I.L. GROSS
STRUCTURAL
ENGINEERS

Mercer Island Pergola

Mercer Island, WA

Calculations for Permit Review

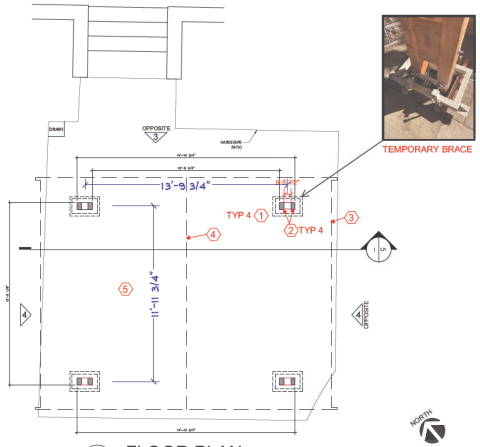
July 16, 2024

www.ilgross.com

MICHAEL L. JONES
ARCHITECT/CONSULTANT, LLC

Mercer Island Pergola

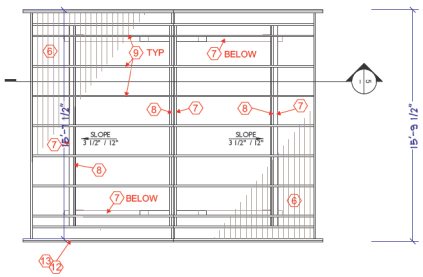
8636 N Mercer Way
Mercer Isl, WA 98040



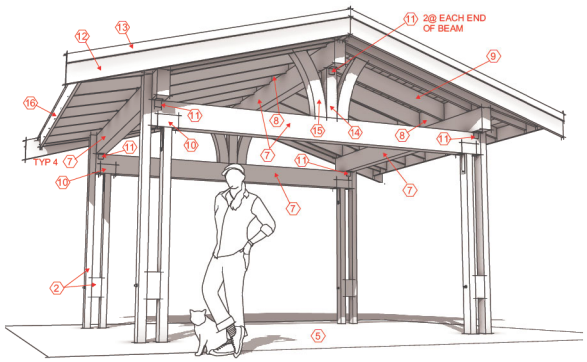
1 FLOOR PLAN
SCALE: 1/4" = 1'-0"

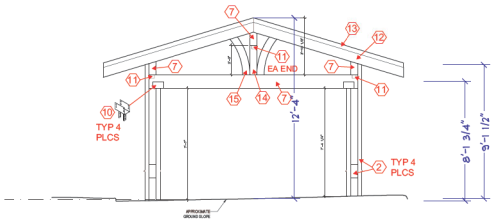
PROJECT DESCRIPTION

MOVE EXISTING, NON-PERMITTED TIMBER FRAME PERGOLA APPROXIMATELY 7'-8" NE TO COMPLY WITH MIN. 20'-0" FRONT YARD SETBACK, PER BUILDING INSPECTOR'S DIRECTION. EXISTING CONSTRUCTION HAS BEEN ACCURATELY MEASURED REVIEWED BY A STRUCTURAL ENGINEER (REF: STRUCTURAL SHEETS) TO FULLY COMPLY WITH CURRENT STRUCTURAL CODE. REFERENCE SITE PLAN FOR EXACT LOCATION ON PROPERTY. NOTE THAT THE RELOCATION WILL CONFLICT WITH THE EXISTING LANDSCAPE STAIRS WHICH WILL NEED TO BE REDESIGNED & RELOCATED ALSO.

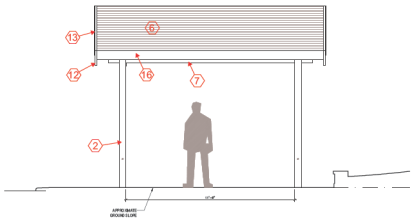


2 ROOF PLAN
SCALE: 1/4" = 1'-0"

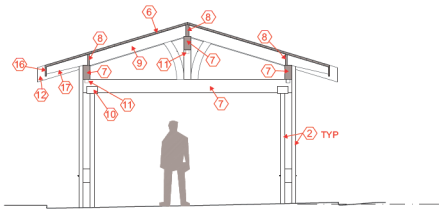




3 SOUTH ELEVATION
(NORTH ELEVATION OPPOSITE)
SCALE: 1/4" = 1'-0"



4 WEST ELEVATION
(EAST ELEVATION OPPOSITE)
SCALE: 1/4" = 1'-0"



5 BUILDING SECTION
SCALE: 1/4" = 1'-0"

KEYNOTES

1. TEMPORARY POST BRACKET. RELOCATE STRUCTURE PER SITE PLAN. REMOVE BRACKET AND MOUNT POSTS PER STRUCTURAL (4 PLACES).
2. DOUBLE 4X6 WOOD COLUMNS SPACED 5 1/2" APART (4 PLACES). NOTE ON N-S ELEVATIONS THAT THE COLUMNS ARE CONNECTED WITH A 6X6X11 1/4" WOOD BLOCK AT THE BOTTOM.
3. EDGE OF ROOF – REF: ROOF PLAN.
4. ROOF RIDGE – REF: ROOF PLAN.
5. EXISTING STONE PATIO.
6. 1 1/2"X5" T&G DECKING.
7. 6X12 BEAM
8. 2X BLOCKING BETWEEN JOISTS
9. 2X10 JOISTS @ 24" OC
10. SIMPSON CC64 POST CAP (4 PLACES)
11. SIMPSON OHA33 ORNAMENTAL ANGLE (12 PLACES)
12. 2X10 GABLE END TRIM
13. 1X4 TRIM
14. 6X6 KING POST
15. CURVED DECORATIVE BRACE – 5 1/2" THICK
16. 2X8 TRIM AT RAFTER ENDS
17. ANGLE CUTS ON END OF RAFTERS

5652 REGISTERED ARCHITECT
MICHAEL L. JONES
STATE OF WASHINGTON

JURISDICTION STAMP

Design Criteria

8636 N Mercer Way
Mercer Island, WA 98040

2021 International Building Code
2016 ASCE 7

Seismic analysis

I = 1.0
S_S= 139%
S_1= 48%
S_{DS}= 111%
S_{D1}= 59%
R = 1.5
Seismic Design Category D

Wind analysis

Wind Speed (V3s) mph 110
Exposure C
Importance Factor I = 1.0
Topographic Factor Kzt = 1.0

Live Loads

Roof	25 psf snow

Dead Loads

Pergola Framing

Asphtalt Roofing	4 psf
1/2" CDX Sheathing	1.5 psf
2x Decking	4.3 psf
2x10 @ 24" oc	1.9 psf
Framing	1.5 psf
M/E Misc	0.5 psf
	13.7 psf

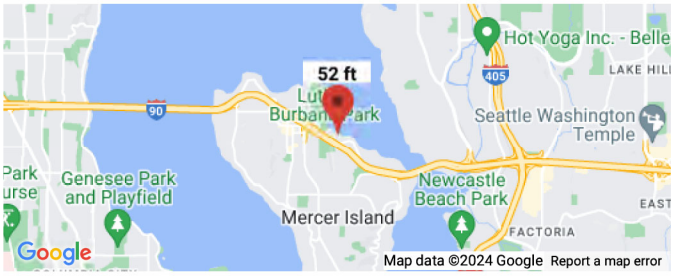
⚠ This is a beta release of the new ATC Hazards by Location website. Please contact us with feedback.

ℹ The ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Hazards by Location

Search Information

Address:	8636 N Mercer Way, Mercer Island, WA 98040, USA
Coordinates:	47.5845667, -122.2220987
Elevation:	52 ft
Timestamp:	2024-07-10T17:56:52.622Z
Hazard Type:	Seismic
Reference Document:	ASCE7-16
Risk Category:	II
Site Class:	D-default



Basic Parameters

Name	Value	Description
S_S	1.391	MCE_R ground motion (period=0.2s)
S_1	0.484	MCE_R ground motion (period=1.0s)
S_{MS}	1.67	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	1.113	Numeric seismic design value at 0.2s SA
S_{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8

Additional Information

Name	Value	Description
SDC	* null	Seismic design category
F_a	1.2	Site amplification factor at 0.2s
F_v	* null	Site amplification factor at 1.0s
CR_S	0.903	Coefficient of risk (0.2s)
CR_1	0.897	Coefficient of risk (1.0s)
PGA	0.595	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.714	Site modified peak ground acceleration
T_L	6	Long-period transition period (s)
SsRT	1.391	Probabilistic risk-targeted ground motion (0.2s)
SsUH	1.541	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	3.326	Factored deterministic acceleration value (0.2s)
S1RT	0.484	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.54	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	1.355	Factored deterministic acceleration value (1.0s)
PGAd	1.147	Factored deterministic acceleration value (PGA)

* See Section 11.4.8

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.

Mercer Island Pergola

WIND FORCES

Wind Analysis Using MWFRS Chapter 27 - Part 2

for V= 110 mph Exp C

$P = P_h/P_0 * K_{ZT}$ Interpolation Factor = 1.000

Length= 15.75 ft
B (width) = 19.5 ft
L/B 0.80769
h= 12.33
Kzt= 1.00

h	P Wall				
15	Ph	16.7			psf
	Po	16.7			psf

@ h= 12.33

ASCE Partial Table 27.5-3

110 mph Exposure B

		L/B		
h, ft	P_{NET}	0.5	1	2
15	P_h	16.7	16.7	14.5
	P_0	16.7	16.7	14.5
20	P_h	17.5	17.5	15.1
	P_0	17.2	17.2	14.8
30	P_h	19.6	19.6	16.9
	P_0	18.1	18.1	15.4
40	P_h	21.5	21.5	18.6
	P_0	18.7	18.7	15.8
50	P_h	23.1	23.1	20.2
	P_0	19.3	19.3	16.3
60	P_h	24.8	24.8	21.7
	P_0	20.0	20.0	16.7
70	P_h	26.3	26.3	23.1
	P_0	20.6	20.6	17.2

P_h NET = 16.7 psf
P_0 NET = 16.7 psf

PNET @ h = 12.33 ft 16.7
PNET @ h = ft
PNET @ h =
PNET @ h =
PNET @ h =
PNET @ h =

North-South Wind Load

Roof Wind Load

TOTAL AREA	P_{NET}	FORCE	
148	16.7	2475	lbs
			lbs
			lbs
			lbs

Roof Wind Load 2.5 kips

2nd Floor Wind Loading

TOTAL AREA	P_{NET}	FORCE	
	0.0	0	lbs
			lbs
			lbs
			lbs

2nd Floor Wind Loading 0.0 kips

1st Floor Wind Loading

TOTAL AREA	P_{NET}	FORCE	
0	0.0	0	lbs
			lbs
			lbs
			lbs

1st Floor Wind Loading 0.0 kips

Total Wind Load N/S = 2.5 kips
0.6*W = 1.5 kips

Total Seismic Load N/S = 4.2 kips
0.7 E = 2.9 kips

Seismic Governs

East-West Wind Load

Roof Wind Load

TOTAL AREA	P_{NET}	FORCE	
148	16.7	2475	lbs
			lbs
			lbs
			lbs

Roof Wind Load 2.5 kips

2nd Floor Wind Loading

TOTAL AREA	P_{NET}	FORCE	
	0.0	0	lbs
			lbs
			lbs
			lbs

2nd Floor Wind Loading 0.0 kips

1st Floor Wind Loading

TOTAL AREA	P_{NET}	FORCE	
	0.0	0	lbs
			lbs
			lbs
			lbs

1st Floor Wind Loading 0.0 kips

Total Wind Load E/W = 2.5 kips
0.6*W = 1.5 kips

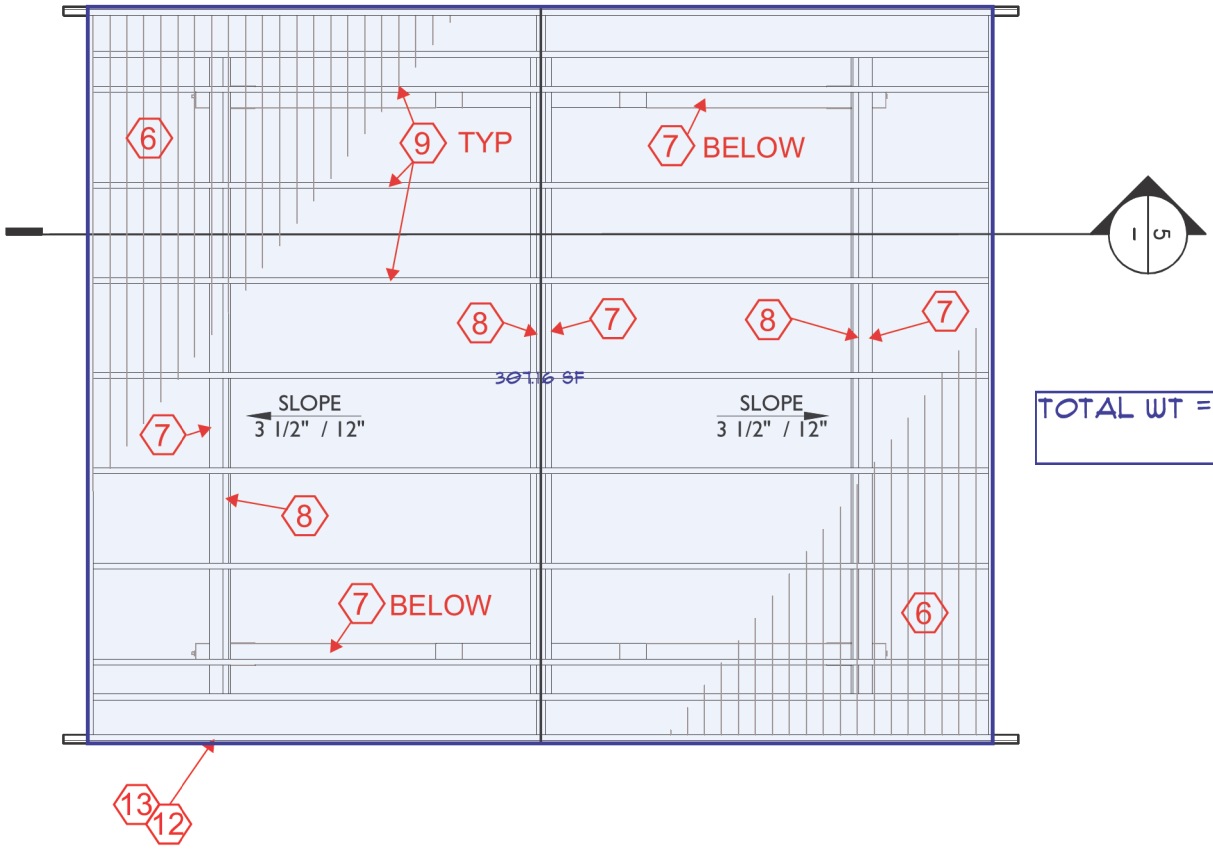
Total Seismic Load E/W = 4.2 kips
0.7 E = 2.9 kips

Seismic Governs

h = 12.3 feet

h = 0.0 feet

h = 0.0 feet



TOTAL WT = 308 SF X 14 PSF =>4312 LBS

2 ROOF PLAN

SCALE: 3/8" = 1'-0"

ROOF WEIGHT	3/8" = 1'-0"	07/24
SHEET TITLE	SCALE	DATE
MI PERGOLA		
PROJECT	DESIGNED BY	
MIKE JONES	VM	
CLIENT	CHECKED	SHEET

I.L. GROSS STRUCTURAL ENGINEERS

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Internation Building Code **Section 1613**

ASCE7 Chapter 12

Maximum Considered Earthquake Spectral Response Acceleration Parameters

Ss =	139%	S_{DS}=	111%	Fa=	1.2	per Table 11.4-1
S1 =	48%	S_{D1}=	59%	Fv=	1.816	per Table 11.4-2

Interpolate Fv	
S1	Fv
0.4	1.9
0.5	1.8
48%	1.816

Site Class **D** assumed **MCE**

Section 1613

Design Spectral Response Acceleration Parameters (IBC 1613.2.1)

5% damped design

Approximate Fundamental Period T = Ct(hn)^x (ASCE7 12.8.2.1) table 12.8-2

Where: Ct = 0.02, Hn = 12.33, x= 0.75

T = 0.132 sec

'OK, no increase' (ASCE 11.4.8) Exception #2

General Resonse Spectrum (ASCE7 11.4.5)

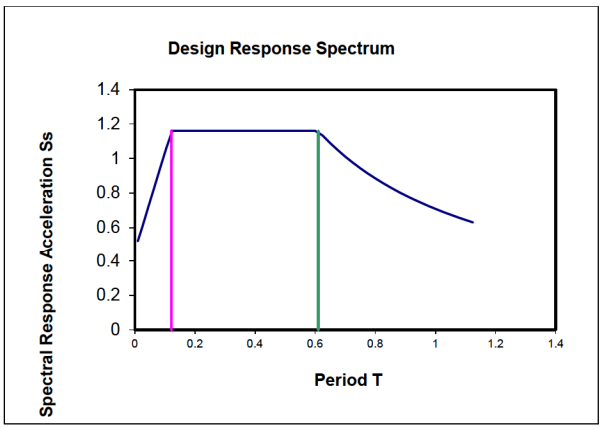
To = $0.2 * S_{D1}/S_{DS}$ = 0.11 sec

Ts = S_{D1}/S_{DS} = 0.53 sec

TL = 6 sec figure 22-12

Sa=	5.28553	11.4-5	if T,To
Sa=	1.11		if To<T<Ts
Sa=	4.452641	11.4-6	if Ts<T<TL
Sa=	203.0096	11.4-7	if T>TL

Sa= 1.1128



Ss = 1.113

Importance Factor I = 1

Seismic Use Group= II (ASCE-7 Table 9.1.3)

Seismic Design Category D Table 11.6-1 (ASCE-7 Table 11.6)

D Table 11.6-2

IBC Building Classification: Regular Building (ASCE7 12.3.2)

Equivalent Lateral Force Procedure (ASCE 7 section 12.8)

Requirements to use the Equivalent Lateral Force Procedure:
Regular Building
T < 3.5 Ts okay

Building Type
Cantilevered Timber Column System

R= 1.5 Ω_o = 1.5 C_D = 1.5 (ASCE7 Table 12.2.1)

Seismic Base Shear

$V = Cs\ W$ (ASCE7 Eq 12.8-1)

$Cs = \frac{S_{DS}}{R/I}$ Cs = 0.742 (ASCE7 Eq 12.8-2)

but need not be greater than,

$Cs = \frac{S_{D1}}{T(R/I)}$ For I<IL = 2.968 (ASCE7 Eq 12.8-3)

$Cs = \frac{S_{D1}\,T_L}{T^2(R/I)}$ For I>IL = 135.340 (ASCE7 Eq 12.8-4)

Cs max= 2.968

but shall not be less than:

Cs = .044*SDs/(R/Ie) Cs min= 0.0064

Cs = 0.5*Sd1/(R/Ie)

Therefore: Cs = 0.742 W

Total W = **4.3** kips

V = 3.2 kips

Redudancy Factor

E = r Eh + Ev (ASCE7 EQ 12.3.4)

where r = 1.3 unless criteria of table 12.3-3 are met for SDC D,E,F
r = 1.0 for Seismic Design Categories A,B,C

Therefore: r = 1.30

E = 4.16 kips

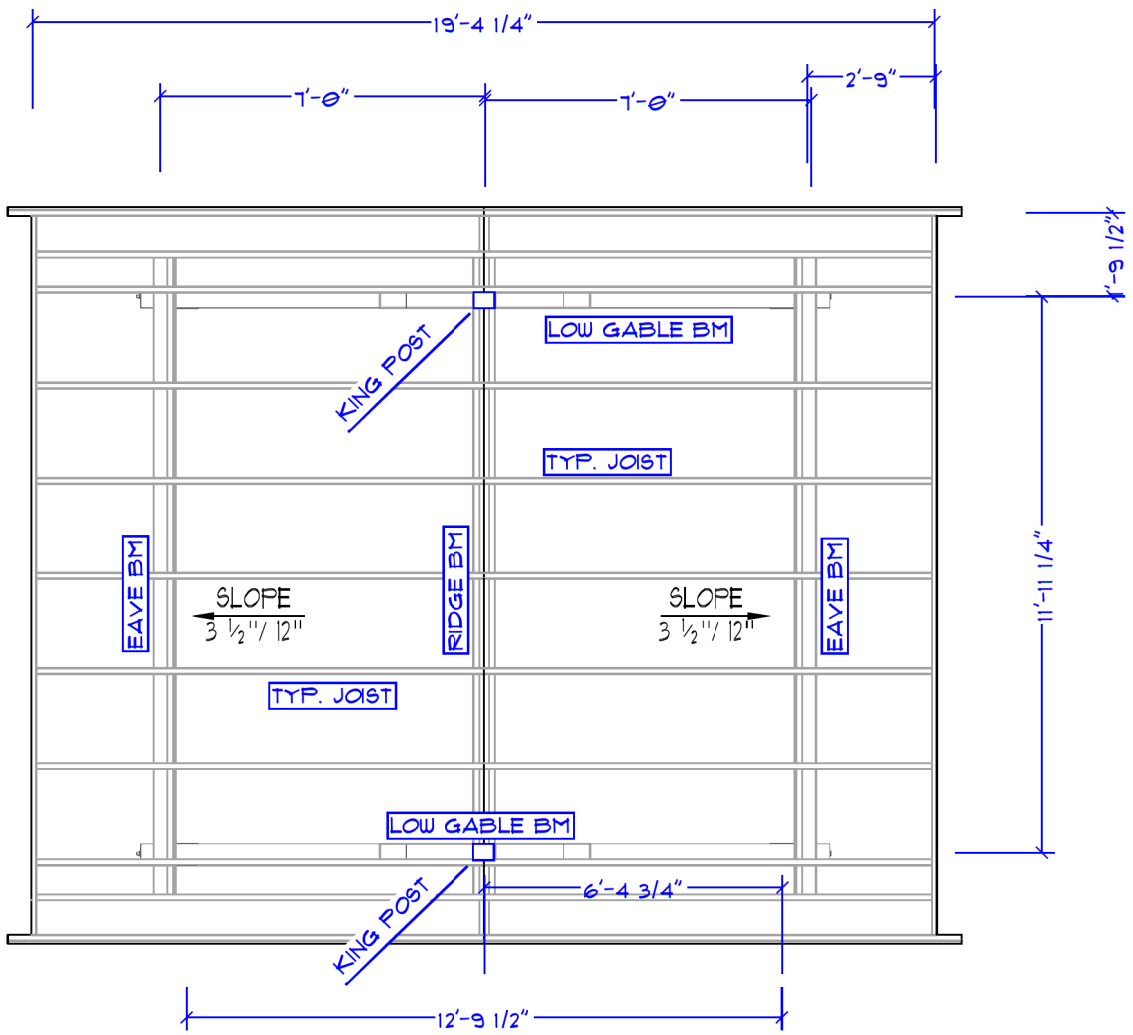
Building Weight
Roof = 14 psf

Roof 4.31 k

Total Deck Wt 4.3

SEISMIC DISTRIBUTION

level	W (kips)	h (ft)	Wh (kip-ft)	Wh / Σ Wh	STRENGTH / LRFD story shear (kips)	STRENGTH / LRFD Σ (kips)	ALLOW. STRESS DESIGN story shear (kips)	ALLOW. STRESS DESIGN Σ (kips)
Roof	4.3	12.33	53.2	1.00	4.16	4.16	2.97	2.97
BASE								
	4 kips		53.2					



ROOF PLAN

3/8" = 1'-0"

Project Title:
Engineer:
Project ID:
Project Descr:

Building Code Information

Project File: MI Pergola.ec6

Governing Code : IBC 2021, ASCE 7-16, AISC 360-16, NDS 2018, ACI 318-19, TMS 402-16
City Jurisdiction : Mercer Island
Contact Name :
Alternate Contact :
Building Official :
Address : , Mercer Island,
Phone : Fax : eMail :
Notes :

Project Information

Project Title : MI Pergola

Description : Existing Pergola to be Relocated

I.D. :

Address : 8636 N Mercer Way, Mercer Island, WA 98040

Project Leader : VM

Phone : 425-640-7333 Fax : eMail : victorm@ilgross.com

Project Notes

Project Title: MI Pergola
Engineer: VM
Project ID:
Project Descr: Existing Pergola to be Relocated

Multiple Simple Beam

Project File: MI Pergola.ec6

Description : MI Pergola Framing

Wood Beam Design : TYP. JOIST

Calculations per NDS 2018, IBC 2021, ASCE 7-16

BEAM Size : **2x10, Sawn, Fully Braced**
Using Allowable Stress Design with ASCE 7-16 Load Combinations, Major Axis Bending
Wood Species : Douglas Fir-Larch Wood Grade : Standard

Fb - Tension	575.0 psi	Fc - Prll	1,400.0 psi	Fv	180.0 psi	Ebend- xx	1,400.0 ksi	Density	31.210 pcf
Fb - Compr	575.0 psi	Fc - Perp	625.0 psi	Ft	375.0 psi	Eminbend - xx	510.0 ksi		

Applied Loads

Beam self weight calculated and added to loads
Unif Load: D = 0.0140, S = 0.0250 k/ft, Trib= 2.0 ft

Design Summary

Max fb/Fb Ratio = 0.301 : 1
fb : Actual : 199.05 psi at 2.975 ft in Span # 1
Fb : Allowable : 661.25 psi
Load Comb : +D+S+H

Max fv/FvRatio = 0.138 : 1
fv : Actual : 28.64 psi at 6.230 ft in Span # 1
Fv : Allowable : 207.00 psi
Load Comb : +D+S+H

Max Reactions (k)	D	Lr	L	S	W	E	H
Left Support	0.09			0.15			
Right Support	0.21			0.34			

Max Deflections

Transient Downward	0.012 in	Total Downward	0.020 in
Ratio	6733	Ratio	4155
	LC: S Only		LC: +D+S+H
Transient Upward	-0.005 in	Total Upward	-0.008 in
Ratio	9999	Ratio	8250
	LC: S Only		LC: +D+S+H

Wood Beam Design : EAVE BEAMS

Calculations per NDS 2018, IBC 2021, ASCE 7-16

BEAM Size : **6x12, Sawn, Fully Unbraced**
Using Allowable Stress Design with ASCE 7-16 Load Combinations, Major Axis Bending
Wood Species : Douglas Fir-Larch Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	31.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

Beam self weight calculated and added to loads
Unif Load: D = 0.0140, S = 0.0250 k/ft, Trib= 6.250 ft

Design Summary

Max fb/Fb Ratio = 0.444 : 1
fb : Actual : 455.54 psi at 6.000 ft in Span # 2
Fb : Allowable : 1,025.89 psi
Load Comb : +D+S+H

Max fv/FvRatio = 0.151 : 1
fv : Actual : 31.26 psi at 11.120 ft in Span # 2
Fv : Allowable : 207.00 psi
Load Comb : +D+S+H

Max Reactions (k)	D	Lr	L	S	W	E	H
Left Support	0.66			1.02			
Right Support	0.66			1.02			

Max Deflections

Transient Downward	0.066 in	Total Downward	0.108 in
Ratio	2198	Ratio	1334
	LC: S Only		LC: +D+S+H
Transient Upward	-0.009 in	Total Upward	-0.014 in
Ratio	1390	Ratio	844
	LC: S Only		LC: +D+S+H

Project Title: MI Pergola
Engineer: VM
Project ID:
Project Descr: Existing Pergola to be Relocated

Multiple Simple Beam

Project File: MI Pergola.ec6

Wood Beam Design : RIDGE BEAM

Calculations per NDS 2018, IBC 2021, ASCE 7-16

BEAM Size : **6x12, Sawn, Fully Unbraced**
Using Allowable Stress Design with ASCE 7-16 Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir-Larch				Wood Grade :	No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	31.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

Beam self weight calculated and added to loads
Unif Load: D = 0.0140, S = 0.0250 k/ft, Trib= 7.0 ft

Design Summary

Max fb/Fb Ratio = **0.494** : 1
fb : Actual : 507.30 psi at 6.000 ft in Span # 2
Fb : Allowable : 1,025.89 psi
Load Comb : +D+S+H

Max fv/FvRatio = **0.197** : 1
fv : Actual : 40.80 psi at 12.000 ft in Span # 2
Fv : Allowable : 207.00 psi
Load Comb : +D+S+H

Max Reactions (k)	D	Lr	L	S	W	E	H
Left Support	0.73			1.14			
Right Support	0.73			1.14			

Max Deflections

Transient Downward	0.073 in	Total Downward	0.120 in
Ratio	1962	Ratio	1197
	LC: S Only		LC: +D+S+H
Transient Upward	-0.010 in	Total Upward	-0.016 in
Ratio	1242	Ratio	758
	LC: S Only		LC: +D+S+H

Wood Beam Design : GABLE BEAM

Calculations per NDS 2018, IBC 2021, ASCE 7-16

BEAM Size : **6x12, Sawn, Fully Unbraced**
Using Allowable Stress Design with ASCE 7-16 Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir-Larch				Wood Grade :	No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	31.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

Beam self weight calculated and added to loads
1Point: D = 0.730, S = 1.140 k @ 6.375 ft
2Point: D = 0.660, S = 1.020 k @ -0.50 ft
3Point: D = 0.660, S = 1.020 k @ 13.250 ft

Design Summary

Max fb/Fb Ratio = **0.521** : 1
fb : Actual : 534.29 psi at 6.375 ft in Span # 2
Fb : Allowable : 1,025.31 psi
Load Comb : +D+S+H

Max fv/FvRatio = **0.193** : 1
fv : Actual : 40.00 psi at 12.750 ft in Span # 2
Fv : Allowable : 207.00 psi
Load Comb : +D+S+H

Max Reactions (k)	D	Lr	L	S	W	E	H
Left Support	1.12			1.59			
Right Support	1.12			1.59			

Max Deflections

Transient Downward	0.061 in	Total Downward	0.107 in
Ratio	2518	Ratio	1431
	LC: S Only		LC: +D+S+H
Transient Upward	-0.006 in	Total Upward	-0.011 in
Ratio	1878	Ratio	1054
	LC: S Only		LC: +D+S+H

Project Title: MI Pergola
Engineer: VM
Project ID:
Project Descr: Existing Pergola to be Relocated

General Footing

Project File: MI Pergola.ec6

DESCRIPTION: Typical Footing

Code References

Calculations per ACI 318-19, IBC 2021, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

Material Properties

f'c : Concrete 28 day strength	=	2.50	ksi
fy : Rebar Yield	=	60.0	ksi
Ec : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	No
Use Pedestal wt for stability, mom & shear	:	No

Soil Design Values

Allowable Soil Bearing	=	1.50	ksf
Soil Density	=	110.0	pcf
Increase Bearing By Footing Weight	=	No	
Soil Passive Resistance (for Sliding)	=	250.0	pcf
Soil/Concrete Friction Coeff.	=	0.30	

Increases based on footing Depth

Footing base depth below soil surface	=	ft
Allow press. increase per foot of depth	=	ksf
when footing base is below	=	ft

Increases based on footing plan dimension

Allowable pressure increase per foot of depth	=	ksf
when max. length or width is greater than	=	ft

Dimensions

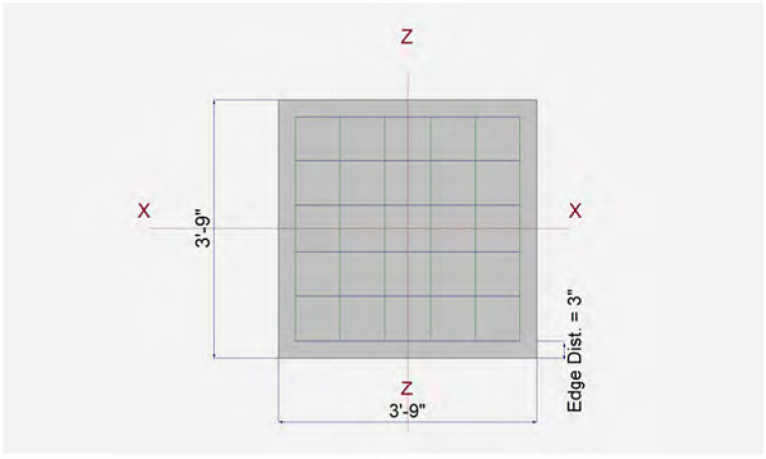
Width parallel to X-X Axis	=	3.750 ft
Length parallel to Z-Z Axis	=	3.750 ft
Footing Thickness	=	12.0 in

Pedestal dimensions...

px : parallel to X-X Axis	=	in
pz : parallel to Z-Z Axis	=	in
Height	=	in

Rebar Centerline to Edge of Concrete...

at Bottom of footing	=	3.0 in



Reinforcing

Bars parallel to X-X Axis			
Number of Bars	=		6.0
Reinforcing Bar Size	=	#	4
Bars parallel to Z-Z Axis			
Number of Bars	=		6.0
Reinforcing Bar Size	=	#	4

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation n/a

# Bars required within zone	n/a
# Bars required on each side of zone	n/a

Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	3.90							k
OB : Overburden	=								ksf
M-xx	=								k-ft
M-zz	=	5.90							k-ft
V-x	=								k
V-z	=								k

Project Title: MI Pergola
Engineer: VM
Project ID:
Project Descr: Existing Pergola to be Relocated

General Footing

Project File: MI Pergola.ec6

LIC# : KW-06016108, Build:20.24.03.04 I.L. GROSS STRUCTURAL ENGINEERS (c) ENERCALC INC 1983-2023

DESCRIPTION: Typical Footing

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.7927	Soil Bearing	1.189 ksf	1.50 ksf	D Only about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	1.887	Overturning - Z-Z	5.90 k-ft	11.136 k-ft	D Only
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.1089	Z Flexure (+X)	1.353 k-ft/ft	12.418 k-ft/ft	D Only
PASS	0.01776	Z Flexure (-X)	0.2205 k-ft/ft	12.418 k-ft/ft	D Only
PASS	0.03926	X Flexure (+Z)	0.4875 k-ft/ft	12.418 k-ft/ft	D Only
PASS	0.03926	X Flexure (-Z)	0.4875 k-ft/ft	12.418 k-ft/ft	D Only
PASS	0.1929	1-way Shear (+X)	8.312 psi	43.089 psi	D Only
PASS	0.03505	1-way Shear (-X)	1.510 psi	43.089 psi	D Only
PASS	0.06705	1-way Shear (+Z)	2.889 psi	43.089 psi	D Only
PASS	0.06705	1-way Shear (-Z)	2.889 psi	43.089 psi	D Only
PASS	0.07789	2-way Punching	11.683 psi	150.0 psi	D Only

Top reinforcing mat required (see 'Bending' tab).

Hand check required for anchor pullout.

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc (in)	Zecc (in)	Actual Soil Bearing Stress @ Location Bottom, -Z	Top, +Z	Left, -X	Right, +X	Actual / Allow Ratio
X-X, D Only	1.50	n/a	0.0	0.4223	0.4223	n/a	n/a	0.282
Z-Z, D Only	1.50	11.921	n/a	n/a	n/a	0.0	1.189	0.793

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
X-X, D Only	None	0.0 k-ft	Infinity	OK
Z-Z, D Only	5.90 k-ft	11.136 k-ft	1.887	OK

Sliding Stability

All units k

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Stability Ratio	Status
Footing Has NO Sliding				

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, D Only	0.4875	+Z	Bottom	0.2592	ACI 7.6.1.1	0.320	12.418	OK
X-X, D Only	0.4875	-Z	Bottom	0.2592	ACI 7.6.1.1	0.320	12.418	OK
Z-Z, D Only	0.2205	-X	Top	0.2592	ACI 7.6.1.1	0.320	12.418	OK
Z-Z, D Only	1.353	+X	Bottom	0.2592	ACI 7.6.1.1	0.320	12.418	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
D Only	1.51 psi	8.31 psi	8.31 psi	43.09 psi	0.19	OK

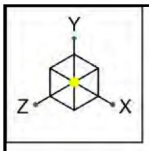
One Way Shear Z

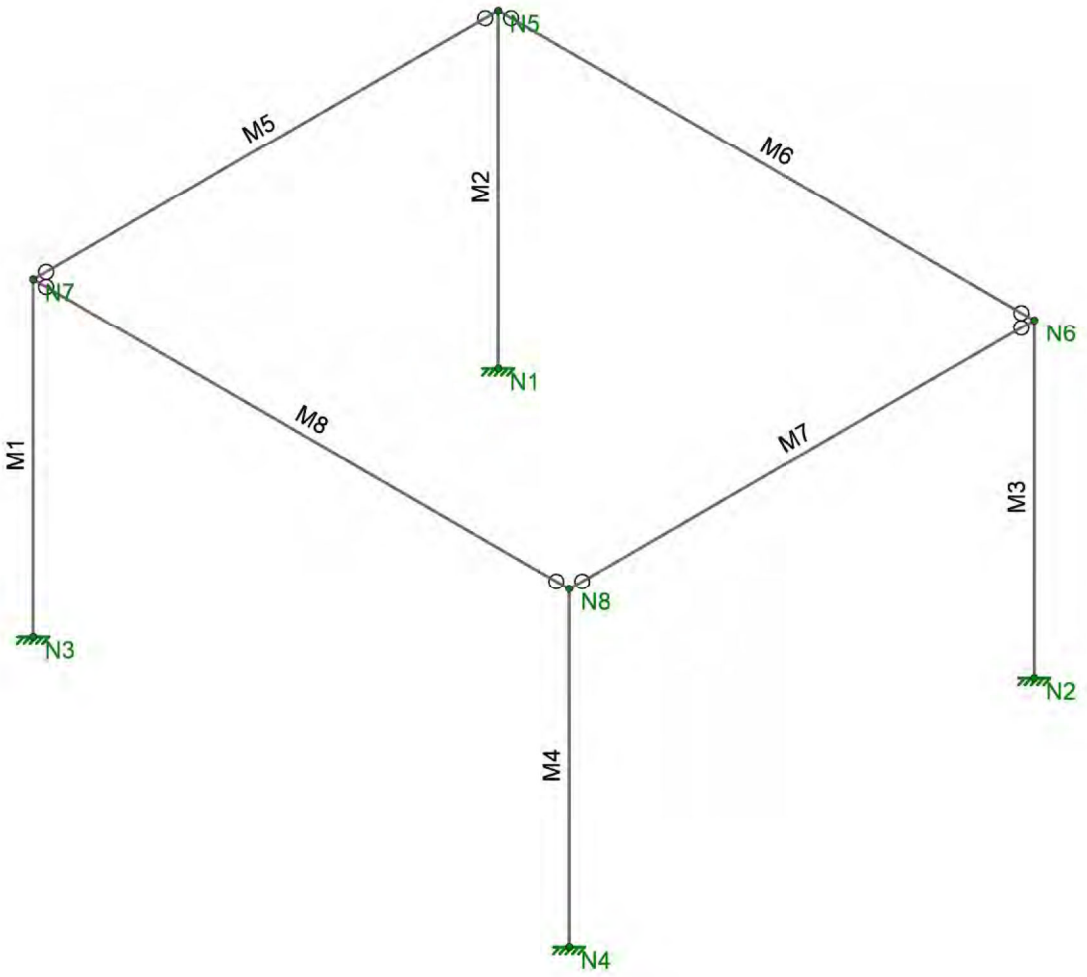
Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
D Only	2.89 psi	2.89 psi	2.89 psi	43.09 psi	0.07	OK

Two-Way "Punching" Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
D Only	11.68 psi	150.00 psi	0.07789	OK





RISA	I.L. Gross Structural Engin…	Pergola Column Check	SK-1
	VM		Jul 16, 2024 at 12:38 PM
	MI Pergola		MI Pergola Colum Check.r3d

Model Settings

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes
Approximate Mesh Size (in)	24
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3
Single	No
Multiple (Optimum)	Yes
Maximum	No

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes
Default Global Plane for z-axis	XZ
Plate Local Axis Orientation	Global

Hot Rolled Steel	AISC 15th (360-16): ASD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 14th (360-10): ASD
Cold Formed Steel	AISI S100-16: ASD
Stiffness Adjustment	Yes (Iterative)
Wood	AWC NDS-18 / SDPWS-15 ASD
Temperature	< 100F
Concrete	ACI 318-14
Masonry	TMS 402-16: ASD
Aluminum	AA ADM1-15: ASD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): ASD
Stiffness Adjustment	Yes (Iterative)

Analysis Methodology	Exact Integration Method
Parme Beta Factor	0.65

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No
List forces which were ignored for design in the Detail Report	Yes

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No
Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Code	ASCE 7-16

Model Settings (Continued)

Risk Category	I or II
Drift Cat	Other
Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes
S_1 (g)	0.44
SD_1 (g)	0.55
SD_S (g)	1.01
T_L (sec)	6
T Z (sec)	
T X (sec)	
C_tZ	0.02
C_tX	0.02
C_tExp. Z	0.75
C_tExp. X	0.75
R Z	6.5
R X	6.5
Ω_0Z	2.5
Ω_0X	2.5
C_dZ	4
C_dX	4
ρ Z	1.3
ρ X	1.3

Wood Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	BEAM	6X12	Beam	Rectangular Double	DF	Typical	63.25	159.443	697.068	446.446
2	COL	4X6	Column	Rectangular	DF	Typical	19.25	19.651	48.526	47.522
3	COL 2	6X12	Column	Rectangular	DF	Typical	63.25	159.443	697.068	446.446

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	N1	0	0	0	
2	N2	13.833	0	0	
3	N3	0	0	12	
4	N4	13.833	0	12	
5	N5	0	8	0	
6	N6	13.833	8	0	
7	N7	0	8	12	
8	N8	13.833	8	12	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N3	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N4	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N2	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N3	N7	COL 2	Column	Rectangular	DF	Typical
2	M2	N1	N5	COL 2	Column	Rectangular	DF	Typical
3	M3	N2	N6	COL 2	Column	Rectangular	DF	Typical
4	M4	N4	N8	COL 2	Column	Rectangular	DF	Typical
5	M5	N7	N5	BEAM	Beam	Rectangular Double	DF	Typical
6	M6	N5	N6	BEAM	Beam	Rectangular Double	DF	Typical
7	M7	N6	N8	BEAM	Beam	Rectangular Double	DF	Typical
8	M8	N8	N7	BEAM	Beam	Rectangular Double	DF	Typical

Hot Rolled Steel Design Parameters

No Data to Print...

Wood Design Parameters

	Label	Shape	Length [ft]	le-bend top [ft]	Cr	y sway	z sway
1	M1	COL 2	8	Lbyy			
2	M2	COL 2	8	Lbyy			
3	M3	COL 2	8	Lbyy			
4	M4	COL 2	8	Lbyy			
5	M5	BEAM	12	Lbyy			
6	M6	BEAM	13.833	Lbyy			
7	M7	BEAM	12	Lbyy			
8	M8	BEAM	13.833	Lbyy			

Member Detailing Data

	Label	I Cardinal Point	Ix Offset [in]	Iy Offset [in]	Iz Offset [in]	J Cardinal Point	Jx Offset [in]	Jy Offset [in]	Jz Offset [in]
1	M1	10	0	0	0	10	0	0	0
2	M2	10	0	0	0	10	0	0	0
3	M3	10	0	0	0	10	0	0	0
4	M4	10	0	0	0	10	0	0	0
5	M5	10	0	0	0	10	0	0	0
6	M6	10	0	0	0	10	0	0	0
7	M7	10	0	0	0	10	0	0	0
8	M8	10	0	0	0	10	0	0	0

Node Loads and Enforced Displacements (BLC 4 : ELX)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	N7	L	X	1.05
2	N5	L	X	1.05
3	N6	L	X	1.05
4	N8	L	X	1.05

Node Loads and Enforced Displacements (BLC 5 : ELZ)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	N7	L	Z	1.05
2	N5	L	Z	1.05
3	N6	L	Z	1.05
4	N8	L	Z	1.05

Member Point Loads (BLC 1 : DL)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M8	y	-0.73	%50
2	M6	y	-0.73	%50

Member Point Loads (BLC 3 : SL)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M8	y	-1.14	%50
2	M6	y	-1.14	%50

Wall Panel Point Loads

No Data to Print...

Diaphragm Point Loads

No Data to Print...

Member Distributed Loads (BLC 1 : DL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M5	Y	-0.087	-0.087	0	%100
2	M7	Y	-0.087	-0.087	0	%100

Member Distributed Loads (BLC 3 : SL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M5	Y	-0.155	-0.155	0	%100
2	M7	Y	-0.155	-0.155	0	%100

Wall Panel Distributed Loads

No Data to Print...

Diaphragm Distributed Loads

No Data to Print...

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed
1	DL	DL	-1		2	2
2	LL	LL				
3	SL	SL			2	2
4	ELX	ELX		4		
5	ELZ	ELZ		4		

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	IBC 16-5 (a)	Yes	Y	DL	1.2	EL	1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
2	IBC 16-5 (b)	Yes	Y	DL	1.2	EL	-1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
3	IBC 16-7 (a)	Yes	Y	DL	0.9	EL	1								
4	IBC 16-7 (b)	Yes	Y	DL	0.9	EL	-1								
5	IBC 16-1	Yes	Y	DL	1.4										
6	IBC 16-2 (a)	Yes	Y	DL	1.2	LL	1.6	LLS	1.6						
7	IBC 16-2 (b)	Yes	Y	DL	1.2	LL	1.6	LLS	1.6	SL	0.5	SLN	0.5		
8	IBC 16-3 (c)	Yes	Y	DL	1.2	SL	1.6	SLN	1.6	LL	0.5	LLS	1		
9	Deflection - DL+LL	Yes	Y	DL	1	LL	1								
10	Deflection - DL+SL	Yes	Y	DL	1	SL	1								
11	Deflection - DL+LL+SL	Yes	Y	DL	1	LL	0.75	SL	0.75						
12	Deflection - SL	Yes	Y	SL	1										
13	Deflection - LL	Yes	Y	LL	1										
14	Deflection - Total	Yes	Y	DL	1	LL	0.75	SL	0.75	EL	2.308				
15	R DL		Y	DL	1										
16	R LL		Y	LL	1										
17	R SL		Y	SL	1										
18	R EQ		Y	EL	1										
19	ASCE ASD 8 (a)	Yes	Y	DL	1	ELX	0.7								
20	ASCE ASD 8 (b)	Yes	Y	DL	1	ELZ	0.7								
21	ASCE ASD 8 (c)	Yes	Y	DL	1	ELX	-0.7								
22	ASCE ASD 8 (d)	Yes	Y	DL	1	ELZ	-0.7								
23	ASCE ASD 9 (a)	Yes	Y	DL	1	ELX	0.525	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
24	ASCE ASD 9 (b)	Yes	Y	DL	1	ELZ	0.525	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
25	ASCE ASD 9 (c)	Yes	Y	DL	1	ELX	-0.525	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
26	ASCE ASD 9 (d)	Yes	Y	DL	1	ELZ	-0.525	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
27	ASCE ASD 10 (a)	Yes	Y	DL	0.6	ELX	0.7								
28	ASCE ASD 10 (b)	Yes	Y	DL	0.6	ELZ	0.7								
29	ASCE ASD 10 (c)	Yes	Y	DL	0.6	ELX	-0.7								
30	ASCE ASD 10 (d)	Yes	Y	DL	0.6	ELZ	-0.7								

Load Combination Design

	Description	CD	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
1	IBC 16-5 (a)			Yes	Yes		Yes	Yes	Yes	Yes	Yes
2	IBC 16-5 (b)			Yes	Yes		Yes	Yes	Yes	Yes	Yes
3	IBC 16-7 (a)			Yes	Yes		Yes	Yes	Yes	Yes	Yes
4	IBC 16-7 (b)			Yes	Yes		Yes	Yes	Yes	Yes	Yes
5	IBC 16-1			Yes	Yes		Yes	Yes	Yes	Yes	Yes
6	IBC 16-2 (a)			Yes	Yes		Yes	Yes	Yes	Yes	Yes
7	IBC 16-2 (b)			Yes	Yes		Yes	Yes	Yes	Yes	Yes
8	IBC 16-3 (c)			Yes	Yes		Yes	Yes	Yes	Yes	Yes
9	Deflection - DL+LL			Yes	Yes		Yes	Yes	Yes	Yes	Yes
10	Deflection - DL+SL			Yes	Yes		Yes	Yes	Yes	Yes	Yes
11	Deflection - DL+LL+SL			Yes	Yes		Yes	Yes	Yes	Yes	Yes

Load Combination Design (Continued)

	Description	CD	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
12	Deflection - SL			Yes	Yes		Yes	Yes	Yes	Yes	Yes
13	Deflection - LL			Yes	Yes		Yes	Yes	Yes	Yes	Yes
14	Deflection - Total			Yes	Yes		Yes	Yes	Yes	Yes	Yes
15	R DL			Yes	Yes		Yes	Yes	Yes	Yes	Yes
16	R LL			Yes	Yes		Yes	Yes	Yes	Yes	Yes
17	R SL			Yes	Yes		Yes	Yes	Yes	Yes	Yes
18	R EQ			Yes	Yes		Yes	Yes	Yes	Yes	Yes
19	ASCE ASD 8 (a)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
20	ASCE ASD 8 (b)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21	ASCE ASD 8 (c)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
22	ASCE ASD 8 (d)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23	ASCE ASD 9 (a)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
24	ASCE ASD 9 (b)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
25	ASCE ASD 9 (c)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
26	ASCE ASD 9 (d)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
27	ASCE ASD 10 (a)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
28	ASCE ASD 10 (b)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
29	ASCE ASD 10 (c)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
30	ASCE ASD 10 (d)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Spectra Scaling Factor

Seismic Code:	ASCE 7-16				
C_tZ:	0.02	T Z (sec):	Not Entered	R Z:	6.5
C_tX:	0.02	T X (sec):	Not Entered	R X:	6.5
C_tExp. Z:	0.75	C_tExp. X:	0.75	Seismic Weight LC:	0
Risk Category:	I or II	T_L(sec):	6		
SD_1(g):	0.55	SD_s(g):	1.01	S_1(g):	0.44

T Z Used (sec):	0	T Z Method A:	0	T Z Upper Limit:	0
T X Used (sec):	0	T X Method A:	0	T X Upper Limit:	0
Importance Fac.:	0	Design Cat:			
V Z (k):	-1	Gov. Eqn.:			
V X (k):	-1	Gov. Eqn.:			

Weight (k):	0

Static Base Shear Z (k):	-1	Unscaled Base Shear Z (k):	-1	Multiplier Z:	1
Static Base Shear X (k):	-1	Unscaled Base Shear X (k):	-1	Multiplier X:	1

Scaling Factor Z:	1	Scaling Factor X:	1		

Dynamic Data

Number Of Modes	0
Load Combination Number	R EQ
Acceleration of Gravity	32.2 (ft/sec^2)
Convergence Tolerance	0.0001

Node Reactions

	LC	Node Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N3	0	1.75	0	0	0	0
2	1	N1	0	1.75	0	0	0	0
3	1	N4	0	1.75	0	0	0	0
4	1	N2	0	1.75	0	0	0	0
5	1	Totals:	0	7.001	0			
6	1	COG (ft):	X: 6.916	Y: 7.663	Z: 6			
7	2	N3	0	1.75	0	0	0	0
8	2	N1	0	1.75	0	0	0	0
9	2	N4	0	1.75	0	0	0	0
10	2	N2	0	1.75	0	0	0	0
11	2	Totals:	0	7.001	0			
12	2	COG (ft):	X: 6.916	Y: 7.663	Z: 6			
13	3	N3	0	1.088	0	0	0	0
14	3	N1	0	1.088	0	0	0	0
15	3	N4	0	1.088	0	0	0	0
16	3	N2	0	1.088	0	0	0	0
17	3	Totals:	0	4.351	0			
18	3	COG (ft):	X: 6.916	Y: 7.593	Z: 6			
19	4	N3	0	1.088	0	0	0	0
20	4	N1	0	1.088	0	0	0	0
21	4	N4	0	1.088	0	0	0	0
22	4	N2	0	1.088	0	0	0	0
23	4	Totals:	0	4.351	0			
24	4	COG (ft):	X: 6.916	Y: 7.593	Z: 6			
25	5	N3	0	1.692	0	0	0	0
26	5	N1	0	1.692	0	0	0	0
27	5	N4	0	1.692	0	0	0	0
28	5	N2	0	1.692	0	0	0	0
29	5	Totals:	0	6.768	0			
30	5	COG (ft):	X: 6.917	Y: 7.593	Z: 6			
31	6	N3	0	1.45	0	0	0	0
32	6	N1	0	1.45	0	0	0	0
33	6	N4	0	1.45	0	0	0	0
34	6	N2	0	1.45	0	0	0	0
35	6	Totals:	0	5.801	0			
36	6	COG (ft):	X: 6.916	Y: 7.593	Z: 6			
37	7	N3	0	2.2	0	0	0	0
38	7	N1	0	2.2	0	0	0	0
39	7	N4	0	2.2	0	0	0	0
40	7	N2	0	2.2	0	0	0	0
41	7	Totals:	0	8.801	0			
42	7	COG (ft):	X: 6.917	Y: 7.732	Z: 6			
43	8	N3	0	3.85	0	0	0	0
44	8	N1	0	3.85	0	0	0	0
45	8	N4	0	3.85	0	0	0	0
46	8	N2	0	3.85	0	0	0	0
47	8	Totals:	0	15.401	0			
48	8	COG (ft):	X: 6.916	Y: 7.847	Z: 6			
49	9	N3	0	1.209	0	0	0	0
50	9	N1	0	1.209	0	0	0	0
51	9	N4	0	1.209	0	0	0	0
52	9	N2	0	1.209	0	0	0	0
53	9	Totals:	0	4.834	0			
54	9	COG (ft):	X: 6.917	Y: 7.593	Z: 6			
55	10	N3	0	2.709	0	0	0	0

Node Reactions (Continued)

	LC	Node Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
56	10	N1	0	2.709	0	0	0	0
57	10	N4	0	2.709	0	0	0	0
58	10	N2	0	2.709	0	0	0	0
59	10	Totals:	0	10.834	0			
60	10	COG (ft):	X: 6.917	Y: 7.818	Z: 6			
61	11	N3	0	2.334	0	0	0	0
62	11	N1	0	2.334	0	0	0	0
63	11	N4	0	2.334	0	0	0	0
64	11	N2	0	2.334	0	0	0	0
65	11	Totals:	0	9.334	0			
66	11	COG (ft):	X: 6.917	Y: 7.789	Z: 6			
67	12	N3	0	1.5	0	0	0	0
68	12	N1	0	1.5	0	0	0	0
69	12	N4	0	1.5	0	0	0	0
70	12	N2	0	1.5	0	0	0	0
71	12	Totals:	0	6	0			
72	12	COG (ft):	X: 6.917	Y: 8	Z: 6			
73	13	N3	0	0	0	0	0	0
74	13	N1	0	0	0	0	0	0
75	13	N4	0	0	0	0	0	0
76	13	N2	0	0	0	0	0	0
77	13	Totals:	0	0	0			
78	13	COG (ft):	NC	NC	NC			
79	14	N3	0	2.334	0	0	0	0
80	14	N1	0	2.334	0	0	0	0
81	14	N4	0	2.334	0	0	0	0
82	14	N2	0	2.334	0	0	0	0
83	14	Totals:	0	9.334	0			
84	14	COG (ft):	X: 6.917	Y: 7.789	Z: 6			
85	19	N3	-0.735	1.209	0	0	0	5.903
86	19	N1	-0.735	1.209	0	0	0	5.903
87	19	N4	-0.735	1.209	0	0	0	5.903
88	19	N2	-0.735	1.209	0	0	0	5.903
89	19	Totals:	-2.94	4.834	0			
90	19	COG (ft):	X: 6.917	Y: 7.593	Z: 6			
91	20	N3	0	1.209	-0.735	-5.982	0	0
92	20	N1	0	1.209	-0.735	-5.982	0	0
93	20	N4	0	1.209	-0.735	-5.982	0	0
94	20	N2	0	1.209	-0.735	-5.982	0	0
95	20	Totals:	0	4.834	-2.94			
96	20	COG (ft):	X: 6.917	Y: 7.593	Z: 6			
97	21	N3	0.735	1.209	0	0	0	-5.903
98	21	N1	0.735	1.209	0	0	0	-5.903
99	21	N4	0.735	1.209	0	0	0	-5.903
100	21	N2	0.735	1.209	0	0	0	-5.903
101	21	Totals:	2.94	4.834	0			
102	21	COG (ft):	X: 6.917	Y: 7.593	Z: 6			
103	22	N3	0	1.209	0.735	5.982	0	0
104	22	N1	0	1.209	0.735	5.982	0	0
105	22	N4	0	1.209	0.735	5.982	0	0
106	22	N2	0	1.209	0.735	5.982	0	0
107	22	Totals:	0	4.834	2.94			
108	22	COG (ft):	X: 6.917	Y: 7.593	Z: 6			
109	23	N3	-0.551	2.334	0	0	0	4.445
110	23	N1	-0.551	2.334	0	0	0	4.445

Node Reactions (Continued)

	LC	Node Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
111	23	N4	-0.551	2.334	0	0	0	4.445
112	23	N2	-0.551	2.334	0	0	0	4.445
113	23	Totals:	-2.205	9.334	0			
114	23	COG (ft):	X: 6.917	Y: 7.789	Z: 6			
115	24	N3	0	2.334	-0.551	-4.564	0	0
116	24	N1	0	2.334	-0.551	-4.564	0	0
117	24	N4	0	2.334	-0.551	-4.564	0	0
118	24	N2	0	2.334	-0.551	-4.564	0	0
119	24	Totals:	0	9.334	-2.205			
120	24	COG (ft):	X: 6.917	Y: 7.789	Z: 6			
121	25	N3	0.551	2.334	0	0	0	-4.445
122	25	N1	0.551	2.334	0	0	0	-4.445
123	25	N4	0.551	2.334	0	0	0	-4.445
124	25	N2	0.551	2.334	0	0	0	-4.445
125	25	Totals:	2.205	9.334	0			
126	25	COG (ft):	X: 6.917	Y: 7.789	Z: 6			
127	26	N3	0	2.334	0.551	4.564	0	0
128	26	N1	0	2.334	0.551	4.564	0	0
129	26	N4	0	2.334	0.551	4.564	0	0
130	26	N2	0	2.334	0.551	4.564	0	0
131	26	Totals:	0	9.334	2.205			
132	26	COG (ft):	X: 6.917	Y: 7.789	Z: 6			
133	27	N3	-0.735	0.725	0	0	0	5.894
134	27	N1	-0.735	0.725	0	0	0	5.894
135	27	N4	-0.735	0.725	0	0	0	5.894
136	27	N2	-0.735	0.725	0	0	0	5.894
137	27	Totals:	-2.94	2.901	0			
138	27	COG (ft):	X: 6.916	Y: 7.593	Z: 6			
139	28	N3	0	0.725	-0.735	-5.941	0	0
140	28	N1	0	0.725	-0.735	-5.941	0	0
141	28	N4	0	0.725	-0.735	-5.941	0	0
142	28	N2	0	0.725	-0.735	-5.941	0	0
143	28	Totals:	0	2.901	-2.94			
144	28	COG (ft):	X: 6.916	Y: 7.593	Z: 6			
145	29	N3	0.735	0.725	0	0	0	-5.894
146	29	N1	0.735	0.725	0	0	0	-5.894
147	29	N4	0.735	0.725	0	0	0	-5.894
148	29	N2	0.735	0.725	0	0	0	-5.894
149	29	Totals:	2.94	2.901	0			
150	29	COG (ft):	X: 6.916	Y: 7.593	Z: 6			
151	30	N3	0	0.725	0.735	5.941	0	0
152	30	N1	0	0.725	0.735	5.941	0	0
153	30	N4	0	0.725	0.735	5.941	0	0
154	30	N2	0	0.725	0.735	5.941	0	0
155	30	Totals:	0	2.901	2.94			
156	30	COG (ft):	X: 6.916	Y: 7.593	Z: 6			

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	N3	max	0.735	21	3.85	8	0.735	30	5.982	22	0	30	5.903	19
2		min	-0.735	19	0	13	-0.735	20	-5.982	20	0	1	-5.903	21
3	N1	max	0.735	21	3.85	8	0.735	30	5.982	22	0	30	5.903	19
4		min	-0.735	19	0	13	-0.735	20	-5.982	20	0	1	-5.903	21
5	N4	max	0.735	21	3.85	8	0.735	22	5.982	22	0	30	5.903	19
6		min	-0.735	19	0	13	-0.735	20	-5.982	20	0	1	-5.903	21

Envelope Node Reactions (Continued)

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
7	N2	max	0.735	21	3.85	8	0.735	22	5.982	22	0	30	5.903	19
8		min	-0.735	19	0	13	-0.735	20	-5.982	20	0	1	-5.903	21
9	Totals:	max	2.94	21	15.401	8	2.94	22						
10		min	-2.94	19	0	13	-2.94	20						

Node Reactions - Overstrength or Capacity Limit

No Data to Print...

Node Displacements

	LC	Node Label	X [in]	Y [in]	Z [in]	X Rotation [rad]	Y Rotation [rad]	Z Rotation [rad]
1	1	N1	0	0	0	0	0	0
2	1	N2	0	0	0	0	0	0
3	1	N3	0	0	0	0	0	0
4	1	N4	0	0	0	0	0	0
5	1	N5	0	-0.002	0	0	0	0
6	1	N6	0	-0.002	0	0	0	0
7	1	N7	0	-0.002	0	0	0	0
8	1	N8	0	-0.002	0	0	0	0
9	2	N1	0	0	0	0	0	0
10	2	N2	0	0	0	0	0	0
11	2	N3	0	0	0	0	0	0
12	2	N4	0	0	0	0	0	0
13	2	N5	0	-0.002	0	0	0	0
14	2	N6	0	-0.002	0	0	0	0
15	2	N7	0	-0.002	0	0	0	0
16	2	N8	0	-0.002	0	0	0	0
17	3	N1	0	0	0	0	0	0
18	3	N2	0	0	0	0	0	0
19	3	N3	0	0	0	0	0	0
20	3	N4	0	0	0	0	0	0
21	3	N5	0	-0.001	0	0	0	0
22	3	N6	0	-0.001	0	0	0	0
23	3	N7	0	-0.001	0	0	0	0
24	3	N8	0	-0.001	0	0	0	0
25	4	N1	0	0	0	0	0	0
26	4	N2	0	0	0	0	0	0
27	4	N3	0	0	0	0	0	0
28	4	N4	0	0	0	0	0	0
29	4	N5	0	-0.001	0	0	0	0
30	4	N6	0	-0.001	0	0	0	0
31	4	N7	0	-0.001	0	0	0	0
32	4	N8	0	-0.001	0	0	0	0
33	5	N1	0	0	0	0	0	0
34	5	N2	0	0	0	0	0	0
35	5	N3	0	0	0	0	0	0
36	5	N4	0	0	0	0	0	0
37	5	N5	0	-0.002	0	0	0	0
38	5	N6	0	-0.002	0	0	0	0
39	5	N7	0	-0.002	0	0	0	0
40	5	N8	0	-0.002	0	0	0	0
41	6	N1	0	0	0	0	0	0
42	6	N2	0	0	0	0	0	0
43	6	N3	0	0	0	0	0	0
44	6	N4	0	0	0	0	0	0

Node Displacements (Continued)

	LC	Node Label	X [in]	Y [in]	Z [in]	X Rotation [rad]	Y Rotation [rad]	Z Rotation [rad]
45	6	N5	0	-0.002	0	0	0	0
46	6	N6	0	-0.002	0	0	0	0
47	6	N7	0	-0.002	0	0	0	0
48	6	N8	0	-0.002	0	0	0	0
49	7	N1	0	0	0	0	0	0
50	7	N2	0	0	0	0	0	0
51	7	N3	0	0	0	0	0	0
52	7	N4	0	0	0	0	0	0
53	7	N5	0	-0.002	0	0	0	0
54	7	N6	0	-0.002	0	0	0	0
55	7	N7	0	-0.002	0	0	0	0
56	7	N8	0	-0.002	0	0	0	0
57	8	N1	0	0	0	0	0	0
58	8	N2	0	0	0	0	0	0
59	8	N3	0	0	0	0	0	0
60	8	N4	0	0	0	0	0	0
61	8	N5	0	-0.004	0	0	0	0
62	8	N6	0	-0.004	0	0	0	0
63	8	N7	0	-0.004	0	0	0	0
64	8	N8	0	-0.004	0	0	0	0
65	9	N1	0	0	0	0	0	0
66	9	N2	0	0	0	0	0	0
67	9	N3	0	0	0	0	0	0
68	9	N4	0	0	0	0	0	0
69	9	N5	0	-0.001	0	0	0	0
70	9	N6	0	-0.001	0	0	0	0
71	9	N7	0	-0.001	0	0	0	0
72	9	N8	0	-0.001	0	0	0	0
73	10	N1	0	0	0	0	0	0
74	10	N2	0	0	0	0	0	0
75	10	N3	0	0	0	0	0	0
76	10	N4	0	0	0	0	0	0
77	10	N5	0	-0.003	0	0	0	0
78	10	N6	0	-0.003	0	0	0	0
79	10	N7	0	-0.003	0	0	0	0
80	10	N8	0	-0.003	0	0	0	0
81	11	N1	0	0	0	0	0	0
82	11	N2	0	0	0	0	0	0
83	11	N3	0	0	0	0	0	0
84	11	N4	0	0	0	0	0	0
85	11	N5	0	-0.003	0	0	0	0
86	11	N6	0	-0.003	0	0	0	0
87	11	N7	0	-0.003	0	0	0	0
88	11	N8	0	-0.003	0	0	0	0
89	12	N1	0	0	0	0	0	0
90	12	N2	0	0	0	0	0	0
91	12	N3	0	0	0	0	0	0
92	12	N4	0	0	0	0	0	0
93	12	N5	0	-0.002	0	0	0	0
94	12	N6	0	-0.002	0	0	0	0
95	12	N7	0	-0.002	0	0	0	0
96	12	N8	0	-0.002	0	0	0	0
97	13	N1	0	0	0	0	0	0
98	13	N2	0	0	0	0	0	0
99	13	N3	0	0	0	0	0	0

Node Displacements (Continued)

	LC	Node Label	X [in]	Y [in]	Z [in]	X Rotation [rad]	Y Rotation [rad]	Z Rotation [rad]
100	13	N4	0	0	0	0	0	0
101	13	N5	0	0	0	0	0	0
102	13	N6	0	0	0	0	0	0
103	13	N7	0	0	0	0	0	0
104	13	N8	0	0	0	0	0	0
105	14	N1	0	0	0	0	0	0
106	14	N2	0	0	0	0	0	0
107	14	N3	0	0	0	0	0	0
108	14	N4	0	0	0	0	0	0
109	14	N5	0	-0.003	0	0	0	0
110	14	N6	0	-0.003	0	0	0	0
111	14	N7	0	-0.003	0	0	0	0
112	14	N8	0	-0.003	0	0	0	0
113	19	N1	0	0	0	0	0	0
114	19	N2	0	0	0	0	0	0
115	19	N3	0	0	0	0	0	0
116	19	N4	0	0	0	0	0	0
117	19	N5	0.243	-0.001	0	0	0	-3.752e-3
118	19	N6	0.243	-0.001	0	0	0	-3.752e-3
119	19	N7	0.243	-0.001	0	0	0	-3.752e-3
120	19	N8	0.243	-0.001	0	0	0	-3.752e-3
121	20	N1	0	0	0	0	0	0
122	20	N2	0	0	0	0	0	0
123	20	N3	0	0	0	0	0	0
124	20	N4	0	0	0	0	0	0
125	20	N5	0	-0.001	1.067	1.662e-2	0	0
126	20	N6	0	-0.001	1.067	1.662e-2	0	0
127	20	N7	0	-0.001	1.067	1.662e-2	0	0
128	20	N8	0	-0.001	1.067	1.662e-2	0	0
129	21	N1	0	0	0	0	0	0
130	21	N2	0	0	0	0	0	0
131	21	N3	0	0	0	0	0	0
132	21	N4	0	0	0	0	0	0
133	21	N5	-0.243	-0.001	0	0	0	3.752e-3
134	21	N6	-0.243	-0.001	0	0	0	3.752e-3
135	21	N7	-0.243	-0.001	0	0	0	3.752e-3
136	21	N8	-0.243	-0.001	0	0	0	3.752e-3
137	22	N1	0	0	0	0	0	0
138	22	N2	0	0	0	0	0	0
139	22	N3	0	0	0	0	0	0
140	22	N4	0	0	0	0	0	0
141	22	N5	0	-0.001	-1.067	-1.662e-2	0	0
142	22	N6	0	-0.001	-1.067	-1.662e-2	0	0
143	22	N7	0	-0.001	-1.067	-1.662e-2	0	0
144	22	N8	0	-0.001	-1.067	-1.662e-2	0	0
145	23	N1	0	0	0	0	0	0
146	23	N2	0	0	0	0	0	0
147	23	N3	0	0	0	0	0	0
148	23	N4	0	0	0	0	0	0
149	23	N5	0.183	-0.003	0	0	0	-2.825e-3
150	23	N6	0.183	-0.003	0	0	0	-2.825e-3
151	23	N7	0.183	-0.003	0	0	0	-2.825e-3
152	23	N8	0.183	-0.003	0	0	0	-2.825e-3
153	24	N1	0	0	0	0	0	0
154	24	N2	0	0	0	0	0	0

Node Displacements (Continued)

	LC	Node Label	X [in]	Y [in]	Z [in]	X Rotation [rad]	Y Rotation [rad]	Z Rotation [rad]
155	24	N3	0	0	0	0	0	0
156	24	N4	0	0	0	0	0	0
157	24	N5	0	-0.003	0.814	1.268e-2	0	0
158	24	N6	0	-0.003	0.814	1.268e-2	0	0
159	24	N7	0	-0.003	0.814	1.268e-2	0	0
160	24	N8	0	-0.003	0.814	1.268e-2	0	0
161	25	N1	0	0	0	0	0	0
162	25	N2	0	0	0	0	0	0
163	25	N3	0	0	0	0	0	0
164	25	N4	0	0	0	0	0	0
165	25	N5	-0.183	-0.003	0	0	0	2.825e-3
166	25	N6	-0.183	-0.003	0	0	0	2.825e-3
167	25	N7	-0.183	-0.003	0	0	0	2.825e-3
168	25	N8	-0.183	-0.003	0	0	0	2.825e-3
169	26	N1	0	0	0	0	0	0
170	26	N2	0	0	0	0	0	0
171	26	N3	0	0	0	0	0	0
172	26	N4	0	0	0	0	0	0
173	26	N5	0	-0.003	-0.814	-1.268e-2	0	0
174	26	N6	0	-0.003	-0.814	-1.268e-2	0	0
175	26	N7	0	-0.003	-0.814	-1.268e-2	0	0
176	26	N8	0	-0.003	-0.814	-1.268e-2	0	0
177	27	N1	0	0	0	0	0	0
178	27	N2	0	0	0	0	0	0
179	27	N3	0	0	0	0	0	0
180	27	N4	0	0	0	0	0	0
181	27	N5	0.242	-0.001	0	0	0	-3.746e-3
182	27	N6	0.242	-0.001	0	0	0	-3.746e-3
183	27	N7	0.242	-0.001	0	0	0	-3.746e-3
184	27	N8	0.242	-0.001	0	0	0	-3.746e-3
185	28	N1	0	0	0	0	0	0
186	28	N2	0	0	0	0	0	0
187	28	N3	0	0	0	0	0	0
188	28	N4	0	0	0	0	0	0
189	28	N5	0	-0.001	1.059	1.651e-2	0	0
190	28	N6	0	-0.001	1.059	1.651e-2	0	0
191	28	N7	0	-0.001	1.059	1.651e-2	0	0
192	28	N8	0	-0.001	1.059	1.651e-2	0	0
193	29	N1	0	0	0	0	0	0
194	29	N2	0	0	0	0	0	0
195	29	N3	0	0	0	0	0	0
196	29	N4	0	0	0	0	0	0
197	29	N5	-0.242	-0.001	0	0	0	3.746e-3
198	29	N6	-0.242	-0.001	0	0	0	3.746e-3
199	29	N7	-0.242	-0.001	0	0	0	3.746e-3
200	29	N8	-0.242	-0.001	0	0	0	3.746e-3
201	30	N1	0	0	0	0	0	0
202	30	N2	0	0	0	0	0	0
203	30	N3	0	0	0	0	0	0
204	30	N4	0	0	0	0	0	0
205	30	N5	0	-0.001	-1.059	-1.651e-2	0	0
206	30	N6	0	-0.001	-1.059	-1.651e-2	0	0
207	30	N7	0	-0.001	-1.059	-1.651e-2	0	0
208	30	N8	0	-0.001	-1.059	-1.651e-2	0	0

Envelope Member Section Forces

	Member	Sec		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	M1	1	max	2.334	26	0.738	19	0.748	22	0	30	5.982	20	5.903	19
2			min	0.725	27	-0.738	21	-0.748	20	0	19	-5.982	22	-5.903	21
3		2	max	2.303	26	0.738	19	0.748	22	0	30	4.486	20	4.427	19
4			min	0.707	27	-0.738	21	-0.748	20	0	19	-4.486	22	-4.427	21
5		3	max	2.272	26	0.738	19	0.748	22	0	30	2.991	20	2.952	19
6			min	0.688	27	-0.738	21	-0.748	20	0	19	-2.991	22	-2.952	21
7		4	max	2.241	26	0.738	19	0.748	22	0	30	1.495	20	1.476	19
8			min	0.67	27	-0.738	21	-0.748	20	0	19	-1.495	22	-1.476	21
9		5	max	2.211	26	0.738	19	0.748	22	0	30	0	30	0	30
10			min	0.651	27	-0.738	21	-0.748	20	0	19	0	19	0	19
11	M2	1	max	2.334	26	0.738	19	0.748	22	0	30	5.982	20	5.903	19
12			min	0.725	27	-0.738	21	-0.748	20	0	19	-5.982	22	-5.903	21
13		2	max	2.303	26	0.738	19	0.748	22	0	30	4.486	20	4.427	19
14			min	0.707	27	-0.738	21	-0.748	20	0	19	-4.486	22	-4.427	21
15		3	max	2.272	26	0.738	19	0.748	22	0	30	2.991	20	2.952	19
16			min	0.688	27	-0.738	21	-0.748	20	0	19	-2.991	22	-2.952	21
17		4	max	2.241	26	0.738	19	0.748	22	0	30	1.495	20	1.476	19
18			min	0.67	27	-0.738	21	-0.748	20	0	19	-1.495	22	-1.476	21
19		5	max	2.211	26	0.738	19	0.748	22	0	30	0	30	0	30
20			min	0.651	27	-0.738	21	-0.748	20	0	19	0	19	0	19
21	M3	1	max	2.334	26	0.738	19	0.748	22	0	30	5.982	20	5.903	19
22			min	0.725	27	-0.738	21	-0.748	20	0	19	-5.982	22	-5.903	21
23		2	max	2.303	26	0.738	19	0.748	22	0	30	4.486	20	4.427	19
24			min	0.707	27	-0.738	21	-0.748	20	0	19	-4.486	22	-4.427	21
25		3	max	2.272	26	0.738	19	0.748	22	0	30	2.991	20	2.952	19
26			min	0.688	27	-0.738	21	-0.748	20	0	19	-2.991	22	-2.952	21
27		4	max	2.241	26	0.738	19	0.748	22	0	30	1.495	20	1.476	19
28			min	0.67	27	-0.738	21	-0.748	20	0	19	-1.495	22	-1.476	21
29		5	max	2.211	26	0.738	19	0.748	22	0	30	0	30	0	30
30			min	0.651	27	-0.738	21	-0.748	20	0	19	0	19	0	19
31	M4	1	max	2.334	26	0.738	19	0.748	22	0	30	5.982	20	5.903	19
32			min	0.725	27	-0.738	21	-0.748	20	0	19	-5.982	22	-5.903	21
33		2	max	2.303	26	0.738	19	0.748	22	0	30	4.486	20	4.427	19
34			min	0.707	27	-0.738	21	-0.748	20	0	19	-4.486	22	-4.427	21
35		3	max	2.272	26	0.738	19	0.748	22	0	30	2.991	20	2.952	19
36			min	0.688	27	-0.738	21	-0.748	20	0	19	-2.991	22	-2.952	21
37		4	max	2.241	26	0.738	19	0.748	22	0	30	1.495	20	1.476	19
38			min	0.67	27	-0.738	21	-0.748	20	0	19	-1.495	22	-1.476	21
39		5	max	2.211	26	0.738	19	0.748	22	0	30	0	30	0	30
40			min	0.651	27	-0.738	21	-0.748	20	0	19	0	19	0	19
41	M5	1	max	0	30	1.312	26	0	30	0	30	0	30	0	30
42			min	0	19	0.369	27	0	19	0	19	0	19	0	19
43		2	max	0	30	0.656	26	0	30	0	30	0	30	-0.829	30
44			min	0	19	0.184	27	0	19	0	19	0	19	-2.951	23
45		3	max	0	30	0	30	0	30	0	30	0	30	-1.106	30
46			min	0	19	0	19	0	19	0	19	0	19	-3.935	23
47		4	max	0	30	-0.184	30	0	30	0	30	0	30	-0.829	30
48			min	0	19	-0.656	23	0	19	0	19	0	19	-2.951	23
49		5	max	0	30	-0.369	30	0	30	0	30	0	30	0	30
50			min	0	19	-1.312	23	0	19	0	19	0	19	0	19
51	M6	1	max	0	30	0.899	26	0	30	0	30	0	30	0	30
52			min	0	19	0.283	27	0	19	0	19	0	19	0	19
53		2	max	0	30	0.846	26	0	30	0	30	0	30	-0.923	30
54			min	0	19	0.251	27	0	19	0	19	0	19	-3.016	23
55		3	max	0	30	-0.219	30	0	30	0	30	0	30	-1.735	30

Envelope Member Section Forces (Continued)

	Member	Sec		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
56			min	0	19	-0.792	23	0	19	0	19	0	19	-5.849	23
57		4	max	0	30	-0.251	30	0	30	0	30	0	30	-0.923	30
58			min	0	19	-0.846	23	0	19	0	19	0	19	-3.016	23
59		5	max	0	30	-0.283	30	0	30	0	30	0	30	0	30
60			min	0	19	-0.899	23	0	19	0	19	0	19	0	19
61	M7	1	max	0	30	1.312	26	0	30	0	30	0	30	0	30
62			min	0	19	0.369	27	0	19	0	19	0	19	0	19
63		2	max	0	30	0.656	26	0	30	0	30	0	30	-0.829	30
64			min	0	19	0.184	27	0	19	0	19	0	19	-2.951	23
65		3	max	0	30	0	30	0	30	0	30	0	30	-1.106	30
66			min	0	19	0	19	0	19	0	19	0	19	-3.935	23
67		4	max	0	30	-0.184	30	0	30	0	30	0	30	-0.829	30
68			min	0	19	-0.656	23	0	19	0	19	0	19	-2.951	23
69		5	max	0	30	-0.369	30	0	30	0	30	0	30	0	30
70			min	0	19	-1.312	23	0	19	0	19	0	19	0	19
71	M8	1	max	0	30	0.899	26	0	30	0	30	0	30	0	30
72			min	0	19	0.283	27	0	19	0	19	0	19	0	19
73		2	max	0	30	0.846	26	0	30	0	30	0	30	-0.923	30
74			min	0	19	0.251	27	0	19	0	19	0	19	-3.016	23
75		3	max	0	30	-0.219	30	0	30	0	30	0	30	-1.735	30
76			min	0	19	-0.792	23	0	19	0	19	0	19	-5.849	23
77		4	max	0	30	-0.251	30	0	30	0	30	0	30	-0.923	30
78			min	0	19	-0.846	23	0	19	0	19	0	19	-3.016	23
79		5	max	0	30	-0.283	30	0	30	0	30	0	30	0	30
80			min	0	19	-0.899	23	0	19	0	19	0	19	0	19

Envelope Maximum Member Section Forces

	Member		Axial[k]	Loc[ft]	LC	y Shear[k]	Loc[ft]	LC	z Shear[k]	Loc[ft]	LC	Torque[k-ft]	Loc[ft]	LC	y-y Moment[k-ft]	Loc[ft]	LC	z-z Moment[k-ft]	Loc[ft]	LC
1	M1	max	2.334	0	26	0.738	8	19	0.748	8	22	0	8	30	5.982	0	20	5.903	0	19
2		min	0.651	8	27	-0.738	0	21	-0.748	0	20	0	0	19	-5.982	0	22	-5.903	0	21
3	M2	max	2.334	0	26	0.738	8	19	0.748	8	22	0	8	30	5.982	0	20	5.903	0	19
4		min	0.651	8	27	-0.738	0	21	-0.748	0	20	0	0	19	-5.982	0	22	-5.903	0	21
5	M3	max	2.334	0	26	0.738	8	19	0.748	8	22	0	8	30	5.982	0	20	5.903	0	19
6		min	0.651	8	27	-0.738	0	21	-0.748	0	20	0	0	19	-5.982	0	22	-5.903	0	21
7	M4	max	2.334	0	26	0.738	8	19	0.748	8	22	0	8	30	5.982	0	20	5.903	0	19
8		min	0.651	8	27	-0.738	0	21	-0.748	0	20	0	0	19	-5.982	0	22	-5.903	0	21
9	M5	max	0	12	30	1.312	0	26	0	12	30	0	12	30	0	12	30	0	12	30
10		min	0	0	19	-1.312	12	23	0	0	19	0	0	19	0	0	19	-3.935	6	23
11	M6	max	0	13.833	30	0.899	0	26	0	13.833	30	0	13.833	30	0	13.833	30	0	13.833	30
12		min	0	0	19	-0.899	13.833	23	0	0	19	0	0	19	0	0	19	-5.849	6.917	23
13	M7	max	0	12	30	1.312	0	26	0	12	30	0	12	30	0	12	30	0	12	30
14		min	0	0	19	-1.312	12	23	0	0	19	0	0	19	0	0	19	-3.935	6	23
15	M8	max	0	13.833	30	0.899	0	26	0	13.833	30	0	13.833	30	0	13.833	30	0	13.833	30
16		min	0	0	19	-0.899	13.833	23	0	0	19	0	0	19	0	0	19	-5.849	6.917	23

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	M1	I	max	2.334	26	0.738	19	0.748	22	0	30	5.982	20	5.903	19
2			min	0.725	27	-0.738	21	-0.748	20	0	19	-5.982	22	-5.903	21
3		J	max	2.211	26	0.738	19	0.748	22	0	30	0	30	0	30
4			min	0.651	27	-0.738	21	-0.748	20	0	19	0	19	0	19
5	M2	I	max	2.334	26	0.738	19	0.748	22	0	30	5.982	20	5.903	19
6			min	0.725	27	-0.738	21	-0.748	20	0	19	-5.982	22	-5.903	21

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
7		J	max	2.211	26	0.738	19	0.748	22	0	30	0	30	0	30
8			min	0.651	27	-0.738	21	-0.748	20	0	19	0	19	0	19
9	M3	I	max	2.334	26	0.738	19	0.748	22	0	30	5.982	20	5.903	19
10			min	0.725	27	-0.738	21	-0.748	20	0	19	-5.982	22	-5.903	21
11		J	max	2.211	26	0.738	19	0.748	22	0	30	0	30	0	30
12			min	0.651	27	-0.738	21	-0.748	20	0	19	0	19	0	19
13	M4	I	max	2.334	26	0.738	19	0.748	22	0	30	5.982	20	5.903	19
14			min	0.725	27	-0.738	21	-0.748	20	0	19	-5.982	22	-5.903	21
15		J	max	2.211	26	0.738	19	0.748	22	0	30	0	30	0	30
16			min	0.651	27	-0.738	21	-0.748	20	0	19	0	19	0	19
17	M5	I	max	0	30	1.312	26	0	30	0	30	0	30	0	30
18			min	0	19	0.369	27	0	19	0	19	0	19	0	19
19		J	max	0	30	-0.369	30	0	30	0	30	0	30	0	30
20			min	0	19	-1.312	23	0	19	0	19	0	19	0	19
21	M6	I	max	0	30	0.899	26	0	30	0	30	0	30	0	30
22			min	0	19	0.283	27	0	19	0	19	0	19	0	19
23		J	max	0	30	-0.283	30	0	30	0	30	0	30	0	30
24			min	0	19	-0.899	23	0	19	0	19	0	19	0	19
25	M7	I	max	0	30	1.312	26	0	30	0	30	0	30	0	30
26			min	0	19	0.369	27	0	19	0	19	0	19	0	19
27		J	max	0	30	-0.369	30	0	30	0	30	0	30	0	30
28			min	0	19	-1.312	23	0	19	0	19	0	19	0	19
29	M8	I	max	0	30	0.899	26	0	30	0	30	0	30	0	30
30			min	0	19	0.283	27	0	19	0	19	0	19	0	19
31		J	max	0	30	-0.283	30	0	30	0	30	0	30	0	30
32			min	0	19	-0.899	23	0	19	0	19	0	19	0	19

Envelope Member 2nd/1st Moment Ratios

	Member		y-y Moment [k-ft]	2nd/1st Ratio	Loc [ft]	LC	z-z Moment [k-ft]	2nd/1st Ratio	Loc [ft]	LC
1	M1	max	4.564	1.035	0	24	4.445	1.008	0	23
2		min	-5.941	1.01	0	30	-5.894	1.002	0	29
3	M2	max	4.564	1.035	0	24	4.445	1.008	0	23
4		min	-5.941	1.01	0	30	-5.894	1.002	0	29
5	M3	max	4.564	1.035	0	24	4.445	1.008	0	23
6		min	-5.941	1.01	0	30	-5.894	1.002	0	29
7	M4	max	4.564	1.035	0	24	4.445	1.008	0	23
8		min	-5.941	1.01	0	30	-5.894	1.002	0	29
9	M5	max	NC	NC			-1.106	1	6	30
10		min	NC	NC			-6.675	1	6	8
11	M6	max	NC	NC			-3.942	1	6.917	12
12		min	NC	NC			-6.835	1	6.917	10
13	M7	max	NC	NC			-1.106	1	6	30
14		min	NC	NC			-6.675	1	6	8
15	M8	max	NC	NC			-3.942	1	6.917	12
16		min	NC	NC			-6.835	1	6.917	10

Member Section Stresses

	LC	Member Label	Sec	Axial[ksi]	y Shear[ksi]	z Shear[ksi]	y top Bending[ksi]	y bot Bending[ksi]	z top Bending[ksi]	z bot Bending[ksi]
1	19	M1	1	0.019	0.017	0	-0.584	0.584	0	0
2			2	0.019	0.017	0	-0.438	0.438	0	0
3			3	0.018	0.017	0	-0.292	0.292	0	0
4			4	0.018	0.017	0	-0.146	0.146	0	0
5			5	0.017	0.017	0	0	0	0	0

Member Section Stresses (Continued)

	LC	Member Label	Sec	Axial[ksi]	y Shear[ksi]	z Shear[ksi]	y top Bending[ksi]	y bot Bending[ksi]	z top Bending[ksi]	z bot Bending[ksi]
6	19	M2	1	0.019	0.017	0	-0.584	0.584	0	0
7			2	0.019	0.017	0	-0.438	0.438	0	0
8			3	0.018	0.017	0	-0.292	0.292	0	0
9			4	0.018	0.017	0	-0.146	0.146	0	0
10			5	0.017	0.017	0	0	0	0	0
11	19	M3	1	0.019	0.017	0	-0.584	0.584	0	0
12			2	0.019	0.017	0	-0.438	0.438	0	0
13			3	0.018	0.017	0	-0.292	0.292	0	0
14			4	0.018	0.017	0	-0.146	0.146	0	0
15			5	0.017	0.017	0	0	0	0	0
16	19	M4	1	0.019	0.017	0	-0.584	0.584	0	0
17			2	0.019	0.017	0	-0.438	0.438	0	0
18			3	0.018	0.017	0	-0.292	0.292	0	0
19			4	0.018	0.017	0	-0.146	0.146	0	0
20			5	0.017	0.017	0	0	0	0	0
21	19	M5	1	0	0.015	0	0	0	0	0
22			2	0	0.007	0	0.137	-0.137	0	0
23			3	0	0	0	0.182	-0.182	0	0
24			4	0	-0.007	0	0.137	-0.137	0	0
25			5	0	-0.015	0	0	0	0	0
26	19	M6	1	0	0.011	0	0	0	0	0
27			2	0	0.01	0	0.152	-0.152	0	0
28			3	0	-0.009	0	0.286	-0.286	0	0
29			4	0	-0.01	0	0.152	-0.152	0	0
30			5	0	-0.011	0	0	0	0	0
31	19	M7	1	0	0.015	0	0	0	0	0
32			2	0	0.007	0	0.137	-0.137	0	0
33			3	0	0	0	0.182	-0.182	0	0
34			4	0	-0.007	0	0.137	-0.137	0	0
35			5	0	-0.015	0	0	0	0	0
36	19	M8	1	0	0.011	0	0	0	0	0
37			2	0	0.01	0	0.152	-0.152	0	0
38			3	0	-0.009	0	0.286	-0.286	0	0
39			4	0	-0.01	0	0.152	-0.152	0	0
40			5	0	-0.011	0	0	0	0	0
41	20	M1	1	0.019	0	-0.018	0	0	1.238	-1.238
42			2	0.019	0	-0.018	0	0	0.929	-0.929
43			3	0.018	0	-0.018	0	0	0.619	-0.619
44			4	0.018	0	-0.018	0	0	0.31	-0.31
45			5	0.017	0	-0.018	0	0	0	0
46	20	M2	1	0.019	0	-0.018	0	0	1.238	-1.238
47			2	0.019	0	-0.018	0	0	0.929	-0.929
48			3	0.018	0	-0.018	0	0	0.619	-0.619
49			4	0.018	0	-0.018	0	0	0.31	-0.31
50			5	0.017	0	-0.018	0	0	0	0
51	20	M3	1	0.019	0	-0.018	0	0	1.238	-1.238
52			2	0.019	0	-0.018	0	0	0.929	-0.929
53			3	0.018	0	-0.018	0	0	0.619	-0.619
54			4	0.018	0	-0.018	0	0	0.31	-0.31
55			5	0.017	0	-0.018	0	0	0	0
56	20	M4	1	0.019	0	-0.018	0	0	1.238	-1.238
57			2	0.019	0	-0.018	0	0	0.929	-0.929
58			3	0.018	0	-0.018	0	0	0.619	-0.619
59			4	0.018	0	-0.018	0	0	0.31	-0.31
60			5	0.017	0	-0.018	0	0	0	0

Member Section Stresses (Continued)

	LC	Member Label	Sec	Axial[ksi]	y Shear[ksi]	z Shear[ksi]	y top Bending[ksi]	y bot Bending[ksi]	z top Bending[ksi]	z bot Bending[ksi]
61	20	M5	1	0	0.015	0	0	0	0	0
62			2	0	0.007	0	0.137	-0.137	0	0
63			3	0	0	0	0.182	-0.182	0	0
64			4	0	-0.007	0	0.137	-0.137	0	0
65			5	0	-0.015	0	0	0	0	0
66	20	M6	1	0	0.011	0	0	0	0	0
67			2	0	0.01	0	0.152	-0.152	0	0
68			3	0	-0.009	0	0.286	-0.286	0	0
69			4	0	-0.01	0	0.152	-0.152	0	0
70			5	0	-0.011	0	0	0	0	0
71	20	M7	1	0	0.015	0	0	0	0	0
72			2	0	0.007	0	0.137	-0.137	0	0
73			3	0	0	0	0.182	-0.182	0	0
74			4	0	-0.007	0	0.137	-0.137	0	0
75			5	0	-0.015	0	0	0	0	0
76	20	M8	1	0	0.011	0	0	0	0	0
77			2	0	0.01	0	0.152	-0.152	0	0
78			3	0	-0.009	0	0.286	-0.286	0	0
79			4	0	-0.01	0	0.152	-0.152	0	0
80			5	0	-0.011	0	0	0	0	0
81	21	M1	1	0.019	-0.017	0	0.584	-0.584	0	0
82			2	0.019	-0.017	0	0.438	-0.438	0	0
83			3	0.018	-0.017	0	0.292	-0.292	0	0
84			4	0.018	-0.017	0	0.146	-0.146	0	0
85			5	0.017	-0.017	0	0	0	0	0
86	21	M2	1	0.019	-0.017	0	0.584	-0.584	0	0
87			2	0.019	-0.017	0	0.438	-0.438	0	0
88			3	0.018	-0.017	0	0.292	-0.292	0	0
89			4	0.018	-0.017	0	0.146	-0.146	0	0
90			5	0.017	-0.017	0	0	0	0	0
91	21	M3	1	0.019	-0.017	0	0.584	-0.584	0	0
92			2	0.019	-0.017	0	0.438	-0.438	0	0
93			3	0.018	-0.017	0	0.292	-0.292	0	0
94			4	0.018	-0.017	0	0.146	-0.146	0	0
95			5	0.017	-0.017	0	0	0	0	0
96	21	M4	1	0.019	-0.017	0	0.584	-0.584	0	0
97			2	0.019	-0.017	0	0.438	-0.438	0	0
98			3	0.018	-0.017	0	0.292	-0.292	0	0
99			4	0.018	-0.017	0	0.146	-0.146	0	0
100			5	0.017	-0.017	0	0	0	0	0
101	21	M5	1	0	0.015	0	0	0	0	0
102			2	0	0.007	0	0.137	-0.137	0	0
103			3	0	0	0	0.182	-0.182	0	0
104			4	0	-0.007	0	0.137	-0.137	0	0
105			5	0	-0.015	0	0	0	0	0
106	21	M6	1	0	0.011	0	0	0	0	0
107			2	0	0.01	0	0.152	-0.152	0	0
108			3	0	-0.009	0	0.286	-0.286	0	0
109			4	0	-0.01	0	0.152	-0.152	0	0
110			5	0	-0.011	0	0	0	0	0
111	21	M7	1	0	0.015	0	0	0	0	0
112			2	0	0.007	0	0.137	-0.137	0	0
113			3	0	0	0	0.182	-0.182	0	0
114			4	0	-0.007	0	0.137	-0.137	0	0
115			5	0	-0.015	0	0	0	0	0

Member Section Stresses (Continued)

	LC	Member Label	Sec	Axial[ksi]	y Shear[ksi]	z Shear[ksi]	y top Bending[ksi]	y bot Bending[ksi]	z top Bending[ksi]	z bot Bending[ksi]
116	21	M8	1	0	0.011	0	0	0	0	0
117			2	0	0.01	0	0.152	-0.152	0	0
118			3	0	-0.009	0	0.286	-0.286	0	0
119			4	0	-0.01	0	0.152	-0.152	0	0
120			5	0	-0.011	0	0	0	0	0
121	22	M1	1	0.019	0	0.018	0	0	-1.238	1.238
122			2	0.019	0	0.018	0	0	-0.929	0.929
123			3	0.018	0	0.018	0	0	-0.619	0.619
124			4	0.018	0	0.018	0	0	-0.31	0.31
125			5	0.017	0	0.018	0	0	0	0
126	22	M2	1	0.019	0	0.018	0	0	-1.238	1.238
127			2	0.019	0	0.018	0	0	-0.929	0.929
128			3	0.018	0	0.018	0	0	-0.619	0.619
129			4	0.018	0	0.018	0	0	-0.31	0.31
130			5	0.017	0	0.018	0	0	0	0
131	22	M3	1	0.019	0	0.018	0	0	-1.238	1.238
132			2	0.019	0	0.018	0	0	-0.929	0.929
133			3	0.018	0	0.018	0	0	-0.619	0.619
134			4	0.018	0	0.018	0	0	-0.31	0.31
135			5	0.017	0	0.018	0	0	0	0
136	22	M4	1	0.019	0	0.018	0	0	-1.238	1.238
137			2	0.019	0	0.018	0	0	-0.929	0.929
138			3	0.018	0	0.018	0	0	-0.619	0.619
139			4	0.018	0	0.018	0	0	-0.31	0.31
140			5	0.017	0	0.018	0	0	0	0
141	22	M5	1	0	0.015	0	0	0	0	0
142			2	0	0.007	0	0.137	-0.137	0	0
143			3	0	0	0	0.182	-0.182	0	0
144			4	0	-0.007	0	0.137	-0.137	0	0
145			5	0	-0.015	0	0	0	0	0
146	22	M6	1	0	0.011	0	0	0	0	0
147			2	0	0.01	0	0.152	-0.152	0	0
148			3	0	-0.009	0	0.286	-0.286	0	0
149			4	0	-0.01	0	0.152	-0.152	0	0
150			5	0	-0.011	0	0	0	0	0
151	22	M7	1	0	0.015	0	0	0	0	0
152			2	0	0.007	0	0.137	-0.137	0	0
153			3	0	0	0	0.182	-0.182	0	0
154			4	0	-0.007	0	0.137	-0.137	0	0
155			5	0	-0.015	0	0	0	0	0
156	22	M8	1	0	0.011	0	0	0	0	0
157			2	0	0.01	0	0.152	-0.152	0	0
158			3	0	-0.009	0	0.286	-0.286	0	0
159			4	0	-0.01	0	0.152	-0.152	0	0
160			5	0	-0.011	0	0	0	0	0
161	23	M1	1	0.037	0.013	0	-0.44	0.44	0	0
162			2	0.036	0.013	0	-0.33	0.33	0	0
163			3	0.036	0.013	0	-0.22	0.22	0	0
164			4	0.035	0.013	0	-0.11	0.11	0	0
165			5	0.035	0.013	0	0	0	0	0
166	23	M2	1	0.037	0.013	0	-0.44	0.44	0	0
167			2	0.036	0.013	0	-0.33	0.33	0	0
168			3	0.036	0.013	0	-0.22	0.22	0	0
169			4	0.035	0.013	0	-0.11	0.11	0	0
170			5	0.035	0.013	0	0	0	0	0

Member Section Stresses (Continued)

	LC	Member Label	Sec	Axial[ksi]	y Shear[ksi]	z Shear[ksi]	y top Bending[ksi]	y bot Bending[ksi]	z top Bending[ksi]	z bot Bending[ksi]
171	23	M3	1	0.037	0.013	0	-0.44	0.44	0	0
172			2	0.036	0.013	0	-0.33	0.33	0	0
173			3	0.036	0.013	0	-0.22	0.22	0	0
174			4	0.035	0.013	0	-0.11	0.11	0	0
175			5	0.035	0.013	0	0	0	0	0
176	23	M4	1	0.037	0.013	0	-0.44	0.44	0	0
177			2	0.036	0.013	0	-0.33	0.33	0	0
178			3	0.036	0.013	0	-0.22	0.22	0	0
179			4	0.035	0.013	0	-0.11	0.11	0	0
180			5	0.035	0.013	0	0	0	0	0
181	23	M5	1	0	0.031	0	0	0	0	0
182			2	0	0.016	0	0.292	-0.292	0	0
183			3	0	0	0	0.39	-0.39	0	0
184			4	0	-0.016	0	0.292	-0.292	0	0
185			5	0	-0.031	0	0	0	0	0
186	23	M6	1	0	0.021	0	0	0	0	0
187			2	0	0.02	0	0.299	-0.299	0	0
188			3	0	-0.019	0	0.579	-0.579	0	0
189			4	0	-0.02	0	0.299	-0.299	0	0
190			5	0	-0.021	0	0	0	0	0
191	23	M7	1	0	0.031	0	0	0	0	0
192			2	0	0.016	0	0.292	-0.292	0	0
193			3	0	0	0	0.39	-0.39	0	0
194			4	0	-0.016	0	0.292	-0.292	0	0
195			5	0	-0.031	0	0	0	0	0
196	23	M8	1	0	0.021	0	0	0	0	0
197			2	0	0.02	0	0.299	-0.299	0	0
198			3	0	-0.019	0	0.579	-0.579	0	0
199			4	0	-0.02	0	0.299	-0.299	0	0
200			5	0	-0.021	0	0	0	0	0
201	24	M1	1	0.037	0	-0.014	0	0	0.945	-0.945
202			2	0.036	0	-0.014	0	0	0.708	-0.708
203			3	0.036	0	-0.014	0	0	0.472	-0.472
204			4	0.035	0	-0.014	0	0	0.236	-0.236
205			5	0.035	0	-0.014	0	0	0	0
206	24	M2	1	0.037	0	-0.014	0	0	0.945	-0.945
207			2	0.036	0	-0.014	0	0	0.708	-0.708
208			3	0.036	0	-0.014	0	0	0.472	-0.472
209			4	0.035	0	-0.014	0	0	0.236	-0.236
210			5	0.035	0	-0.014	0	0	0	0
211	24	M3	1	0.037	0	-0.014	0	0	0.945	-0.945
212			2	0.036	0	-0.014	0	0	0.708	-0.708
213			3	0.036	0	-0.014	0	0	0.472	-0.472
214			4	0.035	0	-0.014	0	0	0.236	-0.236
215			5	0.035	0	-0.014	0	0	0	0
216	24	M4	1	0.037	0	-0.014	0	0	0.945	-0.945
217			2	0.036	0	-0.014	0	0	0.708	-0.708
218			3	0.036	0	-0.014	0	0	0.472	-0.472
219			4	0.035	0	-0.014	0	0	0.236	-0.236
220			5	0.035	0	-0.014	0	0	0	0
221	24	M5	1	0	0.031	0	0	0	0	0
222			2	0	0.016	0	0.292	-0.292	0	0
223			3	0	0	0	0.39	-0.39	0	0
224			4	0	-0.016	0	0.292	-0.292	0	0
225			5	0	-0.031	0	0	0	0	0

Member Section Stresses (Continued)

	LC	Member Label	Sec	Axial[ksi]	y Shear[ksi]	z Shear[ksi]	y top Bending[ksi]	y bot Bending[ksi]	z top Bending[ksi]	z bot Bending[ksi]
226	24	M6	1	0	0.021	0	0	0	0	0
227			2	0	0.02	0	0.299	-0.299	0	0
228			3	0	-0.019	0	0.579	-0.579	0	0
229			4	0	-0.02	0	0.299	-0.299	0	0
230			5	0	-0.021	0	0	0	0	0
231	24	M7	1	0	0.031	0	0	0	0	0
232			2	0	0.016	0	0.292	-0.292	0	0
233			3	0	0	0	0.39	-0.39	0	0
234			4	0	-0.016	0	0.292	-0.292	0	0
235			5	0	-0.031	0	0	0	0	0
236	24	M8	1	0	0.021	0	0	0	0	0
237			2	0	0.02	0	0.299	-0.299	0	0
238			3	0	-0.019	0	0.579	-0.579	0	0
239			4	0	-0.02	0	0.299	-0.299	0	0
240			5	0	-0.021	0	0	0	0	0
241	25	M1	1	0.037	-0.013	0	0.44	-0.44	0	0
242			2	0.036	-0.013	0	0.33	-0.33	0	0
243			3	0.036	-0.013	0	0.22	-0.22	0	0
244			4	0.035	-0.013	0	0.11	-0.11	0	0
245			5	0.035	-0.013	0	0	0	0	0
246	25	M2	1	0.037	-0.013	0	0.44	-0.44	0	0
247			2	0.036	-0.013	0	0.33	-0.33	0	0
248			3	0.036	-0.013	0	0.22	-0.22	0	0
249			4	0.035	-0.013	0	0.11	-0.11	0	0
250			5	0.035	-0.013	0	0	0	0	0
251	25	M3	1	0.037	-0.013	0	0.44	-0.44	0	0
252			2	0.036	-0.013	0	0.33	-0.33	0	0
253			3	0.036	-0.013	0	0.22	-0.22	0	0
254			4	0.035	-0.013	0	0.11	-0.11	0	0
255			5	0.035	-0.013	0	0	0	0	0
256	25	M4	1	0.037	-0.013	0	0.44	-0.44	0	0
257			2	0.036	-0.013	0	0.33	-0.33	0	0
258			3	0.036	-0.013	0	0.22	-0.22	0	0
259			4	0.035	-0.013	0	0.11	-0.11	0	0
260			5	0.035	-0.013	0	0	0	0	0
261	25	M5	1	0	0.031	0	0	0	0	0
262			2	0	0.016	0	0.292	-0.292	0	0
263			3	0	0	0	0.39	-0.39	0	0
264			4	0	-0.016	0	0.292	-0.292	0	0
265			5	0	-0.031	0	0	0	0	0
266	25	M6	1	0	0.021	0	0	0	0	0
267			2	0	0.02	0	0.299	-0.299	0	0
268			3	0	-0.019	0	0.579	-0.579	0	0
269			4	0	-0.02	0	0.299	-0.299	0	0
270			5	0	-0.021	0	0	0	0	0
271	25	M7	1	0	0.031	0	0	0	0	0
272			2	0	0.016	0	0.292	-0.292	0	0
273			3	0	0	0	0.39	-0.39	0	0
274			4	0	-0.016	0	0.292	-0.292	0	0
275			5	0	-0.031	0	0	0	0	0
276	25	M8	1	0	0.021	0	0	0	0	0
277			2	0	0.02	0	0.299	-0.299	0	0
278			3	0	-0.019	0	0.579	-0.579	0	0
279			4	0	-0.02	0	0.299	-0.299	0	0
280			5	0	-0.021	0	0	0	0	0

Member Section Stresses (Continued)

	LC	Member Label	Sec	Axial[ksi]	y Shear[ksi]	z Shear[ksi]	y top Bending[ksi]	y bot Bending[ksi]	z top Bending[ksi]	z bot Bending[ksi]
281	26	M1	1	0.037	0	0.014	0	0	-0.945	0.945
282			2	0.036	0	0.014	0	0	-0.708	0.708
283			3	0.036	0	0.014	0	0	-0.472	0.472
284			4	0.035	0	0.014	0	0	-0.236	0.236
285			5	0.035	0	0.014	0	0	0	0
286	26	M2	1	0.037	0	0.014	0	0	-0.945	0.945
287			2	0.036	0	0.014	0	0	-0.708	0.708
288			3	0.036	0	0.014	0	0	-0.472	0.472
289			4	0.035	0	0.014	0	0	-0.236	0.236
290			5	0.035	0	0.014	0	0	0	0
291	26	M3	1	0.037	0	0.014	0	0	-0.945	0.945
292			2	0.036	0	0.014	0	0	-0.708	0.708
293			3	0.036	0	0.014	0	0	-0.472	0.472
294			4	0.035	0	0.014	0	0	-0.236	0.236
295			5	0.035	0	0.014	0	0	0	0
296	26	M4	1	0.037	0	0.014	0	0	-0.945	0.945
297			2	0.036	0	0.014	0	0	-0.708	0.708
298			3	0.036	0	0.014	0	0	-0.472	0.472
299			4	0.035	0	0.014	0	0	-0.236	0.236
300			5	0.035	0	0.014	0	0	0	0
301	26	M5	1	0	0.031	0	0	0	0	0
302			2	0	0.016	0	0.292	-0.292	0	0
303			3	0	0	0	0.39	-0.39	0	0
304			4	0	-0.016	0	0.292	-0.292	0	0
305			5	0	-0.031	0	0	0	0	0
306	26	M6	1	0	0.021	0	0	0	0	0
307			2	0	0.02	0	0.299	-0.299	0	0
308			3	0	-0.019	0	0.579	-0.579	0	0
309			4	0	-0.02	0	0.299	-0.299	0	0
310			5	0	-0.021	0	0	0	0	0
311	26	M7	1	0	0.031	0	0	0	0	0
312			2	0	0.016	0	0.292	-0.292	0	0
313			3	0	0	0	0.39	-0.39	0	0
314			4	0	-0.016	0	0.292	-0.292	0	0
315			5	0	-0.031	0	0	0	0	0
316	26	M8	1	0	0.021	0	0	0	0	0
317			2	0	0.02	0	0.299	-0.299	0	0
318			3	0	-0.019	0	0.579	-0.579	0	0
319			4	0	-0.02	0	0.299	-0.299	0	0
320			5	0	-0.021	0	0	0	0	0
321	27	M1	1	0.011	0.017	0	-0.583	0.583	0	0
322			2	0.011	0.017	0	-0.438	0.438	0	0
323			3	0.011	0.017	0	-0.292	0.292	0	0
324			4	0.011	0.017	0	-0.146	0.146	0	0
325			5	0.01	0.017	0	0	0	0	0
326	27	M2	1	0.011	0.017	0	-0.583	0.583	0	0
327			2	0.011	0.017	0	-0.438	0.438	0	0
328			3	0.011	0.017	0	-0.292	0.292	0	0
329			4	0.011	0.017	0	-0.146	0.146	0	0
330			5	0.01	0.017	0	0	0	0	0
331	27	M3	1	0.011	0.017	0	-0.583	0.583	0	0
332			2	0.011	0.017	0	-0.438	0.438	0	0
333			3	0.011	0.017	0	-0.292	0.292	0	0
334			4	0.011	0.017	0	-0.146	0.146	0	0
335			5	0.01	0.017	0	0	0	0	0

Member Section Stresses (Continued)

	LC	Member Label	Sec	Axial[ksi]	y Shear[ksi]	z Shear[ksi]	y top Bending[ksi]	y bot Bending[ksi]	z top Bending[ksi]	z bot Bending[ksi]
336	27	M4	1	0.011	0.017	0	-0.583	0.583	0	0
337			2	0.011	0.017	0	-0.438	0.438	0	0
338			3	0.011	0.017	0	-0.292	0.292	0	0
339			4	0.011	0.017	0	-0.146	0.146	0	0
340			5	0.01	0.017	0	0	0	0	0
341	27	M5	1	0	0.009	0	0	0	0	0
342			2	0	0.004	0	0.082	-0.082	0	0
343			3	0	0	0	0.109	-0.109	0	0
344			4	0	-0.004	0	0.082	-0.082	0	0
345			5	0	-0.009	0	0	0	0	0
346	27	M6	1	0	0.007	0	0	0	0	0
347			2	0	0.006	0	0.091	-0.091	0	0
348			3	0	-0.005	0	0.172	-0.172	0	0
349			4	0	-0.006	0	0.091	-0.091	0	0
350			5	0	-0.007	0	0	0	0	0
351	27	M7	1	0	0.009	0	0	0	0	0
352			2	0	0.004	0	0.082	-0.082	0	0
353			3	0	0	0	0.109	-0.109	0	0
354			4	0	-0.004	0	0.082	-0.082	0	0
355			5	0	-0.009	0	0	0	0	0
356	27	M8	1	0	0.007	0	0	0	0	0
357			2	0	0.006	0	0.091	-0.091	0	0
358			3	0	-0.005	0	0.172	-0.172	0	0
359			4	0	-0.006	0	0.091	-0.091	0	0
360			5	0	-0.007	0	0	0	0	0
361	28	M1	1	0.011	0	-0.018	0	0	1.23	-1.23
362			2	0.011	0	-0.018	0	0	0.922	-0.922
363			3	0.011	0	-0.018	0	0	0.615	-0.615
364			4	0.011	0	-0.018	0	0	0.307	-0.307
365			5	0.01	0	-0.018	0	0	0	0
366	28	M2	1	0.011	0	-0.018	0	0	1.23	-1.23
367			2	0.011	0	-0.018	0	0	0.922	-0.922
368			3	0.011	0	-0.018	0	0	0.615	-0.615
369			4	0.011	0	-0.018	0	0	0.307	-0.307
370			5	0.01	0	-0.018	0	0	0	0
371	28	M3	1	0.011	0	-0.018	0	0	1.23	-1.23
372			2	0.011	0	-0.018	0	0	0.922	-0.922
373			3	0.011	0	-0.018	0	0	0.615	-0.615
374			4	0.011	0	-0.018	0	0	0.307	-0.307
375			5	0.01	0	-0.018	0	0	0	0
376	28	M4	1	0.011	0	-0.018	0	0	1.23	-1.23
377			2	0.011	0	-0.018	0	0	0.922	-0.922
378			3	0.011	0	-0.018	0	0	0.615	-0.615
379			4	0.011	0	-0.018	0	0	0.307	-0.307
380			5	0.01	0	-0.018	0	0	0	0
381	28	M5	1	0	0.009	0	0	0	0	0
382			2	0	0.004	0	0.082	-0.082	0	0
383			3	0	0	0	0.109	-0.109	0	0
384			4	0	-0.004	0	0.082	-0.082	0	0
385			5	0	-0.009	0	0	0	0	0
386	28	M6	1	0	0.007	0	0	0	0	0
387			2	0	0.006	0	0.091	-0.091	0	0
388			3	0	-0.005	0	0.172	-0.172	0	0
389			4	0	-0.006	0	0.091	-0.091	0	0
390			5	0	-0.007	0	0	0	0	0

Member Section Stresses (Continued)

	LC	Member Label	Sec	Axial[ksi]	y Shear[ksi]	z Shear[ksi]	y top Bending[ksi]	y bot Bending[ksi]	z top Bending[ksi]	z bot Bending[ksi]
391	28	M7	1	0	0.009	0	0	0	0	0
392			2	0	0.004	0	0.082	-0.082	0	0
393			3	0	0	0	0.109	-0.109	0	0
394			4	0	-0.004	0	0.082	-0.082	0	0
395			5	0	-0.009	0	0	0	0	0
396	28	M8	1	0	0.007	0	0	0	0	0
397			2	0	0.006	0	0.091	-0.091	0	0
398			3	0	-0.005	0	0.172	-0.172	0	0
399			4	0	-0.006	0	0.091	-0.091	0	0
400			5	0	-0.007	0	0	0	0	0
401	29	M1	1	0.011	-0.017	0	0.583	-0.583	0	0
402			2	0.011	-0.017	0	0.438	-0.438	0	0
403			3	0.011	-0.017	0	0.292	-0.292	0	0
404			4	0.011	-0.017	0	0.146	-0.146	0	0
405			5	0.01	-0.017	0	0	0	0	0
406	29	M2	1	0.011	-0.017	0	0.583	-0.583	0	0
407			2	0.011	-0.017	0	0.438	-0.438	0	0
408			3	0.011	-0.017	0	0.292	-0.292	0	0
409			4	0.011	-0.017	0	0.146	-0.146	0	0
410			5	0.01	-0.017	0	0	0	0	0
411	29	M3	1	0.011	-0.017	0	0.583	-0.583	0	0
412			2	0.011	-0.017	0	0.438	-0.438	0	0
413			3	0.011	-0.017	0	0.292	-0.292	0	0
414			4	0.011	-0.017	0	0.146	-0.146	0	0
415			5	0.01	-0.017	0	0	0	0	0
416	29	M4	1	0.011	-0.017	0	0.583	-0.583	0	0
417			2	0.011	-0.017	0	0.438	-0.438	0	0
418			3	0.011	-0.017	0	0.292	-0.292	0	0
419			4	0.011	-0.017	0	0.146	-0.146	0	0
420			5	0.01	-0.017	0	0	0	0	0
421	29	M5	1	0	0.009	0	0	0	0	0
422			2	0	0.004	0	0.082	-0.082	0	0
423			3	0	0	0	0.109	-0.109	0	0
424			4	0	-0.004	0	0.082	-0.082	0	0
425			5	0	-0.009	0	0	0	0	0
426	29	M6	1	0	0.007	0	0	0	0	0
427			2	0	0.006	0	0.091	-0.091	0	0
428			3	0	-0.005	0	0.172	-0.172	0	0
429			4	0	-0.006	0	0.091	-0.091	0	0
430			5	0	-0.007	0	0	0	0	0
431	29	M7	1	0	0.009	0	0	0	0	0
432			2	0	0.004	0	0.082	-0.082	0	0
433			3	0	0	0	0.109	-0.109	0	0
434			4	0	-0.004	0	0.082	-0.082	0	0
435			5	0	-0.009	0	0	0	0	0
436	29	M8	1	0	0.007	0	0	0	0	0
437			2	0	0.006	0	0.091	-0.091	0	0
438			3	0	-0.005	0	0.172	-0.172	0	0
439			4	0	-0.006	0	0.091	-0.091	0	0
440			5	0	-0.007	0	0	0	0	0
441	30	M1	1	0.011	0	0.018	0	0	-1.23	1.23
442			2	0.011	0	0.018	0	0	-0.922	0.922
443			3	0.011	0	0.018	0	0	-0.615	0.615
444			4	0.011	0	0.018	0	0	-0.307	0.307
445			5	0.01	0	0.018	0	0	0	0

Member Section Stresses (Continued)

	LC	Member Label	Sec	Axial[ksi]	y Shear[ksi]	z Shear[ksi]	y top Bending[ksi]	y bot Bending[ksi]	z top Bending[ksi]	z bot Bending[ksi]
446	30	M2	1	0.011	0	0.018	0	0	-1.23	1.23
447			2	0.011	0	0.018	0	0	-0.922	0.922
448			3	0.011	0	0.018	0	0	-0.615	0.615
449			4	0.011	0	0.018	0	0	-0.307	0.307
450			5	0.01	0	0.018	0	0	0	0
451	30	M3	1	0.011	0	0.018	0	0	-1.23	1.23
452			2	0.011	0	0.018	0	0	-0.922	0.922
453			3	0.011	0	0.018	0	0	-0.615	0.615
454			4	0.011	0	0.018	0	0	-0.307	0.307
455			5	0.01	0	0.018	0	0	0	0
456	30	M4	1	0.011	0	0.018	0	0	-1.23	1.23
457			2	0.011	0	0.018	0	0	-0.922	0.922
458			3	0.011	0	0.018	0	0	-0.615	0.615
459			4	0.011	0	0.018	0	0	-0.307	0.307
460			5	0.01	0	0.018	0	0	0	0
461	30	M5	1	0	0.009	0	0	0	0	0
462			2	0	0.004	0	0.082	-0.082	0	0
463			3	0	0	0	0.109	-0.109	0	0
464			4	0	-0.004	0	0.082	-0.082	0	0
465			5	0	-0.009	0	0	0	0	0
466	30	M6	1	0	0.007	0	0	0	0	0
467			2	0	0.006	0	0.091	-0.091	0	0
468			3	0	-0.005	0	0.172	-0.172	0	0
469			4	0	-0.006	0	0.091	-0.091	0	0
470			5	0	-0.007	0	0	0	0	0
471	30	M7	1	0	0.009	0	0	0	0	0
472			2	0	0.004	0	0.082	-0.082	0	0
473			3	0	0	0	0.109	-0.109	0	0
474			4	0	-0.004	0	0.082	-0.082	0	0
475			5	0	-0.009	0	0	0	0	0
476	30	M8	1	0	0.007	0	0	0	0	0
477			2	0	0.006	0	0.091	-0.091	0	0
478			3	0	-0.005	0	0.172	-0.172	0	0
479			4	0	-0.006	0	0.091	-0.091	0	0
480			5	0	-0.007	0	0	0	0	0

Envelope Member Section Stresses

	Member	Sec		Axial[ksi]	LC	y Shear[ksi]	LC	z Shear[ksi]	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
1	M1	1	max	0.037	26	0.017	19	0.018	22	0.584	21	0.584	19	1.238	20	1.238	22
2			min	0.011	27	-0.017	21	-0.018	20	-0.584	19	-0.584	21	-1.238	22	-1.238	20
3		2	max	0.036	26	0.017	19	0.018	22	0.438	21	0.438	19	0.929	20	0.929	22
4			min	0.011	27	-0.017	21	-0.018	20	-0.438	19	-0.438	21	-0.929	22	-0.929	20
5		3	max	0.036	26	0.017	19	0.018	22	0.292	21	0.292	19	0.619	20	0.619	22
6			min	0.011	27	-0.017	21	-0.018	20	-0.292	19	-0.292	21	-0.619	22	-0.619	20
7		4	max	0.035	26	0.017	19	0.018	22	0.146	21	0.146	19	0.31	20	0.31	22
8			min	0.011	27	-0.017	21	-0.018	20	-0.146	19	-0.146	21	-0.31	22	-0.31	20
9		5	max	0.035	26	0.017	19	0.018	22	0	30	0	30	0	30	0	30
10			min	0.01	27	-0.017	21	-0.018	20	0	19	0	19	0	19	0	19
11	M2	1	max	0.037	26	0.017	19	0.018	22	0.584	21	0.584	19	1.238	20	1.238	22
12			min	0.011	27	-0.017	21	-0.018	20	-0.584	19	-0.584	21	-1.238	22	-1.238	20
13		2	max	0.036	26	0.017	19	0.018	22	0.438	21	0.438	19	0.929	20	0.929	22
14			min	0.011	27	-0.017	21	-0.018	20	-0.438	19	-0.438	21	-0.929	22	-0.929	20
15		3	max	0.036	26	0.017	19	0.018	22	0.292	21	0.292	19	0.619	20	0.619	22
16			min	0.011	27	-0.017	21	-0.018	20	-0.292	19	-0.292	21	-0.619	22	-0.619	20
17		4	max	0.035	26	0.017	19	0.018	22	0.146	21	0.146	19	0.31	20	0.31	22

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[ksi]	LC	z Shear[ksi]	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
18			min	0.011	27	-0.017	21	-0.018	20	-0.146	19	-0.146	21	-0.31	22	-0.31	20
19		5	max	0.035	26	0.017	19	0.018	22	0	30	0	30	0	30	0	30
20			min	0.01	27	-0.017	21	-0.018	20	0	19	0	19	0	19	0	19
21	M3	1	max	0.037	26	0.017	19	0.018	22	0.584	21	0.584	19	1.238	20	1.238	22
22			min	0.011	27	-0.017	21	-0.018	20	-0.584	19	-0.584	21	-1.238	22	-1.238	20
23		2	max	0.036	26	0.017	19	0.018	22	0.438	21	0.438	19	0.929	20	0.929	22
24			min	0.011	27	-0.017	21	-0.018	20	-0.438	19	-0.438	21	-0.929	22	-0.929	20
25		3	max	0.036	26	0.017	19	0.018	22	0.292	21	0.292	19	0.619	20	0.619	22
26			min	0.011	27	-0.017	21	-0.018	20	-0.292	19	-0.292	21	-0.619	22	-0.619	20
27		4	max	0.035	26	0.017	19	0.018	22	0.146	21	0.146	19	0.31	20	0.31	22
28			min	0.011	27	-0.017	21	-0.018	20	-0.146	19	-0.146	21	-0.31	22	-0.31	20
29		5	max	0.035	26	0.017	19	0.018	22	0	30	0	30	0	30	0	30
30			min	0.01	27	-0.017	21	-0.018	20	0	19	0	19	0	19	0	19
31	M4	1	max	0.037	26	0.017	19	0.018	22	0.584	21	0.584	19	1.238	20	1.238	22
32			min	0.011	27	-0.017	21	-0.018	20	-0.584	19	-0.584	21	-1.238	22	-1.238	20
33		2	max	0.036	26	0.017	19	0.018	22	0.438	21	0.438	19	0.929	20	0.929	22
34			min	0.011	27	-0.017	21	-0.018	20	-0.438	19	-0.438	21	-0.929	22	-0.929	20
35		3	max	0.036	26	0.017	19	0.018	22	0.292	21	0.292	19	0.619	20	0.619	22
36			min	0.011	27	-0.017	21	-0.018	20	-0.292	19	-0.292	21	-0.619	22	-0.619	20
37		4	max	0.035	26	0.017	19	0.018	22	0.146	21	0.146	19	0.31	20	0.31	22
38			min	0.011	27	-0.017	21	-0.018	20	-0.146	19	-0.146	21	-0.31	22	-0.31	20
39		5	max	0.035	26	0.017	19	0.018	22	0	30	0	30	0	30	0	30
40			min	0.01	27	-0.017	21	-0.018	20	0	19	0	19	0	19	0	19
41	M5	1	max	0	30	0.031	26	0	30	0	30	0	30	0	30	0	30
42			min	0	19	0.009	27	0	19	0	19	0	19	0	19	0	19
43		2	max	0	30	0.016	26	0	30	0.292	26	-0.082	30	0	30	0	30
44			min	0	19	0.004	27	0	19	0.082	27	-0.292	23	0	19	0	19
45		3	max	0	30	0	30	0	30	0.39	26	-0.109	30	0	30	0	30
46			min	0	19	0	19	0	19	0.109	27	-0.39	23	0	19	0	19
47		4	max	0	30	-0.004	30	0	30	0.292	26	-0.082	30	0	30	0	30
48			min	0	19	-0.016	23	0	19	0.082	27	-0.292	23	0	19	0	19
49		5	max	0	30	-0.009	30	0	30	0	30	0	30	0	30	0	30
50			min	0	19	-0.031	23	0	19	0	19	0	19	0	19	0	19
51	M6	1	max	0	30	0.021	26	0	30	0	30	0	30	0	30	0	30
52			min	0	19	0.007	27	0	19	0	19	0	19	0	19	0	19
53		2	max	0	30	0.02	26	0	30	0.299	26	-0.091	30	0	30	0	30
54			min	0	19	0.006	27	0	19	0.091	27	-0.299	23	0	19	0	19
55		3	max	0	30	-0.005	30	0	30	0.579	26	-0.172	30	0	30	0	30
56			min	0	19	-0.019	23	0	19	0.172	27	-0.579	23	0	19	0	19
57		4	max	0	30	-0.006	30	0	30	0.299	26	-0.091	30	0	30	0	30
58			min	0	19	-0.02	23	0	19	0.091	27	-0.299	23	0	19	0	19
59		5	max	0	30	-0.007	30	0	30	0	30	0	30	0	30	0	30
60			min	0	19	-0.021	23	0	19	0	19	0	19	0	19	0	19
61	M7	1	max	0	30	0.031	26	0	30	0	30	0	30	0	30	0	30
62			min	0	19	0.009	27	0	19	0	19	0	19	0	19	0	19
63		2	max	0	30	0.016	26	0	30	0.292	26	-0.082	30	0	30	0	30
64			min	0	19	0.004	27	0	19	0.082	27	-0.292	23	0	19	0	19
65		3	max	0	30	0	30	0	30	0.39	26	-0.109	30	0	30	0	30
66			min	0	19	0	19	0	19	0.109	27	-0.39	23	0	19	0	19
67		4	max	0	30	-0.004	30	0	30	0.292	26	-0.082	30	0	30	0	30
68			min	0	19	-0.016	23	0	19	0.082	27	-0.292	23	0	19	0	19
69		5	max	0	30	-0.009	30	0	30	0	30	0	30	0	30	0	30
70			min	0	19	-0.031	23	0	19	0	19	0	19	0	19	0	19
71	M8	1	max	0	30	0.021	26	0	30	0	30	0	30	0	30	0	30
72			min	0	19	0.007	27	0	19	0	19	0	19	0	19	0	19

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[ksi]	LC	z Shear[ksi]	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
73		2	max	0	30	0.02	26	0	30	0.299	26	-0.091	30	0	30	0	30
74			min	0	19	0.006	27	0	19	0.091	27	-0.299	23	0	19	0	19
75		3	max	0	30	-0.005	30	0	30	0.579	26	-0.172	30	0	30	0	30
76			min	0	19	-0.019	23	0	19	0.172	27	-0.579	23	0	19	0	19
77		4	max	0	30	-0.006	30	0	30	0.299	26	-0.091	30	0	30	0	30
78			min	0	19	-0.02	23	0	19	0.091	27	-0.299	23	0	19	0	19
79		5	max	0	30	-0.007	30	0	30	0	30	0	30	0	30	0	30
80			min	0	19	-0.021	23	0	19	0	19	0	19	0	19	0	19

Envelope Member Section Deflections - Service

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC
1	M1	1	max	0	30	0	30	0	30	0	30	NC	30	NC	30
2			min	0	19	0	19	0	19	0	19	NC	19	NC	19
3		2	max	0	30	0.021	21	0.092	20	0	30	NC	30	NC	29
4			min	-0.001	23	-0.021	19	-0.092	22	0	19	4507.862	19	1042.395	20
5		3	max	0	30	0.076	21	0.334	20	0	30	NC	30	NC	29
6			min	-0.001	23	-0.076	19	-0.334	22	0	19	1257.169	19	287.597	20
7		4	max	-0.001	30	0.154	21	0.675	20	0	30	NC	30	NC	29
8			min	-0.002	23	-0.154	19	-0.675	22	0	19	623.615	19	142.171	20
9		5	max	-0.001	30	0.243	21	1.067	20	0	30	NC	30	NC	29
10			min	-0.003	23	-0.243	19	-1.067	22	0	19	395.425	19	90.009	20
11	M2	1	max	0	30	0	30	0	30	0	30	NC	30	NC	30
12			min	0	19	0	19	0	19	0	19	NC	19	NC	19
13		2	max	0	30	0.021	21	0.092	20	0	30	NC	30	NC	29
14			min	-0.001	23	-0.021	19	-0.092	22	0	19	4507.862	19	1042.395	20
15		3	max	0	30	0.076	21	0.334	20	0	30	NC	30	NC	29
16			min	-0.001	23	-0.076	19	-0.334	22	0	19	1257.169	19	287.597	20
17		4	max	-0.001	30	0.154	21	0.675	20	0	30	NC	30	NC	29
18			min	-0.002	23	-0.154	19	-0.675	22	0	19	623.615	19	142.171	20
19		5	max	-0.001	30	0.243	21	1.067	20	0	30	NC	30	NC	29
20			min	-0.003	23	-0.243	19	-1.067	22	0	19	395.425	19	90.009	20
21	M3	1	max	0	30	0	30	0	30	0	30	NC	30	NC	30
22			min	0	19	0	19	0	19	0	19	NC	19	NC	19
23		2	max	0	30	0.021	21	0.092	20	0	30	NC	30	NC	29
24			min	-0.001	23	-0.021	19	-0.092	22	0	19	4507.862	19	1042.395	20
25		3	max	0	30	0.076	21	0.334	20	0	30	NC	30	NC	29
26			min	-0.001	23	-0.076	19	-0.334	22	0	19	1257.169	19	287.597	20
27		4	max	-0.001	30	0.154	21	0.675	20	0	30	NC	30	NC	29
28			min	-0.002	23	-0.154	19	-0.675	22	0	19	623.615	19	142.171	20
29		5	max	-0.001	30	0.243	21	1.067	20	0	30	NC	30	NC	29
30			min	-0.003	23	-0.243	19	-1.067	22	0	19	395.425	19	90.009	20
31	M4	1	max	0	30	0	30	0	30	0	30	NC	30	NC	30
32			min	0	19	0	19	0	19	0	19	NC	19	NC	19
33		2	max	0	30	0.021	21	0.092	20	0	30	NC	30	NC	29
34			min	-0.001	23	-0.021	19	-0.092	22	0	19	4507.862	19	1042.395	20
35		3	max	0	30	0.076	21	0.334	20	0	30	NC	30	NC	29
36			min	-0.001	23	-0.076	19	-0.334	22	0	19	1257.169	19	287.597	20
37		4	max	-0.001	30	0.154	21	0.675	20	0	30	NC	30	NC	29
38			min	-0.002	23	-0.154	19	-0.675	22	0	19	623.615	19	142.171	20
39		5	max	-0.001	30	0.243	21	1.067	20	0	30	NC	30	NC	29
40			min	-0.003	23	-0.243	19	-1.067	22	0	19	395.425	19	90.009	20
41	M5	1	max	1.067	22	-0.001	30	0.243	19	0.004	19	NC	30	NC	30
42			min	-1.067	20	-0.003	23	-0.243	21	-0.004	21	NC	19	NC	19
43		2	max	1.067	22	-0.023	30	0.243	19	0.004	19	6390.705	30	NC	30
44			min	-1.067	20	-0.083	23	-0.243	21	-0.004	21	1795.524	23	NC	19

Envelope Member Section Deflections - Service (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC
45		3	max	1.067	22	-0.032	30	0.243	19	0.004	19	4553.377	30	NC	30
46			min	-1.067	20	-0.115	23	-0.243	21	-0.004	21	1279.311	23	NC	19
47		4	max	1.067	22	-0.023	30	0.243	19	0.004	19	6390.705	30	NC	30
48			min	-1.067	20	-0.083	23	-0.243	21	-0.004	21	1795.524	23	NC	19
49		5	max	1.067	22	-0.001	30	0.243	19	0.004	19	NC	30	NC	30
50			min	-1.067	20	-0.003	23	-0.243	21	-0.004	21	NC	19	NC	19
51	M6	1	max	0.243	19	-0.001	30	1.067	20	0.017	20	NC	30	NC	30
52			min	-0.243	21	-0.003	23	-1.067	22	-0.017	22	NC	19	NC	19
53		2	max	0.243	19	-0.038	30	1.067	20	0.017	20	4410.08	30	NC	30
54			min	-0.243	21	-0.127	23	-1.067	22	-0.017	22	1332.815	23	NC	19
55		3	max	0.243	19	-0.055	30	1.067	20	0.017	20	3048.912	30	NC	30
56			min	-0.243	21	-0.183	23	-1.067	22	-0.017	22	918.888	23	NC	19
57		4	max	0.243	19	-0.038	30	1.067	20	0.017	20	4410.08	30	NC	30
58			min	-0.243	21	-0.127	23	-1.067	22	-0.017	22	1332.815	23	NC	19
59		5	max	0.243	19	-0.001	30	1.067	20	0.017	20	NC	30	NC	30
60			min	-0.243	21	-0.003	23	-1.067	22	-0.017	22	NC	19	NC	19
61	M7	1	max	1.067	20	-0.001	30	0.243	21	0.004	21	NC	30	NC	30
62			min	-1.067	22	-0.003	23	-0.243	19	-0.004	19	NC	19	NC	19
63		2	max	1.067	20	-0.023	30	0.243	21	0.004	21	6390.705	30	NC	30
64			min	-1.067	22	-0.083	23	-0.243	19	-0.004	19	1795.524	23	NC	19
65		3	max	1.067	20	-0.032	30	0.243	21	0.004	21	4553.377	30	NC	30
66			min	-1.067	22	-0.115	23	-0.243	19	-0.004	19	1279.311	23	NC	19
67		4	max	1.067	20	-0.023	30	0.243	21	0.004	21	6390.705	30	NC	30
68			min	-1.067	22	-0.083	23	-0.243	19	-0.004	19	1795.524	23	NC	19
69		5	max	1.067	20	-0.001	30	0.243	21	0.004	21	NC	30	NC	30
70			min	-1.067	22	-0.003	23	-0.243	19	-0.004	19	NC	19	NC	19
71	M8	1	max	0.243	21	-0.001	30	1.067	22	0.017	22	NC	30	NC	30
72			min	-0.243	19	-0.003	23	-1.067	20	-0.017	20	NC	19	NC	19
73		2	max	0.243	21	-0.038	30	1.067	22	0.017	22	4410.08	30	NC	30
74			min	-0.243	19	-0.127	23	-1.067	20	-0.017	20	1332.815	23	NC	19
75		3	max	0.243	21	-0.055	30	1.067	22	0.017	22	3048.912	30	NC	30
76			min	-0.243	19	-0.183	23	-1.067	20	-0.017	20	918.888	23	NC	19
77		4	max	0.243	21	-0.038	30	1.067	22	0.017	22	4410.08	30	NC	30
78			min	-0.243	19	-0.127	23	-1.067	20	-0.017	20	1332.815	23	NC	19
79		5	max	0.243	21	-0.001	30	1.067	22	0.017	22	NC	30	NC	30
80			min	-0.243	19	-0.003	23	-1.067	20	-0.017	20	NC	19	NC	19

Envelope Member Section Deflections - Strength

No Data to Print...

Envelope Beam Deflections

	Member Label	Span		Location [ft]	y' [in]	(n) L'/y' Ratio	LC
1	M5	1	max	0.125	-0.001	NC	30
2		1	min	6	-0.113	1279	23
3	M6	1	max	0.144	-0.002	NC	30
4		1	min	6.916	-0.181	918	23
5	M7	1	max	0.125	-0.001	NC	30
6		1	min	6	-0.113	1279	23
7	M8	1	max	0.144	-0.002	NC	30
8		1	min	6.916	-0.181	918	23

Envelope Beam Deflection Checks

	Beam	Design Rule	Span	Defl [in]	Ratio	LC	Defl [in]	Ratio	LC	Defl [in]	Ratio	LC
1	M5	Typical	1	0	NC	1(DL+EL+LL...)	0	NC	2(DL+EL+LL...)	0	NC	3(DL+EL)
2	M6	Typical	1	0	NC	1(DL+EL+LL...)	0	NC	2(DL+EL+LL...)	0	NC	3(DL+EL)
3	M7	Typical	1	0	NC	1(DL+EL+LL...)	0	NC	2(DL+EL+LL...)	0	NC	3(DL+EL)
4	M8	Typical	1	0	NC	1(DL+EL+LL...)	0	NC	2(DL+EL+LL...)	0	NC	3(DL+EL)

Envelope Member Torsion Stresses

	Member	Sec		Torque[k-ft]	LC	Torsion Shear[ksi]	LC	y-y Warp Shear[ksi]	z-z Warp Shear[ksi]	z-Top Warp Bend[ksi]	z-Bot Warp Bend[ksi]
1	M1	1	max	0	30	0	30	NC	NC	NC	NC
2			min	0	19	0	19	NC	NC	NC	NC
3		2	max	0	30	0	30	NC	NC	NC	NC
4			min	0	19	0	19	NC	NC	NC	NC
5		3	max	0	30	0	30	NC	NC	NC	NC
6			min	0	19	0	19	NC	NC	NC	NC
7		4	max	0	30	0	30	NC	NC	NC	NC
8			min	0	19	0	19	NC	NC	NC	NC
9		5	max	0	30	0	30	NC	NC	NC	NC
10			min	0	19	0	19	NC	NC	NC	NC
11	M2	1	max	0	30	0	30	NC	NC	NC	NC
12			min	0	19	0	19	NC	NC	NC	NC
13		2	max	0	30	0	30	NC	NC	NC	NC
14			min	0	19	0	19	NC	NC	NC	NC
15		3	max	0	30	0	30	NC	NC	NC	NC
16			min	0	19	0	19	NC	NC	NC	NC
17		4	max	0	30	0	30	NC	NC	NC	NC
18			min	0	19	0	19	NC	NC	NC	NC
19		5	max	0	30	0	30	NC	NC	NC	NC
20			min	0	19	0	19	NC	NC	NC	NC
21	M3	1	max	0	30	0	30	NC	NC	NC	NC
22			min	0	19	0	19	NC	NC	NC	NC
23		2	max	0	30	0	30	NC	NC	NC	NC
24			min	0	19	0	19	NC	NC	NC	NC
25		3	max	0	30	0	30	NC	NC	NC	NC
26			min	0	19	0	19	NC	NC	NC	NC
27		4	max	0	30	0	30	NC	NC	NC	NC
28			min	0	19	0	19	NC	NC	NC	NC
29		5	max	0	30	0	30	NC	NC	NC	NC
30			min	0	19	0	19	NC	NC	NC	NC
31	M4	1	max	0	30	0	30	NC	NC	NC	NC
32			min	0	19	0	19	NC	NC	NC	NC
33		2	max	0	30	0	30	NC	NC	NC	NC
34			min	0	19	0	19	NC	NC	NC	NC
35		3	max	0	30	0	30	NC	NC	NC	NC
36			min	0	19	0	19	NC	NC	NC	NC
37		4	max	0	30	0	30	NC	NC	NC	NC
38			min	0	19	0	19	NC	NC	NC	NC
39		5	max	0	30	0	30	NC	NC	NC	NC
40			min	0	19	0	19	NC	NC	NC	NC
41	M5	1	max	0	30	0	30	NC	NC	NC	NC
42			min	0	19	0	19	NC	NC	NC	NC
43		2	max	0	30	0	30	NC	NC	NC	NC
44			min	0	19	0	19	NC	NC	NC	NC
45		3	max	0	30	0	30	NC	NC	NC	NC
46			min	0	19	0	19	NC	NC	NC	NC
47		4	max	0	30	0	30	NC	NC	NC	NC

Envelope Member Torsion Stresses (Continued)

	Member	Sec		Torque[k-ft]	LC	Torsion Shear[ksi]	LC	y-y Warp Shear[ksi]	z-z Warp Shear[ksi]	z-Top Warp Bend[ksi]	z-Bot Warp Bend[ksi]
48			min	0	19	0	19	NC	NC	NC	NC
49		5	max	0	30	0	30	NC	NC	NC	NC
50			min	0	19	0	19	NC	NC	NC	NC
51	M6	1	max	0	30	0	30	NC	NC	NC	NC
52			min	0	19	0	19	NC	NC	NC	NC
53		2	max	0	30	0	30	NC	NC	NC	NC
54			min	0	19	0	19	NC	NC	NC	NC
55		3	max	0	30	0	30	NC	NC	NC	NC
56			min	0	19	0	19	NC	NC	NC	NC
57		4	max	0	30	0	30	NC	NC	NC	NC
58			min	0	19	0	19	NC	NC	NC	NC
59		5	max	0	30	0	30	NC	NC	NC	NC
60			min	0	19	0	19	NC	NC	NC	NC
61	M7	1	max	0	30	0	30	NC	NC	NC	NC
62			min	0	19	0	19	NC	NC	NC	NC
63		2	max	0	30	0	30	NC	NC	NC	NC
64			min	0	19	0	19	NC	NC	NC	NC
65		3	max	0	30	0	30	NC	NC	NC	NC
66			min	0	19	0	19	NC	NC	NC	NC
67		4	max	0	30	0	30	NC	NC	NC	NC
68			min	0	19	0	19	NC	NC	NC	NC
69		5	max	0	30	0	30	NC	NC	NC	NC
70			min	0	19	0	19	NC	NC	NC	NC
71	M8	1	max	0	30	0	30	NC	NC	NC	NC
72			min	0	19	0	19	NC	NC	NC	NC
73		2	max	0	30	0	30	NC	NC	NC	NC
74			min	0	19	0	19	NC	NC	NC	NC
75		3	max	0	30	0	30	NC	NC	NC	NC
76			min	0	19	0	19	NC	NC	NC	NC
77		4	max	0	30	0	30	NC	NC	NC	NC
78			min	0	19	0	19	NC	NC	NC	NC
79		5	max	0	30	0	30	NC	NC	NC	NC
80			min	0	19	0	19	NC	NC	NC	NC

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

No Data to Print...

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

No Data to Print...

AISI S100-16: ASD Member Cold Formed Steel Code Checks

No Data to Print...

Envelope AISI S100-16: ASD Member Cold Formed Steel Code Checks

No Data to Print...

AWC NDS-18 / SDPWS-15 ASD Member Wood Code Checks

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	Fc' [ksi]	Ft' [ksi]	Fb1' [ksi]	Fb2' [ksi]	Fv' [ksi]	RB	CL	CP	Eqn
1	19	M1	6X12	0.422	0	0.064	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
2	19	M2	6X12	0.422	0	0.064	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
3	19	M3	6X12	0.422	0	0.064	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
4	19	M4	6X12	0.422	0	0.064	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
5	19	M5	6X12	0.131	6	0.054	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3

AWC NDS-18 / SDPWS-15 ASD Member Wood Code Checks (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	Fc' [ksi]	Ft' [ksi]	Fb1' [ksi]	Fb2' [ksi]	Fv' [ksi]	RB	CL	CP	Eqn
6	19	M6	6X12	0.206	6.916	0.041	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
7	19	M7	6X12	0.131	6	0.054	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
8	19	M8	6X12	0.206	6.916	0.041	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
9	20	M1	6X12	0.898	0	0.065	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
10	20	M2	6X12	0.898	0	0.065	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
11	20	M3	6X12	0.898	0	0.065	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
12	20	M4	6X12	0.898	0	0.065	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
13	20	M5	6X12	0.131	6	0.054	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
14	20	M6	6X12	0.206	6.916	0.041	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
15	20	M7	6X12	0.131	6	0.054	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
16	20	M8	6X12	0.206	6.916	0.041	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
17	21	M1	6X12	0.422	0	0.064	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
18	21	M2	6X12	0.422	0	0.064	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
19	21	M3	6X12	0.422	0	0.064	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
20	21	M4	6X12	0.422	0	0.064	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
21	21	M5	6X12	0.131	6	0.054	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
22	21	M6	6X12	0.206	6.916	0.041	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
23	21	M7	6X12	0.131	6	0.054	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
24	21	M8	6X12	0.206	6.916	0.041	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
25	22	M1	6X12	0.898	0	0.065	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
26	22	M2	6X12	0.898	0	0.065	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
27	22	M3	6X12	0.898	0	0.065	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
28	22	M4	6X12	0.898	0	0.065	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
29	22	M5	6X12	0.131	6	0.054	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
30	22	M6	6X12	0.206	6.916	0.041	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
31	22	M7	6X12	0.131	6	0.054	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
32	22	M8	6X12	0.206	6.916	0.041	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
33	23	M1	6X12	0.32	0	0.048	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
34	23	M2	6X12	0.32	0	0.048	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
35	23	M3	6X12	0.32	0	0.048	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
36	23	M4	6X12	0.32	0	0.048	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
37	23	M5	6X12	0.28	6	0.114	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
38	23	M6	6X12	0.417	6.916	0.078	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
39	23	M7	6X12	0.28	6	0.114	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
40	23	M8	6X12	0.417	6.916	0.078	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
41	24	M1	6X12	0.697	0	0.05	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
42	24	M2	6X12	0.697	0	0.05	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
43	24	M3	6X12	0.697	0	0.05	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
44	24	M4	6X12	0.697	0	0.05	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
45	24	M5	6X12	0.28	6	0.114	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
46	24	M6	6X12	0.417	6.916	0.078	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
47	24	M7	6X12	0.28	6	0.114	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
48	24	M8	6X12	0.417	6.916	0.078	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
49	25	M1	6X12	0.32	0	0.048	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
50	25	M2	6X12	0.32	0	0.048	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
51	25	M3	6X12	0.32	0	0.048	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
52	25	M4	6X12	0.32	0	0.048	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
53	25	M5	6X12	0.28	6	0.114	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
54	25	M6	6X12	0.417	6.916	0.078	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
55	25	M7	6X12	0.28	6	0.114	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
56	25	M8	6X12	0.417	6.916	0.078	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
57	26	M1	6X12	0.697	0	0.05	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
58	26	M2	6X12	0.697	0	0.05	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
59	26	M3	6X12	0.697	0	0.05	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
60	26	M4	6X12	0.697	0	0.05	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3

AWC NDS-18 / SDPWS-15 ASD Member Wood Code Checks (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	Fc' [ksi]	Ft' [ksi]	Fb1' [ksi]	Fb2' [ksi]	Fv' [ksi]	RB	CL	CP	Eqn
61	26	M5	6X12	0.28	6	0.114	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
62	26	M6	6X12	0.417	6.916	0.078	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
63	26	M7	6X12	0.28	6	0.114	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
64	26	M8	6X12	0.417	6.916	0.078	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
65	27	M1	6X12	0.42	0	0.064	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
66	27	M2	6X12	0.42	0	0.064	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
67	27	M3	6X12	0.42	0	0.064	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
68	27	M4	6X12	0.42	0	0.064	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
69	27	M5	6X12	0.079	6	0.032	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
70	27	M6	6X12	0.124	6.916	0.025	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
71	27	M7	6X12	0.079	6	0.032	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
72	27	M8	6X12	0.124	6.916	0.025	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
73	28	M1	6X12	0.886	0	0.065	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
74	28	M2	6X12	0.886	0	0.065	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
75	28	M3	6X12	0.886	0	0.065	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
76	28	M4	6X12	0.886	0	0.065	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
77	28	M5	6X12	0.079	6	0.032	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
78	28	M6	6X12	0.124	6.916	0.025	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
79	28	M7	6X12	0.079	6	0.032	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
80	28	M8	6X12	0.124	6.916	0.025	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
81	29	M1	6X12	0.42	0	0.064	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
82	29	M2	6X12	0.42	0	0.064	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
83	29	M3	6X12	0.42	0	0.064	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
84	29	M4	6X12	0.42	0	0.064	8	y	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
85	29	M5	6X12	0.079	6	0.032	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
86	29	M6	6X12	0.124	6.916	0.025	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
87	29	M7	6X12	0.079	6	0.032	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
88	29	M8	6X12	0.124	6.916	0.025	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
89	30	M1	6X12	0.886	0	0.065	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
90	30	M2	6X12	0.886	0	0.065	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
91	30	M3	6X12	0.886	0	0.065	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
92	30	M4	6X12	0.886	0	0.065	8	z	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
93	30	M5	6X12	0.079	6	0.032	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
94	30	M6	6X12	0.124	6.916	0.025	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
95	30	M7	6X12	0.079	6	0.032	12	y	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
96	30	M8	6X12	0.124	6.916	0.025	13.833	y	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3

Envelope AWC NDS-18 / SDPWS-15 ASD Member Wood Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Fc' [ksi]	Ft' [ksi]	Fb1' [ksi]	Fb2' [ksi]	Fv' [ksi]	RB	CL	CP	Eqn
1	M1	6X12	0.898	0	22	0.065	8	z	22	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
2	M2	6X12	0.898	0	22	0.065	8	z	22	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
3	M3	6X12	0.898	0	22	0.065	8	z	22	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
4	M4	6X12	0.898	0	22	0.065	8	z	22	0.749	0.68	1.393	1.4	0.272	6.041	0.995	0.78	3.9-3
5	M5	6X12	0.28	6	26	0.114	12	y	26	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
6	M6	6X12	0.417	6.916	26	0.078	13.833	y	26	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3
7	M7	6X12	0.28	6	26	0.114	12	y	26	0.476	0.68	1.389	1.4	0.272	7.399	0.992	0.496	3.9-3
8	M8	6X12	0.417	6.916	26	0.078	13.833	y	26	0.379	0.68	1.387	1.4	0.272	7.944	0.991	0.395	3.9-3

Envelope Concrete Beam Design Results

No Data to Print...

Envelope Concrete Column Design Results

No Data to Print...

AA ADM1-15: ASD - BUILDING Member Aluminum Code Checks

No Data to Print...

Envelope AA ADM1-15: ASD - BUILDING Member Aluminum Code Checks

No Data to Print...

AISC 14TH (360-10): ASD Member Stainless Steel Code Checks

No Data to Print...

Envelope AISC 14TH (360-10): ASD Member Stainless Steel Code Checks

No Data to Print...

Frequencies and Participation

No Data to Print...

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.1			1	0.3	0.3	0.035
3	HF	Solid Sawn	Visually Graded	Hem-Fir	No.1			1	0.3	0.3	0.035
4	SPF	Solid Sawn	Visually Graded	Spruce-Pine-fir	No.1			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
9	1.3E-1600F_VERSALAM	SCL	Boise Cascade	1.3E-1600F_VERSALAM	na			1	0.3	0.3	0.035
10	1.35E LSL SolidStart	SCL	Louisiana Pacific	1.35E LSL SolidStart	na			1	0.3	0.3	0.035
11	1.3E_RIGIDLAM LVL	SCL	Roseburg Forest Products_2012	1.3E_RIGIDLAM LVL	na			1	0.3	0.3	0.035
12	2.0E DF Parallam PSL	SCL	TrusJoist	2.0E DF Parallam PSL	na			1	0.3	0.3	0.035
13	LVL PRL 1.5E 2250F	Custom	N/A	LVL PRL 1.5E 2250F	na			1	0.3	0.3	0.035
14	LVL_Microlam_1.9E_2600F	Custom	N/A	LVL_Microllam_1.9E_2600F	na			1	0.3	0.3	0.035
15	PSL_Parallam_2.0E_2900F	Custom	N/A	PSL_Parallam_2.0E_2900F	na			1	0.3	0.3	0.035
16	LSL_TimberStrand_1.55E_2325F	Custom	N/A	LSL_TimberStrand_1.55E_2325F	na			1	0.3	0.3	0.035

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	STL COL	HSS12X4X4	Column	Tube	A36 Gr.36	Typical	7.1	21	119	59.8

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	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B RECT	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A500 Gr.C RND	29000	11154	0.3	0.65	0.527	46	1.4	62	1.3
7	A500 Gr.C RECT	29000	11154	0.3	0.65	0.527	50	1.4	62	1.3
8	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2

Hot Rolled Steel Properties (Continued)

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
9	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
10	A913 Gr.65	29000	11154	0.3	0.65	0.49	65	1.1	80	1.1

Company:		Date:	2/22/2023
Engineer:		Page:	1/8
Project:			
Address:			
Phone:			
E-mail:			

1.Project information

Project description:
Location:
Fastening description:

2. Input Data & Anchor Parameters

General
Design method:ACI 318-19
Units: Imperial units

Anchor Information:
Anchor type: Bonded anchor
Material: F1554 Grade 36
Diameter (inch): 0.625
Effective Embedment depth, h_{ef} (inch): 6.000
Code report: ICC-ES ESR-4057
Anchor category: -
Anchor ductility: Yes
h_{min} (inch): 7.38
c_{ac} (inch): 11.30
C_{min} (inch): 1.75
S_{min} (inch): 3.00

Base Material
Concrete: Normal-weight
Concrete thickness, h (inch): 12.00
State: Uncracked
Compressive strength, f'_c (psi): 2500
$\Psi_{c,V}$: 1.4
Reinforcement condition: Supplementary reinforcement not present
Supplemental edge reinforcement: No
Reinforcement provided at corners: No
Ignore concrete breakout in tension: No
Ignore concrete breakout in shear: No
Hole condition: Dry concrete
Inspection: Continuous
Temperature range, Short/Long: 150/110°F
Reduced installation torque (for AT-3G): Not applicable
Ignore 6do requirement: Not applicable
Build-up grout pad: No

Base Plate
Length x Width x Thickness (inch): 16.00 x 14.00 x 0.37
Yield stress: 36000 psi

Profile type/size: HSS14X6X3/8

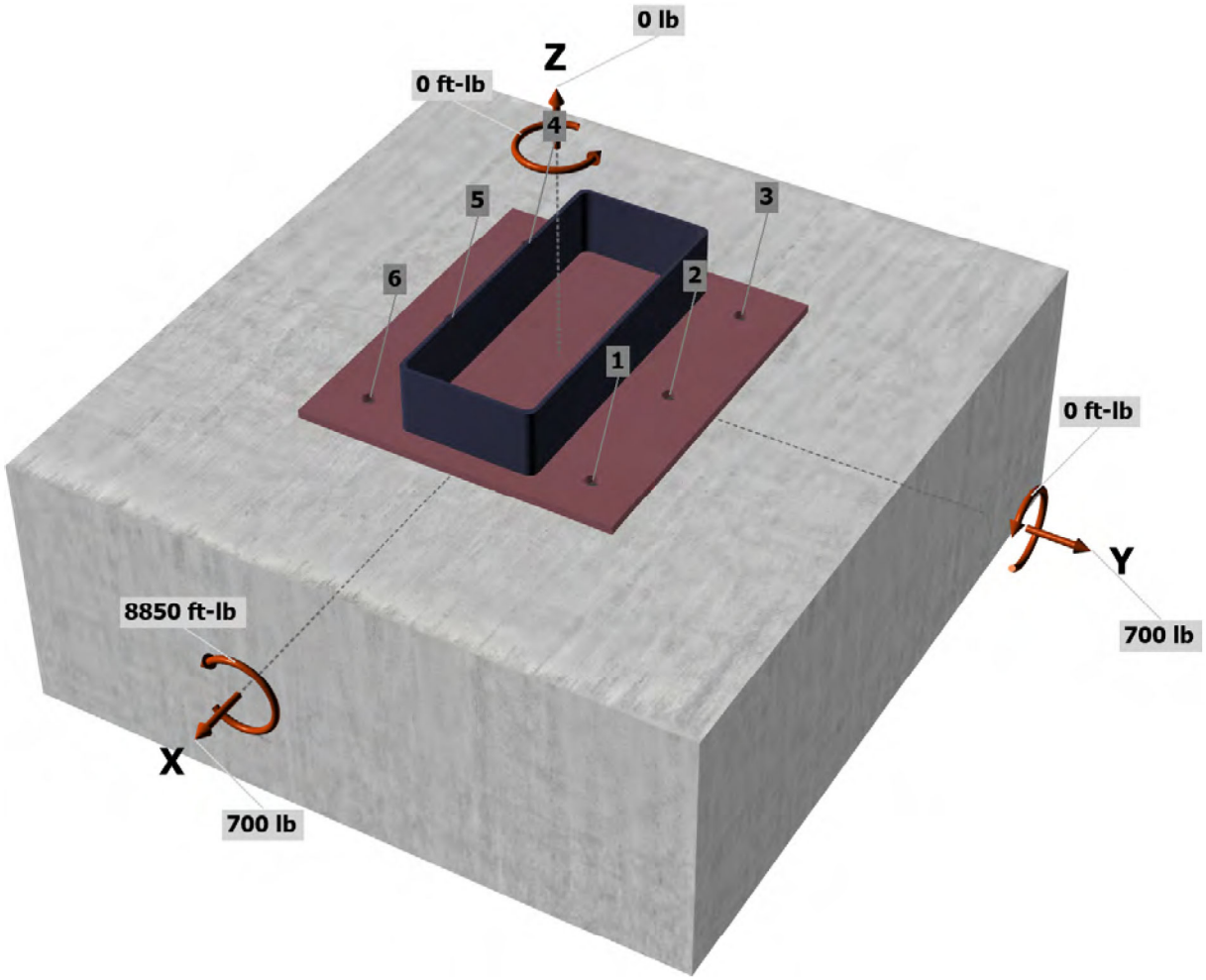
Recommended Anchor
Anchor Name: SET-3G™ - SET-3G w/ 5/8"Ø F1554 Gr. 36
Code Report: ICC-ES ESR-4057

Load and Geometry
Load factor source: ACI 318 Section 5.3
Load combination: not set
Seismic design: Yes
Anchors subjected to sustained tension: No
Ductility section for tension: 17.10.5.2 not applicable
Ductility section for shear: 17.10.6.2 not applicable
Ω_0 factor: not set
Apply entire shear load at front row: No
Anchors only resisting wind and/or seismic loads: Yes

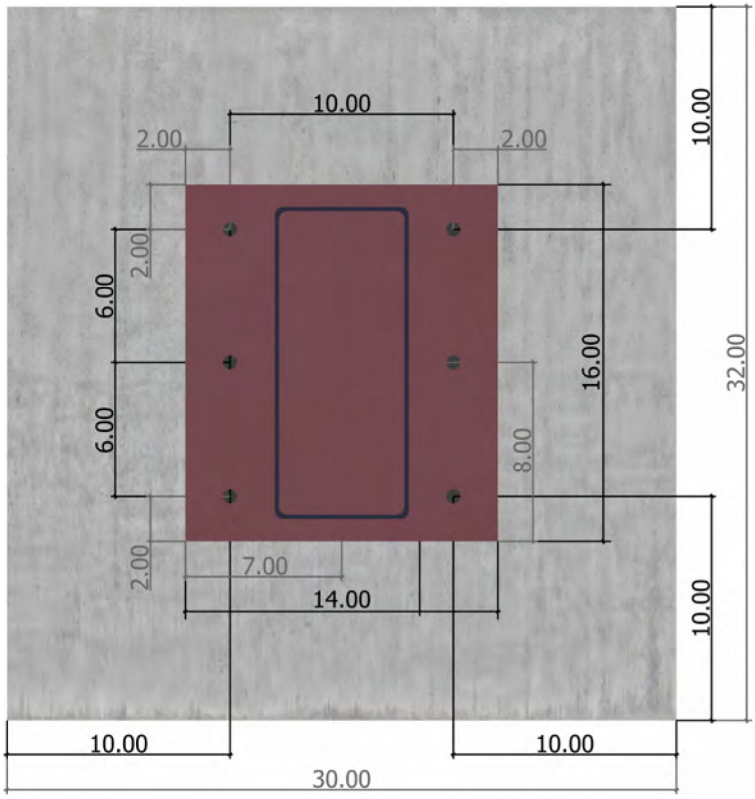
Strength level loads:

N_{ua} [lb]: 0
V_{uax} [lb]: 700
V_{uay} [lb]: 700
M_{ux} [ft-lb]: 8850
M_{uy} [ft-lb]: 0
M_{uz} [ft-lb]: 0

<Figure 1>



<Figure 2>

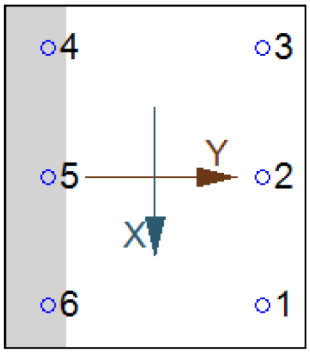

10.00
2.00
2.00
10.00
2.00
6.00
6.00
16.00
32.00
8.00
2.00
7.00
14.00
10.00
10.00
10.00
30.00

3. Resulting Anchor Forces

Anchor	Tension load, N_{ua} (lb)	Shear load x, V_{uax} (lb)	Shear load y, V_{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2+(V_{uay})^2}$ (lb)
1	3200.1	116.7	116.7	165.0
2	3200.1	116.7	116.7	165.0
3	3200.1	116.7	116.7	165.0
4	0.0	116.7	116.7	165.0
5	0.0	116.7	116.7	165.0
6	0.0	116.7	116.7	165.0
Sum	9600.2	700.0	700.0	989.9

Maximum concrete compression strain (‰): 0.10
Maximum concrete compression stress (psi): 426
Resultant tension force (lb): 9600
Resultant compression force (lb): 9600
Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00
Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00
Eccentricity of resultant shear forces in x-axis, e'_{Vx} (inch): 0.00
Eccentricity of resultant shear forces in y-axis, e'_{Vy} (inch): 0.00

<Figure 3>



4. Steel Strength of Anchor in Tension (Sec. 17.6.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
13110	0.75	9833

5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.6.2)

$N_b = k_c \lambda_a \sqrt{f'_c} h_{ef}^{1.5}$ (Eq. 17.6.2.2.1)

k_c	λ_a	f'_c (psi)	h_{ef} (in)	N_b (lb)
24.0	1.00	2500	6.000	17636

$0.75\phi N_{cbg} = 0.75\phi \, (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b$ (Sec. 17.5.1.2 & Eq. 17.6.2.1a)

A_{Nc} (in²)	A_{Nco} (in²)	$c_{a,min}$ (in)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	$0.75\phi N_{cbg}$ (lb)
540.00	324.00	10.00	1.000	1.000	1.00	0.885	17636	0.65	12686

6. Adhesive Strength of Anchor in Tension (Sec. 17.6.5)

$\tau_{k,uncr} = \tau_{k,uncr} f_{short\text{-}term} K_{sat} \alpha_{N,seis} (f'_c / 2{,}500)^n$

$\tau_{k,uncr}$ (psi)	$f_{short\text{-}term}$	K_{sat}	$\alpha_{N,seis}$	f'_c (psi)	n	$\tau_{k,uncr}$ (psi)
2162	1.00	1.00	1.00	2500	0.35	2162

$N_{ba} = \lambda_a \tau_{uncr} \pi d_a h_{ef}$ (Eq. 17.6.5.2.1)

λ_a	τ_{uncr} (psi)	d_a (in)	h_{ef} (in)	N_{ba} (lb)
1.00	2162	0.63	6.000	25470

$0.75\phi N_{ag} = 0.75\phi \, (A_{Na} / A_{Na0}) \Psi_{ec,Na} \Psi_{ed,Na} \Psi_{cp,Na} N_{ba}$ (Sec. 17.5.1.2 & Eq. 17.6.5.1b)

A_{Na} (in²)	A_{Na0} (in²)	c_{Na} (in)	$c_{a,min}$ (in)	$\Psi_{ec,Na}$	$\Psi_{ed,Na}$	$\Psi_{cp,Na}$	N_{ba}(lb)	ϕ	$0.75\phi N_{ag}$ (lb)
517.39	307.10	8.76	10.00	1.000	1.000	0.885	25470	0.65	18520

8. Steel Strength of Anchor in Shear (Sec. 17.7.1)

V_{sa} (lb)	ϕ_{grout}	ϕ	$\alpha_{V,seis}$	$\phi_{grout}\alpha_{V,seis}\phi V_{sa}$ (lb)
7865	1.0	0.65	0.75	3834

9. Concrete Breakout Strength of Anchor in Shear (Sec. 17.7.2)

Shear perpendicular to edge in y-direction:

$V_{by} = \min|7(l_e / d_a)^{0.2}\sqrt{d_a}\lambda_a\sqrt{f'_c}c_{a1}^{1.5};\ 9\lambda_a\sqrt{f'_c}c_{a1}^{1.5}|$ (Eq. 17.7.2.2.1a & Eq. 17.7.2.2.1b)

l_e (in)	d_a (in)	λ_a	f'_c (psi)	c_{a1} (in)	V_{by} (lb)
5.00	0.625	1.00	2500	8.00	9490

$\phi V_{cbgy} = \phi\,(A_{Vc} / A_{Vco})\,\Psi_{ec,V}\Psi_{ed,V}\Psi_{c,V}\Psi_{h,V}V_{by}$ (Sec. 17.5.1.2 & Eq. 17.7.2.1b)

A_{Vc} (in²)	A_{Vco} (in²)	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	V_{by} (lb)	ϕ	ϕV_{cbgy} (lb)
384.00	288.00	1.000	0.950	1.400	1.000	9490	0.70	11780

Shear perpendicular to edge in x-direction:

$V_{bx} = \min|7(l_e / d_a)^{0.2}\sqrt{d_a}\lambda_a\sqrt{f'_c}c_{a1}^{1.5};\ 9\lambda_a\sqrt{f'_c}c_{a1}^{1.5}|$ (Eq. 17.7.2.2.1a & Eq. 17.7.2.2.1b)

l_e (in)	d_a (in)	λ_a	f'_c (psi)	c_{a1} (in)	V_{bx} (lb)
5.00	0.625	1.00	2500	8.00	9490

$\phi V_{cbgx} = \phi\,(A_{Vc} / A_{Vco})\,\Psi_{ec,V}\Psi_{ed,V}\Psi_{c,V}\Psi_{h,V}V_{bx}$ (Sec. 17.5.1.2 & Eq. 17.7.2.1b)

A_{Vc} (in²)	A_{Vco} (in²)	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	V_{bx} (lb)	ϕ	ϕV_{cbgx} (lb)
360.00	288.00	1.000	0.950	1.400	1.000	9490	0.70	11044

Shear parallel to edge in x-direction:

$V_{by} = \min|7(l_e / d_a)^{0.2}\sqrt{d_a}\lambda_a\sqrt{f'_c}c_{a1}^{1.5};\ 9\lambda_a\sqrt{f'_c}c_{a1}^{1.5}|$ (Eq. 17.7.2.2.1a & Eq. 17.7.2.2.1b)

l_e (in)	d_a (in)	λ_a	f'_c (psi)	c_{a1} (in)	V_{by} (lb)
5.00	0.625	1.00	2500	8.00	9490

$\phi V_{cbgx} = \phi\,(2)(A_{Vc} / A_{Vco})\,\Psi_{ec,V}\Psi_{ed,V}\Psi_{c,V}\Psi_{h,V}V_{by}$ (Sec. 17.5.1.2, 17.7.2.1(c) & Eq. 17.7.2.1b)

A_{Vc} (in²)	A_{Vco} (in²)	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	V_{by} (lb)	ϕ	ϕV_{cbgx} (lb)
360.00	288.00	1.000	1.000	1.400	1.000	9490	0.70	23250

Shear parallel to edge in y-direction:

$V_{bx} = \min|7(l_e / d_a)^{0.2}\sqrt{d_a}\lambda_a\sqrt{f'_c}c_{a1}^{1.5};\ 9\lambda_a\sqrt{f'_c}c_{a1}^{1.5}|$ (Eq. 17.7.2.2.1a & Eq. 17.7.2.2.1b)

l_e (in)	d_a (in)	λ_a	f'_c (psi)	c_{a1} (in)	V_{bx} (lb)
5.00	0.625	1.00	2500	8.00	9490

$\phi V_{cbgy} = \phi\,(2)(A_{Vc} / A_{Vco})\,\Psi_{ec,V}\Psi_{ed,V}\Psi_{c,V}\Psi_{h,V}V_{bx}$ (Sec. 17.5.1.2, 17.7.2.1(c) & Eq. 17.7.2.1b)

A_{Vc} (in²)	A_{Vco} (in²)	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	V_{bx} (lb)	ϕ	ϕV_{cbgy} (lb)
384.00	288.00	1.000	1.000	1.400	1.000	9490	0.70	24800

10. Concrete Pryout Strength of Anchor in Shear (Sec. 17.7.3)

$\phi V_{cpg} = \phi \min|k_{cp}N_{ag}\ ;\ k_{cp}N_{cbg}| = \phi \min|k_{cp}(A_{Na} / A_{Na0})\,\Psi_{ec,Na}\Psi_{ed,Na}\Psi_{cp,Na}N_{ba}\ ;\ k_{cp}(A_{Nc} / A_{Nco})\,\Psi_{ec,N}\Psi_{ed,N}\Psi_{c,N}\Psi_{cp,N}N_b|$ (Sec. 17.5.1.2 & Eq. 17.7.3.1b)

k_{cp}	A_{Na} (in²)	A_{Na0} (in²)	$\Psi_{ed,Na}$	$\Psi_{ec,Na}$	$\Psi_{cp,Na}$	N_{ba} (lb)	N_a (lb)
2.0	812.64	307.10	1.000	1.000	0.885	25470	59668

A_{Nc} (in²)	A_{Nco} (in²)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	N_{cb} (lb)	ϕ
840.00	324.00	1.000	1.000	1.000	0.885	17636	40479	0.70

ϕV_{cpg} (lb)
56671

11. Results

Interaction of Tensile and Shear Forces (Sec. 17.8)

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status
Steel	3200	9833	0.33	Pass
Concrete breakout	**9600**	**12686**	**0.76**	**Pass (Governs)**
Adhesive	9600	18520	0.52	Pass

Shear	Factored Load, V_{ua} (lb)	Design Strength, ϕV_n (lb)	Ratio	Status
Steel	165	3834	0.04	Pass
T Concrete breakout y+	700	11780	0.06	Pass
T Concrete breakout x+	700	11044	0.06	Pass
|| Concrete breakout x-	233	23250	0.01	Pass
|| Concrete breakout y+	350	24800	0.01	Pass
Concrete breakout, combined	**-**	**-**	**0.09**	**Pass (Governs)**
Pryout	990	56671	0.02	Pass

Interaction check	$N_{ua}/\phi N_n$	$V_{ua}/\phi V_n$	Combined Ratio	Permissible	Status
Sec. 17.8.1	0.76	0.00	75.7%	1.0	Pass

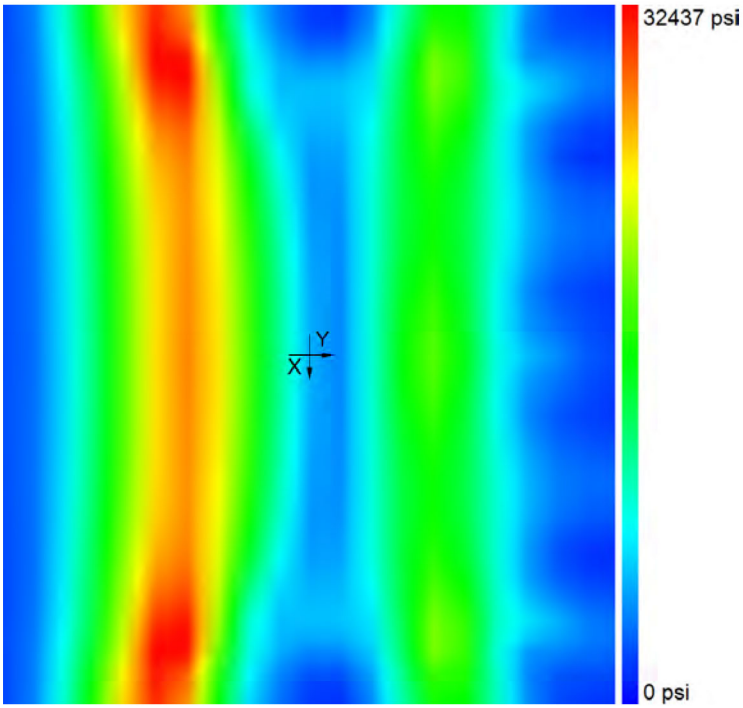
SET-3G w/ 5/8"Ø F1554 Gr. 36 with hef = 6.000 inch meets the selected design criteria.

Base Plate Thickness

Required base plate thickness: 0.544 inch
Warning: input base plate thickness does not meet required base plate thickness.

Steel	**36000 psi**
Maximum stress	**32437 psi**
Calculated plate thickness	**0.544 inch**

Stress distribution



For ACI and CSA design methods, maximum base plate stress is limited to 0.9 times yield stress.
For ETAG design method, maximum base plate stress is limited to yield stress divide by 1.5.
Plate stress is derived using Von Mises theory.

$$\sigma_{xx} = \frac{F_{xx}}{t} + \frac{6M_{xx}}{t^2} \text{ (@ bottom) or } \sigma_{xx} = \frac{F_{xx}}{t} - \frac{6M_{xx}}{t^2} \text{ (@ top)}$$

$$\sigma_{yy} = \frac{F_{yy}}{t} + \frac{6M_{yy}}{t^2} \text{ (@bottom) or } \sigma_{yy} = \frac{F_{yy}}{t} - \frac{6M_{yy}}{t^2} \text{ (@ top)}$$

$$\sigma_{xy} = \frac{F_{xy}}{t} + \frac{6M_{xy}}{t^2} \text{ (@bottom) or } \sigma_{xy} = \frac{F_{xy}}{t} - \frac{6M_{xy}}{t^2} \text{ (@ top)}$$

$$\sigma_{xz} = \frac{V_x}{t}$$

$$\sigma_{yz} = \frac{V_y}{t}$$

$\sigma_{xx}, \sigma_{yy}, \sigma_{xy}$ as follows:

$$S_1 = \frac{\sigma_{xx} + \sigma_{yy}}{2} + \sqrt{(\frac{\sigma_{xx} - \sigma_{yy}}{2})^2 + \sigma_{xy}^2}$$

$$S_2 = \frac{\sigma_{xx} + \sigma_{yy}}{2} - \sqrt{(\frac{\sigma_{xx} - \sigma_{yy}}{2})^2 + \sigma_{xy}^2}$$

$$S_3 = 0$$

$$\sigma_{Von\ Mises} = \sqrt{\frac{(S_1 - S_2)^2 + (S_1 - S_3)^2 + (S_2}{2}}$$

12. Warnings

- Per designer input, the tensile component of the strength-level earthquake force applied to anchors does not exceed 20 percent of the total factored anchor tensile force associated with the same load combination. Therefore the ductility requirements of ACI 318 17.10.5.2 for tension need not be satisfied – designer to verify.

- Per designer input, the shear component of the strength-level earthquake force applied to anchors does not exceed 20 percent of the total factored anchor shear force associated with the same load combination. Therefore the ductility requirements of ACI 318 17.10.6.2 for shear need not be satisfied – designer to verify.

- Designer must exercise own judgement to determine if this design is suitable.

- Refer to manufacturer's product literature for hole cleaning and installation instructions.