PSE CONSULTING ENGINEERS INC.

STRUCTURAL ENGINEERING CALCULATIONS

PROJECT: Screen Building Analysis & Design

PROJECT LOCATION: 38600 Main St.,
Milner CO 80487.

PSE PROJECT NUMBER: AquaWorks DBO Inc.
224-2002

DATE: April 8, 2024

REVIEW BY: Nabil Taha, Ph.D., P.E.
Design BY: Maverick Davison / Ayyappan Saravanabavan
(Under Supervision of Licensed Engineer)

Expires 10/31/2025

Table of Contents:

Expires 10/31/2025

References:

1- Literature:

a. 2021 International Building Code (IBC) as adopted by the Colorado State Buildings Program

b. Steel Construction Manual, AISC 15th Edition

c. American Iron and Steel Institute (AISI): Cold-Formed Steel Design Manual, 2017

d. American Society of Civil Engineers (ASCE): Minimum Design Loads for Buildings and Other Structures 7-16

e. Steel Deck Institute SDI, Diaphragm Design, Edition 4

2- Software:

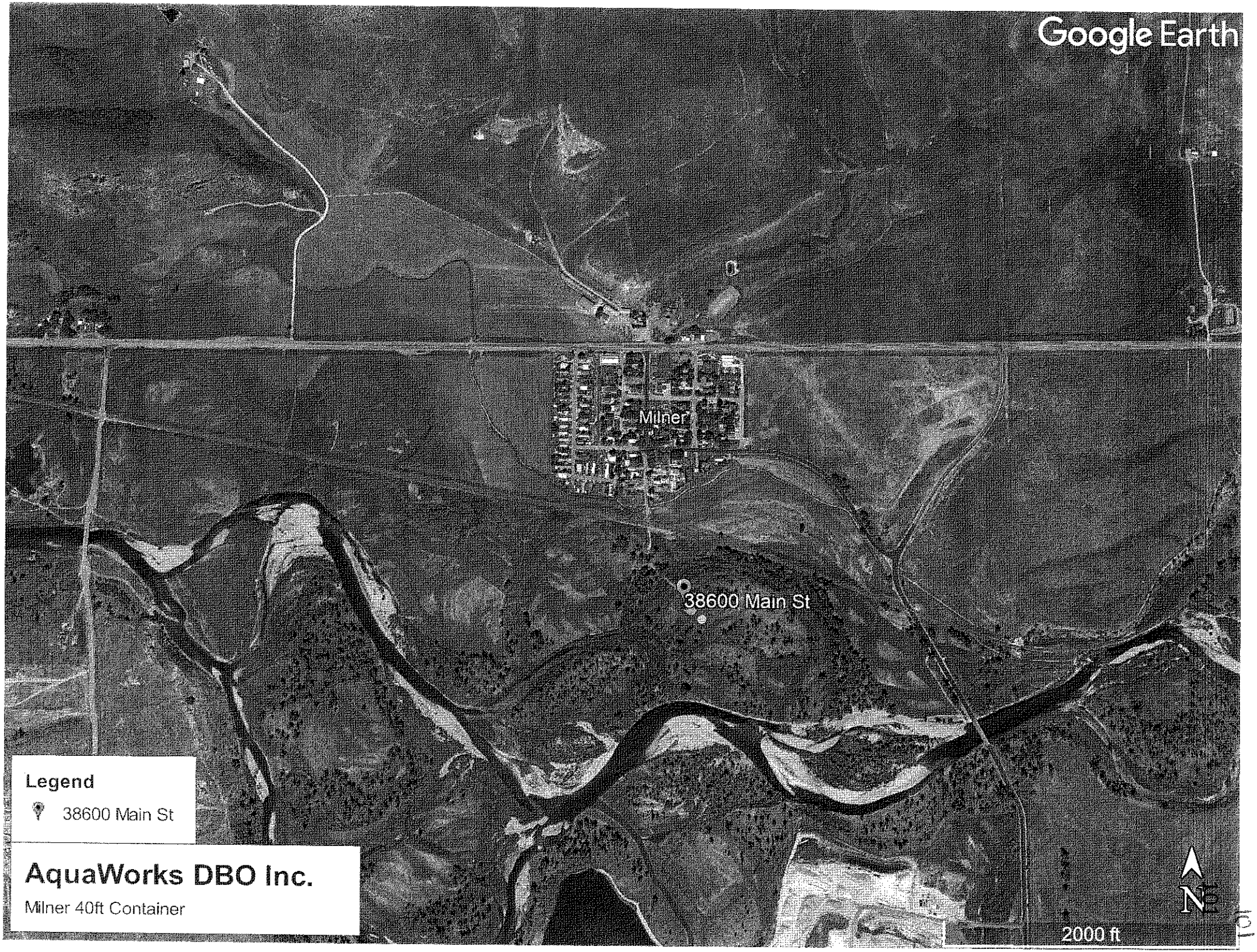
a. RISA 3D Version 21.0,
RISA Technologies,

b. Wood Works Design Office Version 12.0,
American Forest & Paper Association

Design Criteria:

1- Location:	Milner, CO 80487. (Lat. 40.4805º, Long. -107.0200º)		
2- Seismic:	OC	II	
	SDC	C	
	Site Class	D	
	S_s	0.582	
	S_1	0.102	
	S_{DS}	0.518	
	S_{ms}	0.777	
	I_E	1.0	
	R	2.0	Refer to pg. 502
3- Wind:	Ultimate wind speed	105 mph (3 s. gust)	
	Exposure	C	
	I_W	1.0	
4- Snow:	76.82 psf (ground) 53.8 psf (flat roof) (See pg.no 111)		
5- Soil Bearing Capacity:	1500 psf (presumptive value from IBC)		
6- Gravity Loads:	Container(s):	Self Weight	
	DL Floor:	5 psf additional	
	LL Floor:	40 psf	
	DL Roof:	20 psf	
7- Deflection Criteria:	Floor LL Deflection:	L/480	
	Roof TL Deflection:	L/180	

**Other criteria assumed as stated in design calculations.


Google Earth
Milner
38600 Main St
Legend
38600 Main St
AquaWorks DBO Inc.
Milner 40ft Container
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2000 ft


Google Earth
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Legend
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AquaWorks DBO Inc.
Milner 40ft Container
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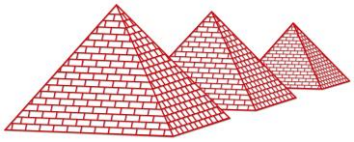


WIND LOAD DATA

250-A Main Street
Klamath Falls, OR. 97601
E-Mail: info@structure1.com
Web: www.structure1.com
ph. (541) 850-6300
fax (541) 850-6233

Hazards by Location

Search Information

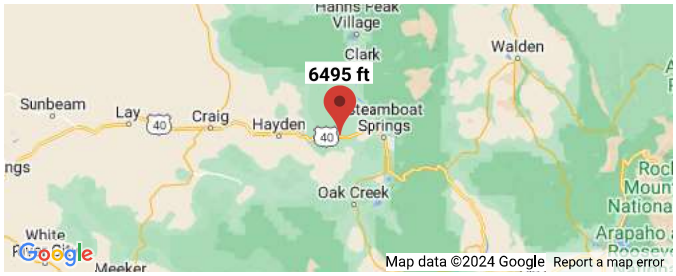
Address: 38600 Main st, Milner co 80487

Coordinates: 40.4806125, -107.0200923

Elevation: 6495 ft

Timestamp: 2024-04-08T07:59:56.655Z

Hazard Type: Wind



ASCE 7-16

MRI 10-Year	77 mph
MRI 25-Year	83 mph
MRI 50-Year	88 mph
MRI 100-Year	92 mph
Risk Category I	100 mph
Risk Category II	105 mph
Risk Category III	112 mph
Risk Category IV	116 mph

ASCE 7-10

MRI 10-Year	76 mph
MRI 25-Year	84 mph
MRI 50-Year	90 mph
MRI 100-Year	96 mph
Risk Category I	105 mph
Risk Category II	115 mph
Risk Category III-IV	120 mph

ASCE 7-05

ASCE 7-05 Wind Speed	90 mph

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Please note that the ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Disclaimer

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher. NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

MecaWind v2460

Calculations Prepared by:

PSE Consulting Engineers, Inc
250-A Main Street
Klamath Falls, OR, 97601
Date: Apr 08, 2024
File Location: D:\Projects - Maverick Davison\AquaWorks DBO, INC\224-2002 CO, Milner Container\Dsgn Engineering\1 Screen Building Analysis & Report Data\1 Admin\1 Code, Loads & Mecawind & Design Criteri\2024-04-08-AquaWorks DBO, INC Transport - Screen Building.wnd

General:

Wind Load Standard	=	ASCE 7-16	Basic Wind Speed	=	105.0 mph
Exposure Classification	=	C	Risk Category	=	II
Structure Type	=	Building	Design Basis for Wind Pressures	=	LRFD
MWFRS Analysis Method	=	Ch 27 Pt 1	C&C Analysis Method	=	Ch 30 Pt 1
Dynamic Type of Structure	=	Flexible	Natural Frequency of Structure,	=	3.518 Hz
Structural Damping	=	0.0100	Show Advanced Options	=	0

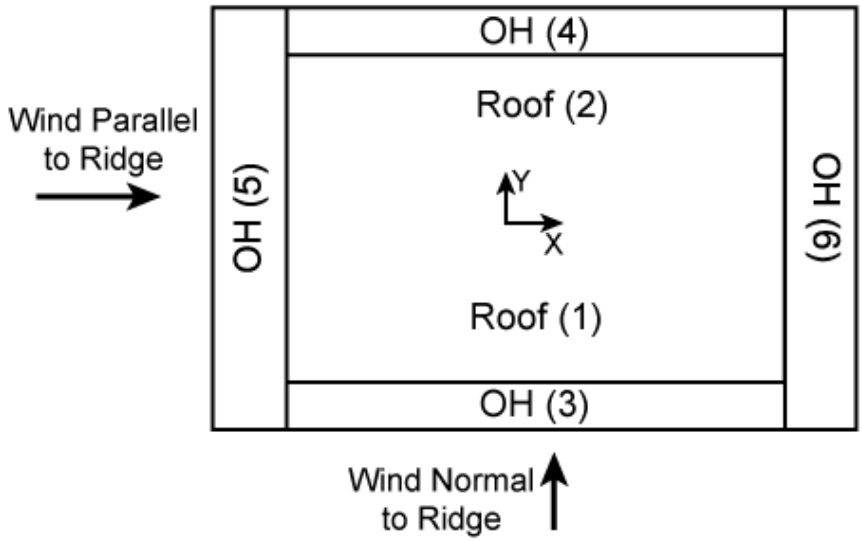
Building:

Roof	=	Roof Type	= Flat	Encl	=	Enclosure Classification	= Enclosed
Help	=	Help on Building Roof Type	= Help	RfHt	=	Roof Height	= 8.782 ft
W	=	Building Width	= 8.000 ft	L	=	Building Length	= 10.000 ft
OH	=	Type of Overhang	= None	Par	=	Parapet	= None
HT_{over}	=	Override Mean Roof Height	= False	Ht_{man}	=	Mean Roof Height	= 8.782 ft
RA_{over}	=	Override Roof Area	= False	GC_{pi_o}	=	Override GC_{pi} value	= False

Exposure Constants [Tbl 26.11-1]:

α = 3-s Gust-speed exponent	=	9.500	Z_g = Nominal Ht of Boundary Layer	=	900.000 ft
â = Reciprocol of α	=	0.105	b = 3 sec gust speed factor	=	1.000
α_m = Mean hourly Wind-Speed Exponent	=	0.154	b_m = Mean hourly Windspeed Exponent	=	0.650
c = Turbulence Intensity Factor	=	0.200	ε = Integral Length Scale Exponent	=	0.2000

Main Wind Force Resisting System (MWFRS) Wind Calculations per Ch 27 Pt1



h	=	Mean structure height	=	8.782 ft
h_{grade}	=	Elevation from Grade to Top of Structure	=	8.782 ft
K_h	=	$2.01 \cdot (15/Z_g)^{2/\alpha}$ [Tbl 26.10-1]	=	0.849
K_{zt}	=	No Topographic feature specified	=	1.000
K_d	=	Wind Directionality Factor per Tbl 26.6-1	=	0.85
$+GC_{pi}$	=	Enclosed Positive Internal Pressure Tbl 26.13-1	=	+0.18
$-GC_{pi}$	=	Enclosed Negative Internal Pressure Tbl 26.13-1	=	-0.18
LF	=	Load Factor based upon STRENGTH Design	=	1.00
K_e	=	Ground Elev Factor [Tbl 26.9-1]	=	1.000
q_h	=	$0.00256 \cdot K_h \cdot K_{zt} \cdot K_d \cdot K_e \cdot V^2 * LF$ [Eq 26.10-1]	=	20.37 psf
RA	=	Roof Area	=	80.00 ft^2

q_h	=	$0.00256 \cdot K_h \cdot K_{zt} \cdot K_d \cdot K_e \cdot V^2 * LF$ [Eq 26.10-1]	=	20.37 psf
q_{in}	=	Negative Internal Pressure: $q_h \cdot LF$	=	20.37 psf
q_{ip}	=	Positive Internal Pressure: $q_h \cdot LF$	=	20.37 psf

MWFRS Wind Loads [Normal to Ridge]

h	=	Mean Roof Height Of Building	=	8.782 ft
RHt	=	Ridge Height Of Roof	=	8.782 ft
B	=	Horizontal Dimension Of Building Normal To Wind Direction	=	10.000 ft
L	=	Horizontal Dimension Of building Parallel To Wind Direction	=	8.000 ft
L/B	=	Ratio Of L/B used For Cp determination	=	0.800
h/L	=	Ratio Of h/L used For Cp determination	=	1.098
Slope	=	Slope Of Roof	=	0.0 Deg

Gust Factor Calculation for Wind: [Normal to Ridge]

Gust Factor Category I Rigid Structures - Simplified Method

G_1	=	Simplified: For Rigid Structures can use 0.85	=	0.85

Gust Factor Category II Rigid Structures - Complete Analysis

Z_m	=	Equiv Struc Height: Max(0.6•h, Z_{min})	=	15.000 ft
I_{zm}	=	Turbulence Intensity: $c \cdot (33/Z_m)^{1/6}$ [Eq 26.11-1]	=	0.228
L_{zm}	=	Turbulence Integral Length Scale: $\ell \cdot (Z_m/33)^{\varepsilon}$ [Eq 26.11-9]	=	427.057 ft
B	=	Building Width Width Normal to Wind Direction	=	10.000 ft
Q	=	$[1/(1+0.63 \cdot [(B+h)/L_{zm}]^{0.63})]^{0.5}$ [Eq 26.11-8]	=	0.959
G_2	=	Detailed: $0.925 \cdot [(1+1.7 \cdot g_q \cdot I_{zm} \cdot Q)/(1+1.7 \cdot g_v \cdot I_{zm})]$ [Eq 26.11-6]	=	0.903

Gust Factor Used in Analysis

G	=	Gust Factor: Min(G_1, G_2)	=	0.850

Cp_{WW}	=	Windward Wall Coefficient (All L/B Values)	=	0.800
Cp_{LW}	=	Leeward Wall Coefficient using L/B	=	-0.500
Cp_{SW}	=	Side Wall Coefficient (All L/B values)	=	-0.700

Wind Pressures [Normal to Ridge]

All wind pressures include a Load Factor (LF) of 1.0

Elev ft	GC_{pi}	q_i psf	K_z	K_{zt}	q_z psf	Windward Press psf	Leeward Press psf	Side Press psf	Total Press psf	Minimum Pressure* psf
8.782	+0.18	20.37	0.849	1.000	20.37	10.18	-12.32	-15.78	22.50	16.00
8.782	-0.18	20.37	0.849	1.000	20.37	17.51	-4.99	-8.45	22.50	16.00

K_z = $2.01 \cdot (15/Z_g)^{2/\alpha}$ [Tbl 26.10-1]
GC_{pi} = Enclosed Internal Pressure Tbl 26.13-1
q_{ip} = Positive Internal Pressure: $q_h \cdot LF$
Side = $q_h \cdot G \cdot Cp_{SW} - q_{ip} \cdot (+GC_{pi})$ [Eq 27.3-1]
Windward = $q_z \cdot G \cdot Cp_{WW} - q_{ip} \cdot (+GC_{pi})$ [Eq 27.3-1]

K_{zt} = No Topographic feature specified
q_z = $0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot K_e \cdot V^2 * LF$ [Eq 26.10-1]
q_{in} = Negative Internal Pressure: $q_h \cdot LF$
Leeward = $q_h \cdot G \cdot Cp_{LW} - q_{ip} \cdot (+GC_{pi})$ [Eq 27.3-1]
Total = Windward - Leeward

- *Minimum Pressure: § 27.1.5 no less than 16.00 psf (Incl LF) applied to Walls*
- *Positive Pressures Act TOWARD Surface and Negative Pressures Act AWAY from Surface*

Roof Wind Pressures for Positive & Negative Internal Pressure (±GC_{pi}) [Normal to Ridge]

All wind pressures include a Load Factor (LF) of 1.0

Reference	Description	Location	Start Dist ft	End Dist ft	C_p Min	C_p Max	GC_{pi}	Pressure Min psf	Pressure Max psf
Roof	**Roof (0 to h/2)	All	0.000	4.391	-1.300	-0.180	+0.18/-0.18	-26.17	8.00
Roof	Roof (>= h/2)	All	4.391	8.000	-0.700	-0.180	+0.18/-0.18	-15.78	8.00

Roof Pressures based upon Ch 27 Pt1:
Start = Start Dist from Windward Edge
C_{p_min} = Smallest Coefficient Magnitude
$Press_{Min}$ = $q_h \cdot G \cdot C_{p\_min} - q_{ip} \cdot (+GC_{pi})$ Eq 27.3-1

End = End Dist from Windward Edge
C_{p_max} = Largest Coefficient Magnitude
$Press_{Max}$ = $q_h \cdot G \cdot C_{p\_max} - q_{in} \cdot (-GC_{pi})$ Eq 27.3-1

- *No reduction factor was applicable*
- *The smaller uplift pressures due to Cp_Min can become critical when wind is combined with roof live load or snow load; load combinations are given in ASCE 7*
- *Positive Pressures Act TOWARD Surface and Negative Pressures Act AWAY from Surface*

MWFRS Wind Loads [Parallel to Ridge]

h	=	Mean Roof Height Of Building	=	8.782 ft
RHt	=	Ridge Height Of Roof	=	8.782 ft
B	=	Horizontal Dimension Of Building Normal To Wind Direction	=	8.000 ft
L	=	Horizontal Dimension Of building Parallel To Wind Direction	=	10.000 ft
L/B	=	Ratio Of L/B used For Cp determination	=	1.250
h/L	=	Ratio Of h/L used For Cp determination	=	0.878
Slope	=	Slope Of Roof	=	0.0 Deg

Gust Factor Calculation for Wind: [Parallel to Ridge]

Gust Factor Category I Rigid Structures - Simplified Method

G_1	=	Simplified: For Rigid Structures can use 0.85	=	0.85

Gust Factor Category II Rigid Structures - Complete Analysis

Z_m	=	Equiv Struc Height: Max(0.6•h, Z_{min})	=	15.000 ft
I_{zm}	=	Turbulence Intensity: c•(33/Z_m)$^{1/6}$[Eq 26.11-1]	=	0.228
L_{zm}	=	Turbulence Integral Length Scale: ℓ•(Z_m/33)$^{\varepsilon}$[Eq 26.11-9]	=	427.057 ft
B	=	Building Width Width Normal to Wind Direction	=	8.000 ft
Q	=	[1/(1+0.63•[(B+h)/L_{zm}]$^{0.63}$)]$^{0.5}$[Eq 26.11-8]	=	0.961
G_2	=	Detailed: 0.925•[(1+1.7•g_q•I_{zm}•Q)/(1+1.7•g_v•I_{zm})] [Eq 26.11-6]	=	0.905
Gust Factor Used in Analysis				
G	=	Gust Factor: Min(G_1, G_2)	=	0.850
Cp_{WW}	=	Windward Wall Coefficient (All L/B Values)	=	0.800
Cp_{LW}	=	Leeward Wall Coefficient using L/B	=	-0.450
Cp_{SW}	=	Side Wall Coefficient (All L/B values)	=	-0.700

Wind Pressures [Parallel to Ridge]

All wind pressures include a Load Factor (LF) of 1.0

Elev ft	GC_{pi}	q_i psf	K_z	K_{zt}	q_z psf	Windward Press psf	Leeward Press psf	Side Press psf	Total Press psf	Minimum Pressure* psf
8.782	+0.18	20.37	0.849	1.000	20.37	10.18	-11.46	-15.78	21.64	16.00
8.782	-0.18	20.37	0.849	1.000	20.37	17.51	-4.12	-8.45	21.64	16.00

K_z = 2.01•(15/Z_g)$^{2/\alpha}$[Tbl 26.10-1]
GC_{pi} = Enclosed Internal Pressure Tbl 26.13-1
q_{ip} = Positive Internal Pressure: q_h•LF
Side = q_h•G•Cp_{SW}-q_{ip}•(+GC_{pi}) [Eq 27.3-1]
Windward = q_z•G•Cp_{WW}-q_{ip}•(+GC_{pi}) [Eq 27.3-1]
K_{zt} = No Topographic feature specified
*q_z = 0.00256•K_z•K_{zt}•K_d•K_e•V^2*LF [Eq 26.10-1]*
q_{in} = Negative Internal Pressure: q_h•LF
Leeward = q_h•G•Cp_{LW}-q_{ip}•(+GC_{pi}) [Eq 27.3-1]
Total = Windward - Leeward

- *Minimum Pressure: § 27.1.5 no less than 16.00 psf (Incl LF) applied to Walls*
- *Positive Pressures Act TOWARD Surface and Negative Pressures Act AWAY from Surface*

Roof Wind Pressures for Positive & Negative Internal Pressure (±GC_{pi}) [Parallel to Ridge]

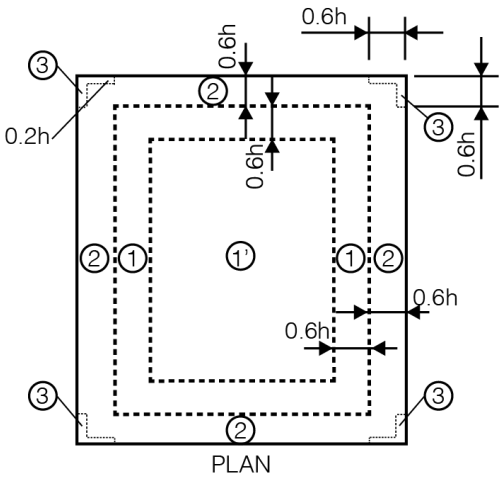
All wind pressures include a Load Factor (LF) of 1.0

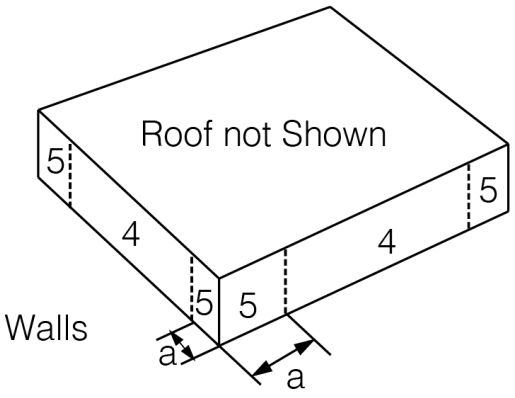
Reference	Description	Location	Start Dist ft	End Dist ft	C_p Min	C_p Max	GC_{pi}	Pressure Min psf	Pressure Max psf
Roof	Roof (0 to h/2)	All	0.000	4.391	-1.203	-0.180	+0.18/-0.18	-24.48	8.00
Roof	Roof (h/2 to h)	All	4.391	8.782	-0.749	-0.180	+0.18/-0.18	-16.63	8.00
Roof	Roof (h to 2*h)	All	8.782	10.000	-0.651	-0.180	+0.18/-0.18	-14.94	8.00

Roof Pressures based upon Ch 27 Pt1:
Start = Start Dist from Windward Edge
C_{p_min} = Smallest Coefficient Magnitude
$Press_{Min}$ = q_h•G•C_{p_min}-q_{ip}•(+GC_{pi}) Eq 27.3-1
End = End Dist from Windward Edge
C_{p_max} = Largest Coefficient Magnitude
$Press_{Max}$ = q_h•G•C_{p_max}-q_{in}•(-GC_{pi}) Eq 27.3-1

- *No reduction factor was applicable*
- *The smaller uplift pressures due to Cp_Min can become critical when wind is combined with roof live load or snow load; load combinations are given in ASCE 7*
- *Positive Pressures Act TOWARD Surface and Negative Pressures Act AWAY from Surface*

Components and Cladding (C&C) Wind Loads per Ch 30 Part 1 Roof & Wall





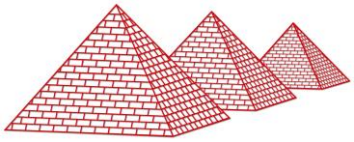
h/W	=	Ratio of mean roof height to building width	=	1.098
h/L	=	Ratio of mean roof height to building length	=	0.878
h	=	Mean structure height	=	8.782 ft
h_{grade}	=	Elevation from Grade to Top of Structure	=	8.782 ft
K_h	=	2.01•(15/Z_g)$^{2/\alpha}$[Tbl 26.10-1]	=	0.849
K_{zt}	=	No Topographic feature specified	=	1.000
K_d	=	Wind Directionality Factor per Tbl 26.6-1	=	0.85
+GC_{pi}	=	Enclosed Positive Internal Pressure Tbl 26.13-1	=	+0.18
-GC_{pi}	=	Enclosed Negative Internal Pressure Tbl 26.13-1	=	-0.18

LF	=	Load Factor based upon STRENGTH Design	=	1.00
K_e	=	Ground Elev Factor [Tbl 26.9-1]	=	1.000
q_h	=	$0.00256 \cdot K_h \cdot K_{zt} \cdot K_d \cdot K_e \cdot V^2 * LF$ [Eq 26.10-1]	=	20.37 psf
LHD	=	Least Horizontal Dimension: Min(B, L)	=	8.000 ft
a_1	=	$\text{Min}(0.1 \cdot LHD, 0.4 \cdot h)$	=	0.800 ft
a	=	$\text{Max}(a_1, 0.04 \cdot LHD, 3 \text{ ft } [0.9 \text{ m}])$	=	3.000 ft
h/B	=	Ratio of mean roof height to least horizontal dim: h/B	=	1.098
0.2*h	=	Parameter used to define Zone 3	=	1.756 ft
0.6*h	=	Parameter used to define Zones 1 and 2	=	5.269 ft

Wind Pressures for C&C Ch 30 Pt 1 Roof & Wall
All wind pressures include a Load Factor (LF) of 1.0

Description	Zone	Width ft	Span ft	Area ft^2	1/3 Rule	Figure	GCp Max	GCp Min	p Max psf	p Min psf
DOOR	4	6.000	7.500	45.00	No	30.3-1	0.796	-0.886	19.88	-21.71

Area = Span Length x Effective Width
1/3 Rule = Effective width need not be less than 1/3 of the span length
GCp = External Pressure Coefficients taken from Figures 30.3-1 through 30.3-7
p = Wind Pressure: $q_h \cdot [GC_p - GC_{pi}]$ [[Eq 30.3-1]]
** Per § 30.2.2 the Minimum Pressure for C&C is 16.00 psf [0.766 kPa] {Includes LF}*
Since Roof Slope= 10°, the Wall GCp values for Zone 4 & 5 are reduced by 10%



SNOW LOAD DATA

250-A Main Street
Klamath Falls, OR. 97601
E-Mail: info@structure1.com
Web: www.structure1.com
ph. (541) 850-6300
fax (541) 850-6233

Routt County Addresses

Date Updated	November 15 2021
Full Address	38600 MAIN ST
Address PIN	938151001
Postal Community Name	MILNER
State	CO
Status	CURRENT
Zipcode	80487

North Routt Snow Load - High Res

Snowload: 76.82 psf

ASCE 7-16 SNOW LOAD

Sheet # 1

FLAT ROOF

Date April-08-2024

PROJECT NUMBER: AQUAWORKS DBO - 224-2002

DESIGNER: AYPN

ELEVATION REVIEWED BY: MRD

LOCATION (STATE): CO

P_s : Sloped roof snow load (PSF)

C_S : Slope factor [ASCE 7-16, Fig 7-2]

P_f : Flat roof snow load (PSF)

C_e : Exposure factor [ASCE 7-16, Table 7-2]

C_t : Thermal factor [ASCE 7-16 Table 7-3]

I : Snow load importance factor [ASCE 7-16, Table 1.5-2]

P_g : Ground snow load

δ: Density of snow

h_d: Drift Height [ASCE 7-16, Fig 7-9, l_u=W from windward side]

S: roof slope = NIL

1 Enter values from Code

76.82 Calculated Values

1) Flat Roof Snow Load

$P_f = 0.7 \times C_e \times C_t \times I \times P_g$ [ASCE 7-16, Eq 7.3-1]

I = 1.0

P_g = 76.82

	Cat.	Exposure
C_e =	C-PartiallyExposed	1

C_t = 1

P_f = **53.8** (PSF)

2) Sloped Roof Snow Load (Upper Roof)

$P_s = C_S \times P_f$ [ASCE-7-16, Eq 7.4-1]

Roof slope = 0 / 12 = 0.0 °

Is roof unobstructed and slippery? N/A (choose N/A if unknown)

Is roof ventilated? No (ignore if Thermal Factor, Ct is 1.1, 1.2, or 1.3; choose N/A if unknown)

Roof R-Value N/A ft^2 hr °F/Btu (ignore if Thermal Factor, Ct is 1.1, 1.2, or 1.3; choose N/A if unknown)

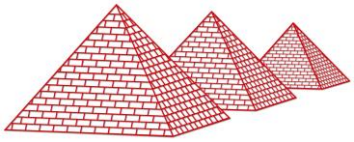
Figure: **7-2a** [ASCE 7-16, Fig. 7-2]

Line: **Solid** [ASCE 7-16, Fig. 7-2]

C_s = **1.000** [ASCE 7-16, Fig. 7-2]

P_s = **53.8** (PSF)

FOR CONSERVATIVE SIDE, THE FLAT ROOF SNOW LOAD WAS TAKEN AS 80 PSF



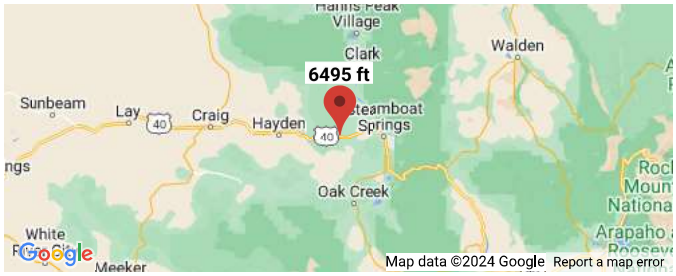
SEISMIC DATA

250-A Main Street
Klamath Falls, OR. 97601
E-Mail: info@structure1.com
Web: www.structure1.com
ph. (541) 850-6300
fax (541) 850-6233

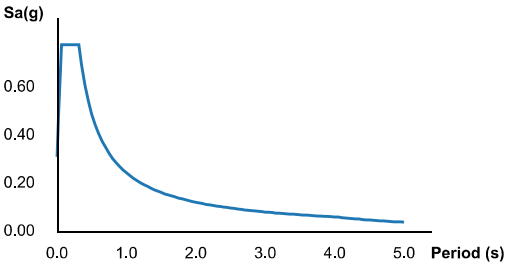
Hazards by Location

Search Information

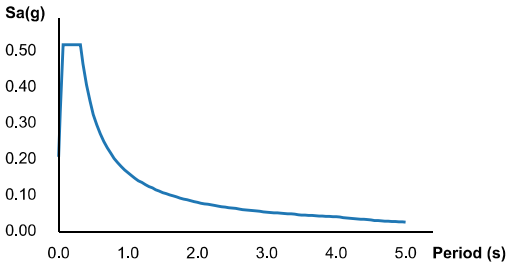
Address:	38600 Main st, Milner co 80487
Coordinates:	40.4806125, -107.0200923
Elevation:	6495 ft
Timestamp:	2024-04-08T08:03:42.368Z
Hazard Type:	Seismic
Reference Document:	ASCE7-16
Risk Category:	II
Site Class:	D-default



MCER Horizontal Response Spectrum



Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
S_S	0.582	MCE_R ground motion (period=0.2s)
S_1	0.102	MCE_R ground motion (period=1.0s)
S_{MS}	0.777	Site-modified spectral acceleration value
S_{M1}	0.244	Site-modified spectral acceleration value
S_{DS}	0.518	Numeric seismic design value at 0.2s SA
S_{D1}	0.163	Numeric seismic design value at 1.0s SA

Additional Information

Name	Value	Description
SDC	D	Seismic design category
F_a	1.334	Site amplification factor at 0.2s
F_v	2.396	Site amplification factor at 1.0s
CR_S	0.909	Coefficient of risk (0.2s)
CR_1	0.945	Coefficient of risk (1.0s)
PGA	0.406	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.487	Site modified peak ground acceleration
T_L	4	Long-period transition period (s)
SsRT	0.582	Probabilistic risk-targeted ground motion (0.2s)
SsUH	0.641	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.5	Factored deterministic acceleration value (0.2s)
S1RT	0.102	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.108	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.6	Factored deterministic acceleration value (1.0s)

PGAd	0.5	Factored deterministic acceleration value (PGA)

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Please note that the ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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Designer must input values into Orange boxes

ASCE 7-16 (2018 & 2021 IBC) SEISMIC DESIGN

Last updated July 4th, 2023 by Caleb Sale

EQUIVALENT LATERAL FORCE PROCEDURE

JOB NUMBER AQUA WORKS 224-2002

DESIGNER AYPN

Design Information

DATA	VALUE	SOURCE
Site Class	D-Default	Site conditions, geotech report
S_s=	0.582	Seismic Design Parameters (Software)
S_1=	0.102	Seismic Design Parameters (Software)
S_{MS}=	0.777	Seismic Design Parameters (Calculated)
S_{M1}=	0.244	Seismic Design Parameters (Calculated)
I_E	1.0	ASCE 7-16 Table 1.5-2
Risk Category	2	ASCE 7-16 Table 1.5-1
R	2	ASCE 7-16 Table 12.2-1
h_n	9	Height per ASCE 7-16
C_t	0.02	ASCE 7-16 Table 12.8-2
T_L	4	Long-period Transition period (Software)
Diaphragm	Flexible	Rigid or Flexible
L	10	Maximum distance between LFRS Elements

S_{MS}: Max considered spectral response acceleration for short periods

S_{M1}: Max considered spectral response acceleration for 1-second period

I_E : Seismic importance factor

R: Response modification factor

1) Design spectral response acceleration

S_{DS}: 5% Damped spectral response acceleration at short periods

S_{D1}: 5% Damped spectral response acceleration at 1 second period

$S_{DS}=2/3(S_{ms})$ $S_{DS}=$ 2/3 X 0.776621 $S_{DS}=$ 0.518 [ASCE 7-16 Eq. 11.4-3]

$S_{D1}=2/3(S_{m1})$ $S_{D1}=$ 2/3 X 0.244392 $S_{D1}=$ 0.163 [ASCE 7-16 Eq. 11.4-4]

2) Seismic design category

11.6 EXCEPTIONS:

ALL MUST BE MET TO USE EXCEPTION

1: $T_a < 0.8T_s$ MET

2: T<Ts for Story Drift MET

3: Eq 12.8-2 Used for C_s MET

4: Diaphragm is Rigid or Flexible W/ L<40' MET

From Table 11.6-1 ASCE 7-16 = D

From Table 11.6-2 ASCE 7-16 = C

Governing Design D

Note: S1<0.75 AND all exceptions of ASCE 7-16 11.6 are met, SDC is permitted to be determined from Table 11.6-1 alone. IRC table 302.2.1.1 is equivalent to IBC Table 11.6-1 for alternate SDC Determination

3) Determine design base shear (V)

A. ASCE 7-16, 11.4.8 Exception

Ts= 0.3146864

$T = T_a = C_t (h_n^x)$ [ASCE 7-16, 12.8.2.1, Eq. 12.8-7]

T_a : Approximate Fundamental Period

$T= 0.020 \times 9^{0.75}$ T= 0.104

For Site Class D/D-Default: T is < 1.5 Ts

For site class D/-default Cs shall be calculated per Eq. 12.8-2

Equivalent Force Procedure [ASCE 7-16, 12.8.1] $V= C_s \times W$

C_s : Seismic Response Coefficient

W : Total dead load and other applicable loads

B. [ASCE 7-16, 12.8.1.1, Eq. 12.8-2]

$C_S = \frac{S_{DS}}{R / I}$ $C_S = \frac{0.518}{2} 1.0$ $C_S=$ 0.259

C. Nor greater than

$C_S = \frac{S_{D1}}{T (R / I)}$ [ASCE 7-16, 12.8.1.1, Eq. 12.8-3] **OR** $C_S = \frac{S_{D1} * T_L}{T^2 (R / I)}$ [ASCE 7-16, 12.8.1.1, Eq. 12.8-4]

$C_S = \frac{0.163 \times 1}{0.104 \times 2}$ $C_S = \frac{0.163 \times 4 \times 1}{0.011 \times 2}$

$C_S=$ 0.784 $C_S=$ 30.17

D. Nor less than [ASCE 7-16, 12.8.1.1, Eq. 12.8-5]

$C_S = 0.044 (S_{DS}) (I)$ $C_S = 0.044 \times 0.518 \times 1$ $C_S=$ 0.02278

Governing C_s = 0.259

V= Cs x W V = 0.259 X W Refer to sheet two for W and Calculated V

WEIGHTS AND VERTICLE DISTRIBUTION PG 2

Note: Designer must input values into RED boxes (use zero if no entry)

IBC SEISMIC DESIGN

VERTICAL FORCE DISTRIBUTION EQUIVALENT LATERAL FORCE PROCEDURE

JOB NUMBER AQUA WORKS 224-2002

DESIGNER AYPN

1. Determine dead load at each level of building.

Structural portion		DL (PSF)	Area (SF)	Length (FT)	Height (FT)	Total Weight (LB)
a) Roof	Diaphram elevation from the base level in ft				9	
	Roof	20	80	NA	NA	1600
	Misc.	0	0	0	0	0
	Misc. (LBS)	0	NA	NA	NA	0
c) 5th floor	Diaphram elevation from the base level in ft				0	
	Ext. Walls	15	NA	0	0	0
	Int. Walls	10	NA	0	0	0
	Floor	15	0	NA	NA	0
	Misc.	0	0	0	0	0
	Misc. (LBS)	0	NA	NA	NA	0
d) 4th floor	Diaphram elevation from the base level in ft				0	
	Ext. Walls	15	NA	0	0	0
	Int. Walls	10	NA	0	0	0
	Floor	15	0	NA	NA	0
	Misc.	0	0	0	0	0
	Misc. (LBS)	0	NA	NA	NA	0
e) 3rd floor	Diaphram elevation from the base level in ft				0	
	Ext. Walls	15	NA	0	0	0
	Int. Walls	10	NA	0	0	0
	Floor	15	0	NA	NA	0
	Misc.	0	0	0	0	0
	Misc. (LBS)	0	NA	NA	NA	0
f) 2nd floor	Diaphram elevation from the base level in ft				0	
	Ext. Walls	15	NA	0	0	0
	Int. Walls	10	NA	0	0	0
	Floor	15	0	NA	NA	0
	Misc.	15	0	1	1	0
	Misc. (LBS)	0	NA	NA	NA	0
g) 1st floor	Ext. Walls	15	NA	36	9	4860
	Int. Walls	10	NA	0	0	0
	Misc.	0	0	0	0	0
				TOTAL DEAD LOAD (LB) =		6460

2) Determine verticle force distribution at each level ASCE 7-16 12.8.3

$F_x = C_{vx} \times V$ ASCE 7-16 Eq. 12.8-11

$$C_{vx} = \frac{w_x h_x^k}{\sum w_i h_i^k}$$ ASCE 7-16 Eq. 12.8-12

F_x: Lateral seismic force at any level

V: Seismic base shear (Kips)

w_x & w_i : The portion of the total gravity load of the structure (W) located or assigned to level i or x

h_x & h_x: The height (ft) from the base to level i or x diaphram.

k : An exponent related to the structures period (T) as follows;

T ≤ 0.5 sec k = 1 T ≥ 2.5 sec k = 2 0.5 ≤ T ≤ 2.5 Interpolate between 1 & 2

Refer to sheet one for V

V = 0.09 X W V = 0.09 X 6460 V= 0.579 (kips) T= 0.1039 k= 1

Level (floor)	Wall Height (ft)	Diaphram Height (Ft)	W_x (kips)	$W_x*h_x^k$	C_{vx}	F_x (kips)	Allowable F_x (kips)
Roof	9	9	4.030	36	1.000	0.58	0.41
5	0	0	0.000	0	0.000	0	0.00
4	0	0	0.000	0	0.000	0	0.00
3	0	0	0.000	0	0.000	0	0.00
2	0	0	0.000	0	0.000	0.00	0.00
			4.030	36	1.000	0.58	0.4

Note: The Total Shear shown in the right hand column is an "allowable" load.

BASE SHEAR CALC. PG 1

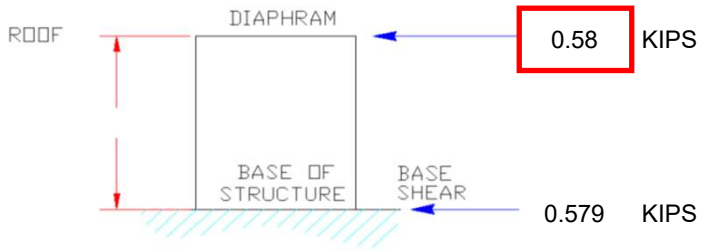
VIEW LOADS PG 3

IBC SEISMIC DESIGN

VERTICLE FORCE DISTRIBUTION EQUIVALENT LATERAL FORCE PROCEDURE

JOB NUMBER AQUA WORKS 224-2004

DESIGNER AYPN



VIEW PG 1 VIEW PG 2

Pages 118 – 199 RESERVED FOR FUTURE USE

250-A Main Street
Klamath Falls, OR. 97601
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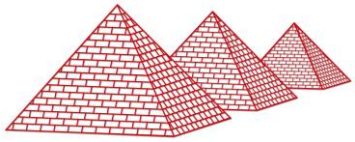
ph. (541) 850-6300
fax (541) 850-6233

SCREEN BUILDING FRAMING ANALYSIS

& DESIGN:

Pages 1,000 - 1,999



RISA 3D MODEL

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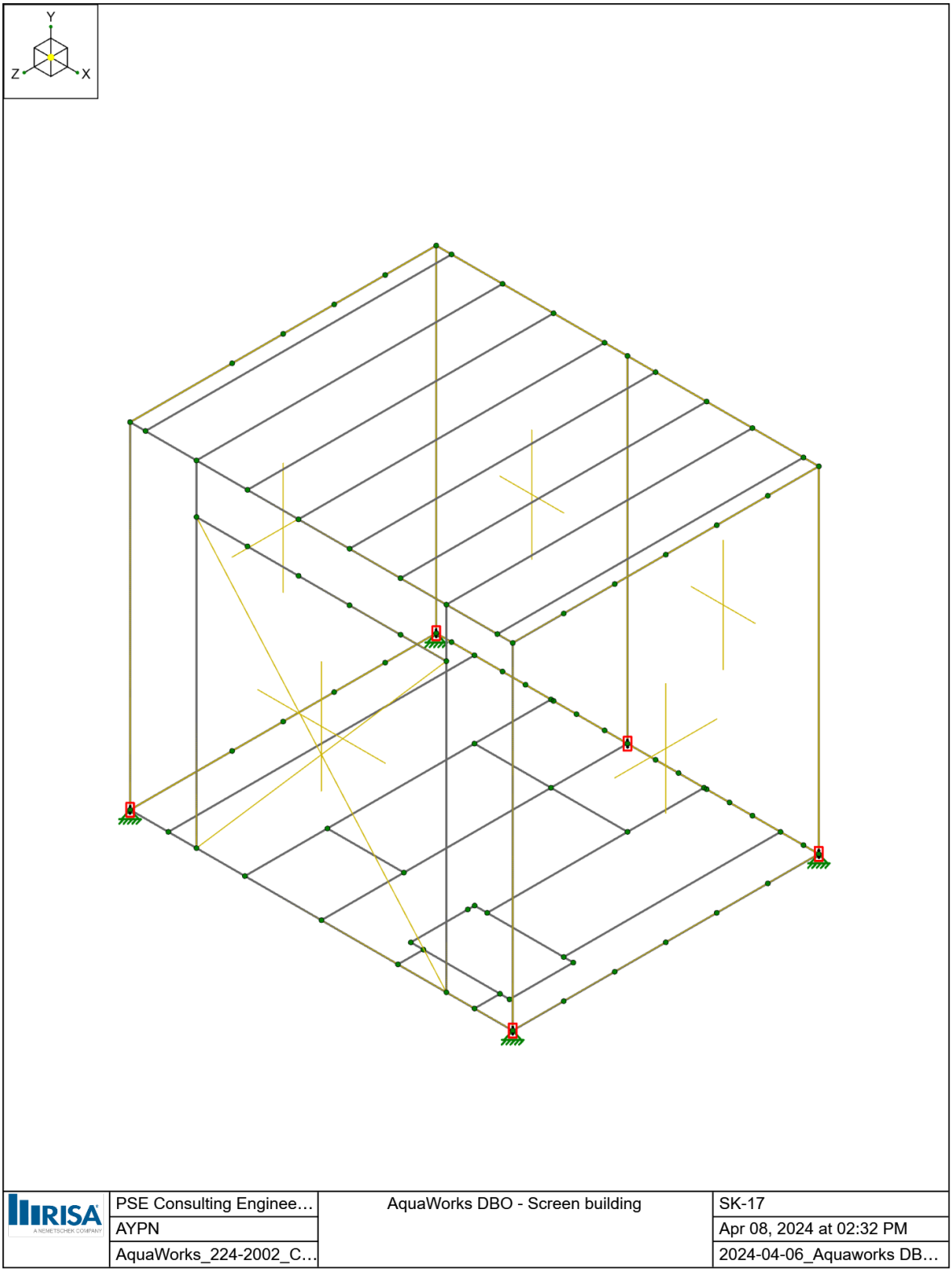

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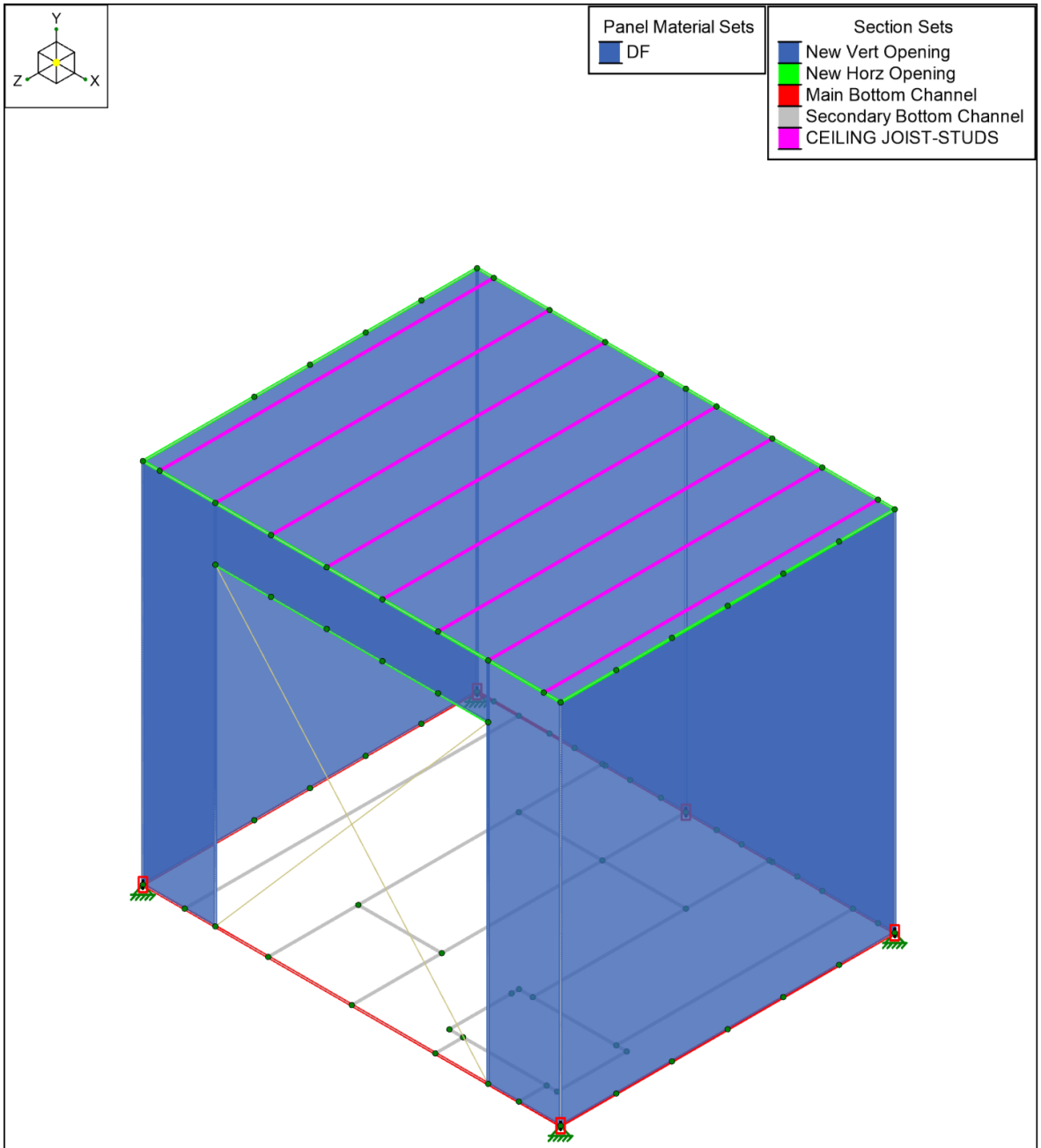

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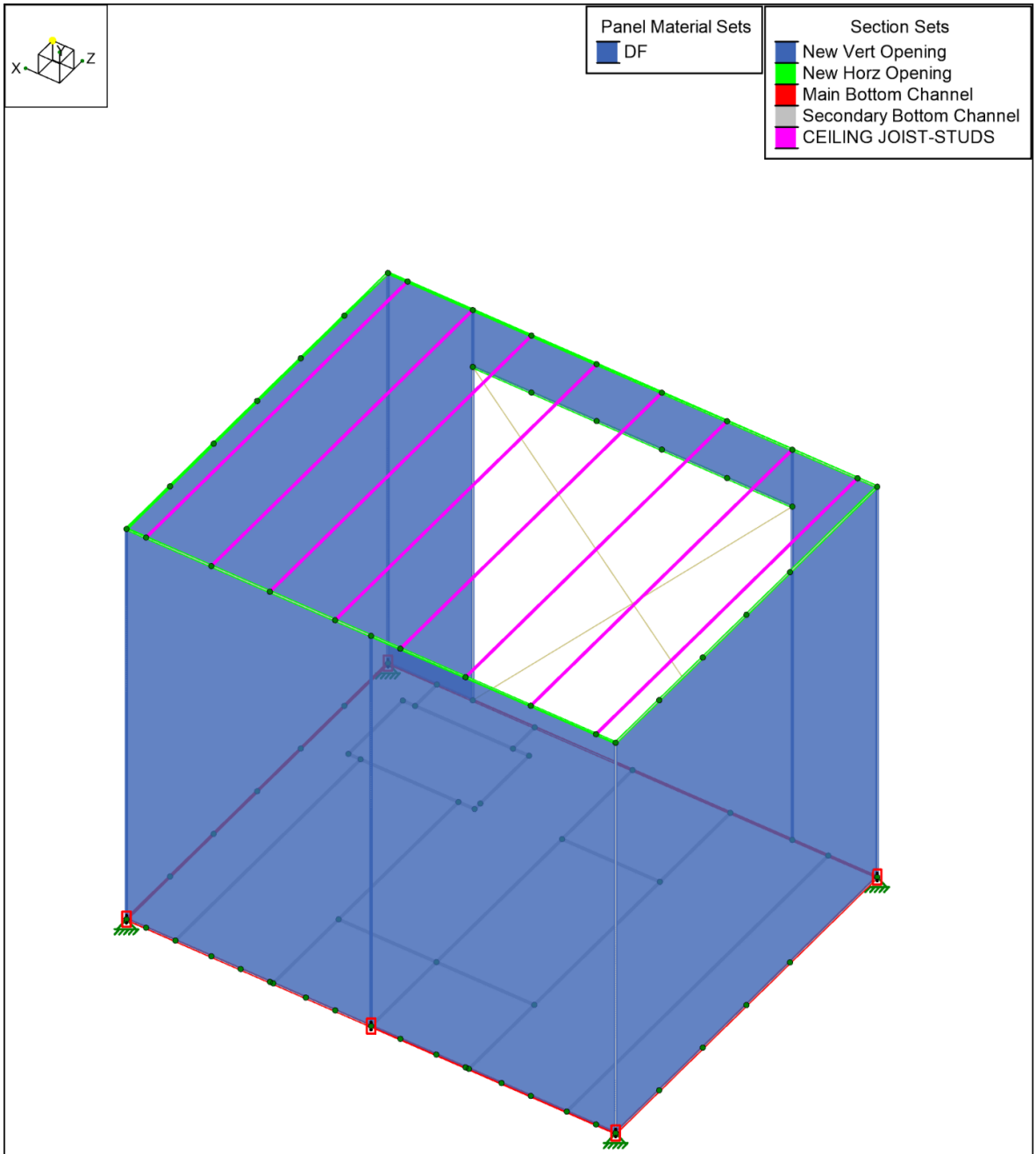

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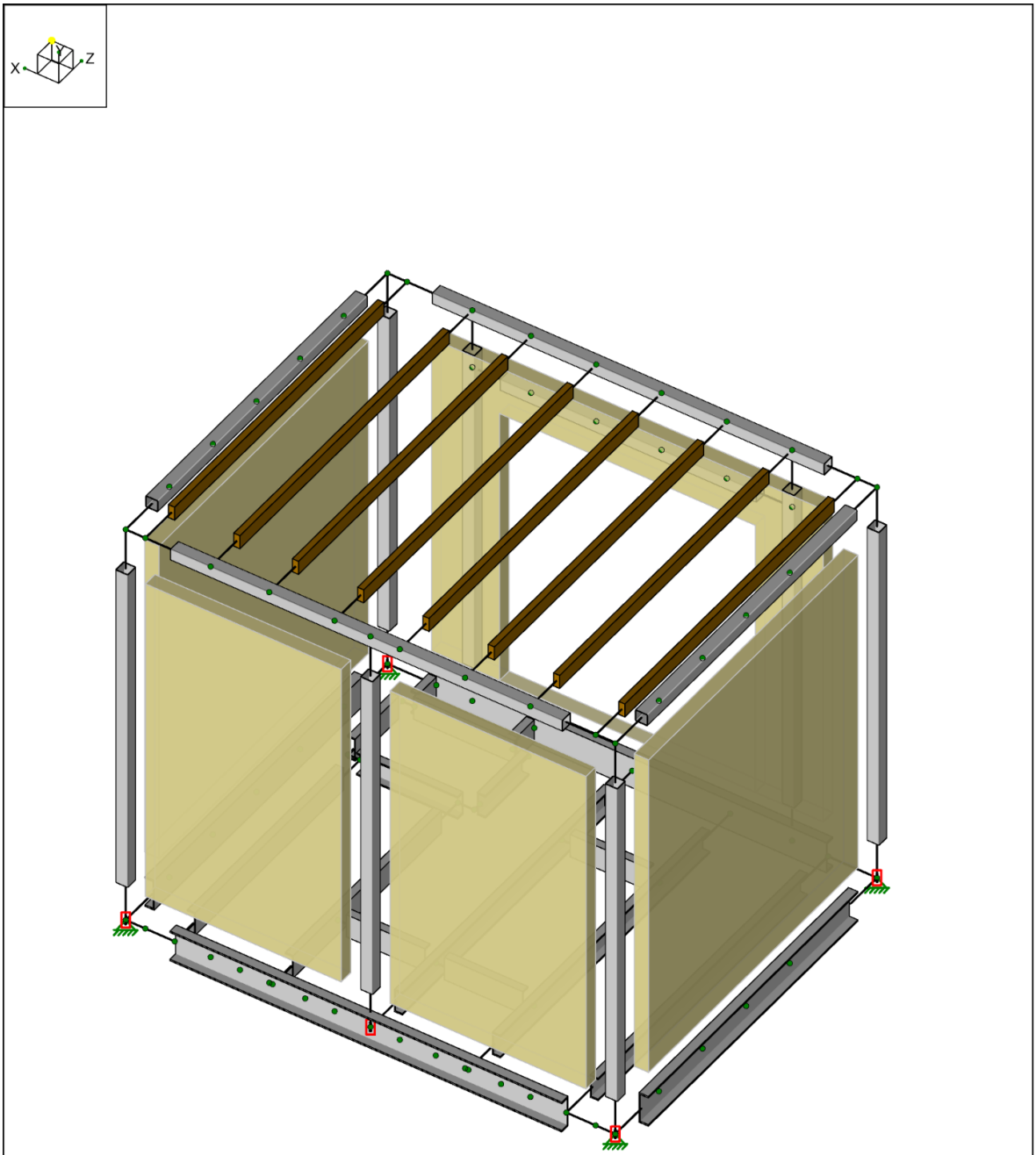

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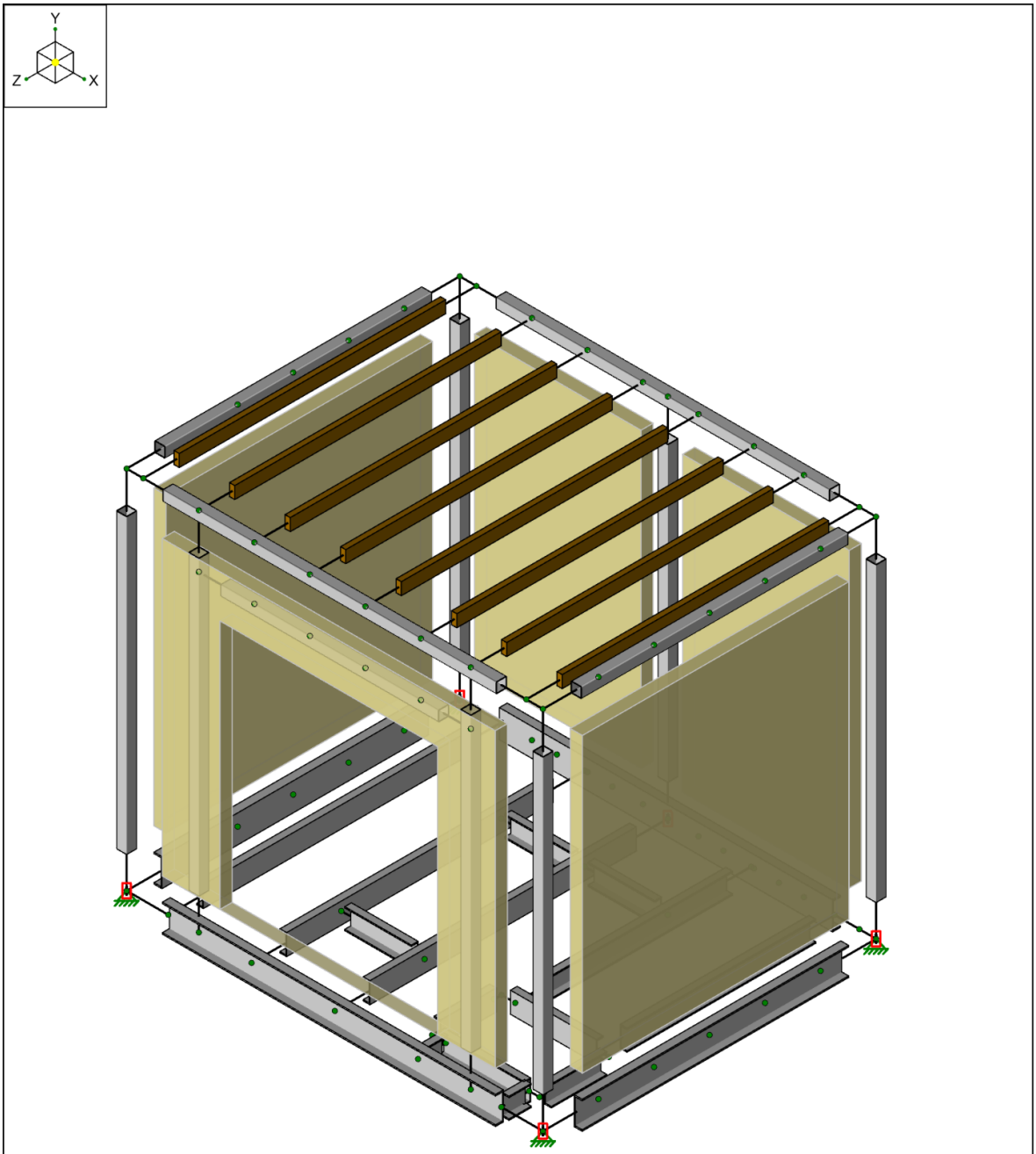

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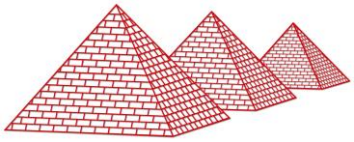

INPUTS - RISA DESIGN DATA

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Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]
1	N44	Reaction	Reaction	Reaction
2	N45	Reaction	Reaction	Reaction
3	N46	Reaction	Reaction	Reaction
4	N47	Reaction	Reaction	Reaction

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
3	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.C RND	29000	11154	0.3	0.65	0.527	46	1.4	62	1.3
5	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
6	A500 Gr.C Rect	29000	11154	0.3	0.65	0.527	50	1.4	62	1.3
7	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
8	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
9	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
10	Ship Cont. W FS	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
11	Corten A (A242)	29000	11154	0.3	0.65	0.49	50	1.4	70	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	New Vert Opening	HSS3X3X2	Column	None	A1085	Typical	1.3	1.78	1.78	2.84
2	New Horz Opening	HSS3X3X2	Beam	None	A1085	Typical	1.3	1.78	1.78	2.84
3	Main Bottom Channel	C8X11.5	Column	None	A36 Gr.36	Typical	3.37	1.31	32.5	0.13
4	Secondary Bottom Channel	C6X8.2	Beam	None	A36 Gr.36	Typical	2.39	0.687	13.1	0.074

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	Lcomp top [ft]	Lcomp bot [ft]	L-Torque [ft]	Channel Conn.	a [ft]	Function
1	M31	Main Bottom Channel	8			Lbyy			N/A	N/A	Lateral
2	M32	Main Bottom Channel	10			Lbyy			N/A	N/A	Lateral
3	M33	Main Bottom Channel	8			Lbyy			N/A	N/A	Lateral
4	M34	Main Bottom Channel	10			Lbyy			N/A	N/A	Lateral
5	M35	New Vert Opening	8.78			Lbyy			N/A	N/A	Lateral
6	M36	New Vert Opening	8.78			Lbyy			N/A	N/A	Lateral
7	M37	New Vert Opening	8.78			Lbyy			N/A	N/A	Lateral
8	M38	New Vert Opening	8.78			Lbyy			N/A	N/A	Lateral
9	M39	New Horz Opening	8			Lbyy			N/A	N/A	Lateral
10	M40	New Horz Opening	10			Lbyy			N/A	N/A	Lateral
11	M41	New Horz Opening	8			Lbyy			N/A	N/A	Lateral
12	M42	New Horz Opening	10			Lbyy			N/A	N/A	Lateral
13	M43	New Vert Opening	8.78			Lbyy			N/A	N/A	Lateral
14	M44	New Vert Opening	8.78			Lbyy			N/A	N/A	Lateral
15	M45	New Vert Opening	8.78			Lbyy			N/A	N/A	Lateral
16	M46	Secondary Bottom Channel	5.667			Lbyy			N/A	N/A	Lateral
17	M47	Secondary Bottom Channel	5.667			Lbyy			N/A	N/A	Lateral
18	M48	Secondary Bottom Channel	8			Lbyy			N/A	N/A	Lateral
19	M49	Secondary Bottom Channel	8			Lbyy			N/A	N/A	Lateral
20	M50	Secondary Bottom Channel	8			Lbyy			N/A	N/A	Lateral
21	M51	Secondary Bottom Channel	2			Lbyy			N/A	N/A	Lateral
22	M52	Secondary Bottom Channel	2			Lbyy			N/A	N/A	Lateral
23	M53	Secondary Bottom Channel	2			Lbyy			N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	Lcomp top [ft]	Lcomp bot [ft]	L-Torque [ft]	Channel Conn.	a [ft]	Function
24	M55	Secondary Bottom Channel	1.667				1		N/A	N/A	Lateral
25	M56	Secondary Bottom Channel	2.58	2	2	Lbyy	Lbyy	2	N/A	N/A	Lateral
26	M57	Secondary Bottom Channel	1.667			Lbyy			N/A	N/A	Lateral
27	M58	Secondary Bottom Channel	2.58			Lbyy			N/A	N/A	Lateral
28	M59	Secondary Bottom Channel	0.667			Lbyy			N/A	N/A	Lateral
29	M60	Secondary Bottom Channel	0.667			Lbyy			N/A	N/A	Lateral
30	M77	New Horz Opening	6.531			Lbyy			N/A	N/A	Lateral

Design Size and Code Check Parameters

	Label	Max Axial/Bending Chk	Max Shear Chk
1	Typical	1	1

Wood Properties

	Label	Type	Database	Species	Grade	Cm	Ci	Emod	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]
1	DF	Solid Sawn	Visually Graded	Douglas Fir-Larch	No.2			1	0.3	0.3	0.035
2	SP	Solid Sawn	Visually Graded	Southern Pine	No.2			1	0.3	0.3	0.035
3	HF	Solid Sawn	Visually Graded	Hem-Fir	No.2			1	0.3	0.3	0.035
4	SPF	Solid Sawn	Visually Graded	Spruce-Pine-fir	Standard			1	0.3	0.3	0.035
5	24F-1.8E DF Balanced	Glulam	NDS Table 5A	24F-1.8E_DF_BAL	na			1	0.3	0.3	0.035
6	24F-1.8E DF Unbalanced	Glulam	NDS Table 5A	24F-1.8E_DF_UNBAL	na			1	0.3	0.3	0.035
7	24F-1.8E SP Balanced	Glulam	NDS Table 5A	24F-1.8E_SP_BAL	na			1	0.3	0.3	0.035
8	24F-1.8E SP Unbalanced	Glulam	NDS Table 5A	24F-1.8E_SP_UNBAL	na			1	0.3	0.3	0.035

Wood Section Sets

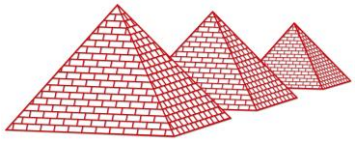
	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	VERTICAL STUDS	2X4	Column	Rectangular	DF	Typical	5.25	0.984	5.359	2.877
2	CEILING JOIST-STUDS	2X4	Beam	Rectangular	DF	Typical	5.25	0.984	5.359	2.877

Wood Design Parameters

	Label	Shape	Length [ft]	le2 [ft]	le-bend bot [ft]	Cr	y sway	z sway
1	M90	CEILING JOIST-STUDS	8	4	1			
2	M91	CEILING JOIST-STUDS	8	4	1			
3	M92	CEILING JOIST-STUDS	8	4	1			
4	M93	CEILING JOIST-STUDS	8	4	1			
5	M94	CEILING JOIST-STUDS	8	4	1			
6	M95	CEILING JOIST-STUDS	8	4	1			
7	M96	CEILING JOIST-STUDS	8	4	1			
8	M97	CEILING JOIST-STUDS	8	4	1			

Wall Panel Data

	Label	A Node	B Node	C Node	D Node	Material Type	Material Set	Thickness [in]	Design Rule	Panel/Spacing
1	WP1	N47	N51	N49	N45	Wood	DF	3.5 (stud)	Typical	S1_5/16_6d@6 | 16
2	WP2	N45	N49	N53	N52	Wood	DF	3.5 (stud)	Typical	S1_5/16_6d@6 | 16
3	WP3	N52	N53	N48	N44	Wood	DF	3.5 (stud)	Typical	S1_5/16_6d@6 | 16
4	WP4	N46	N50	N48	N44	Wood	DF	3.5 (stud)	Typical	S1_5/16_6d@6 | 16
5	WP5	N46	N50	N51	N47	Wood	DF	3.5 (stud)	Typical	S1_5/16_6d@6 | 16



INPUTS - RISA LOAD DATA

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Basic Load Cases

	BLC Description	Category	Y Gravity	Distributed	Area(Member)
1	Dead Load	DL	-1		2
2	Live Load	LL			1
3	Snow Load	SL			1
4	WL+X (+GCpi - Normal to Ridge)	WL+X			5
5	WL-X (-GCpi Normal to Ridge)	WL-X			5
6	WL+Z (+GCpi Parallel to Ridge)	WL+Z			5
7	WL-Z (-GCpi Parallel to Ridge)	WL-Z			5
8	ELX	ELX		2	
9	ELZ	ELZ		2	
10	BLC 1 Transient Area Loads	None		105	
11	BLC 2 Transient Area Loads	None		55	
12	BLC 3 Transient Area Loads	None		50	
13	BLC 4 Transient Area Loads	None		71	
14	BLC 5 Transient Area Loads	None		71	
15	BLC 6 Transient Area Loads	None		71	
16	BLC 7 Transient Area Loads	None		71	

Member Area Loads (BLC 1 : Dead Load)

	Node A	Node B	Node C	Node D	Direction	Load Direction	A Magnitude [psf]	B Magnitude [psf]	C Magnitude [psf]	D Magnitude [psf]	Exclude Braces
1	N47	N46	N44	N45	Y	A-B	-15	-15	-15	-15	Yes
2	N51	N50	N48	N49	Y	A-B	-20	-20	-20	-20	Yes

Member Area Loads (BLC 2 : Live Load)

	Node A	Node B	Node C	Node D	Direction	Load Direction	A Magnitude [psf]	B Magnitude [psf]	C Magnitude [psf]	D Magnitude [psf]	Exclude Braces
1	N47	N46	N44	N45	Y	A-B	-40	-40	-40	-40	Yes

Member Area Loads (BLC 3 : Snow Load)

	Node A	Node B	Node C	Node D	Direction	Load Direction	A Magnitude [psf]	B Magnitude [psf]	C Magnitude [psf]	D Magnitude [psf]	Exclude Braces
1	N50	N48	N49	N51	Y	B-C	-80	-80	-80	-80	Yes

Member Area Loads (BLC 4 : WL+X (+GCpi - Normal to Ridge))

	Node A	Node B	Node C	Node D	Direction	Load Direction	A Magnitude [psf]	B Magnitude [psf]	C Magnitude [psf]	D Magnitude [psf]	Exclude Braces
1	N46	N44	N48	N50	X	B-C	10.18	10.18	10.18	10.18	Yes
2	N47	N45	N49	N51	X	B-C	12.32	12.32	12.32	12.32	Yes
3	N47	N46	N50	N51	Z	B-C	15.78	15.78	15.78	15.78	Yes
4	N45	N44	N48	N49	Z	B-C	-15.78	-15.78	-15.78	-15.78	Yes
5	N50	N51	N49	N48	Y	A-B	26.17	26.17	26.17	26.17	Yes

Member Area Loads (BLC 5 : WL-X (-GCpi Normal to Ridge))

	Node A	Node B	Node C	Node D	Direction	Load Direction	A Magnitude [psf]	B Magnitude [psf]	C Magnitude [psf]	D Magnitude [psf]	Exclude Braces
1	N46	N44	N48	N50	X	B-C	17.51	17.51	17.51	17.51	Yes
2	N47	N45	N49	N51	X	B-C	4.99	4.99	4.99	4.99	Yes
3	N47	N46	N50	N51	Z	B-C	8.45	8.45	8.45	8.45	Yes
4	N45	N44	N48	N49	Z	B-C	-8.45	-8.45	-8.45	-8.45	Yes
5	N50	N51	N49	N48	Y	A-B	26.17	26.17	26.17	26.17	Yes

Member Area Loads (BLC 6 : WL+Z (+GCpi Parallel to Ridge))

	Node A	Node B	Node C	Node D	Direction	Load Direction	A Magnitude [psf]	B Magnitude [psf]	C Magnitude [psf]	D Magnitude [psf]	Exclude Braces
1	N46	N44	N48	N50	X	B-C	-15.78	-15.78	-15.78	-15.78	Yes
2	N47	N45	N49	N51	X	B-C	15.78	15.78	15.78	15.78	Yes
3	N47	N46	N50	N51	Z	B-C	-10.18	-10.18	-10.18	-10.18	Yes
4	N45	N44	N48	N49	Z	B-C	-11.46	-11.46	-11.46	-11.46	Yes
5	N50	N51	N49	N48	Y	A-B	24.48	24.48	24.48	24.48	Yes

Member Area Loads (BLC 7 : WL-Z (-GCpi Parallel to Ridge))

	Node A	Node B	Node C	Node D	Direction	Load Direction	A Magnitude [psf]	B Magnitude [psf]	C Magnitude [psf]	D Magnitude [psf]	Exclude Braces
1	N46	N44	N48	N50	X	B-C	-8.45	-8.45	-8.45	-8.45	Yes
2	N47	N45	N49	N51	X	B-C	8.45	8.45	8.45	8.45	Yes
3	N47	N46	N50	N51	Z	B-C	-17.51	-17.51	-17.51	-17.51	Yes
4	N45	N44	N48	N49	Z	B-C	-4.12	-4.12	-4.12	-4.12	Yes
5	N50	N51	N49	N48	Y	A-B	24.48	24.48	24.48	24.48	Yes

Member Distributed Loads (BLC 8 : ELX)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M39	X	0.036	0.036	0	%100
2	M41	X	0.036	0.036	0	%100

Member Distributed Loads (BLC 9 : ELZ)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M40	Z	0.029	0.029	0	%100
2	M42	Z	0.029	0.029	0	%100

Member Distributed Loads (BLC 10 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M31	Y	-0.005	-0.007	0	1.6
2	M31	Y	-0.007	-0.009	1.6	3.2
3	M31	Y	-0.009	-0.009	3.2	4.8
4	M31	Y	-0.009	-0.007	4.8	6.4
5	M31	Y	-0.007	-0.005	6.4	8
6	M33	Y	-0.01	-0.008	0	1.6
7	M33	Y	-0.008	-0.007	1.6	3.2
8	M33	Y	-0.007	-0.007	3.2	4.8
9	M33	Y	-0.007	-0.006	4.8	6.4
10	M33	Y	-0.006	-0.007	6.4	8
11	M46	Y	-0.018	-0.023	0	1.133
12	M46	Y	-0.023	-0.022	1.133	2.267
13	M46	Y	-0.022	-0.02	2.267	3.4
14	M46	Y	-0.02	-0.023	3.4	4.533
15	M46	Y	-0.023	-0.024	4.533	5.667
16	M47	Y	-0.026	-0.029	0	1.133
17	M47	Y	-0.029	-0.031	1.133	2.267
18	M47	Y	-0.031	-0.033	2.267	3.4
19	M47	Y	-0.033	-0.033	3.4	4.533
20	M47	Y	-0.033	-0.031	4.533	5.667
21	M48	Y	-0.032	-0.028	0	1.6
22	M48	Y	-0.028	-0.033	1.6	3.2
23	M48	Y	-0.033	-0.033	3.2	4.8

Member Distributed Loads (BLC 10 : BLC 1 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
24	M48	Y	-0.033	-0.031	4.8	6.4
25	M48	Y	-0.031	-0.039	6.4	8
26	M49	Y	-0.016	-0.023	0	1.6
27	M49	Y	-0.023	-0.027	1.6	3.2
28	M49	Y	-0.027	-0.021	3.2	4.8
29	M49	Y	-0.021	-0.018	4.8	6.4
30	M49	Y	-0.018	-0.025	6.4	8
31	M50	Y	-0.026	-0.025	0	1.6
32	M50	Y	-0.025	-0.029	1.6	3.2
33	M50	Y	-0.029	-0.024	3.2	4.8
34	M50	Y	-0.024	-0.026	4.8	6.4
35	M50	Y	-0.026	-0.048	6.4	8
36	M55	Y	-0.029	-0.029	0	0.333
37	M55	Y	-0.029	-0.031	0.333	0.667
38	M55	Y	-0.031	-0.031	0.667	1
39	M55	Y	-0.031	-0.03	1	1.333
40	M55	Y	-0.03	-0.029	1.333	1.667
41	M57	Y	-0.031	-0.023	0	0.333
42	M57	Y	-0.023	-0.026	0.333	0.667
43	M57	Y	-0.026	-0.026	0.667	1
44	M57	Y	-0.026	-0.023	1	1.333
45	M57	Y	-0.023	-0.031	1.333	1.667
46	M59	Y	-0.045	-0.024	0	0.133
47	M59	Y	-0.024	-0.024	0.133	0.267
48	M59	Y	-0.024	-0.03	0.267	0.4
49	M59	Y	-0.03	-0.032	0.4	0.533
50	M59	Y	-0.032	-0.044	0.533	0.667
51	M60	Y	-0.027	-0.018	0	0.133
52	M60	Y	-0.018	-0.019	0.133	0.267
53	M60	Y	-0.019	-0.024	0.267	0.4
54	M60	Y	-0.024	-0.023	0.4	0.533
55	M60	Y	-0.023	-0.02	0.533	0.667
56	M39	Y	-0.004	-0.004	0	1.6
57	M39	Y	-0.004	-0.004	1.6	3.2
58	M39	Y	-0.004	-0.004	3.2	4.8
59	M39	Y	-0.004	-0.004	4.8	6.4
60	M39	Y	-0.004	-0.004	6.4	8
61	M41	Y	-0.004	-0.004	0	1.6
62	M41	Y	-0.004	-0.004	1.6	3.2
63	M41	Y	-0.004	-0.004	3.2	4.8
64	M41	Y	-0.004	-0.004	4.8	6.4
65	M41	Y	-0.004	-0.004	6.4	8
66	M90	Y	-0.032	-0.022	0	1.6
67	M90	Y	-0.022	-0.025	1.6	3.2
68	M90	Y	-0.025	-0.028	3.2	4.8
69	M90	Y	-0.028	-0.026	4.8	6.4
70	M90	Y	-0.026	-0.029	6.4	8
71	M91	Y	-0.018	-0.031	0	1.6
72	M91	Y	-0.031	-0.031	1.6	3.2
73	M91	Y	-0.031	-0.026	3.2	4.8
74	M91	Y	-0.026	-0.029	4.8	6.4
75	M91	Y	-0.029	-0.029	6.4	8
76	M92	Y	-0.023	-0.029	0	1.6
77	M92	Y	-0.029	-0.027	1.6	3.2
78	M92	Y	-0.027	-0.024	3.2	4.8

Member Distributed Loads (BLC 10 : BLC 1 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
79	M92	Y	-0.024	-0.025	4.8	6.4
80	M92	Y	-0.025	-0.023	6.4	8
81	M93	Y	-0.025	-0.031	0	1.6
82	M93	Y	-0.031	-0.026	1.6	3.2
83	M93	Y	-0.026	-0.025	3.2	4.8
84	M93	Y	-0.025	-0.03	4.8	6.4
85	M93	Y	-0.03	-0.024	6.4	8
86	M94	Y	-0.016	-0.029	0	1.6
87	M94	Y	-0.029	-0.033	1.6	3.2
88	M94	Y	-0.033	-0.029	3.2	4.8
89	M94	Y	-0.029	-0.024	4.8	6.4
90	M94	Y	-0.024	-0.018	6.4	8
91	M95	Y	-0.03	-0.023	0	1.6
92	M95	Y	-0.023	-0.024	1.6	3.2
93	M95	Y	-0.024	-0.026	3.2	4.8
94	M95	Y	-0.026	-0.024	4.8	6.4
95	M95	Y	-0.024	-0.028	6.4	8
96	M96	Y	-0.013	-0.019	0	1.6
97	M96	Y	-0.019	-0.017	1.6	3.2
98	M96	Y	-0.017	-0.015	3.2	4.8
99	M96	Y	-0.015	-0.018	4.8	6.4
100	M96	Y	-0.018	-0.015	6.4	8
101	M97	Y	-0.015	-0.018	0	1.6
102	M97	Y	-0.018	-0.015	1.6	3.2
103	M97	Y	-0.015	-0.017	3.2	4.8
104	M97	Y	-0.017	-0.019	4.8	6.4
105	M97	Y	-0.019	-0.013	6.4	8

Member Distributed Loads (BLC 11 : BLC 2 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M49	Y	-0.043	-0.06	0	1.6
2	M49	Y	-0.06	-0.071	1.6	3.2
3	M49	Y	-0.071	-0.056	3.2	4.8
4	M49	Y	-0.056	-0.048	4.8	6.4
5	M49	Y	-0.048	-0.067	6.4	8
6	M50	Y	-0.07	-0.066	0	1.6
7	M50	Y	-0.066	-0.076	1.6	3.2
8	M50	Y	-0.076	-0.064	3.2	4.8
9	M50	Y	-0.064	-0.069	4.8	6.4
10	M50	Y	-0.069	-0.127	6.4	8
11	M55	Y	-0.076	-0.078	0	0.333
12	M55	Y	-0.078	-0.082	0.333	0.667
13	M55	Y	-0.082	-0.083	0.667	1
14	M55	Y	-0.083	-0.08	1	1.333
15	M55	Y	-0.08	-0.078	1.333	1.667
16	M57	Y	-0.084	-0.06	0	0.333
17	M57	Y	-0.06	-0.069	0.333	0.667
18	M57	Y	-0.069	-0.069	0.667	1
19	M57	Y	-0.069	-0.06	1	1.333
20	M57	Y	-0.06	-0.083	1.333	1.667
21	M59	Y	-0.12	-0.063	0	0.133
22	M59	Y	-0.063	-0.064	0.133	0.267
23	M59	Y	-0.064	-0.081	0.267	0.4
24	M59	Y	-0.081	-0.084	0.4	0.533
25	M59	Y	-0.084	-0.116	0.533	0.667

Member Distributed Loads (BLC 11 : BLC 2 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
26	M60	Y	-0.071	-0.047	0	0.133
27	M60	Y	-0.047	-0.049	0.133	0.267
28	M60	Y	-0.049	-0.065	0.267	0.4
29	M60	Y	-0.065	-0.061	0.4	0.533
30	M60	Y	-0.061	-0.052	0.533	0.667
31	M31	Y	-0.013	-0.019	0	1.6
32	M31	Y	-0.019	-0.024	1.6	3.2
33	M31	Y	-0.024	-0.024	3.2	4.8
34	M31	Y	-0.024	-0.019	4.8	6.4
35	M31	Y	-0.019	-0.013	6.4	8
36	M33	Y	-0.027	-0.021	0	1.6
37	M33	Y	-0.021	-0.019	1.6	3.2
38	M33	Y	-0.019	-0.019	3.2	4.8
39	M33	Y	-0.019	-0.017	4.8	6.4
40	M33	Y	-0.017	-0.019	6.4	8
41	M46	Y	-0.048	-0.061	0	1.133
42	M46	Y	-0.061	-0.057	1.133	2.267
43	M46	Y	-0.057	-0.053	2.267	3.4
44	M46	Y	-0.053	-0.061	3.4	4.533
45	M46	Y	-0.061	-0.065	4.533	5.667
46	M47	Y	-0.071	-0.077	0	1.133
47	M47	Y	-0.077	-0.083	1.133	2.267
48	M47	Y	-0.083	-0.088	2.267	3.4
49	M47	Y	-0.088	-0.087	3.4	4.533
50	M47	Y	-0.087	-0.082	4.533	5.667
51	M48	Y	-0.086	-0.074	0	1.6
52	M48	Y	-0.074	-0.087	1.6	3.2
53	M48	Y	-0.087	-0.089	3.2	4.8
54	M48	Y	-0.089	-0.082	4.8	6.4
55	M48	Y	-0.082	-0.103	6.4	8

Member Distributed Loads (BLC 12 : BLC 3 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M39	Y	-0.016	-0.017	0	1.6
2	M39	Y	-0.017	-0.015	1.6	3.2
3	M39	Y	-0.015	-0.015	3.2	4.8
4	M39	Y	-0.015	-0.017	4.8	6.4
5	M39	Y	-0.017	-0.016	6.4	8
6	M41	Y	-0.016	-0.017	0	1.6
7	M41	Y	-0.017	-0.015	1.6	3.2
8	M41	Y	-0.015	-0.015	3.2	4.8
9	M41	Y	-0.015	-0.017	4.8	6.4
10	M41	Y	-0.017	-0.016	6.4	8
11	M90	Y	-0.136	-0.094	0	1.6
12	M90	Y	-0.094	-0.101	1.6	3.2
13	M90	Y	-0.101	-0.114	3.2	4.8
14	M90	Y	-0.114	-0.106	4.8	6.4
15	M90	Y	-0.106	-0.125	6.4	8
16	M91	Y	-0.073	-0.125	0	1.6
17	M91	Y	-0.125	-0.123	1.6	3.2
18	M91	Y	-0.123	-0.104	3.2	4.8
19	M91	Y	-0.104	-0.114	4.8	6.4
20	M91	Y	-0.114	-0.118	6.4	8
21	M92	Y	-0.094	-0.116	0	1.6
22	M92	Y	-0.116	-0.109	1.6	3.2

Member Distributed Loads (BLC 12 : BLC 3 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
23	M92	Y	-0.109	-0.097	3.2	4.8
24	M92	Y	-0.097	-0.099	4.8	6.4
25	M92	Y	-0.099	-0.091	6.4	8
26	M93	Y	-0.102	-0.125	0	1.6
27	M93	Y	-0.125	-0.102	1.6	3.2
28	M93	Y	-0.102	-0.099	3.2	4.8
29	M93	Y	-0.099	-0.118	4.8	6.4
30	M93	Y	-0.118	-0.095	6.4	8
31	M94	Y	-0.066	-0.114	0	1.6
32	M94	Y	-0.114	-0.131	1.6	3.2
33	M94	Y	-0.131	-0.115	3.2	4.8
34	M94	Y	-0.115	-0.096	4.8	6.4
35	M94	Y	-0.096	-0.073	6.4	8
36	M95	Y	-0.119	-0.091	0	1.6
37	M95	Y	-0.091	-0.097	1.6	3.2
38	M95	Y	-0.097	-0.103	3.2	4.8
39	M95	Y	-0.103	-0.097	4.8	6.4
40	M95	Y	-0.097	-0.113	6.4	8
41	M96	Y	-0.056	-0.072	0	1.6
42	M96	Y	-0.072	-0.063	1.6	3.2
43	M96	Y	-0.063	-0.056	3.2	4.8
44	M96	Y	-0.056	-0.066	4.8	6.4
45	M96	Y	-0.066	-0.063	6.4	8
46	M97	Y	-0.06	-0.071	0	1.6
47	M97	Y	-0.071	-0.061	1.6	3.2
48	M97	Y	-0.061	-0.067	3.2	4.8
49	M97	Y	-0.067	-0.077	4.8	6.4
50	M97	Y	-0.077	-0.053	6.4	8

Member Distributed Loads (BLC 13 : BLC 4 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M95	Y	0.033	0.036	6.4	8
2	M96	Y	0.019	0.023	0	1.6
3	M96	Y	0.023	0.02	1.6	3.2
4	M96	Y	0.02	0.02	3.2	4.8
5	M96	Y	0.02	0.023	4.8	6.4
6	M96	Y	0.023	0.019	6.4	8
7	M97	Y	0.019	0.023	0	1.6
8	M97	Y	0.023	0.02	1.6	3.2
9	M97	Y	0.02	0.02	3.2	4.8
10	M97	Y	0.02	0.023	4.8	6.4
11	M97	Y	0.023	0.019	6.4	8
12	M31	X	0.045	0.045	6.661e-16	8
13	M39	X	0.045	0.045	0	8
14	M33	X	0.054	0.054	0	8
15	M41	X	0.054	0.054	4.441e-16	8
16	M34	Z	0.063	0.067	0	2
17	M34	Z	0.067	0.072	2	4
18	M34	Z	0.072	0.072	4	6
19	M34	Z	0.072	0.067	6	8
20	M34	Z	0.067	0.063	8	10
21	M42	Z	0.073	0.029	0	2
22	M42	Z	0.029	0.006	2	4
23	M42	Z	0.006	0.006	4	6
24	M42	Z	0.006	0.029	6	8

Member Distributed Loads (BLC 13 : BLC 4 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
25	M42	Z	0.029	0.073	8	10
26	M77	Z	0.063	0.064	0	1.306
27	M77	Z	0.064	0.064	1.306	2.612
28	M77	Z	0.064	0.064	2.612	3.919
29	M77	Z	0.064	0.064	3.919	5.225
30	M77	Z	0.064	0.063	5.225	6.531
31	M32	Z	-0.069	-0.069	1.887e-15	10
32	M40	Z	-0.069	-0.069	9.992e-16	10
33	M39	Y	0.005	0.006	0	1.6
34	M39	Y	0.006	0.005	1.6	3.2
35	M39	Y	0.005	0.005	3.2	4.8
36	M39	Y	0.005	0.006	4.8	6.4
37	M39	Y	0.006	0.005	6.4	8
38	M41	Y	0.005	0.006	0	1.6
39	M41	Y	0.006	0.005	1.6	3.2
40	M41	Y	0.005	0.005	3.2	4.8
41	M41	Y	0.005	0.006	4.8	6.4
42	M41	Y	0.006	0.005	6.4	8
43	M90	Y	0.04	0.031	0	1.6
44	M90	Y	0.031	0.035	1.6	3.2
45	M90	Y	0.035	0.037	3.2	4.8
46	M90	Y	0.037	0.034	4.8	6.4
47	M90	Y	0.034	0.038	6.4	8
48	M91	Y	0.024	0.041	0	1.6
49	M91	Y	0.041	0.04	1.6	3.2
50	M91	Y	0.04	0.034	3.2	4.8
51	M91	Y	0.034	0.037	4.8	6.4
52	M91	Y	0.037	0.038	6.4	8
53	M92	Y	0.031	0.038	0	1.6
54	M92	Y	0.038	0.036	1.6	3.2
55	M92	Y	0.036	0.032	3.2	4.8
56	M92	Y	0.032	0.032	4.8	6.4
57	M92	Y	0.032	0.03	6.4	8
58	M93	Y	0.033	0.041	0	1.6
59	M93	Y	0.041	0.033	1.6	3.2
60	M93	Y	0.033	0.032	3.2	4.8
61	M93	Y	0.032	0.039	4.8	6.4
62	M93	Y	0.039	0.031	6.4	8
63	M94	Y	0.022	0.037	0	1.6
64	M94	Y	0.037	0.043	1.6	3.2
65	M94	Y	0.043	0.038	3.2	4.8
66	M94	Y	0.038	0.031	4.8	6.4
67	M94	Y	0.031	0.024	6.4	8
68	M95	Y	0.039	0.03	0	1.6
69	M95	Y	0.03	0.032	1.6	3.2
70	M95	Y	0.032	0.035	3.2	4.8
71	M95	Y	0.035	0.033	4.8	6.4

Member Distributed Loads (BLC 14 : BLC 5 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M31	X	0.077	0.077	6.661e-16	8
2	M39	X	0.077	0.077	0	8
3	M33	X	0.022	0.022	0	8
4	M41	X	0.022	0.022	4.441e-16	8
5	M34	Z	0.034	0.036	0	2

Member Distributed Loads (BLC 14 : BLC 5 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
6	M34	Z	0.036	0.039	2	4
7	M34	Z	0.039	0.039	4	6
8	M34	Z	0.039	0.036	6	8
9	M34	Z	0.036	0.034	8	10
10	M42	Z	0.039	0.016	0	2
11	M42	Z	0.016	0.003	2	4
12	M42	Z	0.003	0.003	4	6
13	M42	Z	0.003	0.016	6	8
14	M42	Z	0.016	0.039	8	10
15	M77	Z	0.034	0.034	0	1.306
16	M77	Z	0.034	0.034	1.306	2.612
17	M77	Z	0.034	0.034	2.612	3.919
18	M77	Z	0.034	0.034	3.919	5.225
19	M77	Z	0.034	0.034	5.225	6.531
20	M32	Z	-0.037	-0.037	1.887e-15	10
21	M40	Z	-0.037	-0.037	9.992e-16	10
22	M39	Y	0.005	0.006	0	1.6
23	M39	Y	0.006	0.005	1.6	3.2
24	M39	Y	0.005	0.005	3.2	4.8
25	M39	Y	0.005	0.006	4.8	6.4
26	M39	Y	0.006	0.005	6.4	8
27	M41	Y	0.005	0.006	0	1.6
28	M41	Y	0.006	0.005	1.6	3.2
29	M41	Y	0.005	0.005	3.2	4.8
30	M41	Y	0.005	0.006	4.8	6.4
31	M41	Y	0.006	0.005	6.4	8
32	M90	Y	0.04	0.031	0	1.6
33	M90	Y	0.031	0.035	1.6	3.2
34	M90	Y	0.035	0.037	3.2	4.8
35	M90	Y	0.037	0.034	4.8	6.4
36	M90	Y	0.034	0.038	6.4	8
37	M91	Y	0.024	0.041	0	1.6
38	M91	Y	0.041	0.04	1.6	3.2
39	M91	Y	0.04	0.034	3.2	4.8
40	M91	Y	0.034	0.037	4.8	6.4
41	M91	Y	0.037	0.038	6.4	8
42	M92	Y	0.031	0.038	0	1.6
43	M92	Y	0.038	0.036	1.6	3.2
44	M92	Y	0.036	0.032	3.2	4.8
45	M92	Y	0.032	0.032	4.8	6.4
46	M92	Y	0.032	0.03	6.4	8
47	M93	Y	0.033	0.041	0	1.6
48	M93	Y	0.041	0.033	1.6	3.2
49	M93	Y	0.033	0.032	3.2	4.8
50	M93	Y	0.032	0.039	4.8	6.4
51	M93	Y	0.039	0.031	6.4	8
52	M94	Y	0.022	0.037	0	1.6
53	M94	Y	0.037	0.043	1.6	3.2
54	M94	Y	0.043	0.038	3.2	4.8
55	M94	Y	0.038	0.031	4.8	6.4
56	M94	Y	0.031	0.024	6.4	8
57	M95	Y	0.039	0.03	0	1.6
58	M95	Y	0.03	0.032	1.6	3.2
59	M95	Y	0.032	0.035	3.2	4.8
60	M95	Y	0.035	0.033	4.8	6.4

Member Distributed Loads (BLC 14 : BLC 5 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
61	M95	Y	0.033	0.036	6.4	8
62	M96	Y	0.019	0.023	0	1.6
63	M96	Y	0.023	0.02	1.6	3.2
64	M96	Y	0.02	0.02	3.2	4.8
65	M96	Y	0.02	0.023	4.8	6.4
66	M96	Y	0.023	0.019	6.4	8
67	M97	Y	0.019	0.023	0	1.6
68	M97	Y	0.023	0.02	1.6	3.2
69	M97	Y	0.02	0.02	3.2	4.8
70	M97	Y	0.02	0.023	4.8	6.4
71	M97	Y	0.023	0.019	6.4	8

Member Distributed Loads (BLC 15 : BLC 6 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M94	Y	0.029	0.022	6.4	8
2	M95	Y	0.037	0.028	0	1.6
3	M95	Y	0.028	0.03	1.6	3.2
4	M95	Y	0.03	0.033	3.2	4.8
5	M95	Y	0.033	0.031	4.8	6.4
6	M95	Y	0.031	0.033	6.4	8
7	M96	Y	0.018	0.022	0	1.6
8	M96	Y	0.022	0.019	1.6	3.2
9	M96	Y	0.019	0.018	3.2	4.8
10	M96	Y	0.018	0.021	4.8	6.4
11	M96	Y	0.021	0.018	6.4	8
12	M97	Y	0.018	0.021	0	1.6
13	M97	Y	0.021	0.018	1.6	3.2
14	M97	Y	0.018	0.019	3.2	4.8
15	M97	Y	0.019	0.022	4.8	6.4
16	M97	Y	0.022	0.018	6.4	8
17	M31	X	-0.069	-0.069	6.661e-16	8
18	M39	X	-0.069	-0.069	0	8
19	M33	X	0.069	0.069	0	8
20	M41	X	0.069	0.069	4.441e-16	8
21	M34	Z	-0.041	-0.043	0	2
22	M34	Z	-0.043	-0.046	2	4
23	M34	Z	-0.046	-0.047	4	6
24	M34	Z	-0.047	-0.043	6	8
25	M34	Z	-0.043	-0.041	8	10
26	M42	Z	-0.047	-0.019	0	2
27	M42	Z	-0.019	-0.004	2	4
28	M42	Z	-0.004	-0.004	4	6
29	M42	Z	-0.004	-0.019	6	8
30	M42	Z	-0.019	-0.047	8	10
31	M77	Z	-0.041	-0.041	0	1.306
32	M77	Z	-0.041	-0.041	1.306	2.612
33	M77	Z	-0.041	-0.041	2.612	3.919
34	M77	Z	-0.041	-0.041	3.919	5.225
35	M77	Z	-0.041	-0.04	5.225	6.531
36	M32	Z	-0.05	-0.05	1.887e-15	10
37	M40	Z	-0.05	-0.05	9.992e-16	10
38	M39	Y	0.005	0.005	0	1.6
39	M39	Y	0.005	0.005	1.6	3.2
40	M39	Y	0.005	0.005	3.2	4.8
41	M39	Y	0.005	0.005	4.8	6.4

Member Distributed Loads (BLC 15 : BLC 6 Transient Area Loads) (Continued)

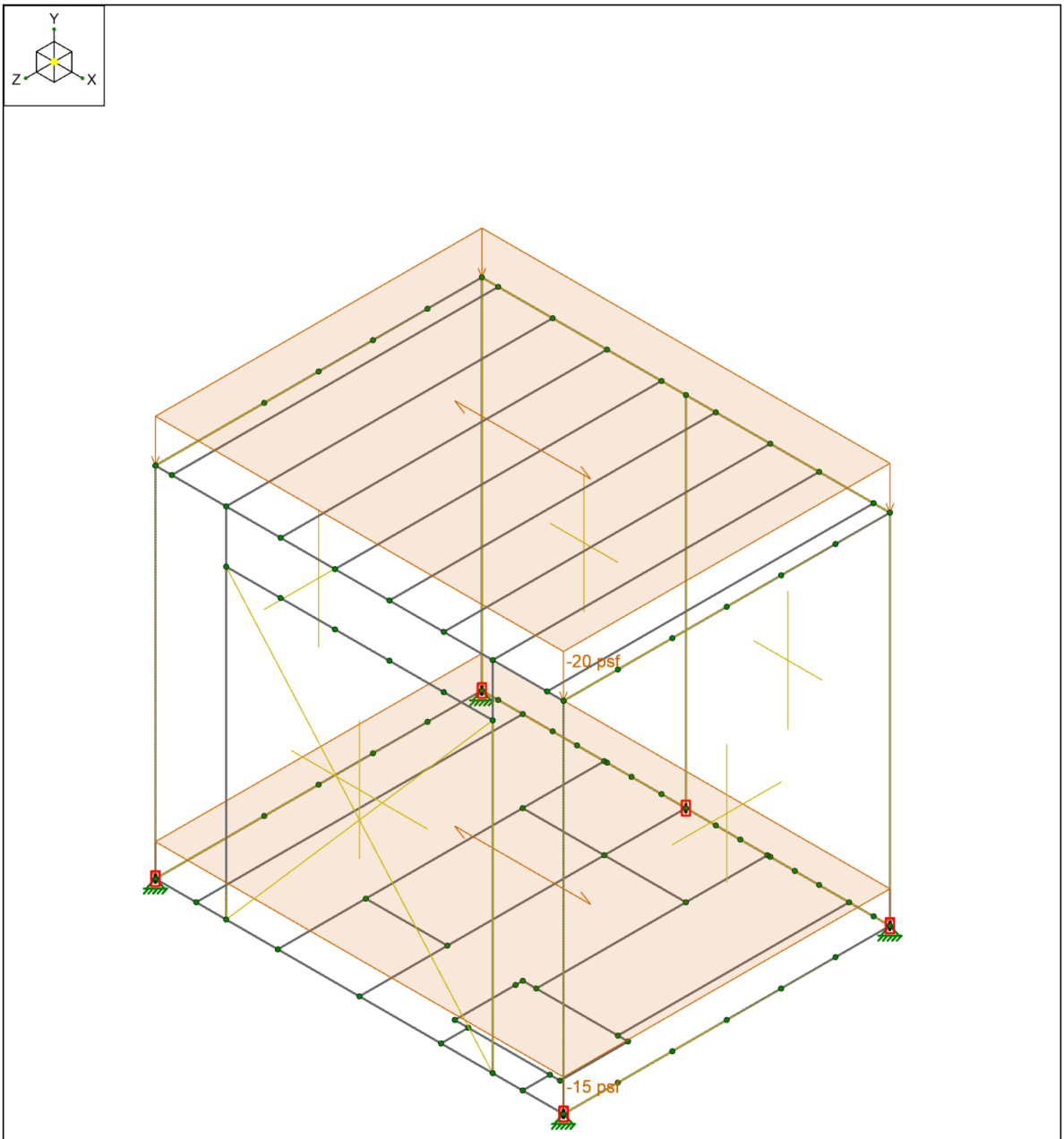
	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
42	M39	Y	0.005	0.005	6.4	8
43	M41	Y	0.005	0.005	0	1.6
44	M41	Y	0.005	0.005	1.6	3.2
45	M41	Y	0.005	0.005	3.2	4.8
46	M41	Y	0.005	0.005	4.8	6.4
47	M41	Y	0.005	0.005	6.4	8
48	M90	Y	0.037	0.029	0	1.6
49	M90	Y	0.029	0.033	1.6	3.2
50	M90	Y	0.033	0.035	3.2	4.8
51	M90	Y	0.035	0.032	4.8	6.4
52	M90	Y	0.032	0.036	6.4	8
53	M91	Y	0.022	0.038	0	1.6
54	M91	Y	0.038	0.038	1.6	3.2
55	M91	Y	0.038	0.032	3.2	4.8
56	M91	Y	0.032	0.035	4.8	6.4
57	M91	Y	0.035	0.036	6.4	8
58	M92	Y	0.029	0.035	0	1.6
59	M92	Y	0.035	0.033	1.6	3.2
60	M92	Y	0.033	0.03	3.2	4.8
61	M92	Y	0.03	0.03	4.8	6.4
62	M92	Y	0.03	0.028	6.4	8
63	M93	Y	0.031	0.038	0	1.6
64	M93	Y	0.038	0.031	1.6	3.2
65	M93	Y	0.031	0.03	3.2	4.8
66	M93	Y	0.03	0.036	4.8	6.4
67	M93	Y	0.036	0.029	6.4	8
68	M94	Y	0.02	0.035	0	1.6
69	M94	Y	0.035	0.04	1.6	3.2
70	M94	Y	0.04	0.035	3.2	4.8
71	M94	Y	0.035	0.029	4.8	6.4

Member Distributed Loads (BLC 16 : BLC 7 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M31	X	-0.037	-0.037	6.661e-16	8
2	M39	X	-0.037	-0.037	0	8
3	M33	X	0.037	0.037	0	8
4	M41	X	0.037	0.037	4.441e-16	8
5	M34	Z	-0.07	-0.074	0	2
6	M34	Z	-0.074	-0.08	2	4
7	M34	Z	-0.08	-0.08	4	6
8	M34	Z	-0.08	-0.074	6	8
9	M34	Z	-0.074	-0.07	8	10
10	M42	Z	-0.081	-0.032	0	2
11	M42	Z	-0.032	-0.007	2	4
12	M42	Z	-0.007	-0.007	4	6
13	M42	Z	-0.007	-0.032	6	8
14	M42	Z	-0.032	-0.081	8	10
15	M77	Z	-0.07	-0.071	0	1.306
16	M77	Z	-0.071	-0.071	1.306	2.612
17	M77	Z	-0.071	-0.071	2.612	3.919
18	M77	Z	-0.071	-0.071	3.919	5.225
19	M77	Z	-0.071	-0.07	5.225	6.531
20	M32	Z	-0.018	-0.018	1.887e-15	10
21	M40	Z	-0.018	-0.018	9.992e-16	10
22	M39	Y	0.005	0.005	0	1.6

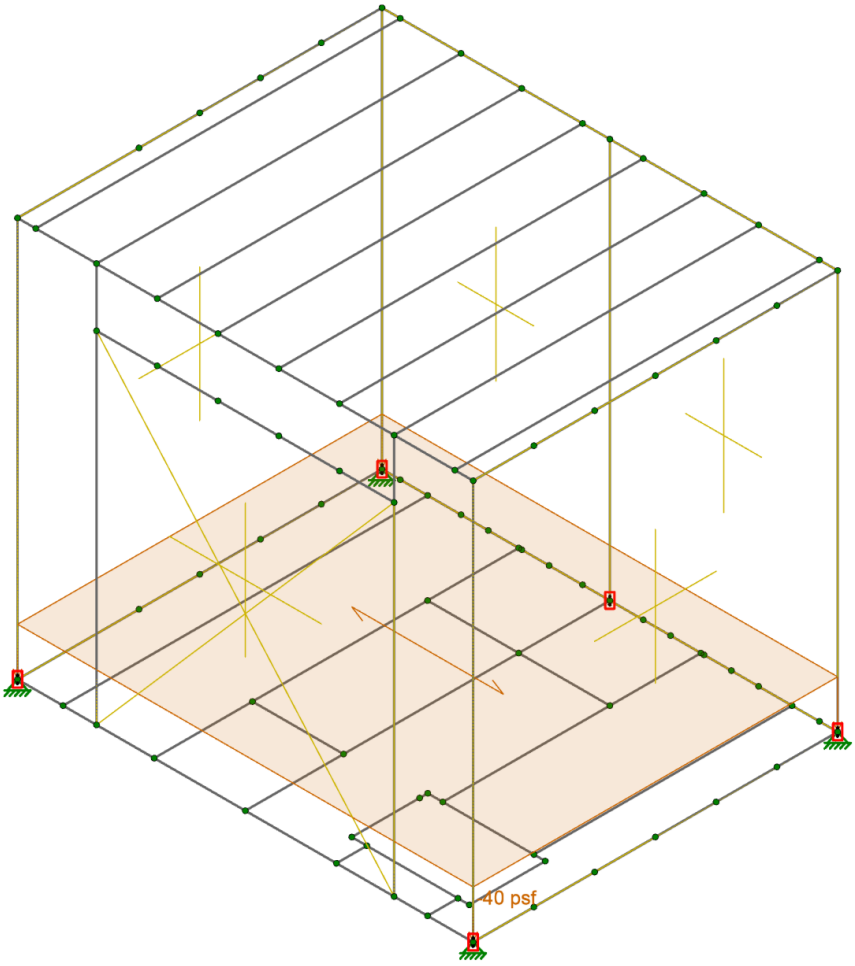
Member Distributed Loads (BLC 16 : BLC 7 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, psf, k-ft/ft]	End Magnitude [k/ft, F, psf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
23	M39	Y	0.005	0.005	1.6	3.2
24	M39	Y	0.005	0.005	3.2	4.8
25	M39	Y	0.005	0.005	4.8	6.4
26	M39	Y	0.005	0.005	6.4	8
27	M41	Y	0.005	0.005	0	1.6
28	M41	Y	0.005	0.005	1.6	3.2
29	M41	Y	0.005	0.005	3.2	4.8
30	M41	Y	0.005	0.005	4.8	6.4
31	M41	Y	0.005	0.005	6.4	8
32	M90	Y	0.037	0.029	0	1.6
33	M90	Y	0.029	0.033	1.6	3.2
34	M90	Y	0.033	0.035	3.2	4.8
35	M90	Y	0.035	0.032	4.8	6.4
36	M90	Y	0.032	0.036	6.4	8
37	M91	Y	0.022	0.038	0	1.6
38	M91	Y	0.038	0.038	1.6	3.2
39	M91	Y	0.038	0.032	3.2	4.8
40	M91	Y	0.032	0.035	4.8	6.4
41	M91	Y	0.035	0.036	6.4	8
42	M92	Y	0.029	0.035	0	1.6
43	M92	Y	0.035	0.033	1.6	3.2
44	M92	Y	0.033	0.03	3.2	4.8
45	M92	Y	0.03	0.03	4.8	6.4
46	M92	Y	0.03	0.028	6.4	8
47	M93	Y	0.031	0.038	0	1.6
48	M93	Y	0.038	0.031	1.6	3.2
49	M93	Y	0.031	0.03	3.2	4.8
50	M93	Y	0.03	0.036	4.8	6.4
51	M93	Y	0.036	0.029	6.4	8
52	M94	Y	0.02	0.035	0	1.6
53	M94	Y	0.035	0.04	1.6	3.2
54	M94	Y	0.04	0.035	3.2	4.8
55	M94	Y	0.035	0.029	4.8	6.4
56	M94	Y	0.029	0.022	6.4	8
57	M95	Y	0.037	0.028	0	1.6
58	M95	Y	0.028	0.03	1.6	3.2
59	M95	Y	0.03	0.033	3.2	4.8
60	M95	Y	0.033	0.031	4.8	6.4
61	M95	Y	0.031	0.033	6.4	8
62	M96	Y	0.018	0.022	0	1.6
63	M96	Y	0.022	0.019	1.6	3.2
64	M96	Y	0.019	0.018	3.2	4.8
65	M96	Y	0.018	0.021	4.8	6.4
66	M96	Y	0.021	0.018	6.4	8
67	M97	Y	0.018	0.021	0	1.6
68	M97	Y	0.021	0.018	1.6	3.2
69	M97	Y	0.018	0.019	3.2	4.8
70	M97	Y	0.019	0.022	4.8	6.4
71	M97	Y	0.022	0.018	6.4	8



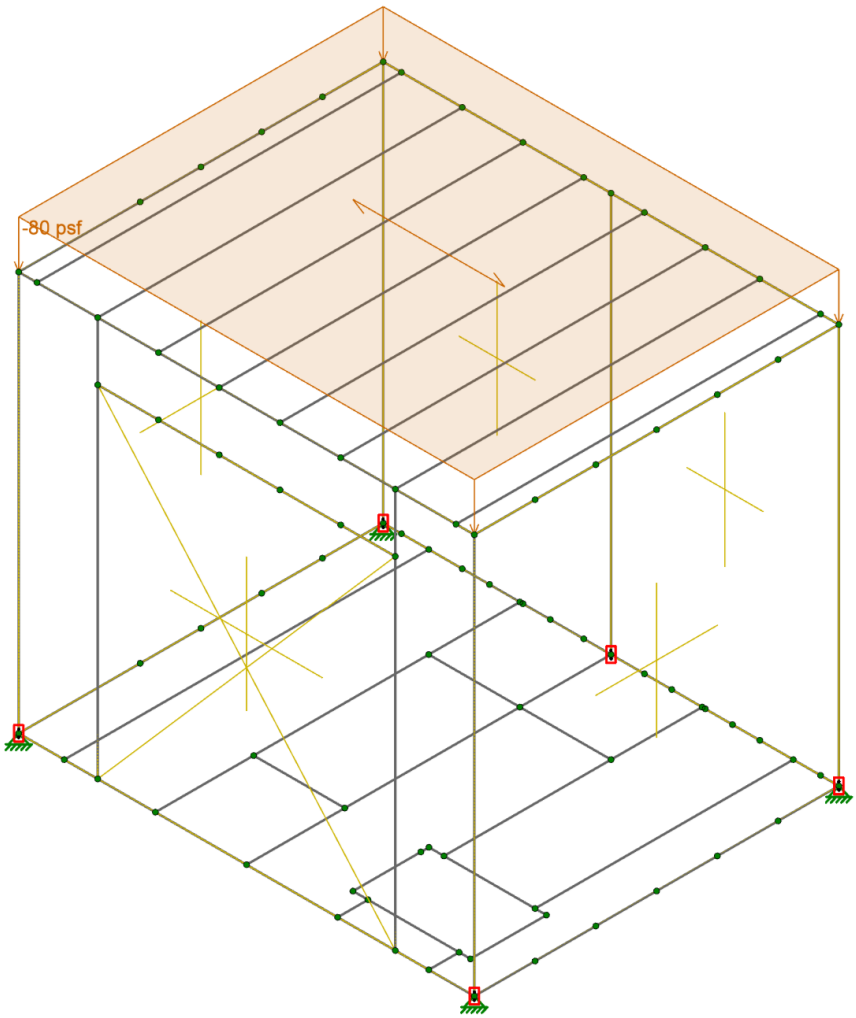
Loads: BLC 1, Dead Load

RISA	PSE Consulting Engineers…	AquaWorks DBO - Screen building	SK-8
	AYPN		Apr 08, 2024 at 02:14 PM
	AquaWorks_224-2001_CO		2024-04-06_Aquaworks DB…



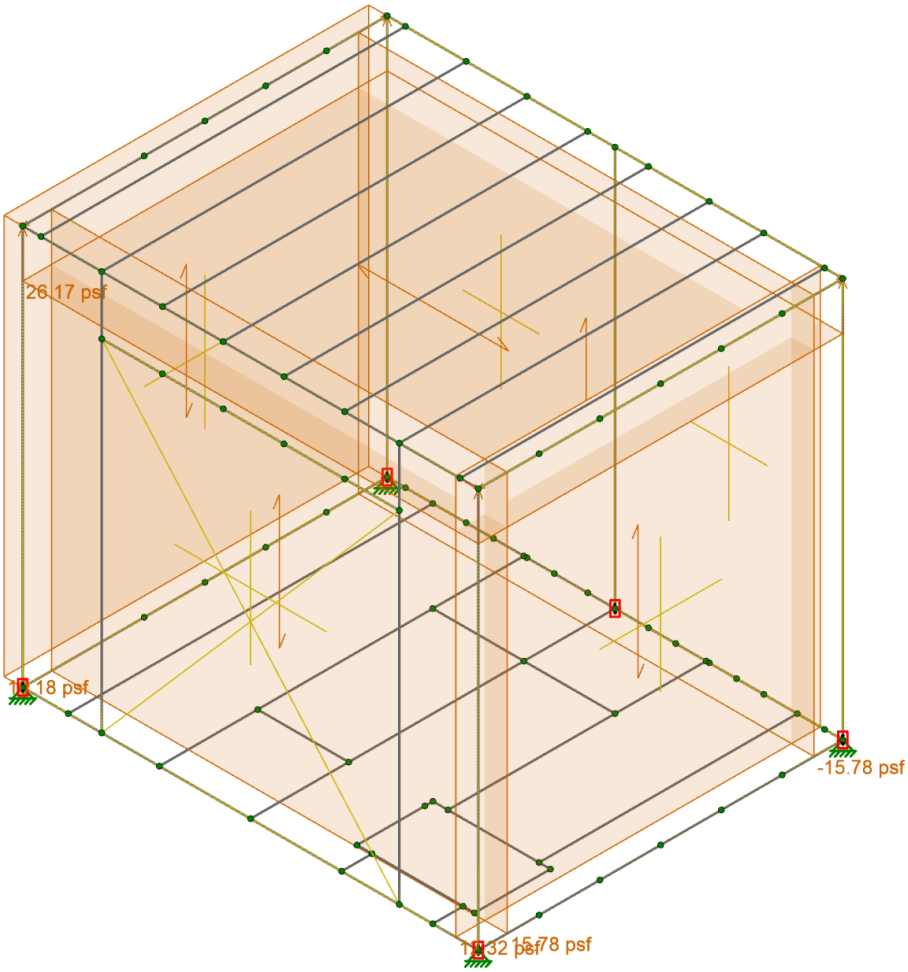
Loads: BLC 2, Live Load

	PSE Consulting Engineers…	AquaWorks DBO - Screen building	SK-9
	AYPN		Apr 08, 2024 at 02:14 PM
	AquaWorks_224-2001_CO		2024-04-06_Aquaworks DB…



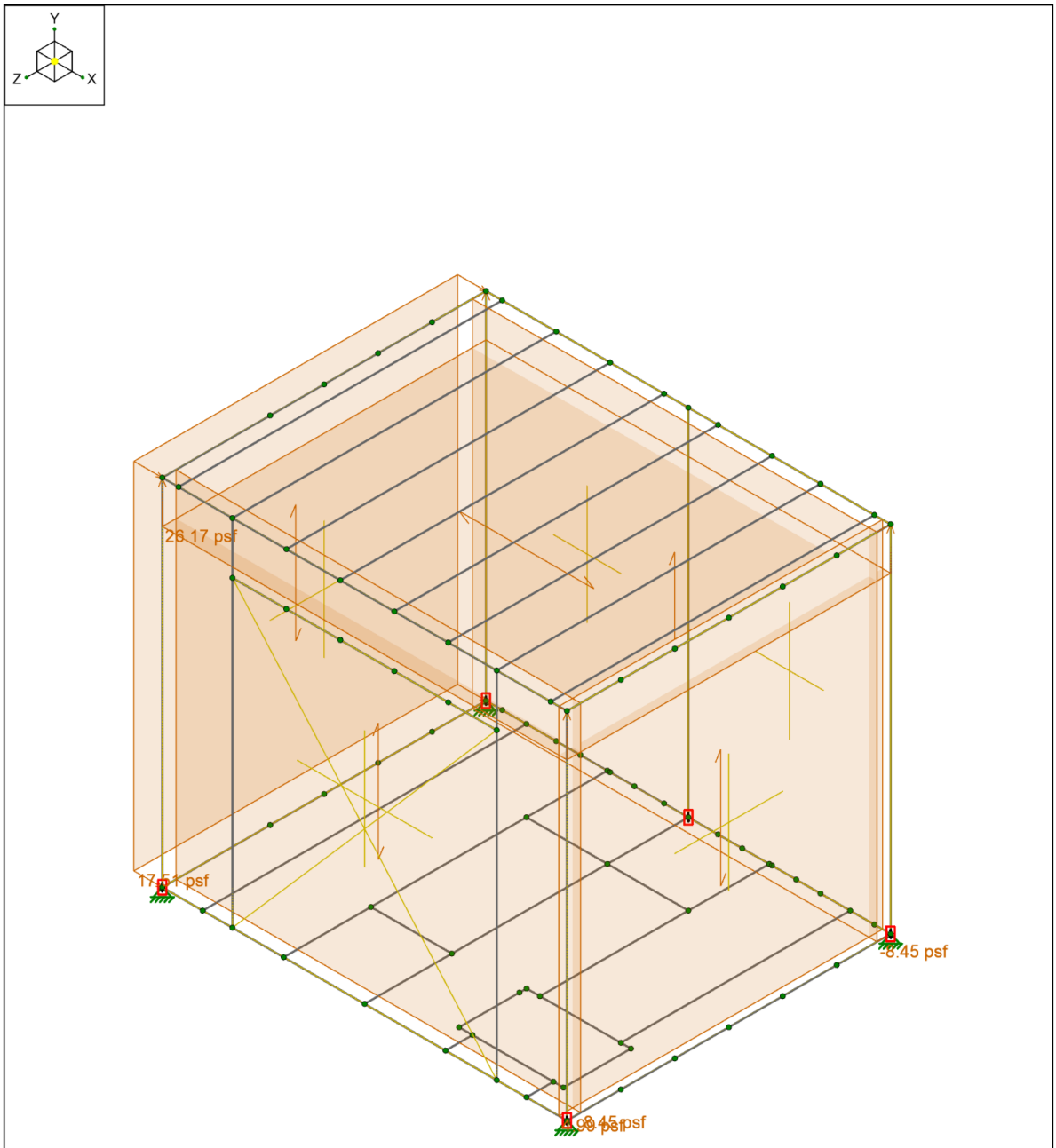
Loads: BLC 3, Snow Load

RISA	PSE Consulting Engineers…	AquaWorks DBO - Screen building	SK-10
	AYPN		Apr 08, 2024 at 02:14 PM
	AquaWorks_224-2001_CO		2024-04-06_Aquaworks DB…



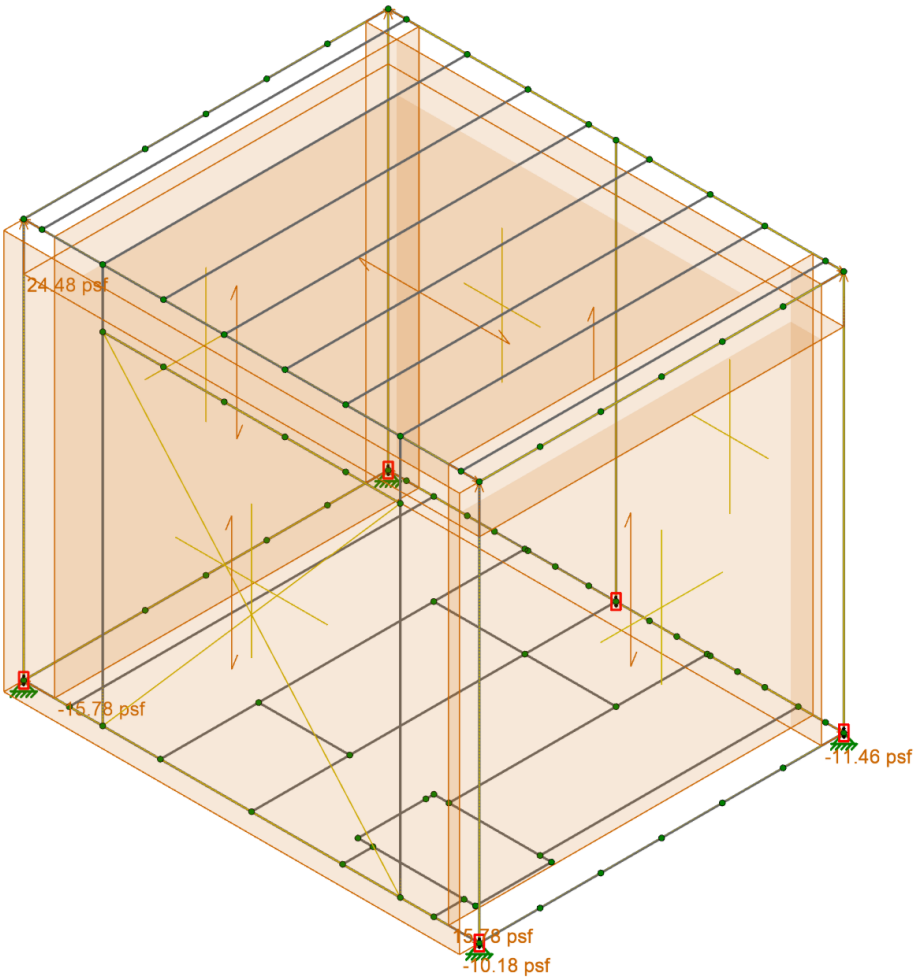
Loads: BLC 4, WL+X (+GCpi - Normal to Ridge)

RISA	PSE Consulting Engineers…	AquaWorks DBO - Screen building	SK-11
	AYPN		Apr 08, 2024 at 02:14 PM
	AquaWorks_224-2001_CO		2024-04-06_Aquaworks DB…



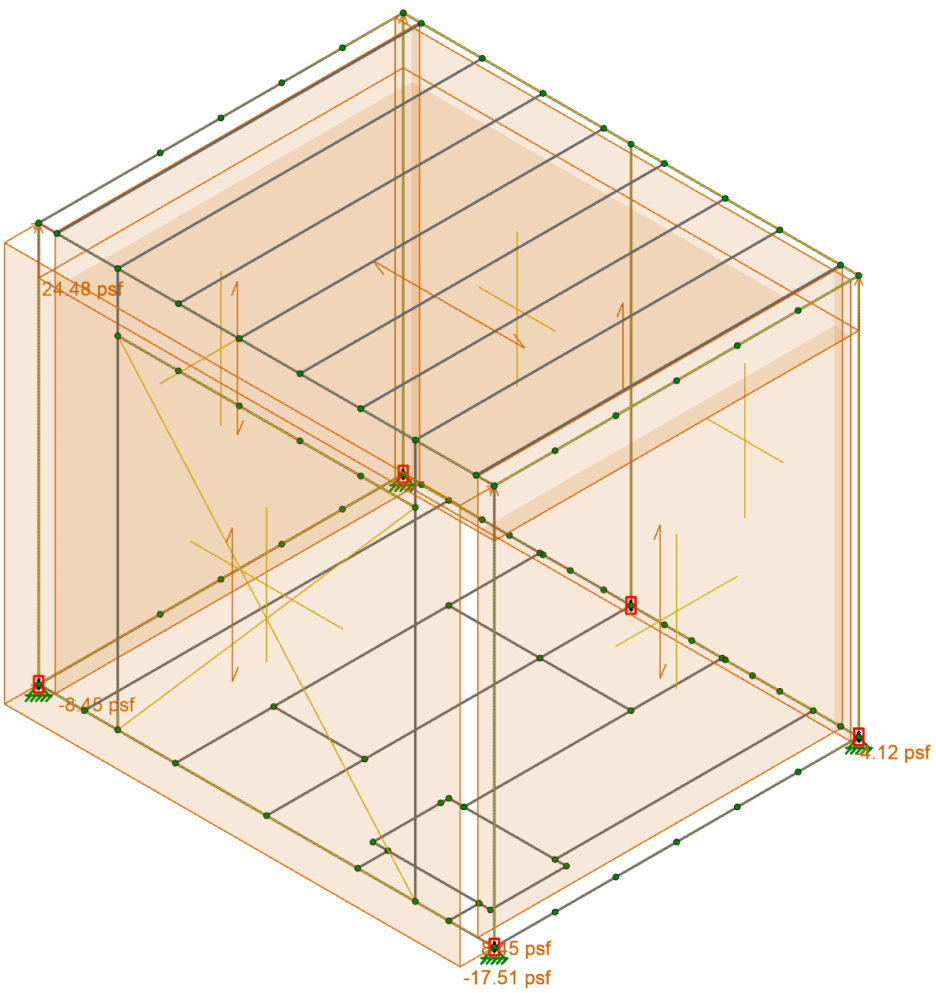
Loads: BLC 5, WL-X (-GCpi Normal to Ridge)

PSE Consulting Engineers…		AquaWorks DBO - Screen building	SK-12
AYPN			Apr 08, 2024 at 02:14 PM
AquaWorks_224-2001_CO			2024-04-06_Aquaworks DB…



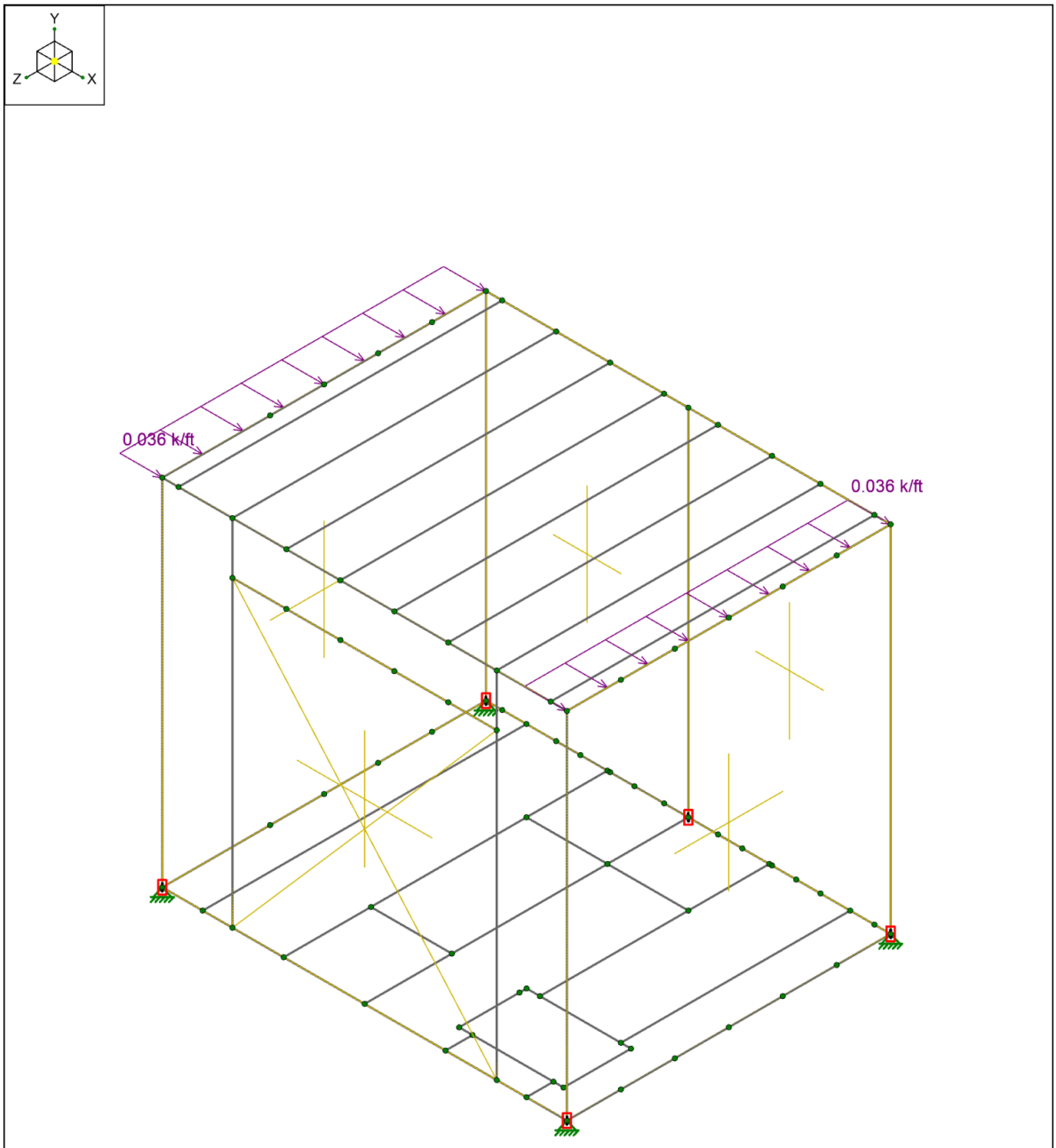
Loads: BLC 6, WL+Z (+GCpi Parallel to Ridge)

RISA	PSE Consulting Engineers…	AquaWorks DBO - Screen building	SK-13
	AYPN		Apr 08, 2024 at 02:14 PM
	AquaWorks_224-2001_CO		2024-04-06_Aquaworks DB…



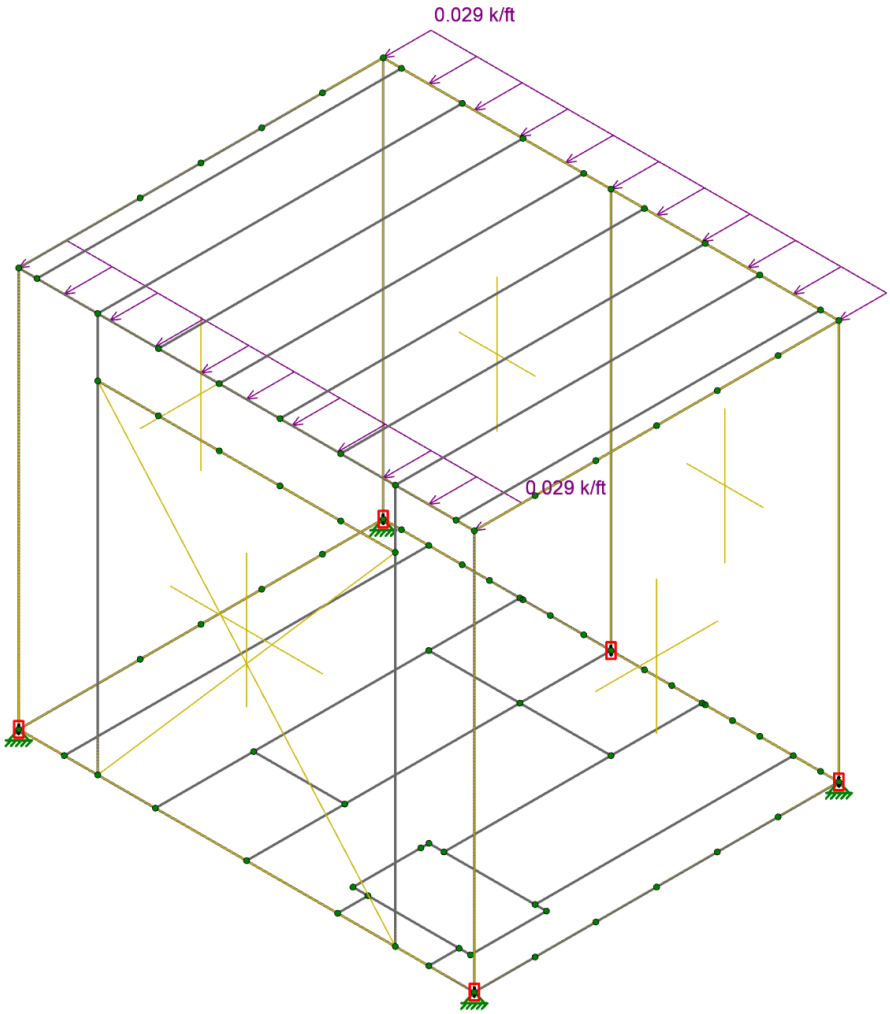
Loads: BLC 7, WL-Z (-GCpi Parallel to Ridge)

RISA	PSE Consulting Engineers…	AquaWorks DBO - Screen building	SK-14
	AYPN		Apr 08, 2024 at 02:14 PM
	AquaWorks_224-2001_CO		2024-04-06_Aquaworks DB…



Loads: BLC 8, ELX

PSE Consulting Engineers…		AquaWorks DBO - Screen building	SK-15
AYPN			Apr 08, 2024 at 02:15 PM
AquaWorks_224-2001_CO			2024-04-06_Aquaworks DB…



Loads: BLC 9, ELZ

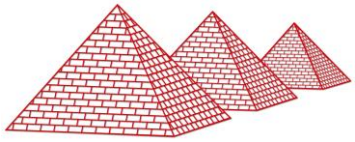
RISA	PSE Consulting Engineers…	AquaWorks DBO - Screen building	SK-16
	AYPN		Apr 08, 2024 at 02:15 PM
	AquaWorks_224-2001_CO		2024-04-06_Aquaworks DB…

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	ASD														
2	Deflection 1		Y	DL	1										
3	Deflection 2		Y	LL	1										
4	Deflection 3		Y	DL	1	LL	1								
5	IBC 21/ASCE ASD 1		Y	DL	1										
6	IBC 21/ASCE ASD 2		Y	DL	1	LL	1	LLS	1						
7	IBC 21/ASCE ASD 3 (b)		Y	DL	1	SL	1	SLN	1						
8	IBC 21/ASCE ASD 4 (b)		Y	DL	1	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75		
9	IBC 21/ASCE ASD 5 (a)		Y	DL	1	WL+X	0.6								
10	IBC 21/ASCE ASD 6 (a)		Y	DL	1	WL+X	0.45	LL	0.75	LLS	0.75				
11	IBC 21/ASCE ASD 6 (b)		Y	DL	1	WL+X	0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
12	IBC 21/ASCE ASD 7		Y	DL	0.6	WL+X	0.6								
13	IBC 21/ASCE ASD 5 (a)		Y	DL	1	WL-X	0.6								
14	IBC 21/ASCE ASD 6 (a)		Y	DL	1	WL-X	0.45	LL	0.75	LLS	0.75				
15	IBC 21/ASCE ASD 6 (b)		Y	DL	1	WL-X	0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
16	IBC 21/ASCE ASD 7		Y	DL	0.6	WL-X	0.6								
17	IBC 21/ASCE ASD 5 (a)		Y	DL	1	WL+Z	0.6								
18	IBC 21/ASCE ASD 6 (a)		Y	DL	1	WL+Z	0.45	LL	0.75	LLS	0.75				
19	IBC 21/ASCE ASD 6 (b)		Y	DL	1	WL+Z	0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
20	IBC 21/ASCE ASD 7		Y	DL	0.6	WL+Z	0.6								
21	IBC 21/ASCE ASD 5 (a)		Y	DL	1	WL-Z	0.6								
22	IBC 21/ASCE ASD 6 (a)		Y	DL	1	WL-Z	0.45	LL	0.75	LLS	0.75				
23	IBC 21/ASCE ASD 6 (b)		Y	DL	1	WL-Z	0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
24	IBC 21/ASCE ASD 7		Y	DL	0.6	WL-Z	0.6								
25	IBC 21/ASCE ASD 8		Y	DL	1	ELX	0.7								
26	IBC 21/ASCE ASD 9		Y	DL	1	ELX	0.525	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
27	IBC 21/ASCE ASD 10		Y	DL	0.6	ELX	0.7								
28	IBC 21/ASCE ASD 8		Y	DL	1	ELZ	0.7								
29	IBC 21/ASCE ASD 9		Y	DL	1	ELZ	0.525	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
30	IBC 21/ASCE ASD 10		Y	DL	0.6	ELZ	0.7								
31	LRFD														
32	Deflection 1	Yes	Y	DL	1										
33	Deflection 2	Yes	Y	LL	1										
34	Deflection 3	Yes	Y	DL	1	LL	1								
35	IBC 21/ASCE Strength 1	Yes	Y	DL	1.4										
36	IBC 21/ASCE Strength 2 (a)	Yes	Y	DL	1.2	LL	1.6	LLS	1.6						
37	IBC 21/ASCE Strength 2 (b)	Yes	Y	DL	1.2	LL	1.6	LLS	1.6	SL	0.5	SLN	0.5		
38	IBC 21/ASCE Strength 3 (c)	Yes	Y	DL	1.2	SL	1.6	SLN	1.6	LL	0.5	LLS	1		
39	IBC 21/ASCE Strength 3 (b)	Yes	Y	DL	1.2	WL+X	0.5								
40	IBC 21/ASCE Strength 3 (d)	Yes	Y	DL	1.2	SL	1.6	SLN	1.6	WL+X	0.5				
41	IBC 21/ASCE Strength 4 (a)	Yes	Y	DL	1.2	WL+X	1	LL	0.5	LLS	1				
42	IBC 21/ASCE Strength 4 (b)	Yes	Y	DL	1.2	WL+X	1	LL	0.5	LLS	1	SL	0.5	SLN	0.5
43	IBC 21/ASCE Strength 5	Yes	Y	DL	0.9	WL+X	1								
44	IBC 21/ASCE Strength 3 (b)	Yes	Y	DL	1.2	WL-X	0.5								
45	IBC 21/ASCE Strength 3 (d)	Yes	Y	DL	1.2	SL	1.6	SLN	1.6	WL-X	0.5				
46	IBC 21/ASCE Strength 4 (a)	Yes	Y	DL	1.2	WL-X	1	LL	0.5	LLS	1				
47	IBC 21/ASCE Strength 4 (b)	Yes	Y	DL	1.2	WL-X	1	LL	0.5	LLS	1	SL	0.5	SLN	0.5
48	IBC 21/ASCE Strength 5	Yes	Y	DL	0.9	WL-X	1								
49	IBC 21/ASCE Strength 3 (b)	Yes	Y	DL	1.2	WL+Z	0.5								
50	IBC 21/ASCE Strength 3 (d)	Yes	Y	DL	1.2	SL	1.6	SLN	1.6	WL+Z	0.5				
51	IBC 21/ASCE Strength 4 (a)	Yes	Y	DL	1.2	WL+Z	1	LL	0.5	LLS	1				
52	IBC 21/ASCE Strength 4 (b)	Yes	Y	DL	1.2	WL+Z	1	LL	0.5	LLS	1	SL	0.5	SLN	0.5
53	IBC 21/ASCE Strength 5	Yes	Y	DL	0.9	WL+Z	1								
54	IBC 21/ASCE Strength 3 (b)	Yes	Y	DL	1.2	WL-Z	0.5								
55	IBC 21/ASCE Strength 3 (d)	Yes	Y	DL	1.2	SL	1.6	SLN	1.6	WL-Z	0.5				

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
56	IBC 21/ASCE Strength 4 (a)	Yes	Y	DL	1.2	WL-Z	1	LL	0.5	LLS	1				
57	IBC 21/ASCE Strength 4 (b)	Yes	Y	DL	1.2	WL-Z	1	LL	0.5	LLS	1	SL	0.5	SLN	0.5
58	IBC 21/ASCE Strength 5	Yes	Y	DL	0.9	WL-Z	1								
59	IBC 21/ASCE Strength 6	Yes	Y	DL	1.2	ELX	1	LL	0.5	LLS	1	SL	0.2	SLN	0.2
60	IBC 21/ASCE Strength 7	Yes	Y	DL	0.9	ELX	1								
61	IBC 21/ASCE Strength 6	Yes	Y	DL	1.2	ELZ	1	LL	0.5	LLS	1	SL	0.2	SLN	0.2
62	IBC 21/ASCE Strength 7	Yes	Y	DL	0.9	ELZ	1								
63	INDIVIDUAL LOAD CASE														
64	DL	Yes	Y	DL	1										
65	LL	Yes	Y	LL	1										
66	SL	Yes	Y	SL	1										
67	WL+X	Yes	Y	WL+X	1										
68	WL-X	Yes	Y	WL-X	1										
69	WL+Z	Yes	Y	WL+Z	1										
70	WL-Z	Yes	Y	WL-Z	1										
71	ELX	Yes	Y	ELX	1										
72	ELZ	Yes	Y	ELZ	1										



OUTPUTS - RESULT DATA

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Klamath Falls, OR. 97601
E-Mail: info@structure1.com
Web: www.structure1.com
ph. (541) 850-6300
fax (541) 850-6233

Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N44	max	1.327	38	4.499	38	0.803	52	0	72	0	72	0	72
2		min	-0.676	68	-0.948	68	-0.317	68	0	32	0	32	0	32
3	N45	max	0.019	72	4.51	38	0.805	52	0	72	0	72	0	72
4		min	-1.348	40	-0.318	72	-0.143	72	0	32	0	32	0	32
5	N46	max	0.468	50	4.421	38	0.346	70	0	72	0	72	0	72
6		min	-0.512	68	-0.993	69	-0.244	61	0	32	0	32	0	32
7	N47	max	0.027	70	4.446	38	0.388	70	0	72	0	72	0	72
8		min	-0.577	42	-0.996	69	-0.276	42	0	32	0	32	0	32
9	Totals:	max	0	72	17.876	38	1.9	52						
10		min	-1.58	47	-2.094	68	-0.58	72						

Envelope Member End Reactions

	Member	Member End		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
1	M31	I	max	0.07	61	0.149	70	0.174	45	0.018	38	0.089	69	0.213	70
2			min	-0.112	70	-0.507	38	-0.132	69	-0.007	67	-0.179	47	-0.21	38
3		J	max	0.091	69	0.5	38	0.143	69	0.013	68	0.198	69	0.097	72
4			min	-0.051	61	-0.104	68	-0.316	38	-0.049	38	-0.164	47	-0.319	52
5	M32	I	max	0.274	38	0.273	68	0.172	45	0.014	52	0.192	51	0.286	68
6			min	-0.194	68	-1.624	38	-0.18	69	-0.005	72	-0.126	47	-1.013	38
7		J	max	0.316	40	1.623	38	0.181	51	0.006	61	0.217	51	0.071	70
8			min	-0.002	72	-0.121	70	-0.062	38	-0.012	53	-0.029	66	-1.01	38
9	M33	I	max	0.091	69	0.056	72	0.303	38	0.049	38	0.193	69	0.099	72
10			min	-0.052	61	-0.507	38	-0.144	69	-0.002	70	-0.088	38	-0.301	52
11		J	max	0.065	61	0.482	38	0.123	69	0.005	69	0.091	67	0.221	70
12			min	-0.114	70	-0.146	70	-0.125	38	-0.017	38	-0.119	38	-0.181	38
13	M34	I	max	0.214	42	0.342	68	0.106	55	0.004	45	0.123	41	0.089	70
14			min	-0.062	70	-1.473	38	-0.159	41	-0.008	36	-0.087	55	-0.597	38
15		J	max	0.133	38	1.447	38	0.074	69	0.005	69	0.081	69	0.247	68
16			min	-0.183	68	-0.229	70	-0.173	45	-0.007	45	-0.174	45	-0.596	38
17	M35	I	max	2.253	38	0.351	68	0.472	52	0.078	37	0.083	72	0.246	68
18			min	-0.541	68	-1.138	38	-0.152	68	-0.012	67	-0.269	52	-0.886	38
19		J	max	0.592	38	0.084	69	0.042	47	0.143	38	0.132	50	0.317	38
20			min	-0.114	68	-0.321	38	-0.019	69	-0.048	68	-0.022	72	-0.062	67
21	M36	I	max	2.26	38	1.133	38	0.442	52	0.007	69	0.085	72	0.882	38
22			min	-0.211	72	-0.045	70	-0.113	72	-0.114	37	-0.255	52	-0.068	70
23		J	max	0.609	38	0.315	38	0.014	38	0.031	70	0.137	50	0.048	69
24			min	-0.035	72	-0.084	69	-0.02	69	-0.144	38	-0.022	72	-0.316	38
25	M37	I	max	2.214	38	0.283	40	0.148	70	0.103	36	0.161	38	0.451	38
26			min	-0.549	69	-0.04	70	-0.141	38	-0.015	69	-0.17	70	-0.064	70
27		J	max	0.413	37	0.258	38	0.039	50	0.191	38	0.061	69	0.03	69
28			min	-0.059	69	-0.082	67	-0.009	62	-0.019	70	-0.162	38	-0.228	38
29	M38	I	max	2.21	38	0.14	68	0.143	70	0.017	69	0.172	38	0.185	68
30			min	-0.593	67	-0.301	38	-0.149	38	-0.047	36	-0.166	70	-0.462	38
31		J	max	0.419	37	0.053	69	0.059	50	0.044	68	0.061	69	0.228	38
32			min	-0.067	67	-0.241	38	-0.03	48	-0.196	38	-0.158	38	-0.031	69
33	M39	I	max	0.684	45	0.073	68	0.149	69	0.204	38	0.172	45	0.063	68
34			min	-0.205	69	-0.386	38	-0.241	45	-0.066	68	-0.082	69	-0.345	50
35		J	max	0.611	45	0.271	38	0.179	45	0.078	68	0.211	45	0.097	69
36			min	-0.357	69	-0.102	69	-0.161	69	-0.221	38	-0.236	69	-0.225	38
37	M40	I	max	0.568	45	0.868	38	0.277	69	0.093	69	0.312	45	0.576	38
38			min	-0.296	69	-0.188	68	-0.475	45	-0.38	38	-0.255	69	-0.137	68
39		J	max	0.529	38	0.135	70	0.473	38	0.394	38	0.261	38	0.576	38
40			min	-0.294	69	-0.892	38	-0.279	69	-0.093	69	-0.256	69	-0.085	70
41	M41	I	max	0.58	38	0.102	69	0.161	69	0.221	38	0.135	38	0.097	69

Envelope Member End Reactions (Continued)

	Member	Member End		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
42			min	-0.358	69	-0.28	38	-0.113	38	-0.034	70	-0.236	69	-0.234	38
43		J	max	0.642	38	0.396	38	0.168	38	0.012	72	0.096	38	0.045	72
44			min	-0.236	67	-0.048	72	-0.151	69	-0.205	38	-0.11	67	-0.348	50
45	M42	I	max	0.525	38	0.796	38	0.186	67	0.076	70	0.272	38	0.464	38
46			min	-0.275	67	-0.076	68	-0.571	38	-0.537	38	-0.115	67	-0.03	70
47		J	max	0.577	45	0.137	68	0.604	45	0.53	38	0.331	45	0.466	38
48			min	-0.243	69	-0.805	38	-0.145	69	-0.086	68	-0.094	69	-0.089	68
49	M43	I	max	0.419	50	0.144	42	0.466	37	0.017	36	0.052	69	0.129	42
50			min	-0.311	36	-0.001	58	-0.075	70	0	66	-0.484	37	0	58
51		J	max	0.476	50	0.09	47	0.046	69	0	72	0.218	38	0.001	69
52			min	-0.141	36	-0.001	69	-0.226	38	-0.003	42	-0.039	70	-0.081	47
53	M44	I	max	0.602	50	0.204	42	0.066	37	0.017	67	0.102	37	0.321	40
54			min	-0.848	46	-0.012	70	-0.018	70	-0.083	38	-0.004	69	-0.037	70
55		J	max	0.792	38	1.025	38	0.029	67	0.395	38	0.099	70	0.103	69
56			min	-0.246	36	-0.147	69	-0.106	55	-0.093	70	-0.529	38	-0.76	38
57	M45	I	max	0.741	40	0.167	68	0.032	37	0.086	38	0.031	37	0.209	68
58			min	-0.856	36	-0.145	37	-0.028	70	-0.004	67	-0.005	69	-0.301	38
59		J	max	0.816	40	0.214	67	0.044	67	0.092	70	0.1	70	0.754	38
60			min	-0.247	36	-1.015	38	-0.142	38	-0.392	38	-0.537	38	-0.169	67
61	M46	I	max	0.242	69	0.006	72	0.001	67	0	66	0.092	57	0.036	72
62			min	-0.396	37	-0.542	37	-0.031	57	-0.005	36	-0.002	67	-0.617	37
63		J	max	0.242	69	0.184	36	0.001	67	0	66	0.005	67	0.441	36
64			min	-0.396	37	-0.007	70	-0.031	57	-0.005	36	-0.084	57	-0.006	66
65	M47	I	max	0.092	70	0.012	67	0.003	67	0.009	37	0.099	57	0.036	69
66			min	-0.14	42	-0.55	37	-0.067	57	0	68	-0.005	67	-0.622	37
67		J	max	0.032	70	0.228	37	0.004	67	0	67	0.01	67	0.556	36
68			min	-0.158	42	-0.001	68	-0.04	57	-0.014	37	-0.09	57	-0.004	66
69	M48	I	max	0.067	70	0.003	68	0.036	57	0.001	45	0.002	67	0.003	69
70			min	-0.153	42	-0.65	37	-0.001	67	0	69	-0.06	57	-0.015	37
71		J	max	0.171	56	0.62	37	0.07	57	0.001	36	0.093	57	0.053	69
72			min	-0.145	67	-0.012	69	-0.003	67	-0.002	45	-0.005	67	-0.191	37
73	M49	I	max	0.271	69	0.011	69	0.015	57	0	68	0.002	67	0.068	69
74			min	-0.493	47	-0.522	37	-0.001	67	0	50	-0.06	57	-0.296	37
75		J	max	0.271	69	0.512	36	0.015	57	0	68	0.061	57	0.038	72
76			min	-0.493	47	-0.009	72	-0.001	67	0	50	-0.003	67	-0.246	37
77	M50	I	max	0.179	70	0.025	66	0.002	36	0	70	0.017	52	0.037	37
78			min	-0.163	42	-0.667	36	-0.009	57	-0.003	37	-0.001	33	0	72
79		J	max	0.053	70	1.174	36	0.002	41	0.004	36	0.002	41	0.081	69
80			min	-0.222	42	-0.039	66	-0.016	57	0	71	-0.014	57	-0.689	37
81	M51	I	max	0.057	57	0.033	66	0.076	57	0.001	66	0.005	67	0.001	36
82			min	-0.002	67	-0.237	36	-0.005	67	-0.002	36	-0.072	57	-0.002	55
83		J	max	0.057	57	0.033	66	0.076	57	0.001	66	0.081	57	0.494	36
84			min	-0.002	67	-0.257	36	-0.005	67	-0.002	36	-0.005	67	-0.067	66
85	M52	I	max	0.027	52	0.27	36	0.006	67	0	68	0.077	57	0.499	36
86			min	-0.001	72	-0.032	66	-0.085	57	-0.011	37	-0.006	67	-0.067	66
87		J	max	0.027	52	0.25	36	0.006	67	0	68	0.007	67	0.001	68
88			min	-0.001	72	-0.032	66	-0.085	57	-0.011	37	-0.093	57	-0.023	37
89	M53	I	max	0	72	0.012	35	0.038	57	0.004	36	0.003	67	0	69
90			min	-0.023	57	0	66	-0.003	67	-0.001	66	-0.044	57	-0.001	45
91		J	max	0	72	0.001	65	0.038	57	0.004	36	0.032	57	0	69
92			min	-0.023	57	-0.011	35	-0.003	67	-0.001	66	-0.003	67	-0.002	37
93	M55	I	max	0.099	70	0	68	0.003	67	0.036	37	0.034	52	0.005	69
94			min	-0.127	42	-0.483	37	-0.033	57	-0.001	67	0	71	-0.02	37
95		J	max	0.099	70	0	68	0.003	67	0.036	37	0.013	42	0.546	36
96			min	-0.127	42	-0.193	37	-0.033	57	-0.001	67	-0.027	70	-0.003	66

Envelope Member End Reactions (Continued)

	Member	Member End		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
97	M56	I	max	0.033	57	0	68	0.1	70	0.003	66	0.013	42	0.036	37
98			min	-0.003	67	-0.193	37	-0.127	42	-0.546	36	-0.027	70	-0.001	67
99		J	max	0.002	67	0.243	37	0.429	37	0.451	36	0.054	37	0	67
100			min	-0.038	57	-0.005	70	-0.168	69	-0.006	66	-0.007	67	-0.039	37
101	M57	I	max	0.168	69	0.242	37	0.002	67	0.039	37	0.054	37	0.451	36
102			min	-0.429	37	-0.005	70	-0.038	57	0	67	-0.007	67	-0.006	66
103		J	max	0.168	69	0.491	37	0.002	67	0.039	37	0.004	36	0.013	69
104			min	-0.429	37	-0.005	70	-0.038	57	0	67	-0.032	69	-0.163	37
105	M58	I	max	0.038	57	0.493	37	0.168	69	0.163	37	0.004	36	0.039	37
106			min	-0.002	67	-0.005	70	-0.429	37	-0.013	69	-0.032	69	0	67
107		J	max	0.003	67	0	68	0.127	42	0.005	69	0.034	52	0.001	67
108			min	-0.033	57	-0.483	37	-0.1	70	-0.02	37	0	71	-0.036	37
109	M59	I	max	0.131	56	0.267	36	0.06	37	0.465	37	0.014	69	0.116	37
110			min	-0.113	42	-0.005	66	-0.053	70	-0.032	67	-0.007	45	-0.001	69
111		J	max	0.131	56	0.149	36	0.06	37	0.465	37	0.038	37	0.006	66
112			min	-0.113	42	-0.005	66	-0.053	70	-0.032	67	-0.023	70	-0.026	36
113	M60	I	max	0.15	69	0.938	37	0.101	70	0.355	36	0.019	67	0.803	37
114			min	-0.484	37	-0.01	69	-0.034	42	-0.018	66	-0.063	57	-0.02	69
115		J	max	0.15	69	0.854	37	0.101	70	0.355	36	0.025	69	0.205	37
116			min	-0.484	37	-0.01	69	-0.034	42	-0.018	66	-0.04	37	-0.013	69
117	M77	I	max	0.233	70	0.907	38	0.151	70	0.583	38	0.241	38	0.865	38
118			min	-1.306	38	-0.24	67	-0.381	38	-0.159	70	-0.074	70	-0.27	67
119		J	max	0.373	68	0.14	69	0.413	38	0.16	70	0.253	38	0.882	38
120			min	-1.304	38	-0.953	38	-0.158	70	-0.589	38	-0.076	70	-0.131	69
121	M90	I	max	0.031	34	0.109	34	0	34	0	32	0	33	0.135	34
122			min	0.001	33	0	33	0	33	0	34	-0.001	34	0.001	33
123		J	max	0.031	34	0	33	0	34	0	32	0.001	34	0.144	34
124			min	0.001	33	-0.113	32	0	33	0	34	0	33	0	33
125	M91	I	max	0.042	34	0.114	34	0	34	0	32	0	33	0.141	34
126			min	0.003	33	0	33	0	33	0	33	0	34	0.002	33
127		J	max	0.042	34	0	33	0	34	0	32	0	34	0.157	32
128			min	0.003	33	-0.121	32	0	33	0	33	0	33	0	33
129	M92	I	max	0.031	34	0.108	34	0	33	0	32	0	32	0.123	34
130			min	0.004	33	0	33	0	32	0	33	0	33	0.003	33
131		J	max	0.031	34	0	33	0	33	0	32	0	33	0.145	32
132			min	0.004	33	-0.108	32	0	32	0	33	0	32	-0.001	33
133	M93	I	max	0.034	34	0.112	34	0	32	0	33	0	34	0.128	34
134			min	0.004	33	0	33	0	34	0	32	0	32	0.003	33
135		J	max	0.034	34	0	33	0	32	0	33	0	32	0.152	32
136			min	0.004	33	-0.116	32	0	34	0	32	0	34	-0.001	33
137	M94	I	max	0.042	34	0.111	34	0	33	0	33	0	34	0.142	34
138			min	0.004	33	0	33	0	34	0	32	0	33	0.002	33
139		J	max	0.042	34	0	33	0	33	0	33	0	33	0.152	32
140			min	0.004	33	-0.109	32	0	34	0	32	0	34	0	33
141	M95	I	max	0.031	34	0.104	34	0	33	0	34	0.001	34	0.129	34
142			min	0.002	33	0	33	0	34	0	32	0	33	0.001	33
143		J	max	0.031	34	0	33	0	33	0	34	0	33	0.136	34
144			min	0.002	33	-0.107	32	0	34	0	32	-0.001	34	0	33
145	M96	I	max	0.018	34	0.072	34	0	34	0	33	0	33	0.093	34
146			min	0	33	0	33	0	33	0	32	0	34	0	33
147		J	max	0.018	34	0	33	0	34	0	33	0	34	0.094	32
148			min	0	33	-0.071	32	0	33	0	32	0	33	0	33
149	M97	I	max	0.018	34	0.071	34	0	33	0	32	0	34	0.091	34
150			min	0.001	33	0	33	0	34	0	33	0	33	0	33
151		J	max	0.018	34	0	33	0	33	0	32	0	33	0.096	32

Envelope Member End Reactions (Continued)

	Member	Member End		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
152			min	0.001	33	-0.073	32	0	34	0	33	0	34	0	33

Envelope Beam Deflections

	Member Label	Span		Location [ft]	y' [in]	(n) L'/y' Ratio	LC
1	M39	1	max	6.917	0.001	NC	69
2		1	min	0	0	NC	32
3	M40	1	max	0.313	0	NC	72
4		1	min	0.313	0.001	3292	38
5		2	max	1.563	0.001	NC	37
6		2	min	0.729	0.002	7597	38
7		3	max	3.021	0	NC	72
8		3	min	1.771	0	NC	32
9		4	max	4.375	0	NC	72
10		4	min	3.125	0	NC	32
11		5	max	5	0	NC	72
12		5	min	4.479	0	NC	32
13		6	max	5.729	0	NC	72
14		6	min	5.104	0	NC	32
15		7	max	6.771	-0.001	NC	37
16		7	min	5.833	0	NC	32
17		8	max	7.083	-0.001	NC	37
18		8	min	7.5	-0.002	8456	38
19		9	max	9.583	0	NC	72
20		9	min	8.333	0	NC	32
21		10	max	10	0	NC	72
22		10	min	9.688	0	NC	32
23	M41	1	max	1.5	0.001	NC	69
24		1	min	0	0	NC	32
25	M42	1	max	0.313	0	NC	72
26		1	min	0.313	0.001	3480	38
27		2	max	1.25	0.001	NC	40
28		2	min	0.417	0	NC	32
29		3	max	1.875	0.001	NC	37
30		3	min	2.188	0.003	4457	38
31		4	max	4.167	0.001	NC	50
32		4	min	3.021	0	NC	32
33		5	max	5	-0.001	NC	52
34		5	min	4.896	-0.004	4474	38
35		6	max	5.938	-0.001	NC	47
36		6	min	6.146	-0.004	4246	38
37		7	max	7.708	0.001	NC	45
38		7	min	6.979	0	NC	32
39		8	max	9.583	0	NC	72
40		8	min	8.333	0	NC	32
41		9	max	10	0	NC	72
42		9	min	9.688	0	NC	32
43	M46	1	max	1.771	0.001	NC	53
44		1	min	0	0	NC	32
45	M47	1	max	1.181	0.001	NC	41
46		1	min	0	0	NC	32
47	M48	1	max	0.25	0.001	NC	62
48		1	min	3.833	0.044	2206	37
49	M49	1	max	0.667	0.001	NC	45
50		1	min	4	0.028	3382	36
51	M50	1	max	0.25	0.001	NC	55

Envelope Beam Deflections (Continued)

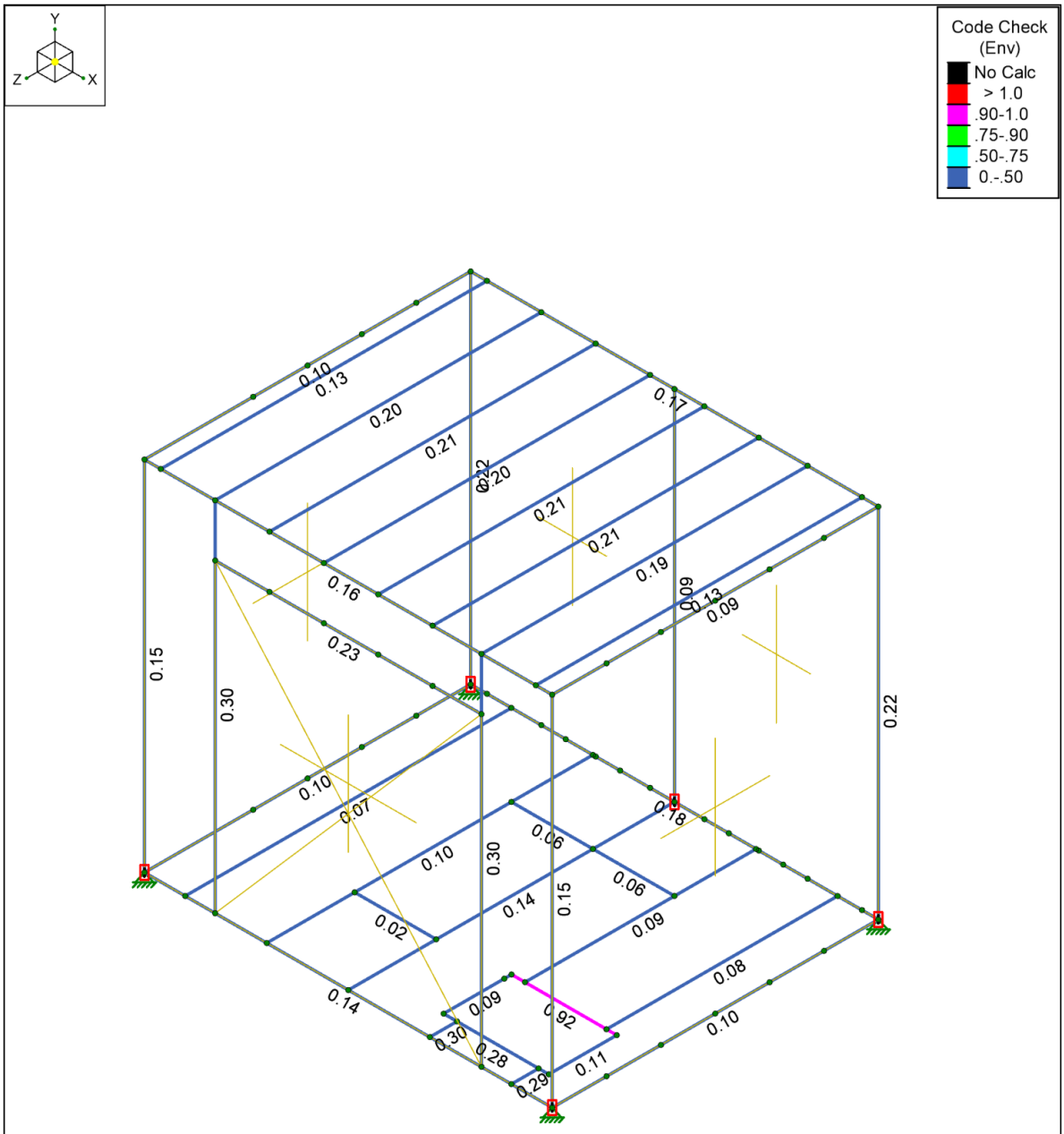
	Member Label	Span		Location [ft]	y' [in]	(n) L'/y' Ratio	LC
52		1	min	4	0.057	1679	36
53	M51	1	max	2	0	NC	72
54		1	min	0	0	NC	32
55	M52	1	max	2	0	NC	72
56		1	min	0	0	NC	32
57	M53	1	max	2	0	NC	72
58		1	min	0	0	NC	32
59	M55	1	max	1.667	0	NC	72
60		1	min	0	0	NC	32
61	M56	1	max	2.58	0	NC	72
62		1	min	0	0	NC	32
63	M57	1	max	1.667	0	NC	72
64		1	min	0	0	NC	32
65	M58	1	max	2.58	0	NC	72
66		1	min	0	0	NC	32
67	M59	1	max	0.667	0	NC	72
68		1	min	0	0	NC	32
69	M60	1	max	0.528	-0.001	NC	36
70		1	min	0	0	NC	32
71	M77	1	max	5.783	-0.001	NC	60
72		1	min	3.266	-0.063	1247	38
73	M90	1	max	7.833	-0.001	NC	34
74		1	min	4	-0.07	1364	32
75	M91	1	max	1.333	0.001	NC	33
76		1	min	3.917	-0.082	1167	32
77	M92	1	max	0.917	0.001	NC	33
78		1	min	3.833	-0.079	1210	32
79	M93	1	max	5.833	0.001	NC	33
80		1	min	3.833	-0.081	1189	32
81	M94	1	max	5.75	0.001	NC	33
82		1	min	3.917	-0.082	1164	32
83	M95	1	max	4.833	0.001	NC	33
84		1	min	4	-0.067	1437	32
85	M96	1	max	7.75	-0.001	NC	34
86		1	min	4	-0.044	2190	32
87	M97	1	max	7.75	-0.001	NC	34
88		1	min	4	-0.044	2194	32

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M31	C8X11.5	0.1	8	38	0.027	7.833	y	38	32.112	109.188	3.353	20.089	1.076	H1-1b
2	M32	C8X11.5	0.18	6.979	37	0.313	6.979	y	37	20.552	109.188	3.353	20.036	1.256	H1-1b
3	M33	C8X11.5	0.097	0	52	0.027	0.167	y	38	32.112	109.188	3.353	23.176	1.242	H1-1b
4	M34	C8X11.5	0.144	1.042	37	0.136	2.917	y	37	20.552	109.188	3.353	21.403	1.342	H1-1b
5	M35	HSS3X3X2	0.224	0	38	0.081	0.183	y	38	32.338	58.5	5.25	5.25	3	H1-1b
6	M36	HSS3X3X2	0.22	0	38	0.086	0.183	y	38	32.338	58.5	5.25	5.25	3	H1-1b
7	M37	HSS3X3X2	0.151	0	38	0.059	8.78	y	38	32.338	58.5	5.25	5.25	3	H1-1b
8	M38	HSS3X3X2	0.155	0	38	0.06	8.78	y	38	32.338	58.5	5.25	5.25	3	H1-1b
9	M39	HSS3X3X2	0.102	0	45	0.071	0.25	y	38	35.762	58.5	5.25	5.25	3	H1-1b
10	M40	HSS3X3X2	0.169	10	38	0.168	9.792	y	38	27.114	58.5	5.25	5.25	3	H1-1b
11	M41	HSS3X3X2	0.093	8	38	0.071	7.833	y	38	35.762	58.5	5.25	5.25	3	H1-1b
12	M42	HSS3X3X2	0.164	1.771	38	0.195	2.396	y	38	27.114	58.5	5.25	5.25	1.687	H1-1b
13	M43	HSS3X3X2	0.094	0	37	0.032	0.274	z	37	32.338	58.5	5.25	5.25	2.833	H1-1b
14	M44	HSS3X3X2	0.304	7.5	38	0.167	8.14	y	38	32.338	58.5	5.25	5.25	3	H1-1b
15	M45	HSS3X3X2	0.303	7.5	38	0.165	8.14	y	38	32.338	58.5	5.25	5.25	3	H1-1b

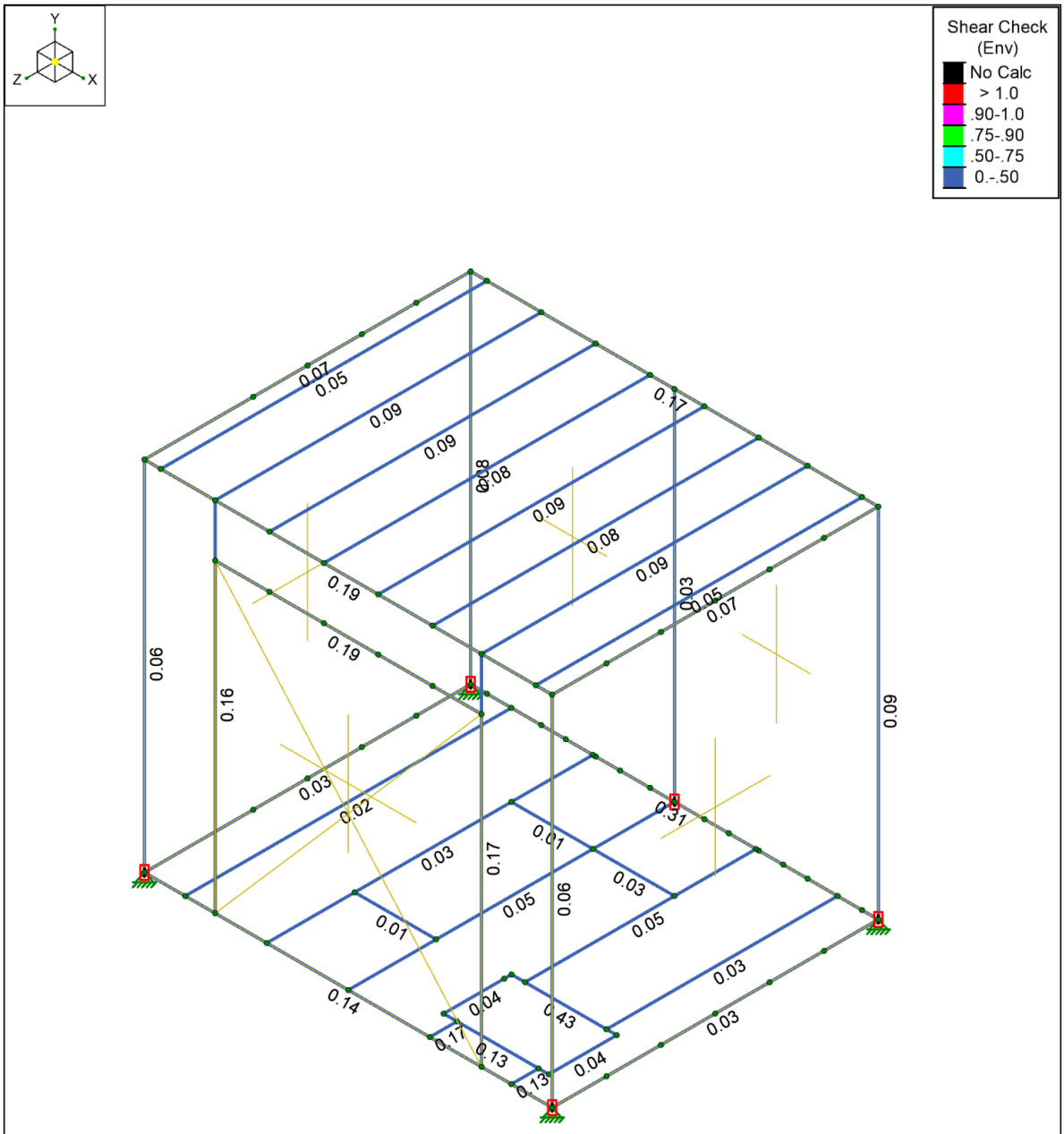
Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
16	M46	C6X8.2	0.085	0	37	0.027	0.944	y	36	33.202	77.436	2.108	13.932	1.545	H1-1b
17	M47	C6X8.2	0.09	0	37	0.051	2.007	y	37	33.202	77.436	2.108	13.932	1.539	H1-1b
18	M48	C6X8.2	0.105	3.333	37	0.028	0	y	37	16.84	77.436	2.108	11.709	1.195	H1-1b
19	M49	C6X8.2	0.071	3.667	36	0.022	0	y	37	16.84	77.436	2.108	11.732	1.198	H1-1b
20	M50	C6X8.2	0.137	3.917	36	0.05	8	y	36	16.84	77.436	2.108	10.909	1.114	H1-1b
21	M51	C6X8.2	0.059	2	37	0.015	2	y	36	69.683	77.436	2.108	13.932	1.686	H1-1b
22	M52	C6X8.2	0.057	2	57	0.035	0	y	36	69.683	77.436	2.108	13.932	1.78	H1-1b
23	M53	C6X8.2	0.023	0	57	0.005	1	z	36	69.683	77.436	2.108	13.932	1.119	H1-1b
24	M55	C6X8.2	0.088	1.667	37	0.043	0.712	y	37	71.966	77.436	2.108	13.932	1	H1-1b
25	M56	C6X8.2	0.922	0	36	0.431	0.322	z	36	69.683	77.436	2.108	13.932	1	H1-1b
26	M57	C6X8.2	0.112	0	37	0.039	0.92	y	37	71.966	77.436	2.108	13.932	1.881	H1-1b
27	M58	C6X8.2	0.277	0	37	0.125	0.242	z	37	64.969	77.436	2.108	13.932	1.992	H1-1b
28	M59	C6X8.2	0.301	0.667	37	0.168	0.333	z	37	76.534	77.436	2.108	13.932	2.139	H1-1b
29	M60	C6X8.2	0.287	0	36	0.127	0.333	z	36	76.534	77.436	2.108	13.932	1.439	H1-1b
30	M77	HSS3X3X2	0.227	6.531	38	0.193	6.531	y	38	42.14	58.5	5.25	5.25	2.127	H1-1b



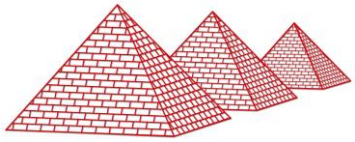
Member Code Checks Displayed (Enveloped)

	PSE Consulting Engineers…	AquaWorks DBO - Screen building	SK-6
	AYPN		Apr 08, 2024 at 02:13 PM
	AquaWorks_224-2001_CO		2024-04-06_Aquaworks DB…



Member Shear Checks Displayed (Enveloped)

	PSE Consulting Engineers…	AquaWorks DBO - Screen building	SK-7
	AYPN		Apr 08, 2024 at 02:13 PM
	AquaWorks_224-2001_CO		2024-04-06_Aquaworks DB…



ENVELOPE NODE REACTIONS FOR FOUNDATION DESIGN

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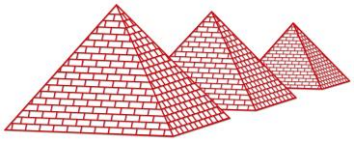
Envelope Node Reactions FOR LRFD LOAD COBINATION WITH INDIVIDUAL LOADS

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N44	max	1.327	38	4.499	38	0.803	52	0	72	0	72	0	72
2		min	-0.676	68	-0.948	68	-0.317	68	0	32	0	32	0	32
3	N45	max	0.019	72	4.51	38	0.805	52	0	72	0	72	0	72
4		min	-1.348	40	-0.318	72	-0.143	72	0	32	0	32	0	32
5	N46	max	0.468	50	4.421	38	0.346	70	0	72	0	72	0	72
6		min	-0.512	68	-0.993	69	-0.244	61	0	32	0	32	0	32
7	N47	max	0.027	70	4.446	38	0.388	70	0	72	0	72	0	72
8		min	-0.577	42	-0.996	69	-0.276	42	0	32	0	32	0	32
9	Totals:	max	0	72	17.876	38	1.9	52						
10		min	-1.58	47	-2.094	68	-0.58	72						



CEILING JOIST & WOOD STUDS DESIGN

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PSE Consulting Engineers Inc.

Project Number	AquaWorks DBO 224-2002				
Project Name	Screen Building	Designed by	AYPN	Date	April-08-2024
Subject	Loads on Ceiling Joist	Checked by	MRD	Date	April-08-2024

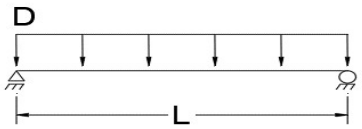
Loads Acting on the Wood Ceiling Joist Under Container Roof

ID #: 1

Loads on Ceiling Joists Under Container Roof: (Option#1)

Distributed Load (D) Trib: 1.33 ft — L_T: 7.5 ft

Roof Dead Load =	15	psf	*	1.33	=	19.95	plf	
Snow Load =	40	psf	*	1.33	=	53.2	plf	



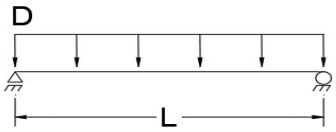
USE **2x4, 2-ply, D.Fir-L, No.2 @ 24" O.C. CEILING JOISTS TYPICAL**

ID #: 2

Loads on Ceiling Joists Under Container Roof: (Option#2)

Distributed Load (D) Trib: 1 ft — L_T: 7.5 ft

Roof Dead Load =	15	psf	*	1.00	=	15	plf	
Snow Load =	40	psf	*	1.00	=	40	plf	



USE **2x4, D.Fir-L, No.1 @ 12" O.C. CEILING JOISTS TYPICAL**

ID #: 3

Interior Studs

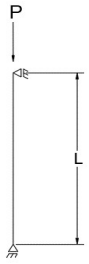
Spacing: 16 " O.C. — L: 9 ft

Trib: 5 ft

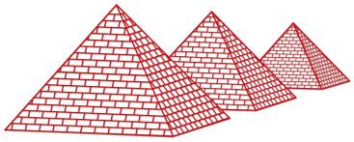
Area Loading Stud: 1.33 ft * 5.00 ft = 6.67 ft^2

Point Load (P):

Dead Load =	15	psf	*	1.33	=	20.00	plf	
Snow Load =	40	psf	*	1.33	=	53.33	plf	



USE **2x4, D.Fir-L, No.2 @ 16" O.C. WALL STUDS TYPICAL**



CEILING JOIST OPTION#1

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WoodWorks® SOFTWARE FOR WOOD DESIGN	COMPANY	PROJECT
	Mar. 21, 2024 14:03	1 Ceiling Joist Option#1

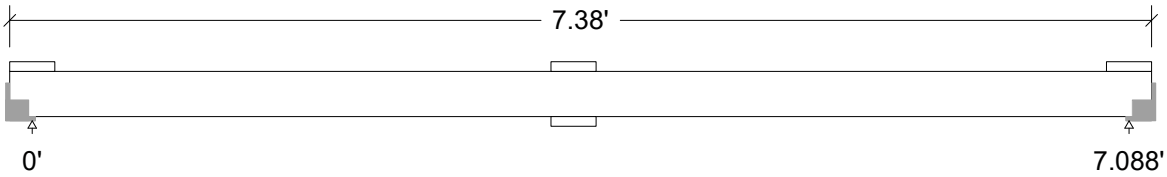
Design Check Calculation Sheet

WoodWorks Sizer 2023

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
DL	Dead	Full Area				15.00(24.0")		psf
SL	Snow	Full Area				40.00(24.0")		psf
Self-weight	Dead	Full UDL				2.5		plf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	120		120
Snow	295		295
Factored:			
Total	415		415
Bearing:			
Capacity			
Joist	937		937
Support	775		775
Des ratio			
Joist	0.44		0.44
Support	0.55		0.55
Load comb	#2		#2
Length	2.00*		2.00*
Min req'd	0.50*		0.50*
Cb	-		-
Cb min	1.00		1.00
Cb support	-		-
Fcp sup	-		-

*Minimum bearing length setting used: 1/2" for end supports

CEILING JOIST UNDER CONTAINER ROOF

Lumber n-ply, D.Fir-L, No.2, 2x4, 2-ply (3"x3-1/2")

Supports: All - LUS24-2 Hanger, F 4-10d, S 2-10d

Roof joist spaced at 24.0" c/c; Total length: 7.38'; Clear span: 7.063'; Volume = 0.5 cu.ft.

Lateral support: top = 3'-6 bottom = 3'-6 (in); Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 52	Fv' = 180	psi	fv/Fv' = 0.29
Bending(+)	fb = 1384	Fb' = 1524	psi	fb/Fb' = 0.91
Live Defl'n	0.26 = L/321	0.35 = L/240	in	0.75
Total Defl'n	0.43 = L/199	0.47 = L/180	in	0.90

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	180	1.00	1.00	1.00	-	-	-	-	1.00	1.00	2
Fb'+	900	1.00	1.00	1.00	0.982	1.500	-	1.15	1.00	1.00	2
Fcp'	625	-	1.00	1.00	-	-	-	-	1.00	1.00	-
E'	1.6 million		1.00	1.00	-	-	-	-	1.00	1.00	2
Emin'	0.58 million		1.00	1.00	-	-	-	-	1.00	1.00	2

Custom duration factor for Snow load = 1.00

CRITICAL LOAD COMBINATIONS:

```
 Shear     : LC #2  = D + S
 Bending(+): LC #2  = D + S
 Deflection: LC #2  = D + S  (live)
             LC #2  = D + S  (total)
 Bearing   : Support 1 - LC #2 = D + S
             Support 2 - LC #2 = D + S
 D=dead S=snow
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-16 2.4
```

CALCULATIONS:

```
 V max = 399, V design = 364 (NDS 3.4.3.1(a)) lbs; M(+) = 707 lbs-ft
 EI = 8.57e06 lb-in^2/ply
 "Live" deflection is due to all non-dead loads (live, wind, snow…)
 Total deflection = 1.50 permanent + "live"
 Lateral stability(+):  Lu = 3.50'  Le = 6.56'  RB = 11.1; b = single ply width
```

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2021) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.
4. Factored hanger resistances come from the SST Connector Selector, version 2020.4.22, and may be different than those published in the current Wood Construction Connectors catalogue. The catalogue values are for certain configurations, whereas the Selector adjusts these for specific connection geometry and fasteners. For further information, please contact Simpson Strong-Tie at www.strongtie.com.

PSE Consulting Engineers Inc.

CEILING JOIST OPTION#2

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WoodWorks® SOFTWARE FOR WOOD DESIGN	COMPANY	PROJECT
	Mar. 21, 2024 14:01	2 Ceiling Joist Option#2

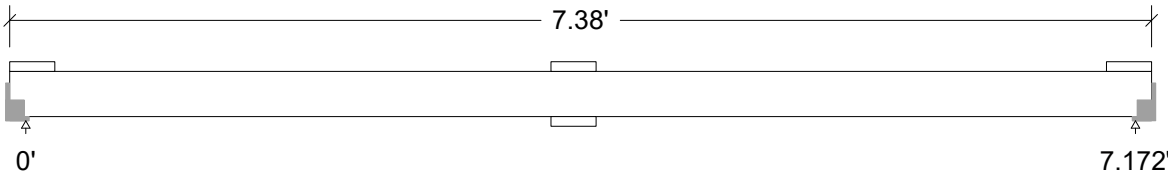
Design Check Calculation Sheet

WoodWorks Sizer 2023

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
DL	Dead	Full Area				15.00(12.0")		psf
SL	Snow	Full Area				40.00(12.0")		psf
Self-weight	Dead	Full UDL				1.2		plf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	60		60
Snow	148		148
Factored:			
Total	207		207
Bearing:			
Capacity			
Joist	469		469
Support	530		530
Des ratio			
Joist	0.44		0.44
Support	0.39		0.39
Load comb	#2		#2
Length	1.50*		1.50*
Min req'd	0.50*		0.50*
Cb	-		-
Cb min	1.00		1.00
Cb support	-		-
Fcp sup	-		-

*Minimum bearing length setting used: 1/2" for end supports

CEILING JOIST UNDER CONTAINER ROOF

Lumber-soft, D.Fir-L, No.2, 2x4 (1-1/2"x3-1/2")

Supports: All - LU24 Hanger, F 4-10d, S 2-10dx1.5

Roof joist spaced at 12.0" c/c; Total length: 7.38'; Clear span: 7.125'; Volume = 0.3 cu.ft.

Lateral support: top = 3'-6 bottom = 3'-6 (in); Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 53	Fv' = 180	psi	fv/Fv' = 0.29
Bending(+)	fb = 1417	Fb' = 1524	psi	fb/Fb' = 0.93
Live Defl'n	0.28 = L/309	0.36 = L/240	in	0.77
Total Defl'n	0.45 = L/192	0.48 = L/180	in	0.93

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	180	1.00	1.00	1.00	-	-	-	-	1.00	1.00	2
Fb'+	900	1.00	1.00	1.00	0.982	1.500	-	1.15	1.00	1.00	2
Fcp'	625	-	1.00	1.00	-	-	-	-	1.00	1.00	-
E'	1.6 million		1.00	1.00	-	-	-	-	1.00	1.00	2
Emin'	0.58 million		1.00	1.00	-	-	-	-	1.00	1.00	2

Custom duration factor for Snow load = 1.00

CRITICAL LOAD COMBINATIONS:

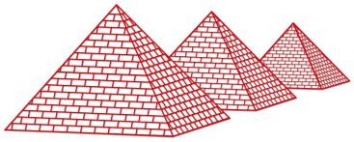
```
 Shear     : LC #2  = D + S
 Bending(+): LC #2  = D + S
 Deflection: LC #2  = D + S  (live)
             LC #2  = D + S  (total)
 Bearing   : Support 1 - LC #2 = D + S
             Support 2 - LC #2 = D + S
 D=dead S=snow
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-16 2.4
```

CALCULATIONS:

```
 V max = 202, V design = 184 (NDS 3.4.3.1(a)) lbs; M(+) = 362 lbs-ft
 EI = 8.57e06 lb-in^2
 "Live" deflection is due to all non-dead loads (live, wind, snow…)
 Total deflection = 1.50 permanent + "live"
 Lateral stability(+):  Lu = 3.50'  Le = 6.56'  RB = 11.1
```

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2021) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.
4. Factored hanger resistances come from the SST Connector Selector, version 2020.4.22, and may be different than those published in the current Wood Construction Connectors catalogue. The catalogue values are for certain configurations, whereas the Selector adjusts these for specific connection geometry and fasteners. For further information, please contact Simpson Strong-Tie at www.strongtie.com.



WOOD WALL STUD

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	COMPANY	PROJECT
WoodWorks® SOFTWARE FOR WOOD DESIGN		
	Mar. 25, 2024 15:34	3 Wall Stud Design

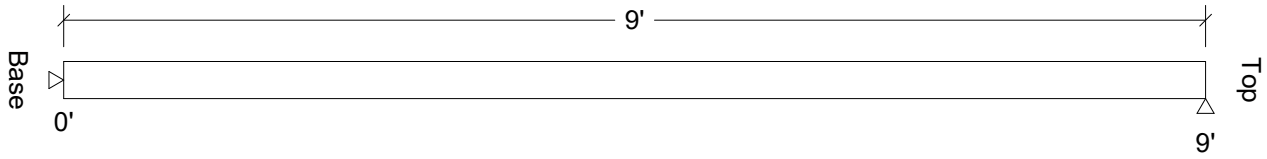
Design Check Calculation Sheet

WoodWorks Sizer 2023

Loads:

Load	Type	Distribution	Location [ft] Start	End	Magnitude Start	End	Unit
DL	Dead	Axial UDL	(Ecc. = 0.58")		20		plf
SL	Snow	Axial UDL	(Ecc. = 0.58")		53		plf
Self-weight	Dead	Axial UDL			8		plf

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	0		-0
Snow	0		-0
Axial:			
Dead	38		38
Snow	71		71
Factored:			
R->L			-1
Load comb			#2
L->R	1		
Load comb	#2		#1

Stud

Lumber Stud, D.Fir-L, No.2, 2x4 (1-1/2"x3-1/2")

Support: None

Spaced at 16.0" c/c; Total length: 9.0'; Volume = 0.3 cu.ft.

Pinned base; Load face = width(b); Ke x Lb: 1.0 x 0.0 = 0.0 ft; Ke x Ld: 1.0 x 9.0 = 9.0 ft; Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Bending(+)	fb = 19	Fb' = 1552	psi	fb/Fb' = 0.01
Axial	fc = 21	Fc' = 462	psi	fc/Fc' = 0.04
Combined	(axial + eccentric moment)			Eq.15.4-3 = 0.01
Axial Bearing	fc = 21	Fc* = 1552	psi	fc/Fc* = 0.01
Live Defl'n	0.00 = < L/999	0.90 = L/120	in	0.00
Total Defl'n	0.01 = < L/999	0.90 = L/120	in	0.01

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CF	Cfu	Cr	Cfrt	Ci	LC#
Fb'+	900	1.00	1.00	1.00	1.000	1.500	-	1.15	1.00	1.00	2
Fc'	1350	1.00	1.00	1.00	0.297	1.150	-	-	1.00	1.00	2
E'	1.6 million	1.00	1.00	-	-	-	-	1.00	1.00	2	
Emin'	0.58 million	1.00	1.00	-	-	-	-	1.00	1.00	2	
Fc*	1350	1.00	1.00	1.00	-	1.150	-	-	1.00	1.00	2

Custom duration factor for Snow load = 1.00

CRITICAL LOAD COMBINATIONS:

Bending(+): LC #2 = D + S
Deflection: LC #2 = D + S (live)
LC #2 = D + S (total)
Axial : LC #2 = D + S
Combined : LC #2 = D + S
D=dead S=snow
All LC's are listed in the Analysis output
Load combinations: ASD Basic from ASCE 7-16 2.4

CALCULATIONS:

M(+) = 5 lbs-ft; P = 109 lbs
EI = 8.57e06 lb-in^2
Combined: Fb' = 1552 psi; fb = 0 psi; fbe = (P x e)/S = fc(6e/d) = 19 psi;
FcE = 501 psi
"Live" deflection is due to all non-dead loads (live, wind, snow…)
Total deflection = 1.50 permanent + "live"
Axial d governs, l/b = 0.0, l/d = 30.9

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2021) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.

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