 0 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# 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 | 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

## SHEARWALL 106: 1ST - SIDE EXT GARAGE

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 8.0 | FT. | MAX WALL OPENING HT, Hc | 0.0 | FT. | | |
| WALL LENGTH, L | 15.0 | FT. | QUALIFYING WALL LENGTH, L | 15.0 | FT. | SHEARWALL ASSEMBLY | P1 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 600 LBS | < | 3598 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 | 4.8 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 200 | LBS | RESISTIVE MOMENT | 8.3 | K-FT | HOLDOWN CAPACITY | 3695 | LBS |

### HOLD-DOWN SPECIFICATION

NO HOLDOWN REQUIRED

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# SHEARWALL DESIGN SUMMARY

## SHEARWALL 107: 1ST - SIDE EXT DINING

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 10.0 | FT. | MAX WALL OPENING HT, $H_c$ | 5.0 | FT. | | |
| WALL LENGTH, L | 20.7 | FT. | QUALIFYING WALL LENGTH, L | 10.7 | FT. | SHEARWALL ASSEMBLY | P3 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 3600 LBS | < | 4803 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 | 249 | PLF | OVERTURNING MOMENT | 36.0 | K-FT | HOLD DOWN DESIGN LOAD | 371 | LBS |
| DL AT ENDS OF WALL | 400 | LBS | RESISTIVE MOMENT | 28.3 | K-FT | HOLDOWN CAPACITY | 3695 | LBS |

### HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

## SHEARWALL 108: 1ST - SIDE INT GARAGE

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 10.0 | FT. | MAX WALL OPENING HT, Hc | 0.0 | FT. | | |
| WALL LENGTH, L | 12.5 | FT. | QUALIFYING WALL LENGTH, L | 12.5 | FT. | SHEARWALL ASSEMBLY | P3 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 2900 LBS | < | 5627 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 | 388 | PLF | OVERTURNING MOMENT | 29.0 | K-FT | HOLD DOWN DESIGN LOAD | 649 | LBS |
| DL AT ENDS OF WALL | 1200 | LBS | RESISTIVE MOMENT | 20.9 | K-FT | HOLDOWN CAPACITY | 3695 | LBS |

### HOLD-DOWN SPECIFICATION

SIMPSON STHD14RJ HOLDOWN

MULHERN+KULP
RESIDENTIAL STRUCTURAL ENGINEERING

PROJECT NAME: JAYMARC HOMES
SPRING RESIDENCE
M&K PROJECT #: 154-22026
ENGINEER: JCL
DATE: 01-Nov-22

# SHEARWALL DESIGN SUMMARY

## SHEARWALL 109: 1ST - SIDE EXT STAIRS / GREAT ROOM

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 10.0 | FT. | MAX WALL OPENING HT, $H_c$ | 0.0 | FT. | | |
| WALL LENGTH, L | 26.3 | FT. | QUALIFYING WALL LENGTH, L | 26.3 | FT. | SHEARWALL ASSEMBLY | P3 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 6800 LBS | < | 11816 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 | 368 | PLF | OVERTURNING MOMENT | 68.0 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 1200 | LBS | RESISTIVE MOMENT | 73.0 | K-FT | HOLDOWN CAPACITY | 3695 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**

## SHEARWALL 110: 1ST - SIDE EXT COVERED PATIO

### SHEARWALL PROPERTIES:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WALL HEIGHT, H | 10.0 | FT. | MAX WALL OPENING HT, Hc | 8.0 | FT. | | |
| WALL LENGTH, L | 21.8 | FT. | QUALIFYING WALL LENGTH, L | 8.0 | FT. | SHEARWALL ASSEMBLY | P3 |

### CAPACITY EVALUATION:

| TOTAL SHEAR LOAD ON WALL | | ALLOWABLE SHEARWALL CAPACITY |
|---|---|---|
| 1900 LBS | < | 3601 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 | 309 | PLF | OVERTURNING MOMENT | 19.0 | K-FT | HOLD DOWN DESIGN LOAD | 0 | LBS |
| DL AT ENDS OF WALL | 1200 | LBS | RESISTIVE MOMENT | 45.7 | K-FT | HOLDOWN CAPACITY | 0 | LBS |

### HOLD-DOWN SPECIFICATION

**NO HOLDOWN REQUIRED**