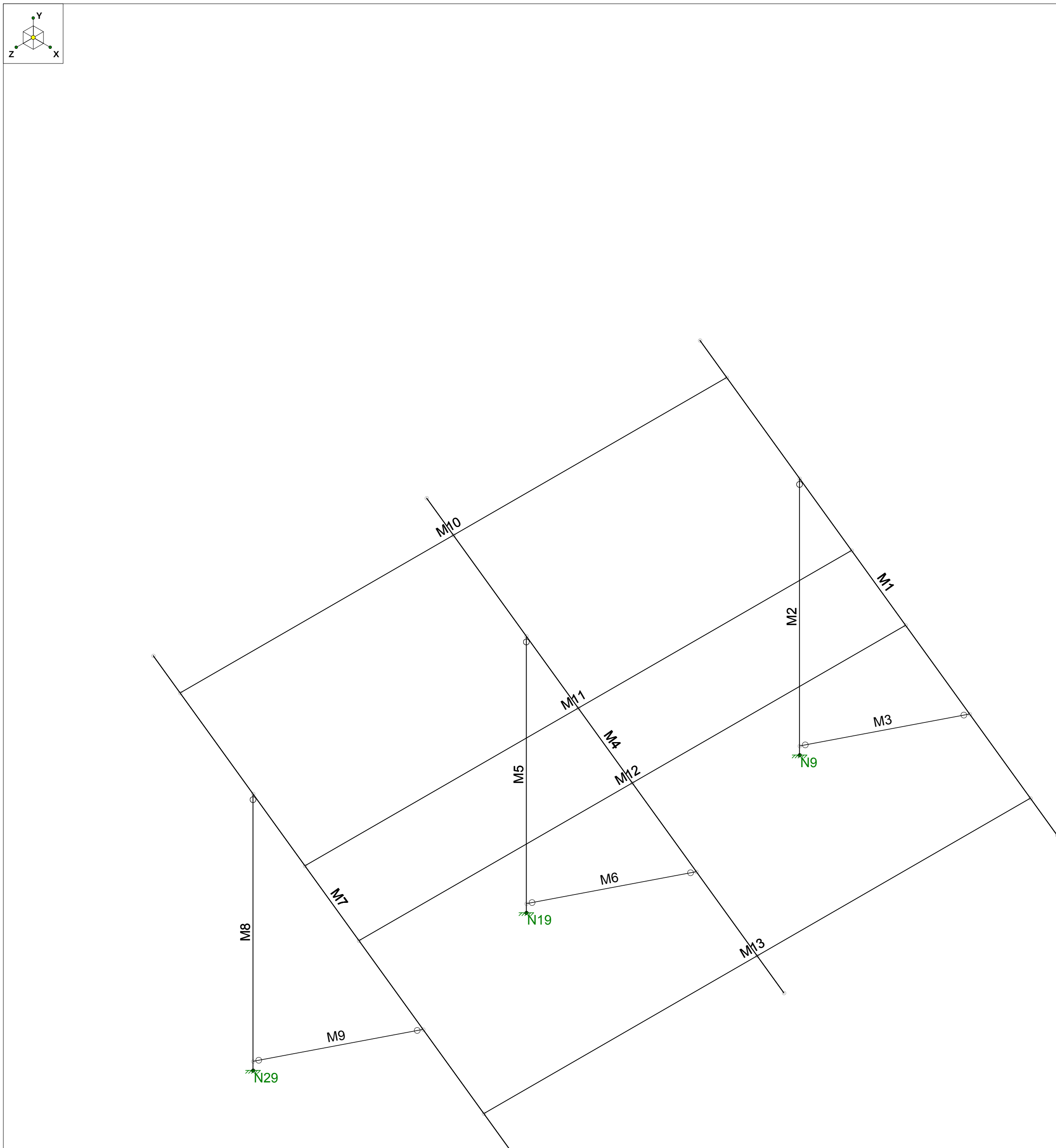


Schletter, Inc.		35° Tilt w/ Seismic Design
HCV	Standard FS Racking System	
	Representative Calculations - ASCE 7-10	

1. INTRODUCTION

1.1 Project Description

The following sections will cover the determination of forces and structural design calculations for the Schletter, Inc. FS ground mount system.

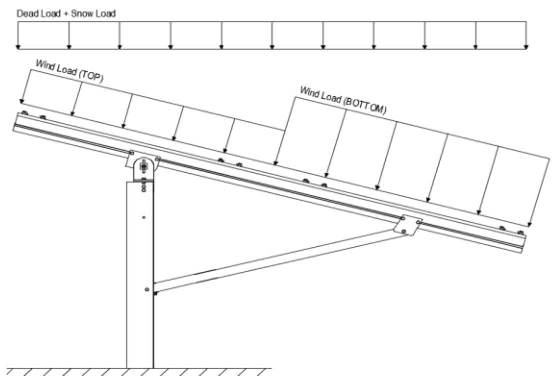
1.2 Construction

Photovoltaic modules are attached to aluminum purlins using clamp fasteners. Purlins are clamped to inclined aluminum girders, which are then connected to galvanized steel posts. Each support structure is equally spaced.

PV modules are required to meet the following specifications:

	Maximum			Minimum	
Height =	1700	mm	Height =	1550	mm
Width =	1050	mm	Width =	970	mm
Dead Load =	3.00	psf	Dead Load =	1.75	psf

Modules Per Row = 2
Module Tilt = 35°
Maximum Height Above Grade = 3 ft



Typical loading conditions of the module dead loads, snow loads, and wind loads are shown on the left.

1.3 Technical Codes

- ASCE 7-10 - Chapter 26-31, Wind Loads
- ASCE 7-10 - Chapter 7, Snow Loads
- ASCE 7-10 - Chapter 2, Combination of Loads
- International Building Code, IBC, 2012, 2015
- Aluminum Design Manual, Eighth Edition, 2005

2. LOAD ACTIONS

2.1 Permanent Loads

g_{MAX} = 3.00 psf
g_{MIN} = 1.75 psf

Self-weight of the PV modules.

2.2 Snow Loads

Ground Snow Load, P_g =	30.00	psf	
Sloped Roof Snow Load, P_s =	14.43	psf	*(ASCE 7-10, Eq. 7.4-1)*
I_s =	1.00		
C_s =	0.64		
C_e =	0.90		
C_t =	1.20		

2.3 Wind Loads

Design Wind Speed, V = 130 mph
Height < 15 ft

Exposure Category = C
Importance Category = II

Peak Velocity Pressure, q_z = 26.53 psf *Including the gust factor, G=0.85. (ASCE 7-10, Eq. 27.3-1)*

Pressure Coefficients

$Cf+_{TOP}$	=	1.2	*(Pressure)*
$Cf+_{BOTTOM}$	=	2	
$Cf-_{TOP}$	=	-2.4	*(Suction)*
$Cf-_{BOTTOM}$	=	-1.2	

Provided pressure coefficients are the result of wind tunnel testing done by Ruscheweyh Consult. Coefficients are located in test report # 1127/0510-e. Negative forces are applied away from the surface.

2.4 Seismic Loads

S_S =	2.50	R =	1.25
S_{DS} =	1.67	C_S =	0.8
S_1 =	1.00	ρ =	1.3
S_{D1} =	1.00	Ω =	1.25
T_a =	0.08	C_d =	1.25

ASCE 7, Section 12.8.1.3: A maximum S_s of 1.5 may be used to calculate the base shear, C_s, of structures under five stories and with a period, T, of 0.5 or less. Therefore, a S_{ds} of 1.0 was used to calculate C_s.

2.5 Combination of Loads

ASCE 7 requires that all structures be checked by specified combinations of loads. Applicable load combinations are provided below.

Strength Design, LRFD

Component stresses are checked using the following LRFD load combinations:

1.2D + 1.6S + 0.5W
1.2D + 1.0W + 0.5S
0.9D + 1.0W [M]
1.54D + 1.3E + 0.2S [R]
0.56D + 1.3E [R]
1.54D + 1.25E + 0.2S [O]
0.56D + 1.25E [O]

(ASCE 7, Eq 2.3.2-1 through 2.3.2-7) & (ASCE 7, Section 12.4.3.2)

Allowable Stress Design, ASD

Member deflection checks and foundation designs are done according to the following ASD load combinations:

1.0D + 1.0S
1.0D + 0.6W
1.0D + 0.75L + 0.45W + 0.75S
0.6D + 0.6W [M]
1.238D + 0.875E [O]
1.1785D + 0.65625E + 0.75S [O]
0.362D + 0.875E [O]

(ASCE 7, Eq 2.4.1-1 through 2.4.1-8) & (ASCE 7, Section 12.4.3.2)

[M] *Uses the minimum allowable module dead load.*
[R] *Include redundancy factor of 1.3.*
[O] *Includes overstrength factor of 1.25. Used to check seismic drift.*

3. STRUCTURAL ANALYSIS

3.1 RISA Results

Appendix B.1 contains outputs from the structural analysis software package, RISA. These outputs are used to accurately determine resultant member and reaction forces from the loads seen throughout Section 2.

3.2 RISA Components

A member and node list has been provided below to correlate the RISA components with the design calculations in Section 4. Items of significance have been listed.

Purlins	Location
M10	Top
M11	Mid-Top
M12	Mid-Bottom
M13	Bottom

Posts	Location
M2	Outer
M5	Inner
M8	Outer

Girders	Location
M1	Outer
M4	Inner
M7	Outer

Reactions	Location
N9	Outer
N19	Inner
N29	Outer

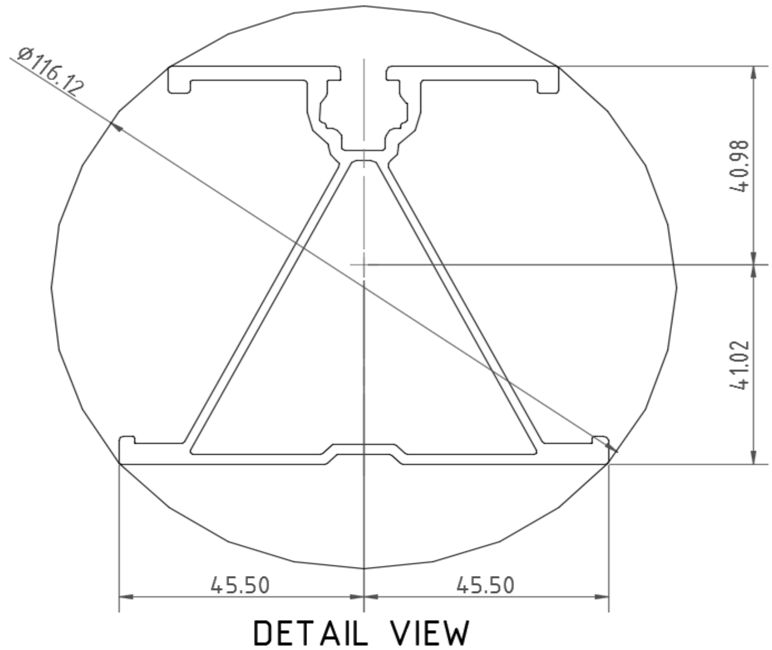
Struts	Location
M3	Outer
M6	Inner
M9	Outer

4. MEMBER DESIGN CALCULATIONS

4.1 Purlin Design

Aluminum purlins are used to transfer loads to the support structure. Purlins are designed as continous beams with cantilevers. These are considered beams with internal hinges that can be joined with splices at 25% of the support respective span. See Appendix A.1 for detailed member calculations. Section units are in (mm).

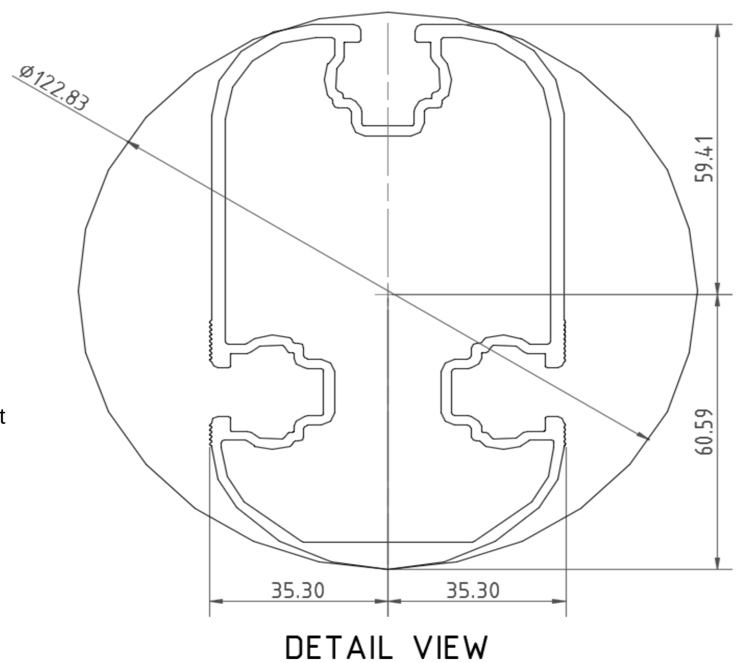
Purlin Type =	**S1.5**	
Aluminum Type =	6105-T5	
F_{ty} =	35	ksi
L_b =	108	in
$\Phi F_{ty\ STRONG\text{-}AXIS}$ =	25.07	ksi
$\Phi F_{ty\ WEAK\text{-}AXIS}$ =	23.08	ksi
S_y =	1.33	in^3
S_x =	0.6	in^3
E =	10100	ksi
I_y =	2.16	in^4
I_x =	1.07	in^4
A =	1.25	in^2
g =	1.50	lbs/ft
M_y =	1.641	k-ft
M_z =	0.111	k-ft
$M_{y\ allowable}$ =	2.779	k-ft
$M_{z\ allowable}$ =	1.154	k-ft
Utilization =	69%	



4.2 Girder Design

Loads from purlins are transferred to the posts using an inclined girder, which is connected to the steel post. Loads on the girder result from the support reactions of the purlins. See Appendix A.2 for detailed member calculations. Section units are in (mm).

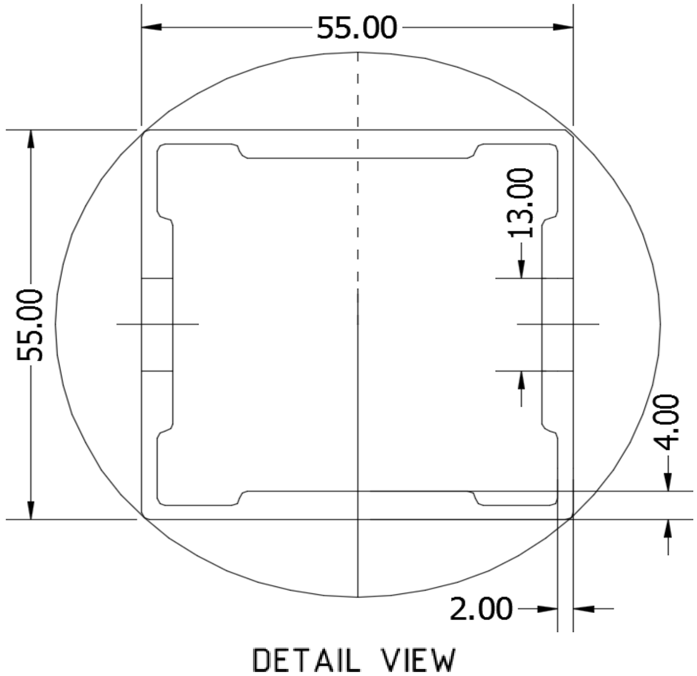
Girder Type =	**T5**	
Aluminum Type =	6105-T5	
F_{ty} =	35	ksi
L_b =	63.82	in
$\Phi F_{ty\ AXIAL}$ =	30.80	ksi
$\Phi F_{ty\ STRONG\text{-}AXIS}$ =	30.46	ksi
$\Phi F_{ty\ WEAK\text{-}AXIS}$ =	31.56	ksi
S_y =	1.98	in^3
S_x =	1.32	in^3
E =	10100	ksi
I_y =	4.74	in^4
I_x =	1.83	in^4
A =	1.93	in^2
g =	2.32	lbs/ft
M_y =	3.913	k-ft
M_z =	0.000	k-ft
P_n =	0.013	k
$M_{y\ allowable}$ =	5.026	k-ft
$M_{z\ allowable}$ =	3.472	k-ft
$P_{n\ allowable}$ =	59.439	k
Utilization =	78%	



4.3 Strut Design

The aluminum strut connects a portion of the girder to the galvanized steel post. Girder forces are then transferred down through the strut into the post. The strut is attached with single M10 bolts at each end. See Appendix A.3 for detailed member calculations. Section units are in (mm).

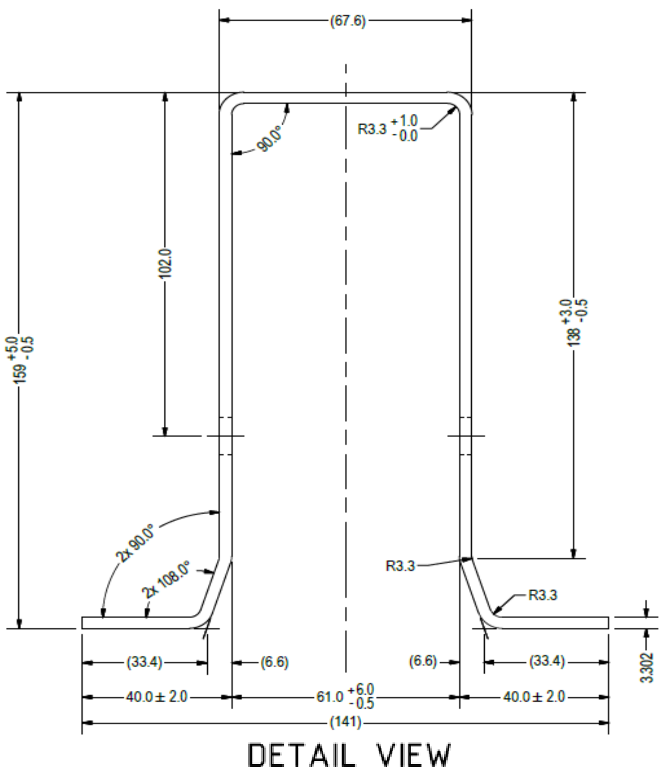
Strut Type =	**55x55**	
Aluminum Type =	6105-T5	
F_{ty} =	35	ksi
L_b =	61.00	in
$\Phi F_{ty\ AXIAL}$ =	13.67	ksi
$\Phi F_{ty\ BENDING}$ =	28.22	ksi
S_y =	0.60	in^3
S_x =	0.60	in^3
E =	10100	ksi
I_y =	0.67	in^4
I_x =	0.67	in^4
A =	0.98	in^2
g =	1.18	lbs/ft
M_y =	0.000	k-ft
M_z =	0.285	k-ft
P_n =	3.795	k
$M_{y\ allowable}$ =	1.408	k-ft
$M_{z\ allowable}$ =	1.408	k-ft
$P_{n\ allowable}$ =	13.425	k
Utilization =	49%	



4.4 Post Design

Galvanized steel posts are a roll formed steel section, that are either ram driven into the ground or placed in a concrete foundation at a defined depth. Embedment depths will be provided on the structural drawings or through a geotechnical testing report. See Appendix A.4 for detailed member calculations. Section units are in (mm).

Post Type =	**FG8**	
Steel Type =	J2340	
F_{ty} =	60	ksi
L_b =	85.68	in
Φ =	0.90	
ΦF_{ty} =	54.00	ksi
S_y =	3.46	in^3
S_x =	1.55	in^3
E =	29000	ksi
I_y =	10.94	in^4
I_x =	4.31	in^4
A =	2.23	in^2
g =	7.59	lbs/ft
M_y =	16.119	k-ft
M_z =	0.000	k-ft
P_r =	-4.504	k
$M_{y\ allowable}$ =	19.207	k-ft
$M_{z\ allowable}$ =	14.389	k-ft
P_c =	28.060	k
Utilization =	96%	



5. FOUNDATION DESIGN CALCULATIONS

5.1 Rammed Post Foundations

The following LRFD loads include a safety factor of 1.3, and are to be used in conjunction with a Schletter, Inc. Geotechnical Investigation Report. The forces below should fall within the guidelines provided in the Geotechnical Investigation Report. If a Geotechnical Investigation Report is not present, please proceed to Section 5.2 for a concrete footing design.

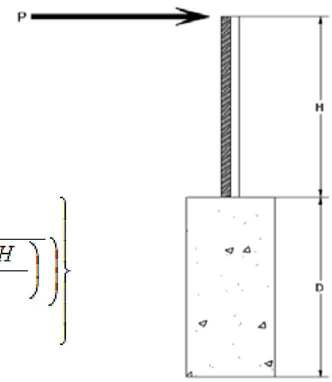
Maximum Tensile Load =	5.81	k
Maximum Lateral Load =	3.98	k

5.2 Design of Drilled Shaft Foundations

The galvanized steel post is to be embedded into a cylindrical drilled shaft foundation. For the purpose of design, the post is considered to be fixed to the ground. The applicable lateral force, uplift, and compression resistance checks are seen below.

5.3 Lateral Force Resistance

The equivalent lateral force is applied at the top of the post to determine the required embedment depth. A lateral soil bearing capacity for clay is assumed. Footing is unrestrained at ground level. (IBC, Eq. 18-1)



Lateral Force @ Top of Pole, P =	1.03	k
Height of Pole Above Grade, H =	7.14	ft
Diameter of Pole Footing, B =	2.00	ft
Lateral Soil Bearing Capacity, S =	0.10	ksf/ft
Isolated Pole Factor, F =	2	
First Trial Depth, D =	3.25	ft

$$S_3 = Min\,(D, 12')$$

$$S_1 = Min\left(\frac{D}{3}, 12'\right)$$

$$A = 2.34\, P/S_1 B$$

$$D = \left\{0.5A\left(1 + \sqrt{1 + \left(\frac{4.36\,H}{A}\right)}\right)\right\}$$

Lateral Bearing @ Bottom =	S_3
Lateral Bearing @ D/3 =	S_1
Required Depth =	D

	Non-Constrained	
Lateral Force @ Top of Pole, P =	1.03	k
Height of Pole Above Grade, H =	7.14	ft
Diameter of Pole Footing, B =	2.00	ft
Lateral Soil Bearing Capacity, S =	0.20	ksf/ft

1st Trial @ D_1 =	3.25	ft
Lateral Soil Bearing @ D/3, S_1 =	0.22	ksf
Lateral Soil Bearing @ D, S_3 =	0.65	ksf
Constant $2.34P/(S_1B)$, A =	5.54	
Required Footing Depth, D =	9.89	ft
2nd Trial @ D_2 =	6.57	ft
Lateral Soil Bearing @ D/3, S_1 =	0.44	ksf
Lateral Soil Bearing @ D, S_3 =	1.31	ksf
Constant $2.34P/(S_1B)$, A =	2.74	
Required Footing Depth, D =	6.18	ft
3rd Trial @ D_3 =	6.38	ft
Lateral Soil Bearing @ D/3, S_1 =	0.43	ksf
Lateral Soil Bearing @ D, S_3 =	1.28	ksf
Constant $2.34P/(S_1B)$, A =	2.82	
Required Footing Depth, D =	6.30	ft

4th Trial @ D_4 =	6.34	ft
Lateral Soil Bearing @ D/3, S_1 =	0.42	ksf
Lateral Soil Bearing @ D, S_3 =	1.27	ksf
Constant $2.34P/(S_1B)$, A =	2.84	
Required Footing Depth, D =	6.33	ft
5th Trial @ D_5 =	6.33	ft
Lateral Soil Bearing @ D/3, S_1 =	0.42	ksf
Lateral Soil Bearing @ D, S_3 =	1.27	ksf
Constant $2.34P/(S_1B)$, A =	2.84	
Required Footing Depth, D =	6.50	ft

A 2ft diameter x 6.5ft deep footing unrestrained at ground level is required for the racking structure.

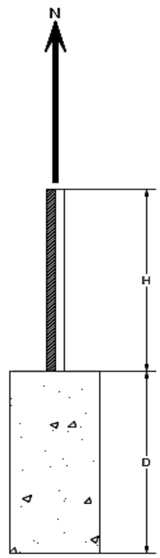
5.4 Uplifting Force Resistance

Uplifting forces of the racking system are checked against the uplift resistance of the soil. Clay soils are assumed.

Weight of Concrete, g_{con} =	145	pcf
Uplifting Force, N =	2.66	k
Footing Diameter, B =	2.00	ft
Factor of Safety =	2.50	
Cohesion =	208.85	psf
γ_s =	120.43	pcf
α =	0.45	
Required Concrete Weight, g =	1.72	k
Required Concrete Volume, V =	11.84	ft^3
Required Footing Depth, D =	4.00	ft

Iteration	z	dz	Qs	Side
1	0.2	0.2	118.10	5.74
2	0.4	0.2	118.10	5.64
3	0.6	0.2	118.10	5.53
4	0.8	0.2	118.10	5.43
5	1	0.2	118.10	5.32
6	1.2	0.2	118.10	5.22
7	1.4	0.2	118.10	5.12
8	1.6	0.2	118.10	5.01
9	1.8	0.2	118.10	4.91
10	2	0.2	118.10	4.81
11	2.2	0.2	118.10	4.70
12	2.4	0.2	118.10	4.60
13	2.6	0.2	118.10	4.49
14	2.8	0.2	118.10	4.39
15	3	0.2	118.10	4.29
16	3.2	0.2	118.10	4.18
17	3.4	0.2	118.10	4.08
18	3.6	0.2	118.10	3.98
19	3.8	0.2	118.10	3.87
20	4	0.2	118.10	3.77
21	0	0.0	0.00	3.77
22	0	0.0	0.00	3.77
23	0	0.0	0.00	3.77
24	0	0.0	0.00	3.77
25	0	0.0	0.00	3.77
26	0	0.0	0.00	3.77
27	0	0.0	0.00	3.77
28	0	0.0	0.00	3.77
29	0	0.0	0.00	3.77
30	0	0.0	0.00	3.77
31	0	0.0	0.00	3.77
32	0	0.0	0.00	3.77
33	0	0.0	0.00	3.77
34	0	0.0	0.00	3.77
Max	4	Sum	0.94	

A 2ft diameter x 4ft deep footing unrestrained at ground level is required for the racking structure.



5.5 Compressive Force Resistance

Skin friction of the soil is checked against the compression force from the racking and the weight of the drilled shaft foundation. Skin friction starts at 3ft below grade. Clay soils are again assumed.

Depth Below Grade, D =	6.50	ft
Footing Diameter, B =	2.00	ft
Compressive Force, P =	3.37	k
Footing Area =	3.14	ft^2
Circumference =	6.28	ft
Skin Friction Area =	21.99	ft^2
Concrete Weight =	0.145	kcf

Bearing Pressure

Bearing Area =	3.14	ft^2
Bearing Capacity =	1.5	ksf
Resistance =	4.71	k

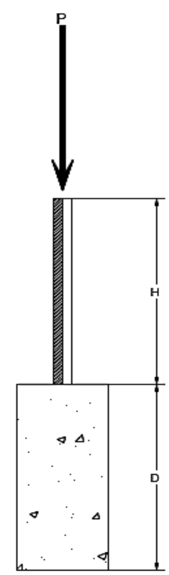
Weight of Concrete

Footing Volume	20.42	ft^3
Weight	2.96	k

Skin Friction Resistance

Skin Friction =	0.15	ksf
Resistance =	3.30	k
1/3 Increase for Wind =	1.33	
Total Resistance =	10.68	k
Applied Force =	6.33	k
Utilization =	59%	

A 2ft diameter footing passes at a depth of 6.5ft.



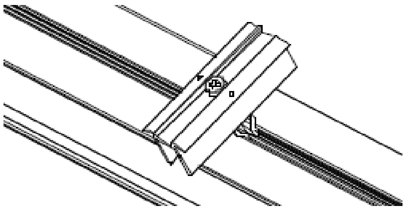
6. DESIGN OF JOINTS AND CONNECTIONS

6.1 Anchorage of Modules to Purlins and Connection of Purlins to Girders

Modules are secured to the purlins with Schletter, Inc. Rapid2+ mounting clamps. Purlins are secured to the girders with the use of 40mm mounting clamps. The reliability of calculations is uncertain due to limited standards, therefore the strength of the clamp fasteners has been evaluated by load testing.

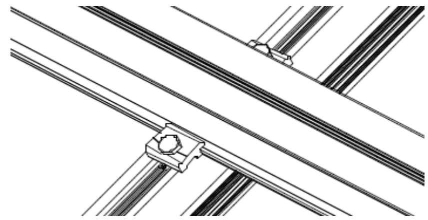
Fastening of Modules to Purlins

Maximum Uplifting Force =	0.597	k
Allowable Uplift =	1.214	k
Utilization =	49%	



Fastening of Purlins to Girders

Maximum Uplifting Force =	1.917	k
Allowable Uplift =	2.180	k
Utilization =	88%	

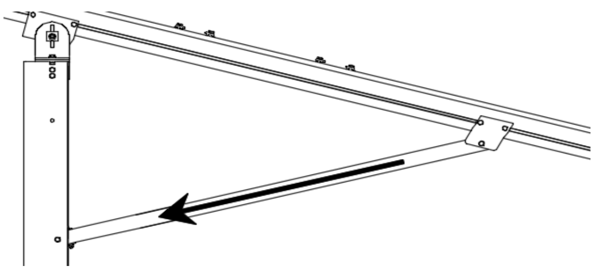


6.2 Strut Connections

The aluminum struts connect the front end of girder to a center section of the steel post. Single M10 bolts are used to attach each end of the strut to the girder and post. ASTM A193/A193M-86 equivalent stainless steel bolts are used.

Maximum Axial Load =	3.795	k
M10 Bolt Shear Capacity =	8.894	k
Utilization =	43%	

Bolt capacity is accounting for double shear. (ASCE 8-02, Eq. 5.3.4-1)

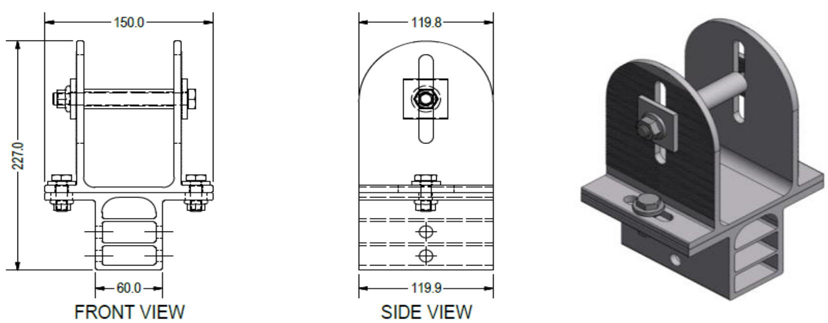


A strut under compression is shown to demonstrate the load transfer from the girder. Single M10 bolts are located at each end of the strut and are subjected to double shear.

6.3 Girder to Post Connection

In order to connect the girder to the post, custom extruded sections are assembled to create a post head piece. The reliability of calculations is uncertain due to limited standards, therefore the strength of the head piece has been evaluated by load testing.

Maximum Tensile Load =	4.053	k
Allowable Load =	5.649	k
Utilization =	72%	



7. SEISMIC DESIGN

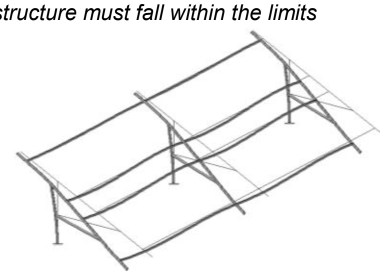
7.1 Seismic Drift

The racking structure has been analyzed under seismic loading. The allowable story drift of the structure must fall within the limits provided by (ASCE 7, Table 12.12-1).

Mean Height, h_{sx} =	77.78	in
Allowable Story Drift for All Other Structures, Δ = {	$0.020h_{sx}$	
	1.556	in
Max Drift, Δ_{MAX} =	0.621	in

$0.621 \le 1.556$, OK.

The racking structure's reaction to seismic loads is shown to the right. The deflections have been magnified to provide a clear portrayal of potential story drift.



APPENDIX A

A.1 Design of Aluminum Purlins - Aluminum Design Manual, 2005 Edition

Purlin = **S1.5**

Strong Axis:

3.4.14

L_b = 108 in

J = 0.432

298.779

$$S1 = \left(\frac{Bc - \frac{\theta_y}{\theta_b}Fcy}{1.6Dc}\right)^2$$

S1 = 0.51461

$$S2 = \left(\frac{C_c}{1.6}\right)^2$$

S2 = 1701.56

φF_L= φb[Bc-1.6Dc*√((LbSc)/(Cb*√(IyJ)/2))]

φF_L= 27.7 ksi

3.4.16

b/t = 32.195

$$S1 = \frac{Bp - \frac{\theta_y}{\theta_b}Fcy}{1.6Dp}$$

S1 = 12.2

$$S2 = \frac{k_1 Bp}{1.6Dp}$$

S2 = 46.7

φF_L= φb[Bp-1.6Dp*b/t]

φF_L= 25.1 ksi

3.4.16.1 Not Used

Rb/t =

$$S1 = \left(\frac{Bt - 1.17\frac{\theta_y}{\theta_b}Fcy}{1.6Dt}\right)^2$$

S1 = 1.1

$$S2 = C_t$$

S2 = 141.0

φF_L= 1.17φyFcy

φF_L= 38.9 ksi

3.4.18

h/t = 37.0588

$$S1 = \frac{Bbr - \frac{\theta_y}{\theta_b}1.3Fcy}{mDbr}$$

S1 = 36.9

m = 0.65

C_0 = 40.985

Cc = 41.015

$$S2 = \frac{k_1 Bbr}{mDbr}$$

S2 = 77.2

φF_L= φb[Bbr-mDbr*h/t]

φF_L= 43.2 ksi

φF_LSt= 25.1 ksi

Ix = 897074 mm^4

2.155 in^4

y = 41.015 mm

Sx = 1.335 in^3

M_{max}St = 2.788 k-ft

Weak Axis:

3.4.14

L_b = 108

J = 0.432

190.005

$$S1 = \left(\frac{Bc - \frac{\theta_y}{\theta_b}Fcy}{1.6Dc}\right)^2$$

S1 = 0.51461

$$S2 = \left(\frac{C_c}{1.6}\right)^2$$

S2 = 1701.56

φF_L= φb[Bc-1.6Dc*√((LbSc)/(Cb*√(IyJ)/2))]

φF_L= 28.9

3.4.16

b/t = 37.0588

$$S1 = \frac{Bp - \frac{\theta_y}{\theta_b}Fcy}{1.6Dp}$$

S1 = 12.2

$$S2 = \frac{k_1 Bp}{1.6Dp}$$

S2 = 46.7

φF_L= φb[Bp-1.6Dp*b/t]

φF_L= 23.1 ksi

3.4.16.1

N/A for Weak Direction

3.4.18

h/t = 32.195

$$S1 = \frac{Bbr - \frac{\theta_y}{\theta_b}1.3Fcy}{mDbr}$$

S1 = 36.9

m = 0.65

C_0 = 45.5

Cc = 45.5

$$S2 = \frac{k_1 Bbr}{mDbr}$$

S2 = 77.3

φF_L= 1.3φyFcy

φF_L= 43.2 ksi

φF_LWk= 23.1 ksi

Iy = 446476 mm^4

1.073 in^4

x = 45.5 mm

Sy = 0.599 in^3

M_{max}Wk = 1.152 k-ft

Compression

3.4.9

b/t = 32.195
S1 = 12.21 (See 3.4.16 above for formula)
S2 = 32.70 (See 3.4.16 above for formula)
φF_L= φc[Bp-1.6Dp*b/t]
φF_L= 25.1 ksi

b/t = 37.0588
S1 = 12.21
S2 = 32.70
φF_L= (φck2*√(BpE))/(1.6b/t)
φF_L= 21.9 ksi

3.4.10

Rb/t = 0.0

$$S1 = \left(\frac{Bt - \frac{\theta_y}{\theta_b}Fcy}{Dt}\right)^2$$

S1 = 6.87
S2 = 131.3
φF_L= φyFcy
φF_L= 33.25 ksi

φF_L= 21.94 ksi
A = 1215.13 mm^2
1.88 in^2
P_{max} = 41.32 kips

A.2 Design of Aluminum Girders - Aluminum Design Manual, 2005 Edition

Girder = **T5**

Strong Axis:

3.4.14

L_b = 63.8189 in
J = 1.98
82.1278

$$S1 = \left(\frac{Bc - \frac{\theta_y}{\theta_b}Fcy}{1.6Dc}\right)^2$$

S1 = 0.51461

$$S2 = \left(\frac{C_c}{1.6}\right)^2$$

S2 = 1701.56
φF_L= φb[Bc-1.6Dc*√((LbSc)/(Cb*√(IyJ)/2))]
φF_L= 30.5 ksi

3.4.16

b/t = 4.5

$$S1 = \frac{Bp - \frac{\theta_y}{\theta_b}Fcy}{1.6Dp}$$

S1 = 12.2

$$S2 = \frac{k_1 Bp}{1.6Dp}$$

S2 = 46.7
φF_L= φyFcy
φF_L= 33.3 ksi

Weak Axis:

3.4.14

L_b = 63.8189
J = 1.98
89.1294

$$S1 = \left(\frac{Bc - \frac{\theta_y}{\theta_b}Fcy}{1.6Dc}\right)^2$$

S1 = 0.51461

$$S2 = \left(\frac{C_c}{1.6}\right)^2$$

S2 = 1701.56
φF_L= φb[Bc-1.6Dc*√((LbSc)/(Cb*√(IyJ)/2))]
φF_L= 30.3

3.4.16

b/t = 16.3333

$$S1 = \frac{Bp - \frac{\theta_y}{\theta_b}Fcy}{1.6Dp}$$

S1 = 12.2

$$S2 = \frac{k_1 Bp}{1.6Dp}$$

S2 = 46.7
φF_L= φb[Bp-1.6Dp*b/t]
φF_L= 31.6 ksi

3.4.16.1 Used

Rb/t = 20.0

$$S1 = \left(\frac{Bt - 1.17\frac{\theta_y}{\theta_b}Fcy}{1.6Dt}\right)^2$$

S1 = 1.1

$$S2 = C_t$$

S2 = 141.0

φF_L= φb[Bt-Dt*√(Rb/t)]

φF_L= 30.8 ksi

3.4.16.1

N/A for Weak Direction

3.4.18

h/t = 16.3333

$$S1 = \frac{Bbr - \frac{\theta_y}{\theta_b}1.3Fcy}{mDbr}$$

S1 = 37.9

m = 0.63

C_0 = 61.046

Cc = 58.954

$$S2 = \frac{k_1 Bbr}{mDbr}$$

S2 = 79.4

φF_L= 1.3φyFcy

φF_L= 43.2 ksi

3.4.18

h/t = 4.5

$$S1 = \frac{Bbr - \frac{\theta_y}{\theta_b}1.3Fcy}{mDbr}$$

S1 = 36.9

m = 0.65

C_0 = 35

Cc = 35

$$S2 = \frac{k_1 Bbr}{mDbr}$$

S2 = 77.3

φF_L= 1.3φyFcy

φF_L= 43.2 ksi

φF_LSt=	30.5	ksi	φF_LWk=	31.6	ksi
Ix =	1970917	mm^4	Iy =	763048	mm^4
	4.735	in^4		1.833	in^4
y =	61.046	mm	x =	35	mm
Sx =	1.970	in^3	Sy =	1.330	in^3
M_{max}St =	5.001	k-ft	M_{max}Wk =	3.499	k-ft

Compression

3.4.9

b/t = 4.5

S1 = 12.21 (See 3.4.16 above for formula)

S2 = 32.70 (See 3.4.16 above for formula)

φF_L= φyFcy

φF_L= 33.3 ksi

b/t = 16.3333

S1 = 12.21

S2 = 32.70

φF_L= φc[Bp-1.6Dp*b/t]

φF_L= 31.6 ksi

3.4.10

Rb/t = 20.0

$$S1 = \left(\frac{Bt - \frac{\theta_y}{\theta_b}Fcy}{Dt}\right)^2$$

S1 = 6.87

S2 = 131.3

φF_L= φc[Bt-Dt*√(Rb/t)]

φF_L= 30.80 ksi

φF_L= 30.80 ksi

A = 1215.13 mm^2

1.88 in^2

P_{max} = 58.01 kips

A.3 Design of Aluminum Struts - Aluminum Design Manual, 2005 Edition

Strut = **55x55**

Strong Axis:

3.4.14

L_b = 61 in

J = 0.942

95.1963

$$S1 = \left(\frac{Bc - \frac{\theta_y}{\theta_b}Fcy}{1.6Dc}\right)^2$$

S1 = 0.51461

$$S2 = \left(\frac{C_c}{1.6}\right)^2$$

S2 = 1701.56

φF_L= φb[Bc-1.6Dc*√((LbSc)/(Cb*√(IyJ)/2))]

φF_L= 30.2 ksi

3.4.16

b/t = 24.5

$$S1 = \frac{Bp - \frac{\theta_y}{\theta_b}Fcy}{1.6Dp}$$

S1 = 12.2

$$S2 = \frac{k_1 Bp}{1.6Dp}$$

S2 = 46.7

φF_L= φb[Bp-1.6Dp*b/t]

φF_L= 28.2 ksi

3.4.16.1 Not Used

Rb/t = 0.0

$$S1 = \left(\frac{Bt - 1.17\frac{\theta_y}{\theta_b}Fcy}{1.6Dt}\right)^2$$

S1 = 1.1

$$S2 = C_t$$

S2 = 141.0

φF_L= 1.17φyFcy

φF_L= 38.9 ksi

3.4.18

h/t = 24.5

$$S1 = \frac{Bbr - \frac{\theta_y}{\theta_b}1.3Fcy}{mDbr}$$

S1 = 36.9

m = 0.65

C_0 = 27.5

Cc = 27.5

$$S2 = \frac{k_1 Bbr}{mDbr}$$

S2 = 77.3

φF_L= 1.3φyFcy

φF_L= 43.2 ksi

$\varphi F_L St$= 28.2 ksi

Ix = 279836 mm^4

0.672 in^4

y = 27.5 mm

Sx = 0.621 in^3

$M_{max}St$ = 1.460 k-ft

Weak Axis:

3.4.14

L_b = 61

J = 0.942

95.1963

$$S1 = \left(\frac{Bc - \frac{\theta_y}{\theta_b}Fcy}{1.6Dc}\right)^2$$

S1 = 0.51461

$$S2 = \left(\frac{C_c}{1.6}\right)^2$$

S2 = 1701.56

φF_L= φb[Bc-1.6Dc*√((LbSc)/(Cb*√(IyJ)/2))]

φF_L= 30.2

3.4.16

b/t = 24.5

$$S1 = \frac{Bp - \frac{\theta_y}{\theta_b}Fcy}{1.6Dp}$$

S1 = 12.2

$$S2 = \frac{k_1 Bp}{1.6Dp}$$

S2 = 46.7

φF_L= φb[Bp-1.6Dp*b/t]

φF_L= 28.2 ksi

3.4.16.1

N/A for Weak Direction

3.4.18

h/t = 24.5

$$S1 = \frac{Bbr - \frac{\theta_y}{\theta_b}1.3Fcy}{mDbr}$$

S1 = 36.9

m = 0.65

C_0 = 27.5

Cc = 27.5

$$S2 = \frac{k_1 Bbr}{mDbr}$$

S2 = 77.3

φF_L= 1.3φyFcy

φF_L= 43.2 ksi

$\varphi F_L Wk$= 28.2 ksi

Iy = 279836 mm^4

0.672 in^4

x = 27.5 mm

Sy = 0.621 in^3

$M_{max}Wk$ = 1.460 k-ft

Compression

3.4.7

$\lambda =$ 1.41113

r = 0.81 in

$$S1^* = \frac{Bc - Fcy}{1.6Dc^*}$$

$S1^*$ = 0.33515

$$S2^* = \frac{Cc}{\pi}\sqrt{Fcy/E}$$

$S2^*$ = 1.23671

φcc = 0.77756

$\varphi F_L = (\varphi ccFcy)/(\lambda^2)$

φF_L = 13.6667 ksi

3.4.9

b/t = 24.5

S1 = 12.21 (See 3.4.16 above for formula)

S2 = 32.70 (See 3.4.16 above for formula)

$\varphi F_L = \varphi c[Bp-1.6Dp*b/t]$

φF_L = 28.2 ksi

b/t = 24.5

S1 = 12.21

S2 = 32.70

$\varphi F_L = \varphi c[Bp-1.6Dp*b/t]$

φF_L = 28.2 ksi

3.4.10

Rb/t = 0.0

$$S1 = \left(\frac{Bt - \frac{\theta_y}{\theta_b}Fcy}{Dt}\right)^2$$

S1 = 6.87

S2 = 131.3

$\varphi F_L = \varphi yFcy$

φF_L = 33.25 ksi

φF_L = 13.67 ksi

A = 663.99 mm^2

1.03 in^2

P_{max} = 14.07 kips

A.4 Design of Galvanized Steel Posts

Post Type = **FG8**

Unbraced Length =	85.68	in	
Pr =	-4.50	k	(LRFD Factored Load)
Mr (Strong) =	16.12	k-ft	(LRFD Factored Load)
Mr (Weak) =	0.00	k-ft	(LRFD Factored Load)

Flexural Buckling:

kL/r =	123.28	
4.71√(E/Fy) =	103.55 =>	kL/r > 4.71√(E/Fy)
Fcr =	16.52 ksi	
Fe =	18.83 ksi	
Pn =	36.831 k	

Torsional/Flexural Torsional Buckling:

Fcr =	12.5831 ksi
Fey =	48.0382 ksi
Fez =	16.1601 ksi
Pn =	28.0602 k

Bending (Strong Axis):

Yielding:			
Mn =	21.95 k-ft		
Flange Local Buckling:			
Mn =	19.207 k-ft		
Pr/Pc =	0.1223 <	0.2	
Utilization =	0.96 <	1.0	OK

Bending (Weak Axis):

Yielding:			
Mn =	14.65 k-ft		
Flange Local Buckling:			
Mn =	14.39 k-ft		
Pr/Pc =	0.122 <	0.2	
Utilization =	0.00 <	1.0	OK

Combined Forces

Utilization = 96%

APPENDIX B

B.1

The following pages will contain the results from RISA. Please refer back to Section 2 for load information and Section 4-5 for member and foundation design.

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	Dead Load, Max	DL		-1				4		
2	Dead Load, Min	DL		-1				4		
3	Snow Load	SL						4		
4	Wind Load - Pressure	WL						4		
5	Wind Load - Suction	WL						4		
6	Seismic - Lateral	EL			.8			8		

Member Distributed Loads (BLC 1 : Dead Load, Max)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M10	Y	-8.366	-8.366	0	0
2	M11	Y	-8.366	-8.366	0	0
3	M12	Y	-8.366	-8.366	0	0
4	M13	Y	-8.366	-8.366	0	0

Member Distributed Loads (BLC 2 : Dead Load, Min)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M10	Y	-4.45	-4.45	0	0
2	M11	Y	-4.45	-4.45	0	0
3	M12	Y	-4.45	-4.45	0	0
4	M13	Y	-4.45	-4.45	0	0

Member Distributed Loads (BLC 3 : Snow Load)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M10	Y	-32.97	-32.97	0	0
2	M11	Y	-32.97	-32.97	0	0
3	M12	Y	-32.97	-32.97	0	0
4	M13	Y	-32.97	-32.97	0	0

Member Distributed Loads (BLC 4 : Wind Load - Pressure)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M10	y	-88.797	-88.797	0	0
2	M11	y	-88.797	-88.797	0	0
3	M12	y	-147.995	-147.995	0	0
4	M13	y	-147.995	-147.995	0	0

Member Distributed Loads (BLC 5 : Wind Load - Suction)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M10	y	177.594	177.594	0	0
2	M11	y	177.594	177.594	0	0
3	M12	y	88.797	88.797	0	0
4	M13	y	88.797	88.797	0	0

Member Distributed Loads (BLC 6 : Seismic - Lateral)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M10	Z	6.693	6.693	0	0
2	M11	Z	6.693	6.693	0	0
3	M12	Z	6.693	6.693	0	0
4	M13	Z	6.693	6.693	0	0
5	M10	Z	0	0	0	0
6	M11	Z	0	0	0	0
7	M12	Z	0	0	0	0
8	M13	Z	0	0	0	0

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	LRFD 1.2D + 1.6S + 0.5W	Yes	Y		1	1.2	3	1.6	4	.5												
2	LRFD 1.2D + 1.0W + 0.5S	Yes	Y		1	1.2	3	.5	4	1												
3	LRFD 0.9D + 1.0W	Yes	Y		2	.9					5	1										
4	LATERAL - LRFD 1.54D + 1.3E ...	Yes	Y		1	1.54	3	.2			6	1.3										
5	LATERAL - LRFD 0.56D + 1.3E	Yes	Y		1	.56					6	1.3										
6	LATERAL - LRFD 1.54D + 1.25...	Yes	Y		1	1.54	3	.2			6	1.25										
7	LATERAL - LRFD 0.56D + 1.25E	Yes	Y		1	.56					6	1.25										
8																						
9	ASD 1.0D + 1.0S	Yes	Y		1	1	3	1														
10	ASD 1.0D + 0.6W	Yes	Y		1	1			4	.6												
11	ASD 1.0D + 0.75L + 0.45W + 0....	Yes	Y		1	1	3	.75	4	.45												
12	ASD 0.6D + 0.6W	Yes	Y		2	.6					5	.6										
13	LATERAL - ASD 1.238D + 0.875E	Yes	Y		1	1.2...					6	.875										
14	LATERAL - ASD 1.1785D + 0.65...	Yes	Y		1	1.1...	3	.75			6	.656										
15	LATERAL - ASD 0.362D + 0.875E	Yes	Y		1	.362					6	.875										

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N9	max	941.75	2	1942.385	2	189.988	2	.277	2	.036	5	4.996	3
2		min	-1219.13	3	-1405.236	3	-316.312	5	-1.423	5	-.025	2	.032	10
3	N19	max	3005.959	2	5422.234	2	0	1	0	3	.038	4	9.685	3
4		min	-3062.381	3	-4446.105	3	-340.695	5	-1.488	4	0	10	-.233	10
5	N29	max	941.75	2	1942.385	2	227.935	3	.381	3	.04	4	4.996	3
6		min	-1219.13	3	-1405.236	3	-347.589	4	-1.487	4	-.012	3	-.191	5
7	Totals:	max	4889.459	2	9307.004	2	0	1						
8		min	-5500.642	3	-7256.578	3	-985.603	5						

Envelope Member Section Forces

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Mome...	LC	z-z Mome...	LC
1	M1	1	max	0	1	.006	2	.002	4	0	1	0	1	0	1
2			min	0	1	0	3	-.001	1	0	1	0	1	0	1
3		2	max	-.299	15	-.427	15	0	12	0	1	0	12	0	6
4			min	-1.274	6	-1.817	6	-1.499	5	0	1	0	5	0	15
5		3	max	-23.441	12	290.077	3	-14.537	10	.052	3	.19	1	.271	2
6			min	-167.635	1	-627.411	2	-100.355	1	-.196	2	.023	10	-.122	3
7		4	max	-23.938	12	289.014	3	-14.537	10	.052	3	.128	1	.661	2
8			min	-168.628	1	-628.828	2	-100.355	1	-.196	2	.014	10	-.301	3
9		5	max	-24.434	12	287.951	3	-14.537	10	.052	3	.065	1	1.051	2
10			min	-169.62	1	-630.246	2	-100.355	1	-.196	2	.005	10	-.48	3
11		6	max	142.178	3	548.373	2	-10.671	12	.072	2	.071	2	1.01	2
12			min	-543.647	2	-175.655	3	-146.128	1	-.079	3	-.033	5	-.489	3
13		7	max	141.434	3	546.955	2	-10.671	12	.072	2	.009	10	.67	2
14			min	-544.64	2	-176.718	3	-146.128	1	-.079	3	-.07	4	-.38	3
15		8	max	140.689	3	545.538	2	-10.671	12	.072	2	-.021	10	.331	2
16			min	-545.633	2	-177.781	3	-146.128	1	-.079	3	-.119	1	-.27	3
17		9	max	101.743	3	99.494	3	-23.52	12	.017	5	.068	1	.13	2
18			min	-697.793	1	-67.858	2	-159.832	1	-.135	2	-.006	10	-.217	3
19		10	max	100.999	3	98.431	3	-23.52	12	.017	5	.044	3	.173	2
20			min	-698.785	1	-69.276	2	-159.832	1	-.135	2	-.039	2	-.278	3
21		11	max	100.254	3	97.368	3	-23.52	12	.017	5	.021	3	.216	2
22			min	-699.778	1	-70.693	2	-159.832	1	-.135	2	-.13	1	-.339	3
23		12	max	57.447	3	751.385	3	131.46	2	.298	3	.117	1	.417	2
24			min	-872.198	1	-466.444	2	-311.485	3	-.236	2	-.057	5	-.653	3

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Mome...	LC	z-z Mome...	LC
25		13	max	56.702	3	750.321	3	131.46	2	.298	3	.141	1	.707	2
26			min	-873.191	1	-467.861	2	-311.485	3	-.236	2	-.164	5	-1.119	3
27		14	max	170.449	1	431.618	2	63.345	5	.209	2	.139	3	.986	2
28			min	7.734	15	-678.24	3	-112.702	3	-.398	3	-.148	4	-1.565	3
29		15	max	169.456	1	430.2	2	61.845	5	.209	2	.069	3	.718	2
30			min	7.435	15	-679.303	3	-112.702	3	-.398	3	-.122	1	-1.144	3
31		16	max	168.464	1	428.783	2	60.345	5	.209	2	0	3	.452	2
32			min	7.136	15	-680.367	3	-112.702	3	-.398	3	-.163	1	-.722	3
33		17	max	167.471	1	427.365	2	58.846	5	.209	2	-.015	15	.186	2
34			min	6.836	15	-681.43	3	-112.702	3	-.398	3	-.204	1	-.299	3
35		18	max	1.274	4	1.819	6	1.5	4	0	1	0	12	0	6
36			min	.299	15	.428	15	0	12	0	1	0	4	0	15
37		19	max	0	1	.004	2	.001	1	0	1	0	1	0	1
38			min	0	1	-.008	3	0	15	0	1	0	1	0	1
39	M4	1	max	0	1	.014	2	.002	4	0	1	0	1	0	1
40			min	0	1	-.002	3	0	1	0	1	0	1	0	1
41		2	max	-.299	15	-.427	15	0	1	0	1	0	1	0	6
42			min	-1.274	6	-1.816	6	-1.499	5	0	1	0	5	0	15
43		3	max	14.484	3	932.869	3	0	1	.052	4	.174	4	.709	2
44			min	-337.6	1	-1831.353	2	-90.962	5	0	1	0	1	-.368	3
45		4	max	13.74	3	931.806	3	0	1	.052	4	.117	4	1.846	2
46			min	-338.592	1	-1832.771	2	-92.462	5	0	1	0	1	-.946	3
47		5	max	12.995	3	930.743	3	0	1	.052	4	.06	4	2.984	2
48			min	-339.585	1	-1834.188	2	-93.961	5	0	1	0	1	-1.524	3
49		6	max	681.629	3	1693.978	2	0	1	0	1	0	1	2.828	2
50			min	-1550.448	2	-739.686	3	-70.38	4	-.046	4	-.034	5	-1.489	3
51		7	max	680.884	3	1692.56	2	0	1	0	1	0	1	1.777	2
52			min	-1551.441	2	-740.749	3	-71.88	4	-.046	4	-.077	4	-1.03	3
53		8	max	680.14	3	1691.143	2	0	1	0	1	0	1	.727	2
54			min	-1552.433	2	-741.812	3	-73.38	4	-.046	4	-.122	4	-.57	3
55		9	max	700.473	3	217.36	3	0	1	.012	4	.066	5	.1	1
56			min	-1695.748	2	-175.336	2	-166.089	4	0	1	0	1	-.333	3
57		10	max	699.729	3	216.297	3	0	1	.012	4	0	1	.204	2
58			min	-1696.741	2	-176.753	2	-167.588	4	0	1	-.038	4	-.468	3
59		11	max	698.985	3	215.234	3	0	1	.012	4	0	1	.314	2
60			min	-1697.733	2	-178.171	2	-169.088	4	0	1	-.143	4	-.602	3
61		12	max	727.042	3	2017.68	3	0	1	.149	4	0	1	.915	2
62			min	-2018.459	1	-1414.897	2	-190.596	4	0	1	-.05	4	-1.462	3
63		13	max	726.297	3	2016.617	3	0	1	.149	4	0	1	1.794	2
64			min	-2019.451	1	-1416.314	2	-192.096	4	0	1	-.168	4	-2.713	3
65		14	max	340.906	1	1176.885	2	65.933	5	0	1	0	1	2.638	2
66			min	-12.837	3	-1745.874	3	0	1	-.105	4	-.108	5	-3.913	3
67		15	max	339.913	1	1175.467	2	64.434	5	0	1	0	1	1.908	2
68			min	-13.581	3	-1746.937	3	0	1	-.105	4	-.068	5	-2.829	3
69		16	max	338.921	1	1174.05	2	62.934	5	0	1	0	1	1.179	2
70			min	-14.326	3	-1748	3	0	1	-.105	4	-.028	5	-1.745	3
71		17	max	337.928	1	1172.632	2	61.434	5	0	1	.01	4	.45	2
72			min	-15.07	3	-1749.063	3	0	1	-.105	4	0	1	-.66	3
73		18	max	1.274	6	1.82	6	1.5	4	0	1	0	1	0	6
74			min	.299	15	.428	15	0	1	0	1	0	4	0	15
75		19	max	0	1	.011	2	0	4	0	1	0	1	0	1
76			min	0	1	-.017	3	0	1	0	1	0	1	0	1
77	M7	1	max	0	1	.006	2	.003	4	0	1	0	1	0	1
78			min	0	1	0	3	0	12	0	1	0	1	0	1
79		2	max	-.299	15	-.428	15	.001	1	0	1	0	1	0	4
80			min	-1.274	4	-1.818	4	-1.499	5	0	1	0	5	0	15
81		3	max	9.437	5	290.077	3	100.355	1	.196	2	.078	5	.271	2

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Mome...	LC	z-z Mome...	LC
82			min	-167.635	1	-627.411	2	-42.652	5	-.052	3	-.19	1	-.122	3
83		4	max	8.973	5	289.014	3	100.355	1	.196	2	.051	5	.661	2
84			min	-168.628	1	-628.828	2	-44.152	5	-.052	3	-.128	1	-.301	3
85		5	max	8.51	5	287.951	3	100.355	1	.196	2	.023	5	1.051	2
86			min	-169.62	1	-630.246	2	-45.652	5	-.052	3	-.065	1	-.48	3
87		6	max	142.178	3	548.373	2	146.128	1	.079	3	.026	3	1.01	2
88			min	-543.647	2	-175.655	3	-21.827	5	-.072	2	-.071	2	-.489	3
89		7	max	141.434	3	546.955	2	146.128	1	.079	3	.036	3	.67	2
90			min	-544.64	2	-176.718	3	-23.326	5	-.072	2	-.052	5	-.38	3
91		8	max	140.689	3	545.538	2	146.128	1	.079	3	.119	1	.331	2
92			min	-545.633	2	-177.781	3	-24.826	5	-.072	2	-.067	5	-.27	3
93		9	max	101.743	3	99.494	3	159.832	1	.135	2	.012	5	.13	2
94			min	-697.793	1	-67.858	2	-69.676	5	.014	15	-.068	1	-.217	3
95		10	max	100.999	3	98.431	3	159.832	1	.135	2	.039	2	.173	2
96			min	-698.785	1	-69.276	2	-71.175	5	.014	15	-.044	3	-.278	3
97		11	max	100.254	3	97.368	3	159.832	1	.135	2	.13	1	.216	2
98			min	-699.778	1	-70.693	2	-72.675	5	.014	15	-.076	5	-.339	3
99		12	max	57.447	3	751.385	3	311.485	3	.236	2	-.02	10	.417	2
100			min	-872.198	1	-466.444	2	-167.197	5	-.298	3	-.117	1	-.653	3
101		13	max	56.702	3	750.321	3	311.485	3	.236	2	.157	3	.707	2
102			min	-873.191	1	-467.861	2	-168.697	5	-.298	3	-.205	4	-1.119	3
103		14	max	170.449	1	431.618	2	112.702	3	.398	3	.095	2	.986	2
104			min	13.693	15	-678.24	3	-10.237	10	-.209	2	-.139	3	-1.565	3
105		15	max	169.456	1	430.2	2	112.702	3	.398	3	.122	1	.718	2
106			min	13.394	15	-679.303	3	-10.237	10	-.209	2	-.081	5	-1.144	3
107		16	max	168.464	1	428.783	2	112.702	3	.398	3	.163	1	.452	2
108			min	13.094	15	-680.367	3	-10.237	10	-.209	2	-.034	5	-.722	3
109		17	max	167.471	1	427.365	2	112.702	3	.398	3	.204	1	.186	2
110			min	12.795	15	-681.43	3	-10.237	10	-.209	2	.007	15	-.299	3
111		18	max	1.274	6	1.82	4	1.5	5	0	1	0	1	0	4
112			min	.299	15	.428	15	-.001	1	0	1	0	5	0	15
113		19	max	0	1	.004	2	0	5	0	1	0	1	0	1
114			min	0	1	-.008	3	-.001	1	0	1	0	1	0	1
115	M10	1	max	112.715	3	424.149	2	-12.199	15	.012	2	.231	1	.209	2
116			min	-10.238	10	-683.689	3	-165.534	1	-.024	3	.028	15	-.398	3
117		2	max	112.715	3	312.146	2	-10.15	15	.012	2	.084	1	.199	3
118			min	-10.238	10	-510.484	3	-128.483	1	-.024	3	.008	10	-.159	2
119		3	max	112.715	3	200.143	2	-8.101	15	.012	2	.05	3	.623	3
120			min	-10.238	10	-337.28	3	-91.433	1	-.024	3	-.026	1	-.415	2
121		4	max	112.715	3	88.141	2	-6.051	15	.012	2	.021	3	.874	3
122			min	-10.238	10	-164.076	3	-54.382	1	-.024	3	-.099	1	-.559	2
123		5	max	112.715	3	13.537	5	-1.248	10	.012	2	-.003	12	.951	3
124			min	-10.238	10	-27.07	1	-23.909	3	-.024	3	-.135	1	-.591	2
125		6	max	112.715	3	182.333	3	19.72	1	.012	2	-.008	15	.855	3
126			min	-10.238	10	-135.865	2	-20.836	3	-.024	3	-.134	1	-.511	2
127		7	max	112.715	3	355.538	3	56.771	1	.012	2	-.008	15	.586	3
128			min	-10.238	10	-247.868	2	-17.762	3	-.024	3	-.096	1	-.319	2
129		8	max	112.715	3	528.742	3	93.822	1	.012	2	0	10	.144	3
130			min	-10.238	10	-359.871	2	-14.689	3	-.024	3	-.062	3	-.019	5
131		9	max	112.715	3	701.946	3	130.872	1	.012	2	.092	1	.4	2
132			min	-11.63	5	-471.874	2	-11.615	3	-.024	3	-.075	3	-.471	3
133		10	max	112.715	3	167.525	14	167.923	1	.012	2	.241	1	.928	2
134			min	-10.238	10	-875.151	3	-96.119	14	-.024	3	-.085	3	-1.26	3
135		11	max	112.715	3	471.874	2	11.615	3	.024	3	.092	1	.4	2
136			min	-10.238	10	-701.946	3	-130.872	1	-.012	2	-.075	3	-.471	3
137		12	max	112.715	3	359.871	2	14.689	3	.024	3	.007	5	.144	3
138			min	-10.238	10	-528.742	3	-93.822	1	-.012	2	-.062	3	-.016	2

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Mome...	LC	z-z Mome...	LC
139		13	max	112.715	3	247.868	2	17.762	3	.024	3	-.002	15	.586	3
140			min	-10.238	10	-355.538	3	-56.771	1	-.012	2	-.096	1	-.319	2
141		14	max	112.715	3	135.865	2	20.836	3	.024	3	-.007	15	.855	3
142			min	-10.238	10	-182.333	3	-19.72	1	-.012	2	-.134	1	-.511	2
143		15	max	112.715	3	27.07	1	23.909	3	.024	3	-.003	12	.951	3
144			min	-14.785	5	-9.129	3	-2.848	5	-.012	2	-.135	1	-.591	2
145		16	max	112.715	3	164.076	3	54.382	1	.024	3	.021	3	.874	3
146			min	-25.05	5	-88.141	2	.09	15	-.012	2	-.099	1	-.559	2
147		17	max	112.715	3	337.28	3	91.433	1	.024	3	.05	3	.623	3
148			min	-35.315	5	-200.143	2	2.139	15	-.012	2	-.026	1	-.415	2
149		18	max	112.715	3	510.484	3	128.483	1	.024	3	.084	1	.199	3
150			min	-45.581	5	-312.146	2	4.189	15	-.012	2	-.01	5	-.159	2
151		19	max	112.715	3	683.689	3	165.534	1	.024	3	.231	1	.209	2
152			min	-55.846	5	-424.149	2	6.238	15	-.012	2	-.002	5	-.398	3
153	M11	1	max	202.918	2	393.195	2	8.408	5	0	10	.267	1	.125	4
154			min	-274.398	3	-654.906	3	-171.576	1	-.006	3	-.083	5	-.407	3
155		2	max	202.918	2	281.192	2	11.578	5	0	10	.114	1	.162	3
156			min	-274.398	3	-481.702	3	-134.525	1	-.006	3	-.073	5	-.236	2
157		3	max	202.918	2	169.189	2	14.749	5	0	10	.071	3	.557	3
158			min	-274.398	3	-308.497	3	-97.474	1	-.006	3	-.06	5	-.462	2
159		4	max	202.918	2	57.186	2	17.919	5	0	10	.037	3	.779	3
160			min	-274.398	3	-135.293	3	-60.423	1	-.006	3	-.081	1	-.575	2
161		5	max	202.918	2	37.911	3	21.089	5	0	10	.006	3	.827	3
162			min	-274.398	3	-54.817	2	-29.133	3	-.006	3	-.123	1	-.576	2
163		6	max	202.918	2	211.116	3	27.316	4	0	10	0	15	.703	3
164			min	-274.398	3	-166.82	2	-26.059	3	-.006	3	-.128	1	-.465	2
165		7	max	202.918	2	384.32	3	50.729	1	0	10	.025	5	.405	3
166			min	-274.398	3	-278.823	2	-22.986	3	-.006	3	-.096	1	-.242	2
167		8	max	202.918	2	557.525	3	87.78	1	0	10	.054	5	.092	2
168			min	-274.398	3	-390.826	2	-19.912	3	-.006	3	-.067	3	-.066	3
169		9	max	202.918	2	730.729	3	124.831	1	0	10	.105	4	.539	2
170			min	-274.398	3	-502.828	2	-16.838	3	-.006	3	-.085	3	-.71	3
171		10	max	202.918	2	903.933	3	161.882	1	0	11	.223	1	1.098	2
172			min	-274.398	3	-614.831	2	-78.345	14	-.006	3	-.101	3	-1.527	3
173		11	max	202.918	2	502.828	2	16.838	3	.006	3	.08	1	.539	2
174			min	-274.398	3	-730.729	3	-124.831	1	0	5	-.085	3	-.71	3
175		12	max	202.918	2	390.826	2	19.912	3	.006	3	0	10	.092	2
176			min	-274.398	3	-557.525	3	-87.78	1	0	5	-.067	3	-.066	3
177		13	max	202.918	2	278.823	2	22.986	3	.006	3	-.013	10	.405	3
178			min	-274.398	3	-384.32	3	-50.729	1	0	5	-.096	1	-.242	2
179		14	max	202.918	2	166.82	2	26.059	3	.006	3	-.013	12	.703	3
180			min	-274.398	3	-211.116	3	-13.679	1	0	5	-.128	1	-.465	2
181		15	max	202.918	2	54.817	2	31.774	4	.006	3	.006	3	.827	3
182			min	-274.398	3	-37.911	3	1.489	10	0	5	-.123	1	-.576	2
183		16	max	202.918	2	135.293	3	60.423	1	.006	3	.037	3	.779	3
184			min	-274.398	3	-57.186	2	7.151	10	0	5	-.081	1	-.575	2
185		17	max	202.918	2	308.497	3	97.474	1	.006	3	.071	3	.557	3
186			min	-274.398	3	-169.189	2	12.812	10	0	5	-.01	2	-.462	2
187		18	max	202.918	2	481.702	3	134.525	1	.006	3	.124	4	.162	3
188			min	-274.398	3	-281.192	2	18.473	10	0	5	.009	10	-.236	2
189		19	max	202.918	2	654.906	3	171.576	1	.006	3	.267	1	.101	2
190			min	-274.398	3	-393.195	2	24.135	10	0	5	.03	10	-.407	3
191	M12	1	max	43.308	5	611.072	2	13.497	5	0	10	.281	1	.207	2
192			min	-24.613	9	-278.381	3	-173.928	1	-.005	3	-.105	5	.018	12
193		2	max	33.042	5	439.871	2	16.668	5	0	10	.125	1	.265	3
194			min	-24.613	9	-193.974	3	-136.877	1	-.005	3	-.09	5	-.318	2
195		3	max	31.213	2	268.67	2	19.838	5	0	10	.058	3	.417	3

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Mome...	LC	z-z Mome...	LC
196			min	-24.613	9	-109.567	3	-99.826	1	-.005	3	-.072	5	-.672	2
197		4	max	31.213	2	97.469	2	23.008	5	0	10	.027	3	.485	3
198			min	-24.613	9	-25.159	3	-62.775	1	-.005	3	-.074	1	-.855	2
199		5	max	31.213	2	59.248	3	26.179	5	0	10	0	3	.468	3
200			min	-24.613	9	-73.732	2	-25.859	3	-.005	3	-.119	1	-.867	2
201		6	max	31.213	2	143.656	3	32.169	4	0	10	.002	5	.366	3
202			min	-24.613	9	-244.933	2	-22.785	3	-.005	3	-.126	1	-.708	2
203		7	max	31.213	2	228.063	3	48.377	1	0	10	.033	5	.18	3
204			min	-28.402	14	-416.134	2	-19.711	3	-.005	3	-.096	1	-.377	2
205		8	max	31.213	2	312.47	3	85.428	1	0	10	.067	5	.124	2
206			min	-37.822	4	-587.335	2	-16.638	3	-.005	3	-.064	3	-.09	3
207		9	max	31.213	2	396.878	3	122.479	1	0	10	.123	4	.797	2
208			min	-48.087	4	-758.535	2	-13.564	3	-.005	3	-.079	3	-.445	3
209		10	max	31.213	2	481.285	3	159.53	1	0	10	.216	1	1.641	2
210			min	-58.352	4	-929.736	2	-10.49	3	-.005	3	-.091	3	-.884	3
211		11	max	32.12	5	758.535	2	17.988	5	.005	3	.075	1	.797	2
212			min	-24.613	9	-396.878	3	-122.479	1	0	5	-.092	5	-.445	3
213		12	max	31.213	2	587.335	2	21.158	5	.005	3	-.002	10	.124	2
214			min	-24.613	9	-312.47	3	-85.428	1	0	5	-.081	4	-.09	3
215		13	max	31.213	2	416.134	2	24.328	5	.005	3	-.013	10	.18	3
216			min	-24.613	9	-228.063	3	-48.377	1	0	5	-.096	1	-.377	2
217		14	max	31.213	2	244.933	2	27.499	5	.005	3	-.015	12	.366	3
218			min	-24.613	9	-143.656	3	-11.326	1	0	5	-.126	1	-.708	2
219		15	max	31.213	2	73.732	2	37.395	4	.005	3	.005	5	.468	3
220			min	-24.613	9	-59.248	3	3.123	10	0	5	-.119	1	-.867	2
221		16	max	31.213	2	25.159	3	62.775	1	.005	3	.038	5	.485	3
222			min	-29.005	14	-97.469	2	8.784	10	0	5	-.074	1	-.855	2
223		17	max	31.213	2	109.567	3	99.826	1	.005	3	.075	4	.417	3
224			min	-38.884	4	-268.67	2	14.446	10	0	5	0	10	-.672	2
225		18	max	31.213	2	193.974	3	136.877	1	.005	3	.144	4	.265	3
226			min	-49.149	4	-439.871	2	20.107	10	0	5	.017	10	-.318	2
227		19	max	31.213	2	278.381	3	173.928	1	.005	3	.281	1	.207	2
228			min	-59.415	4	-611.072	2	24.039	12	0	5	.04	10	-.052	5
229	M13	1	max	39.622	5	625.01	2	10.365	5	.005	3	.23	1	.196	2
230			min	-100.273	1	-292.195	3	-165.574	1	-.016	2	-.096	5	-.052	3
231		2	max	29.357	5	453.809	2	13.535	5	.005	3	.083	1	.198	3
232			min	-100.273	1	-207.788	3	-128.523	1	-.016	2	-.084	5	-.343	2
233		3	max	19.091	5	282.608	2	16.706	5	.005	3	.048	3	.363	3
234			min	-100.273	1	-123.38	3	-91.472	1	-.016	2	-.075	4	-.712	2
235		4	max	8.826	5	111.407	2	19.876	5	.005	3	.02	3	.444	3
236			min	-100.273	1	-38.973	3	-54.421	1	-.016	2	-.1	1	-.909	2
237		5	max	-.716	15	45.434	3	23.046	5	.005	3	-.004	12	.441	3
238			min	-100.273	1	-59.794	2	-23.25	3	-.016	2	-.135	1	-.935	2
239		6	max	-7.625	15	129.842	3	30.933	4	.005	3	-.003	15	.354	3
240			min	-100.273	1	-230.994	2	-20.177	3	-.016	2	-.134	1	-.789	2
241		7	max	-14.534	10	214.249	3	56.731	1	.005	3	.023	5	.182	3
242			min	-100.273	1	-402.195	2	-17.103	3	-.016	2	-.096	1	-.473	2
243		8	max	-14.534	10	298.657	3	93.782	1	.005	3	.054	5	.015	2
244			min	-100.273	1	-573.396	2	-14.029	3	-.016	2	-.061	3	-.075	3
245		9	max	-14.534	10	383.064	3	130.833	1	.005	3	.111	4	.674	2
246			min	-100.273	1	-744.597	2	-10.956	3	-.016	2	-.073	3	-.416	3
247		10	max	-14.534	10	467.471	3	167.884	1	0	15	.241	1	1.504	2
248			min	-100.273	1	-915.798	2	-110.574	9	-.016	2	-.083	3	-.841	3
249		11	max	25.03	5	744.597	2	13.53	5	.016	2	.091	1	.674	2
250			min	-100.273	1	-383.064	3	-130.833	1	-.005	3	-.073	3	-.416	3
251		12	max	14.765	5	573.396	2	16.7	5	.016	2	0	10	.015	2
252			min	-100.273	1	-298.657	3	-93.782	1	-.005	3	-.064	4	-.075	3

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Mome...	LC	z-z Mome...	LC
253		13	max	4.499	5	402.195	2	19.87	5	.016	2	-.013	10	.182	3
254			min	-100.273	1	-214.249	3	-56.731	1	-.005	3	-.096	1	-.473	2
255		14	max	-3.619	15	230.994	2	23.041	5	.016	2	-.012	15	.354	3
256			min	-100.273	1	-129.842	3	-19.68	1	-.005	3	-.134	1	-.789	2
257		15	max	-10.528	15	59.794	2	30.914	4	.016	2	.006	5	.441	3
258			min	-100.273	1	-45.434	3	1.271	10	-.005	3	-.135	1	-.935	2
259		16	max	-14.534	10	38.973	3	54.421	1	.016	2	.034	5	.444	3
260			min	-100.273	1	-111.407	2	6.933	10	-.005	3	-.1	1	-.909	2
261		17	max	-14.534	10	123.38	3	91.472	1	.016	2	.065	5	.363	3
262			min	-100.273	1	-282.608	2	12.594	10	-.005	3	-.027	1	-.712	2
263		18	max	-14.534	10	207.788	3	128.523	1	.016	2	.121	4	.198	3
264			min	-100.273	1	-453.809	2	18.255	10	-.005	3	.008	10	-.343	2
265		19	max	-14.534	10	292.195	3	165.574	1	.016	2	.23	1	.196	2
266			min	-100.273	1	-625.01	2	22.409	12	-.005	3	.029	10	-.052	3
267	M2	1	max	1942.385	2	1218.745	3	190.062	2	.036	5	1.423	5	4.996	3
268			min	-1405.236	3	-941.772	2	-316.334	5	-.025	2	-.277	2	.032	10
269		2	max	1284.748	1	799.867	3	130.108	2	.001	2	1.289	5	4.638	3
270			min	-1138.981	3	24.954	10	-285.264	5	0	3	-.211	2	.145	10
271		3	max	1281.642	1	799.867	3	130.108	2	.001	2	1.192	5	4.365	3
272			min	-1141.311	3	24.954	10	-282.572	5	0	3	-.167	2	.136	10
273		4	max	1278.536	1	799.867	3	130.108	2	.001	2	1.096	5	4.093	3
274			min	-1143.64	3	24.954	10	-279.88	5	0	3	-.122	2	.128	10
275		5	max	1275.43	1	799.867	3	130.108	2	.001	2	1.001	5	3.82	3
276			min	-1145.97	3	24.954	10	-277.188	5	0	3	-.078	2	.119	10
277		6	max	1272.324	1	799.867	3	130.108	2	.001	2	.907	5	3.547	3
278			min	-1148.299	3	24.954	10	-274.496	5	0	3	-.039	1	.111	10
279		7	max	1269.218	1	799.867	3	130.108	2	.001	2	.817	4	3.274	3
280			min	-1150.629	3	24.954	10	-271.804	5	0	3	-.035	3	.102	10
281		8	max	1266.112	1	799.867	3	130.108	2	.001	2	.729	4	3.001	3
282			min	-1152.959	3	24.954	10	-269.112	5	0	3	-.103	3	.094	10
283		9	max	1263.006	1	799.867	3	130.108	2	.001	2	.641	4	2.728	3
284			min	-1155.288	3	24.954	10	-266.421	5	0	3	-.171	3	.085	10
285		10	max	1259.899	1	799.867	3	130.108	2	.001	2	.555	4	2.456	3
286			min	-1157.618	3	24.954	10	-263.729	5	0	3	-.239	3	.077	10
287		11	max	1256.793	1	799.867	3	130.108	2	.001	2	.469	4	2.183	3
288			min	-1159.947	3	24.954	10	-261.037	5	0	3	-.306	3	.068	10
289		12	max	1253.687	1	799.867	3	130.108	2	.001	2	.384	4	1.91	3
290			min	-1162.277	3	24.954	10	-258.345	5	0	3	-.374	3	.06	10
291		13	max	1250.581	1	799.867	3	130.108	2	.001	2	.3	4	1.637	3
292			min	-1164.606	3	24.954	10	-255.653	5	0	3	-.442	3	.051	10
293		14	max	1247.475	1	799.867	3	130.108	2	.001	2	.321	2	1.364	3
294			min	-1166.936	3	24.954	10	-252.961	5	0	3	-.51	3	.043	10
295		15	max	1244.369	1	799.867	3	130.108	2	.001	2	.366	2	1.091	3
296			min	-1169.266	3	24.954	10	-250.269	5	0	3	-.578	3	.034	10
297		16	max	1241.263	1	799.867	3	130.108	2	.001	2	.41	2	.819	3
298			min	-1171.595	3	24.954	10	-247.577	5	0	3	-.646	3	.026	10
299		17	max	1238.157	1	799.867	3	130.108	2	.001	2	.455	2	.546	3
300			min	-1173.925	3	24.954	10	-244.885	5	0	3	-.713	3	.017	10
301		18	max	1235.051	1	799.867	3	130.108	2	.001	2	.499	2	.273	3
302			min	-1176.254	3	24.954	10	-242.193	5	0	3	-.781	3	.009	10
303		19	max	1231.945	1	799.867	3	130.108	2	.001	2	.543	2	0	1
304			min	-1178.584	3	24.954	10	-239.501	5	0	3	-.849	3	0	1
305	M5	1	max	5422.234	2	3059.906	3	0	1	.038	4	1.488	4	9.685	3
306			min	-4446.105	3	-3006.477	2	-340.743	5	0	1	0	1	-.233	10
307		2	max	3323.249	2	1526.968	3	0	1	0	1	1.345	4	8.855	3
308			min	-3473.687	3	21.075	10	-308.182	4	0	4	0	1	.122	10
309		3	max	3320.143	2	1526.968	3	0	1	0	1	1.24	4	8.334	3

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Mome...	LC	z-z Mome...	LC
310			min	-3476.016	3	21.075	10	-305.49	4	0	4	0	1	.115	10
311		4	max	3317.037	2	1526.968	3	0	1	0	1	1.136	4	7.813	3
312			min	-3478.346	3	21.075	10	-302.798	4	0	4	0	1	.108	10
313		5	max	3313.931	2	1526.968	3	0	1	0	1	1.034	4	7.292	3
314			min	-3480.675	3	21.075	10	-300.106	4	0	4	0	1	.101	10
315		6	max	3310.825	2	1526.968	3	0	1	0	1	.932	4	6.771	3
316			min	-3483.005	3	21.075	10	-297.414	4	0	4	0	1	.093	10
317		7	max	3307.718	2	1526.968	3	0	1	0	1	.831	4	6.25	3
318			min	-3485.334	3	21.075	10	-294.722	4	0	4	0	1	.086	10
319		8	max	3304.612	2	1526.968	3	0	1	0	1	.731	4	5.73	3
320			min	-3487.664	3	21.075	10	-292.03	4	0	4	0	1	.079	10
321		9	max	3301.506	2	1526.968	3	0	1	0	1	.631	4	5.209	3
322			min	-3489.994	3	21.075	10	-289.338	4	0	4	0	1	.072	10
323		10	max	3298.4	2	1526.968	3	0	1	0	1	.533	4	4.688	3
324			min	-3492.323	3	21.075	10	-286.646	4	0	4	0	1	.065	10
325		11	max	3295.294	2	1526.968	3	0	1	0	1	.436	4	4.167	3
326			min	-3494.653	3	21.075	10	-283.954	4	0	4	0	1	.058	10
327		12	max	3292.188	2	1526.968	3	0	1	0	1	.339	4	3.646	3
328			min	-3496.982	3	21.075	10	-281.262	4	0	4	0	1	.05	10
329		13	max	3289.082	2	1526.968	3	0	1	0	1	.244	4	3.125	3
330			min	-3499.312	3	21.075	10	-278.571	4	0	4	0	1	.043	10
331		14	max	3285.976	2	1526.968	3	0	1	0	1	.149	4	2.604	3
332			min	-3501.641	3	21.075	10	-275.879	4	0	4	0	1	.036	10
333		15	max	3282.87	2	1526.968	3	0	1	0	1	.056	4	2.083	3
334			min	-3503.971	3	21.075	10	-273.187	4	0	4	0	1	.029	10
335		16	max	3279.764	2	1526.968	3	0	1	0	1	0	1	1.563	3
336			min	-3506.301	3	21.075	10	-270.495	4	0	4	-.037	5	.022	10
337		17	max	3276.658	2	1526.968	3	0	1	0	1	0	1	1.042	3
338			min	-3508.63	3	21.075	10	-267.803	4	0	4	-.129	4	.014	10
339		18	max	3273.551	2	1526.968	3	0	1	0	1	0	1	.521	3
340			min	-3510.96	3	21.075	10	-265.111	4	0	4	-.22	4	.007	10
341		19	max	3270.445	2	1526.968	3	0	1	0	1	0	1	0	1
342			min	-3513.289	3	21.075	10	-262.419	4	0	4	-.31	4	0	1
343	M8	1	max	1942.385	2	1218.745	3	227.862	3	.04	4	1.487	4	4.996	3
344			min	-1405.236	3	-941.772	2	-347.674	4	-.012	3	-.381	3	-.191	5
345		2	max	1284.748	1	799.867	3	198.891	3	0	3	1.34	4	4.638	3
346			min	-1138.981	3	-29.429	5	-309.282	4	-.001	2	-.304	3	-.171	5
347		3	max	1281.642	1	799.867	3	198.891	3	0	3	1.235	4	4.365	3
348			min	-1141.311	3	-29.429	5	-306.59	4	-.001	2	-.236	3	-.161	5
349		4	max	1278.536	1	799.867	3	198.891	3	0	3	1.131	4	4.093	3
350			min	-1143.64	3	-29.429	5	-303.898	4	-.001	2	-.169	3	-.151	5
351		5	max	1275.43	1	799.867	3	198.891	3	0	3	1.028	4	3.82	3
352			min	-1145.97	3	-29.429	5	-301.206	4	-.001	2	-.101	3	-.141	5
353		6	max	1272.324	1	799.867	3	198.891	3	0	3	.926	4	3.547	3
354			min	-1148.299	3	-29.429	5	-298.514	4	-.001	2	-.033	3	-.131	5
355		7	max	1269.218	1	799.867	3	198.891	3	0	3	.824	4	3.274	3
356			min	-1150.629	3	-29.429	5	-295.822	4	-.001	2	-.011	2	-.12	5
357		8	max	1266.112	1	799.867	3	198.891	3	0	3	.724	4	3.001	3
358			min	-1152.959	3	-29.429	5	-293.13	4	-.001	2	-.055	2	-.11	5
359		9	max	1263.006	1	799.867	3	198.891	3	0	3	.626	5	2.728	3
360			min	-1155.288	3	-29.429	5	-290.438	4	-.001	2	-.1	2	-.1	5
361		10	max	1259.899	1	799.867	3	198.891	3	0	3	.532	5	2.456	3
362			min	-1157.618	3	-29.429	5	-287.746	4	-.001	2	-.144	2	-.09	5
363		11	max	1256.793	1	799.867	3	198.891	3	0	3	.44	5	2.183	3
364			min	-1159.947	3	-29.429	5	-285.054	4	-.001	2	-.188	2	-.08	5
365		12	max	1253.687	1	799.867	3	198.891	3	0	3	.374	3	1.91	3
366			min	-1162.277	3	-29.429	5	-282.362	4	-.001	2	-.233	2	-.07	5

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Mome...	LC	z-z Mome...	LC
367		13	max	1250.581	1	799.867	3	198.891	3	0	3	.442	3	1.637	3
368			min	-1164.606	3	-29.429	5	-279.67	4	-.001	2	-.277	2	-.06	5
369		14	max	1247.475	1	799.867	3	198.891	3	0	3	.51	3	1.364	3
370			min	-1166.936	3	-29.429	5	-276.978	4	-.001	2	-.321	2	-.05	5
371		15	max	1244.369	1	799.867	3	198.891	3	0	3	.578	3	1.091	3
372			min	-1169.266	3	-29.429	5	-274.287	4	-.001	2	-.366	2	-.04	5
373		16	max	1241.263	1	799.867	3	198.891	3	0	3	.646	3	.819	3
374			min	-1171.595	3	-29.429	5	-271.595	4	-.001	2	-.41	2	-.03	5
375		17	max	1238.157	1	799.867	3	198.891	3	0	3	.713	3	.546	3
376			min	-1173.925	3	-29.429	5	-268.903	4	-.001	2	-.455	2	-.02	5
377		18	max	1235.051	1	799.867	3	198.891	3	0	3	.781	3	.273	3
378			min	-1176.254	3	-29.429	5	-266.211	4	-.001	2	-.499	2	-.01	5
379		19	max	1231.945	1	799.867	3	198.891	3	0	3	.849	3	0	1
380			min	-1178.584	3	-29.429	5	-263.519	4	-.001	2	-.543	2	0	1
381	M3	1	max	1273.061	2	4.147	6	59.701	2	.005	3	.048	5	0	1
382			min	-493.274	3	.975	15	-29.17	3	-.007	2	-.027	2	0	1
383		2	max	1272.823	2	3.686	6	59.701	2	.005	3	.039	5	0	15
384			min	-493.452	3	.866	15	-29.17	3	-.007	2	-.009	2	-.001	6
385		3	max	1272.585	2	3.225	6	59.701	2	.005	3	.032	4	0	15
386			min	-493.631	3	.758	15	-29.17	3	-.007	2	-.004	3	-.002	6
387		4	max	1272.347	2	2.765	6	59.701	2	.005	3	.025	4	0	15
388			min	-493.809	3	.65	15	-29.17	3	-.007	2	-.013	3	-.003	6
389		5	max	1272.109	2	2.304	6	59.701	2	.005	3	.043	2	0	15
390			min	-493.988	3	.542	15	-29.17	3	-.007	2	-.021	3	-.004	6
391		6	max	1271.871	2	1.843	6	59.701	2	.005	3	.06	2	-.001	15
392			min	-494.166	3	.433	15	-29.17	3	-.007	2	-.03	3	-.004	6
393		7	max	1271.633	2	1.382	6	59.701	2	.005	3	.077	2	-.001	15
394			min	-494.345	3	.325	15	-29.17	3	-.007	2	-.038	3	-.005	6
395		8	max	1271.395	2	.922	6	59.701	2	.005	3	.095	2	-.001	15
396			min	-494.523	3	.217	15	-29.17	3	-.007	2	-.046	3	-.005	6
397		9	max	1271.157	2	.461	6	59.701	2	.005	3	.112	2	-.001	15
398			min	-494.702	3	.108	15	-29.17	3	-.007	2	-.055	3	-.005	6
399		10	max	1270.919	2	0	1	59.701	2	.005	3	.129	2	-.001	15
400			min	-494.88	3	0	1	-29.17	3	-.007	2	-.063	3	-.005	6
401		11	max	1270.681	2	-.108	15	59.701	2	.005	3	.147	2	-.001	15
402			min	-495.059	3	-.461	4	-29.17	3	-.007	2	-.072	3	-.005	6
403		12	max	1270.443	2	-.217	15	59.701	2	.005	3	.164	2	-.001	15
404			min	-495.237	3	-.922	4	-29.17	3	-.007	2	-.08	3	-.005	6
405		13	max	1270.205	2	-.325	15	59.701	2	.005	3	.181	2	-.001	15
406			min	-495.416	3	-1.382	4	-29.17	3	-.007	2	-.089	3	-.005	6
407		14	max	1269.967	2	-.433	15	59.701	2	.005	3	.199	2	-.001	15
408			min	-495.594	3	-1.843	4	-29.17	3	-.007	2	-.097	3	-.004	6
409		15	max	1269.729	2	-.542	15	59.701	2	.005	3	.216	2	0	15
410			min	-495.773	3	-2.304	4	-29.17	3	-.007	2	-.106	3	-.004	6
411		16	max	1269.491	2	-.65	15	59.701	2	.005	3	.233	2	0	15
412			min	-495.951	3	-2.765	4	-29.17	3	-.007	2	-.114	3	-.003	6
413		17	max	1269.253	2	-.758	15	59.701	2	.005	3	.251	2	0	15
414			min	-496.13	3	-3.225	4	-29.17	3	-.007	2	-.123	3	-.002	6
415		18	max	1269.015	2	-.866	15	59.701	2	.005	3	.268	2	0	15
416			min	-496.308	3	-3.686	4	-29.17	3	-.007	2	-.131	3	-.001	6
417		19	max	1268.777	2	-.975	15	59.701	2	.005	3	.285	2	0	1
418			min	-496.487	3	-4.147	4	-29.17	3	-.007	2	-.14	3	0	1
419	M6	1	max	3795.253	2	4.147	6	0	1	0	1	.05	4	0	1
420			min	-1791.949	3	.975	15	-33.353	4	-.004	4	0	1	0	1
421		2	max	3795.015	2	3.686	6	0	1	0	1	.04	4	0	15
422			min	-1792.127	3	.866	15	-32.98	4	-.004	4	0	1	-.001	6
423		3	max	3794.777	2	3.225	6	0	1	0	1	.031	4	0	15

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Mome...	LC	z-z Mome...	LC
424			min	-1792.306	3	.758	15	-32.606	4	-.004	4	0	1	-.002	6
425		4	max	3794.539	2	2.765	6	0	1	0	1	.021	4	0	15
426			min	-1792.484	3	.65	15	-32.233	4	-.004	4	0	1	-.003	6
427		5	max	3794.301	2	2.304	6	0	1	0	1	.012	4	0	15
428			min	-1792.663	3	.542	15	-31.86	4	-.004	4	0	1	-.004	6
429		6	max	3794.063	2	1.843	6	0	1	0	1	.003	4	-.001	15
430			min	-1792.841	3	.433	15	-31.486	4	-.004	4	0	1	-.004	6
431		7	max	3793.825	2	1.382	6	0	1	0	1	0	1	-.001	15
432			min	-1793.02	3	.325	15	-31.113	4	-.004	4	-.006	4	-.005	6
433		8	max	3793.587	2	.922	6	0	1	0	1	0	1	-.001	15
434			min	-1793.198	3	.217	15	-30.74	4	-.004	4	-.015	4	-.005	6
435		9	max	3793.349	2	.461	6	0	1	0	1	0	1	-.001	15
436			min	-1793.377	3	.108	15	-30.366	4	-.004	4	-.024	4	-.005	6
437		10	max	3793.111	2	0	1	0	1	0	1	0	1	-.001	15
438			min	-1793.555	3	0	1	-29.993	4	-.004	4	-.033	4	-.005	6
439		11	max	3792.873	2	-.108	15	0	1	0	1	0	1	-.001	15
440			min	-1793.734	3	-.461	4	-29.62	4	-.004	4	-.041	4	-.005	6
441		12	max	3792.635	2	-.217	15	0	1	0	1	0	1	-.001	15
442			min	-1793.912	3	-.922	4	-29.246	4	-.004	4	-.05	4	-.005	6
443		13	max	3792.397	2	-.325	15	0	1	0	1	0	1	-.001	15
444			min	-1794.091	3	-1.382	4	-28.873	4	-.004	4	-.058	4	-.005	6
445		14	max	3792.159	2	-.433	15	0	1	0	1	0	1	-.001	15
446			min	-1794.269	3	-1.843	4	-28.5	4	-.004	4	-.067	4	-.004	6
447		15	max	3791.921	2	-.542	15	0	1	0	1	0	1	0	15
448			min	-1794.448	3	-2.304	4	-28.126	4	-.004	4	-.075	4	-.004	6
449		16	max	3791.683	2	-.65	15	0	1	0	1	0	1	0	15
450			min	-1794.626	3	-2.765	4	-27.753	4	-.004	4	-.083	4	-.003	6
451		17	max	3791.445	2	-.758	15	0	1	0	1	0	1	0	15
452			min	-1794.805	3	-3.225	4	-27.38	4	-.004	4	-.091	4	-.002	6
453		18	max	3791.207	2	-.866	15	0	1	0	1	0	1	0	15
454			min	-1794.983	3	-3.686	4	-27.007	4	-.004	4	-.099	4	-.001	6
455		19	max	3790.969	2	-.975	15	0	1	0	1	0	1	0	1
456			min	-1795.162	3	-4.147	4	-26.633	4	-.004	4	-.107	4	0	1
457	M9	1	max	1273.061	2	4.147	6	29.17	3	.007	2	.052	4	0	1
458			min	-493.274	3	.975	15	-59.701	2	-.005	5	-.013	3	0	1
459		2	max	1272.823	2	3.686	6	29.17	3	.007	2	.041	4	0	15
460			min	-493.452	3	.866	15	-59.701	2	-.005	5	-.004	3	-.001	6
461		3	max	1272.585	2	3.225	6	29.17	3	.007	2	.031	5	0	15
462			min	-493.631	3	.758	15	-59.701	2	-.005	5	-.008	2	-.002	6
463		4	max	1272.347	2	2.765	6	29.17	3	.007	2	.022	5	0	15
464			min	-493.809	3	.65	15	-59.701	2	-.005	5	-.025	2	-.003	6
465		5	max	1272.109	2	2.304	6	29.17	3	.007	2	.021	3	0	15
466			min	-493.988	3	.542	15	-59.701	2	-.005	5	-.043	2	-.004	6
467		6	max	1271.871	2	1.843	6	29.17	3	.007	2	.03	3	-.001	15
468			min	-494.166	3	.433	15	-59.701	2	-.005	5	-.06	2	-.004	6
469		7	max	1271.633	2	1.382	6	29.17	3	.007	2	.038	3	-.001	15
470			min	-494.345	3	.325	15	-59.701	2	-.005	5	-.077	2	-.005	6
471		8	max	1271.395	2	.922	6	29.17	3	.007	2	.046	3	-.001	15
472			min	-494.523	3	.217	15	-59.701	2	-.005	5	-.095	2	-.005	6
473		9	max	1271.157	2	.461	6	29.17	3	.007	2	.055	3	-.001	15
474			min	-494.702	3	.108	15	-59.701	2	-.005	5	-.112	2	-.005	6
475		10	max	1270.919	2	0	1	29.17	3	.007	2	.063	3	-.001	15
476			min	-494.88	3	0	1	-59.701	2	-.005	5	-.129	2	-.005	6
477		11	max	1270.681	2	-.108	15	29.17	3	.007	2	.072	3	-.001	15
478			min	-495.059	3	-.461	4	-59.701	2	-.005	5	-.147	2	-.005	6
479		12	max	1270.443	2	-.217	15	29.17	3	.007	2	.08	3	-.001	15
480			min	-495.237	3	-.922	4	-59.701	2	-.005	5	-.164	2	-.005	6

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Mome...	LC	z-z Mome...	LC
481		13	max	1270.205	2	-.325	15	29.17	3	.007	2	.089	3	-.001	15
482			min	-495.416	3	-1.382	4	-59.701	2	-.005	5	-.181	2	-.005	6
483		14	max	1269.967	2	-.433	15	29.17	3	.007	2	.097	3	-.001	15
484			min	-495.594	3	-1.843	4	-59.701	2	-.005	5	-.199	2	-.004	6
485		15	max	1269.729	2	-.542	15	29.17	3	.007	2	.106	3	0	15
486			min	-495.773	3	-2.304	4	-59.701	2	-.005	5	-.216	2	-.004	6
487		16	max	1269.491	2	-.65	15	29.17	3	.007	2	.114	3	0	15
488			min	-495.951	3	-2.765	4	-59.701	2	-.005	5	-.233	2	-.003	6
489		17	max	1269.253	2	-.758	15	29.17	3	.007	2	.123	3	0	15
490			min	-496.13	3	-3.225	4	-59.701	2	-.005	5	-.251	2	-.002	6
491		18	max	1269.015	2	-.866	15	29.17	3	.007	2	.131	3	0	15
492			min	-496.308	3	-3.686	4	-59.701	2	-.005	5	-.268	2	-.001	6
493		19	max	1268.777	2	-.975	15	29.17	3	.007	2	.14	3	0	1
494			min	-496.487	3	-4.147	4	-59.701	2	-.005	5	-.285	2	0	1

Envelope Member Section Deflections

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
1	M1	1	max	-.01	10	-.029	15	.018	1	7.324e-3	3	NC	3	NC	3
2			min	-.277	3	-.322	1	-.495	5	-1.818e-2	2	421.121	1	489.141	5
3		2	max	-.01	10	-.025	15	.005	1	7.324e-3	3	NC	3	NC	2
4			min	-.277	3	-.259	1	-.477	4	-1.818e-2	2	524.676	1	526.835	5
5		3	max	-.01	10	-.021	15	-.001	10	6.914e-3	3	NC	3	NC	1
6			min	-.276	3	-.196	1	-.459	4	-1.664e-2	2	696.054	1	573.271	5
7		4	max	-.01	10	-.016	15	-.002	12	6.284e-3	3	NC	3	NC	1
8			min	-.276	3	-.136	1	-.435	4	-1.428e-2	2	858.368	14	639.832	5
9		5	max	-.01	10	-.012	15	-.002	12	5.654e-3	3	NC	3	NC	1
10			min	-.276	3	-.109	3	-.408	4	-1.192e-2	2	999.764	14	734.378	5
11		6	max	-.01	10	.001	10	0	12	5.961e-3	3	NC	5	NC	1
12			min	-.276	3	-.096	3	-.379	4	-1.147e-2	2	790.79	2	867.512	5
13		7	max	-.01	10	.015	2	0	3	6.915e-3	3	NC	1	NC	2
14			min	-.277	3	-.077	3	-.351	4	-1.234e-2	2	701.781	2	1050.766	5
15		8	max	-.009	10	.027	2	.001	3	7.87e-3	3	NC	5	NC	2
16			min	-.277	3	-.052	3	-.326	4	-1.32e-2	2	659.566	2	1304.509	5
17		9	max	-.009	10	.036	1	0	10	8.952e-3	3	NC	5	NC	2
18			min	-.277	3	-.023	3	-.304	4	-1.317e-2	2	635.108	2	1661.001	5
19		10	max	-.009	10	.056	1	0	2	1.026e-2	3	NC	5	NC	2
20			min	-.277	3	.006	12	-.282	4	-1.154e-2	2	617.005	2	2278.026	5
21		11	max	-.009	10	.073	1	.002	3	1.157e-2	3	NC	5	NC	2
22			min	-.277	3	.009	15	-.261	4	-9.906e-3	2	606.407	2	3507.405	5
23		12	max	-.009	10	.088	1	.005	3	9.746e-3	3	NC	5	NC	2
24			min	-.277	3	.013	15	-.243	4	-7.5e-3	2	603.915	2	6667.743	5
25		13	max	-.009	10	.133	3	.009	3	6.159e-3	3	NC	5	NC	2
26			min	-.277	3	.015	10	-.227	4	-4.656e-3	2	535.277	3	9761.848	1
27		14	max	-.009	10	.197	3	.008	3	2.756e-3	3	NC	5	NC	2
28			min	-.277	3	.005	10	-.216	4	-5.563e-3	4	425.94	3	7064.089	1
29		15	max	-.009	10	.283	3	.008	1	7.547e-3	3	NC	5	NC	2
30			min	-.277	3	-.012	10	-.212	5	-4.853e-3	4	334.993	3	5304.364	1
31		16	max	-.009	10	.384	3	.01	1	1.234e-2	3	NC	5	NC	2
32			min	-.277	3	-.039	2	-.212	5	-6.974e-3	2	267.335	3	4930.351	1
33		17	max	-.009	10	.495	3	.006	1	1.713e-2	3	NC	4	NC	2
34			min	-.277	3	-.083	2	-.215	4	-9.495e-3	2	218.791	3	5763.233	1
35		18	max	-.009	10	.61	3	0	10	2.025e-2	3	NC	4	NC	1
36			min	-.277	3	-.129	2	-.221	4	-1.114e-2	2	184.17	3	NC	1
37		19	max	-.009	10	.725	3	-.003	10	2.025e-2	3	NC	1	NC	1
38			min	-.277	3	-.176	2	-.227	4	-1.114e-2	2	159.03	3	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
39	M4	1	max	-.01	10	-.026	15	0	1	1.249e-4	4	NC	3	NC	1
40			min	-.526	3	-.688	1	-.493	4	0	1	274.223	1	489.803	4
41		2	max	-.01	10	-.021	15	0	1	1.249e-4	4	8779.522	12	NC	1
42			min	-.526	3	-.545	1	-.477	4	0	1	387.314	1	519.979	4
43		3	max	-.01	10	-.017	15	0	1	0	1	6540.21	15	NC	1
44			min	-.526	3	-.402	1	-.459	4	-2.842e-4	4	596.289	9	557.718	4
45		4	max	-.01	10	-.012	15	0	1	0	1	8414.552	15	NC	1
46			min	-.526	3	-.265	1	-.436	4	-9.118e-4	4	489.56	2	617.418	4
47		5	max	-.01	10	-.008	15	0	1	0	1	NC	15	NC	1
48			min	-.526	3	-.196	3	-.408	4	-1.539e-3	4	335.454	2	706.75	4
49		6	max	-.01	10	.004	10	0	1	0	1	NC	5	NC	1
50			min	-.526	3	-.183	3	-.379	4	-1.471e-3	4	277.522	2	835.949	4
51		7	max	-.01	10	.037	2	0	1	0	1	NC	5	NC	1
52			min	-.526	3	-.15	3	-.351	4	-9.213e-4	4	254.751	2	1014.701	4
53		8	max	-.009	10	.056	2	0	1	0	1	NC	3	NC	1
54			min	-.526	3	-.102	3	-.325	4	-3.717e-4	4	246.058	2	1257.075	4
55		9	max	-.009	10	.066	1	0	1	0	1	NC	4	NC	1
56			min	-.527	3	-.047	3	-.304	4	-7.457e-5	4	242.018	2	1578.078	4
57		10	max	-.009	10	.096	1	0	1	0	1	NC	4	NC	1
58			min	-.527	3	.005	15	-.282	4	-2.241e-4	4	238.449	2	2134.718	4
59		11	max	-.008	10	.124	1	0	1	0	1	NC	5	NC	1
60			min	-.527	3	.006	15	-.261	4	-3.736e-4	4	236.153	2	3190.592	4
61		12	max	-.008	10	.153	3	0	1	0	1	NC	5	NC	1
62			min	-.527	3	.008	15	-.244	4	-1.577e-3	4	235.55	2	5395.266	4
63		13	max	-.008	10	.247	3	0	1	0	1	NC	5	NC	1
64			min	-.528	3	.01	15	-.229	4	-3.377e-3	4	240.123	2	NC	1
65		14	max	-.007	10	.378	3	0	1	0	1	NC	5	NC	1
66			min	-.528	3	.002	10	-.22	4	-5.109e-3	4	256.537	2	NC	1
67		15	max	-.007	10	.562	3	0	1	0	1	NC	5	NC	1
68			min	-.528	3	-.04	10	-.217	4	-3.85e-3	4	199.436	3	NC	1
69		16	max	-.007	10	.786	3	0	1	0	1	NC	5	NC	1
70			min	-.528	3	-.136	2	-.217	4	-2.592e-3	4	149.699	3	NC	1
71		17	max	-.007	10	1.033	3	0	1	0	1	NC	5	NC	1
72			min	-.528	3	-.25	2	-.218	4	-1.333e-3	4	117.287	3	NC	1
73		18	max	-.007	10	1.289	3	0	1	0	1	NC	4	NC	1
74			min	-.528	3	-.37	2	-.219	4	-5.126e-4	4	95.816	3	NC	1
75		19	max	-.007	10	1.545	3	0	1	0	1	NC	1	NC	1
76			min	-.528	3	-.489	2	-.219	4	-5.126e-4	4	81.02	3	NC	1
77	M7	1	max	.01	5	0	15	-.003	10	1.818e-2	2	NC	3	NC	3
78			min	-.277	3	-.322	1	-.505	4	-7.324e-3	3	421.121	1	462.529	4
79		2	max	.01	5	0	15	0	10	1.818e-2	2	NC	3	NC	2
80			min	-.277	3	-.259	1	-.48	4	-7.324e-3	3	524.676	1	506.212	4
81		3	max	.01	5	.002	5	.006	1	1.664e-2	2	NC	3	NC	1
82			min	-.276	3	-.196	1	-.455	4	-6.914e-3	3	696.054	1	559.611	4
83		4	max	.01	5	.003	5	.011	1	1.428e-2	2	NC	3	NC	1
84			min	-.276	3	-.136	1	-.429	5	-6.284e-3	3	898.498	9	628.46	4
85		5	max	.01	5	.003	5	.011	1	1.192e-2	2	NC	3	NC	1
86			min	-.276	3	-.109	3	-.402	5	-5.654e-3	3	1002.873	2	719.129	4
87		6	max	.01	5	.004	5	.008	1	1.147e-2	2	NC	4	NC	1
88			min	-.276	3	-.096	3	-.375	4	-5.961e-3	3	790.79	2	839.854	4
89		7	max	.01	5	.015	2	.004	2	1.234e-2	2	NC	1	NC	2
90			min	-.277	3	-.077	3	-.35	4	-6.915e-3	3	701.781	2	997.665	4
91		8	max	.01	5	.027	2	.001	2	1.32e-2	2	NC	4	NC	2
92			min	-.277	3	-.052	3	-.326	4	-7.87e-3	3	659.566	2	1211.533	4
93		9	max	.01	5	.036	1	0	3	1.317e-2	2	NC	4	NC	2
94			min	-.277	3	-.023	3	-.303	4	-8.952e-3	3	635.108	2	1519.349	4
95		10	max	.01	5	.056	1	0	3	1.154e-2	2	NC	4	NC	2

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
96			min	-.277	3	0	15	-.282	4	-1.026e-2	3	617.005	2	2018.806	4
97		11	max	.01	5	.073	1	0	2	9.906e-3	2	NC	5	NC	2
98			min	-.277	3	-.002	5	-.261	4	-1.157e-2	3	606.407	2	2940.454	4
99		12	max	.01	5	.088	1	.004	2	7.5e-3	2	NC	5	NC	2
100			min	-.277	3	-.003	5	-.242	4	-9.746e-3	3	603.915	2	5068.282	4
101		13	max	.01	5	.133	3	.005	2	4.656e-3	2	NC	5	NC	2
102			min	-.277	3	-.005	5	-.226	4	-6.159e-3	3	535.277	3	9761.848	1
103		14	max	.01	5	.197	3	.002	2	1.93e-3	2	NC	5	NC	2
104			min	-.277	3	-.007	5	-.218	4	-5.129e-3	5	425.94	3	7064.089	1
105		15	max	.01	5	.283	3	0	10	4.452e-3	2	NC	5	NC	2
106			min	-.277	3	-.012	10	-.217	4	-7.547e-3	3	334.993	3	5304.364	1
107		16	max	.01	5	.384	3	-.002	10	6.974e-3	2	NC	7	NC	2
108			min	-.277	3	-.039	2	-.218	4	-1.234e-2	3	267.335	3	4930.351	1
109		17	max	.01	5	.495	3	0	12	9.495e-3	2	NC	4	NC	2
110			min	-.277	3	-.083	2	-.219	4	-1.713e-2	3	218.791	3	5763.233	1
111		18	max	.01	5	.61	3	.005	1	1.114e-2	2	NC	4	NC	1
112			min	-.277	3	-.129	2	-.217	4	-2.025e-2	3	184.17	3	NC	1
113		19	max	.01	5	.725	3	.017	1	1.114e-2	2	NC	1	NC	1
114			min	-.277	3	-.176	2	-.218	5	-2.025e-2	3	159.03	3	NC	1
115	M10	1	max	0	3	.57	3	.277	3	1.545e-2	3	NC	1	NC	1
116			min	-.218	4	-.113	2	-.01	5	-6.234e-3	2	NC	1	NC	1
117		2	max	0	3	.82	3	.293	3	1.755e-2	3	NC	4	NC	2
118			min	-.218	4	-.25	2	-.009	5	-7.325e-3	2	863.525	3	6283.951	1
119		3	max	0	3	1.056	3	.322	3	1.964e-2	3	NC	4	NC	5
120			min	-.218	4	-.375	2	-.004	5	-8.416e-3	2	444.789	3	2615.614	1
121		4	max	0	3	1.243	3	.359	3	2.174e-2	3	NC	4	NC	5
122			min	-.218	4	-.467	2	.002	15	-9.507e-3	2	321.037	3	1699.578	1
123		5	max	0	3	1.362	3	.399	3	2.383e-2	3	NC	4	NC	5
124			min	-.218	4	-.516	2	.006	15	-1.06e-2	2	272.784	3	1382.166	1
125		6	max	0	3	1.407	3	.439	3	2.593e-2	3	NC	4	NC	5
126			min	-.218	4	-.519	2	.01	15	-1.169e-2	2	258.212	3	1313.693	1
127		7	max	0	3	1.385	3	.474	3	2.802e-2	3	NC	4	NC	5
128			min	-.218	4	-.482	2	.013	15	-1.278e-2	2	265.201	3	1092.856	3
129		8	max	0	3	1.317	3	.503	3	3.012e-2	3	NC	4	NC	5
130			min	-.218	4	-.42	2	.015	15	-1.387e-2	2	289.142	3	955.666	3
131		9	max	0	3	1.24	3	.521	3	3.221e-2	3	NC	4	NC	5
132			min	-.218	4	-.358	2	.01	10	-1.496e-2	2	322.728	3	883.234	3
133		10	max	0	1	1.2	3	.528	3	3.431e-2	3	NC	9	NC	2
134			min	-.218	4	-.328	2	.007	10	-1.605e-2	2	342.816	3	860.022	3
135		11	max	0	10	1.24	3	.521	3	3.221e-2	3	NC	9	NC	5
136			min	-.218	4	-.358	2	.01	10	-1.496e-2	2	322.728	3	883.234	3
137		12	max	0	10	1.317	3	.503	3	3.012e-2	3	NC	4	NC	5
138			min	-.218	4	-.42	2	.016	10	-1.387e-2	2	289.142	3	955.666	3
139		13	max	0	10	1.385	3	.474	3	2.802e-2	3	NC	4	NC	5
140			min	-.218	4	-.482	2	.022	10	-1.278e-2	2	265.201	3	1092.856	3
141		14	max	0	10	1.407	3	.439	3	2.593e-2	3	NC	4	NC	5
142			min	-.218	4	-.519	2	.026	10	-1.169e-2	2	258.212	3	1313.693	1
143		15	max	0	10	1.362	3	.399	3	2.383e-2	3	NC	4	NC	5
144			min	-.218	4	-.516	2	.027	10	-1.06e-2	2	272.784	3	1382.166	1
145		16	max	0	10	1.243	3	.359	3	2.174e-2	3	NC	4	NC	5
146			min	-.218	4	-.467	2	.025	10	-9.507e-3	2	321.037	3	1699.578	1
147		17	max	0	10	1.056	3	.322	3	1.964e-2	3	NC	4	NC	5
148			min	-.218	4	-.375	2	.02	10	-8.416e-3	2	444.789	3	2615.614	1
149		18	max	0	10	.82	3	.293	3	1.755e-2	3	NC	14	NC	2
150			min	-.219	4	-.25	2	.014	10	-7.325e-3	2	863.525	3	6283.951	1
151		19	max	0	10	.57	3	.277	3	1.545e-2	3	NC	1	NC	1
152			min	-.219	4	-.113	2	.009	10	-6.234e-3	2	3139.888	4	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
153	M11	1	max	.002	2	.078	1	.277	3	5.301e-3	3	NC	1	NC	1
154			min	-.254	4	-.002	5	-.01	5	-1.918e-4	5	NC	1	NC	1
155		2	max	.002	2	.21	3	.284	3	5.806e-3	3	NC	4	NC	2
156			min	-.254	4	-.065	2	.008	15	-1.721e-4	10	1419.355	3	8195.691	4
157		3	max	.001	2	.351	3	.308	3	6.312e-3	3	NC	4	NC	10
158			min	-.254	4	-.158	2	.016	15	-1.872e-4	10	738.024	3	3215.184	1
159		4	max	.001	2	.448	3	.343	3	6.817e-3	3	NC	4	NC	10
160			min	-.254	4	-.214	2	.018	15	-2.022e-4	10	553.673	3	1959.653	1
161		5	max	0	2	.485	3	.385	3	7.322e-3	3	NC	4	NC	5
162			min	-.254	4	-.226	2	.014	15	-2.172e-4	10	505.951	3	1533.943	1
163		6	max	0	2	.457	3	.427	3	7.827e-3	3	NC	4	NC	5
164			min	-.254	4	-.193	2	.009	15	-2.322e-4	10	541.082	3	1418.528	1
165		7	max	0	2	.375	3	.466	3	8.332e-3	3	NC	4	NC	5
166			min	-.254	4	-.124	2	.003	15	-2.473e-4	10	681.718	3	1139.261	3
167		8	max	0	2	.262	3	.498	3	8.838e-3	3	NC	4	NC	5
168			min	-.254	4	-.036	2	0	15	-2.623e-4	10	1061.511	3	974.958	3
169		9	max	0	2	.155	3	.52	3	9.343e-3	3	NC	2	NC	4
170			min	-.254	4	.004	15	.003	15	-2.773e-4	10	2238.775	3	889.451	3
171		10	max	0	1	.133	1	.527	3	9.848e-3	3	NC	4	NC	2
172			min	-.254	4	.007	15	.008	10	-2.923e-4	10	3965.936	1	862.063	3
173		11	max	0	3	.155	3	.52	3	9.343e-3	3	NC	2	NC	10
174			min	-.254	4	.008	15	.011	10	-2.773e-4	10	2238.775	3	889.451	3
175		12	max	0	3	.262	3	.498	3	8.838e-3	3	NC	4	NC	10
176			min	-.254	4	-.036	2	.017	10	-2.623e-4	10	1061.511	3	974.958	3
177		13	max	0	3	.375	3	.466	3	8.332e-3	3	NC	5	NC	10
178			min	-.254	4	-.124	2	.023	10	-2.473e-4	10	681.718	3	1139.261	3
179		14	max	.001	3	.457	3	.427	3	7.827e-3	3	NC	5	NC	5
180			min	-.254	4	-.193	2	.026	10	-2.322e-4	10	541.082	3	1418.528	1
181		15	max	.001	3	.485	3	.385	3	7.322e-3	3	NC	15	NC	5
182			min	-.254	4	-.226	2	.021	15	-2.172e-4	10	505.951	3	1533.943	1
183		16	max	.002	3	.448	3	.343	3	6.817e-3	3	NC	15	NC	4
184			min	-.254	4	-.214	2	.015	15	-2.022e-4	10	553.673	3	1959.653	1
185		17	max	.002	3	.351	3	.308	3	6.312e-3	3	NC	15	NC	4
186			min	-.254	4	-.158	2	.011	15	-1.872e-4	10	738.024	3	3215.184	1
187		18	max	.002	3	.21	3	.284	3	5.806e-3	3	NC	5	NC	2
188			min	-.254	4	-.065	2	.014	10	-1.721e-4	10	1419.355	3	8898.155	1
189		19	max	.002	3	.078	1	.277	3	5.301e-3	3	NC	1	NC	1
190			min	-.254	4	.01	15	.009	10	-1.571e-4	10	NC	1	NC	1
191	M12	1	max	0	2	.032	2	.277	3	3.895e-3	3	NC	1	NC	1
192			min	-.311	4	-.034	3	-.01	5	-1.502e-4	5	NC	1	NC	1
193		2	max	0	2	.063	3	.289	3	4.293e-3	3	NC	4	NC	1
194			min	-.311	4	-.133	2	.011	15	-8.621e-5	5	1305.955	2	7372.118	4
195		3	max	0	2	.14	3	.316	3	4.692e-3	3	NC	4	NC	10
196			min	-.311	4	-.274	2	.016	10	-2.322e-5	15	704.296	2	3514.867	1
197		4	max	0	2	.184	3	.352	3	5.091e-3	3	NC	5	NC	10
198			min	-.311	4	-.363	2	.019	15	1.936e-5	15	545.777	2	2076.256	1
199		5	max	0	2	.19	3	.393	3	5.489e-3	3	NC	5	NC	5
200			min	-.311	4	-.386	2	.015	15	6.195e-5	15	516.625	2	1596.899	1
201		6	max	0	2	.159	3	.434	3	5.888e-3	3	NC	5	NC	5
202			min	-.311	4	-.34	2	.007	15	1.045e-4	15	579.484	2	1376.737	3
203		7	max	0	2	.1	3	.47	3	6.286e-3	3	NC	4	NC	5
204			min	-.311	4	-.24	2	0	15	1.471e-4	15	793.095	2	1114.785	3
205		8	max	0	2	.027	3	.5	3	6.685e-3	3	NC	4	NC	4
206			min	-.311	4	-.111	2	-.004	5	1.897e-4	15	1508.977	2	966.848	3
207		9	max	0	2	.014	1	.52	3	7.083e-3	3	NC	1	NC	4
208			min	-.311	4	-.038	3	0	15	2.323e-4	15	8661.265	2	889.123	3
209		10	max	0	1	.061	2	.527	3	7.482e-3	3	NC	4	NC	2

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
210			min	-.311	4	-.067	3	.009	10	2.749e-4	15	6452.212	3	864.206	3
211		11	max	0	9	.014	1	.52	3	7.083e-3	3	NC	1	NC	10
212			min	-.311	4	-.038	3	.012	10	2.811e-4	10	8661.265	2	889.123	3
213		12	max	0	9	.027	3	.5	3	6.685e-3	3	NC	4	NC	10
214			min	-.311	4	-.111	2	.016	10	2.871e-4	10	1508.977	2	966.848	3
215		13	max	0	9	.1	3	.47	3	6.286e-3	3	NC	5	NC	10
216			min	-.311	4	-.24	2	.021	10	2.932e-4	10	793.095	2	1114.785	3
217		14	max	0	9	.159	3	.434	3	5.888e-3	3	NC	5	NC	5
218			min	-.311	4	-.34	2	.024	10	2.992e-4	10	579.484	2	1376.737	3
219		15	max	0	9	.19	3	.393	3	5.489e-3	3	NC	15	NC	5
220			min	-.311	4	-.386	2	.021	15	3.053e-4	10	516.625	2	1596.899	1
221		16	max	0	9	.184	3	.352	3	5.091e-3	3	NC	15	NC	4
222			min	-.311	4	-.363	2	.013	15	3.114e-4	10	545.777	2	2076.256	1
223		17	max	0	9	.14	3	.316	3	4.692e-3	3	NC	5	NC	4
224			min	-.311	4	-.274	2	.008	15	3.174e-4	10	704.296	2	3514.867	1
225		18	max	0	9	.063	3	.289	3	4.293e-3	3	NC	5	NC	1
226			min	-.311	4	-.133	2	.011	10	3.235e-4	10	1305.955	2	NC	1
227		19	max	0	9	.032	2	.277	3	3.895e-3	3	NC	1	NC	1
228			min	-.311	4	-.034	3	.009	10	3.296e-4	10	NC	1	NC	1
229	M13	1	max	0	10	0	15	.277	3	8.504e-3	2	NC	1	NC	1
230			min	-.471	4	-.237	1	-.01	5	4.621e-5	3	NC	1	NC	1
231		2	max	0	10	0	15	.293	3	9.947e-3	2	NC	4	NC	2
232			min	-.471	4	-.412	2	.011	15	-3.603e-4	3	991.615	2	6176.142	1
233		3	max	0	10	.04	3	.322	3	1.139e-2	2	NC	5	NC	10
234			min	-.471	4	-.604	2	.021	15	-7.668e-4	3	527.437	2	2579.597	1
235		4	max	0	10	.083	3	.359	3	1.283e-2	2	NC	5	NC	10
236			min	-.471	4	-.74	2	.023	15	-1.173e-3	3	395.688	2	1677.759	1
237		5	max	0	10	.091	3	.399	3	1.428e-2	2	NC	5	NC	10
238			min	-.471	4	-.806	2	.02	15	-1.58e-3	3	353.366	2	1363.9	1
239		6	max	0	10	.064	3	.438	3	1.572e-2	2	NC	5	NC	5
240			min	-.471	4	-.798	2	.013	15	-1.986e-3	3	357.842	2	1294.272	1
241		7	max	0	10	.011	3	.473	3	1.716e-2	2	NC	5	NC	5
242			min	-.471	4	-.729	2	.007	15	-2.393e-3	3	404.128	2	1097.161	3
243		8	max	0	10	-.018	15	.501	3	1.861e-2	2	NC	5	NC	5
244			min	-.471	4	-.623	2	.002	15	-2.799e-3	3	503.514	2	961.415	3
245		9	max	0	10	-.019	15	.519	3	2.005e-2	2	NC	3	NC	4
246			min	-.471	4	-.53	1	.004	15	-3.206e-3	3	662.922	2	889.691	3
247		10	max	0	1	-.02	15	.526	3	2.149e-2	2	NC	5	NC	2
248			min	-.471	4	-.495	1	.01	10	-3.612e-3	3	778.898	2	866.719	3
249		11	max	0	1	-.022	15	.519	3	2.005e-2	2	NC	3	NC	10
250			min	-.471	4	-.53	1	.013	10	-3.206e-3	3	662.922	2	889.691	3
251		12	max	0	1	-.026	15	.501	3	1.861e-2	2	NC	5	NC	10
252			min	-.471	4	-.623	2	.019	10	-2.799e-3	3	503.514	2	961.415	3
253		13	max	0	1	.011	3	.473	3	1.716e-2	2	NC	15	NC	10
254			min	-.471	4	-.729	2	.025	10	-2.393e-3	3	404.128	2	1097.161	3
255		14	max	0	1	.064	3	.438	3	1.572e-2	2	NC	15	NC	5
256			min	-.471	4	-.798	2	.026	15	-1.986e-3	3	357.842	2	1294.272	1
257		15	max	0	1	.091	3	.399	3	1.428e-2	2	NC	15	NC	5
258			min	-.471	4	-.806	2	.018	15	-1.58e-3	3	353.366	2	1363.9	1
259		16	max	0	1	.083	3	.359	3	1.283e-2	2	NC	15	NC	4
260			min	-.471	4	-.74	2	.012	15	-1.173e-3	3	395.688	2	1677.759	1
261		17	max	0	1	.04	3	.322	3	1.139e-2	2	NC	15	NC	4
262			min	-.471	4	-.604	2	.009	15	-7.668e-4	3	527.437	2	2579.597	1
263		18	max	0	1	-.021	12	.293	3	9.947e-3	2	NC	5	NC	2
264			min	-.471	4	-.412	2	.013	15	-3.603e-4	3	991.615	2	6176.142	1
265		19	max	0	1	-.023	15	.277	3	8.504e-3	2	NC	1	NC	1
266			min	-.471	4	-.237	1	.01	10	4.621e-5	3	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
267	M2	1	max	0	1	0	1	0	1	0	1	NC	1	NC	1
268			min	0	1	0	1	0	1	0	1	NC	1	NC	1
269		2	max	0	3	0	10	.001	5	4.791e-3	2	NC	1	NC	1
270			min	0	2	-.002	3	0	2	-7.154e-3	5	NC	1	NC	1
271		3	max	0	3	0	10	.004	5	4.402e-3	2	NC	1	NC	1
272			min	0	2	-.006	3	0	2	-6.949e-3	5	NC	1	NC	1
273		4	max	0	3	0	10	.01	5	4.014e-3	2	NC	1	NC	1
274			min	0	1	-.014	3	-.002	2	-6.744e-3	5	5370.273	3	7707.751	5
275		5	max	0	3	0	10	.016	5	3.625e-3	2	NC	2	NC	1
276			min	0	1	-.024	3	-.003	2	-6.539e-3	5	3109.732	3	4472.24	5
277		6	max	0	3	0	10	.025	5	3.236e-3	2	NC	2	NC	1
278			min	0	1	-.036	3	-.004	2	-6.334e-3	5	2041.834	3	2947.293	5
279		7	max	0	3	-.001	10	.035	5	2.847e-3	2	NC	2	NC	1
280			min	0	1	-.051	3	-.005	2	-6.13e-3	5	1452.592	3	2106.281	5
281		8	max	0	3	-.002	10	.046	5	2.458e-3	2	NC	10	NC	1
282			min	0	1	-.067	3	-.006	2	-5.925e-3	5	1092.459	3	1592.152	5
283		9	max	0	3	-.002	10	.059	5	2.069e-3	2	NC	10	NC	1
284			min	0	1	-.086	3	-.007	2	-5.72e-3	5	856.073	3	1254.486	5
285		10	max	0	3	-.003	10	.072	5	1.68e-3	2	NC	10	NC	1
286			min	0	1	-.106	3	-.008	2	-5.515e-3	5	692.368	3	1020.476	5
287		11	max	0	3	-.004	10	.087	5	1.291e-3	2	NC	10	NC	9
288			min	0	1	-.128	3	-.009	2	-5.318e-3	4	574.181	3	851.427	5
289		12	max	0	3	-.004	10	.102	5	9.022e-4	2	NC	10	NC	9
290			min	0	1	-.152	3	-.009	2	-5.152e-3	4	485.988	3	725.224	5
291		13	max	0	3	-.005	10	.117	5	5.925e-4	3	NC	10	NC	9
292			min	0	1	-.176	3	-.009	2	-4.986e-3	4	418.386	3	628.47	5
293		14	max	0	3	-.006	10	.133	5	8.627e-4	3	NC	10	NC	9
294			min	-.001	1	-.202	3	-.009	2	-4.819e-3	4	365.397	3	552.652	5
295		15	max	.001	3	-.007	10	.15	5	1.133e-3	3	NC	10	NC	9
296			min	-.001	1	-.228	3	-.009	1	-4.653e-3	4	323.092	3	492.168	5
297		16	max	.001	3	-.008	10	.166	5	1.403e-3	3	9752.638	10	NC	1
298			min	-.001	1	-.255	3	-.008	1	-4.487e-3	4	288.784	3	443.183	5
299		17	max	.001	3	-.008	10	.183	4	1.673e-3	3	8778.769	10	NC	1
300			min	-.001	1	-.283	3	-.006	1	-4.321e-3	4	260.583	3	402.771	4
301		18	max	.001	3	-.009	10	.2	4	1.943e-3	3	7972.421	10	NC	1
302			min	-.001	1	-.311	3	-.004	1	-4.154e-3	4	237.137	3	368.929	4
303		19	max	.001	3	-.01	10	.216	4	2.214e-3	3	7297.827	10	NC	1
304			min	-.001	1	-.339	3	-.008	3	-3.988e-3	4	217.449	3	340.598	4
305	M5	1	max	0	1	0	1	0	1	0	1	NC	1	NC	1
306			min	0	1	0	1	0	1	0	1	NC	1	NC	1
307		2	max	0	3	0	10	.001	4	0	1	NC	1	NC	1
308			min	0	2	-.003	3	0	1	-7.593e-3	4	NC	1	NC	1
309		3	max	0	3	0	10	.005	4	0	1	NC	1	NC	1
310			min	0	2	-.012	3	0	1	-7.348e-3	4	6029.673	3	NC	1
311		4	max	0	3	0	10	.01	4	0	1	NC	2	NC	1
312			min	0	2	-.026	3	0	1	-7.104e-3	4	2797.181	3	7384.712	4
313		5	max	0	3	0	10	.017	4	0	1	NC	2	NC	1
314			min	0	2	-.045	3	0	1	-6.859e-3	4	1622.622	3	4288.94	4
315		6	max	.001	3	0	10	.026	4	0	1	NC	2	NC	1
316			min	-.001	2	-.069	3	0	1	-6.614e-3	4	1066.403	3	2829.318	4
317		7	max	.001	3	0	10	.036	4	0	1	NC	5	NC	1
318			min	-.001	2	-.097	3	0	1	-6.37e-3	4	759.087	3	2024.086	4
319		8	max	.002	3	-.001	10	.048	4	0	1	NC	5	NC	1
320			min	-.002	2	-.129	3	0	1	-6.125e-3	4	571.107	3	1531.713	4
321		9	max	.002	3	-.002	10	.061	4	0	1	NC	5	NC	1
322			min	-.002	2	-.165	3	0	1	-5.88e-3	4	447.651	3	1208.277	4
323		10	max	.002	3	-.002	10	.075	4	0	1	NC	10	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
324			min	-.002	2	-.203	3	0	1	-5.636e-3	4	362.119	3	984.106	4
325		11	max	.002	3	-.003	10	.09	4	0	1	NC	10	NC	1
326			min	-.002	2	-.245	3	0	1	-5.391e-3	4	300.351	3	822.164	4
327		12	max	.002	3	-.003	10	.105	4	0	1	NC	10	NC	1
328			min	-.002	2	-.29	3	0	1	-5.146e-3	4	254.248	3	701.279	4
329		13	max	.003	3	-.004	10	.121	4	0	1	NC	10	NC	1
330			min	-.003	2	-.337	3	0	1	-4.902e-3	4	218.903	3	608.628	4
331		14	max	.003	3	-.004	10	.137	4	0	1	NC	10	NC	1
332			min	-.003	2	-.385	3	0	1	-4.657e-3	4	191.193	3	536.059	4
333		15	max	.003	3	-.005	10	.154	4	0	1	NC	10	NC	1
334			min	-.003	2	-.436	3	0	1	-4.412e-3	4	169.068	3	478.206	4
335		16	max	.003	3	-.006	10	.171	4	0	1	NC	10	NC	1
336			min	-.003	2	-.488	3	0	1	-4.168e-3	4	151.123	3	431.398	4
337		17	max	.004	3	-.006	10	.187	4	0	1	NC	10	NC	1
338			min	-.003	2	-.54	3	0	1	-3.923e-3	4	136.372	3	393.061	4
339		18	max	.004	3	-.007	10	.204	4	0	1	NC	10	NC	1
340			min	-.004	2	-.594	3	0	1	-3.678e-3	4	124.106	3	361.346	4
341		19	max	.004	3	-.008	10	.22	4	0	1	9778.778	10	NC	1
342			min	-.004	2	-.647	3	0	1	-3.434e-3	4	113.807	3	334.903	4
343	M8	1	max	0	1	0	1	0	1	0	1	NC	1	NC	1
344			min	0	1	0	1	0	1	0	1	NC	1	NC	1
345		2	max	0	3	0	5	.001	4	2.38e-3	3	NC	1	NC	1
346			min	0	2	-.002	3	0	3	-7.83e-3	4	NC	1	NC	1
347		3	max	0	3	0	5	.005	4	2.109e-3	3	NC	1	NC	1
348			min	0	2	-.006	3	-.001	3	-7.557e-3	4	NC	1	NC	1
349		4	max	0	3	0	5	.01	4	1.839e-3	3	NC	1	NC	1
350			min	0	1	-.014	3	-.002	3	-7.285e-3	4	5370.273	3	7402.523	4
351		5	max	0	3	0	5	.017	4	1.569e-3	3	NC	2	NC	1
352			min	0	1	-.024	3	-.004	3	-7.012e-3	4	3109.732	3	4300.875	4
353		6	max	0	3	.001	5	.026	4	1.299e-3	3	NC	2	NC	1
354			min	0	1	-.036	3	-.005	3	-6.739e-3	4	2041.834	3	2838.053	4
355		7	max	0	3	.002	5	.036	4	1.029e-3	3	NC	2	NC	1
356			min	0	1	-.051	3	-.007	3	-6.467e-3	4	1452.592	3	2030.896	4
357		8	max	0	3	.002	5	.048	4	7.584e-4	3	NC	5	NC	1
358			min	0	1	-.067	3	-.009	3	-6.194e-3	4	1092.459	3	1537.276	4
359		9	max	0	3	.003	5	.061	4	4.883e-4	3	NC	5	NC	1
360			min	0	1	-.086	3	-.01	3	-5.922e-3	4	856.073	3	1212.986	4
361		10	max	0	3	.004	5	.075	4	2.181e-4	3	NC	5	NC	1
362			min	0	1	-.106	3	-.011	3	-5.649e-3	4	692.368	3	988.206	4
363		11	max	0	3	.005	5	.089	4	-3.277e-5	12	NC	5	NC	9
364			min	0	1	-.128	3	-.012	3	-5.376e-3	4	574.181	3	825.815	4
365		12	max	0	3	.006	5	.105	4	4.764e-5	9	NC	5	NC	9
366			min	0	1	-.152	3	-.012	3	-5.104e-3	4	485.988	3	704.595	4
367		13	max	0	3	.006	5	.12	4	1.521e-4	9	NC	5	NC	9
368			min	0	1	-.176	3	-.012	3	-4.862e-3	5	418.386	3	611.688	4
369		14	max	0	3	.007	5	.137	4	2.567e-4	9	NC	7	NC	9
370			min	-.001	1	-.202	3	-.011	3	-4.63e-3	5	365.397	3	538.923	4
371		15	max	.001	3	.008	5	.153	4	5.572e-4	1	NC	10	NC	9
372			min	-.001	1	-.228	3	-.009	3	-4.398e-3	5	323.092	3	480.921	4
373		16	max	.001	3	.009	5	.17	4	8.747e-4	1	NC	15	NC	1
374			min	-.001	1	-.255	3	-.007	3	-4.167e-3	5	288.784	3	434	4
375		17	max	.001	3	.01	5	.186	4	1.192e-3	1	9927.219	15	NC	1
376			min	-.001	1	-.283	3	-.003	3	-3.935e-3	5	260.583	3	395.579	4
377		18	max	.001	3	.011	5	.203	4	1.51e-3	1	9034.703	15	NC	1
378			min	-.001	1	-.311	3	0	10	-3.703e-3	5	237.137	3	363.806	4
379		19	max	.001	3	.012	5	.218	4	1.827e-3	1	8285.199	15	NC	1
380			min	-.001	1	-.339	3	-.002	2	-3.471e-3	5	217.449	3	337.327	4

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
381	M3	1	max	0	3	0	10	0	5	2.685e-3	2	NC	1	NC	1
382			min	0	2	0	3	0	2	-3.729e-3	5	NC	1	NC	1
383		2	max	0	3	-.001	10	.023	5	2.761e-3	2	NC	1	NC	4
384			min	0	2	-.017	3	-.015	2	-3.665e-3	5	NC	1	4137.632	2
385		3	max	0	3	-.002	10	.046	5	2.837e-3	2	NC	1	NC	4
386			min	0	2	-.034	3	-.03	2	-3.6e-3	5	NC	1	2055.167	2
387		4	max	.001	3	-.003	10	.069	5	2.914e-3	2	NC	1	NC	4
388			min	-.001	2	-.051	3	-.045	2	-3.536e-3	5	NC	1	1372.212	2
389		5	max	.001	3	-.004	10	.093	5	2.99e-3	2	NC	1	NC	4
390			min	-.002	2	-.067	3	-.059	2	-3.472e-3	5	NC	1	1039.214	2
391		6	max	.001	3	-.005	10	.118	5	3.066e-3	2	NC	1	NC	4
392			min	-.002	2	-.084	3	-.072	2	-3.407e-3	5	NC	1	846.602	2
393		7	max	.002	3	-.006	10	.143	5	3.142e-3	2	NC	1	NC	4
394			min	-.003	2	-.101	3	-.084	2	-3.343e-3	5	NC	1	724.85	2
395		8	max	.002	3	-.007	10	.167	5	3.218e-3	2	NC	1	NC	4
396			min	-.003	2	-.117	3	-.095	2	-3.278e-3	5	NC	1	644.519	2
397		9	max	.002	3	-.008	10	.192	5	3.294e-3	2	NC	1	9255.156	13
398			min	-.003	2	-.134	3	-.103	2	-3.214e-3	5	NC	1	591.33	2
399		10	max	.002	3	-.009	10	.216	5	3.37e-3	2	NC	1	7758.101	13
400			min	-.004	2	-.15	3	-.109	2	-3.149e-3	5	NC	1	557.93	2
401		11	max	.002	3	-.009	10	.239	5	3.446e-3	2	NC	1	6830.694	13
402			min	-.004	2	-.167	3	-.112	2	-3.085e-3	5	NC	1	540.739	2
403		12	max	.002	3	-.01	10	.262	5	3.522e-3	2	NC	1	6284.418	13
404			min	-.005	2	-.183	3	-.112	2	-3.02e-3	5	NC	1	538.76	2
405		13	max	.003	3	-.01	10	.284	5	3.598e-3	2	NC	1	6035.951	13
406			min	-.005	2	-.199	3	-.109	2	-2.956e-3	5	NC	1	491.632	14
407		14	max	.003	3	-.011	10	.306	5	3.674e-3	2	NC	1	6072.638	13
408			min	-.006	2	-.215	3	-.101	2	-2.891e-3	5	NC	1	448.411	14
409		15	max	.003	3	-.011	10	.326	5	3.75e-3	2	NC	1	6461.187	13
410			min	-.006	2	-.232	3	-.09	2	-2.827e-3	5	NC	1	411.651	14
411		16	max	.003	3	-.011	10	.345	5	3.826e-3	2	NC	1	7427.218	13
412			min	-.006	2	-.248	3	-.073	2	-2.762e-3	5	NC	1	380.037	14
413		17	max	.003	3	-.012	10	.362	5	3.903e-3	2	NC	1	9710.519	13
414			min	-.007	2	-.264	3	-.052	2	-2.698e-3	5	NC	1	352.582	14
415		18	max	.003	3	-.012	10	.379	4	3.979e-3	2	NC	1	NC	4
416			min	-.007	2	-.28	3	-.026	2	-2.633e-3	5	NC	1	328.534	14
417		19	max	.004	3	-.012	10	.396	4	4.055e-3	2	NC	1	NC	1
418			min	-.008	2	-.296	3	.001	12	-2.569e-3	5	NC	1	307.31	14
419	M6	1	max	.001	3	0	10	0	4	0	1	NC	1	NC	1
420			min	0	2	0	3	0	1	-3.969e-3	4	NC	1	NC	1
421		2	max	.002	3	-.001	15	.024	4	0	1	NC	1	NC	1
422			min	-.002	2	-.032	3	0	1	-3.917e-3	4	NC	1	NC	1
423		3	max	.002	3	-.002	15	.048	4	0	1	NC	1	NC	1
424			min	-.003	2	-.064	3	0	1	-3.864e-3	4	NC	1	NC	1
425		4	max	.003	3	-.003	15	.073	4	0	1	NC	1	NC	1
426			min	-.004	2	-.095	3	0	1	-3.812e-3	4	NC	1	9037.329	4
427		5	max	.004	3	-.004	15	.099	4	0	1	NC	1	NC	1
428			min	-.005	2	-.126	3	0	1	-3.759e-3	4	NC	1	6006.96	4
429		6	max	.004	3	-.005	15	.125	4	0	1	NC	1	NC	1
430			min	-.007	2	-.158	3	0	1	-3.707e-3	4	NC	1	4416.481	4
431		7	max	.005	3	-.006	15	.15	4	0	1	NC	1	NC	1
432			min	-.008	2	-.189	3	0	1	-3.655e-3	4	NC	1	3479.985	4
433		8	max	.005	3	-.007	15	.176	4	0	1	NC	1	NC	1
434			min	-.009	2	-.22	3	0	1	-3.602e-3	4	NC	1	2888.823	4
435		9	max	.006	3	-.008	15	.202	4	0	1	NC	1	NC	1
436			min	-.01	2	-.252	3	0	1	-3.55e-3	4	NC	1	2501.478	4
437		10	max	.007	3	-.009	15	.226	4	0	1	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
438			min	-.012	2	-.283	3	0	1	-3.497e-3	4	NC	1	2246.552	4
439		11	max	.007	3	-.01	15	.251	4	0	1	NC	1	NC	1
440			min	-.013	2	-.314	3	0	1	-3.445e-3	4	NC	1	2086.587	4
441		12	max	.008	3	-.011	15	.274	4	0	1	NC	1	NC	1
442			min	-.014	2	-.345	3	0	1	-3.392e-3	4	NC	1	2003.301	4
443		13	max	.008	3	-.012	15	.296	4	0	1	NC	1	NC	1
444			min	-.016	2	-.376	3	0	1	-3.34e-3	4	NC	1	1992.13	4
445		14	max	.009	3	-.013	15	.317	4	0	1	NC	1	NC	1
446			min	-.017	2	-.406	3	0	1	-3.287e-3	4	NC	1	2062.874	4
447		15	max	.01	3	-.013	15	.336	4	0	1	NC	1	NC	1
448			min	-.018	2	-.437	3	0	1	-3.235e-3	4	NC	1	2248.8	4
449		16	max	.01	3	-.014	15	.354	4	0	1	NC	1	NC	1
450			min	-.019	2	-.468	3	0	1	-3.183e-3	4	NC	1	2639.05	4
451		17	max	.011	3	-.015	15	.37	4	0	1	NC	1	NC	1
452			min	-.021	2	-.499	3	0	1	-3.13e-3	4	NC	1	3512.325	4
453		18	max	.011	3	-.016	15	.385	4	0	1	NC	1	NC	1
454			min	-.022	2	-.529	3	0	1	-3.078e-3	4	NC	1	6277.287	4
455		19	max	.012	3	-.016	10	.397	4	0	1	NC	1	NC	1
456			min	-.023	2	-.56	3	0	1	-3.025e-3	4	NC	1	NC	1
457	M9	1	max	0	3	0	5	0	4	1.306e-3	3	NC	1	NC	1
458			min	0	2	0	3	0	3	-4.107e-3	4	NC	1	NC	1
459		2	max	0	3	0	5	.025	4	1.36e-3	3	NC	1	NC	4
460			min	0	2	-.017	3	-.008	3	-4.046e-3	4	NC	1	4137.632	2
461		3	max	0	3	0	5	.05	4	1.413e-3	3	NC	1	NC	4
462			min	0	2	-.034	3	-.015	3	-3.984e-3	4	NC	1	2055.167	2
463		4	max	.001	3	.001	5	.076	4	1.466e-3	3	NC	1	NC	5
464			min	-.001	2	-.051	3	-.023	3	-3.923e-3	4	NC	1	1372.212	2
465		5	max	.001	3	.001	5	.102	4	1.52e-3	3	NC	1	9910.753	15
466			min	-.002	2	-.067	3	-.03	3	-3.862e-3	4	NC	1	1039.214	2
467		6	max	.001	3	.002	5	.128	4	1.573e-3	3	NC	1	7212.351	15
468			min	-.002	2	-.084	3	-.037	3	-3.801e-3	4	NC	1	846.602	2
469		7	max	.002	3	.002	5	.155	4	1.626e-3	3	NC	1	5640.593	15
470			min	-.003	2	-.101	3	-.043	3	-3.74e-3	4	NC	1	724.85	2
471		8	max	.002	3	.003	5	.181	4	1.68e-3	3	NC	1	4655.768	15
472			min	-.003	2	-.117	3	-.048	3	-3.679e-3	4	NC	1	644.519	2
473		9	max	.002	3	.003	5	.206	4	1.733e-3	3	NC	1	4013.484	15
474			min	-.003	2	-.134	3	-.053	3	-3.618e-3	4	NC	1	591.33	2
475		10	max	.002	3	.004	5	.231	4	1.786e-3	3	NC	1	3591.497	15
476			min	-.004	2	-.15	3	-.056	3	-3.557e-3	4	NC	1	557.93	2
477		11	max	.002	3	.005	5	.256	4	1.84e-3	3	NC	1	3325.912	15
478			min	-.004	2	-.167	3	-.058	3	-3.495e-3	4	NC	1	540.739	2
479		12	max	.002	3	.005	5	.278	4	1.893e-3	3	NC	1	3185.294	15
480			min	-.005	2	-.183	3	-.058	3	-3.522e-3	2	NC	1	538.76	2
481		13	max	.003	3	.006	5	.3	4	1.946e-3	3	NC	1	3160.941	15
482			min	-.005	2	-.199	3	-.057	3	-3.598e-3	2	NC	1	553.469	2
483		14	max	.003	3	.007	5	.32	4	2.e-3	3	NC	1	3267.372	15
484			min	-.006	2	-.215	3	-.053	3	-3.674e-3	2	9406.326	5	589.83	2
485		15	max	.003	3	.007	5	.339	4	2.053e-3	3	NC	1	3556.4	15
486			min	-.006	2	-.232	3	-.048	3	-3.75e-3	2	8430.462	5	659.617	2
487		16	max	.003	3	.008	5	.355	4	2.106e-3	3	NC	1	4168.009	15
488			min	-.006	2	-.248	3	-.04	3	-3.826e-3	2	7611.025	5	791.929	2
489		17	max	.003	3	.009	5	.369	4	2.16e-3	3	NC	1	5540.758	15
490			min	-.007	2	-.264	3	-.03	3	-3.903e-3	2	6918.859	5	1075.741	2
491		18	max	.003	3	.01	5	.381	4	2.213e-3	3	NC	1	9892.379	15
492			min	-.007	2	-.28	3	-.017	3	-3.979e-3	2	6331.45	5	1958.265	2
493		19	max	.004	3	.011	5	.391	4	2.266e-3	3	NC	1	NC	1
494			min	-.008	2	-.296	3	-.01	1	-4.055e-3	2	5831.208	5	NC	1