

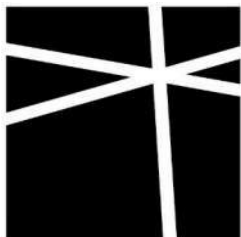
REVISED STRUCTURAL CALCULATIC

2707 70TH AVE SE

MERCER ISLAND, WA

ARCHITECT: V SQUARED

AUGUST 28, 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 (C_p)

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



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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.



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DESIGN CRITERIA

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

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

$$K_{ZT, MAP} = 1.90$$



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	 $K_{z,t} = 1.0$
	 $K_{z,t} = 1.3$
	 $K_{z,t} = 1.6$
	 $K_{z,t} = 1.9$



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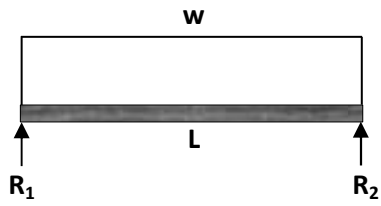
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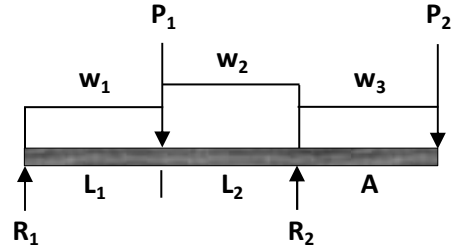
TYPICAL BEAM CASES

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

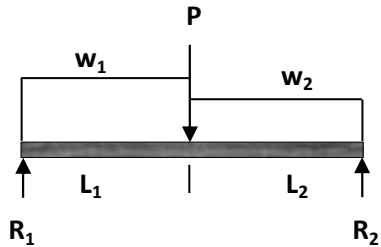
CASE #1: (C1)



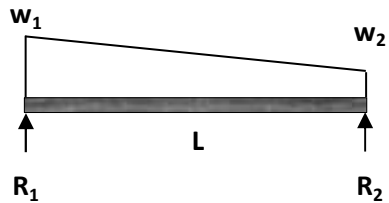
CASE #5: (C5)



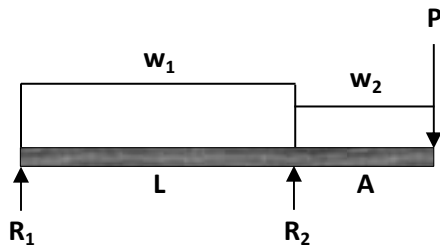
CASE #2: (C2)



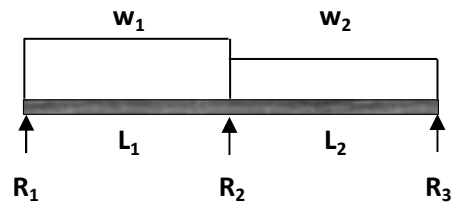
CASE #6: (C6)



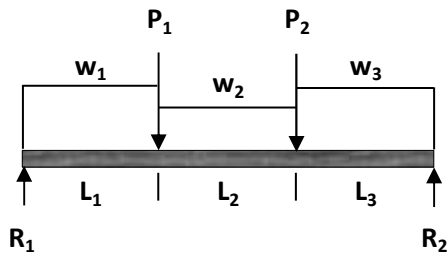
CASE #3: (C3)



CASE #7: (C7)



CASE #4: (C4)



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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

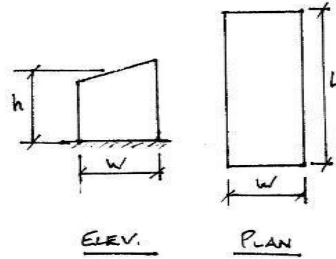
$GC_{pi} = 0.18$ Table 26.11-1

$K_h = 0.701$ 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



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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	51.33	5.39
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		24.45

V_{ns} 13.0 k
V_{ew} 24.4 k

Seismic

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

Level	h _i	A	w	w _i	w _{h_i}	C _{vx}	F _{x, allow}	psf
ROOF	28.00	1500	22.5	33.75	945.00	0.40	(6.25)	(4.17)
UPPER	19.00	2000	28.0	56.00	1064.00	0.45	(7.04)	(3.52)
MAIN	9.00	1100	38.0	41.80	376.20	0.16	(2.49)	(2.26)
				Σ	131.55	2385.20	1.00	(15.79)

North/South		East/West	
W	w	W	w
28.50	(219.4)	51.33	(121.8)
28.50	(247.1)	68.16	(103.3)
28.50	(87.4)	38.16	(65.2)

V_{ult} 22.6 k
V_{all} 15.8 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	(6.25)	5.39	(6.25)
UPPER	8.41	(13.30)	18.34	(13.30)
MAIN	12.97	(15.79)	24.45	(15.79)
Σ	12.97	(15.79)	24.45	(15.79)



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LATERAL ANALYSIS - SFR REMODEL

LFRS - WIND (SEISMIC)

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

North/South

ROOF

WIND	105.0						
(SEISMIC)	(219.4)						
	WEST				EAST		
Left Offset:	7.5	17.0	11.5				
Plt Ht:	1	2	3	4	5	6	7
R:	0.90 (1.87)	1.50 (3.13)	0.61 (1.27)				
PLt Ht:	9.25	8.75					
L:	12.5	44.3	13.9				
	=6+6.5	=11.5+10.5+18.5+3.75	=11.66+2.2				
L(min):			2.2				
V:	72 (150)	34 (71)	45 (92)				
SW:	SW6	SW6	SW6				
OT1:	0.67 (1.39)						
HD1:	CS16*	-	-				
H:W:	-	-	230(2.2)/7.5 = 135				
Dir:	Standard	Standard	Standard				
Left:							
Right:							

*STRAPS DOWN TO DIST. INTO #202

Totals:	
L:	28.5
Base Shear:	
3.01 (6.27)	This Level

Add Rho:	No
----------	----

A NOT USING

UPPER

WIND	190.0						
(SEISMIC)	(247.1)						
	WEST				EAST		
Left Offset:	9	17.0	11.5				
Plt Ht:	1	2	3	4	5	6	7
R:	2.52 (3.98)	4.21 (6.66)	1.71 (2.70)				
PLt Ht:	12.0	33.6	36.0				
L:	5+7	=5.75+10+8.33+9.5	=8.25+10+17.75				
L(min):							
V:	210 (332)	126 (199)	48 (75)				
SW:	SW4	SW6	SW6				
Stacked:	No						
OT1:	1.89 (2.99)	1.13 (1.79)					
OT2:							
HD1:	(2)CS16/HDU4	(2)CS16*/H DU2	-				
HD2:							
H:W:	-	-	-				
Dir:	Standard	Standard	Standard				
Left:							
Right:							

*STRAP UP TO DIST. INTO #207/#215

Totals:	
L:	28.5
Base Shears:	
3.01 (6.27)	From Above
5.43 (7.07)	This Level
8.44 (13.34)	Total Down

Add Rho:	No
----------	----

B DRAG CHECK
 $V_w = 2.5(7/12.0) = 1.5k$
 $V_e = 4.0(0.58) \times 1.25 = 3.0k, (2)CS16$
 STRUCT. IRREG.
 $3.0k / 0.36klf = 8.3' LAP \text{ o/ } BLOCKED DIAPH.$

C DRAG CHECK SEIS GOV.
 $V_e = 6.66(15.75/33.6) - 3.13(11.5+2.5)/51.33 - (6.66 - 3.13)(18.25/68.25) = 1.4k, (2)HTS30C$
 SOUTH
 $V_e = 6.66[(9.5/33.6)-(21'/68')] = 0.2k \times 1.25 = 0.25, DIAPH LAP \sim 4' OK$



↑ NORTHWEST WALL NOT STACKING w/BELOW

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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)	(121.8)							
	SOUTH				NORTH			
Left Offset:	16.8	20.0	15.5	15.8				
Plt Ht:	7.5							
	1	2	3	4	5	6	7	
R:	1.05 (1.22)	1.87 (2.17)	1.65 (1.91)	0.84 (0.97)				
Plt Ht:								
L:	11.8	23.3	13.5	15.2				
		=16.25+7		=11.5+3.66				
L(min):								
V:	90 (104)	81 (94)	123 (142)	56 (64)				
SW:	SW6	SW6	SW6	SW6				
OT1:			0.92 (1.07)					
HD1:	-	-	CS16	-				
H:W:	-	-	-	-				
Dir:								
Left:	0.3 (0.35)	0.85 (0.99)	1.3 (1.5)					
Right:	0.75 (0.87)	1.02 (1.18)	0.35 (0.41)	0.84 (0.97)				

Totals:
L: 68.2

Base Shear:
5.41 (6.27) This Level

Add Rho: No

UPPER

WIND	190.0							
(SEISMIC)	(103.3)							
	SOUTH				NORTH			
Left Offset:		23.5	24.5	20.3				
Plt Ht:	9							
	1	2	3	4	5	6	7	
R:	2.54 (1.57)	6.17 (4.35)	6.57 (5.00)	3.12 (2.43)				
Plt Ht:								
L:	13.5	12.8	20.3	11.8				
			=9+11.25	=11.75				
L(min):								
V:	189 (117)	481 (340)	325 (247)	266 (207)				
SW:	SW6	SW4	SW4	SW6				
Stacked:								
OT1:	1.70 (1.05)	4.33 (3.06)	2.93 (2.22)	2.39 (1.86)				
OT2:								
HD1:	HDU4	(3)CS16/HDU5	(2)CS16/HDU2	(2)CS16/HDU4				
HD2:								
H:W:	-	-	-	-				
Dir:								
Left:		1.34 (0.94)	0.66 (0.5)					
Right:		4.83 (3.41)	5.91 (4.50)					

Totals:
L: 68.3

Base Shears:
5.41 (6.27) From Above
12.99 (7.08) This Level
18.40 (13.35) Total Down

Add Rho: No

1 DRAG CHECK
 $V_w = (6.2-1.6)(16.75/30.5) = 2.5k$, (2)HTS30C
 $V_e = (4.4-1.9)(0.56) \times 1.25 = 1.7k$
 STRUCT. IRREG.
DIAPH WORSE CASE
 $vw = 0.19k \text{ft}(30/2)/30' + 0.9k/13' = 165 \text{plf} < 240 \text{ UNBLOCKED}$



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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

		5.49 (3.91)					
		3.88 (2.51)		5.91 (4.50)		3.12 (2.43)	
WIND	160.0	0.0					
(SEISMIC)	(65.2)	(0.0)					
	SOUTH					NORTH	
Left Offset:		△	△	△	△		
Plt Ht:	9.33	1	2	3	4	5	6
		30.0	20.0	18.3			
R:	3.88 (2.52)	1.61 (0.66)	8.98 (5.75)	4.58 (3.03)			
PLt Ht:		6		6			
L:		5.8	13.3	8.5			
				=5+3.5			
L(min):							
V:		280 (115)	674 (432)	539 (357)			
SW:		SW6	SW2	SW3			
Stacked:				No			
OT1:	LOAD	1.68 (0.69)	6.29 (4.03)	3.23 (2.14)			
OT2:	INTO						
HD1:	FDN						
HD2:		HDU2	HDU5	HDU4			
H:W:		-	-	-			
Dir:							
Left:							
Right:							

Totals:
L: 68.3

Base Shears:
12.91 (9.44) From Above
6.14 (2.52) This Level
19.05 (11.96) Total Down

Add Rho: No

2 **LOAD ABV TO FDN**
LOAD DISTRIBUTED TO GL E FROM SWs
ABOVE DIRECTLY TO (E)FOUNDATION
WALL



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VERTICAL ANALYSIS ROOF: TL=45PSF

JOISTS / TRUSSES

TYP RAFTERS

$$L_{max} = 16.25'$$

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

$$R = 0.73^k$$

$$M = 3.0^k'$$

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

$$F_v = 58$$

$$\Delta = 0.50''$$

$$= 4/390$$

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



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SHEET

VERTICAL ANALYSIS ROOF CONT'D

BEAMS/HEADERS

#303 NOT USING

#304 INT. HDR

$$L = 3'$$

$$W = 0.045 \left(\frac{27.5}{2} \right) = 0.62$$

$$R = 0.9$$

$$M = 0.7$$

$$F_b = 0.3$$

$$F_v = 40$$

$$\Delta \approx 0$$

$$= L / -$$

USE (2) 2x8

#305 INT. RIM

$$L = 3.75$$

$$W = 0.045 \left(\frac{27.5}{2} \right) = 0.62$$

$$R = 1.2$$

$$M = 1.1$$

$$F_b = 0.2$$

$$F_v = 26$$

$$\Delta \approx 0$$

$$= L / -$$

USE (2) 2x12

BEAMS/HEADERS

#306 SOUTHWEST CORNER (C3)

$$L = 11.25 \quad [1.0DL]$$

$$A = 5.5$$

$$w1 = 0.045 + 0.035(1.5/2) = 0.072 \quad [0.026]$$

$$w2 = w1$$

$$P = 0.035(18.5' * 1.5' * 0.25)(15.25'/13.25')(7.5'/5.5') = 0.6k$$

→ DOUBLE CANT'L EAVE LOAD, SPLIT

BETWEEN BOTH CANT'L RIMS, P = 0.3k

$$R1 = 0.2 \quad [-0.1]$$

$$R2 = 1.3$$

$$M = -2.7$$

$$f_b = -1.2$$

$$f_v = 40$$

$$[\Delta = 0.64]$$

$$[= L/200]$$

USE 3-1/2 x 6.75" PSL → 11-1/4" PSL

$$[\Delta = 0.14]$$

$$[= L/950]$$

#307 SOUTHWEST CORNER (C3)

$$[1.0DL]$$

$$L = 9.25$$

$$A = 4.0$$

$$w1 = 0.045(16.5/2) + 0.035(1.5/2) = 0.40 \quad [0.14]$$

$$w2 = w1$$

$$P = 0.3k$$

$$R1 = 1.4$$

$$R2 = 4.2$$

$$M = -2.7$$

$$f_b = -2.0$$

$$f_v = 125$$

$$[\Delta = 0.48]$$

$$[= L/200]$$

USE 3-1/2 x 6.75" PSL → 11-1/4" PSL

$$[\Delta = 0.10]$$

$$[= L/920]$$

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PROJECT

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DATE

0527-2025.01

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VERTICAL ANALYSIS

UPPER FLOOR = 55 PSF
ROOF DECK = 90 PSF

JOISTS / TRUSSES

TYP JOISTS

SEE TJI 1-5

TYP DECK JOISTS

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

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

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

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

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)

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

USE 5 1/4 x 14 PSL

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



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VERTICAL ANALYSIS UPPER Cont'd

BEAMS/HEADERS

#203 OT BM (C2) [0.6DL]
 $L_1 = 10.75$
 $L_2 = 5.5$
 $W_1 = 0.055(\frac{16}{12}) = 0.073 [0.012]$
 $W_2 = W_1$
 $P = 1.3 \times 2.5 = \pm 3.3$
 $R_1 = 1.7 [-1.0]$
 $R_2 = 2.8 [-2.1] + 3.3 = -0.5 [+1.2]$
 $M = 14.2 [-11.6]$

USE 3 1/2 x 14 LSL

#204 LANDING CANTILE (C3)

$L = 16.5$ [0.6DL]
 $A = 4$
 $W_1 = 0.055(\frac{16}{12}) = 0.073 [0.012]$
 $W_2 = W_1 + 0.055(\frac{6}{12}) = 0.24$
 $P = 0.055(4 \times 4 / 4) = 0.22$
 $R_1 = 0.4 [-0.07]$
 $R_2 = 1.9$
 $M = -2.8$
 $F_b = -0.6$
 $F_v = 55$
 $\Delta_c = 0.18$
 $L = L/530$

USE 1 3/4 x 14 LSL MIN

BEAMS/HEADERS

#205 NOT USING

#206 GIRDER

$L = 16.0$
 $W = 0.055(\frac{27.5}{2}) + 0.010(9) + 0.62 = 1.47$
 $R = 11.8 + 3.0 = 14.8$ NORTH
 $M = 47.0$
 $F_b = 2.5$
 $F_v = 154$
 $\Delta = 0.61$
 $= L/311$
 $= L/510$

USE 7 x 14 PSL

#207 CANTILE RIM/INT-SW

$L = 8.0$ [0.6DL] $f_b = 0.9$
 $W = (0.045 + 0.055)(29.5/2) + 0.09 = 1.57 [0.36]$ $f_v = 91$
 $R = 6.3 [1.44] + 3.5[0.81] \text{ (SOUTH)} = 9.8 [2.3] \text{ (SOUTH)}$ $\Delta = 0.05$
 $M = 12.6$ $= L/1700$

USE 5-1/4 x 14 PSL

SEISMIC Rx, NS: P_r AT ENDS = ±1.8k

COMP

$R_{NORTH} = 6.3 + 1.8 + 11.8(\#206) = 19.9k$

$R_{SOUTH} = 9.8 + 1.8 = 11.6k$

TEN

$R_{NORTH} = 1.44 - 1.8 + 2.4(\#206) = 2.0k$

$R_{SOUTH} = 2.3 - 1.8 = 0.5k \dots$ NO NET UPLIFT

→ 5-1/4 x 14 PSL OK

SEISMIC OT, EW: P_r AT L=5.5' / 2.5' = ±3.1k x 2.5 = ±7.8k

$M_{MAX} = 24.2 \rightarrow f_b = 1.7 \text{ksi OK}$

COMP (w/o OMEGA)

$R_{NORTH} = 6.3 + 1.0 + 11.8(\#206) = 19.1k$

$R_{SOUTH} = 9.8 + 2.1 = 11.6k$

TEN

$R_{NORTH} = 1.44 - 1.0 + 2.4(\#206) = 2.8k$

$R_{SOUTH} = 2.3 - 2.1 = 0.2k \dots$ NO NET UPLIFT → DOWN TO PAD FOOTING

PROVIDE NOM. TIE



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VERTICAL ANALYSIS UPPER CONT'D

BEAMS/HEADERS

#208 NOT USING

#209 DROP SHOWER RM (C3)
[0.6 DL]

L = 8.5
A = 2.5
w1 = 0.045(3)+0.015(10)+0.055+0.08 = 0.42 [0.14]
w2 = w1
P = 3.5
R1 = 0.6 [-0.6]
R2 = 7.5
M = -10.1

fb = -2.1
fv = 249
[▲ = 0.23]
[= L/260]

USE 1-3/4x14 LSL → 3-1/2

[▲ = 0.12]
[= L/520]

#210 NOT USING

BEAMS/HEADERS

#211 NOT USING

#212 NOT USING



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V5
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VERTICAL ANALYSIS UPPER CONT'D

BEAMS/HEADERS

#213 NOT USING

BEAMS/HEADERS

#214 WEST RIM

L = 5.0
w = 0.08(13/2) = 0.52
R = 1.3
M = 1.6

fb = 0.4
fv = 36
▲ = 0.03
= L/2000

USE 6x8

#215 WP DECK RIDGE

WORSE-CASE STATIC

L = 9.25
w = 0.08(24.5/2) = 0.98
R = 4.5 + 3.4 (MID) = 7.9 (MID)
M = 10.5

fb = 1.3
fv = 96
▲ = 0.17
= L/650

USE 5-1/2 x 10-1/2 GLB

USE FULL CONT SPAN TO RESIST MOMENT FROM SEISMIC TEN - SEISMIC OT, PE = -1.8 x 2.5 = -4.5k

L = 9.25 / 7
w = [0.15]
M = 1.7

COMP DIRECT TO POSTS (w/o OMEGA)

R_{MID} = 7.9 + 1.8 = 9.7k
R_{SOUTH} = 4.5 + 1.8 = 6.3k

TEN

R_{NORTH} = 0.4
R_{SOUTH} = 0.2 .. NO NET UPLIFT

→ 5-1/2 x 10-1/2 GLB OK



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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



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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

BEAMS/HEADERS

#104 CANTILEM (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



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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



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SHEET

VERTICAL ANALYSIS

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

FOUNDATIONS

INTERIOR ISOLATED

STEEL GIRDER

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

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

UPP. HALL BATH

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

CLOSET

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

DECK/SOUTH BATH

$$P = 19.9 \text{ k} \rightarrow 42" \text{ SQ}$$

$$P = 11.6 \text{ k} \rightarrow 30" \text{ SQ}$$

$$P = 7.5 \text{ k} \rightarrow 30" \text{ SQ}$$

$$P = 9.7 \text{ k} \rightarrow 30" \text{ SQ}$$

$$P = 3.4 \text{ k} \rightarrow 24" \text{ SQ}$$

EXTERIOR ISOLATED

SOUTH DECK

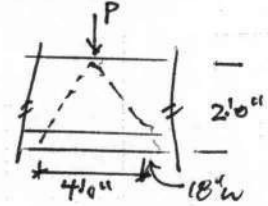
$$P = (2)1.5 = 3 \text{ k} / 2 \rightarrow 24" \text{ SQ}$$

STEM HALL FT LOADS

NEW:

$$A \approx 1.5' (4') = 6 \text{ ft}$$

$$P_A = 6 \text{ ft} \times 2 = 12 \text{ k}$$



AT (E); GLE3

$$P = 11.2 + 5.2 \text{ k} = 16.4 \text{ k} / 2 = 8.2 \text{ k}$$

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

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

DISTRIBUTED FTG

WEST

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

∴ 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...

$$W = 0.35 + 0.32 + 0.32 + 0.3 + 0.015(5.5) = 2.12 \text{ k} / 2$$

∴ VERIFY 12" W



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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
 $M = 3.3^k$
 $F_b = 1.6$
 $F_v = 36$
 $\Delta = 1.55 \times 0.42 = 0.65'' = L/350$
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)

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

$P = 0.9$
 $L_1 = 11$
 $L_2 = 8.1$
 $R_1 = 1.0$
 $R_2 = 1.1$ (2) H6A
 $M = 7.0$
 $F_b = 1.5$
 $F_v = 27$
 $\Delta = 1.42 \times 0.42 = 0.60'' = L/380$

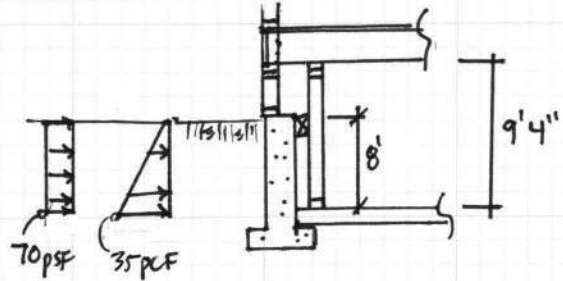
5 1/4 x 11 7/16 PSL (2-0E)

GRID NC4 COLUMN (ZONE 4)

$P = 0.9$
 $L_1 = 11$
 $L_2 = 8.1$
 $R_1 = 0.4$ (ABS)
 $R_2 = 0.5$
 $M = 4.2$
 $F_b = 1.05 < 0.85 \times 1.6$
 $F_v = 15$
 $\Delta = 1.28 \times 0.42 = 0.54'' = L/427$
6 x 10

RETAINING

(E) FULL HIT BASEMENT WALLS WHERE FLOOR UP ARE UNSUPPORTED
 $D4 \leftrightarrow E4$; $E2 \leftrightarrow E4$ (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.
 $W = 0.38 \left(\frac{8}{9.3} \right) = \dots = 0.33 \text{ kLF}$

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



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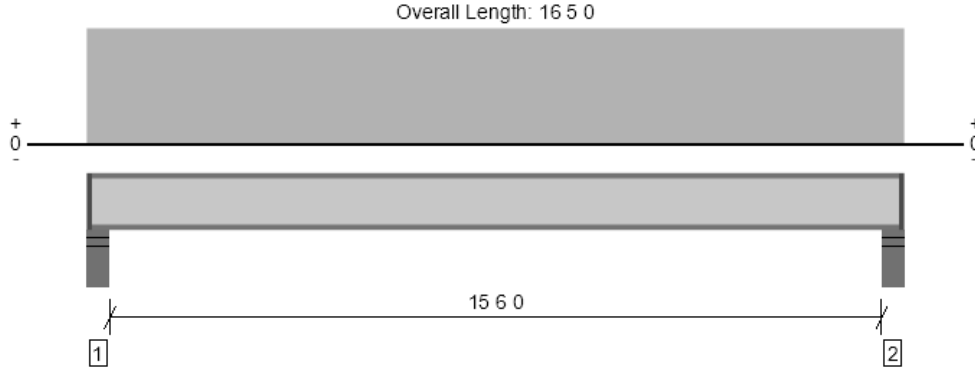
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DL=15 LL=40 (TL=55) 11-7/8" Pro 55, 14" TJI 110 at 16"oc
1 piece(s) 14" TJI® 110 @ 16" OC



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

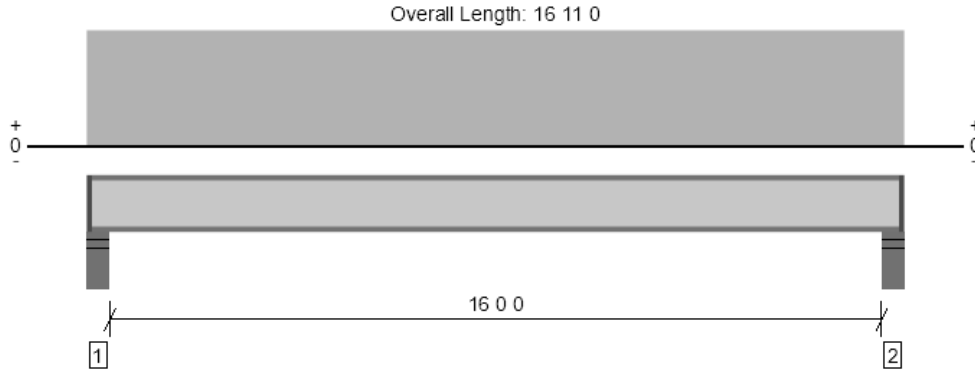
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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

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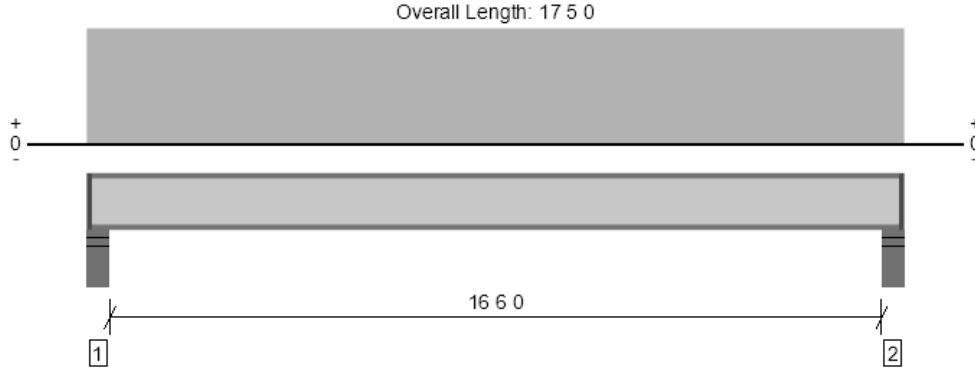
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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

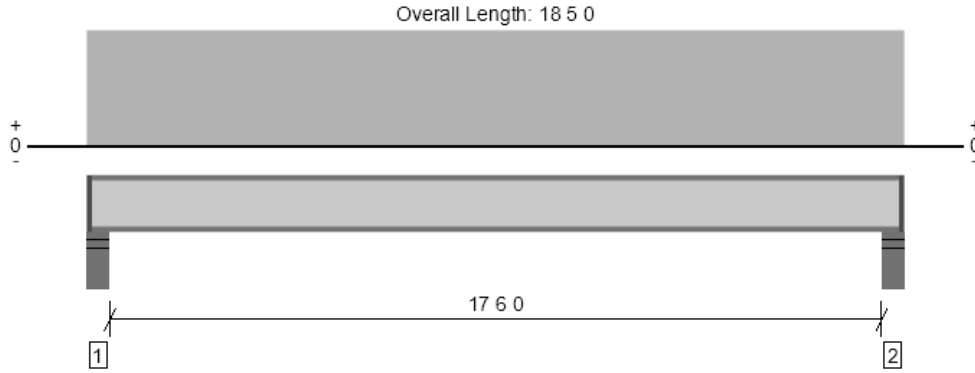
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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

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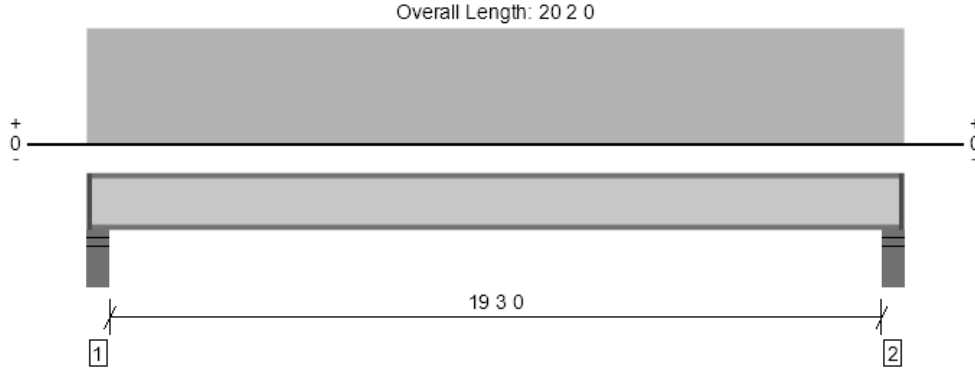
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ForteWEB Software Operator	Job Notes
Nate Moore Malsam Tsang (206) 602-9537 natem@malsam-tsang.com	



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

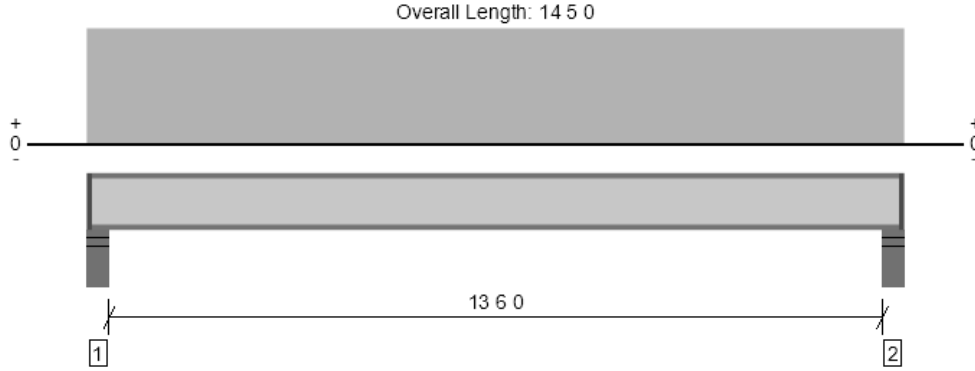
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ForteWEB Software Operator	Job Notes
Nate Moore Malsam Tsang (206) 602-9537 natem@malsam-tsang.com	



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

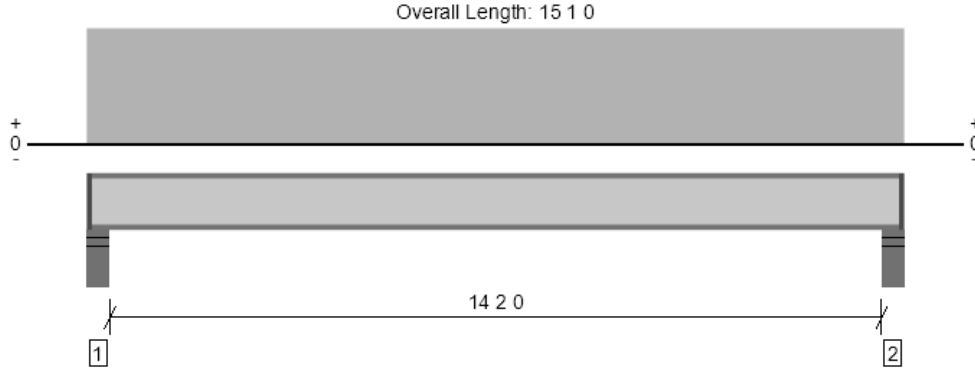
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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

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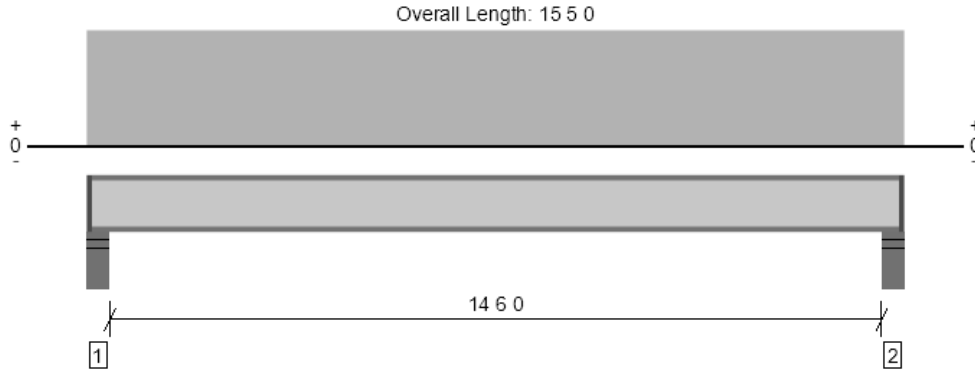
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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

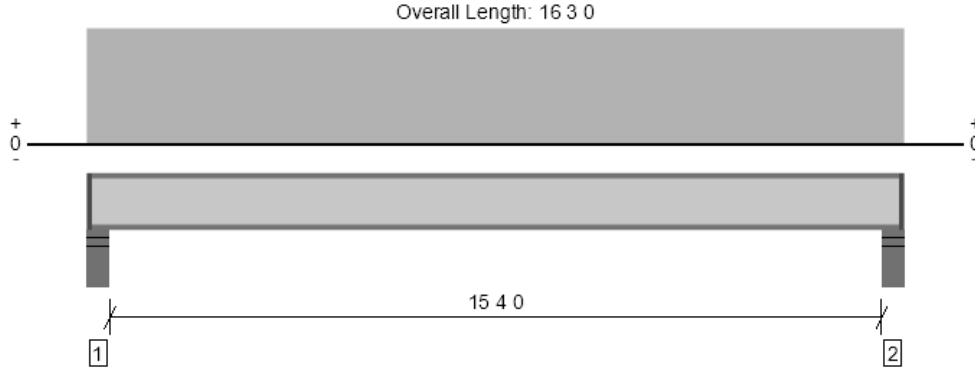
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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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.

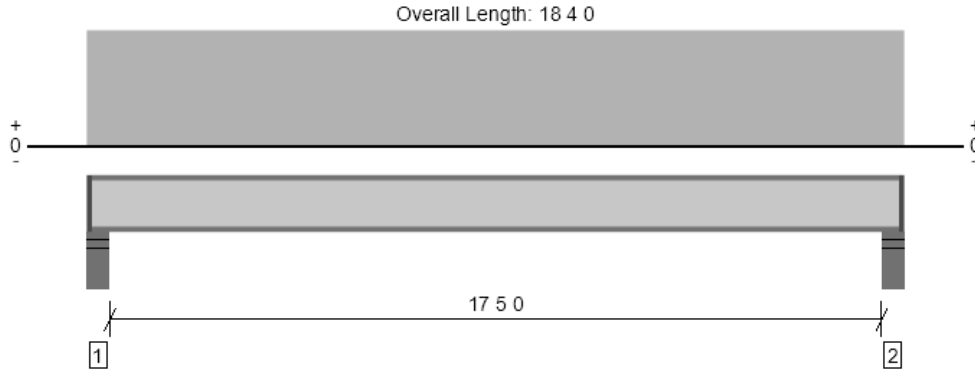
Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 0 0 to 16 3 0	16"	15.0	40.0	Residential - Living Areas

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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

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