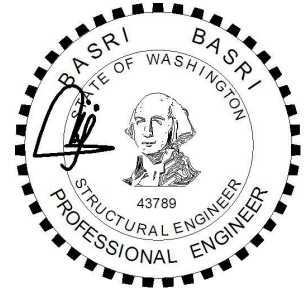


**TSO ADDITION  
8802 SE 37TH ST  
MERCER ISLAND, WA 98040****PROJECT NO: 22126    DATE:06/28/22  
PREPARED BY: BASRI BASRI PE, SE****Design Criteria**

International Building Code (IBC) 2018  
American Society of Civil Engineers (ASCE) 7-16

**Project Description**

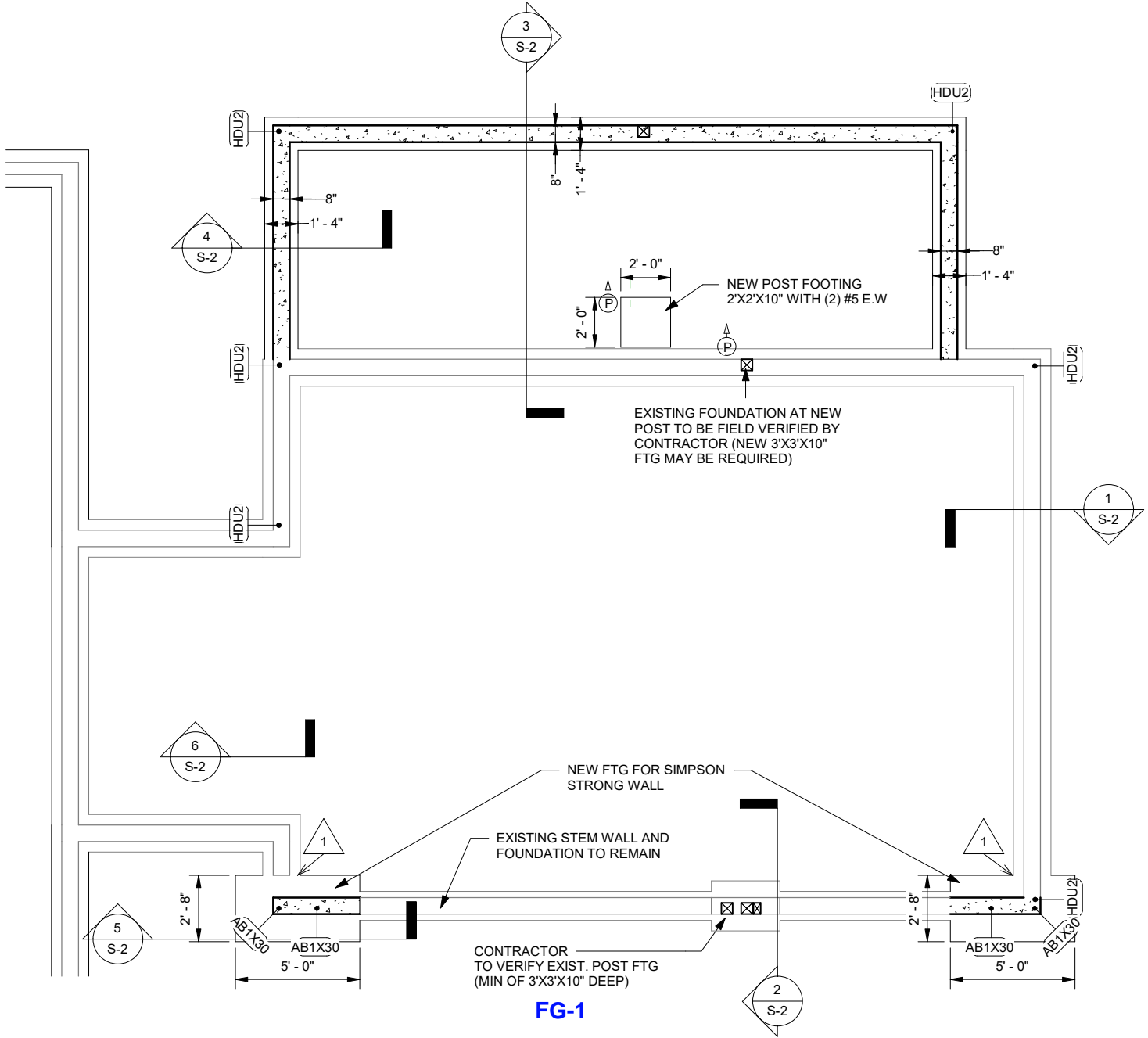
Structural design of second-story addition of 1000 sq. ft. above existing garage, utilizing conventional wood framing on shallow concrete foundation. The lateral system consists of plywood/OSB wall sheathing with Simpson holdown anchors. The seismic criteria are obtained from the ATC Hazards website and the wind criteria are obtained from City of Mercer Island Wind Mapping  
Please see attached calculations for your reference

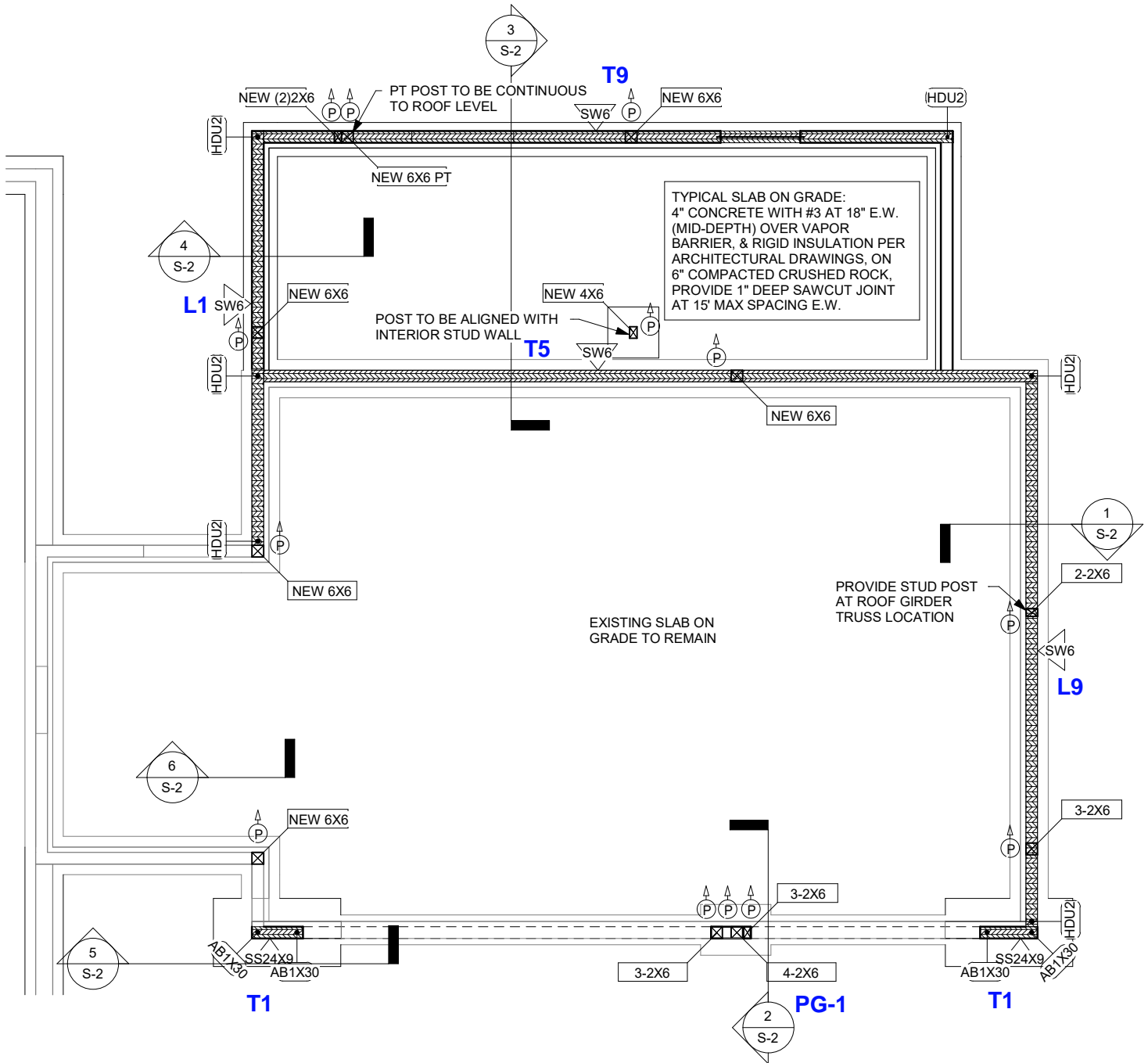
**Seismic Criteria**

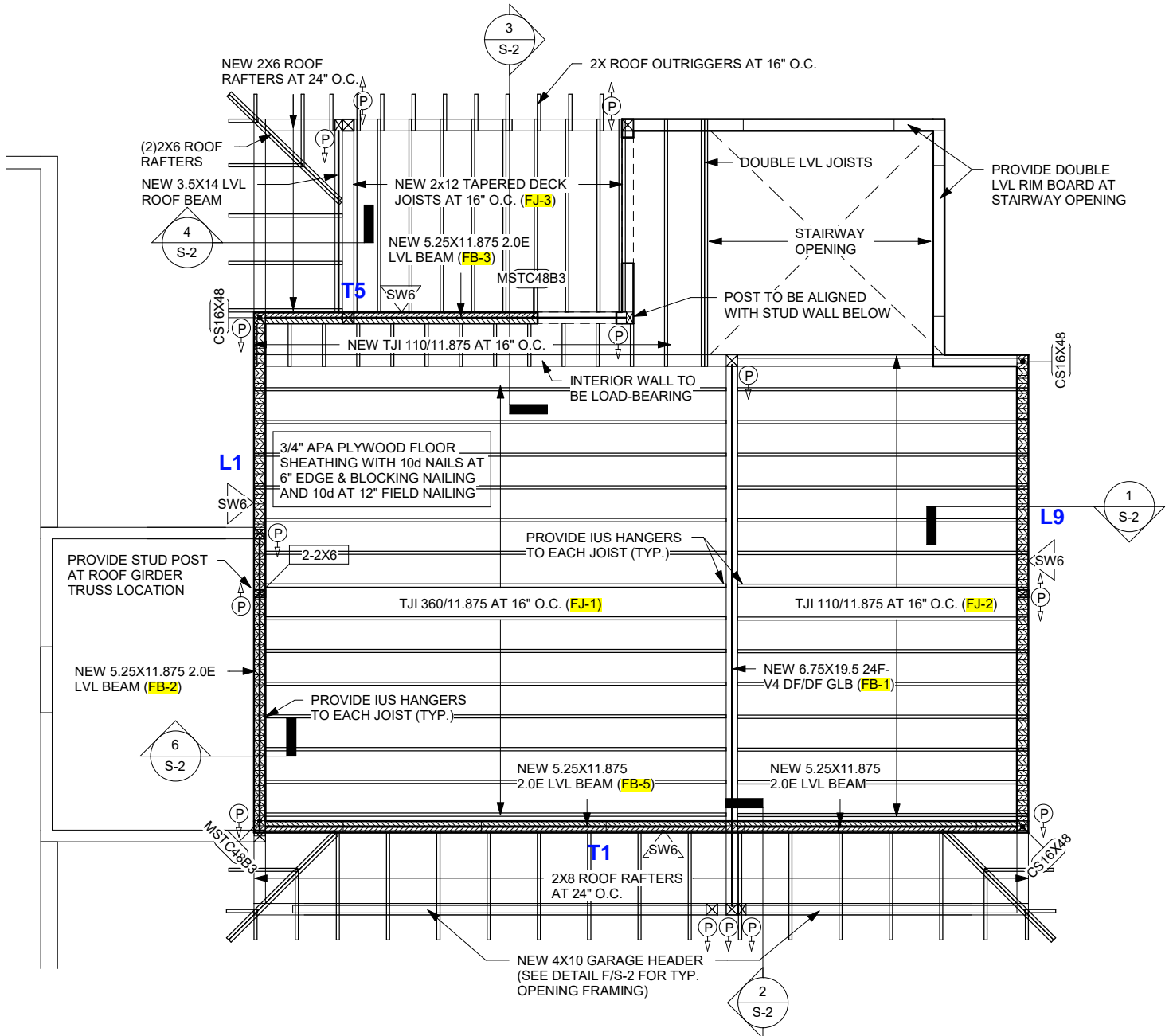
S <sub>s</sub> , %g	140
S <sub>1</sub> , %g	50
Risk Category	II
Site Class	D
Ductility Factor, R	6.5
Seismic Performance Category	D

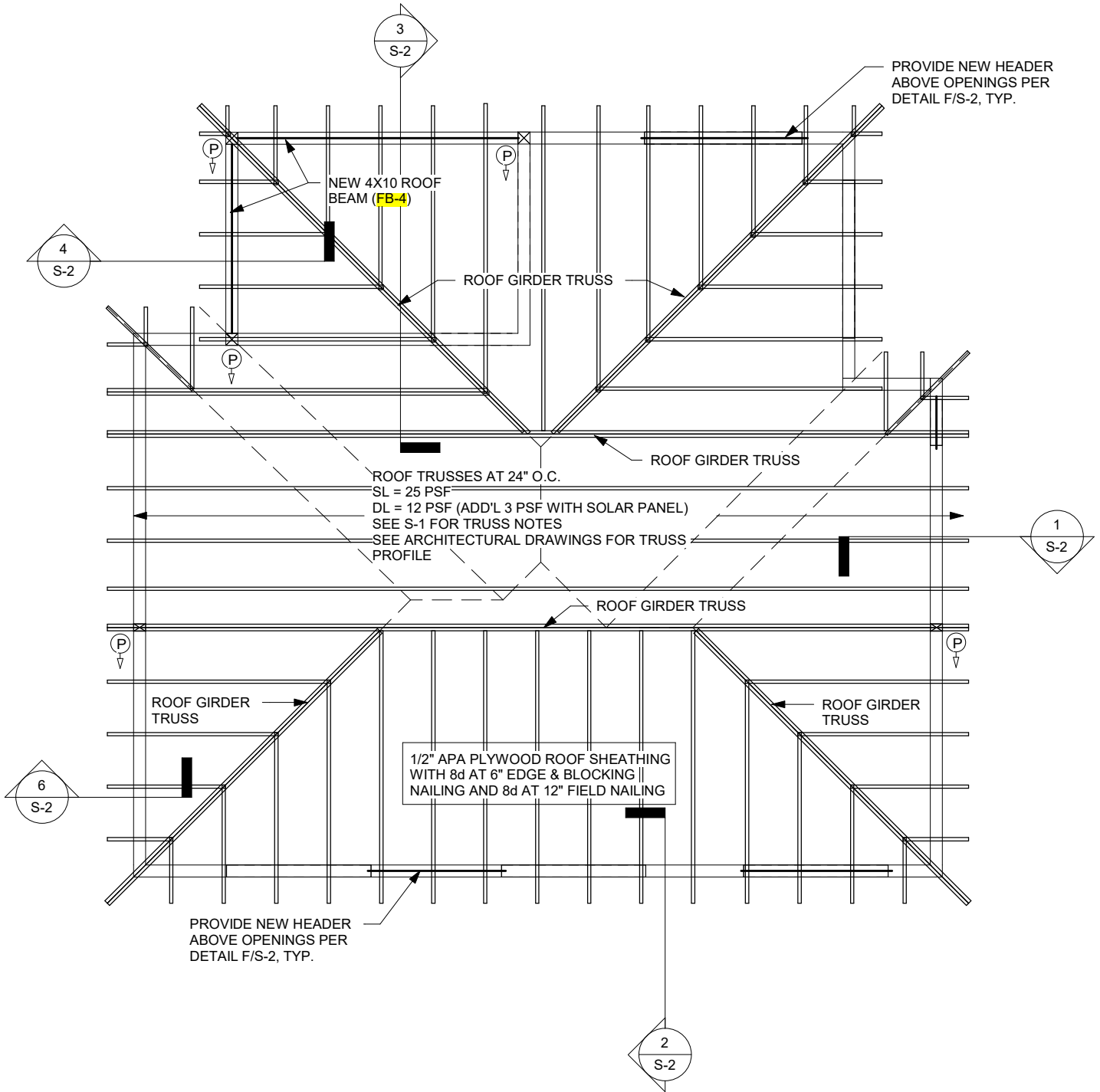
**Wind Criteria**

Ultimate Wind Speed, mph	97
Building Classifications	II
Wind Exposure Category	C
Topographic Effect, K <sub>zt</sub>	1.6









Floor Joist [2015 International Building Code(2015 NDS)]  
 18.3 FT @ 16 O.C.  
 TJI 360 / 11.875 - iLevel Trus Joist  
 Section Adequate By: 1.6%  
 Controlling Factor: Deflection

<b>DEFLECTIONS</b>		Center
Live Load	0.36	IN L/608
Dead Load	0.15	in
Total Load	0.51	IN L/427
Live Load Deflection Criteria: L/480		Total Load Deflection Criteria: L/420

<b>REACTIONS</b>		A	B
Live Load	488	lb	488
Dead Load	207	lb	207
Total Load	695	lb	695
Bearing Length	1.75	in	3.50
Web Stiffeners	No		No

<b>SUPPORT LOADS</b>		A	B
Live Load	366	plf	366
Dead Load	155	plf	155
Total Load	521	plf	521

**I-JOIST PROPERTIES**

TJI 360 / 11.875 - iLevel Trus Joist

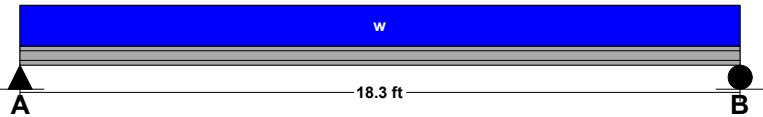
	Base Values	Adjusted
Moment Cap:	Mcap = 6180 ft-lb	Mcap' = 6180 ft-lb
	$C_d = 1.00$	
Shear Stress:	Vcap = 1705 lb	Vcap' = 1705 lb
	$C_d = 1.00$	
Reaction A:	Rcap = 1080 lb	Rcap' = 1080 lb
Reaction B:	Rcap = 1505 lb	Rcap' = 1505 lb
E.I.:	EI = 419 lb-in <sup>2</sup>	EI' = 419 lb-in <sup>2</sup>

**Controlling Moment:** 3181 ft-lb  
 9.15 Ft from left support of span 3 (Right Span)  
 Created by combining all dead and live loads.

**Controlling Shear:** -695 lb  
 18.0 Ft from left support of span 2 (Center Span)  
 Created by combining all dead and live loads.

Comparisons with required sections:	Req'd	Provided
E.I.:	413	419
Moment:	3181	6180
Shear:	-695	1705

**LOADING DIAGRAM**



**JOIST DATA**

	Center
Span Length	18.3 ft
Unbraced Length-Top	0 ft
Unbraced Length-Bottom	0 ft
Floor sheathing applied to top of joists-top of joists fully braced.	
Floor Duration Factor	1.00

**JOIST LOADING**

<b>Uniform Floor Loading</b>		Center
Live Load	LL =	40 psf
Dead Load	DL =	17 psf
Total Load	TL =	57 psf
TL Adj. For Joist Spacing wT =		76 plf

Floor Joist

Floor Joist [2015 International Building Code(2015 NDS)]

12.0 FT @ 16 O.C.

TJI 110 / 11.875 - iLevel Trus Joist

Section Adequate By: 99.6%

Controlling Factor: End Reaction

**DEFLECTIONS**

Center

Live Load	0.11	IN L/1304
Dead Load	0.05	in
Total Load	0.16	IN L/915
Live Load Deflection Criteria: L/480    Total Load Deflection Criteria: L/360		

**REACTIONS**

A                  B

Live Load	320 lb	320 lb
Dead Load	136 lb	136 lb
Total Load	456 lb	456 lb
Bearing Length	1.75 in	3.50 in
Web Stiffeners	No	No

**SUPPORT LOADS**

A                  B

Live Load	240 plf	240 plf
Dead Load	102 plf	102 plf
Total Load	342 plf	342 plf

**I-JOIST PROPERTIES**

TJI 110 / 11.875 - iLevel Trus Joist

Base Values

Adjusted

Moment Cap:	Mcap =	3160 ft-lb	Mcap' =	3160	ft-lb
	<i>Cd = 1.00</i>				
Shear Stress:	Vcap =	1560 lb	Vcap' =	1560	lb
	<i>Cd = 1.00</i>				
Reaction A:	Rcap =	910 lb	Rcap' =	910	lb
Reaction B:	Rcap =	1375 lb	Rcap' =	1375	lb
E.I.:	EI =	267 lb-in <sup>2</sup>	EI' =	267	lb-in <sup>2</sup>

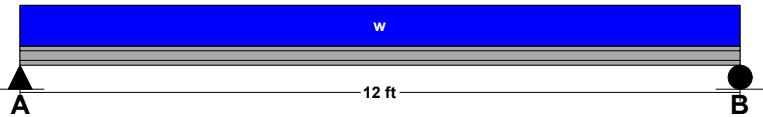
**Controlling Moment:** 1368 ft-lb  
6.0 Ft from left support of span 3 (Right Span)  
Created by combining all dead and live loads.

**Controlling Shear:** 456 lb  
At left support of span 2 (Center Span)  
Created by combining all dead and live loads.

**Comparisons with required sections:**

	Req'd		Provided	
E.I.:	105	in <sup>2</sup> -lb	267	in <sup>2</sup> -lb xE6
Moment:	1368	ft-lb	3160	ft-lb
Shear:	456	lb	1560	lb

**LOADING DIAGRAM**



**JOIST DATA**

Center

Span Length	12 ft
Unbraced Length-Top	0 ft
Unbraced Length-Bottom	0 ft
Floor sheathing applied to top of joists-top of joists fully braced.	
Floor Duration Factor	1.00

**JOIST LOADING**

**Uniform Floor Loading**

Center

Live Load	LL = 40 psf
Dead Load	DL = 17 psf
Total Load	TL = 57 psf
TL Adj. For Joist Spacing wT	= 76 plf

Project: Tso Addition

The Vitruvius Project, Inc.

page

Location: FJ-3

StruCalc Version 11.1.2.0

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of

Floor Joist

Floor Joist [2015 International Building Code(2015 NDS)]

1.5 IN x 7.25 IN x 6.75 FT @ 16 O.C.

#2 - Douglas-Fir-Larch - Wet Use

Section Adequate By: 155.9%

Controlling Factor: Moment

**DEFLECTIONS**

Center

Live Load	0.05	IN L/1487
Dead Load	0.01	in
Total Load	0.06	IN L/1275
Live Load Deflection Criteria: L/480 Total Load Deflection Criteria: L/360		

**REACTIONS**

A B

Live Load	270	lb	270	lb
Dead Load	45	lb	45	lb
Total Load	315	lb	315	lb
Bearing Length	0.50	in	0.50	in

**SUPPORT LOADS**

A B

Live Load	203	plf	203	plf
Dead Load	34	plf	34	plf
Total Load	236	plf	236	plf

**MATERIAL PROPERTIES**

#2 - Douglas-Fir-Larch

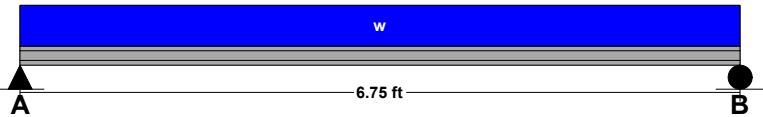
	Base Values	Adjusted
Bending Stress:	Fb = 900 psi Cd=1.00 CF=1.20 Cr=1.15	Fb' = 1242 psi
Shear Stress:	Fv = 180 psi Cd=1.00 Cm=0.97	Fv' = 175 psi
Modulus of Elasticity:	E = 1600 ksi Cm=0.90	E' = 1440 ksi
Comp. ⊥ to Grain:	Fc ⊥ = 625 psi Cm=0.67	Fc ⊥' = 419 psi

**Controlling Moment:** 532 ft-lb  
3.38 Ft from left support of span 2 (Center Span)  
Created by combining all dead loads and live loads on span(s) 2

**Controlling Shear:** 315 lb  
At left support of span 2 (Center Span)  
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	5.14 in3	13.14 in3
Area (Shear):	2.71 in2	10.88 in2
Moment of Inertia (deflection):	15.37 in4	47.63 in4
Moment:	532 ft-lb	1360 ft-lb
Shear:	315 lb	1266 lb

**LOADING DIAGRAM**



**JOIST DATA**

Center

Span Length	6.75	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	0	ft
Floor sheathing applied to top of joists-top of joists fully braced.		
Floor Duration Factor	1.00	

**JOIST LOADING**

**Uniform Floor Loading**

Center

Live Load	LL =	60	psf
Dead Load	DL =	10	psf
Total Load	TL =	70	psf
TL Adj. For Joist Spacing wT =		93.3	plf



Multi-Loaded Multi-Span Beam  
 Multi-Loaded Multi-Span Beam [2015 International Building Code(2015 NDS)]  
 6.75 IN x 19.5 IN x 21.333 FT  
 24F-V4 - Visually Graded Western Species - Dry Use  
 Section Adequate By: 17.8%  
 Controlling Factor: Deflection

<b>DEFLECTIONS</b>		Center
Live Load	0.40	IN L/645
Dead Load	0.21	in
Total Load	0.60	IN L/424
Live Load Deflection Criteria: L/480		Total Load Deflection Criteria: L/360

<b>REACTIONS</b>		A	B
Live Load	6520 lb	6796 lb	
Dead Load	3226 lb	4115 lb	
Total Load	9746 lb	10911 lb	
Bearing Length	2.22 in	2.49 in	

<b>BEAM DATA</b>		Center
Span Length	21.33	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	21.33	ft
Live Load Duration Factor	1.00	
Camber Adj. Factor	1.5	
Camber Required	0.31	
Notch Depth	0.00	

**MATERIAL PROPERTIES**

24F-V4 - Visually Graded Western Species

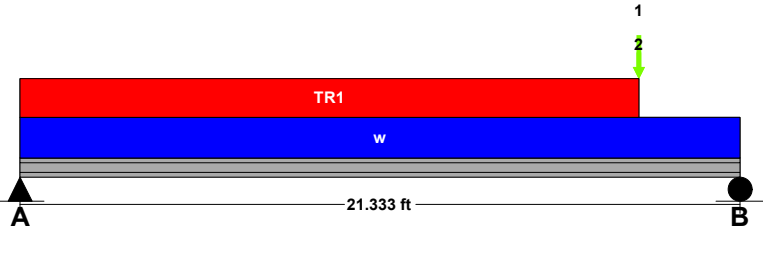
	Base Values	Adjusted
Bending Stress:	Fb = 2400 psi	Controlled by: Fb' = 2221 psi
	Fb_cmpr = 1850 psi	
	Cd=1.00 Cv=0.93	
Shear Stress:	Fv = 265 psi	Fv' = 265 psi
	Cd=1.00	
Modulus of Elasticity:	E = 1800 ksi	E' = 1800 ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 650 psi	Fc - ⊥' = 650 psi

**Controlling Moment:** 54639 ft-lb  
 11.31 Ft from left support of span 2 (Center Span)  
 Created by combining all dead loads and live loads on span(s) 2

**Controlling Shear:** -10911 lb  
 21.0 Ft from left support of span 2 (Center Span)  
 Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	295.26 in3	427.78 in3
Area (Shear):	61.76 in2	131.63 in2
Moment of Inertia (deflection):	3541.51 in4	4170.87 in4
Moment:	54639 ft-lb	79163 ft-lb
Shear:	-10911 lb	23254 lb

**LOADING DIAGRAM**



<b>UNIFORM LOADS</b>		Center
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	29	plf
Total Uniform Load	29	plf

<b>POINT LOADS - CENTER SPAN</b>		
Load Number	One	Two
Live Load	1375 lb	1125 lb
Dead Load	1596 lb	540 lb
Location	18.33 ft	18.33 ft

\* Load obtained from Load Tracker. See Summary Report for details.

<b>TRAPEZOIDAL LOADS - CENTER SPAN</b>	
Load Number	One
Left Live Load	590 plf
Left Dead Load	250.8 plf
Right Live Load	590 plf
Right Dead Load	250.8 plf
Load Start	0 ft
Load End	18.33 ft
Load Length	18.33 ft

Combination Roof And Floor Beam

Combination Roof And Floor Beam [2015 International Building Code(2015 NDS

5.25 IN x 11.875 IN x 11.6 FT

2.0E-2900F - APA EWS LVL Stress Classes

Section Adequate By: 63.4%

Controlling Factor: Deflection

**DEFLECTIONS**

Center

Live Load	0.14	IN L/963
Dead Load	0.09	in
Total Load	0.24	IN L/588
Live Load Deflection Criteria: L/480 Total Load Deflection Criteria: L/360		

**REACTIONS**

A B

Live Load	3016 lb	3016 lb
Dead Load	1922 lb	1922 lb
Total Load	4938 lb	4938 lb
Bearing Length	1.25 in	1.25 in

**BEAM DATA**

Center

Span Length	11.6 ft
Unbraced Length-Top	0 ft
Roof Pitch	4 :12
Floor Duration Factor	1.00
Roof Duration Factor	1.15
Notch Depth	0.00

**MATERIAL PROPERTIES**

2.0E-2900F - APA EWS LVL Stress Classes

	Base Values	Adjusted
Bending Stress:	Fb = 2900 psi <i>Cd=1.15 CF=1.00</i>	Fb' = 3339 psi
Shear Stress:	Fv = 285 psi <i>Cd=1.15</i>	Fv' = 328 psi
Modulus of Elasticity:	E = 2000 ksi	E' = 2000 ksi
Comp. $\perp$ to Grain:	Fc - $\perp$ = 750 psi	Fc - $\perp$ ' = 750 psi

**Controlling Moment:** 14319 ft-lb

5.8 ft from left support

Created by combining all dead and live loads.

**Controlling Shear:** 4938 lb

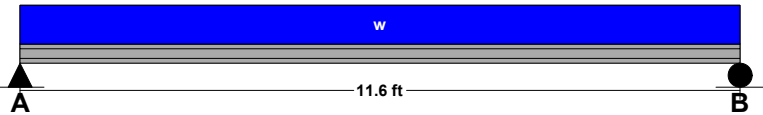
At support.

Created by combining all dead and live loads.

**Comparisons with required sections:**

	Req'd	Provided
Section Modulus:	51.46 in3	123.39 in3
Area (Shear):	22.6 in2	62.34 in2
Moment of Inertia (deflection):	448.41 in4	732.62 in4
Moment:	14319 ft-lb	34337 ft-lb
Shear:	4938 lb	13622 lb

**LOADING DIAGRAM**



**ROOF LOADING**

	Side 1	Side 2
Roof Live Load	RLL = 25 psf	0 psf
Roof Dead Load	RDL = 12 psf	0 psf
Roof Tributary Width	RTW = 6 ft	0 ft

**FLOOR LOADING**

	Side 1	Side 2
Floor Live Load	FLL = 40 psf	0 psf
Floor Dead Load	FDL = 17 psf	0 psf
Floor Tributary Width	FTW = 9.3 ft	0 ft

Wall Load WALL = 80 plf

**BEAM LOADING**

Roof Uniform Live Load:	wL-roof = 150 plf
Roof Uniform Dead Load:	wD-roof = 76 plf
Floor Uniform Live Load:	wL-floor = 370 plf
Floor Uniform Dead Load:	wD-floor = 157 plf
Beam Self Weight:	BSW = 18 plf
Combined Uniform Live Load:	wL = 520 plf
Combined Uniform Dead Load:	wD = 331 plf
Combined Uniform Total Load:	wT = 851 plf

Location: **FB-3**

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Multi-Loaded Multi-Span Beam  
 Multi-Loaded Multi-Span Beam [2015 International Building Code(2015 NDS)]  
 5.25 IN x 11.875 IN x 14.5 FT  
 2.0E-2900F - APA EWS LVL Stress Classes  
 Section Adequate By: 47.8%  
 Controlling Factor: Deflection

**DEFLECTIONS**

Center

Live Load	0.21	IN L/848
Dead Load	0.12	in
Total Load	0.33	IN L/532
Live Load Deflection Criteria: L/480 Total Load Deflection Criteria: L/360		

**REACTIONS**

A B

Live Load	2397 lb	1961 lb
Dead Load	1418 lb	1177 lb
Total Load	3815 lb	3138 lb
Bearing Length	0.97 in	0.80 in

**BEAM DATA**

Center

Span Length	14.5 ft
Unbraced Length-Top	0 ft
Unbraced Length-Bottom	14.5 ft
Live Load Duration Factor	1.00
Notch Depth	0.00

**MATERIAL PROPERTIES**

2.0E-2900F - APA EWS LVL Stress Classes

	Base Values	Adjusted
Bending Stress:	Fb = 2900 psi Cd=1.00 CF=1.00	Fb' = 2904 psi
Shear Stress:	Fv = 285 psi Cd=1.00	Fv' = 285 psi
Modulus of Elasticity:	E = 2000 ksi	E' = 2000 ksi
Comp. $\perp$ to Grain:	Fc - $\perp$ = 750 psi	Fc - $\perp$ ' = 750 psi

**Controlling Moment:**

12523 ft-lb

6.53 Ft from left support of span 2 (Center Span)

Created by combining all dead loads and live loads on span(s) 2

**Controlling Shear:**

3815 lb

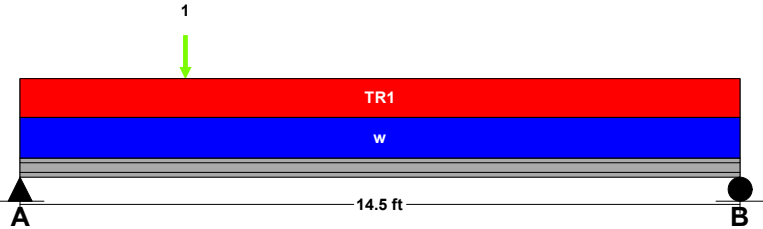
At left support of span 2 (Center Span)

Created by combining all dead loads and live loads on span(s) 2

**Comparisons with required sections:**

	Req'd	Provided
Section Modulus:	51.75 in3	123.39 in3
Area (Shear):	20.08 in2	62.34 in2
Moment of Inertia (deflection):	495.81 in4	732.62 in4
Moment:	12523 ft-lb	29858 ft-lb
Shear:	3815 lb	11845 lb

**LOADING DIAGRAM**



**UNIFORM LOADS**

Center

Uniform Live Load	0 plf
Uniform Dead Load	0 plf
Beam Self Weight	18 plf
Total Uniform Load	18 plf

**POINT LOADS - CENTER SPAN**

Load Number	One *
Live Load	806 lb
Dead Load	446 lb
Location	3.33 ft

\* Load obtained from Load Tracker. See Summary Report for details.

**TRAPEZOIDAL LOADS - CENTER SPAN**

Load Number	One
Left Live Load	245 plf
Left Dead Load	130 plf
Right Live Load	245 plf
Right Dead Load	130 plf
Load Start	0 ft
Load End	14.5 ft
Load Length	14.5 ft

Project: Tso Addition

The Vitruvius Project, Inc.

page

Location: **FB-4**

StruCalc Version 11.1.2.0

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of

Roof Beam

Roof Beam [2015 International Building Code(2015 NDS)]

3.5 IN x 9.25 IN x 10.75 FT

#2 - Douglas-Fir-Larch - Wet Use

Section Adequate By: 53.5%

Controlling Factor: Moment

**DEFLECTIONS**

Center

Live Load 0.14 IN L/952

Dead Load 0.07 in

Total Load 0.21 IN L/613

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

**REACTIONS**

A

B

Live Load 806 lb 806 lb

Dead Load 446 lb 446 lb

Total Load 1252 lb 1252 lb

Bearing Length 0.85 in 0.85 in

**BEAM DATA**

Span Length 10.8 ft

Unbraced Length-Top 0 ft

Unbraced Length-Bottom 0 ft

Roof Pitch 4 :12

Roof Duration Factor 1.15

Notch Depth 0.00

**MATERIAL PROPERTIES**

#2 - Douglas-Fir-Larch

	Base Values	Adjusted
Bending Stress:	Fb = 900 psi <i>Cd=1.15 CF=1.20</i>	Fb' = 1242 psi
Shear Stress:	Fv = 180 psi <i>Cd=1.15 Cm=0.97</i>	Fv' = 201 psi
Modulus of Elasticity:	E = 1600 ksi <i>Cm=0.90</i>	E' = 1440 ksi
Comp. $\perp$ to Grain:	Fc - $\perp$ = 625 psi <i>Cm=0.67</i>	Fc - $\perp$ ' = 419 psi

**Controlling Moment:** 3364 ft-lb

5.375 ft from left support

Created by combining all dead and live loads.

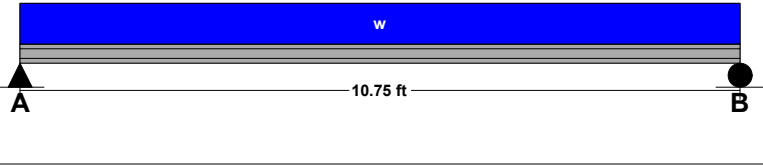
**Controlling Shear:** 1252 lb

At support.

Created by combining all dead and live loads.

Comparisons with required sections:	Req'd	Provided
Section Modulus:	32.51 in <sup>3</sup>	49.91 in <sup>3</sup>
Area (Shear):	9.35 in <sup>2</sup>	32.38 in <sup>2</sup>
Moment of Inertia (deflection):	67.8 in <sup>4</sup>	230.84 in <sup>4</sup>
Moment:	3364 ft-lb	5166 ft-lb
Shear:	1252 lb	4334 lb

**LOADING DIAGRAM**



**ROOF LOADING**

Side One:		
Roof Live Load:	LL =	25 psf
Roof Dead Load:	DL =	12 psf
Tributary Width:	TW =	6 ft
Side Two:		
Roof Live Load:	LL =	0 psf
Roof Dead Load:	DL =	0 psf
Tributary Width:	TW =	0 ft
Wall Load:	WALL =	0 plf

**SLOPE/PITCH ADJUSTED LENGTHS AND LOADS**

Adjusted Beam Length:	Ladj =	10.75 ft
Beam Self Weight:	BSW =	7 plf
Beam Uniform Live Load:	wL =	150 plf
Beam Uniform Dead Load:	wD_adj =	83 plf
Total Uniform Load:	wT =	233 plf

Combination Roof And Floor Beam

Combination Roof And Floor Beam [2015 International Building Code(2015 NDS

5.25 IN x 11.875 IN x 18.333 FT

2.0E-2900F - APA EWS LVL Stress Classes

Section Adequate By: 8.7%

Controlling Factor: Deflection

**CAUTIONS**

The design dead load deflection exceeds the default maximum of 1/4" on spans (2).

**DEFLECTIONS**

Center

Live Load	0.26	IN L/846
Dead Load	0.30	in
Total Load	0.56	IN L/391
Live Load Deflection Criteria: L/480 Total Load Deflection Criteria: L/360		

**REACTIONS**

A B

Live Load	1375 lb	1375 lb
Dead Load	1596 lb	1596 lb
Total Load	2971 lb	2971 lb
Bearing Length	0.75 in	0.75 in

**BEAM DATA**

Center

Span Length	18.33	ft
Unbraced Length-Top	0	ft
Roof Pitch	4	:12
Floor Duration Factor	1.00	
Roof Duration Factor	1.15	
Notch Depth	0.00	

**MATERIAL PROPERTIES**

2.0E-2900F - APA EWS LVL Stress Classes

	Base Values	Adjusted
Bending Stress:	Fb = 2900 psi Cd=1.15 CF=1.00	Fb' = 3339 psi
Shear Stress:	Fv = 285 psi Cd=1.15	Fv' = 328 psi
Modulus of Elasticity:	E = 2000 ksi	E' = 2000 ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 750 psi	Fc - ⊥' = 750 psi

**Controlling Moment:** 13615 ft-lb

9.167 ft from left support

Created by combining all dead and live loads.

**Controlling Shear:** -2971 lb

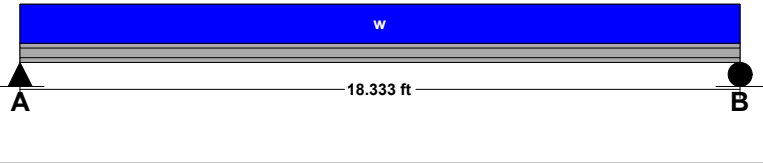
At support.

Created by combining all dead and live loads.

**Comparisons with required sections:**

	Req'd	Provided
Section Modulus:	48.93 in3	123.39 in3
Area (Shear):	13.6 in2	62.34 in2
Moment of Inertia (deflection):	673.84 in4	732.62 in4
Moment:	13615 ft-lb	34337 ft-lb
Shear:	-2971 lb	13622 lb

**LOADING DIAGRAM**



**ROOF LOADING**

	Side 1	Side 2
Roof Live Load	RLL = 25 psf	0 psf
Roof Dead Load	RDL = 12 psf	0 psf
Roof Tributary Width	RTW = 6 ft	0 ft

**FLOOR LOADING**

	Side 1	Side 2
Floor Live Load	FLL = 0 psf	0 psf
Floor Dead Load	FDL = 0 psf	0 psf
Floor Tributary Width	FTW = 0 ft	0 ft

Wall Load WALL = 80 plf

**BEAM LOADING**

Roof Uniform Live Load:	wL-roof = 150 plf
Roof Uniform Dead Load:	wD-roof = 76 plf
Floor Uniform Live Load:	wL-floor = 0 plf
Floor Uniform Dead Load:	wD-floor = 0 plf
Beam Self Weight:	BSW = 18 plf
Combined Uniform Live Load:	wL = 150 plf
Combined Uniform Dead Load:	wD = 174 plf
Combined Uniform Total Load:	wT = 324 plf

Column  
 Column [2015 International Building Code(2015 NDS)]  
 ( 4 ) 1.5 IN x 5.5 IN x 8.0 FT  
 #2 - Douglas-Fir-Larch - Dry Use  
 Section Adequate By: 51.1%

**CAUTIONS**

\* Laminations to be nailed together per National Design Specifications for Wood Construction Section 15.3.3.1

**VERTICAL REACTIONS**

Live Load: Vert-LL-Rxn = 6796 lb  
 Dead Load: Vert-DL-Rxn = 4172 lb  
 Total Load: Vert-TL-Rxn = 10968 lb

**COLUMN DATA**

Total Column Length: 8 ft  
 Unbraced Length (X-Axis) Lx: 8 ft  
 Unbraced Length (Y-Axis) Ly: 8 ft  
 Column End Condition-K (e): 1  
 Axial Load Duration Factor 1.00

**COLUMN PROPERTIES**

#2 - Douglas-Fir-Larch

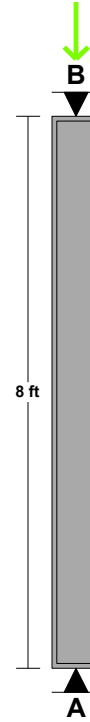
	<u>Base Values</u>	<u>Adjusted</u>
Compressive Stress:	Fc = 1350 psi	Fc' = 680 psi
	<i>Cd=1.00 Cf=1.10 Cp=0.46</i>	
Bending Stress (X-X Axis):	Fbx = 900 psi	Fbx' = 1588 psi
	<i>Cd=1.00 CF=1.30 Cr=1.15 Cf=1.18</i>	
Bending Stress (Y-Y Axis):	Fby = 900 psi	Fby' = 1588 psi
	<i>Cd=1.00 CF=1.30 Cr=1.15 Cf=1.18</i>	
Modulus of Elasticity:	E = 1600 ksi	E' = 1600 ksi

Column Section (X-X Axis):	dx =	5.5 in
Column Section (Y-Y Axis):	dy =	6 in
Area:	A =	33 in <sup>2</sup>
Section Modulus (X-X Axis):	Sx =	30.25 in <sup>3</sup>
Section Modulus (Y-Y Axis):	Sy =	8.25 in <sup>3</sup>
Slenderness Ratio:	L <sub>ex</sub> /dx =	17.45
	L <sub>ey</sub> /dy =	16

**Column Calculations (Controlling Case Only):**

Controlling Load Case: Axial Total Load Only (L + D)		
Actual Compressive Stress:	Fc =	332 psi
Allowable Compressive Stress:	Fc' =	680 psi
Eccentricity Moment (X-X Axis):	M <sub>x-ex</sub> =	0 ft-lb
Eccentricity Moment (Y-Y Axis):	M <sub>y-ey</sub> =	0 ft-lb
Moment Due to Lateral Loads (X-X Axis):	M <sub>x</sub> =	0 ft-lb
Moment Due to Lateral Loads (Y-Y Axis):	M <sub>y</sub> =	0 ft-lb
Bending Stress Lateral Loads Only (X-X Axis):	Fbx =	0 psi
Allowable Bending Stress (X-X Axis):	Fbx' =	1588 psi
Bending Stress Lateral Loads Only (Y-Y Axis):	Fby =	0 psi
Allowable Bending Stress (Y-Y Axis):	Fby' =	1588 psi
<b>Combined Stress Factor:</b>	<b>CSF =</b>	<b>0.49</b>

**LOADING DIAGRAM**



**AXIAL LOADING**

Live Load:	PL =	6796 lb *
Dead Load:	PD =	4115 lb *
Column Self Weight:	CSW =	57 lb
Total Axial Load:	PT =	10968 lb

\* Load obtained from Load Tracker. See Summary Report for details.

Location: **FG-1**

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Footing

Footing [2015 International Building Code(2015 NDS)]

Footing Size: 3.0 FT x 3.0 FT x 10.00 IN

Reinforcement in Long Direction: #4 Bars @ 9.00 IN. O.C. / (4) min.

Reinforcement in Short Direction-center band (Equal to width of short side): #4 Bars @ 9.00 IN. O.C. / (4) min.

Reinforcement in Short Direction-outside bands: #4 Bars @ 0.00 IN. O.C. / () Each band.

Section Footing Design Adequate

**FOOTING PROPERTIES**

Allowable Soil Bearing Pressure:  $Q_s = 1500$  psf  
 Concrete Compressive Strength:  $F'_c = 2500$  psi  
 Reinforcing Steel Yield Strength:  $F_y = 60000$  psi  
 Concrete Reinforcement Cover:  $c = 3$  in

**FOOTING SIZE**

Width:  $W = 3$  ft  
 Length:  $L = 3$  ft  
 Depth:  $\text{Depth} = 10$  in  
 Effective Depth to Top Layer of Steel:  $d = 6.25$  in

**COLUMN AND BASEPLATE SIZE**

Column Type: Steel  
 Column Width:  $m = 4$  in  
 Column Depth:  $n = 4$  in  
 Baseplate Width:  $bsw = 6$  in  
 Baseplate Length:  $bsl = 6$  in

**FOOTING CALCULATIONS****Bearing Calculations:**

Ultimate Bearing Pressure:  $Q_u = 1212$  psf  
 Effective Allowable Soil Bearing Pressure:  $Q_e = 1375$  psf  
 Required Footing Area:  $A_{req} = 7.94$  sf  
 Area Provided:  $A = 9.00$  sf

**Baseplate Bearing:**

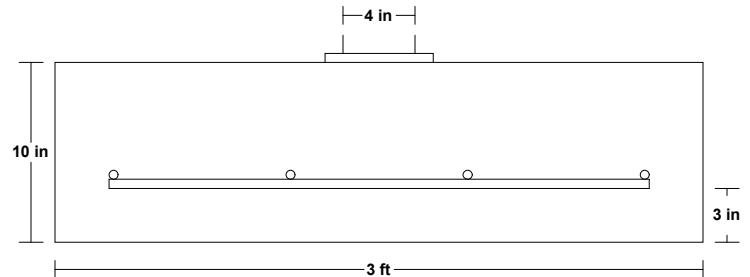
Bearing Required:  $Bear = 15812$  lb  
 Allowable Bearing:  $Bear-A = 99450$  lb

**Beam Shear Calculations (One Way Shear):**

Beam Shear:  $V_{u1} = 4063$  lb  
 Allowable Beam Shear:  $V_{c1} = 16875$  lb

**Punching Shear Calculations (Two Way Shear):**

Critical Perimeter:  $B_o = 45$  in  
 Punching Shear:  $V_{u2} = 14268$  lb  
 Allowable Punching Shear (ACI 11-35):  $vc2-a = 63281$  lb  
 Allowable Punching Shear (ACI 11-36):  $vc2-b = 79688$  lb  
 Allowable Punching Shear (ACI 11-37):  $vc2-c = 42188$  lb  
 Controlling Allowable Punching Shear:  $vc2 = 42188$  lb

**LOADING DIAGRAM****FOOTING LOADING**

Live Load:  $PL = 6796$  lb \*  
 Dead Load:  $PD = 4115$  lb \*  
 Total Load:  $PT = 10911$  lb \*  
 Ultimate Factored Load:  $P_u = 15812$  lb  
 Footing plus soil above footing weight:  $W_t = 725$  lb

\* Load obtained from Load Tracker. See Summary Report for details.

**Short Direction:****Bending Calculations:**

Factored Moment:  $M_u = 52760$  in-lb  
 Nominal Moment Strength:  $M_n = 252009$  in-lb

**Reinforcement Calculations:**

Concrete Compressive Block Depth:  $a = 0.62$  in  
 Steel Required Based on Moment:  $A_s(1) = 0.16$  in<sup>2</sup>  
 Min. Code Req'd Reinf. Flex. Members (ACI-150.1):  $A_s(2) = 0.65$  in<sup>2</sup>  
 Controlling Reinforcing Steel:  $A_{s-reqd} = 0.65$  in<sup>2</sup>  
 Selected Reinforcement: Short Dir: #4's @ 9.0 in. o.c.(4) Min.  
 Reinforcement Area Provided:  $A_s = 0.79$  in<sup>2</sup>

**Development Length Calculations:**

Development Length Required:  $L_d = 15$  in  
 Development Length Supplied:  $L_{d-sup} = 12.5$  in

Note: Plain concrete adequate for bending, therefore adequate development length not required.

**Long Direction:****Bending Calculations:**

Factored Moment:  $M_u = 52760$  in-lb  
 Nominal Moment Strength:  $M_n = 252009$  in-lb

**Reinforcement Calculations:**

Concrete Compressive Block Depth:  $a = 0.62$  in  
 Steel Required Based on Moment:  $A_s(1) = 0.16$  in<sup>2</sup>  
 Min. Code Req'd Reinf. Flex. Members (ACI-150.1):  $A_s(2) = 0.65$  in<sup>2</sup>  
 Controlling Reinforcing Steel:  $A_{s-reqd} = 0.65$  in<sup>2</sup>  
 Selected Reinforcement: Long Dir: #4's @ 9.0 in. o.c.(4) Min.  
 Reinforcement Area Provided:  $A_s = 0.79$  in<sup>2</sup>

**Development Length Calculations:**

Development Length Required:  $L_d = 15$  in  
 Development Length Supplied:  $L_{d-sup} = 12.5$  in

**SEISMIC BASE SHEAR CALCULATIONS PER IBC 2018 (ASCE 7-16)**

Response Spectral Acc. (0.2 sec)  $S_s = 140.50\%g = 1.405g$  Figure 22-1 through 22-14  
 Response Spectral Acc. (1.0 sec)  $S_1 = 48.90\%g = 0.489g$  Figure 22-1 through 22-14

Soil Site Class  Table 20-3-1, Default = D

Site Coefficient  $F_a = 1.200$  Table 11.4-1

Site Coefficient  $F_v = 1.812$  Table 11.4-2

Max Considered Earthquake Acc.  $S_{MS} = F_a \cdot S_s = 1.686$  (11.4-1)

Max Considered Earthquake Acc.  $S_{M1} = F_v \cdot S_1 = 0.886$  (11.4-2)

@ 5% Damped Design  $S_{DS} = 2/3(S_{MS}) = 1.124$  (11.4-3)

$S_{D1} = 2/3(S_{M1}) = 0.591$  (11.4-4)

Building Occupancy Categories  Table 1-1

**Design Category Consideration:**  with dist. between seismic resisting system >40ft

Seismic Design Category for 0.1sec  Table 11.6-1

Seismic Design Category for 1.0sec  Table 11.6-2

$S_1 < .75g$   Section 11.6

Since  $T_a < .8T_s$  (see below), SDC =  **Control (exception of Section 11.6 does not apply)**

**Comply with Seismic Design Category D**  T-R301.2.2.1.1

**12.8 Equivalent lateral force procedure**

A. BEARING WALL SYSTEMS T-12.2-

**Seismic Force Resisting Systems**  T-12.2-

$C_t = 0.02$   $x = 0.75$  T-12.8-2

Building ht.  $H_n = 25.2$  ft Limited Building Height (ft) = 65

$C_u = 1.400$  for  $S_{D1}$  of 0.591g Table 12.8-1

Approx Fundamental period,  $T_a = C_t(h_n)^x = 0.225$  12.8-7  $T_L = 6.000$  Sec

Calculated T shall not exceed  $\leq C_u \cdot T_a$  Use T =  sec.

$0.8T_s = 0.8(S_{D1}/S_{DS}) = 0.420$  Control (exception of Section 11.6 does not apply)

**Is structure Regular &  $\leq 5$  stories?**  12.8.1.3

Response Spectral Acc. (0.2 sec)  $S_s = 1.405g$  Max  $S_s \leq 1.5g$

$F_a = 1.20$   
 @ 5% Damped Design  $S_{DS} = 2/3(F_a \cdot S_s) = 1.124g$  (11.4-3)

Response Modification Coef.  $R = 6.5$  Table-12.2-1

Over Strength Factor  $\Omega_o = 2.5$  foot note g

Importance factor  $I = 1$  Table 11.5-1

Seismic Base Shear  $V = C_s W$   
 $C_s = \frac{S_{DS}}{R/I} = 0.173$  (12.8-2)

or need not to exceed,  $C_s = \frac{S_{D1}}{(R/I) \cdot T} = 0.404$  For  $T \leq T_L$  (12.8-3)

or  $C_s = \frac{S_{D1} \cdot T_L}{T^2(R/I)}$  N/A For  $T > T_L$  (12.8-4)

$C_s$  shall not be less than = 0.01 (12.8-5)

Min  $C_s = 0.5S_1/R$  N/A For  $S_1 \geq 0.6g$  (12.8-6)

Use  $C_s = 0.173$

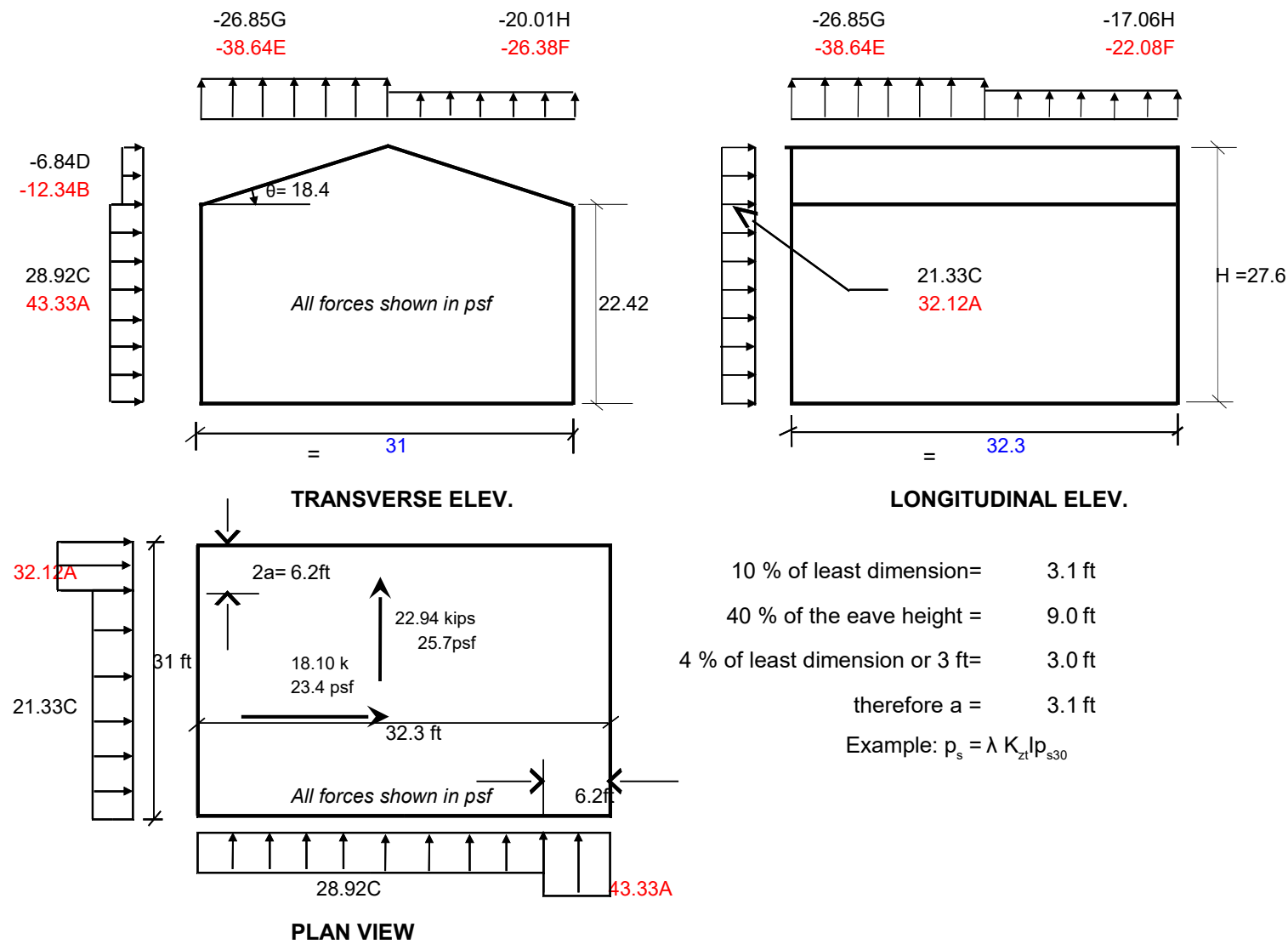
**Design base shear  $V = 0.173 W$  Control**



**WIND FORCES CALCULATIONS PER IBC 2018 (ASCE 7-16)**

Ultimate wind speed = 97 MPH  
 Bldg. Classification = II  
 Exposure C  
 $K_{zt} = 1.600$   
 Roof Pitch = 4.00 : 12  
 Mean Roof Height h = 25 ft

**CHAPTER 28-MWFRS (ENVELOPE PROCEDURE)**



**FIGURE 28.4-1, Main Wind Force System**

**MWFRS**

Load Direction	Roof Angle	Horizontal Loads				Vertical Loads					
		End Zone		Interior zone		End Zone		Interior zone		Overhang	
		Wall (A)	Roof (B)	Wall (C)	Roof (D)	WW (E)	LW (F)	WW (G)	LW (H)	E <sub>OH</sub>	G <sub>OH</sub>
Transverse	18.4	43.33	-12.34	28.92	-6.84	-38.64	-26.38	-26.85	-20.01	-54.20	-42.40
Longitudinal	All	32.12	-16.81	21.33	-10.04	-38.64	-22.08	-26.85	-17.06	-54.2	-42.4

\* If roof pressure under horizontal loads is less than zero, use zero

Plus and minus signs signify pressures acting toward and away from projected surfaces, respectively.

For the design of the longitudinal MWFRS use  $\theta = 0^\circ$ , and locate the zone E/F, G/H boundary at the mid-length of the building

**WIND FORCES:**

LOCATION	WIDTH	HEIGHT	INTERIOR PRESSURE	END ZONE PRESSURE		FORCE	SUBTOT
<b>Transverse Direction</b>							
END ZONE WIDTH	6.2	FT					
<b>ROOF</b>							
T.O.Roof to Parapet	32.3	0.0	-6.84	-12.34	=	0	
T.O. Roof TO MID	32.3	5.00	28.92	43.33	=	5563	
<b>5<sup>th</sup> FLOOR</b>							5563
MID TO FLOOR	32.3		28.92	43.33	=	0	
FLOOR TO MID	32.3		28.92	43.33	=	0	
<b>4<sup>th</sup> FLOOR</b>							0
MID TO FLOOR	32.3		28.92	43.33	=	0	
FLOOR TO MID	32.3		28.92	43.33	=	0	
<b>3<sup>rd</sup> FLOOR</b>							0
MID TO FLOOR	32.3		28.92	43.33	=	0	
FLOOR TO MID	32.3		28.92	43.33	=	0	
<b>2<sup>nd</sup> FLOOR</b>							0
MID TO FLOOR	32.3	5.00	28.92	43.33	=	5563	
FLOOR TO MID	32.3	5.00	28.92	43.33	=	5563	
						11126	
TOTAL FOR WALL SHEAR:							<b>16.69 Kips</b>

**Longitudinal Direction**

<b>ROOF</b>							
T.O.Roof to Parapet	31	0.0	21.33	32.12	=	0	
T.O. Roof TO MID	31	5.00	21.33	32.12	=	3975	
<b>5<sup>th</sup> FLOOR</b>							3975
MID TO FLOOR	31	0.0	21.33	32.12	=	0	
FLOOR TO MID	31	0.0	21.33	32.12	=	0	
<b>4<sup>th</sup> FLOOR</b>							0
MID TO FLOOR	31	0.0	21.33	32.12	=	0	
FLOOR TO MID	31	0.0	21.33	32.12	=	0	
<b>3<sup>rd</sup> FLOOR</b>							0
MID TO FLOOR	31	0.00	21.33	32.12	=	0	
FLOOR TO MID	31	0.00	21.33	32.12	=	0	
<b>2<sup>nd</sup> FLOOR</b>							0
MID TO FLOOR	31	5.00	21.33	32.12	=	3975	
FLOOR TO MID	31	5.00	21.33	32.12	=	3975	
						7950	
TOTAL FOR WALL SHEAR:							<b>11.93 Kips</b>



Job No.	22126	Sheet No.	
Project No.	22126	Sheet Title	
Checked By	BB	Made By	BB
Date		Date	06/08/22

DEAD LOAD WEIGHTS FOR SEISMIC FORCE CALCULATIONS:

Unit Roof Weight:	10 psf
Unit Floor Weight:	12 psf
Unit Exterior Wall Weight :	9 psf
Unit Interior Corridor Wall Weight:	0 psf
Unit Interior Party Wall Weight:	0 psf
Unit Interior Partition Wall Weight:	6.5 psf

LOCATION	LENGTH	HEIGHT	UNIT WT.	TOTAL WEIGHT	SUB TOTAL
<b>ROOF DIAPHRAGM</b>					
Roof	972	1	10	= 9720	
Ext. Wall Below	118	4.50	9	= 4779	psf
Corridor Wall Below	0		0	= 0	17
Party Wall Below	0		0	= 0	
Partition Wall Below	70	4.50	6.5	= 2048	
					16547
<b>FIFTH FLOOR DIAPHRAGM</b>					
Floor		1	12	= 0	
Ext. Wall Above			9	= 0	
Corridor Wall Above	0		0	= 0	
Party Wall Above	0		0	= 0	
Partition Wall Above			6.5	= 0	
Ext. Wall Below			9	= 0	psf
Corridor Wall Below	0		0	= 0	#DIV/0!
Party Wall Below			0	= 0	
Partition Wall Below			6.5	= 0	
					0
<b>FOURTH FLOOR DIAPHRAGM</b>					
Floor		1	12	= 0	
Ext. Wall Above			9	= 0	
Corridor Wall Above	0		0	= 0	
Party Wall Above	0		0	= 0	
Partition Wall Above			6.5	= 0	
Ext. Wall Below			9	= 0	psf
Corridor Wall Below	0		0	= 0	#DIV/0!
Party Wall Below			0	= 0	
Partition Wall Below			6.5	= 0	
					0
<b>THIRD FLOOR DIAPHRAGM</b>					
Floor		1	12	= 0	
Ext. Wall Above			9	= 0	
Corridor Wall Above			0	= 0	
Party Wall Above			0	= 0	
Partition Wall Above			6.5	= 0	
Ext. Wall Below			9	= 0	psf
Corridor Wall Below			0	= 0	#DIV/0!
Party Wall Below			0	= 0	
Partition Wall Below			6.5	= 0	
					0
<b>SECOND FLOOR DIAPHRAGM</b>					
Floor	972	1	12	= 11664	
Ext. Wall Above	118	4.50	9	= 4779	
Corridor Wall Above			0	= 0	
Party Wall Above			0	= 0	
Partition Wall Above	70	4.50	6.5	= 2048	
Ext. Wall Below	105	4.50	9	= 4253	psf
Corridor Wall Below	0		0	= 0	24
Party Wall Below			0	= 0	
Partition Wall Below	20	4.50	6.5	= 585	
					23329
STRUCTURE WEIGHT FOR BASE SHEAR TOTAL:					<b>39.9 Kips</b>

Job No.	22126	0	Sheet No.
Project No.	22126		Sheet Title
Checked By	BB		Made By BB
Date			Date 06/08/22

**Vertical Seismic Distribution**

Cs = 0.17 W  
 W = 39.9 kips  
 V = 6.9 kips  
 Rho = 1

**Important:** It is assumed that the R value is the same for both directions

Floor	Story Height Hi (ft)	Total Height Ht (ft)	Story Weight Wi (kips)	Wi*Ht (k-ft)	N/S Direction		E/W Direction		Mot E (kip-ft)
					Story Force Fi (kips)	Story Shear E (kips)	Story Force Fi (kips)	Story Shear E (kips)	
Roof	9.00	18.00	16.5	298	4.0	<b>4.0</b>	4.0	<b>4.0</b>	<b>72.8</b>
5 <sup>th</sup>	0.00	9.00	0.0	0	0.0	<b>0.0</b>	0.0	<b>0.0</b>	<b>0</b>
4 <sup>th</sup>	0.00	9.00	0.0	0	0.0	<b>0.0</b>	0.0	<b>0.0</b>	<b>0</b>
3 <sup>rd</sup>	0.00	9.00	0.0	0	0.0	<b>0.0</b>	0.0	<b>0.0</b>	<b>0</b>
2 <sup>nd</sup>	9.00	9.00	23.3	210	2.9	<b>2.9</b>	2.9	<b>2.9</b>	<b>25.66</b>
			39.9	508	6.9	<b>6.90</b>		<b>6.90</b>	<b>98.46</b>

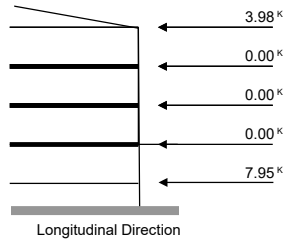
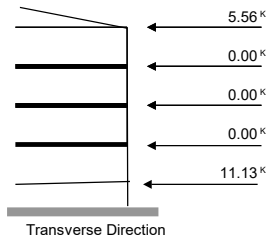
**Diaphragm Seismic Distribution**

Floor	Story Height Hi (ft)	Total Height Ht (ft)	Story Weight Wi (kips)	Force Distribution Fx (kips)	Calculated Fpx (kips)	Max Fpx (kips)	Min Fpx (kips)	Governing Fpx (kips)	Transverse Fpx (plf)	Longitudinal Fpx (plf)
Roof	9.00	18.00	16.5	4.0	4.0	7.4	3.7	<b>4.0</b>	<b>129</b>	<b>134</b>
5 <sup>th</sup>	0.00	9.00	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>
4 <sup>th</sup>	0.00	9.00	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>
3 <sup>rd</sup>	0.00	9.00	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>
2 <sup>nd</sup>	9.00	9.00	23.3	2.9	4.0	10.5	5.2	<b>5.2</b>	<b>5.2</b>	<b>5.2</b>
			39.9	6.9						

**Lateral Forces Summary**

Level	Wind (Trans.) (kips)	Wind (Long.) (kips)	Seismic (Trans.) (kips)	Seismic (Long.) (kips)
Roof	5.56	3.98	4.04	4.04
Fifth	0.00	0.00	0.00	0.00
Fourth	0.00	0.00	0.00	0.00
Third	0.00	0.00	0.00	0.00
Second	11.13	7.95	2.85	2.85
<b>Total</b>	<b>16.69</b>	<b>11.93</b>	<b>6.90</b>	<b>6.90</b>

**Controlling:**  
 Transverse - Wind  
 Longitudinal - Wind



SECOND STORY

Shearwall forces -Transverse Direction

Story shear(kips) = 5.56 (WIND CONTROLS) Accumulated shear(kips)= 5.56  
 Story height (ft) = 9.00  
 Floor depth (ft)= 1.00  
 Total Width(Ft) = 31.00

SEG= SEGMENTAL SHEARWALL METHOD  
 PERF = PERFORATED SHEARWALL METHOD  
 FTM = SHEAR TRANSFER METHOD

Story	Wall	Method	Wall D(ft)	Σ Opening Width (ft)	FTM Opening Width (ft)	FTM Opening Height (ft)	PERF/FTM Wall Width(ft)	PERF Co	Trib.Width (ft)	Story DL(klf)	Sheathing Ratio	h/w Ratio	%Sharing	Story V(kips)	Sum V(kips)	Sum DL(klf)	Wall Shear (plf)	Sum OTM(k-ft)	RM (k-ft)	Resultant HD(kips)	FTM Bound. Shear(k)	Force at Opening(k)
2	T1	PERF	31.0	14.10			16.90	0.8	13.50	0.16	0.55	0.47	1.00	2.42	2.42	0.16	179	21.79	76.40	-3.47	CS16	0.00
2	T2	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T3	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T4	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T5	SEG	11.3						17.50	0.16	1.00	0.71	1.00	3.14	3.14	0.16	279	28.25	10.06	1.71		0.00
2	T6	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T7	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T8	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T9	SEG	0.0								1.00	8000.00	1.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00
2	T10	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T11	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T12	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T13	SEG	0.0								1.00	8000.00	1.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00
2	T14	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T15	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T16	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T17	SEG	0.0								1.00	8000.00	1.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00
2	T18	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T19	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T20	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T21	SEG	0.0								1.00	8000.00	1.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00
2	T22	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T23	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T24	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T25	SEG	0.0								1.00	8000.00	1.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00
2	T26	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T27	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T28	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T29	SEG	0.0								1.00	8000.00	1.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00
2	T30	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T31	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
2	T32	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
Sum			42.3		0.00				31.00					5.56	5.56							

FIRST STORY

Shearwall forces -Transverse Direction

Story shear(kips) = 11.13  
 Story height (ft) = 9.00  
 Floor depth (ft)= 1.00  
 Total Width(Ft) = 31.00

Accumulated shear(kips)=

16.69

SEG= SEGMENTAL SHEARWALL METHOD  
 PERF = PERFORATED SHEARWALL METHOD  
 FTM = SHEAR TRANSFER METHOD

Story	Wall	Method	Wall D(ft)	Σ Opening Width (ft)	FTM Opening Width (ft)	FTM Opening Height (ft)	PERF/FTM Wall Width(ft)	PERF Co	Trib.Width (ft)	Story DL(klf)	Sheathing Ratio	h/w Ratio	%Sharing	Story V(kips)	Sum V(kips)	Sum DL(klf)	Wall Shear (plf)	Sum OTM(k-ft)	RM (k-ft)	Resultant HD(kips)	FTM Bound. Shear(k)	Force at Opening(k)	
1	T1	SEG	2.0	<b>USE WSW24X9</b>					11.00	0.20	1.00	4.00	0.50	1.97	2.96	0.35	2961	48.44	0.71	23.90	0.00	0.00	
1	T2	SEG	2.0						11.00	0.20	1.00	4.00	0.50	1.97	2.96	0.35	2961	48.44	0.71	23.90	0.00	0.00	
1	T3	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	T4	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	T5	SEG	31.0						15.50	0.20	1.00	0.26	1.00	5.57	8.35	0.35	269	103.35	170.10	-1.60	0.00	0.00	
1	T6	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T7	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T8	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T9	PERF	27.4	7.00	37.00		6.00	0.8	4.50	0.20	0.74	1.33	1.00	1.62	2.42	0.20	148	21.80	73.20	-2.70	11.10	0.00	
1	T10	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T11	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T12	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T13	SEG	0.0								1.00	8000.00	1.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	
1	T14	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T15	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T16	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T17	SEG	0.0								1.00	8000.00	1.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	
1	T18	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T19	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T20	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T21	SEG	0.0								1.00	8000.00	1.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	
1	T22	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T23	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T24	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T25	SEG	0.0								1.00	8000.00	1.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	
1	T26	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T27	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T28	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T29	SEG	0.0								1.00	8000.00	1.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	
1	T30	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T31	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
1	T32	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00	
Sum			62.4		37.00				31.00					11.13	16.69								

SECOND STORY

Shearwall forces -Longitudinal Direction

Story shear(kips) = 3.98  
 Story height (ft) = 9.00  
 Floor depth (ft)= 1.00  
 Total Width(Ft) = 32.30

Accumulated shear(kips)= 3.98

SEG= SEGMENTAL SHEARWALL METHOD  
 PERF = PERFORATED SHEARWALL METHOD  
 FTM = SHEAR TRANSFER METHOD

Story	Wall	Method	Wall D(ft)	Σ Opening Width (ft)	FTM Opening Width (ft)	FTM Opening Height (ft)	PERF/FTM Wall Width(ft)	PERF Co	Trib.Width (ft)	Story DL(klf)	Sheathing Ratio	h/w Ratio	%Sharing	Story V(kips)	Sum V(kips)	Sum DL(klf)	Wall Shear (plf)	Sum OTM(k-ft)	RM (k-ft)	Resultant HD(kips)	FTM Bound. Shear(k)	Force at Opening(k)
1	L1	SEG	32.3						16.15	0.25	1.00	0.25	1.00	1.99	1.99	0.25	62	17.91	130.13	-3.07	0.00	0.00
1	L2	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L3	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L4	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L5	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L6	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L7	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L8	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L9	SEG	22.33						16.15	0.25	1.00	0.36	1.00	1.99	1.99	0.25	89	17.91	62.08	-1.70	0.00	0.00
1	L10	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L11	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L12	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L13	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L14	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L15	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L16	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L17	SEG	0.0								1.00	8000.00	1.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00
1	L18	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L19	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L20	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L21	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L22	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L23	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L24	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L25	SEG	0.0								1.00	8000.00	1.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00
1	L26	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L27	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L28	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L29	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L30	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L31	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L32	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
Sum			54.7		0.00				32.30		1.00	#DIV/0!	0.00	3.98	3.98		#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00



**FIRST STORY**

**Shearwall forces -Longitudinal Direction**

Story shear(kips) = 7.95  
 Story height (ft) = 9.00  
 Floor depth (ft)= 1.00  
 Total Width(Ft) = 32.30

Accumulated shear(kips)=

11.93

SEG= SEGMENTAL SHEARWALL METHOD  
 PERF = PERFORATED SHEARWALL METHOD  
 FTM = SHEAR TRANSFER METHOD

Story	Wall	Method	Wall D(ft)	Σ Opening Width (ft)	FTM Opening Width (ft)	FTM Opening Height (ft)	PERF/FTM Wall Width(ft)	PERF Co	Trib.Width (ft)	Story DL(klf)	Sheathing Ratio	h/w Ratio	%Sharing	Story V(kips)	Sum V(kips)	Sum DL(klf)	Wall Shear (plf)	Sum OTM(k-ft)	RM (k-ft)	Resultant HD(kips)	FTM Bound. Shear(k)	Force at Opening(k)
1	L1	SEG	16.25						16.15	0.25	1.00	0.49	1.00	3.98	5.97	0.50	367	71.60	65.75	0.76	0.00	0.00
1	L2	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L3	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L4	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L5	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L6	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L7	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L8	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L9	SEG	21.75						16.15	0.25	1.00	0.37	1.00	3.98	5.97	0.50	274	71.60	117.79	-1.58	0.00	0.00
1	L10	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L11	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L12	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L13	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L14	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L15	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L16	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L17	SEG	0.00								1.00	8000.00	1.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00
1	L18	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L19	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L20	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L21	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L22	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L23	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L24	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L25	SEG	0.0								1.00	8000.00	1.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00
1	L26	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L27	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L28	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L29	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L30	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L31	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
1	L32	SEG									1.00	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!	0.00	0.00	#DIV/0!	#DIV/0!	0.00
Sum			38.0		0.00				32.30					7.95	11.93							

**SHEARWALL, DIAPHRAGM, STRAP AND HOLDOWN CAPACITY TABLE PER IBC 2012**

**PLYWOOD SHEATHED SHEARWALL**

SW6 (15/32" PLYWOOD WITH 10d AT 6" AT EDGE, 10d AT 12" FIELD NAILING)  
 SW4 (15/32" PLYWOOD WITH 10d AT 4" AT EDGE, 10d AT 12" FIELD NAILING)  
 SW3 (15/32" PLYWOOD WITH 10d AT 3" AT EDGE, 10d AT 12" FIELD NAILING)  
 SW2 (15/32" PLYWOOD WITH 10d AT 2" AT EDGE, 10d AT 12" FIELD NAILING)

**LRFD CAPACITY (SEISMIC/WIND)**

496 PLF/ 696 PLF  
 736 PLF/ 1032 PLF  
 960 PLF/ 1344PLF  
 1232 PLF/ 1724 PLF

**COMMENT**

SDPWS TABLE 4.3A  
 MULTIPLY VALUES BY TWO IF SHEATHING  
 APPLIED ON BOTH SIDES

**UNBLOCKED FLOOR DIAPHRAGM**

15/32" PLYWOOD WITH 8d AT 6" AT EDGE, 8d AT 12" FIELD NAILING  
 15/32" PLYWOOD WITH 10d AT 6" AT EDGE, 10d AT 12" FIELD NAILING  
 19/32" PLYWOOD WITH 10d AT 6" AT EDGE, 10d AT 12" FIELD NAILING

**LRFD CAPACITY (SEISMIC/WIND)**

368 PLF/ 516 PLF  
 408 PLF/ 572 PLF  
 456 PLF/ 640 PLF

**COMMENT**

SDPWS TABLE 4.2B

**SIMPSON'S FLOOR STRAP**

CS18  
 CS16  
 CS14  
 CMSTC16  
 CMSTC14

**LRFD CAPACITY (SEISMIC/WIND)**

1916 LBS/ 2190 LBS  
 2363 LBS/ 2700 LBS  
 3487 LBS/ 3985 LBS  
 6236 LBS/ 7336 LBS  
 9086 LBS/ 10384 LBS

**COMMENT**

12" END LENGTH  
 14" END LENGTH  
 20" END LENGTH  
 26" END LENGTH  
 36" END LENGTH

**SIMPSON'S HOLDOWN**

HDU2  
 HDU4  
 HDU5  
 ..

LSTD8/ LSTD8RJ AT 6" STEMWALL  
 STHD10/ STHD10RJ AT 6" STEMWALL  
 STHD14/ STHD14RJ AT 6" STEMWALL  
 LSTD8/ LSTD8RJ AT 8" STEMWALL  
 STHD10/ STHD10RJ AT AT 8" STEMWALL  
 STHD14/ STHD14RJ AT AT 8" STEMWALL

**LRFD CAPACITY (SEISMIC/WIND)**

4305 LBS/ 4920 LBS  
 6391 LBS/ 7304 LBS  
 7905 LBS/ 9032 LBS  
 8372 LBS/ 9568 LBS  
 2730 LBS/ 3120 LBS  
 3700 LBS/ 4224 LBS  
 5173 LBS/ 5912 LBS  
 2730 LBS/ 3120 LBS  
 4116 LBS/ 4700 LBS  
 5340 LBS/ 6100 LBS

**COMMENT**

CRACKED CONCRETE (CORNER CONDITION)  
 CRACKED CONCRETE (CORNER CONDITION)  
 CRACKED CONCRETE (CORNER CONDITION)  
 CRACKED CONCRETE (CORNER CONDITION)  
 CRACKED CONCRETE (CORNER CONDITION)  
 CRACKED CONCRETE (CORNER CONDITION)

**SIMPSON'S ANCHOR BOLT FOR SHEARWALL HOLDOWNS**

SSTB16 (5/8" DIAMETER, 12 5/8" MIN. EMBED., 6" STEMWALL)  
 SSTB20 (5/8" DIAMETER, 16 5/8" MIN. EMBED., 6" STEMWALL)  
 SB 5/8"X24 (5/8" DIAMETER, 18" MIN. EMBED., 6" STEMWALL)  
 SB 7/8"X24 (7/8" DIAMETER, 18" MIN. EMBED., 8" STEMWALL)  
 SB 1"X30 (1" DIAMETER, 24" MIN. EMBED., 8" STEMWALL)

**LRFD CAPACITY (SEISMIC/WIND)**

3570 LBS/ 5776 LBS  
 4403 LBS/ 6464 LBS  
 8022 LBS/ 10680 LBS  
 10997 LBS/ 14968 LBS  
 11640 LBS/ 15848 LBS

**COMMENT**

2500 PSI MIN. CONCRETE (CORNER CONDITION)  
 1 3/4" MIN. EDGE DISTANCE

**TABLE A2—ALLOWABLE ASD IN-PLANE SHEAR FOR STANDARD APPLICATION STRONG-WALL WOOD SHEARWALL (WSW)  
ON CONCRETE FOUNDATION**

Strong-Wall Wood Shearwall Model	Allow. Vertical Load, P (lb.)	2,500 psi Concrete						3,000 psi Concrete					
		Seismic			Wind			Seismic			Wind		
		Allow. ASD Shear Load, V (lb.)	Drift at Allow. Shear, Δ (in.)	Anchor Tension at Allow. Shear, T (lb.)	Allow. ASD Shear, V (lb.)	Drift at Allow. Shear, Δ (in.)	Anchor Tension at Allow. Shear, T (lb.)	Allow. ASD Shear, V (lb.)	Drift at Allow. Shear, Δ (in.)	Anchor Tension at Allow. Shear, T (lb.)	Allow. ASD Shear, V (lb.)	Drift at Allow. Shear, Δ (in.)	Anchor Tension at Allow. Shear, T (lb.)
WSW12x7	1,000	1,065	0.31	10,285	1,380	0.43	13,375	1,065	0.31	10,285	1,380	0.43	13,375
	4,000	1,065	0.31	10,285	1,380	0.43	13,375	1,065	0.31	10,285	1,380	0.43	13,375
	7,500	1,065	0.31	10,285	1,380	0.43	13,370	1,065	0.31	10,285	1,380	0.43	13,375
WSW18x7	1,000	2,475	0.31	13,865	2,980	0.40	16,675	2,475	0.31	13,865	3,225	0.43	18,040
	4,000	2,475	0.31	13,865	2,710	0.36	15,160	2,475	0.31	13,865	3,225	0.43	18,040
	7,500	2,475	0.31	13,865	2,395	0.32	13,395	2,475	0.31	13,865	2,910	0.39	16,280
WSW24x7	1,000	5,515	0.29	22,710	5,515	0.32	22,710	5,515	0.29	22,710	5,515	0.32	22,710
	4,000	5,515	0.29	22,710	5,400	0.31	22,240	5,515	0.29	22,710	5,515	0.32	22,710
	7,500	5,515	0.29	22,710	4,950	0.29	20,390	5,515	0.29	22,710	5,515	0.32	22,710
WSW12x8	1,000	960	0.39	11,125	1,245	0.53	14,420	960	0.39	11,125	1,245	0.53	14,420
	4,000	960	0.39	11,125	1,245	0.53	14,420	960	0.39	11,125	1,245	0.53	14,420
	7,500	960	0.39	11,125	1,155	0.49	13,370	960	0.39	11,125	1,245	0.53	14,420
WSW18x8	1,000	2,430	0.39	16,245	2,490	0.42	16,675	2,430	0.39	16,245	2,925	0.50	19,560
	4,000	2,430	0.39	16,245	2,265	0.38	15,160	2,430	0.39	16,245	2,695	0.46	18,045
	7,500	2,430	0.39	16,245	2,000	0.34	13,395	2,430	0.39	16,245	2,435	0.41	16,280
WSW24x8	1,000	4,945	0.37	24,355	4,840	0.40	23,830	4,945	0.37	24,355	5,515	0.45	27,150
	4,000	4,945	0.37	24,355	4,515	0.37	22,240	4,945	0.37	24,355	5,360	0.44	26,395
	7,500	4,945	0.37	24,355	4,140	0.34	20,390	4,945	0.37	24,355	4,985	0.41	24,540
WSW12x9	1,000	790	0.43	10,310	1,020	0.60	13,335	790	0.43	10,310	1,020	0.60	13,335
	4,000	790	0.43	10,310	1,020	0.60	13,335	790	0.43	10,310	1,020	0.60	13,335
	7,500	790	0.43	10,310	1,020	0.60	13,335	790	0.43	10,310	1,020	0.60	13,335
WSW18x9	1,000	1,920	0.43	14,505	2,210	0.53	16,675	1,920	0.43	14,505	2,515	0.60	18,980
	4,000	1,920	0.43	14,505	2,010	0.48	15,160	1,920	0.43	14,505	2,390	0.57	18,045
	7,500	1,920	0.43	14,505	1,775	0.42	13,395	1,920	0.43	14,505	2,155	0.51	16,280
WSW24x9	1,000	4,190	0.43	23,275	4,290	0.46	23,830	4,190	0.43	23,275	5,035	0.54	27,985
	4,000	4,190	0.43	23,275	4,000	0.43	22,240	4,190	0.43	23,275	4,750	0.51	26,395
	7,500	4,190	0.43	23,275	3,670	0.40	20,390	4,190	0.43	23,275	4,415	0.48	24,540
WSW12x10	1,000	630	0.50	9,175	810	0.67	11,810	630	0.50	9,175	810	0.67	11,810
	4,000	630	0.50	9,175	810	0.67	11,810	630	0.50	9,175	810	0.67	11,810
	7,500	630	0.50	9,175	810	0.67	11,810	630	0.50	9,175	810	0.67	11,810
WSW18x10	1,000	1,715	0.49	14,440	1,980	0.59	16,675	1,715	0.49	14,440	2,225	0.67	18,715
	4,000	1,715	0.49	14,440	1,800	0.54	15,160	1,715	0.49	14,440	2,145	0.64	18,045
	7,500	1,715	0.49	14,440	1,590	0.48	13,395	1,715	0.49	14,440	1,935	0.58	16,280
WSW24x10	1,000	3,675	0.48	22,740	3,850	0.54	23,830	3,675	0.48	22,740	4,520	0.63	27,985
	4,000	3,675	0.48	22,740	3,590	0.50	22,240	3,675	0.48	22,740	4,265	0.60	26,395
	7,500	3,675	0.48	22,740	3,295	0.46	20,390	3,675	0.48	22,740	3,965	0.55	24,540
WSW12x11	1,000	575	0.55	9,190	735	0.73	11,810	575	0.55	9,190	735	0.73	11,810
	4,000	575	0.55	9,190	735	0.73	11,810	575	0.55	9,190	735	0.73	11,810
	7,500	575	0.55	9,190	735	0.73	11,810	575	0.55	9,190	735	0.73	11,810
WSW18x11	1,000	1,510	0.53	14,010	1,800	0.67	16,675	1,510	0.53	14,010	1,975	0.73	18,335
	4,000	1,510	0.53	14,010	1,635	0.61	15,160	1,510	0.53	14,010	1,945	0.72	18,045
	7,500	1,510	0.53	14,010	1,445	0.54	13,395	1,510	0.53	14,010	1,755	0.65	16,280
WSW24x11	1,000	3,295	0.53	22,485	3,490	0.58	23,830	3,295	0.53	22,485	4,100	0.69	27,985
	4,000	3,295	0.53	22,485	3,260	0.55	22,240	3,295	0.53	22,485	3,865	0.65	26,395
	7,500	3,295	0.53	22,485	2,985	0.50	20,390	3,295	0.53	22,485	3,595	0.60	24,540
WSW12x12	1,000	485	0.62	8,540	625	0.80	10,915	485	0.62	8,540	625	0.80	10,915
	4,000	485	0.62	8,540	625	0.80	10,915	485	0.62	8,540	625	0.80	10,915
	7,500	485	0.62	8,540	625	0.80	10,915	485	0.62	8,540	625	0.80	10,915
WSW18x12	1,000	1,340	0.58	13,580	1,645	0.75	16,675	1,340	0.58	13,580	1,755	0.80	17,770
	4,000	1,340	0.58	13,580	1,495	0.68	15,160	1,340	0.58	13,580	1,755	0.80	17,770
	7,500	1,340	0.58	13,580	1,320	0.60	13,395	1,340	0.58	13,580	1,605	0.73	16,280
WSW24x12	1,000	2,920	0.58	21,795	3,195	0.66	23,830	2,920	0.58	21,795	3,750	0.77	27,985
	4,000	2,920	0.58	21,795	2,980	0.61	22,240	2,920	0.58	21,795	3,540	0.73	26,395
	7,500	2,920	0.58	21,795	2,735	0.56	20,390	2,920	0.58	21,795	3,290	0.68	24,540

See footnotes on next page.