

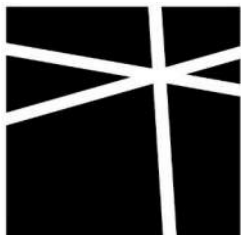
STRUCTURAL CALCULATIONS FOR:

2707 70TH AVE SE

MERCER ISLAND, WA

ARCHITECT: V SQUARED

FEBRUARY 7, 2025



**MALSAM
TSANG**
STRUCTURAL
ENGINEERING

DESIGN CRITERIA IBC 2021

DEAD LOADS

ROOF		ROOF DECK		FLOOR	
Composition	2.5 psf	Palletized Deck	5.0 psf	3/4" Plywood	2.4 psf
3/4" Plywood	2.4 psf	3/4" Plywood	2.4 psf	TJI @ 16" o.c.	2.3 psf
2x @ 24" o.c.	2.0 psf	2x @ 16" o.c.	2.9 psf	Flooring	1.0 psf
Insulation	1.0 psf	1 1/2" Rigid	2.3 psf	Gyp Board (5/8")	2.8 psf
Gyp Board (5/8")	2.8 psf	Gyp Board (5/8")	2.8 psf	MEP	1.5 psf
MEP	1.0 psf	MEP	1.5 psf	Misc	1.0 psf
Solar Panels	4.0 psf	Misc	1.0 psf		
<hr/>		<hr/>		<hr/>	
Total	15.7 psf	Total	17.9 psf	Total	11.0 psf
Use	20.0 psf	Use	20.0 psf	Use	15.0 psf

LIVE LOADS/OCCUPANCY

Risk Category	II	ROOF LIVE		FLOOR LIVE		DECK LIVE	
Roof Deck	Yes	Snow =	25 psf	Occupancy =	40 psf	Occupancy =	60 psf
Common Access	No	Roof Deck =	60 psf				

SEISMIC CRITERIA ASCE 7-16 Ch. 11 & Ch. 12

Imp. Factor =	1.00	Seismic Ht, hn =	30 ft
Site Class =	C	T, Building =	0.3
R Value =	6.5	Ts =	0.4

Geo. Ground Hazard?	No w/ASCE 11.4.8 Excep's		
S _s =	1.398	F _a =	1.200 Table 11.4-1
S ₁ =	0.487	F _v =	1.500 Table 11.4-2
S _{ms} =	1.678 x 2/3 =	S _{ds} =	1.118 Eqn. 11.4-3
S _{m1} =	0.731 x 2/3 =	S _{d1} =	0.487 Eqn. 11.4-4

C_{SULT} = 0.172

C_{SALL} = 0.120

T/Ts = 0.589 ≤ 1.5

Okay, Cs Eqn. 12.8-2

SEISMIC WEIGHT ASCE 7-16 12.7.2

Partitions = 12 psf

*Roof weight = 1/2 Partition + Roof DL

*Floor weight = Full Partition + Floor DL

ROOF 22.5 psf ROOF DECK 24.0 psf

FLOOR 23.0 psf *CONSERV. USED FOR BASE SHEAR, SEE L1

SEISMIC DESIGN CATEGORY IBC 1613.2.5

Seismic DC = D

WIND CRITERIA ASCE 7-16 Ch. 27 Directional Procedure

V =	98 mph	K _d =	0.85
Exposure =	B	G =	0.85
h =	30 ft	K _{zt} =	1.90

Roof Slope = 1 : 12 = 4.8°

PRESSURE COEFFICIENTS (Cp)

Windward Wall = 0.8 Windward Roof = N/A

Leeward Wall = -0.5 Leeward Roof = N/A

PRESSURE (PSF) q = 0.00256K _z K _{zt} K _d V ²								
Ht	K _z	q _z	0.6xq _z ¹	q _h	P _{vw}	P _{lw}	P _{wall}	P _{roof}
15	0.57	22.6	13.6		9.2	7.1	16.3	
20	0.62	24.6	14.8		10.0	7.1	17.1	
25	0.66	26.2	15.7		10.7	7.1	17.8	
30	0.70	27.8	16.7	16.7	11.3	7.1	18.4	N/A
35	0.73	29.0	17.4		11.8	7.1	18.9	
40	0.76	30.2	18.1		12.3	7.1	19.4	
45	0.79	31.4	18.8		12.8	7.1	19.9	
50	0.81	32.2	19.3		13.1	7.1	20.2	

¹ Per ASCE 7-16 2.4.1 Basic Combinations



122 South Jackson
Suite 210
Seattle, WA 98104
t 206.789.6038
f 206.789.6042

2707 70TH AVE SE
Project
MERCER ISLAND, WA

2/7/2025
Date
0527.2025.01
Proj. No.
NDM
Desian
DC1
Sheet

DESIGN CRITERIA

REPORT SUMMARY



Seismic

S_S	1.398
S_1	0.487
F_a	1.2
F_v	N/A
S_{MS}	1.678
S_{M1}	N/A
S_{DS}	1.118
S_{D1}	N/A
T_L	6
PGA	0.598
PGA_M	0.718
F_{PGA}	1.2
I_e	1
C_v	1.38
NO SEISMIC SPECTRUM	Design and MCE_R spectrum data not available for this location
Note	Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.



122 South Jackson
Suite 210
Seattle, WA 98104
t 206.789.6038
f 206.789.6042

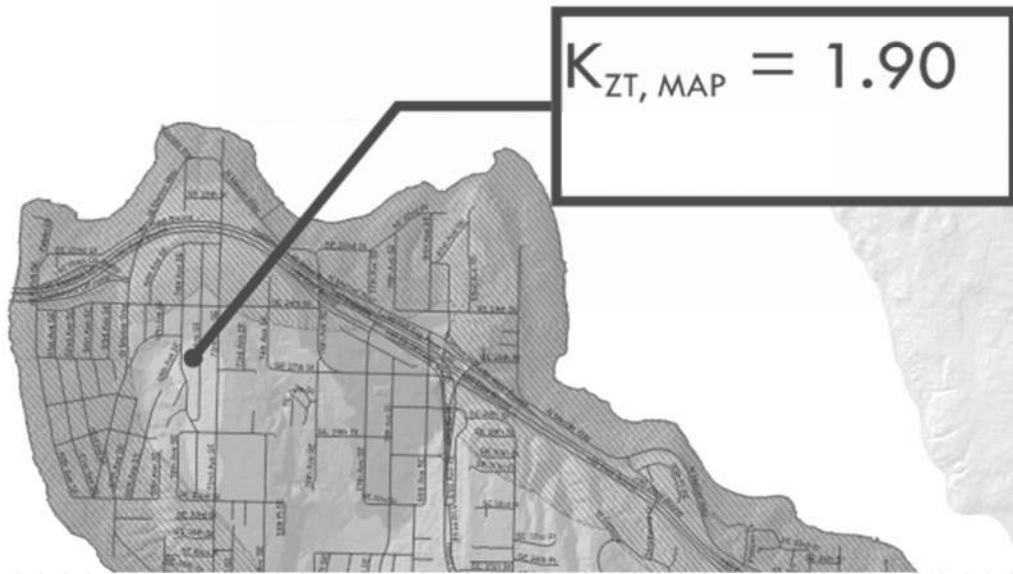
2707 70TH AVE SE
Project
MERCER ISLAND, WA

2/7/2025
Date
0527.2025.01
Proj. No.
NDM
Design
DC2
Sheet

DESIGN CRITERIA

Mercer Island Wind Exposure and Wind Speed-Up (Topographic Effect)

by Development Services Group (DSG), City of Mercer Island
April 2009



WIND EXPOSURE CATEGORIES:

Wind Exposure Category		Exposure 'C' (1500 feet from Lake)
		Exposure 'B' (all other areas)

WIND SPEED-UP (TOPOGRAPHIC EFFECT) - K_z t Factor :

K_z t Factor		K_z t = 1.0
		K_z t = 1.3
		K_z t = 1.6
		K_z t = 1.9



122 South Jackson
Suite 210
Seattle, WA 98104
t 206.789.6038
f 206.789.6042

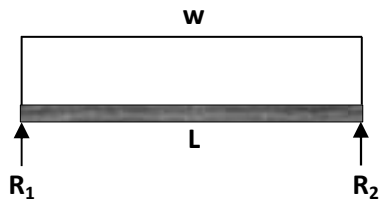
2707 70TH AVE SE
Project _____
MERCER ISLAND, WA

2/7/2025
Date _____
0527.2025.01
Proj. No. _____
NDM
Design _____
DC3
Sheet _____

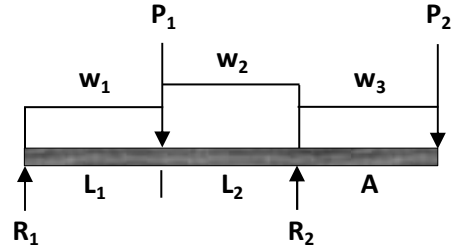
TYPICAL BEAM CASES

*ASSUME CASE 1 FOR ALL BEAMS U.N.O.

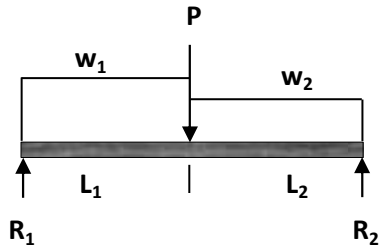
CASE #1: (C1)



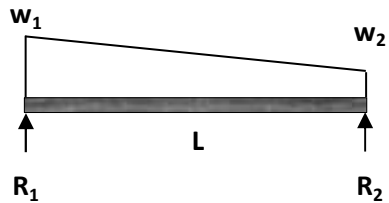
CASE #5: (C5)



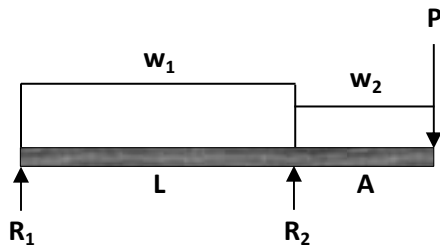
CASE #2: (C2)



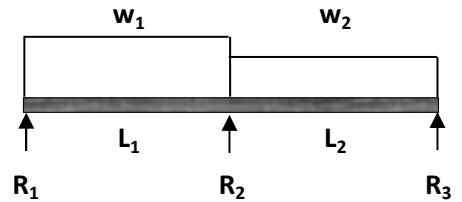
CASE #6: (C6)



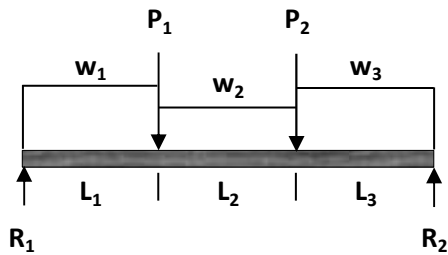
CASE #3: (C3)



CASE #7: (C7)



CASE #4: (C4)



122 South Jackson
Suite 210
Seattle, WA 98104
t 206.789.6038
f 206.789.6042

2707 70TH AVE SE
Project
MERCER ISLAND, WA

2/7/2025
Date
0527.2025.01
Proj. No.
NDM
Desian
DC4
Sheet

COMPONENTS & CLADDING ASCE 7-16 CHAPTER 30

WIND CRITERIA FROM DC1

V = 98 mph $K_d = 0.85$
 Exposure = B $K_{zt} = 1.90$
 h = 30 ft

Roof Slope = 1 : 12 = 4.8°

Bldg Type = Enclosed Building

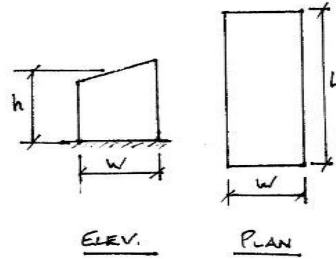
$GC_{pi} = 0.18$ Table 26.11-1

$K_h = 0.701$ Table 30.3-1

$q_h = 27.8$ Eqn 30.3-1

$0.6 \times q_h = 16.7$ Per ASCE 7-16 2.4.1 Basic Combinations

BUILDING GEOMETRY



W = 68.5 ft

L = 28.5 ft

h = 30 ft

a = 3 ft

USE PART 1 FOR h < 60'

PART 1: h < 60'

CHAPTER 30.4

MONOSLOPE ROOF $3\alpha < Q < 10\alpha$

FOR NORTHEAST CORNER

$A_{eff} = 70sf$

WALL PRESSURES				
ZONE	$GC_{p(+)}$	$GC_{p(-)}$	$0.6p(+)$	$0.6p(-)$
4	0.765	-0.86	15.8	-17.3
5	0.765	-0.99	15.8	-19.5

Note: When $\theta < 10^\circ$, GC_p values are reduced by 10% per Figure 30.4-1 Note 5



122 South Jackson
 Suite 210
 Seattle, WA 98104
 t 206.789.6038
 f 206.789.6042

2707 70TH AVE SE

Project

MERCER ISLAND, WA

2/7/2025

Date

0527.2025.01

Proj. No.

NDM

Design

DC5

Sheet

LATERAL ANALYSIS

BASE SHEAR - WIND (SEISMIC)

Units: FT, KIPS for forces, and LBS for line or area loads

SFR REMODEL

Wind

FULL WIND (psf)			18.4	17.8	17.1	16.3	16.3	16.3				w_{level}		North/South		East/West	
Level	h_i	$h_{trib, wall}$	30	25	20	15	15	15			ROOF	Calc'd	Used	L	V	L	V
ROOF	28.00	5.50	4.00	1.50								100.38	105.0	28.50	2.99	61.83	6.49
UPPER	19.00	11.00		3.50	5.00	2.50						188.69	190.0	28.50	5.42	68.16	12.95
MAIN	9.00	9.50				2.50	5.00	2.00				155.06	160.0	28.50	4.56	38.16	6.11
														Σ_{FULL}	12.97		25.55

V_{ns} 13.0 k
 V_{ew} 25.5 k

Seismic

$C_{s, ult}$ 0.172
 $C_{s, all}$ 0.120

Level	h_i	A	w	w_i	$w_i h_i$	C_{vx}	$F_{x, allow}$	psf
ROOF	28.00	1800	22.5	40.50	1134.00	0.44	(7.31)	(4.06)
UPPER	19.00	2000	28.0	56.00	1064.00	0.41	(6.86)	(3.43)
MAIN	9.00	1100	38.0	41.80	376.20	0.15	(2.43)	(2.20)
				Σ	138.30	2574.20	1.00	(16.60)

North/South		East/West	
W	w	W	w
28.50	(256.5)	61.83	(118.2)
28.50	(240.7)	68.16	(100.6)
28.50	(85.1)	38.16	(63.6)

V_{ult} 23.8 k
 V_{all} 16.6 k

*CONSERV. SEISMIC WEIGHT VALUES FOR MAIN FLOOR AND UPPER ROOF DECK

Summation of Shear Per Level

Level	North/South		East/West	
ROOF	2.99	(7.31)	6.49	(7.31)
UPPER	8.41	(14.17)	19.44	(14.17)
MAIN	12.97	(16.60)	25.55	(16.60)
Σ	12.97	(16.60)	25.55	(16.60)



122 South Jackson
 Suite 210
 Seattle, WA 98104
 t 206.789.6038
 f 206.789.6042

Project 2707 70TH AVE SE
 MERCER ISLAND, WA

Date 2/7/2025
 Proj. No. 0527.2025.01
 Design NDM
 Sheet L1

LATERAL ANALYSIS - SFR REMODEL

LFRS - WIND (SEISMIC)
North/South

Units: FT, KIPS for forces, and LBS for line or area loads

ROOF

WIND (SEISMIC)	105.0 (256.5)							
Left Offset:	WEST			EAST				
Plt Ht:	7.5	1	2	3	4	5	6	7
		17.0	11.5					
R:	0.90 (2.19)	1.50 (3.66)	0.61 (1.48)					
PLt Ht:	9.25	8.75						
L:	10.8	53.8	13.7					
L(min):	=6+4.75	=11.5+16+15.75+10.5	=6.16+3.75+3.75					
V:	84 (204)	28 (69)	45 (109)					
SW:	SW6	SW6	SW6					
OT1:	0.78 (1.89)							
HD1:	(2)CS16*	-	-					
H:W:	-	-	-					
Dir:	Standard	Standard						
Left:								
Right:								

*STRAPS DOWN TO DIST. INTO #202

Totals:
L: 28.5
Base Shear:
3.01 (7.33) This Level

Add Rho: No

A DRAG CHECK
 $V_w = 0.9(4.75/10.75) = 0.4k$
 $V_e = 2.2(0.44) \times 1.25 = 1.2k, CS16$
 STRUCT. IRREG.

UPPER

WIND (SEISMIC)	190.0 (240.7)							
Left Offset:	WEST			EAST				
Plt Ht:	9	1	2	3	4	5	6	7
		17.0	11.5					
R:	2.52 (4.24)	4.21 (7.09)	1.71 (2.87)					
PLt Ht:	12.5	26.8	36.0					
L:	5.5+7	17.75+9	8.25+10+17.75					
L(min):								
V:	202 (340)	158 (266)	48 (80)					
SW:	SW4	SW4	SW6					
Stacked:	No							
OT1:	1.82 (3.06)	1.42 (2.39)	0.43 (0.72)					
OT2:								
HD1:	(2)CS16/HDU4	(2)CS16*/HDU4						
HD2:								
H:W:	-	-	-					
Dir:	Standard	Standard	Standard					
Left:								
Right:								

*STRAP UP TO DIST. INTO #207

Totals:
L: 28.5
Base Shears:
3.01 (7.33) From Above
5.43 (6.87) This Level
8.44 (14.20) Total Down

Add Rho: No

B DRAG CHECK
 $V_w = 0.4-2.5(7/12.5) = -1.0k$
 $V_e = 1.2-4.2(0.56) \times 1.25 = 1.4k, CS16$
 STRUCT. IRREG.

C DRAG CHECK SEIS GOV.
 $V_e = 7.09(17.75/26.75) - 3.66(11.5+2.5)/53.75 - (7.09-3.66)(18.25/68.25) = 2.8k, (2)HTS30C$
 SOUTH
 $V_e = 3.66(10.5/53.75) + (7.09-3.66)(17.25/68.25) = 1.6k, CS16$



↑ NORTHWEST WALL NOT STACKING w/BELOW

MALSAM TSANG
STRUCTURAL ENGINEERING
122 South Jackson
Suite 210
Seattle, WA 98104
t 206.789.6038
f 206.789.6042

2707 70TH AVE SE
Project
MERCER ISLAND, WA

2/7/2025
Date
0527.2025.01
Proj. No.
NDM
Design
L2
Sheet

LATERAL ANALYSIS - SFR REMODEL

LFRS - WIND (SEISMIC)
North/South CONTINUED

Units: FT, KIPS for forces, and LBS for line or area loads

MAIN

D TO FDN 2.52 (4.24)
1.41 (2.37) 1.11 (1.87) 4.21 (7.09) 1.71 (2.87)

WIND 160.0
(SEISMIC) (85.1)

WEST EAST

Left Offset: 17.0 11.5

Plt Ht: 9.33 1 2 3 4 5 6 7

R:	2.47 (2.59)	6.49 (8.31)	2.63 (3.36)				
PLt Ht:							
L:	12.0	14.0					
	=6+0+6						
L(min):							
V:	206 (216)	464 (594)					
SW:	SW6	SW2					
Stacked:	No	No					
OT1:	1.92 (2.02)	4.33 (5.54)	LOAD INTO FDN				
OT2:							
HD1:	EPOXY HDU2	HDU8					
HD2:							
H:W:	-	-					
Dir:	Standard	Standard					
Left:							
Right:							

Totals:
L: 28.5
Base Shears:
7.03 (11.83) From Above
5.97 (4.81) This Level
13.00 (16.63) Total Down

Add Rho:

D LOAD TO FDN
 $V_w = 2.5(7/12.5) = 1.4k$
 $V_e = 4.2(0.56) = 2.4k$
 CRIP. WALL LENGTH = 16.5+13 = 29.5'
 $v = 48(82)$
SW6 OK

↑ WALL ABOVE EXITS SHEAR INTO TWO OTHER WALLS, WALL ABOVE RESOLVES ONLY OT PER ABOVE



122 South Jackson
Suite 210
Seattle, WA 98104
t 206.789.6038
f 206.789.6042

2707 70TH AVE SE
Project
MERCER ISLAND, WA

2/7/2025
Date
0527.2025.01
Proj. No.
NDM
Design
L3
Sheet

LATERAL ANALYSIS - SFR REMODEL

LFRS - WIND (SEISMIC)

Units: FT, KIPS for forces, and LBS for line or area loads

East/West

ROOF

WIND	105.0						
(SEISMIC)	(118.2)						
	SOUTH			NORTH			
Left Offset:	6.33	10.5	20.0	15.3	16.0		
Plt Ht:	7.5	1	2	3	4	5	6 7
R:	0.56 (0.63)	1.61 (1.81)	1.86 (2.09)	1.65 (1.86)	0.84 (0.95)		
Plt Ht:							
L:	7.0	5.5	16.3	11.0	15.3		
L(min):					=11.75+3.5		
V:	80 (90)	293 (330)	115 (129)	150 (170)	56 (63)		
SW:	SW6	SW4	SW6	SW6	SW6		
OT1:		2.20 (2.48)		1.13 (1.28)			
HD1:	-	(2)CS16/HDU4	-	CS16	-		
H:W:	-	-	-	-	-		
Dir:							
Left:	0.44 (0.5)	0.71 (0.79)	1.15 (1.3)	1.31 (1.48)			
Right:	0.12 (0.13)	0.90 (1.02)	0.71 (0.79)	0.34 (0.38)	0.84 (0.95)		

Totals:
L: 68.2

Base Shear:
6.52 (7.34) This Level

Add Rho: No

UPPER

WIND	190.0						
(SEISMIC)	(100.6)						
	SOUTH			NORTH			
Left Offset:		30.0	18.0	20.3			
Plt Ht:	9	1	2	3	4	5	6 7
R:	4.00 (2.81)	6.74 (4.87)	5.66 (4.20)	3.10 (2.35)			
Plt Ht:							
L:	13.5	10.5	19.0	11.8			
L(min):			=8+11	=11.75			
V:	297 (209)	642 (464)	298 (222)	264 (200)			
SW:	SW6	SW2	SW6	SW6			
Stacked:							
OT1:	2.67 (1.88)	5.78 (4.18)	2.68 (2.00)	2.38 (1.80)			
OT2:							
HD1:	HDU4	(3)CS16/HDU5	(2)CS16/HDU2	(2)CS16/HDU4			
HD2:							
H:W:	-	-	-	-			
Dir:							
Left:			0.57 (0.42)				
Right:			5.09 (3.78)				

Totals:
L: 68.3

Base Shears:
6.52 (7.34) From Above
12.98 (6.89) This Level
19.50 (14.23) Total Down

Add Rho: No

1 DRAG CHECK

$V_W = (6.7-2.2)(16.75/30.5) = 2.5k$, (2)HTS30C
 $V_E = (4.9-2.5)(0.56) \times 1.25 = 1.7k$
STRUCT. IRREG.

DIAPH WORSE CASE
 $v_w = 0.19k \text{ft}^2(30/2)/30' + 0.9k/13' = 165 \text{plf} < 240 \text{ UNBLOCKED}$



MALSAM TSANG
STRUCTURAL ENGINEERING
122 South Jackson
Suite 210
Seattle, WA 98104
t 206.789.6038
f 206.789.6042

2707 70TH AVE SE
Project
MERCER ISLAND, WA

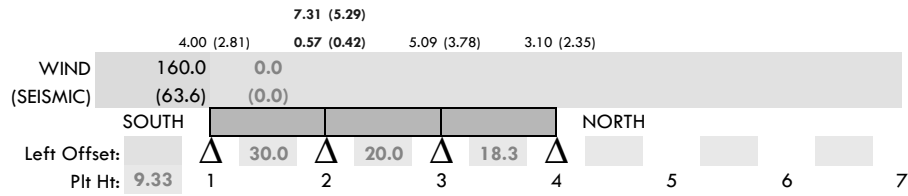
2/7/2025
Date
0527.2025.01
Proj. No.
NDM
Design
L4
Sheet

LATERAL ANALYSIS - SFR REMODEL

LFRS - WIND (SEISMIC)
East/West CONTINUED

Units: FT, KIPS for forces, and LBS for line or area loads

MAIN 2 TO FDN 6.74 (4.87)



R:	4.01 (2.82)	2.17 (1.06)	8.16 (5.00)	4.56 (2.93)			
PLt Ht:		6		6			
L:		5.8	13.8	8.5			
				=5+3.5			
L(min):							
V:		378 (185)	594 (364)	537 (345)			
SW:		SW4	SW3	SW3			
Stacked:				No			
OT1:	LOAD INTO	2.27 (1.11)	5.54 (3.40)	3.22 (2.07)			
OT2:	FDN						
HD1:		HDU2	HDU5	HDU4			
HD2:							
H:W:		-	-	-			
Dir:							
Left:							
Right:							

Totals:
L: 68.3

Base Shears:
12.76 (9.36) From Above
12.88 (7.32) This Level
25.64 (16.68) Total Down

Add Rho: No

2 **LOAD ABV TO FDN**
 $V_w = 7.3 - 6.7 = 0.6k$
 $V_e = 5.3 - 4.9 = 0.4k$



122 South Jackson
Suite 210
Seattle, WA 98104
t 206.789.6038
f 206.789.6042

2707 70TH AVE SE
Project _____

MERCER ISLAND, WA

2/7/2025
Date _____

0527.2025.01
Proj. No. _____

NDM
Design _____

L5
Sheet _____

VERTICAL ANALYSIS ROOF: TL=45PSF

JOISTS / TRUSSES

TYP RAFTERS

$$L_{max} = 16.25'$$

$$W = 0.045(2') = 0.09 \text{ kLF}$$

$$R = 0.73^k$$

$$M = 3.0^k'$$

$$F_b = 1.13 \times 0.9 \times 1.15 \times 1.15 = 1.19$$

$$F_v = 58$$

$$\Delta = 0.50''$$

$$= 4/390$$

USE 2x12's AT 24" OC (DF#2)

TYP FASCIA

$$L_{max} = 9'$$

$$W = 0.09$$

$$R = 0.41^k \therefore \text{LS90's}$$

BEAMS / HEADERS

#301 TYP RIM

$$L_{max} = 7.5' \text{ CONSERVATIVE}$$

$$W = 0.045 \left(\frac{18.5}{2} \right) = 0.42$$

$$R = 1.6$$

$$M = 3.0$$

$$F_b = 1.12$$

$$F_v = 105$$

$$\Delta = 0.11$$

$$= 850$$

USE 2x12 (DF#2)

CANTILE (C3) [0.6DL]

$$L = 7'$$

$$A = 2'$$

$$W_1 = 0.42 [0.08]$$

$$P = 0$$

$$R_1 = 1.4 [0.2]$$

$$R_2 = 2.4$$

$$M = -0.8$$

$$F_b = -0.3$$

$$F_v = 107$$

$$\Delta = 0.02$$

$$= L/3100$$

2x12 OK

#302 CANTILE OUTRIGGER BMS (C3)

$$L = 16.5$$

$$A = 2$$

$$W_1 = 0.09 [0.018]$$

$$W_2 = 0.09$$

$$P = 0.045 \left(\frac{15}{2} \times 2 \right) = 0.7$$

$$R_1 = 0.6 [1.0]$$

$$R_2 = 1.7$$

$$M = -1.6$$

$$F_b = -0.3$$

$$F_v = 36$$

$$\Delta = 0.04$$

$$= L/1200$$

USE (2) 2x12



122 SOUTH JACKSON ST
SUITE 210
SEATTLE, WA 98104
T 206.789.6038
MALSAM-TSANG.COM

2707 70th AVE SE

PROJECT

01.31.25

DATE

0527.2025.01

PROJECT NO

NDM

DESIGN

VI

SHEET

VERTICAL ANALYSIS ROOF CONT'D

BEAMS/HEADERS

#303 EAST HDR

$$\begin{aligned} L &= 6 \\ W &= 0.045 \left(\frac{15.5^2}{2(13.5)} \right) = 0.4 \\ R &= 1.2 \\ M &= 1.8 \end{aligned} \quad \begin{aligned} F_b &= 0.8 \\ F_v &= 66 \\ \Delta &= 0.09 \\ &= L/760 \end{aligned}$$

USE (2) 2x8

#304 INT. HDR

$$\begin{aligned} L &= 3' \\ W &= 0.045 \left(\frac{27.5^2}{2} \right) = 0.62 \\ R &= 0.9 \\ M &= 0.7 \end{aligned} \quad \begin{aligned} F_b &= 0.3 \\ F_v &= 40 \\ \Delta &\approx 0 \\ &= L/1 - \end{aligned}$$

USE (2) 2x8

#305 INT. RIM

$$\begin{aligned} L &= 3.75 \\ W &= 0.045 \left(\frac{27.5^2}{2} \right) = 0.62 \\ R &= 1.2 \\ M &= 1.1 \end{aligned} \quad \begin{aligned} F_b &= 0.2 \\ F_v &= 26 \\ \Delta &\approx 0 \\ &= L/1 - \end{aligned}$$

USE (2) 2x12

BEAMS/HEADERS



**MALSAM
TSANG**
STRUCTURAL
ENGINEERING

122 SOUTH JACKSON ST
SUITE 210
SEATTLE, WA 98104
T 206.759.8098
MALSAM-TSANG.COM

2707 70th AVE SE

PROJECT

01.31.25

DATE

0527-2025-01

PROJECT NO

NDM

DESIGN

V2

SHEET

VERTICAL ANALYSIS

UPPER FLOOR = 55 PSF
ROOF DECK = 90 PSF

JOISTS / TRUSSES

TYP JOISTS

SEE TJI 1-5

TYP DECK JOISTS

$L_{max} = 9.25$
 $W = 0.09 (\frac{16}{12}) = 0.12$
 $R = 0.6$
 $M = 1.3$

* $f_b = 1.17 \leq 0.85 \times 1.15 \times 1.2$
* $f_v = 67 = 1.175$
 $\Delta = 0.32$
 $= L/347$

* $d = 7.25"$
CHECKED
(CONSERV.)

USE TAPERED*
2x12/2x10's AT 16"OC

BEAMS / HEADERS

#201 TYP RIM

$L = 6$
 $W = 0.055 (\frac{16.3}{2}) = 0.45$
 $R = 1.4$
 $M = 2.0$
 $f_b = 0.4$
 $f_v = 51$
 $\Delta = 0.02$
 $= L/3000T$

USE 1 3/4 x 14 LSL MIN

#202 OT RIM (14)

$L_1 = 6$
 $L_2 = 6$
 $L_3 = 6$
 $W_1 = 0.45 + 0.01(9) = 0.54 [0.12]$
 $W_2 = 0.42 + 0.45 + 0.015(9) = 0.96 [0.34]$
 $W_3 = W_1$
 $P_1 = 1.7 + 1.4 \pm 1.9(2.5) = 7.9, 1.7 [5.7, -3.9]$
 $P_2 = 3.1 \mp 4.8 = -1.7, 7.9 [-3.9, 5.7]$
* $R_1 = - [4.2]$
* $R_2 = - [1.0]$
 $M = 55.2 [23.3]$
 $f_b = 3.9 < 2.9 \times 1.6 = 4.64$
 $f_v = 210$

* CHECK FOR
NET UPLIFT
BEARING DIRECTLY
TO POSTS/WALL
CONTINUED

USE 5 1/4 x 14 PSL



122 SOUTH JACKSON ST
SUITE 210
SEATTLE, WA 98104
T 206.789.6038
MALSAM-TSANG.COM

2707 70th AVE SE

PROJECT

01.31.25
DATE

0527202501
PROJECT NO

NDM
DESIGN

V3
SHEET

VERTICAL ANALYSIS UPPER Cont'd

BEAMS/HEADERS

#203 OT BM (C2) [0.6DL]
 $L_1 = 10.75$
 $L_2 = 5.5$
 $W_1 = 0.055(\frac{16}{2}) = 0.073 [0.012]$
 $W_2 = W_1$
 $P = 1.3 \times 2.5 = \pm 3.3$
 $R_1 = 1.7 [-1.0]$
 $R_2 = 2.8 [-2.1] + 3.3 = -0.5 [+1.2]$
 $M = 14.2 [-11.6]$

USE 3 1/2 x 14 LSL

#204 LANDING CANTILE (C3)

$L = 16.5$ [0.6DL]
 $A = 4$
 $W_1 = 0.055(\frac{16}{2}) = 0.073 [0.012]$
 $W_2 = W_1 + 0.055(\frac{6}{2}) = 0.24$
 $P = 0.055(4 \times 4 / 4) = 0.22$
 $R_1 = 0.4 [-0.07]$
 $R_2 = 1.9$
 $M = -2.8$

$F_b = -0.6$
 $F_v = 55$
 $\Delta_c = 0.18$
 $= L/530$

USE 1 3/4 x 14 LSL MIN

BEAMS/HEADERS

#205 EAST RM/HR
 $L = 4.5$ ← WORSE CASE L@KIT. RM
 $W = 0.055(\frac{13.5}{2}) + 0.015(8) + 0.4 = 0.9$
 $R = 2.0$
 $M = 2.3$

$F_b = 1.04$
 $F_v = 103$
 $\Delta = 0.07$
 $= L/800$

USE (2) 2x8 MIN

#206 GIRDER

$L = 15.25$
 $W = 0.055(\frac{27.5}{2}) + 0.010(9) + 0.62 = 1.47$
 $R = 11.2 + 3.0 = 14.2$ NORTH
 $M = 42.6$

$F_b = 2.2$
 $F_v = 145$
 $\Delta = 0.56$
 $= L/328$
 $= L_{LL}/538$

USE 7x14 PSL

#207 CANTILE RM/INT-SW (C3)

$L = 8.75$ [0.6DL]
 $A = 4.25$
 $W_1 = (0.045 + 0.055)(\frac{29.5}{2}) + 0.01(9) = 1.57 [0.36]$
 $W_2 = W_1$
 $P = 0$
 $R_1 = 5.2 [-0.05]$
 $R_2 = 15.2$
 $M = -14.2$

$F_b = -1.5$
 $F_v = 205$
 $\Delta_c = 0.27$
 $= L/370$

~~USE 3 1/2 x 14 LSL~~ → 7 1/2 x 14 PSL

W/OT. MAXES
 $\Delta_o: F_b = -2.1$
 $F_v = 171$
 $w/o \Delta_o: R_1 = -2.4, 8.8$
 $R_2 = 18.7, -0.1$



122 SOUTH JACKSON ST
 SUITE 210
 SEATTLE, WA 98104
 T 206.709.8038
 MALSAM-TSANG.COM

2707 70TH AVE SE

PROJECT

01.31.25
 DATE
 0527202501
 PROJECT NO
 NDM
 DESIGN
 V4
 SHEET

VERTICAL ANALYSIS UPPER CONT'D

BEAMS/HEADERS

#208 DROP SHOWER BM

$$L = 10.25 \quad F_b = 0.6$$

$$W = 0.055 \left(\frac{6}{2} + 1 \right) = 0.22 \quad F_v = 54$$

$$R = 1.2 \quad \Delta = 0.09$$

$$M = 2.9 \quad = L/1300$$

USE 1^{3/4} x 14 LSL MIN

#209 DROP SHOWER RM

$$L = 6 \quad F_b = 0.4$$

$$W = 0.075 \left(\frac{10.25}{2} \right) = 0.39 \quad F_v = 44$$

$$R = 1.2 \quad \Delta = 0.02$$

$$M = 1.8 \quad = L/3900$$

USE 1^{3/4} x 14 LSL MIN

#210 W.P. DECK GIRDER

$$L = 6.5 \quad F_b = 0.94 < 0.85 \times 1.2 = 1.02$$

$$W = 0.09 \left(\frac{16.5}{2} \right) = 0.74 \quad F_v = 85$$

$$R = 2.4 \quad \Delta = 0.10$$

$$M = 3.9 \quad = L/780$$

USE 4x10

BEAMS/HEADERS

#211 W.P. DECK RM (C2)

$$L_1 = 7$$

$$L_2 = 3$$

$$W_1 = 0.09 + 0.015(9) + 0.045 \left(\frac{14^2}{2(12)} \right) = 0.6$$

$$W_2 = W_1$$

$$P = 2.4 \quad F_b = 1.2$$

$$R_1 = 3.7 \quad F_v = 122$$

$$R_2 = 4.7 \quad \Delta = 0.16$$

$$M = 11.5 \quad = L/730$$

USE 3^{1/2} x 14 LSL

#212 W.P. DECK RM (C2)

$$L_1 = 6.75$$

$$L_2 = 6.25$$

$$W_1 = 0.09 \left(\frac{6}{2} \right) + 0.015(10) + 0.045(3) + 0.055 = 0.61$$

$$W_2 = W_1 + 0.39 = 1.0$$

$$P = 1.2$$

$$R_1 = 5.1 + 4.7 = 9.8^* \quad F_b = 1.4$$

$$R_2 = 6.4 \quad F_v = 108^*$$

$$M = 20.7 \quad \Delta = 0.25$$

$$= L/619$$

USE 5^{1/4} x 14 PSL

*NOTCH $d = 8.5''$ MW

$$F_v = \frac{1.5(9.8)}{5.25(8.5)} = \frac{329}{4290} = 1.15 = 335$$



122 SOUTH JACKSON ST
SUITE 210
SEATTLE, WA 98164
T 206.780.6038
MALSAM-TSANG.COM

2707 70th Ave SE

PROJECT

01.31.25
DATE

0527-202501
PROJECT NO

NDM
DESIGN

V5
SHEET

VERTICAL ANALYSIS UPPER CONT'D

BEAMS/HEADERS

#213 W.P. DECK RIM (C3)

$L = 10.5$ [0.6DL]

$A = 1$

$W_1 = 0.09(\frac{7}{2}) + 0.015(9) + 0.045(3) + 0.055 = 0.64$

$W_2 = W_1$ [0.18]

$P = 3.7$

$R_1 = 3.0$ [0.5]

$R_2 = 8.1$

$M = -4.0$

$F_b = -0.4$

$F_v = 110$

$\left[\begin{matrix} \Delta_c \approx 0 \\ = L1- \end{matrix} \right]$

BACKSPAN ONLY

$M_4 = 8.8$ $F_b = 0.9$

USE $3\frac{1}{2} \times 14$ LSL \rightarrow $5\frac{1}{4} \times 14$ PSL

W/SEISMIC

$L_1 = 5$

$L_2 = 5.5$ \swarrow No

$P_E = \pm 2.5 \times 2.5 = \pm 6.3$

$R_1 = 6.7$ [0.4 + 0.7]*

$R_2 = 6.4 - 6.3 = 0.1$ [-0.3 + 2.5 = 2.2]*

$M = 25.3$

$F_b = 1.8$

$F_v = 130$

* w/o Jo

BEAMS/HEADERS

#214 WEST OT RIM (C2)

$L_1 = 5$

$L_2 = 5$

$W_1 = 0.045(\frac{14^2}{2}) + 0.015(9) = 0.5$ [0.15]

$W_2 = 0.073$ [0.012]

$P = 1.7 \pm 1.9 \times 2.5 = 6.5$ [-4.4]

$R_1 = 5.2 - 4.8 = 0.4$ [-0.2 + 1.9 = 1.7]*

$R_2 = 4.1$ [-0.5 + 1.2 = 0.7]

$M = 19.7$ #212 x 0.6DL

$F_b = 2.1$

$F_v = 144$

* w/o Jo

USE $3\frac{1}{2} \times 14$ LSL



122 SOUTH JACKSON ST
SUITE 210
SEATTLE, WA 98104
T 206.750.6036
MALSAM-TSANG.COM

2707 70th AVE SE

PROJECT

01.3125

DATE

0527202501

PROJECT NO

NDM

DESIGN

V6

SHEET

VERTICAL ANALYSIS MAIN: TL=55PSF
DECK: TL=80PSF

JOISTS / TRUSSES

TYP JOISTS
SEE TSI 6-10

TYP DECK JOISTS
REF V3

BEAMS / HEADERS

#101 TYP RIM

$L=6$
 $W=0.08\left(\frac{6.5}{2}\right)+0.055\left(\frac{16.5}{2}\right)=0.72$
 $R=2.1$
 $M=3.4$
 $F_b=60$
 $F_v=109$
 $\Delta=0.06$
 $=L/1200$

USE $1^{3/4} \times 11^{7/8}$ LSL MIN

#102 TYP DECK RIM

$L_{max}=7'$
 $W=0.08\left(\frac{7}{2}\right)=0.28$
 $R=1.0$
 $M=1.9$
 $F_b=0.45$
 $F_v=35$
 $\Delta=0.07$
 $=L/1200$

USE 6x8



122 SOUTH JACKSON ST
SUITE 210
SEATTLE, WA 98104
T 206.789.6038
MALSAM-TSANG.COM

PROJECT 2707 70th AVE SE

DATE 01/31/25

PROJECT NO 05272025d

DESIGN NDM

SHEET V7

VERTICAL ANALYSIS MAIN CONTS

BEAMS/HEADERS

#103 CANTILE BEAMS (C3)

$L = 16.5$ [1.0DL]
 $A = 6.75$
 $W_1 = 0.073$ [0.02]
 $W_2 = 0$
 $P = 0.08 \left(\frac{12}{2} \times \frac{6.75}{2} \right) = 1.56$
 $R_1 = 0$ [-0.5] $F_b = -1.0$
 $R_2 = 2.8 + 7.5 = 10.3$ $F_v = 38$
 $M = -10.6$ $\left[\begin{array}{l} \Delta = 0.62 \\ = L/261 \end{array} \right]$

~~USE $5 \frac{1}{4} \times 11 \frac{7}{8}$ PSL~~ $7''$

BEAMS/HEADERS

#104 CANTILE RIM (C3)

$L = 16.5$ [1.0DL]
 $A = 6.75$
 $W_1 = 0.055(2) + 0.045(3) + 0.015(20) = 0.55$ [0.37]
 $W_2 = 0$
 $P = 1.0$
 $R_1 = 4.1$ $F_b = -1.0$
 $R_2 = 6.0$ $F_v = 160$
 $M = -6.6$ $\left[\begin{array}{l} \Delta_c \approx 0 \\ = L/1- \end{array} \right]$

~~USE $3 \frac{1}{2} \times 11 \frac{7}{8}$ LSL~~ → USE $5 \frac{1}{4} \times 11 \frac{7}{8}$ GLB

#105 NOT USING



122 SOUTH JACKSON ST
 SUITE 210
 SEATTLE, WA 98164
 T 206.790.6038
 MALSAM-TSANG.COM

2707 70th Ave SE

PROJECT

01/31/25
DATE

0527202501
PROJECT NO

NDM
DESIGN

V8
SHEET

VERTICAL ANALYSIS MAIN CONT

BEAMS/HEADERS

#106 STEEL GIRDER (12)

$$\begin{aligned}
 L_1 &= 10.5 \\
 L_2 &= 4 \\
 W_1 &= 0.055 \left(\frac{27.5}{2} \right) = 0.76 \\
 W_2 &= W_1 \\
 P &= 14.2 \\
 R_1 &= 9.4 \\
 R_2 &= 15.8 \\
 M &= 57.1 \\
 F_b &= 15 \text{ ksi} \\
 F_v &= 6 \text{ ksi} \\
 \Delta &= 0.27'' \\
 &= L/650
 \end{aligned}$$

USE W10x45 $b=8.0''$
 $d=10.1''$

#107 TYP DECK HDR

$$\begin{aligned}
 L &= 7 \\
 W &= 0.08 \left(\frac{1}{2} \right) = 0.44 \\
 R &= 1.5 \\
 M &= 2.7 \\
 F_b &= 0.65 \\
 F_v &= 56 \\
 \Delta &= 0.08 \\
 &= L/1000
 \end{aligned}$$

USE 4x10

BEAMS/HEADERS

#108 INT. HDR

$$\begin{aligned}
 L &= 3' \\
 W &= 1.47 + 0.055 \left(\frac{27.5}{2} \right) = 2.23 \\
 R &= 3.3 \\
 M &= 2.5 \\
 F_b &= 0.6 \\
 F_v &= 76 \\
 \Delta &= 0.01 \\
 &= L/2600
 \end{aligned}$$

USE 4x10



122 SOUTH JACKSON ST
SUITE 210
SEATTLE, WA 98164
T 206.759.6038
MALSAM-TSANG.COM

PROJECT

2107 70th AVE SE

DATE

01/31/25

PROJECT NO

0527202501

DESIGN

NPM
V9

SHEET

VERTICAL ANALYSIS

• USING 2000 PIF ALLOWABLE SOIL BEARING PRESSURE (PER GEO)

FOUNDATIONS

INTERIOR ISOLATED

STEEL GIRDER

$$P = 15.8^k / 2 = 7.9^k \text{ REQ'D} \rightarrow \text{USE } 36" \text{ SQ}$$

$$P = 9.4^k / 2 \rightarrow \text{USE } 30" \text{ SQ}$$

UPP. HALL BATH

$$P = 15.2^k \rightarrow \text{USE } 36" \text{ SQ}$$

DROP BATH

$$P = 2.4^k \rightarrow 24" \text{ SQ}$$

CLOSET

$$P = 8.1^k \rightarrow 30" \text{ SQ}$$

DECK/SOUTH BATH

$$P = 9.8^k \rightarrow 30" \text{ SQ}$$

$$P = 4.1^k \rightarrow 24" \text{ SQ}$$

EXTERIOR ISOLATED

SOUTH DECK

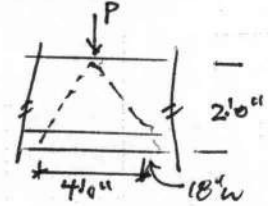
$$P = (2)1.5 = 3^k / 2 \rightarrow 24" \text{ SQ}$$

STEM HALL FT LOADS

NEW:

$$A \approx 1.5'(4') = 6^k$$

$$P_A = 6^k \times 2 = 12^k$$



AT (E); GLE3

$$P = 11.2 + 5.2^k = 16.4^k / 2 = 8.2^k$$

DISTRIBUTED O/FULL HT WALL (H=8')

EXISTING FTG WIDTH MIN 6.2"; (E) WALL 8" OK

DISTRIBUTED FTG

WEST

$$W = 0.47 + 0.46 + 0.46 + 0.52 + 0.015(30) + 0.15(2^k) = 2.66 / 2$$

∴ VERIFY 16" W FTG

SOUTH EAST

$$W = 0.39 + 0.36 + 0.36 + 0.015(20) + 0.15(2) = 1.71 / 2$$

∴ VERIFY 12" W

EAST

← NOT ALWAYS PRESENT...

$$W = 0.35 + 0.32 + 0.32 + 0.3 + 0.015(5.5) = 2.12^k / 2$$

∴ VERIFY 12" W



122 SOUTH JACKSON ST
SUITE 210
SEATTLE, WA 98104
T 206.789.8038
MALSAM-TSANG.COM

2707 70th Ave SE

PROJECT

013125

DATE

0527202501

PROJECT NO

NDM

DESIGN

V10

SHEET

OUT OF PLANE ANALYSIS

WIND

AT NORTHEAST CORNER:

C&C WIND LOAD, $0.69 q_h$ (SEE DC5)

ZONE 4: $0.69 q_h = -17.3 \text{ psf}$

ZONE 5: $0.69 q_h = -19.5 \text{ psf}$

GRID A4 COLUMN (ZONES 5)

$$W_w = -19.5 (7.3/2) = 0.072 \text{ kLF}$$

$H = 19.1'$
 $R = 0.7^k$ (2) ABS $F_b = 1.6$
 $M = 3.3^k$ $F_v = 36$ C&C
 $\Delta = 1.55 \times 0.42 = 0.65''$
 $= L/350$ ✓
5 1/4" PSL COL (2-ZE)

ENTRY RIM (ZONE 4)

$$W_w = -17.3 (19.1/2) = 0.165 \text{ kLF}$$

$$L = 10.6'$$

$$R = 0.9 \leftarrow \text{HUGA}$$

$$M = 2.3$$

3 1/2 x 14 LSL OK

GRID NB4 COLUMN (ZONE 4)

$$W_w = -17.3 (7.3/2) = 0.063$$

$$P = 0.9$$

$$L_1 = 11$$

$$L_2 = 8.1$$

$$R_1 = 1.0$$

$$R_2 = 1.1 \text{ (2) H6A}$$

$$M = 7.0$$

$F_b = 1.5$
 $F_v = 27$
 $\Delta = 1.42 \times 0.42 = 0.60''$
 $= L/380$ ✓

5 1/4 x 11 7/16 PSL (2-0E)

GRID NC4 COLUMN (ZONE 4)

$$P = 0.9$$

$$M = 4.2$$

$$L_1 = 11$$

$$L_2 = 8.1$$

$$R_1 = 0.4 \text{ (ABS)}$$

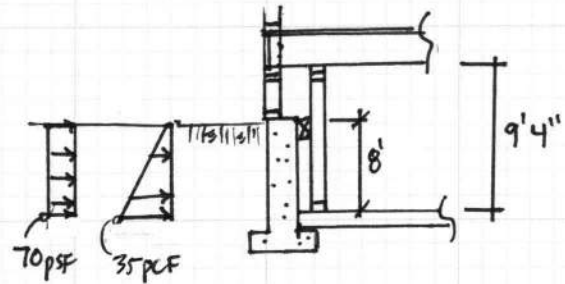
$$R_2 = 0.5$$

$F_b = 1.05 < 0.85 \times 1.6$
 $F_v = 15$
 $\Delta = 1.28 \times 0.42 = 0.54''$
 $= L/427$ ✓
6 x 10

RETAINING

(E) FULL HIT BASEMENT WALLS WHERE FLOOR UP ARE UNSUPPORTED

D4 ↔ E4; E2 ↔ E4 (FLOOR RAISED)



$$R_{\text{TOP}} = 70 \left(\frac{8}{2} \right) + 35 \left(\frac{8^2}{2} \right) \left(\frac{1}{3} \right) = 0.66 \text{ kLF / FT}$$

TO STUDS

$$L = 8$$

$$L_2 = 1.3$$

$$W = 0$$

$$P = 0.87$$

$$R_1 = 0.12$$

$$R_2 = 0.75$$

$$M = 1.0$$

$$F_b = 0.79$$

$$F_v = 68$$

$$\Delta = 0.20$$

$$= L/570$$

(2) 2x6 @ 16" oc

INTO DIAPH w/ TRAF.
 $W = 0.38 \left(\frac{8}{9.3} \right) = \dots$
 $\dots 0.33 \text{ kLF}$

E	D/C	B
$\Delta 15.5$	$\Delta 12.5$	Δ
$\uparrow 2.6^k$	$\uparrow 4.6^k$	$\uparrow 2.1^k$



MALSAM TSANG
STRUCTURAL ENGINEERING

122 SOUTH JACKSON ST
SUITE 210
SEATTLE, WA 98104
T 206.789.6038
MALSAM-TSANG.COM

2707 20th Ave SE

PROJECT

013125

DATE

0527202501

PROJECT NO

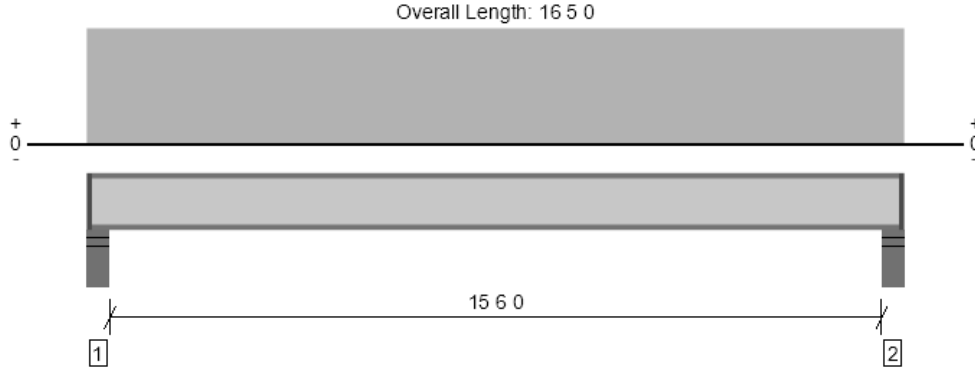
NDM

DESIGN

01

SHEET

DL=15 LL=40 (TL=55) 11-7/8" Pro 55, 14" TJI 110 at 16"oc
1 piece(s) 14" TJI® 110 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	594 @ 0 4 8	1375 (3.50")	Passed (43%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	568 @ 0 5 8	1860	Passed (31%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2250 @ 8 2 8	3740	Passed (60%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.173 @ 8 2 8	0.392	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.238 @ 8 2 8	0.522	Passed (L/790)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	55	55	Passed	--	--

Member Length : 16 2 8
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2012
 Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - HF	5.50"	4.25"	1.75"	164	438	602	1 1/4" Rim Board
2 - Stud wall - HF	5.50"	4.25"	1.75"	164	438	602	1 1/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4 1 0 o/c	
Bottom Edge (Lu)	16 3 0 o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 0 0 to 16 5 0	16"	15.0	40.0	Residential - Living Areas

Weyerhaeuser Notes

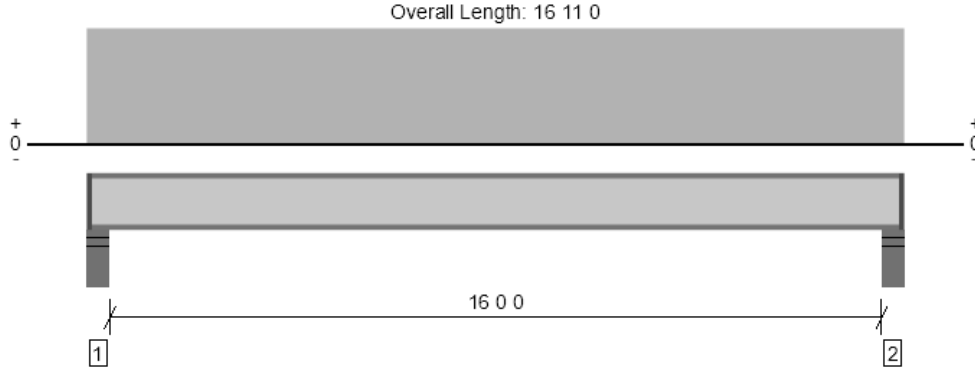
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.woyehaeuser.com/woodproducts/document-library.

The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Nate Moore Malsam Tsang (206) 602-9537 natem@malsam-tsang.com	



DL=15 LL=40 (TL=55) 11-7/8" Pro 55, 14" TJI 210 at 16"oc
1 piece(s) 14" TJI® 210 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	613 @ 0 4 8	1460 (3.50")	Passed (42%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	587 @ 0 5 8	1945	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2396 @ 8 5 8	4490	Passed (53%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.172 @ 8 5 8	0.404	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.237 @ 8 5 8	0.539	Passed (L/818)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	55	55	Passed	--	--

Member Length : 16 8 8
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2012
 Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - HF	5.50"	4.25"	1.75"	169	451	620	1 1/4" Rim Board
2 - Stud wall - HF	5.50"	4.25"	1.75"	169	451	620	1 1/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5 2 0 o/c	
Bottom Edge (Lu)	16 9 0 o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 0 0 to 16 11 0	16"	15.0	40.0	Residential - Living Areas

Weyerhaeuser Notes

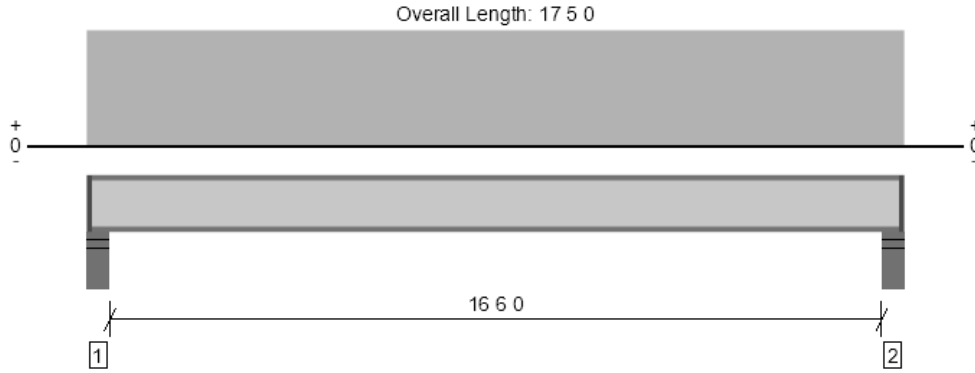
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.woyerhaeuser.com/woodproducts/document-library.

The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Nate Moore Malsam Tsang (206) 602-9537 natem@malsam-tsang.com	



DL=15 LL=40 (TL=55) 11-7/8" Pro 55, 14" TJI 230 at 16"oc
1 piece(s) 14" TJI® 230 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	631 @ 0 4 8	1485 (3.50")	Passed (42%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	605 @ 0 5 8	1945	Passed (31%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2546 @ 8 8 8	4990	Passed (51%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.180 @ 8 8 8	0.417	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.247 @ 8 8 8	0.556	Passed (L/810)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	55	55	Passed	--	--

Member Length : 17 2 8
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2012
 Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - HF	5.50"	4.25"	1.75"	174	464	639	1 1/4" Rim Board
2 - Stud wall - HF	5.50"	4.25"	1.75"	174	464	639	1 1/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5 10 0 o/c	
Bottom Edge (Lu)	17 3 0 o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 0 0 to 17 5 0	16"	15.0	40.0	Residential - Living Areas

Weyerhaeuser Notes

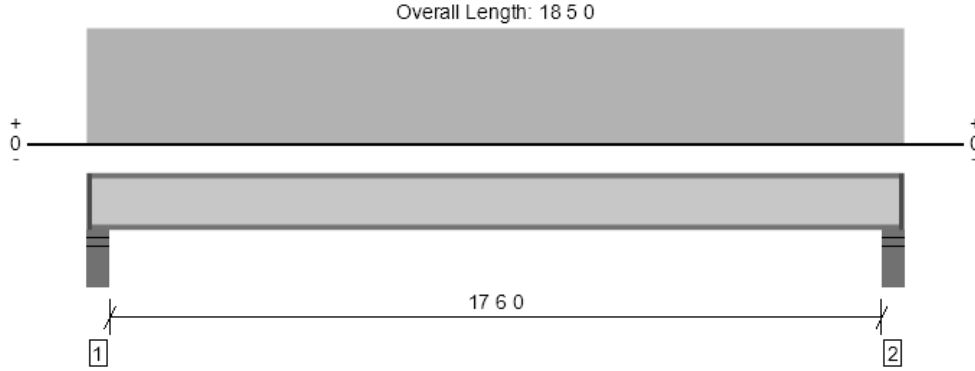
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Nate Moore Malsam Tsang (206) 602-9537 natem@malsam-tsang.com	



DL=15 LL=40 (TL=55) 11-7/8" Pro 55, 14" TJI 360 at 16"oc
1 piece(s) 14" TJI® 360 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	668 @ 0 4 8	1505 (3.50")	Passed (44%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	642 @ 0 5 8	1955	Passed (33%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2861 @ 9 2 8	7335	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.194 @ 9 2 8	0.442	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.267 @ 9 2 8	0.589	Passed (L/794)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	55	55	Passed	--	--

Member Length : 18 2 8
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2012
 Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - HF	5.50"	4.25"	1.75"	184	491	675	1 1/4" Rim Board
2 - Stud wall - HF	5.50"	4.25"	1.75"	184	491	675	1 1/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6 2 0 o/c	
Bottom Edge (Lu)	18 3 0 o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 0 0 to 18 5 0	16"	15.0	40.0	Residential - Living Areas

Weyerhaeuser Notes

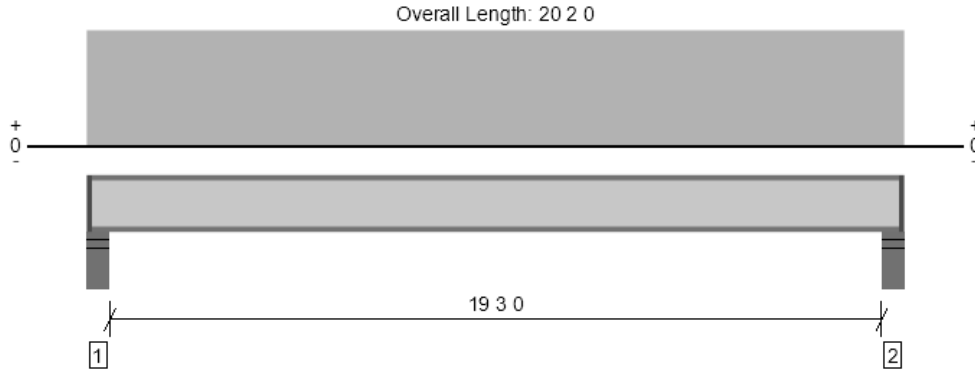
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Nate Moore Malsam Tsang (206) 602-9537 natem@malsam-tsang.com	



DL=15 LL=40 (TL=55) 11-7/8" Pro 55, 14" TJI 560 at 16"oc
1 piece(s) 14" TJI® 560 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	732 @ 0 4 8	1725 (3.50")	Passed (42%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	706 @ 0 5 8	2390	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3456 @ 10 1 0	11275	Passed (31%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.196 @ 10 1 0	0.485	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.270 @ 10 1 0	0.647	Passed (L/863)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	55	55	Passed	--	--

Member Length : 19 11 8
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2012
 Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - HF	5.50"	4.25"	1.75"	202	538	739	1 1/4" Rim Board
2 - Stud wall - HF	5.50"	4.25"	1.75"	202	538	739	1 1/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10 6 0 o/c	
Bottom Edge (Lu)	20 0 0 o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 0 0 to 20 2 0	16"	15.0	40.0	Residential - Living Areas

Weyerhaeuser Notes

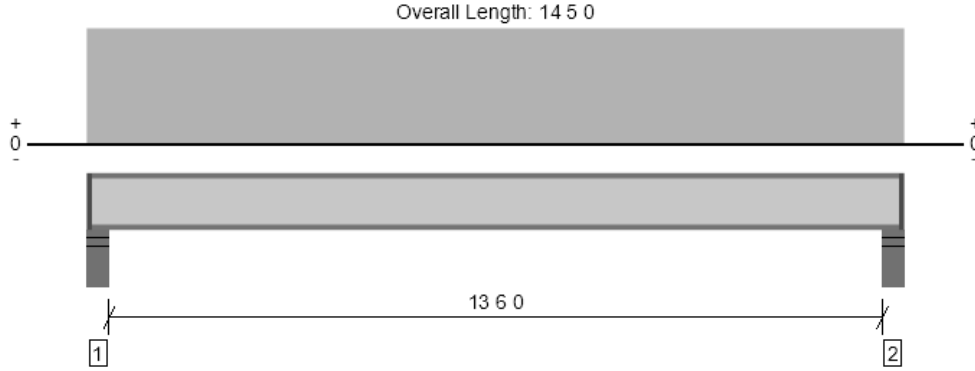
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Nate Moore Malsam Tsang (206) 602-9537 natem@malsam-tsang.com	



DL=15 LL=40 (TL=55) 11-7/8" Pro 55, 11-7/8" TJI 110 at 16"oc
1 piece(s) 11 7/8" TJI@ 110 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	521 @ 0 4 8	1375 (3.50")	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	495 @ 0 5 8	1560	Passed (32%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1712 @ 7 2 8	3160	Passed (54%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.147 @ 7 2 8	0.342	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.202 @ 7 2 8	0.456	Passed (L/811)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	55	55	Passed	--	--

Member Length : 14 2 8
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2012
 Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - HF	5.50"	4.25"	1.75"	144	384	529	1 1/4" Rim Board
2 - Stud wall - HF	5.50"	4.25"	1.75"	144	384	529	1 1/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4 4 0 o/c	
Bottom Edge (Lu)	14 3 0 o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 0 0 to 14 5 0	16"	15.0	40.0	Residential - Living Areas

Weyerhaeuser Notes

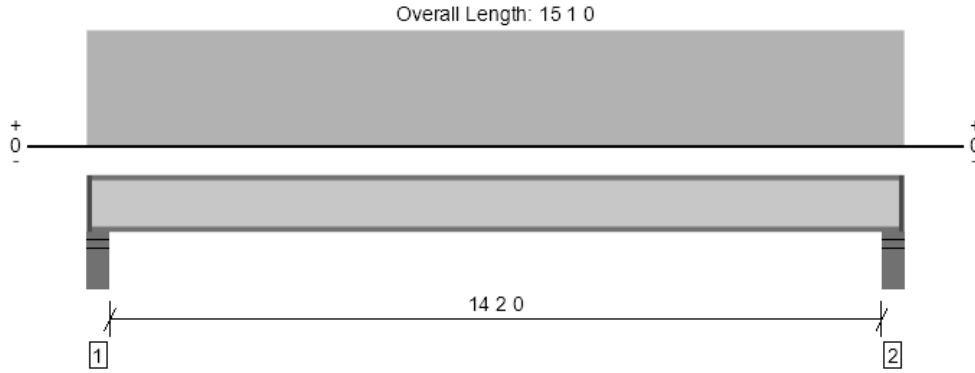
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Nate Moore Malsam Tsang (206) 602-9537 natem@malsam-tsang.com	



DL=15 LL=40 (TL=55) 11-7/8" Pro 55, 11-7/8" TJI 210 at 16"oc
1 piece(s) 11 7/8" TJI@ 210 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	545 @ 0 4 8	1460 (3.50")	Passed (37%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	519 @ 0 5 8	1655	Passed (31%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1883 @ 7 6 8	3795	Passed (50%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.155 @ 7 6 8	0.358	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.214 @ 7 6 8	0.478	Passed (L/805)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	55	55	Passed	--	--

Member Length : 14 10 8
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2012
 Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - HF	5.50"	4.25"	1.75"	151	402	553	1 1/4" Rim Board
2 - Stud wall - HF	5.50"	4.25"	1.75"	151	402	553	1 1/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5 4 0 o/c	
Bottom Edge (Lu)	14 11 0 o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 0 0 to 15 1 0	16"	15.0	40.0	Residential - Living Areas

Weyerhaeuser Notes

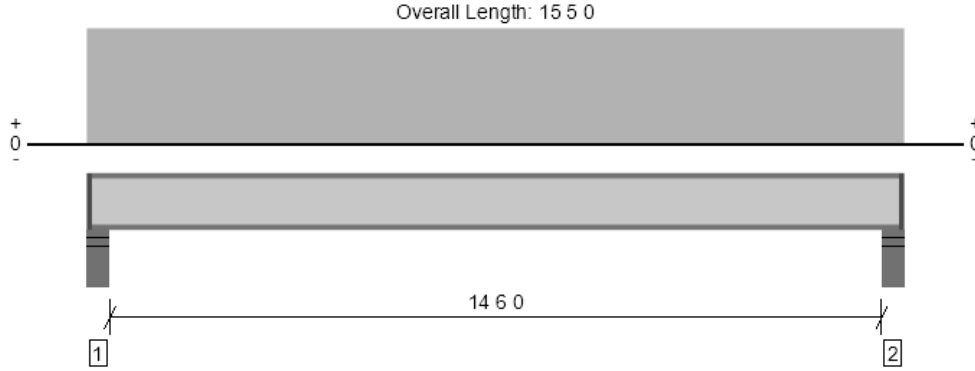
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Nate Moore Malsam Tsang (206) 602-9537 natem@malsam-tsang.com	



DL=15 LL=40 (TL=55) 11-7/8" Pro 55, 11-7/8" TJI 230 at 16"oc
1 piece(s) 11 7/8" TJI@ 230 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	558 @ 0 4 8	1485 (3.50")	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	532 @ 0 5 8	1655	Passed (32%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1972 @ 7 8 8	4215	Passed (47%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.158 @ 7 8 8	0.367	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.217 @ 7 8 8	0.489	Passed (L/812)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	55	55	Passed	--	--

Member Length : 15 2 8
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2012
 Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - HF	5.50"	4.25"	1.75"	154	411	565	1 1/4" Rim Board
2 - Stud wall - HF	5.50"	4.25"	1.75"	154	411	565	1 1/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6 1 0 o/c	
Bottom Edge (Lu)	15 3 0 o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 0 0 to 15 5 0	16"	15.0	40.0	Residential - Living Areas

Weyerhaeuser Notes

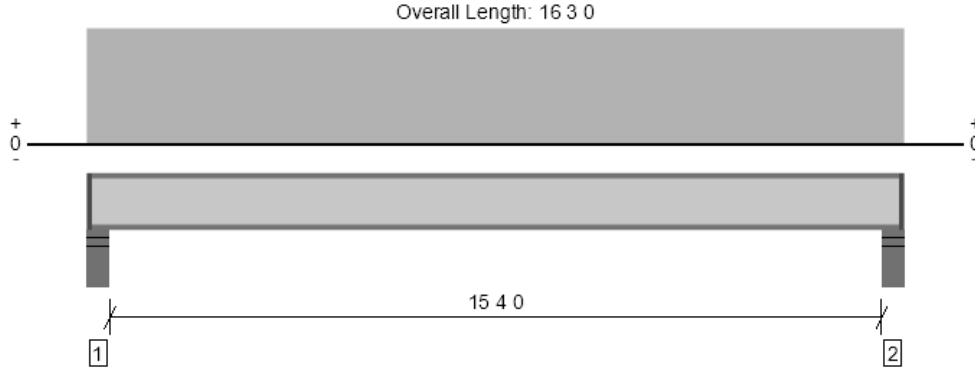
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Nate Moore Malsam Tsang (206) 602-9537 natem@malsam-tsang.com	



DL=15 LL=40 (TL=55) 11-7/8" Pro 55, 11-7/8" TJI 360 at 16"oc
1 piece(s) 11 7/8" TJI@ 360 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	588 @ 0 4 8	1505 (3.50")	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	562 @ 0 5 8	1705	Passed (33%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2202 @ 8 1 8	6180	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.168 @ 8 1 8	0.387	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.231 @ 8 1 8	0.517	Passed (L/804)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	55	55	Passed	--	--

Member Length : 16 0 8
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2012
 Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - HF	5.50"	4.25"	1.75"	163	433	596	1 1/4" Rim Board
2 - Stud wall - HF	5.50"	4.25"	1.75"	163	433	596	1 1/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6 5 0 o/c	
Bottom Edge (Lu)	16 1 0 o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 0 0 to 16 3 0	16"	15.0	40.0	Residential - Living Areas

Weyerhaeuser Notes

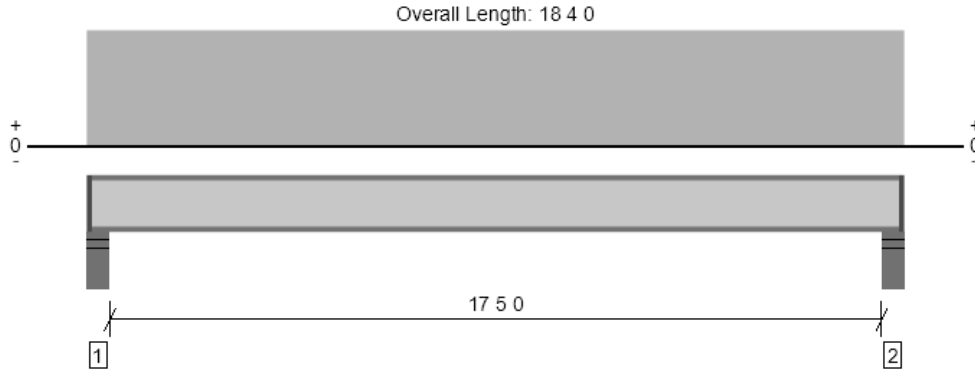
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Nate Moore Malsam Tsang (206) 602-9537 natem@malsam-tsang.com	



DL=15 LL=40 (TL=55) 11-7/8" Pro 55, 11-7/8" TJI 560 at 16"oc
1 piece(s) 11 7/8" TJI@ 560 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	665 @ 0 4 8	1725 (3.50")	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	639 @ 0 5 8	2050	Passed (31%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2834 @ 9 2 0	9500	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.191 @ 9 2 0	0.440	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.262 @ 9 2 0	0.586	Passed (L/804)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	55	55	Passed	--	--

Member Length : 18 1 8
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2012
 Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/360).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - HF	5.50"	4.25"	1.75"	183	489	672	1 1/4" Rim Board
2 - Stud wall - HF	5.50"	4.25"	1.75"	183	489	672	1 1/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10 7 0 o/c	
Bottom Edge (Lu)	18 2 0 o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 0 0 to 18 4 0	16"	15.0	40.0	Residential - Living Areas

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Nate Moore Malsam Tsang (206) 602-9537 natem@malsam-tsang.com	

