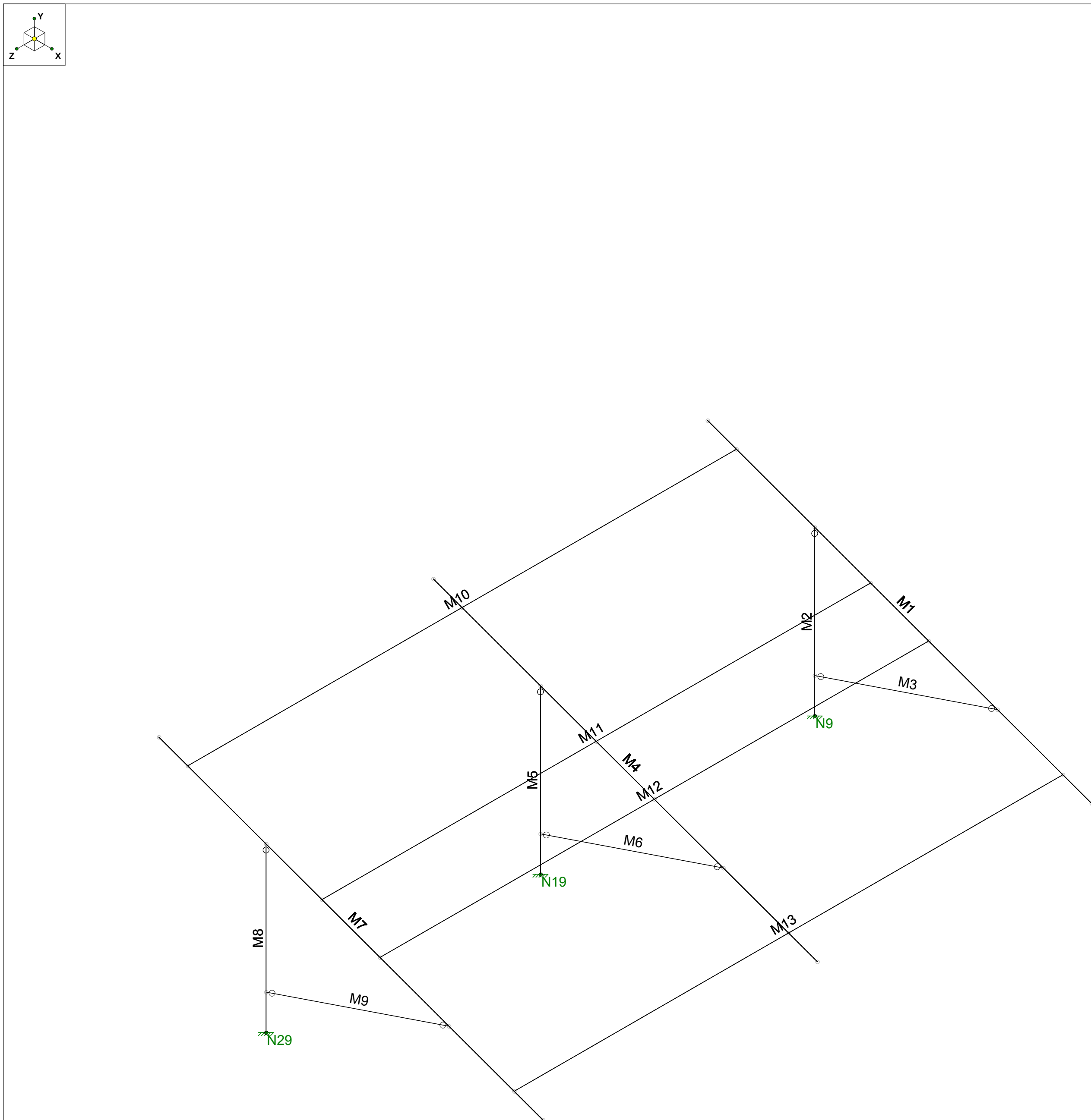


Schletter, Inc.		20° Tilt w/ Seismic Design
HCV	Standard FS Racking System	
	Representative Calculations - ASCE 7-10	

1. INTRODUCTION

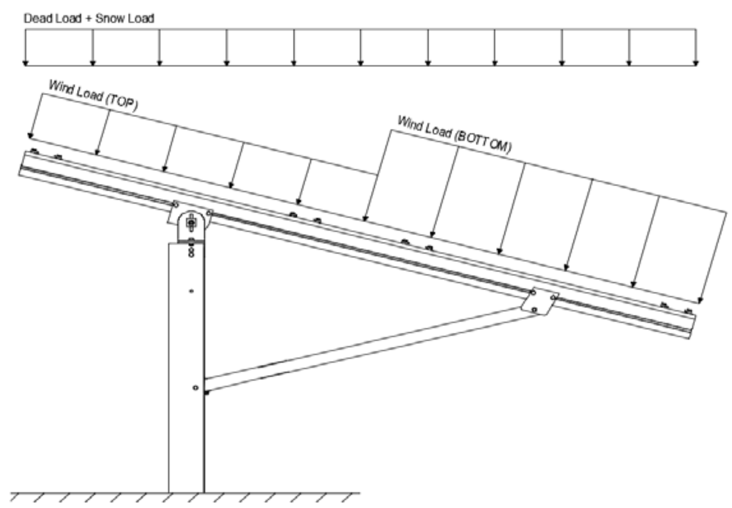
1.1 Project Description
The following sections will cover the determination of forces and structural design calculations for the Schletter, Inc. FS ground mount system.

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 = 20°
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 =	20.62 psf	*(ASCE 7-10, Eq. 7.4-1)*
I_s =	1.00	
C_s =	0.91	
C_e =	0.90	
C_t =	1.20	

2.3 Wind Loads
Design Wind Speed, V = 140 mph — Exposure Category = C
Height < 15 ft — Importance Category = II

Peak Velocity Pressure, q_z = 30.77 psf — *Including the gust factor, G=0.85. (ASCE 7-10, Eq. 27.3-1)*

Pressure Coefficients

$Cf+_{TOP}$	=	1.05	*(Pressure)*
$Cf+_{BOTTOM}$	=	1.65	
$Cf-_{TOP}$	=	-2.12	*(Suction)*
$Cf-_{BOTTOM}$	=	-1	

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 =	0.07	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	**Posts**	Location
M10	Top	M2	Outer
M11	Mid-Top	M5	Inner
M12	Mid-Bottom	M8	Outer
M13	Bottom		

Girders	Location	**Reactions**	Location
M1	Outer	N9	Outer
M4	Inner	N19	Inner
M7	Outer	N29	Outer

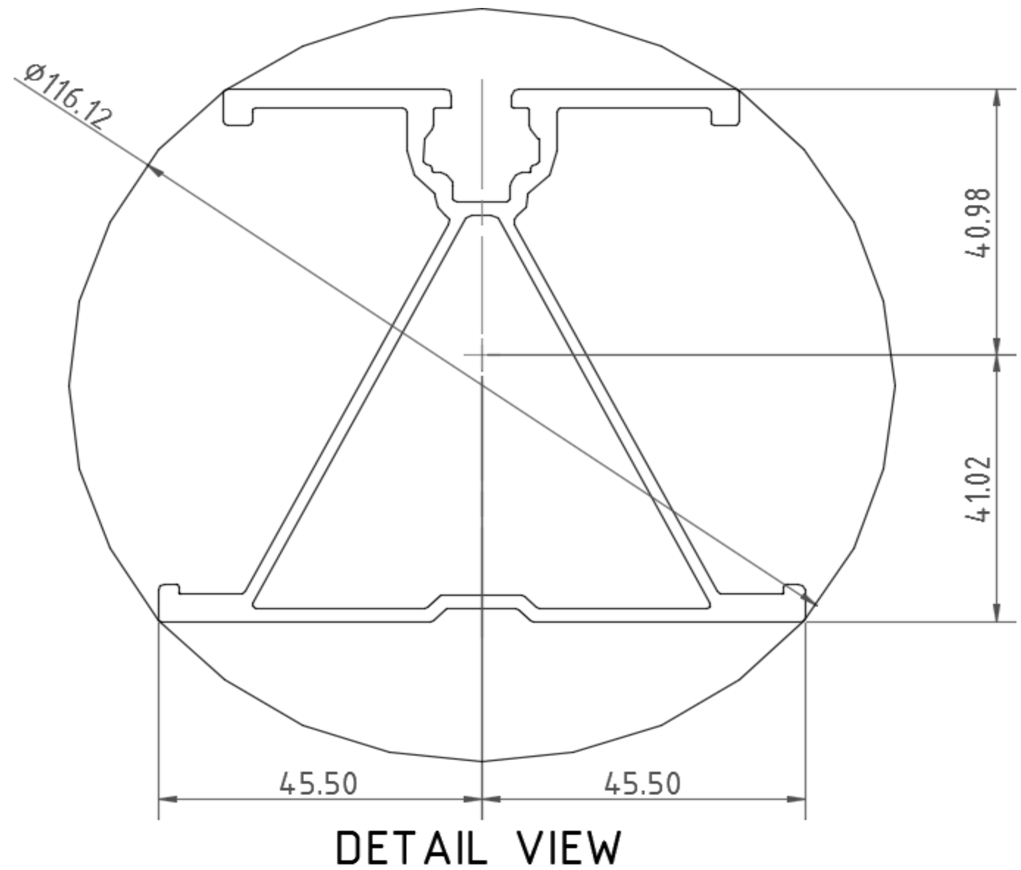
Struts	Location
M3	Outer
M6	Inner
M9	Outer

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).

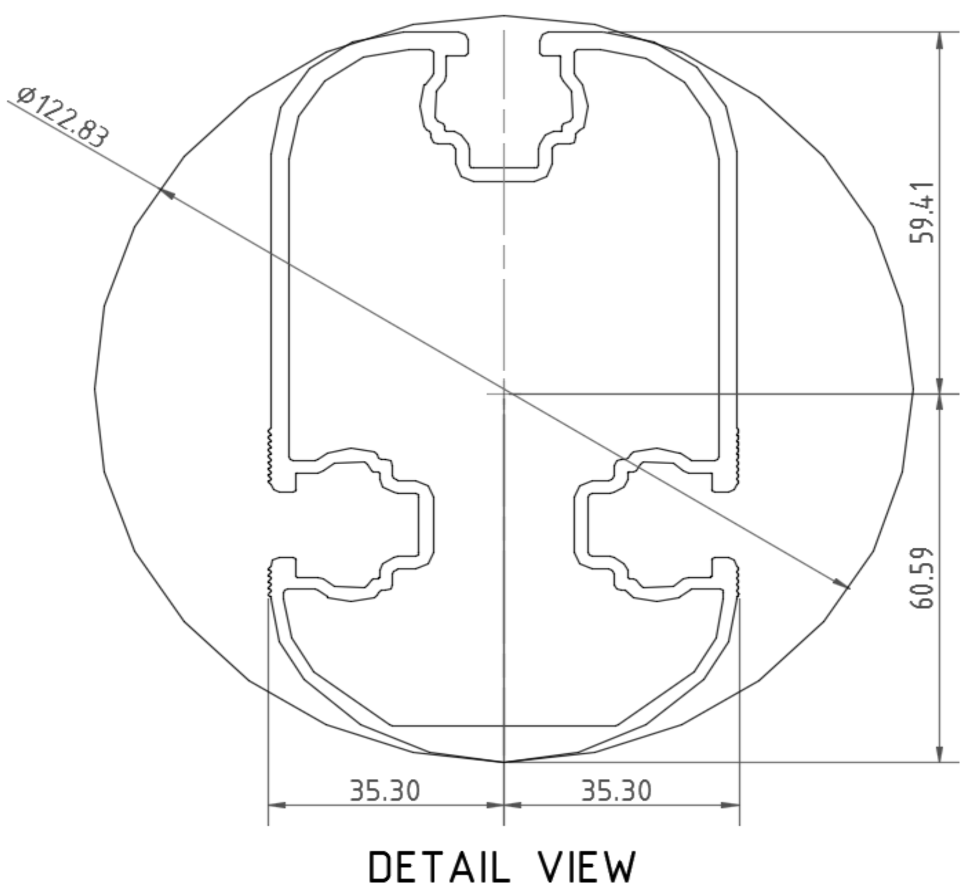
Purlin Type =	**S1.5**	
Aluminum Type =	6105-T5	
F_{ty} =	35	ksi
L_b =	120	in
$\Phi F_{ty\ STRONG\text{-}AXIS}$ =	25.07	ksi
$\Phi F_{ty\ WEAK\text{-}AXIS}$ =	23.08	ksi
S_y =	1.33	in^3
S_x =	0.6	in^3
E =	10100	ksi
I_y =	2.16	in^4
I_x =	1.07	in^4
A =	1.25	in^2
g =	1.50	lbs/ft
M_y =	1.868	k-ft
M_z =	0.155	k-ft
$M_{y\ allowable}$ =	2.779	k-ft
$M_{z\ allowable}$ =	1.154	k-ft
Utilization =	81%	



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).

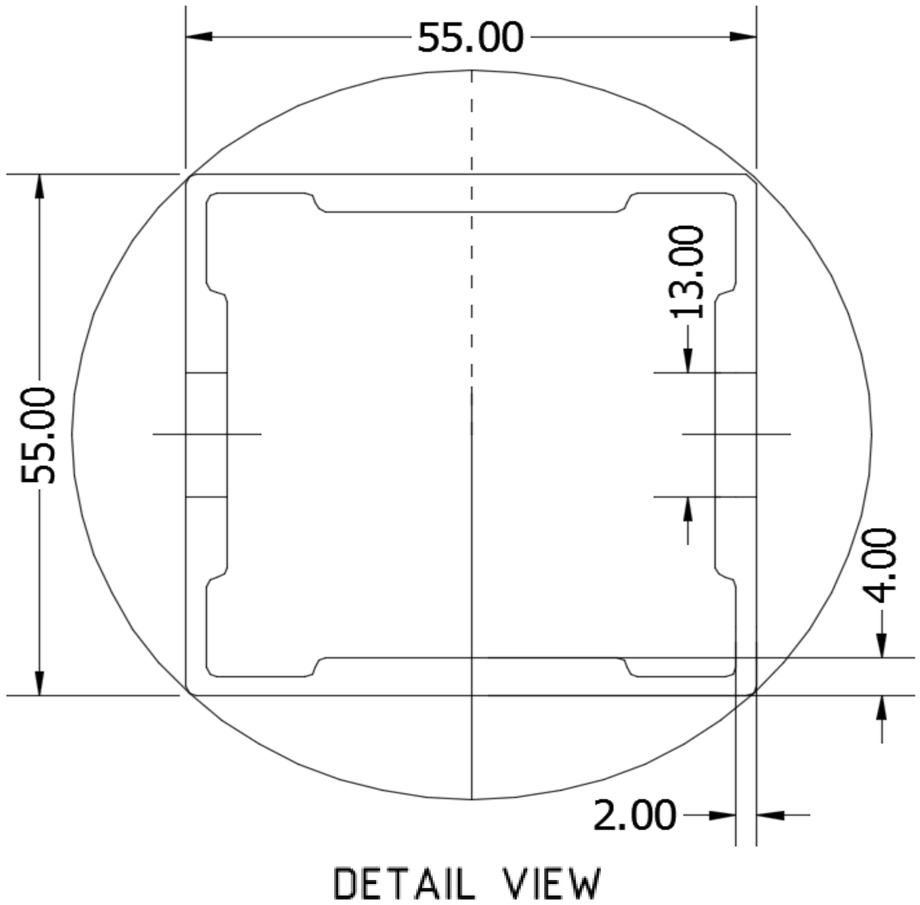
Girder Type =	**T5**	
Aluminum Type =	6105-T5	
F_{ty} =	35	ksi
L_b =	63.82	in
$\Phi F_{ty\ AXIAL}$ =	30.80	ksi
$\Phi F_{ty\ STRONG\text{-}AXIS}$ =	30.46	ksi
$\Phi F_{ty\ WEAK\text{-}AXIS}$ =	31.56	ksi
S_y =	1.98	in^3
S_x =	1.32	in^3
E =	10100	ksi
I_y =	4.74	in^4
I_x =	1.83	in^4
A =	1.93	in^2
g =	2.32	lbs/ft
M_y =	4.594	k-ft
M_z =	0.000	k-ft
P_n =	0.030	k
$M_{y\ allowable}$ =	5.026	k-ft
$M_{z\ allowable}$ =	3.472	k-ft
$P_{n\ allowable}$ =	59.439	k
Utilization =	91%	



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).

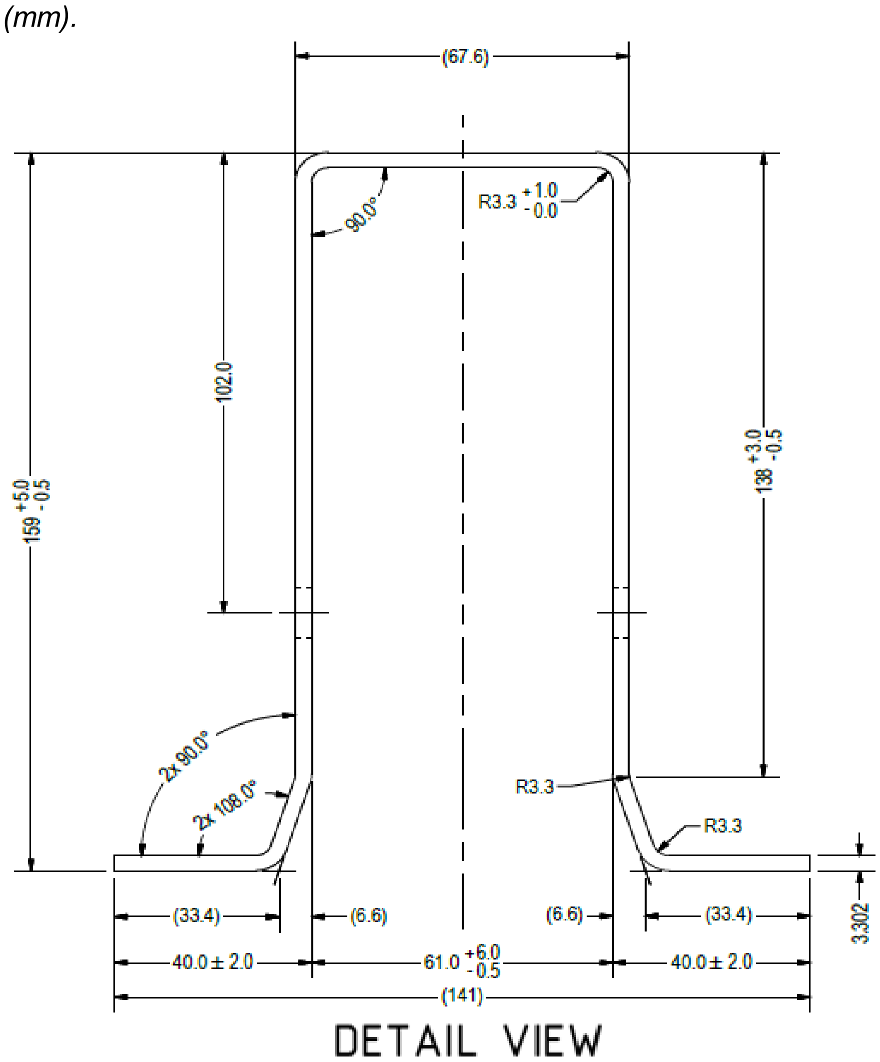
Strut Type =	**55x55**
Aluminum Type =	6105-T5
F_{ty} =	35 ksi
L_b =	61.00 in
$\Phi F_{ty\ AXIAL}$ =	13.67 ksi
$\Phi F_{ty\ BENDING}$ =	28.22 ksi
S_y =	0.60 in^3
S_x =	0.60 in^3
E =	10100 ksi
I_y =	0.67 in^4
I_x =	0.67 in^4
A =	0.98 in^2
g =	1.18 lbs/ft
M_y =	0.005 k-ft
M_z =	0.000 k-ft
P_n =	6.353 k
$M_{y\ allowable}$ =	1.408 k-ft
$M_{z\ allowable}$ =	1.408 k-ft
$P_{n\ allowable}$ =	13.425 k
Utilization =	48%



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 =	65.62 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 =	14.356 k-ft
M_z =	0.000 k-ft
P_r =	7.163 k
$M_{y\ allowable}$ =	19.207 k-ft
$M_{z\ allowable}$ =	14.389 k-ft
P_c =	46.025 k
Utilization =	92%



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.

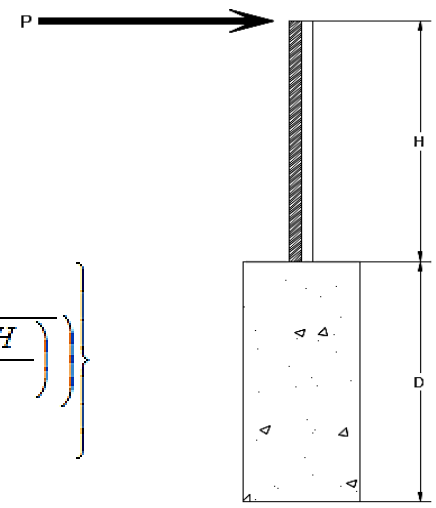
Maximum Tensile Load =	7.33	k
Maximum Lateral Load =	2.85	k

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 =	1.90	k
Height of Pole Above Grade, H =	4.47	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

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

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

$$A = 2.34\,{}^{P}\!/_{S_1 B}$$

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

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

	Non-Constrained	
Lateral Force @ Top of Pole, P =	1.90	k
Height of Pole Above Grade, H =	4.47	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 =	10.27	
Required Footing Depth, D =	13.87	ft
2nd Trial @ D_2 =	8.56	ft
Lateral Soil Bearing @ D/3, S_1 =	0.57	ksf
Lateral Soil Bearing @ D, S_3 =	1.71	ksf
Constant 2.34P/(S_1B), A =	3.90	
Required Footing Depth, D =	6.72	ft
3rd Trial @ D_3 =	7.64	ft
Lateral Soil Bearing @ D/3, S_1 =	0.51	ksf
Lateral Soil Bearing @ D, S_3 =	1.53	ksf
Constant 2.34P/(S_1B), A =	4.37	
Required Footing Depth, D =	7.29	ft

4th Trial @ D_4 =	7.46	ft
Lateral Soil Bearing @ D/3, S_1 =	0.50	ksf
Lateral Soil Bearing @ D, S_3 =	1.49	ksf
Constant 2.34P/(S_1B), A =	4.47	
Required Footing Depth, D =	7.41	ft
5th Trial @ D_5 =	7.44	ft
Lateral Soil Bearing @ D/3, S_1 =	0.50	ksf
Lateral Soil Bearing @ D, S_3 =	1.49	ksf
Constant 2.34P/(S_1B), A =	4.49	
Required Footing Depth, D =	7.50	ft

A 2ft diameter x 7.5ft deep footing unrestrained at ground level is required for the racking structure.

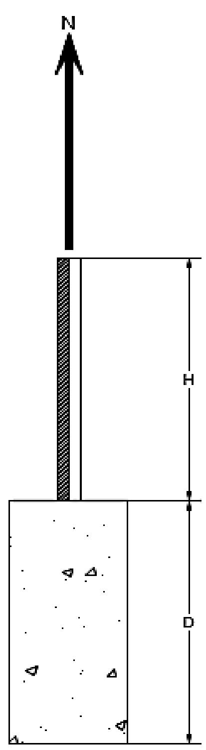
5.4 Uplifting Force Resistance

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 =	3.36	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 =	2.18	k
Required Concrete Volume, V =	15.05	ft^3
Required Footing Depth, D =	5.00	ft

Iteration	z	dz	Qs	Side
1	0.2	0.2	118.10	7.28
2	0.4	0.2	118.10	7.18
3	0.6	0.2	118.10	7.07
4	0.8	0.2	118.10	6.97
5	1	0.2	118.10	6.86
6	1.2	0.2	118.10	6.76
7	1.4	0.2	118.10	6.66
8	1.6	0.2	118.10	6.55
9	1.8	0.2	118.10	6.45
10	2	0.2	118.10	6.35
11	2.2	0.2	118.10	6.24
12	2.4	0.2	118.10	6.14
13	2.6	0.2	118.10	6.03
14	2.8	0.2	118.10	5.93
15	3	0.2	118.10	5.83
16	3.2	0.2	118.10	5.72
17	3.4	0.2	118.10	5.62
18	3.6	0.2	118.10	5.52
19	3.8	0.2	118.10	5.41
20	4	0.2	118.10	5.31
21	4.2	0.2	118.10	5.21
22	4.4	0.2	118.10	5.10
23	4.6	0.2	118.10	5.00
24	4.8	0.2	118.10	4.89
25	5	0.2	118.10	4.79
26	0	0.0	0.00	4.79
27	0	0.0	0.00	4.79
28	0	0.0	0.00	4.79
29	0	0.0	0.00	4.79
30	0	0.0	0.00	4.79
31	0	0.0	0.00	4.79
32	0	0.0	0.00	4.79
33	0	0.0	0.00	4.79
34	0	0.0	0.00	4.79
Max	5	Sum	1.18	

A 2ft diameter x 5ft 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 =	7.50	ft
Footing Diameter, B =	2.00	ft
Compressive Force, P =	4.71	k
Footing Area =	3.14	ft^2
Circumference =	6.28	ft
Skin Friction Area =	28.27	ft^2
Concrete Weight =	0.145	kcf

Bearing Pressure

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

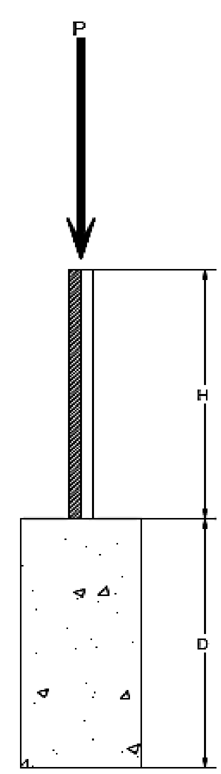
Weight of Concrete

Footing Volume	23.56	ft^3
Weight	3.42	k

Skin Friction Resistance

Skin Friction =	0.15	ksf
Resistance =	4.24	k
1/3 Increase for Wind =	1.33	
Total Resistance =	11.94	k
Applied Force =	8.13	k
Utilization =	68%	

A 2ft diameter footing passes at a depth of 7.5ft.



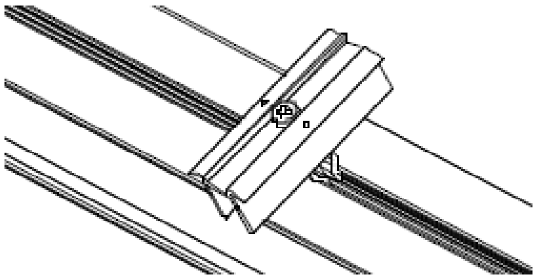
6. DESIGN OF JOINTS AND CONNECTIONS

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.

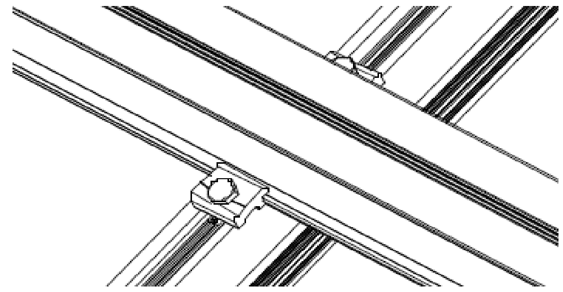
Fastening of Modules to Purlins

Maximum Uplifting Force =	0.612	k
Allowable Uplift =	1.214	k
Utilization =	50%	



Fastening of Purlins to Girders

Maximum Uplifting Force =	2.171	k
Allowable Uplift =	2.180	k
Utilization =	100%	

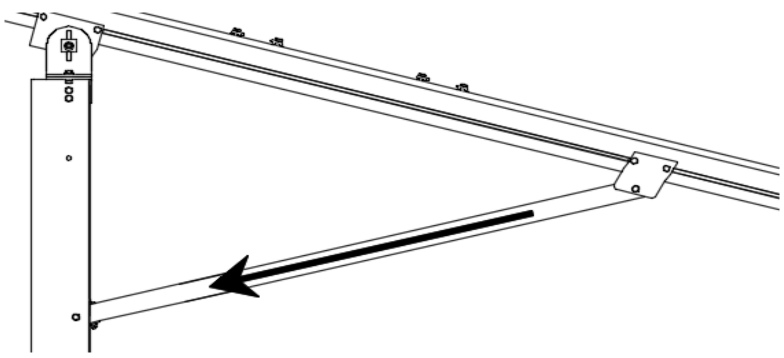


6.2 Strut Connections

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 =	6.353	k
M10 Bolt Shear Capacity =	8.894	k
Utilization =	71%	

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

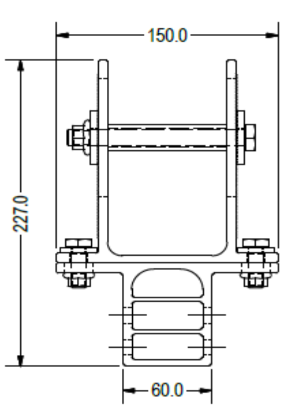


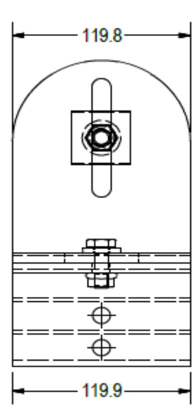
A strut under compression is shown to demonstrate the load transfer from the girder. Single M10 bolts are located at each end of the strut and are subjected to double shear.

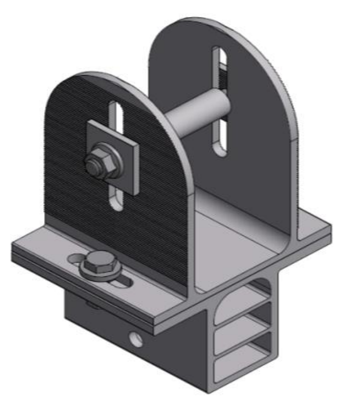
6.3 Girder to Post Connection

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 =	4.616	k
Allowable Load =	5.649	k
Utilization =	82%	







7. SEISMIC DESIGN

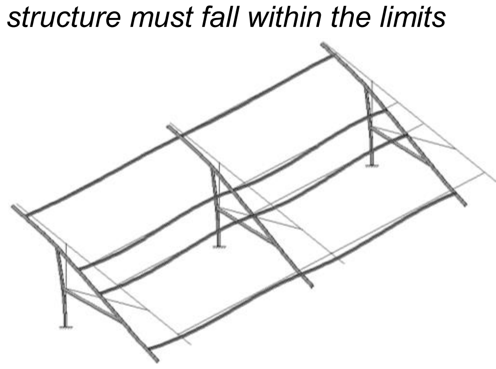
7.1 Seismic Drift

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} =	53.92	in
Allowable Story Drift for All Other Structures, Δ = {	$0.020h_{sx}$	
	1.078	in
Max Drift, Δ_{MAX} =	0.502	in

$0.502 \le 1.078$, 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 = 120 in

J = 0.432

331.976

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

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= 27.4 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

$\varphi F_L St$= 25.1 ksi

Ix = 897074 mm^4

2.155 in^4

y = 41.015 mm

Sx = 1.335 in³

$M_{max}St$ = 2.788 k-ft

Weak Axis:

3.4.14

L_b = 120

J = 0.432

211.117

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

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= 28.6

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

$\varphi F_L Wk$= 23.1 ksi

Iy = 446476 mm^4

1.073 in^4

x = 45.5 mm

Sy = 0.599 in³

$M_{max}Wk$ = 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

φF_LSt= 30.5 ksi

Ix = 1970917 mm^4

4.735 in^4

y = 61.046 mm

Sx = 1.970 in^3

M_{max}St = 5.001 k-ft

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_LWk= 31.6 ksi

Iy = 763048 mm^4

1.833 in^4

x = 35 mm

Sy = 1.330 in^3

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

φF_LSt= 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

φF_LWk= 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

λ = 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

φF_L= (φccFcy)/(λ^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)

φF_L= φc[Bp-1.6Dp*b/t]

φF_L= 28.2 ksi

b/t = 24.5

S1 = 12.21

S2 = 32.70

φF_L= φc[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

φF_L= φyFcy

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 =	65.62	in	
Pr =	7.16	k	(LRFD Factored Load)
Mr (Strong) =	14.36	k-ft	(LRFD Factored Load)
Mr (Weak) =	0.00	k-ft	(LRFD Factored Load)

Flexural Buckling:

kL/r =	94.42
4.71√(E/Fy) =	103.55 => kL/r ≤ 4.71√(E/Fy)
Fcr =	27.44 ksi
Fe =	32.10 ksi
Pn =	61.196 k

Torsional/Flexural Torsional Buckling:

Fcr =	20.6391 ksi
Fey =	81.8881 ksi
Fez =	26.2099 ksi
Pn =	46.0252 k

Bending (Strong Axis):

Yielding:			
Mn =	21.95 k-ft		
Flange Local Buckling:			
Mn =	19.207 k-ft		
Pr/Pc =	0.1729 <	0.2	
Utilization =	0.92 <	1.0	OK

Bending (Weak Axis):

Yielding:			
Mn =	14.65 k-ft		
Flange Local Buckling:			
Mn =	14.39 k-ft		
Pr/Pc =	0.173 <	0.2	
Utilization =	0.00 <	1.0	OK

Combined Forces

Utilization = 92%

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		

Load Combinations

	Description	S...	P...	S...	B...	Fa...	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	516.306	2	2630.094	1	305.026	1	.325	1	.007	5	6.292	1
2		min	-743.6	3	-1908.422	3	-325.761	5	-1.208	5	-.008	2	.365	12
3	N19	max	2137.409	2	7197.089	1	0	3	0	3	.007	4	13.58	1
4		min	-2175.931	3	-5639.583	3	-354.669	5	-1.269	4	0	1	.365	15
5	N29	max	516.306	2	2630.094	1	305.801	3	.308	3	.008	4	6.292	1
6		min	-743.6	3	-1908.422	3	-390.293	4	-1.291	4	-.003	3	-.147	5
7	Totals:	max	3170.021	2	12457.276	1	0	2						
8		min	-3663.132	3	-9456.427	3	-1028.346	4						

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	1	.002	4	0	1	0	1	0	1
2			min	0	1	-.002	3	0	1	0	1	0	1	0	1
3		2	max	-.179	15	-.49	15	0	3	0	1	0	3	0	6
4			min	-.76	6	-2.085	6	-1.499	5	0	1	0	5	0	15
5		3	max	-4.925	12	322.557	3	16.827	3	.081	3	.266	1	.327	2
6			min	-184.936	1	-743.97	2	-178.385	1	-.26	2	.005	12	-.141	3
7		4	max	-5.221	12	321.338	3	16.827	3	.081	3	.155	1	.79	2
8			min	-185.527	1	-745.596	2	-178.385	1	-.26	2	.011	12	-.341	3
9		5	max	-5.517	12	320.118	3	16.827	3	.081	3	.066	4	1.253	2
10			min	-186.119	1	-747.222	2	-178.385	1	-.26	2	-.01	10	-.54	3
11		6	max	635.493	3	657.655	2	45.822	3	.017	1	.131	1	1.201	2
12			min	-1854.909	2	-199.345	3	-238.738	1	-.045	3	-.054	3	-.548	3
13		7	max	635.049	3	656.029	2	45.822	3	.017	1	.015	2	.793	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
14			min	-1855.501	2	-200.565	3	-238.738	1	-.045	3	-.052	4	-.424	3
15		8	max	634.605	3	654.403	2	45.822	3	.017	1	.003	3	.387	2
16			min	-1856.093	2	-201.785	3	-238.738	1	-.045	3	-.165	1	-.299	3
17		9	max	628.519	3	89.936	3	51.662	3	.013	5	.087	1	.169	1
18			min	-1991.844	1	-65.213	1	-244.608	1	-.241	2	.005	10	-.241	3
19		10	max	628.075	3	88.716	3	51.662	3	.013	5	.061	3	.21	1
20			min	-1992.436	1	-66.839	1	-244.608	1	-.241	2	-.065	1	-.297	3
21		11	max	627.631	3	87.497	3	51.662	3	.013	5	.093	3	.252	1
22			min	-1993.028	1	-68.465	1	-244.608	1	-.241	2	-.217	1	-.352	3
23		12	max	617.921	3	824.223	3	136.899	2	.421	3	.14	1	.524	1
24			min	-2181.293	1	-624.004	1	-271.967	3	-.426	1	-.003	5	-.699	3
25		13	max	617.477	3	823.003	3	136.899	2	.421	3	.197	1	.912	1
26			min	-2181.885	1	-625.63	1	-271.967	3	-.426	1	-.151	3	-1.21	3
27		14	max	187.044	1	565.985	1	74.14	5	.284	1	0	10	1.284	1
28			min	4.813	12	-739.085	3	-151.117	1	-.449	3	-.209	4	-1.699	3
29		15	max	186.452	1	564.359	1	72.641	5	.284	1	.003	3	.934	1
30			min	4.517	12	-740.304	3	-151.117	1	-.449	3	-.181	4	-1.24	3
31		16	max	185.86	1	562.733	1	71.141	5	.284	1	.006	3	.584	1
32			min	4.221	12	-741.524	3	-151.117	1	-.449	3	-.193	1	-.78	3
33		17	max	185.268	1	561.107	1	69.641	5	.284	1	.009	3	.235	1
34			min	3.925	12	-742.743	3	-151.117	1	-.449	3	-.287	1	-.32	3
35		18	max	.76	4	2.087	6	1.5	5	0	1	0	12	0	6
36			min	.179	15	.49	15	0	12	0	1	0	5	0	15
37		19	max	0	1	0	2	0	1	0	1	0	1	0	1
38			min	0	1	-.003	3	0	4	0	1	0	1	0	1
39	M4	1	max	0	1	.015	2	.001	4	0	1	0	1	0	1
40			min	0	1	-.004	3	0	1	0	1	0	1	0	1
41		2	max	-.179	15	-.49	15	0	1	0	1	0	1	0	4
42			min	-.76	4	-2.084	4	-1.499	5	0	1	0	5	0	15
43		3	max	-12.078	15	962.848	3	0	1	.019	4	.219	4	.791	2
44			min	-306.049	1	-2078.483	2	-105.235	5	0	1	0	1	-.368	3
45		4	max	-12.256	15	961.628	3	0	1	.019	4	.153	4	2.081	2
46			min	-306.641	1	-2080.109	2	-106.735	5	0	1	0	1	-.965	3
47		5	max	-12.435	15	960.409	3	0	1	.019	4	.087	4	3.372	2
48			min	-307.232	1	-2081.735	2	-108.234	5	0	1	0	1	-1.561	3
49		6	max	2079.898	3	1903.842	2	0	1	0	1	0	1	3.202	2
50			min	-5113.123	2	-724.604	3	-105.621	4	-.015	4	-.007	5	-1.539	3
51		7	max	2079.454	3	1902.216	2	0	1	0	1	0	1	2.021	2
52			min	-5113.714	2	-725.823	3	-107.121	4	-.015	4	-.072	4	-1.089	3
53		8	max	2079.01	3	1900.59	2	0	1	0	1	0	1	.841	2
54			min	-5114.306	2	-727.043	3	-108.62	4	-.015	4	-.139	4	-.638	3
55		9	max	2053.196	3	291.722	3	0	1	.012	4	.122	4	.166	1
56			min	-5198.564	2	-277.059	1	-223.826	4	0	1	0	1	-.41	3
57		10	max	2052.752	3	290.503	3	0	1	.012	4	0	1	.339	1
58			min	-5199.155	2	-278.685	1	-225.325	4	0	1	-.018	4	-.591	3
59		11	max	2052.308	3	289.283	3	0	1	.012	4	0	1	.512	1
60			min	-5199.747	2	-280.312	1	-226.825	4	0	1	-.158	4	-.771	3
61		12	max	2033.741	3	2333.563	3	0	1	.114	4	.033	5	1.329	1
62			min	-5433.07	1	-1949.995	1	-240.133	5	0	1	0	1	-1.759	3
63		13	max	2033.297	3	2332.343	3	0	1	.114	4	0	1	2.54	1
64			min	-5433.662	1	-1951.621	1	-241.633	5	0	1	-.117	4	-3.207	3
65		14	max	307.159	1	1642.687	1	64.362	5	0	1	0	1	3.702	1
66			min	12.547	15	-2042.371	3	0	1	-.08	4	-.194	5	-4.594	3
67		15	max	306.567	1	1641.061	1	62.863	5	0	1	0	1	2.683	1
68			min	12.368	15	-2043.591	3	0	1	-.08	4	-.155	5	-3.326	3
69		16	max	305.975	1	1639.434	1	61.363	5	0	1	0	1	1.665	1
70			min	12.19	15	-2044.81	3	0	1	-.08	4	-.116	4	-2.058	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
71		17	max	305.383	1	1637.808	1	59.863	5	0	1	0	1	.648	1
72			min	12.011	15	-2046.03	3	0	1	-.08	4	-.079	4	-.788	3
73		18	max	.76	4	2.088	6	1.5	5	0	1	0	1	0	6
74			min	.179	15	.491	15	0	1	0	1	0	5	0	15
75		19	max	0	1	.004	1	0	1	0	1	0	1	0	1
76			min	0	1	-.009	3	0	4	0	1	0	1	0	1
77	M7	1	max	0	1	.006	1	.002	4	0	1	0	1	0	1
78			min	0	1	-.002	3	0	3	0	1	0	1	0	1
79		2	max	-.179	15	-.491	15	0	1	0	1	0	1	0	4
80			min	-.76	4	-2.086	4	-1.499	5	0	1	0	5	0	15
81		3	max	16.973	5	322.557	3	178.385	1	.26	2	.107	5	.327	2
82			min	-184.936	1	-743.97	2	-46.183	5	-.081	3	-.266	1	-.141	3
83		4	max	16.697	5	321.338	3	178.385	1	.26	2	.078	5	.79	2
84			min	-185.527	1	-745.596	2	-47.683	5	-.081	3	-.155	1	-.341	3
85		5	max	16.421	5	320.118	3	178.385	1	.26	2	.048	5	1.253	2
86			min	-186.119	1	-747.222	2	-49.183	5	-.081	3	-.044	1	-.54	3
87		6	max	635.493	3	657.655	2	238.738	1	.045	3	.054	3	1.201	2
88			min	-1854.909	2	-199.345	3	-45.822	3	-.017	1	-.131	1	-.548	3
89		7	max	635.049	3	656.029	2	238.738	1	.045	3	.026	3	.793	2
90			min	-1855.501	2	-200.565	3	-45.822	3	-.017	1	-.042	5	-.424	3
91		8	max	634.605	3	654.403	2	238.738	1	.045	3	.165	1	.387	2
92			min	-1856.093	2	-201.785	3	-46.711	5	-.017	1	-.071	5	-.299	3
93		9	max	628.519	3	89.936	3	244.608	1	.241	2	.05	5	.169	1
94			min	-1991.844	1	-65.213	1	-92.349	5	.015	15	-.087	1	-.241	3
95		10	max	628.075	3	88.716	3	244.608	1	.241	2	.065	1	.21	1
96			min	-1992.436	1	-66.839	1	-93.848	5	.015	15	-.061	3	-.297	3
97		11	max	627.631	3	87.497	3	244.608	1	.241	2	.217	1	.252	1
98			min	-1993.028	1	-68.465	1	-95.348	5	.015	15	-.093	3	-.352	3
99		12	max	617.921	3	824.223	3	271.967	3	.426	1	-.011	15	.524	1
100			min	-2181.293	1	-624.004	1	-214.173	4	-.421	3	-.14	1	-.699	3
101		13	max	617.477	3	823.003	3	271.967	3	.426	1	.151	3	.912	1
102			min	-2181.885	1	-625.63	1	-215.672	4	-.421	3	-.197	1	-1.21	3
103		14	max	187.044	1	565.985	1	151.117	1	.449	3	.005	1	1.284	1
104			min	3.622	15	-739.085	3	-5.236	3	-.284	1	-.207	5	-1.699	3
105		15	max	186.452	1	564.359	1	151.117	1	.449	3	.099	1	.934	1
106			min	3.443	15	-740.304	3	-5.236	3	-.284	1	-.152	5	-1.24	3
107		16	max	185.86	1	562.733	1	151.117	1	.449	3	.193	1	.584	1
108			min	3.264	15	-741.524	3	-5.236	3	-.284	1	-.098	5	-.78	3
109		17	max	185.268	1	561.107	1	151.117	1	.449	3	.287	1	.235	1
110			min	3.086	15	-742.743	3	-5.236	3	-.284	1	-.045	5	-.32	3
111		18	max	.76	6	2.087	4	1.5	5	0	1	0	1	0	4
112			min	.179	15	.491	15	0	1	0	1	0	5	0	15
113		19	max	0	1	0	2	0	12	0	1	0	1	0	1
114			min	0	1	-.003	3	0	1	0	1	0	1	0	1
115	M10	1	max	151.089	1	557.676	1	-2.732	15	.007	1	.348	1	.284	1
116			min	-5.233	3	-745.109	3	-184.506	1	-.02	3	-.011	3	-.449	3
117		2	max	151.089	1	404.986	1	-1.374	15	.007	1	.163	1	.27	3
118			min	-5.233	3	-548.552	3	-147.152	1	-.02	3	-.015	3	-.251	1
119		3	max	151.089	1	252.295	1	-.016	15	.007	1	.044	2	.77	3
120			min	-5.233	3	-351.995	3	-109.798	1	-.02	3	-.017	3	-.616	1
121		4	max	151.089	1	99.605	1	1.854	5	.007	1	.006	10	1.052	3
122			min	-5.233	3	-155.438	3	-72.444	1	-.02	3	-.081	1	-.812	1
123		5	max	151.089	1	41.12	3	3.955	5	.007	1	-.008	15	1.116	3
124			min	-5.233	3	-53.086	1	-35.09	1	-.02	3	-.14	1	-.838	1
125		6	max	151.089	1	237.677	3	8.547	14	.007	1	-.004	15	.961	3
126			min	-5.233	3	-205.776	1	-12.49	2	-.02	3	-.159	1	-.694	1
127		7	max	151.089	1	434.234	3	39.617	1	.007	1	.002	5	.588	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
128			min	-5.233	3	-358.466	1	-5.046	10	-.02	3	-.135	1	-.38	1
129		8	max	151.089	1	630.791	3	76.971	1	.007	1	.012	5	.103	1
130			min	-5.233	3	-511.157	1	-1.295	10	-.02	3	-.071	1	-.013	5
131		9	max	151.089	1	827.348	3	114.325	1	.007	1	.048	14	.756	1
132			min	-9.502	5	-663.847	1	2.456	10	-.02	3	-.039	2	-.814	3
133		10	max	151.089	1	816.538	1	-2.162	15	.02	3	.184	1	1.578	1
134			min	-5.233	3	-1023.905	3	-151.679	1	-.003	14	-.028	10	-1.843	3
135		11	max	151.089	1	663.847	1	-.805	15	.02	3	.045	9	.756	1
136			min	-5.233	3	-827.348	3	-114.325	1	-.007	1	-.039	2	-.814	3
137		12	max	151.089	1	511.157	1	1.295	10	.02	3	.009	3	.103	1
138			min	-5.233	3	-630.791	3	-76.971	1	-.007	1	-.071	1	-.004	3
139		13	max	151.089	1	358.466	1	5.046	10	.02	3	0	3	.588	3
140			min	-5.233	3	-434.234	3	-39.617	1	-.007	1	-.135	1	-.38	1
141		14	max	151.089	1	205.776	1	12.49	2	.02	3	-.005	12	.961	3
142			min	-9.638	5	-237.677	3	-7.017	9	-.007	1	-.159	1	-.694	1
143		15	max	151.089	1	53.086	1	35.09	1	.02	3	-.003	15	1.116	3
144			min	-21.043	5	-41.12	3	-3.635	3	-.007	1	-.14	1	-.838	1
145		16	max	151.089	1	155.438	3	72.444	1	.02	3	.006	10	1.052	3
146			min	-32.449	5	-99.605	1	-1.599	3	-.007	1	-.081	1	-.812	1
147		17	max	151.089	1	351.995	3	109.798	1	.02	3	.044	2	.77	3
148			min	-43.855	5	-252.295	1	.437	3	-.007	1	-.017	3	-.616	1
149		18	max	151.089	1	548.552	3	147.152	1	.02	3	.163	1	.27	3
150			min	-55.261	5	-404.986	1	1.976	12	-.007	1	-.015	3	-.251	1
151		19	max	151.089	1	745.109	3	184.506	1	.02	3	.348	1	.284	1
152			min	-66.667	5	-557.676	1	3.334	12	-.007	1	-.011	3	-.449	3
153	M11	1	max	336.676	1	550.784	1	23.816	5	0	3	.375	1	.236	1
154			min	-323.379	3	-739.758	3	-188.62	1	-.009	1	-.153	5	-.521	3
155		2	max	336.676	1	398.094	1	25.917	5	0	3	.186	1	.191	3
156			min	-323.379	3	-543.201	3	-151.266	1	-.009	1	-.126	5	-.304	2
157		3	max	336.676	1	245.403	1	28.017	5	0	3	.047	2	.686	3
158			min	-323.379	3	-346.643	3	-113.912	1	-.009	1	-.096	5	-.649	1
159		4	max	336.676	1	92.713	1	30.118	5	0	3	.005	10	.962	3
160			min	-323.379	3	-150.086	3	-76.558	1	-.009	1	-.08	4	-.837	1
161		5	max	336.676	1	46.471	3	32.218	5	0	3	-.002	12	1.019	3
162			min	-323.379	3	-61.462	2	-39.205	1	-.009	1	-.132	1	-.855	1
163		6	max	336.676	1	243.028	3	35.744	4	0	3	.008	5	.858	3
164			min	-323.379	3	-212.668	1	-13.375	2	-.009	1	-.154	1	-.703	1
165		7	max	336.676	1	439.585	3	45.627	4	0	3	.048	5	.479	3
166			min	-323.379	3	-365.359	1	-4.931	10	-.009	1	-.136	1	-.382	1
167		8	max	336.676	1	636.142	3	72.857	1	0	3	.089	5	.109	1
168			min	-323.379	3	-518.049	1	-1.18	10	-.009	1	-.075	1	-.118	3
169		9	max	336.676	1	832.7	3	110.211	1	0	3	.146	4	.769	1
170			min	-323.379	3	-670.74	1	2.571	10	-.009	1	-.042	2	-.934	3
171		10	max	336.676	1	823.43	1	25.195	5	.009	1	.224	4	1.599	1
172			min	-323.379	3	-1029.257	3	-147.565	1	-.003	14	-.028	10	-1.969	3
173		11	max	336.676	1	670.74	1	27.295	5	.009	1	.039	9	.769	1
174			min	-323.379	3	-832.7	3	-110.211	1	0	3	-.126	5	-.934	3
175		12	max	336.676	1	518.049	1	29.396	5	.009	1	.004	3	.109	1
176			min	-323.379	3	-636.142	3	-72.857	1	0	3	-.106	4	-.118	3
177		13	max	336.676	1	365.359	1	31.496	5	.009	1	0	3	.479	3
178			min	-323.379	3	-439.585	3	-35.503	1	0	3	-.136	1	-.382	1
179		14	max	336.676	1	212.668	1	33.597	5	.009	1	-.002	12	.858	3
180			min	-323.379	3	-243.028	3	-4.057	9	0	3	-.154	1	-.703	1
181		15	max	336.676	1	61.462	2	42.276	4	.009	1	.014	5	1.019	3
182			min	-323.379	3	-46.471	3	.832	12	0	3	-.132	1	-.855	1
183		16	max	336.676	1	150.086	3	76.558	1	.009	1	.054	5	.962	3
184			min	-323.379	3	-92.713	1	2.19	12	0	3	-.067	1	-.837	1

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
185		17	max	336.676	1	346.643	3	113.912	1	.009	1	.102	4	.686	3
186			min	-323.379	3	-245.403	1	3.547	12	0	3	.003	12	-.649	1
187		18	max	336.676	1	543.201	3	151.266	1	.009	1	.186	1	.191	3
188			min	-323.379	3	-398.094	1	4.905	12	0	3	.008	12	-.304	2
189		19	max	336.676	1	739.758	3	188.62	1	.009	1	.375	1	.236	1
190			min	-323.379	3	-550.784	1	6.263	12	0	3	.014	12	-.521	3
191	M12	1	max	44.015	5	713.069	2	25.325	5	.003	3	.402	1	.256	2
192			min	-18.341	9	-294.026	3	-192.706	1	-.01	1	-.16	5	.023	15
193		2	max	35.891	2	515.16	2	27.426	5	.003	3	.208	1	.332	3
194			min	-18.341	9	-204.265	3	-155.352	1	-.01	1	-.131	5	-.426	2
195		3	max	35.891	2	317.251	2	29.526	5	.003	3	.065	2	.509	3
196			min	-18.341	9	-114.505	3	-117.999	1	-.01	1	-.099	5	-.889	2
197		4	max	35.891	2	119.341	2	31.627	5	.003	3	.012	10	.587	3
198			min	-18.341	9	-24.744	3	-80.645	1	-.01	1	-.08	4	-1.131	2
199		5	max	35.891	2	65.016	3	33.727	5	.003	3	-.006	10	.564	3
200			min	-18.341	9	-78.568	2	-43.291	1	-.01	1	-.123	1	-1.154	2
201		6	max	35.891	2	154.777	3	36.732	4	.003	3	.01	5	.442	3
202			min	-20.714	14	-276.477	2	-17.336	2	-.01	1	-.15	1	-.957	2
203		7	max	35.891	2	244.537	3	46.615	4	.003	3	.051	5	.22	3
204			min	-30.34	4	-474.386	2	-6.948	10	-.01	1	-.136	1	-.539	2
205		8	max	35.891	2	334.298	3	68.771	1	.003	3	.094	5	.098	2
206			min	-41.746	4	-672.295	2	-3.197	10	-.01	1	-.08	1	-.101	3
207		9	max	35.891	2	424.058	3	106.124	1	.003	3	.152	4	.955	2
208			min	-53.152	4	-870.204	2	.554	10	-.01	1	-.051	2	-.522	3
209		10	max	35.891	2	1068.113	2	99.345	14	.01	1	.231	4	2.031	2
210			min	-64.558	4	-513.819	3	-143.478	1	-.004	14	-.034	10	-1.043	3
211		11	max	43.548	5	870.204	2	29.106	5	.01	1	.035	9	.955	2
212			min	-18.341	9	-424.058	3	-106.124	1	-.003	3	-.134	5	-.522	3
213		12	max	35.891	2	672.295	2	31.207	5	.01	1	.008	3	.098	2
214			min	-18.341	9	-334.298	3	-68.771	1	-.003	3	-.112	4	-.101	3
215		13	max	35.891	2	474.386	2	33.307	5	.01	1	0	3	.22	3
216			min	-18.341	9	-244.537	3	-31.417	1	-.003	3	-.136	1	-.539	2
217		14	max	35.891	2	276.477	2	35.408	5	.01	1	-.004	12	.442	3
218			min	-18.341	9	-154.777	3	-4.541	3	-.003	3	-.15	1	-.957	2
219		15	max	35.891	2	78.568	2	44.661	4	.01	1	.014	5	.564	3
220			min	-18.341	9	-65.016	3	-2.505	3	-.003	3	-.123	1	-1.154	2
221		16	max	35.891	2	24.744	3	80.645	1	.01	1	.057	5	.587	3
222			min	-20.896	14	-119.341	2	-.468	3	-.003	3	-.054	1	-1.131	2
223		17	max	35.891	2	114.505	3	117.999	1	.01	1	.109	4	.509	3
224			min	-30.757	4	-317.251	2	1.322	12	-.003	3	-.011	3	-.889	2
225		18	max	35.891	2	204.265	3	155.352	1	.01	1	.208	1	.332	3
226			min	-42.163	4	-515.16	2	2.68	12	-.003	3	-.009	3	-.426	2
227		19	max	35.891	2	294.026	3	192.706	1	.01	1	.402	1	.256	2
228			min	-53.569	4	-713.069	2	4.037	12	-.003	3	-.003	3	-.023	5
229	M13	1	max	43.11	5	741.02	2	17.527	5	.011	3	.338	1	.26	2
230			min	-178.256	1	-325.069	3	-183.24	1	-.026	2	-.126	5	-.081	3
231		2	max	31.705	5	543.111	2	19.628	5	.011	3	.155	1	.23	3
232			min	-178.256	1	-235.308	3	-145.886	1	-.026	2	-.105	5	-.453	2
233		3	max	20.299	5	345.202	2	21.728	5	.011	3	.038	2	.442	3
234			min	-178.256	1	-145.548	3	-108.533	1	-.026	2	-.084	4	-.947	2
235		4	max	16.827	3	147.293	2	23.829	5	.011	3	.004	10	.554	3
236			min	-178.256	1	-55.787	3	-71.179	1	-.026	2	-.086	1	-1.221	2
237		5	max	16.827	3	33.973	3	25.929	5	.011	3	-.006	12	.566	3
238			min	-178.256	1	-50.616	2	-33.825	1	-.026	2	-.144	1	-1.274	2
239		6	max	16.827	3	123.734	3	30.541	4	.011	3	0	15	.478	3
240			min	-178.256	1	-248.525	2	-11.413	2	-.026	2	-.161	1	-1.108	2
241		7	max	16.827	3	213.494	3	40.883	1	.011	3	.033	5	.291	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
242			min	-178.256	1	-446.434	2	-4.52	10	-.026	2	-.137	1	-.722	2
243		8	max	16.827	3	303.255	3	78.237	1	.011	3	.067	5	.004	3
244			min	-178.256	1	-644.343	2	-.769	10	-.026	2	-.07	1	-.127	1
245		9	max	16.827	3	393.015	3	115.59	1	.011	3	.119	4	.71	2
246			min	-178.256	1	-842.252	2	2.982	10	-.026	2	-.038	2	-.383	3
247		10	max	16.827	3	1040.161	2	99.386	14	.026	2	.192	4	1.756	2
248			min	-178.256	1	-482.776	3	-152.944	1	-.011	3	-.027	10	-.87	3
249		11	max	31.368	5	842.252	2	20.401	5	.026	2	.046	9	.71	2
250			min	-178.256	1	-393.015	3	-115.59	1	-.011	3	-.096	5	-.383	3
251		12	max	19.962	5	644.343	2	22.501	5	.026	2	.008	3	.004	3
252			min	-178.256	1	-303.255	3	-78.237	1	-.011	3	-.082	4	-.127	1
253		13	max	16.827	3	446.434	2	24.602	5	.026	2	0	3	.291	3
254			min	-178.256	1	-213.494	3	-40.883	1	-.011	3	-.137	1	-.722	2
255		14	max	16.827	3	248.525	2	26.702	5	.026	2	-.004	12	.478	3
256			min	-178.256	1	-123.734	3	-7.609	9	-.011	3	-.161	1	-1.108	2
257		15	max	16.827	3	50.616	2	34.192	4	.026	2	.013	5	.566	3
258			min	-178.256	1	-33.973	3	-1.968	3	-.011	3	-.144	1	-1.274	2
259		16	max	16.827	3	55.787	3	71.179	1	.026	2	.046	5	.554	3
260			min	-178.256	1	-147.293	2	.069	3	-.011	3	-.086	1	-1.221	2
261		17	max	16.827	3	145.548	3	108.533	1	.026	2	.082	5	.442	3
262			min	-178.256	1	-345.202	2	1.616	12	-.011	3	-.009	3	-.947	2
263		18	max	16.827	3	235.308	3	145.886	1	.026	2	.155	1	.23	3
264			min	-178.256	1	-543.111	2	2.974	12	-.011	3	-.005	3	-.453	2
265		19	max	16.827	3	325.069	3	183.24	1	.026	2	.338	1	.26	2
266			min	-178.256	1	-741.02	2	4.332	12	-.011	3	0	3	-.081	3
267	M2	1	max	2630.094	1	743.403	3	305.388	1	.007	5	1.208	5	6.292	1
268			min	-1908.422	3	-513.409	2	-325.845	5	-.008	2	-.325	1	.365	12
269		2	max	2627.833	1	743.403	3	305.388	1	.007	5	1.128	5	6.324	1
270			min	-1910.117	3	-513.409	2	-323.886	5	-.008	2	-.249	1	.254	12
271		3	max	2625.573	1	743.403	3	305.388	1	.007	5	1.047	5	6.356	1
272			min	-1911.813	3	-513.409	2	-321.927	5	-.008	2	-.173	1	.143	12
273		4	max	2623.312	1	743.403	3	305.388	1	.007	5	.968	5	6.388	1
274			min	-1913.508	3	-513.409	2	-319.967	5	-.008	2	-.097	1	.021	3
275		5	max	1972.475	1	1827.403	1	243.145	1	.002	2	.891	5	6.351	1
276			min	-1653.067	3	-39.2	3	-308.666	5	-.001	3	-.09	1	-.136	3
277		6	max	1970.215	1	1827.403	1	243.145	1	.002	2	.817	4	5.898	1
278			min	-1654.762	3	-39.2	3	-306.707	5	-.001	3	-.03	1	-.127	3
279		7	max	1967.954	1	1827.403	1	243.145	1	.002	2	.749	4	5.444	1
280			min	-1656.457	3	-39.2	3	-304.748	5	-.001	3	-.098	3	-.117	3
281		8	max	1965.693	1	1827.403	1	243.145	1	.002	2	.681	4	4.99	1
282			min	-1658.153	3	-39.2	3	-302.789	5	-.001	3	-.167	3	-.107	3
283		9	max	1963.433	1	1827.403	1	243.145	1	.002	2	.614	4	4.537	1
284			min	-1659.848	3	-39.2	3	-300.83	5	-.001	3	-.236	3	-.097	3
285		10	max	1961.172	1	1827.403	1	243.145	1	.002	2	.547	4	4.083	1
286			min	-1661.544	3	-39.2	3	-298.87	5	-.001	3	-.305	3	-.088	3
287		11	max	1958.912	1	1827.403	1	243.145	1	.002	2	.481	4	3.629	1
288			min	-1663.239	3	-39.2	3	-296.911	5	-.001	3	-.374	3	-.078	3
289		12	max	1956.651	1	1827.403	1	243.145	1	.002	2	.415	4	3.176	1
290			min	-1664.935	3	-39.2	3	-294.952	5	-.001	3	-.443	3	-.068	3
291		13	max	1954.39	1	1827.403	1	243.145	1	.002	2	.392	1	2.722	1
292			min	-1666.63	3	-39.2	3	-292.993	5	-.001	3	-.511	3	-.058	3
293		14	max	1952.13	1	1827.403	1	243.145	1	.002	2	.453	1	2.268	1
294			min	-1668.326	3	-39.2	3	-291.034	5	-.001	3	-.58	3	-.049	3
295		15	max	1949.869	1	1827.403	1	243.145	1	.002	2	.513	1	1.815	1
296			min	-1670.021	3	-39.2	3	-289.075	5	-.001	3	-.649	3	-.039	3
297		16	max	1947.609	1	1827.403	1	243.145	1	.002	2	.574	1	1.361	1
298			min	-1671.716	3	-39.2	3	-287.115	5	-.001	3	-.718	3	-.029	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
299		17	max	1945.348	1	1827.403	1	243.145	1	.002	2	.634	1	.907	1
300			min	-1673.412	3	-39.2	3	-285.156	5	-.001	3	-.787	3	-.019	3
301		18	max	1943.087	1	1827.403	1	243.145	1	.002	2	.694	1	.454	1
302			min	-1675.107	3	-39.2	3	-283.197	5	-.001	3	-.856	3	-.01	3
303		19	max	1940.827	1	1827.403	1	243.145	1	.002	2	.755	1	0	1
304			min	-1676.803	3	-39.2	3	-281.238	5	-.001	3	-.925	3	0	1
305	M5	1	max	7197.089	1	2175.366	3	0	1	.007	4	1.269	4	13.58	1
306			min	-5639.583	3	-2118.797	2	-354.857	5	0	1	0	1	.365	15
307		2	max	7194.828	1	2175.366	3	0	1	.007	4	1.181	4	13.903	1
308			min	-5641.278	3	-2118.797	2	-352.898	5	0	1	0	1	.162	12
309		3	max	7192.568	1	2175.366	3	0	1	.007	4	1.094	4	14.225	1
310			min	-5642.974	3	-2118.797	2	-350.939	5	0	1	0	1	-.328	3
311		4	max	7190.307	1	2175.366	3	0	1	.007	4	1.007	4	14.548	1
312			min	-5644.669	3	-2118.797	2	-348.979	5	0	1	0	1	-.868	3
313		5	max	5426.736	1	4223.135	1	0	1	0	1	.928	4	14.678	1
314			min	-4779.092	3	-379.393	3	-340.075	4	0	4	0	1	-1.319	3
315		6	max	5424.475	1	4223.135	1	0	1	0	1	.844	4	13.63	1
316			min	-4780.787	3	-379.393	3	-338.116	4	0	4	0	1	-1.224	3
317		7	max	5422.215	1	4223.135	1	0	1	0	1	.76	4	12.581	1
318			min	-4782.483	3	-379.393	3	-336.156	4	0	4	0	1	-1.13	3
319		8	max	5419.954	1	4223.135	1	0	1	0	1	.677	4	11.533	1
320			min	-4784.178	3	-379.393	3	-334.197	4	0	4	0	1	-1.036	3
321		9	max	5417.693	1	4223.135	1	0	1	0	1	.594	4	10.484	1
322			min	-4785.874	3	-379.393	3	-332.238	4	0	4	0	1	-.942	3
323		10	max	5415.433	1	4223.135	1	0	1	0	1	.512	4	9.436	1
324			min	-4787.569	3	-379.393	3	-330.279	4	0	4	0	1	-.848	3
325		11	max	5413.172	1	4223.135	1	0	1	0	1	.43	4	8.387	1
326			min	-4789.265	3	-379.393	3	-328.32	4	0	4	0	1	-.753	3
327		12	max	5410.912	1	4223.135	1	0	1	0	1	.349	4	7.339	1
328			min	-4790.96	3	-379.393	3	-326.36	4	0	4	0	1	-.659	3
329		13	max	5408.651	1	4223.135	1	0	1	0	1	.268	4	6.291	1
330			min	-4792.656	3	-379.393	3	-324.401	4	0	4	0	1	-.565	3
331		14	max	5406.39	1	4223.135	1	0	1	0	1	.188	4	5.242	1
332			min	-4794.351	3	-379.393	3	-322.442	4	0	4	0	1	-.471	3
333		15	max	5404.13	1	4223.135	1	0	1	0	1	.108	4	4.194	1
334			min	-4796.046	3	-379.393	3	-320.483	4	0	4	0	1	-.377	3
335		16	max	5401.869	1	4223.135	1	0	1	0	1	.029	4	3.145	1
336			min	-4797.742	3	-379.393	3	-318.524	4	0	4	0	1	-.283	3
337		17	max	5399.609	1	4223.135	1	0	1	0	1	0	1	2.097	1
338			min	-4799.437	3	-379.393	3	-316.565	4	0	4	-.05	4	-.188	3
339		18	max	5397.348	1	4223.135	1	0	1	0	1	0	1	1.048	1
340			min	-4801.133	3	-379.393	3	-314.605	4	0	4	-.128	4	-.094	3
341		19	max	5395.087	1	4223.135	1	0	1	0	1	0	1	0	1
342			min	-4802.828	3	-379.393	3	-312.646	4	0	4	-.206	4	0	1
343	M8	1	max	2630.094	1	743.403	3	305.556	3	.008	4	1.291	4	6.292	1
344			min	-1908.422	3	-513.409	2	-390.641	4	-.003	3	-.308	3	-.147	5
345		2	max	2627.833	1	743.403	3	305.556	3	.008	4	1.195	4	6.324	1
346			min	-1910.117	3	-513.409	2	-388.682	4	-.003	3	-.232	3	-.123	5
347		3	max	2625.573	1	743.403	3	305.556	3	.008	4	1.098	4	6.356	1
348			min	-1911.813	3	-513.409	2	-386.723	4	-.003	3	-.156	3	-.099	5
349		4	max	2623.312	1	743.403	3	305.556	3	.008	4	1.003	4	6.388	1
350			min	-1913.508	3	-513.409	2	-384.764	4	-.003	3	-.08	3	-.075	5
351		5	max	1972.475	1	1827.403	1	277.465	3	.001	3	.923	4	6.351	1
352			min	-1653.067	3	-39.2	3	-363.816	4	-.002	2	-.04	3	-.136	3
353		6	max	1970.215	1	1827.403	1	277.465	3	.001	3	.833	4	5.898	1
354			min	-1654.762	3	-39.2	3	-361.857	4	-.002	2	.003	10	-.127	3
355		7	max	1967.954	1	1827.403	1	277.465	3	.001	3	.743	4	5.444	1

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
356			min	-1656.457	3	-39.2	3	-359.898	4	-.002	2	-.043	2	-.117	3
357		8	max	1965.693	1	1827.403	1	277.465	3	.001	3	.657	5	4.99	1
358			min	-1658.153	3	-39.2	3	-357.938	4	-.002	2	-.099	2	-.107	3
359		9	max	1963.433	1	1827.403	1	277.465	3	.001	3	.578	5	4.537	1
360			min	-1659.848	3	-39.2	3	-355.979	4	-.002	2	-.156	2	-.097	3
361		10	max	1961.172	1	1827.403	1	277.465	3	.001	3	.499	5	4.083	1
362			min	-1661.544	3	-39.2	3	-354.02	4	-.002	2	-.212	2	-.088	3
363		11	max	1958.912	1	1827.403	1	277.465	3	.001	3	.421	5	3.629	1
364			min	-1663.239	3	-39.2	3	-352.061	4	-.002	2	-.272	1	-.078	3
365		12	max	1956.651	1	1827.403	1	277.465	3	.001	3	.443	3	3.176	1
366			min	-1664.935	3	-39.2	3	-350.102	4	-.002	2	-.332	1	-.068	3
367		13	max	1954.39	1	1827.403	1	277.465	3	.001	3	.511	3	2.722	1
368			min	-1666.63	3	-39.2	3	-348.143	4	-.002	2	-.392	1	-.058	3
369		14	max	1952.13	1	1827.403	1	277.465	3	.001	3	.58	3	2.268	1
370			min	-1668.326	3	-39.2	3	-346.183	4	-.002	2	-.453	1	-.049	3
371		15	max	1949.869	1	1827.403	1	277.465	3	.001	3	.649	3	1.815	1
372			min	-1670.021	3	-39.2	3	-344.224	4	-.002	2	-.513	1	-.039	3
373		16	max	1947.609	1	1827.403	1	277.465	3	.001	3	.718	3	1.361	1
374			min	-1671.716	3	-39.2	3	-342.265	4	-.002	2	-.574	1	-.029	3
375		17	max	1945.348	1	1827.403	1	277.465	3	.001	3	.787	3	.907	1
376			min	-1673.412	3	-39.2	3	-340.306	4	-.002	2	-.634	1	-.019	3
377		18	max	1943.087	1	1827.403	1	277.465	3	.001	3	.856	3	.454	1
378			min	-1675.107	3	-39.2	3	-338.347	4	-.002	2	-.694	1	-.01	3
379		19	max	1940.827	1	1827.403	1	277.465	3	.001	3	.925	3	0	1
380			min	-1676.803	3	-39.2	3	-336.387	4	-.002	2	-.755	1	0	1
381	M3	1	max	2252.175	2	4.757	4	64.038	2	.034	3	.014	2	0	1
382			min	-825.489	3	1.118	15	-28.99	3	-.071	2	-.006	3	0	1
383		2	max	2252.036	2	4.229	4	64.038	2	.034	3	.032	2	0	15
384			min	-825.594	3	.994	15	-28.99	3	-.071	2	-.015	3	-.001	4
385		3	max	2251.896	2	3.7	4	64.038	2	.034	3	.051	2	0	15
386			min	-825.698	3	.87	15	-28.99	3	-.071	2	-.023	3	-.002	4
387		4	max	2251.757	2	3.171	4	64.038	2	.034	3	.07	2	0	15
388			min	-825.803	3	.745	15	-28.99	3	-.071	2	-.032	3	-.003	4
389		5	max	2251.617	2	2.643	4	64.038	2	.034	3	.089	2	-.001	15
390			min	-825.907	3	.621	15	-28.99	3	-.071	2	-.04	3	-.004	4
391		6	max	2251.478	2	2.114	4	64.038	2	.034	3	.107	2	-.001	15
392			min	-826.012	3	.497	15	-28.99	3	-.071	2	-.049	3	-.005	4
393		7	max	2251.338	2	1.586	4	64.038	2	.034	3	.126	2	-.001	15
394			min	-826.117	3	.373	15	-28.99	3	-.071	2	-.057	3	-.006	4
395		8	max	2251.199	2	1.057	4	64.038	2	.034	3	.145	2	-.001	15
396			min	-826.221	3	.248	15	-28.99	3	-.071	2	-.066	3	-.006	4
397		9	max	2251.06	2	.529	4	64.038	2	.034	3	.164	2	-.001	15
398			min	-826.326	3	.124	15	-28.99	3	-.071	2	-.074	3	-.006	4
399		10	max	2250.92	2	0	1	64.038	2	.034	3	.182	2	-.001	15
400			min	-826.43	3	0	1	-28.99	3	-.071	2	-.083	3	-.006	4
401		11	max	2250.781	2	-.124	15	64.038	2	.034	3	.201	2	-.001	15
402			min	-826.535	3	-.529	4	-28.99	3	-.071	2	-.091	3	-.006	4
403		12	max	2250.641	2	-.248	15	64.038	2	.034	3	.22	2	-.001	15
404			min	-826.639	3	-1.057	4	-28.99	3	-.071	2	-.1	3	-.006	4
405		13	max	2250.502	2	-.373	15	64.038	2	.034	3	.239	2	-.001	15
406			min	-826.744	3	-1.586	4	-28.99	3	-.071	2	-.108	3	-.006	4
407		14	max	2250.363	2	-.497	15	64.038	2	.034	3	.258	2	-.001	15
408			min	-826.849	3	-2.114	4	-28.99	3	-.071	2	-.117	3	-.005	4
409		15	max	2250.223	2	-.621	15	64.038	2	.034	3	.276	2	-.001	15
410			min	-826.953	3	-2.643	4	-28.99	3	-.071	2	-.125	3	-.004	4
411		16	max	2250.084	2	-.745	15	64.038	2	.034	3	.295	2	0	15
412			min	-827.058	3	-3.171	4	-28.99	3	-.071	2	-.134	3	-.003	4

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
413		17	max	2249.944	2	-.87	15	64.038	2	.034	3	.314	2	0	15
414			min	-827.162	3	-3.7	4	-28.99	3	-.071	2	-.142	3	-.002	4
415		18	max	2249.805	2	-.994	15	64.038	2	.034	3	.333	2	0	15
416			min	-827.267	3	-4.229	4	-28.99	3	-.071	2	-.151	3	-.001	4
417		19	max	2249.666	2	-1.118	15	64.038	2	.034	3	.351	2	0	1
418			min	-827.371	3	-4.757	4	-28.99	3	-.071	2	-.159	3	0	1
419	M6	1	max	6352.776	2	4.757	6	0	1	.009	4	.005	4	0	1
420			min	-2702.337	3	1.118	15	-12.332	4	0	1	0	1	0	1
421		2	max	6352.636	2	4.229	6	0	1	.009	4	.002	4	0	15
422			min	-2702.442	3	.994	15	-11.955	4	0	1	0	1	-.001	6
423		3	max	6352.497	2	3.7	6	0	1	.009	4	0	1	0	15
424			min	-2702.546	3	.87	15	-11.579	4	0	1	-.002	4	-.002	6
425		4	max	6352.358	2	3.171	6	0	1	.009	4	0	1	0	15
426			min	-2702.651	3	.745	15	-11.202	4	0	1	-.005	4	-.003	6
427		5	max	6352.218	2	2.643	6	0	1	.009	4	0	1	-.001	15
428			min	-2702.755	3	.621	15	-10.825	4	0	1	-.008	4	-.004	6
429		6	max	6352.079	2	2.114	6	0	1	.009	4	0	1	-.001	15
430			min	-2702.86	3	.497	15	-10.448	4	0	1	-.011	4	-.005	6
431		7	max	6351.939	2	1.586	6	0	1	.009	4	0	1	-.001	15
432			min	-2702.964	3	.373	15	-10.071	4	0	1	-.014	4	-.006	6
433		8	max	6351.8	2	1.057	6	0	1	.009	4	0	1	-.001	15
434			min	-2703.069	3	.248	15	-9.694	4	0	1	-.017	4	-.006	6
435		9	max	6351.661	2	.529	6	0	1	.009	4	0	1	-.001	15
436			min	-2703.174	3	.124	15	-9.317	4	0	1	-.02	4	-.006	6
437		10	max	6351.521	2	0	1	0	1	.009	4	0	1	-.001	15
438			min	-2703.278	3	0	1	-8.941	4	0	1	-.023	4	-.006	6
439		11	max	6351.382	2	-.124	15	0	1	.009	4	0	1	-.001	15
440			min	-2703.383	3	-.529	4	-8.564	4	0	1	-.025	4	-.006	6
441		12	max	6351.242	2	-.248	15	0	1	.009	4	0	1	-.001	15
442			min	-2703.487	3	-1.057	4	-8.187	4	0	1	-.028	4	-.006	6
443		13	max	6351.103	2	-.373	15	0	1	.009	4	0	1	-.001	15
444			min	-2703.592	3	-1.586	4	-7.81	4	0	1	-.03	4	-.006	6
445		14	max	6350.963	2	-.497	15	0	1	.009	4	0	1	-.001	15
446			min	-2703.696	3	-2.114	4	-7.433	4	0	1	-.032	4	-.005	6
447		15	max	6350.824	2	-.621	15	0	1	.009	4	0	1	-.001	15
448			min	-2703.801	3	-2.643	4	-7.056	4	0	1	-.035	4	-.004	6
449		16	max	6350.685	2	-.745	15	0	1	.009	4	0	1	0	15
450			min	-2703.905	3	-3.171	4	-6.68	4	0	1	-.037	4	-.003	6
451		17	max	6350.545	2	-.87	15	0	1	.009	4	0	1	0	15
452			min	-2704.01	3	-3.7	4	-6.303	4	0	1	-.038	4	-.002	6
453		18	max	6350.406	2	-.994	15	0	1	.009	4	0	1	0	15
454			min	-2704.115	3	-4.229	4	-5.926	4	0	1	-.04	4	-.001	6
455		19	max	6350.266	2	-1.118	15	0	1	.009	4	0	1	0	1
456			min	-2704.219	3	-4.757	4	-5.549	4	0	1	-.042	4	0	1
457	M9	1	max	2252.175	2	4.757	6	28.99	3	.071	2	.006	3	0	1
458			min	-825.489	3	1.118	15	-64.038	2	-.034	3	-.014	2	0	1
459		2	max	2252.036	2	4.229	6	28.99	3	.071	2	.015	3	0	15
460			min	-825.594	3	.994	15	-64.038	2	-.034	3	-.032	2	-.001	6
461		3	max	2251.896	2	3.7	6	28.99	3	.071	2	.023	3	0	15
462			min	-825.698	3	.87	15	-64.038	2	-.034	3	-.051	2	-.002	6
463		4	max	2251.757	2	3.171	6	28.99	3	.071	2	.032	3	0	15
464			min	-825.803	3	.745	15	-64.038	2	-.034	3	-.07	2	-.003	6
465		5	max	2251.617	2	2.643	6	28.99	3	.071	2	.04	3	-.001	15
466			min	-825.907	3	.621	15	-64.038	2	-.034	3	-.089	2	-.004	6
467		6	max	2251.478	2	2.114	6	28.99	3	.071	2	.049	3	-.001	15
468			min	-826.012	3	.497	15	-64.038	2	-.034	3	-.107	2	-.005	6
469		7	max	2251.338	2	1.586	6	28.99	3	.071	2	.057	3	-.001	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
470			min	-826.117	3	.373	15	-64.038	2	-.034	3	-.126	2	-.006	6
471		8	max	2251.199	2	1.057	6	28.99	3	.071	2	.066	3	-.001	15
472			min	-826.221	3	.248	15	-64.038	2	-.034	3	-.145	2	-.006	6
473		9	max	2251.06	2	.529	6	28.99	3	.071	2	.074	3	-.001	15
474			min	-826.326	3	.124	15	-64.038	2	-.034	3	-.164	2	-.006	6
475		10	max	2250.92	2	0	1	28.99	3	.071	2	.083	3	-.001	15
476			min	-826.43	3	0	1	-64.038	2	-.034	3	-.182	2	-.006	6
477		11	max	2250.781	2	-.124	15	28.99	3	.071	2	.091	3	-.001	15
478			min	-826.535	3	-.529	4	-64.038	2	-.034	3	-.201	2	-.006	6
479		12	max	2250.641	2	-.248	15	28.99	3	.071	2	.1	3	-.001	15
480			min	-826.639	3	-1.057	4	-64.038	2	-.034	3	-.22	2	-.006	6
481		13	max	2250.502	2	-.373	15	28.99	3	.071	2	.108	3	-.001	15
482			min	-826.744	3	-1.586	4	-64.038	2	-.034	3	-.239	2	-.006	6
483		14	max	2250.363	2	-.497	15	28.99	3	.071	2	.117	3	-.001	15
484			min	-826.849	3	-2.114	4	-64.038	2	-.034	3	-.258	2	-.005	6
485		15	max	2250.223	2	-.621	15	28.99	3	.071	2	.125	3	-.001	15
486			min	-826.953	3	-2.643	4	-64.038	2	-.034	3	-.276	2	-.004	6
487		16	max	2250.084	2	-.745	15	28.99	3	.071	2	.134	3	0	15
488			min	-827.058	3	-3.171	4	-64.038	2	-.034	3	-.295	2	-.003	6
489		17	max	2249.944	2	-.87	15	28.99	3	.071	2	.142	3	0	15
490			min	-827.162	3	-3.7	4	-64.038	2	-.034	3	-.314	2	-.002	6
491		18	max	2249.805	2	-.994	15	28.99	3	.071	2	.151	3	0	15
492			min	-827.267	3	-4.229	4	-64.038	2	-.034	3	-.333	2	-.001	6
493		19	max	2249.666	2	-1.118	15	28.99	3	.071	2	.159	3	0	1
494			min	-827.371	3	-4.757	4	-64.038	2	-.034	3	-.351	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	0	3	.172	3	.026	1	1.309e-2	3	NC	3	NC	3
2			min	-.269	1	-.806	1	-.512	5	-3.151e-2	2	157.437	1	293.167	5
3		2	max	0	3	.133	3	.008	1	1.309e-2	3	5729.617	12	NC	3
4			min	-.269	1	-.692	1	-.487	4	-3.151e-2	2	181.685	1	310.609	5
5		3	max	0	3	.093	3	0	12	1.245e-2	3	2862.633	12	NC	2
6			min	-.269	1	-.578	1	-.463	4	-2.947e-2	2	214.798	1	331.219	5
7		4	max	0	3	.055	3	0	3	1.148e-2	3	3007.247	15	NC	1
8			min	-.269	1	-.468	1	-.433	4	-2.634e-2	2	260.648	1	358.996	5
9		5	max	0	3	.022	3	.001	3	1.05e-2	3	3325.734	15	NC	1
10			min	-.269	1	-.369	1	-.398	4	-2.321e-2	2	323.342	1	395.768	5
11		6	max	0	3	-.003	12	.002	3	1.042e-2	3	3686.66	15	NC	1
12			min	-.269	1	-.285	1	-.361	4	-2.204e-2	2	404.731	1	443.584	5
13		7	max	0	3	-.013	12	.002	3	1.097e-2	3	4095.557	15	NC	2
14			min	-.268	1	-.218	1	-.323	4	-2.222e-2	2	508.521	1	504.285	5
15		8	max	0	3	-.012	15	0	3	1.151e-2	3	4572.744	15	NC	2
16			min	-.267	1	-.16	1	-.288	4	-2.24e-2	2	649.788	1	580.084	5
17		9	max	0	3	-.009	15	0	9	1.229e-2	3	5151.632	15	NC	2
18			min	-.267	1	-.108	1	-.256	4	-2.147e-2	2	629.894	3	673.63	5
19		10	max	0	3	-.005	15	0	1	1.35e-2	3	5880.727	15	NC	2
20			min	-.266	1	-.058	1	-.223	4	-1.857e-2	2	616.754	3	806.379	5
21		11	max	0	3	-.002	15	.002	3	1.471e-2	3	9206.314	10	NC	2
22			min	-.265	1	-.045	3	-.19	4	-1.588e-2	1	615.544	3	1000.813	5
23		12	max	0	3	.033	1	.007	3	1.191e-2	3	NC	1	NC	1
24			min	-.264	1	-.041	3	-.161	4	-1.178e-2	1	627.756	3	1296.742	5
25		13	max	-.001	3	.07	1	.013	3	6.845e-3	3	NC	9	NC	1
26			min	-.263	1	-.027	3	-.131	4	-6.647e-3	1	670.749	3	1827.909	5
27		14	max	-.001	3	.094	1	.014	3	2.009e-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
28			min	-.263	1	.002	12	-.104	4	-4.165e-3	4	791.394	3	2796.154	5
29		15	max	-.001	3	.101	1	.01	3	7.409e-3	3	NC	4	NC	2
30			min	-.263	1	.009	15	-.085	4	-5.118e-3	1	1156.113	3	4457.288	5
31		16	max	-.001	3	.127	3	.008	1	1.281e-2	3	NC	4	NC	2
32			min	-.263	1	.011	15	-.073	5	-8.533e-3	1	2644.953	2	4715.519	1
33		17	max	-.001	3	.208	3	.005	1	1.821e-2	3	NC	4	NC	2
34			min	-.263	1	.013	15	-.065	5	-1.195e-2	1	3719.286	3	5118.368	1
35		18	max	-.001	3	.294	3	0	12	2.173e-2	3	NC	4	NC	2
36			min	-.263	1	.015	15	-.062	4	-1.417e-2	1	1102.186	3	9313.19	1
37		19	max	-.001	3	.379	3	-.003	12	2.173e-2	3	NC	1	NC	1
38			min	-.263	1	.011	10	-.06	4	-1.417e-2	1	647.405	3	NC	1
39	M4	1	max	.041	3	.529	3	0	1	2.152e-4	4	NC	3	NC	1
40			min	-.614	1	-1.911	1	-.508	4	0	1	70.568	1	296.361	4
41		2	max	.041	3	.419	3	0	1	2.152e-4	4	3371.811	15	NC	1
42			min	-.614	1	-1.637	1	-.487	4	0	1	82.477	1	310.514	4
43		3	max	.041	3	.309	3	0	1	7.028e-5	5	4026.33	15	NC	1
44			min	-.614	1	-1.362	1	-.465	4	0	1	99.267	1	327.637	4
45		4	max	.041	3	.203	3	0	1	0	1	4959.019	15	NC	1
46			min	-.614	1	-1.096	1	-.435	4	-1.537e-4	4	123.56	1	353.442	4
47		5	max	.041	3	.111	3	0	1	0	1	6285.715	15	NC	1
48			min	-.614	1	-.857	1	-.399	4	-3.77e-4	4	158.541	1	389.8	4
49		6	max	.04	3	.041	3	0	1	0	1	8100.238	15	NC	1
50			min	-.613	1	-.661	1	-.361	4	-3.647e-4	4	206.343	1	438.696	4
51		7	max	.039	3	-.005	12	0	1	0	1	NC	15	NC	1
52			min	-.611	1	-.507	1	-.323	4	-1.895e-4	4	250.011	3	501.347	4
53		8	max	.039	3	-.01	15	0	1	0	1	NC	15	NC	1
54			min	-.609	1	-.378	1	-.287	4	-1.435e-5	4	235.463	3	578.319	4
55		9	max	.038	3	-.007	15	0	1	4.391e-5	5	NC	5	NC	1
56			min	-.607	1	-.26	1	-.256	4	0	1	225.708	3	669.076	4
57		10	max	.037	3	-.004	15	0	1	0	1	NC	5	NC	1
58			min	-.605	1	-.143	1	-.223	4	-1.052e-4	4	218.641	3	801.87	4
59		11	max	.036	3	0	15	0	1	0	1	NC	4	NC	1
60			min	-.603	1	-.095	3	-.19	4	-2.542e-4	4	214.781	3	995.706	4
61		12	max	.035	3	.073	1	0	1	0	1	NC	5	NC	1
62			min	-.601	1	-.096	3	-.161	4	-1.183e-3	4	214.463	3	1273.075	4
63		13	max	.035	3	.161	1	0	1	0	1	NC	5	NC	1
64			min	-.599	1	-.073	3	-.131	4	-2.552e-3	4	222.587	3	1773.337	4
65		14	max	.034	3	.213	1	0	1	0	1	NC	5	NC	1
66			min	-.597	1	-.006	3	-.106	4	-3.87e-3	4	250.587	3	2675.767	4
67		15	max	.034	3	.215	1	0	1	0	1	NC	5	NC	1
68			min	-.597	1	.005	15	-.087	4	-2.905e-3	4	330.497	3	4192.233	4
69		16	max	.034	3	.299	3	0	1	0	1	NC	5	NC	1
70			min	-.597	1	.005	15	-.075	4	-1.939e-3	4	582.292	3	6912.048	4
71		17	max	.034	3	.503	3	0	1	0	1	NC	5	NC	1
72			min	-.597	1	.003	15	-.066	4	-9.743e-4	4	1008.921	1	NC	1
73		18	max	.034	3	.717	3	0	1	0	1	NC	4	NC	1
74			min	-.597	1	.001	15	-.061	4	-3.45e-4	4	713.629	3	NC	1
75		19	max	.034	3	.931	3	0	1	0	1	NC	1	NC	1
76			min	-.597	1	-.012	9	-.055	4	-3.45e-4	4	333.974	3	NC	1
77	M7	1	max	.003	5	.172	3	0	3	3.151e-2	2	NC	3	NC	3
78			min	-.269	1	-.806	1	-.522	4	-1.309e-2	3	157.437	1	283.852	4
79		2	max	.003	5	.133	3	0	3	3.151e-2	2	NC	5	NC	3
80			min	-.269	1	-.692	1	-.491	4	-1.309e-2	3	181.685	1	303.637	4
81		3	max	.003	5	.093	3	.007	1	2.947e-2	2	NC	5	NC	2
82			min	-.269	1	-.578	1	-.46	4	-1.245e-2	3	214.798	1	326.758	4
83		4	max	.003	5	.055	3	.014	1	2.634e-2	2	NC	5	NC	1
84			min	-.269	1	-.468	1	-.427	5	-1.148e-2	3	260.648	1	355.488	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
85		5	max	.003	5	.022	3	.015	1	2.321e-2	2	NC	5	NC	1
86			min	-.269	1	-.369	1	-.392	5	-1.05e-2	3	323.342	1	391.681	4
87		6	max	.003	5	.003	5	.012	1	2.204e-2	2	NC	5	NC	1
88			min	-.269	1	-.285	1	-.356	4	-1.042e-2	3	404.731	1	437.384	4
89		7	max	.003	5	.003	5	.006	1	2.222e-2	2	NC	5	NC	2
90			min	-.268	1	-.218	1	-.321	4	-1.097e-2	3	508.521	1	493.412	4
91		8	max	.003	5	.003	5	.002	2	2.24e-2	2	NC	4	NC	2
92			min	-.267	1	-.16	1	-.288	4	-1.151e-2	3	649.788	1	562.832	4
93		9	max	.003	5	.003	5	0	3	2.147e-2	2	NC	4	NC	2
94			min	-.267	1	-.108	1	-.256	4	-1.229e-2	3	629.894	3	650.967	4
95		10	max	.003	5	.003	5	0	3	1.857e-2	2	NC	4	NC	2
96			min	-.266	1	-.058	1	-.223	4	-1.35e-2	3	616.754	3	773.953	4
97		11	max	.003	5	.002	5	0	1	1.588e-2	1	NC	4	NC	2
98			min	-.265	1	-.045	3	-.19	4	-1.471e-2	3	615.544	3	954.403	4
99		12	max	.003	5	.033	1	.008	1	1.178e-2	1	NC	1	NC	1
100			min	-.264	1	-.041	3	-.158	4	-1.191e-2	3	627.756	3	1238.353	4
101		13	max	.003	5	.07	1	.01	1	6.647e-3	1	NC	5	NC	1
102			min	-.263	1	-.027	3	-.128	5	-6.845e-3	3	670.749	3	1723.835	4
103		14	max	.003	5	.094	1	.007	2	1.703e-3	1	NC	5	NC	2
104			min	-.263	1	-.001	5	-.103	4	-3.765e-3	5	791.394	3	2499.72	4
105		15	max	.003	5	.101	1	.002	10	5.118e-3	1	NC	5	NC	2
106			min	-.263	1	-.004	5	-.087	4	-7.409e-3	3	1156.113	3	3547.246	4
107		16	max	.003	5	.127	3	0	10	8.533e-3	1	NC	5	NC	2
108			min	-.263	1	-.008	5	-.076	4	-1.281e-2	3	2644.953	2	4715.519	1
109		17	max	.003	5	.208	3	0	10	1.195e-2	1	NC	4	NC	2
110			min	-.263	1	-.012	5	-.068	4	-1.821e-2	3	3719.286	3	5118.368	1
111		18	max	.003	5	.294	3	.006	1	1.417e-2	1	NC	4	NC	2
112			min	-.263	1	-.016	5	-.059	5	-2.173e-2	3	1102.186	3	9313.19	1
113		19	max	.003	5	.379	3	.021	1	1.417e-2	1	NC	1	NC	1
114			min	-.263	1	-.02	5	-.053	5	-2.173e-2	3	647.405	3	NC	1
115	M10	1	max	.001	1	.264	3	.263	1	1.147e-2	3	NC	1	NC	1
116			min	-.062	4	-.014	5	-.003	5	-2.384e-3	2	NC	1	NC	1
117		2	max	.001	1	.563	3	.316	1	1.338e-2	3	NC	4	NC	3
118			min	-.062	4	-.124	1	.004	15	-3.039e-3	1	803.488	3	4473.394	1
119		3	max	.001	1	.837	3	.403	1	1.53e-2	3	NC	5	NC	3
120			min	-.062	4	-.294	1	.006	12	-3.77e-3	1	419.057	3	1712.434	1
121		4	max	0	1	1.037	3	.494	1	1.721e-2	3	NC	5	NC	3
122			min	-.062	4	-.405	1	.005	12	-4.501e-3	1	310.464	3	1037.155	1
123		5	max	0	1	1.136	3	.57	1	1.912e-2	3	NC	5	NC	3
124			min	-.062	4	-.438	1	.001	3	-5.232e-3	1	275.215	3	780.558	1
125		6	max	0	1	1.128	3	.619	1	2.103e-2	3	NC	5	NC	3
126			min	-.062	4	-.39	1	-.006	3	-5.963e-3	1	277.932	3	673.018	1
127		7	max	0	1	1.027	3	.638	1	2.294e-2	3	NC	5	NC	3
128			min	-.062	4	-.275	1	-.015	3	-6.694e-3	1	314.699	3	639.656	1
129		8	max	0	1	.87	3	.631	1	2.485e-2	3	NC	4	NC	5
130			min	-.062	4	-.125	1	-.024	3	-7.426e-3	1	396.069	3	652.438	1
131		9	max	0	1	.716	3	.61	1	2.676e-2	3	NC	4	NC	5
132			min	-.063	4	-.002	5	-.031	3	-8.157e-3	1	531.617	3	691.045	1
133		10	max	0	1	.643	3	.597	1	2.867e-2	3	NC	1	NC	5
134			min	-.063	4	.002	15	-.034	3	-8.888e-3	1	634.101	3	717.553	1
135		11	max	0	3	.716	3	.61	1	2.676e-2	3	NC	4	NC	5
136			min	-.063	4	.001	9	-.031	3	-8.157e-3	1	531.617	3	691.045	1
137		12	max	0	3	.87	3	.631	1	2.485e-2	3	NC	4	NC	5
138			min	-.063	4	-.125	1	-.024	3	-7.426e-3	1	396.069	3	652.438	1
139		13	max	0	3	1.027	3	.638	1	2.294e-2	3	NC	5	NC	3
140			min	-.063	4	-.275	1	-.015	3	-6.694e-3	1	314.699	3	639.656	1
141		14	max	0	3	1.128	3	.619	1	2.103e-2	3	NC	5	NC	3

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
142			min	-.063	4	-.39	1	-.006	3	-5.963e-3	1	277.932	3	673.018	1
143		15	max	0	3	1.136	3	.57	1	1.912e-2	3	NC	5	NC	3
144			min	-.063	4	-.438	1	.001	3	-5.232e-3	1	275.215	3	780.558	1
145		16	max	0	3	1.037	3	.494	1	1.721e-2	3	NC	5	NC	3
146			min	-.063	4	-.405	1	.005	12	-4.501e-3	1	310.464	3	1037.155	1
147		17	max	0	3	.837	3	.403	1	1.53e-2	3	NC	5	NC	3
148			min	-.063	4	-.294	1	.006	12	-3.77e-3	1	419.057	3	1712.434	1
149		18	max	0	3	.563	3	.316	1	1.338e-2	3	NC	4	NC	3
150			min	-.063	4	-.124	1	.005	12	-3.039e-3	1	803.488	3	4473.394	1
151		19	max	0	3	.264	3	.263	1	1.147e-2	3	NC	1	NC	1
152			min	-.063	4	.015	15	.001	3	-2.384e-3	2	6565.987	4	NC	1
153	M11	1	max	.003	1	.006	2	.265	1	5.936e-3	1	NC	1	NC	1
154			min	-.178	4	-.044	3	-.003	5	-8.401e-5	5	NC	1	NC	1
155		2	max	.003	1	.17	3	.309	1	6.852e-3	1	NC	5	NC	3
156			min	-.179	4	-.197	1	-.006	3	-1.659e-5	15	1118.497	3	5149.672	4
157		3	max	.002	1	.368	3	.391	1	7.767e-3	1	NC	5	NC	3
158			min	-.179	4	-.373	1	-.011	3	3.044e-5	15	582.27	3	1894.983	1
159		4	max	.002	1	.5	3	.482	1	8.683e-3	1	NC	5	NC	3
160			min	-.179	4	-.486	1	-.014	3	7.748e-5	15	440.862	3	1106.553	1
161		5	max	.002	1	.54	3	.559	1	9.599e-3	1	NC	5	NC	3
162			min	-.179	4	-.519	1	-.018	3	1.231e-4	12	410.846	3	814.733	1
163		6	max	.001	1	.481	3	.612	1	1.051e-2	1	NC	5	NC	3
164			min	-.179	4	-.469	1	-.022	3	7.368e-5	12	456.395	3	691.55	1
165		7	max	.001	1	.341	3	.635	1	1.143e-2	1	NC	5	NC	5
166			min	-.179	4	-.352	1	-.026	3	8.579e-6	3	622.985	3	648.975	1
167		8	max	0	1	.155	3	.631	1	1.235e-2	1	NC	5	NC	12
168			min	-.179	4	-.199	1	-.031	3	-7.448e-5	3	1175.794	1	654.74	1
169		9	max	0	1	-.002	15	.614	1	1.326e-2	1	NC	4	NC	5
170			min	-.179	4	-.057	1	-.034	3	-1.575e-4	3	3814.105	1	687.427	1
171		10	max	0	1	.007	1	.602	1	1.418e-2	1	NC	1	NC	5
172			min	-.179	4	-.096	3	-.036	3	-2.406e-4	3	4614.706	3	711.014	1
173		11	max	0	3	0	15	.614	1	1.326e-2	1	NC	4	NC	12
174			min	-.18	4	-.057	1	-.034	3	-1.575e-4	3	3814.105	1	687.427	1
175		12	max	0	3	.155	3	.631	1	1.235e-2	1	NC	5	NC	12
176			min	-.18	4	-.199	1	-.031	3	-7.448e-5	3	1175.794	1	654.74	1
177		13	max	.001	3	.341	3	.635	1	1.143e-2	1	NC	5	NC	12
178			min	-.18	4	-.352	1	-.026	3	8.579e-6	3	622.985	3	648.975	1
179		14	max	.001	3	.481	3	.612	1	1.051e-2	1	NC	15	NC	3
180			min	-.18	4	-.469	1	-.022	3	7.368e-5	12	456.395	3	691.55	1
181		15	max	.002	3	.54	3	.559	1	9.599e-3	1	NC	15	NC	3
182			min	-.18	4	-.519	1	-.018	3	1.231e-4	12	410.846	3	814.733	1
183		16	max	.002	3	.5	3	.482	1	8.683e-3	1	NC	15	NC	3
184			min	-.18	4	-.486	1	-.014	3	1.724e-4	12	440.862	3	1106.553	1
185		17	max	.002	3	.368	3	.391	1	7.767e-3	1	NC	15	NC	3
186			min	-.18	4	-.373	1	-.017	5	2.218e-4	12	582.27	3	1894.983	1
187		18	max	.003	3	.17	3	.309	1	6.852e-3	1	NC	5	NC	3
188			min	-.18	4	-.197	1	-.009	5	2.712e-4	12	1118.497	3	5370.704	1
189		19	max	.003	3	.006	2	.265	1	5.936e-3	1	NC	1	NC	1
190			min	-.18	4	-.044	3	0	3	3.206e-4	12	NC	1	NC	1
191	M12	1	max	0	2	.003	5	.267	1	7.002e-3	1	NC	1	NC	1
192			min	-.267	4	-.127	1	-.003	5	-9.935e-4	3	NC	1	NC	1
193		2	max	0	2	.112	3	.303	1	7.989e-3	1	NC	5	NC	2
194			min	-.267	4	-.411	2	.002	3	-1.242e-3	3	799.313	2	5190.225	4
195		3	max	0	2	.23	3	.38	1	8.977e-3	1	NC	5	NC	3
196			min	-.267	4	-.671	2	.001	3	-1.49e-3	3	428.144	2	2117.847	1
197		4	max	0	2	.3	3	.469	1	9.965e-3	1	NC	5	NC	3
198			min	-.267	4	-.846	2	-.001	3	-1.738e-3	3	326.264	2	1184.654	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
199		5	max	0	2	.312	3	.549	1	1.095e-2	1	NC	5	NC	3
200			min	-.267	4	-.912	2	-.006	3	-1.987e-3	3	299.395	2	851.34	1
201		6	max	0	2	.27	3	.605	1	1.194e-2	1	NC	5	NC	3
202			min	-.267	4	-.867	2	-.013	3	-2.235e-3	3	317.297	2	710.645	1
203		7	max	0	2	.186	3	.631	1	1.293e-2	1	NC	5	NC	3
204			min	-.267	4	-.73	2	-.021	3	-2.483e-3	3	387.569	2	658.172	1
205		8	max	0	2	.081	3	.632	1	1.392e-2	1	NC	5	NC	12
206			min	-.267	4	-.541	2	-.029	3	-2.732e-3	3	556.784	2	656.69	1
207		9	max	0	2	-.008	15	.618	1	1.49e-2	1	NC	5	NC	5
208			min	-.267	4	-.378	1	-.035	3	-2.98e-3	3	944.109	2	683.473	1
209		10	max	0	1	-.008	15	.608	1	1.589e-2	1	NC	3	NC	5
210			min	-.267	4	-.303	1	-.038	3	-3.228e-3	3	1365.537	1	704.209	1
211		11	max	0	9	-.009	12	.618	1	1.49e-2	1	NC	5	NC	12
212			min	-.267	4	-.378	1	-.035	3	-2.98e-3	3	944.109	2	683.473	1
213		12	max	0	9	.081	3	.632	1	1.392e-2	1	NC	5	NC	12
214			min	-.267	4	-.541	2	-.029	3	-2.732e-3	3	556.784	2	656.69	1
215		13	max	0	9	.186	3	.631	1	1.293e-2	1	NC	5	NC	3
216			min	-.267	4	-.73	2	-.021	3	-2.483e-3	3	387.569	2	658.172	1
217		14	max	0	9	.27	3	.605	1	1.194e-2	1	NC	15	NC	3
218			min	-.267	4	-.867	2	-.013	3	-2.235e-3	3	317.297	2	710.645	1
219		15	max	0	9	.312	3	.549	1	1.095e-2	1	NC	15	NC	3
220			min	-.267	4	-.912	2	-.006	3	-1.987e-3	3	299.395	2	851.34	1
221		16	max	0	9	.3	3	.469	1	9.965e-3	1	NC	15	NC	3
222			min	-.267	4	-.846	2	-.006	5	-1.738e-3	3	326.264	2	1184.654	1
223		17	max	0	9	.23	3	.38	1	8.977e-3	1	NC	15	NC	3
224			min	-.267	4	-.671	2	-.018	5	-1.49e-3	3	428.144	2	2117.847	1
225		18	max	0	9	.112	3	.303	1	7.989e-3	1	NC	5	NC	2
226			min	-.267	4	-.411	2	-.01	5	-1.242e-3	3	799.313	2	6698.74	1
227		19	max	0	9	-.01	15	.267	1	7.002e-3	1	NC	1	NC	1
228			min	-.267	4	-.127	1	0	3	-9.935e-4	3	NC	1	NC	1
229	M13	1	max	0	3	.119	3	.269	1	1.526e-2	1	NC	1	NC	1
230			min	-.48	4	-.652	1	-.003	5	-5.314e-3	3	NC	1	NC	1
231		2	max	0	3	.292	3	.328	1	1.765e-2	1	NC	5	NC	3
232			min	-.48	4	-1.047	1	0	3	-6.364e-3	3	571.577	2	4084.884	1
233		3	max	0	3	.443	3	.418	1	2.005e-2	1	NC	5	NC	3
234			min	-.48	4	-1.407	2	-.002	3	-7.415e-3	3	301.07	2	1613.775	1
235		4	max	0	3	.551	3	.511	1	2.255e-2	2	NC	15	NC	3
236			min	-.48	4	-1.694	2	-.005	3	-8.466e-3	3	221.515	2	991.426	1
237		5	max	0	3	.607	3	.588	1	2.505e-2	2	NC	15	NC	3
238			min	-.48	4	-1.862	2	-.01	3	-9.517e-3	3	191.7	2	751.957	1
239		6	max	0	3	.607	3	.638	1	2.756e-2	2	NC	15	NC	3
240			min	-.48	4	-1.908	2	-.017	3	-1.057e-2	3	184.982	2	651.268	1
241		7	max	0	3	.561	3	.656	1	3.006e-2	2	NC	15	NC	3
242			min	-.48	4	-1.846	2	-.024	3	-1.162e-2	3	194.153	2	620.483	1
243		8	max	0	3	.488	3	.648	1	3.256e-2	2	NC	15	NC	5
244			min	-.48	4	-1.727	1	-.032	3	-1.267e-2	3	217.016	2	633.453	1
245		9	max	0	3	.415	3	.627	1	3.506e-2	2	NC	15	NC	5
246			min	-.48	4	-1.603	1	-.038	3	-1.372e-2	3	248.417	2	670.805	1
247		10	max	0	1	.381	3	.614	1	3.756e-2	2	NC	15	NC	5
248			min	-.48	4	-1.541	1	-.041	3	-1.477e-2	3	267.359	2	696.251	1
249		11	max	0	1	.415	3	.627	1	3.506e-2	2	NC	15	NC	12
250			min	-.48	4	-1.603	1	-.038	3	-1.372e-2	3	248.417	2	670.805	1
251		12	max	0	1	.488	3	.648	1	3.256e-2	2	9737.019	15	NC	12
252			min	-.48	4	-1.727	1	-.032	3	-1.267e-2	3	217.016	2	633.453	1
253		13	max	0	1	.561	3	.656	1	3.006e-2	2	8635.419	15	NC	3
254			min	-.48	4	-1.846	2	-.024	3	-1.162e-2	3	194.153	2	620.483	1
255		14	max	0	1	.607	3	.638	1	2.756e-2	2	8122.722	15	NC	3

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
256			min	-.48	4	-1.908	2	-.017	3	-1.057e-2	3	184.982	2	651.268	1
257		15	max	0	1	.607	3	.588	1	2.505e-2	2	8274.22	15	NC	3
258			min	-.48	4	-1.862	2	-.01	3	-9.517e-3	3	191.7	2	751.957	1
259		16	max	.001	1	.551	3	.511	1	2.255e-2	2	9349.253	15	NC	3
260			min	-.48	4	-1.694	2	-.005	3	-8.466e-3	3	221.515	2	991.426	1
261		17	max	.001	1	.443	3	.418	1	2.005e-2	1	NC	15	NC	3
262			min	-.48	4	-1.407	2	-.012	5	-7.415e-3	3	301.07	2	1613.775	1
263		18	max	.002	1	.292	3	.328	1	1.765e-2	1	NC	5	NC	3
264			min	-.48	4	-1.047	1	-.004	5	-6.364e-3	3	571.577	2	4084.884	1
265		19	max	.002	1	.119	3	.269	1	1.526e-2	1	NC	1	NC	1
266			min	-.48	4	-.652	1	0	3	-5.314e-3	3	NC	1	NC	1
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	15	0	5	1.863e-3	2	NC	1	NC	1
270			min	0	1	-.001	1	0	1	-1.63e-3	5	NC	1	NC	1
271		3	max	0	3	0	12	.002	5	3.726e-3	2	NC	1	NC	1
272			min	0	1	-.004	1	0	1	-3.261e-3	5	NC	1	NC	1
273		4	max	0	3	0	12	.004	5	5.589e-3	2	NC	3	NC	1
274			min	0	1	-.01	1	-.001	1	-4.891e-3	5	5640.565	1	NC	1
275		5	max	0	3	0	12	.008	5	7.106e-3	2	NC	3	NC	1
276			min	0	1	-.017	1	-.002	1	-6.271e-3	5	3157.083	1	7002.582	5
277		6	max	0	3	0	12	.012	5	6.506e-3	2	NC	3	NC	1
278			min	0	1	-.027	1	-.002	1	-6.112e-3	5	2002.413	1	4609.715	5
279		7	max	0	3	-.001	12	.016	5	5.906e-3	2	NC	3	NC	1
280			min	0	1	-.039	1	-.003	1	-5.954e-3	5	1390.941	1	3289.514	5
281		8	max	0	3	-.001	12	.022	5	5.305e-3	2	NC	3	NC	2
282			min	0	1	-.052	1	-.004	1	-5.796e-3	5	1028.329	1	2482.853	5
283		9	max	0	3	-.001	12	.027	5	4.705e-3	2	NC	3	NC	2
284			min	0	1	-.067	1	-.004	1	-5.638e-3	5	795.307	1	1952.64	5
285		10	max	0	3	-.002	12	.034	5	4.105e-3	2	NC	3	NC	2
286			min	0	1	-.084	1	-.005	1	-5.48e-3	5	636.696	1	1585.258	5
287		11	max	0	3	-.002	12	.041	5	3.504e-3	2	NC	3	NC	2
288			min	-.001	1	-.102	1	-.005	1	-5.322e-3	5	523.732	1	1319.858	5
289		12	max	0	3	-.002	12	.048	5	2.904e-3	2	NC	3	NC	2
290			min	-.001	1	-.122	1	-.005	1	-5.163e-3	5	440.346	1	1121.678	5
291		13	max	0	3	-.002	12	.055	5	2.303e-3	2	NC	3	NC	2
292			min	-.001	1	-.142	1	-.005	1	-5.005e-3	5	377.028	1	969.752	5
293		14	max	.001	3	-.002	12	.063	5	1.703e-3	2	NC	3	NC	2
294			min	-.001	1	-.164	1	-.004	1	-4.847e-3	5	327.787	1	850.677	5
295		15	max	.001	3	-.002	12	.071	4	1.103e-3	2	NC	3	NC	2
296			min	-.001	1	-.186	1	-.003	1	-4.689e-3	5	288.732	1	754.827	4
297		16	max	.001	3	-.002	12	.079	4	5.024e-4	2	NC	3	NC	2
298			min	-.001	1	-.208	1	-.003	3	-4.589e-3	4	257.241	1	675.802	4
299		17	max	.001	3	-.002	12	.088	4	5.269e-4	3	NC	3	NC	1
300			min	-.002	1	-.232	1	-.006	3	-4.506e-3	4	231.485	1	610.823	4
301		18	max	.001	3	-.002	12	.096	4	8.398e-4	3	NC	3	NC	1
302			min	-.002	1	-.255	1	-.01	3	-4.423e-3	4	210.166	1	556.785	4
303		19	max	.001	3	-.002	3	.105	4	1.153e-3	3	NC	3	NC	1
304			min	-.002	1	-.279	1	-.014	3	-4.34e-3	4	192.338	1	511.406	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	15	0	4	0	1	NC	1	NC	1
308			min	0	1	-.002	1	0	1	-1.726e-3	4	NC	1	NC	1
309		3	max	0	3	0	15	.002	4	0	1	NC	3	NC	1
310			min	0	1	-.009	1	0	1	-3.451e-3	4	5990.44	1	NC	1
311		4	max	0	3	0	15	.005	4	0	1	NC	3	NC	1
312			min	0	1	-.021	1	0	1	-5.177e-3	4	2611.361	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
313		5	max	.001	3	0	12	.008	4	0	1	NC	3	NC	1
314			min	-.001	1	-.037	1	0	1	-6.635e-3	4	1445.355	1	6686.057	4
315		6	max	.001	3	0	12	.012	4	0	1	NC	3	NC	1
316			min	-.002	1	-.059	1	0	1	-6.45e-3	4	907.137	1	4405.069	4
317		7	max	.001	3	0	3	.017	4	0	1	NC	3	NC	1
318			min	-.002	1	-.086	1	0	1	-6.266e-3	4	625.735	1	3146.082	4
319		8	max	.002	3	.002	3	.023	4	0	1	NC	3	NC	1
320			min	-.002	1	-.116	1	0	1	-6.081e-3	4	460.323	1	2376.748	4
321		9	max	.002	3	.004	3	.029	4	0	1	NC	3	NC	1
322			min	-.002	1	-.151	1	0	1	-5.897e-3	4	354.705	1	1871.095	4
323		10	max	.002	3	.006	3	.035	4	0	1	NC	12	NC	1
324			min	-.003	1	-.189	1	0	1	-5.712e-3	4	283.164	1	1520.768	4
325		11	max	.002	3	.009	3	.042	4	0	1	NC	12	NC	1
326			min	-.003	1	-.231	1	0	1	-5.528e-3	4	232.407	1	1267.736	4
327		12	max	.003	3	.011	3	.05	4	0	1	8729.638	12	NC	1
328			min	-.003	1	-.275	1	0	1	-5.344e-3	4	195.054	1	1078.846	4
329		13	max	.003	3	.014	3	.057	4	0	1	6893.031	12	NC	1
330			min	-.003	1	-.322	1	0	1	-5.159e-3	4	166.763	1	934.097	4
331		14	max	.003	3	.017	3	.065	4	0	1	5629.722	12	NC	1
332			min	-.004	1	-.37	1	0	1	-4.975e-3	4	144.807	1	820.709	4
333		15	max	.003	3	.021	3	.073	4	0	1	4942.99	15	NC	1
334			min	-.004	1	-.421	1	0	1	-4.79e-3	4	127.425	1	730.27	4
335		16	max	.003	3	.024	3	.082	4	0	1	4403.318	15	NC	1
336			min	-.004	1	-.473	1	0	1	-4.606e-3	4	113.43	1	657.043	4
337		17	max	.004	3	.027	3	.09	4	0	1	3962.009	15	NC	1
338			min	-.004	1	-.526	1	0	1	-4.421e-3	4	101.999	1	596.998	4
339		18	max	.004	3	.031	3	.098	4	0	1	3596.798	15	NC	1
340			min	-.005	1	-.579	1	0	1	-4.237e-3	4	92.549	1	547.246	4
341		19	max	.004	3	.035	3	.106	4	0	1	3291.432	15	NC	1
342			min	-.005	1	-.633	1	0	1	-4.052e-3	4	84.655	1	505.666	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	0	4	8.477e-4	3	NC	1	NC	1
346			min	0	1	-.001	1	0	3	-1.964e-3	4	NC	1	NC	1
347		3	max	0	3	0	5	.002	4	1.695e-3	3	NC	1	NC	1
348			min	0	1	-.004	1	0	3	-3.927e-3	4	NC	1	NC	1
349		4	max	0	3	0	5	.005	4	2.543e-3	3	NC	3	NC	1
350			min	0	1	-.01	1	0	3	-5.891e-3	4	5640.565	1	NC	1
351		5	max	0	3	0	5	.008	4	3.228e-3	3	NC	3	NC	1
352			min	0	1	-.017	1	-.002	3	-7.54e-3	4	3157.083	1	6612.168	4
353		6	max	0	3	0	5	.012	4	2.915e-3	3	NC	3	NC	1
354			min	0	1	-.027	1	-.002	3	-7.264e-3	4	2002.413	1	4367.27	4
355		7	max	0	3	0	5	.017	4	2.602e-3	3	NC	3	NC	1
356			min	0	1	-.039	1	-.003	3	-6.988e-3	4	1390.941	1	3125.648	4
357		8	max	0	3	0	5	.023	4	2.289e-3	3	NC	3	NC	2
358			min	0	1	-.052	1	-.003	3	-6.712e-3	4	1028.329	1	2365.961	4
359		9	max	0	3	.001	5	.029	4	1.976e-3	3	NC	3	NC	2
360			min	0	1	-.067	1	-.003	3	-6.436e-3	4	795.307	1	1866.244	4
361		10	max	0	3	.001	5	.035	4	1.663e-3	3	NC	3	NC	2
362			min	0	1	-.084	1	-.004	3	-6.16e-3	4	636.696	1	1519.843	4
363		11	max	0	3	.001	5	.042	4	1.35e-3	3	NC	3	NC	2
364			min	-.001	1	-.102	1	-.003	3	-5.884e-3	4	523.732	1	1269.576	4
365		12	max	0	3	.002	5	.05	4	1.037e-3	3	NC	3	NC	2
366			min	-.001	1	-.122	1	-.003	3	-5.608e-3	4	440.346	1	1082.744	4
367		13	max	0	3	.002	5	.057	4	7.246e-4	3	NC	3	NC	2
368			min	-.001	1	-.142	1	-.002	3	-5.332e-3	4	377.028	1	939.601	4
369		14	max	.001	3	.002	5	.065	4	4.117e-4	3	NC	3	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
370			min	-.001	1	-.164	1	0	3	-5.056e-3	4	327.787	1	827.528	4
371		15	max	.001	3	.002	5	.073	4	9.881e-5	3	NC	3	NC	2
372			min	-.001	1	-.186	1	0	10	-4.78e-3	4	288.732	1	738.217	4
373		16	max	.001	3	.003	5	.081	4	1.059e-4	9	NC	3	NC	2
374			min	-.001	1	-.208	1	0	10	-4.513e-3	5	257.241	1	665.996	4
375		17	max	.001	3	.003	5	.088	4	4.725e-4	1	NC	3	NC	1
376			min	-.002	1	-.232	1	-.002	2	-4.314e-3	5	231.485	1	606.889	4
377		18	max	.001	3	.003	5	.096	4	1.066e-3	1	NC	3	NC	1
378			min	-.002	1	-.255	1	-.004	2	-4.115e-3	5	210.166	1	558.042	4
379		19	max	.001	3	.003	5	.104	4	1.659e-3	1	NC	3	NC	1
380			min	-.002	1	-.279	1	-.008	2	-3.915e-3	5	192.338	1	517.36	4
381	M3	1	max	.015	1	0	12	.007	5	2.154e-3	2	NC	1	NC	1
382			min	0	12	-.005	1	-.002	1	-9.165e-4	5	NC	1	NC	1
383		2	max	.014	1	0	3	.029	5	2.992e-3	2	NC	1	NC	5
384			min	0	12	-.03	1	-.025	2	-1.278e-3	3	NC	1	2572.336	2
385		3	max	.013	1	0	3	.052	5	3.83e-3	2	NC	1	NC	5
386			min	.001	15	-.054	1	-.049	2	-1.675e-3	3	NC	1	1304.879	2
387		4	max	.013	1	0	3	.074	5	4.668e-3	2	NC	1	NC	5
388			min	.001	15	-.078	1	-.071	2	-2.073e-3	3	NC	1	887.845	2
389		5	max	.012	1	0	3	.097	5	5.506e-3	2	NC	1	NC	13
390			min	.001	15	-.102	1	-.091	2	-2.471e-3	3	NC	1	683.914	2
391		6	max	.011	1	0	3	.119	5	6.344e-3	2	NC	1	NC	13
392			min	.001	15	-.125	1	-.11	2	-2.869e-3	3	NC	1	565.797	2
393		7	max	.011	1	0	3	.141	5	7.182e-3	2	NC	1	NC	13
394			min	.001	15	-.149	1	-.126	2	-3.266e-3	3	NC	1	491.262	2
395		8	max	.01	1	0	3	.163	5	8.019e-3	2	NC	1	NC	13
396			min	.001	15	-.173	1	-.14	2	-3.664e-3	3	NC	1	442.447	2
397		9	max	.009	1	.001	3	.185	5	8.857e-3	2	NC	1	NC	13
398			min	.001	15	-.197	1	-.15	2	-4.062e-3	3	NC	1	391.439	4
399		10	max	.009	1	.002	3	.206	5	9.695e-3	2	NC	1	NC	13
400			min	0	15	-.22	1	-.157	2	-4.46e-3	3	NC	1	346.906	4
401		11	max	.008	1	.002	3	.227	5	1.053e-2	2	NC	1	NC	13
402			min	0	15	-.243	1	-.16	2	-4.857e-3	3	NC	1	311.282	4
403		12	max	.007	1	.003	3	.248	5	1.137e-2	2	NC	1	NC	13
404			min	0	15	-.267	1	-.159	2	-5.255e-3	3	NC	1	282.129	4
405		13	max	.006	1	.003	3	.268	5	1.221e-2	2	NC	1	NC	13
406			min	0	15	-.29	1	-.152	2	-5.653e-3	3	NC	1	257.822	4
407		14	max	.006	1	.004	3	.288	5	1.305e-2	2	NC	1	NC	13
408			min	0	10	-.313	1	-.141	2	-6.051e-3	3	NC	1	237.236	4
409		15	max	.005	3	.005	3	.307	5	1.388e-2	2	NC	1	NC	13
410			min	0	10	-.336	1	-.123	2	-6.448e-3	3	NC	1	219.567	4
411		16	max	.005	3	.006	3	.326	5	1.472e-2	2	NC	1	NC	13
412			min	0	10	-.359	1	-.1	2	-6.846e-3	3	NC	1	204.226	4
413		17	max	.006	3	.007	3	.344	5	1.556e-2	2	NC	1	NC	7
414			min	0	10	-.382	1	-.07	2	-7.244e-3	3	9121.297	3	190.772	4
415		18	max	.006	3	.008	3	.362	5	1.64e-2	2	NC	1	NC	5
416			min	0	10	-.405	1	-.034	2	-7.642e-3	3	8018.849	3	178.868	4
417		19	max	.006	3	.009	3	.383	4	1.724e-2	2	NC	1	NC	1
418			min	-.001	2	-.427	1	-.002	3	-8.039e-3	3	7140.71	3	168.251	4
419	M6	1	max	.032	1	0	3	.007	4	0	1	NC	1	NC	1
420			min	0	15	-.012	1	0	1	-9.851e-4	4	NC	1	NC	1
421		2	max	.03	1	.005	3	.031	4	0	1	NC	1	NC	1
422			min	0	15	-.067	1	0	1	-1.089e-3	4	NC	1	NC	1
423		3	max	.028	1	.009	3	.055	4	0	1	NC	1	NC	1
424			min	0	15	-.122	1	0	1	-1.192e-3	4	7279.344	3	NC	1
425		4	max	.026	1	.014	3	.078	4	0	1	NC	1	NC	1
426			min	0	15	-.176	1	0	1	-1.296e-3	4	4838.115	3	7779.63	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
427		5	max	.024	1	.018	3	.102	4	0	1	NC	1	NC	1
428			min	0	15	-.231	1	0	1	-1.4e-3	4	3613.887	3	5903.477	4
429		6	max	.022	1	.023	3	.125	4	0	1	NC	1	NC	1
430			min	0	15	-.285	1	0	1	-1.503e-3	4	2876.854	3	4822.671	4
431		7	max	.021	1	.027	3	.148	4	0	1	NC	1	NC	1
432			min	0	15	-.34	1	0	1	-1.607e-3	4	2383.748	3	4143.352	4
433		8	max	.019	1	.032	3	.171	4	0	1	NC	1	NC	1
434			min	0	15	-.394	1	0	1	-1.711e-3	4	2030.306	3	3699.014	4
435		9	max	.017	1	.036	3	.193	4	0	1	NC	1	NC	1
436			min	0	15	-.448	1	0	1	-1.814e-3	4	1764.392	3	3409.146	4
437		10	max	.015	1	.041	3	.215	4	0	1	NC	1	NC	1
438			min	0	15	-.502	1	0	1	-1.918e-3	4	1557.033	3	3232.618	4
439		11	max	.013	1	.046	3	.237	4	0	1	NC	1	NC	1
440			min	0	15	-.556	1	0	1	-2.021e-3	4	1390.838	3	3149.881	4
441		12	max	.011	3	.051	3	.258	4	0	1	NC	1	NC	1
442			min	0	15	-.61	1	0	1	-2.125e-3	4	1254.731	3	3156.377	4
443		13	max	.012	3	.056	3	.278	4	0	1	NC	1	NC	1
444			min	0	10	-.664	1	0	1	-2.229e-3	4	1141.321	3	3262.232	4
445		14	max	.013	3	.061	3	.297	4	0	1	NC	1	NC	1
446			min	0	10	-.717	1	0	1	-2.332e-3	4	1045.483	3	3498.692	4
447		15	max	.014	3	.066	3	.316	4	0	1	NC	1	NC	1
448			min	-.002	10	-.771	1	0	1	-2.436e-3	4	963.552	3	3938.64	4
449		16	max	.015	3	.071	3	.334	4	0	1	NC	1	NC	1
450			min	-.004	2	-.825	1	0	1	-2.54e-3	4	892.832	3	4761.317	4
451		17	max	.016	3	.077	3	.352	4	0	1	NC	1	NC	1
452			min	-.006	2	-.878	1	0	1	-2.643e-3	4	831.298	3	6513.851	4
453		18	max	.017	3	.082	3	.368	4	0	1	NC	1	NC	1
454			min	-.008	2	-.931	1	0	1	-2.747e-3	4	777.398	3	NC	1
455		19	max	.018	3	.087	3	.384	4	0	1	NC	1	NC	1
456			min	-.01	2	-.985	1	0	1	-2.851e-3	4	729.922	3	NC	1
457	M9	1	max	.015	1	0	5	.008	4	8.799e-4	3	NC	1	NC	1
458			min	0	5	-.005	1	-.001	3	-2.154e-3	2	NC	1	NC	1
459		2	max	.014	1	0	15	.034	4	1.278e-3	3	NC	1	NC	4
460			min	0	5	-.03	1	-.013	3	-2.992e-3	2	NC	1	2572.336	2
461		3	max	.013	1	0	15	.061	4	1.675e-3	3	NC	1	NC	7
462			min	0	5	-.054	1	-.023	3	-3.83e-3	2	NC	1	1304.879	2
463		4	max	.013	1	0	3	.087	4	2.073e-3	3	NC	1	9780.148	15
464			min	0	5	-.078	1	-.033	3	-4.668e-3	2	NC	1	887.845	2
465		5	max	.012	1	0	3	.113	4	2.471e-3	3	NC	1	7431.777	15
466			min	0	5	-.102	1	-.043	3	-5.506e-3	2	NC	1	683.914	2
467		6	max	.011	1	0	3	.139	4	2.869e-3	3	NC	1	6077.748	15
468			min	0	5	-.125	1	-.051	3	-6.344e-3	2	NC	1	565.797	2
469		7	max	.011	1	0	3	.164	4	3.266e-3	3	NC	1	5225.996	15
470			min	0	5	-.149	1	-.059	3	-7.182e-3	2	NC	1	491.262	2
471		8	max	.01	1	0	3	.189	4	3.664e-3	3	NC	1	4668.455	15
472			min	0	5	-.173	1	-.065	3	-8.019e-3	2	NC	1	442.447	2
473		9	max	.009	1	.001	3	.212	4	4.062e-3	3	NC	1	4304.502	15
474			min	0	5	-.197	1	-.07	3	-8.857e-3	2	NC	1	410.731	2
475		10	max	.009	1	.002	3	.235	4	4.46e-3	3	NC	1	4082.746	15
476			min	0	5	-.22	1	-.073	3	-9.695e-3	2	NC	1	391.748	2
477		11	max	.008	1	.002	3	.256	4	4.857e-3	3	NC	1	3978.793	15
478			min	0	5	-.243	1	-.075	3	-1.053e-2	2	NC	1	383.492	2
479		12	max	.007	1	.003	3	.277	4	5.255e-3	3	NC	1	3987.041	15
480			min	0	5	-.267	1	-.074	3	-1.137e-2	2	NC	1	385.646	2
481		13	max	.006	1	.003	3	.296	4	5.653e-3	3	NC	1	4120.335	15
482			min	0	5	-.29	1	-.071	3	-1.221e-2	2	NC	1	399.602	2
483		14	max	.006	1	.004	3	.313	4	6.051e-3	3	NC	1	4418.094	15

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
484			min	0	5	-.313	1	-.066	3	-1.305e-2	2	NC	1	429.286	2
485		15	max	.005	3	.005	3	.33	4	6.448e-3	3	NC	1	4972.18	15
486			min	0	5	-.336	1	-.058	3	-1.388e-2	2	NC	1	483.691	2
487		16	max	.005	3	.006	3	.344	4	6.846e-3	3	NC	1	6008.444	15
488			min	0	5	-.359	1	-.048	3	-1.472e-2	2	NC	1	584.806	2
489		17	max	.006	3	.007	3	.357	4	7.244e-3	3	NC	1	8216.234	15
490			min	0	5	-.382	1	-.035	3	-1.556e-2	2	9121.297	3	799.639	2
491		18	max	.006	3	.008	3	.368	4	7.642e-3	3	NC	1	NC	5
492			min	0	10	-.405	1	-.018	3	-1.64e-2	2	8018.849	3	1464.694	2
493		19	max	.006	3	.009	3	.378	5	8.039e-3	3	NC	1	NC	1
494			min	-.001	2	-.427	1	-.014	1	-1.724e-2	2	7140.71	3	NC	1