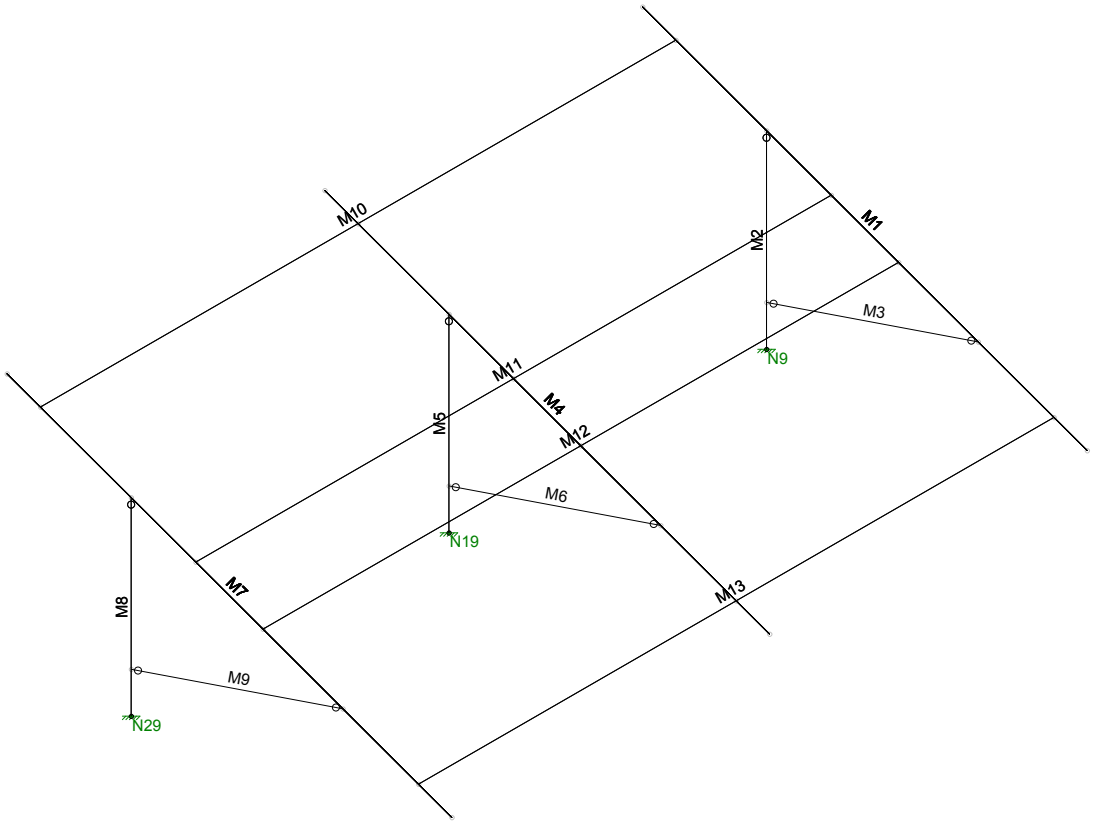


Schletter, Inc.		20° Tilt w/o Seismic Design
HCV	Standard FS Racking System	
	Representative Calculations - ASCE 7-10	

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.

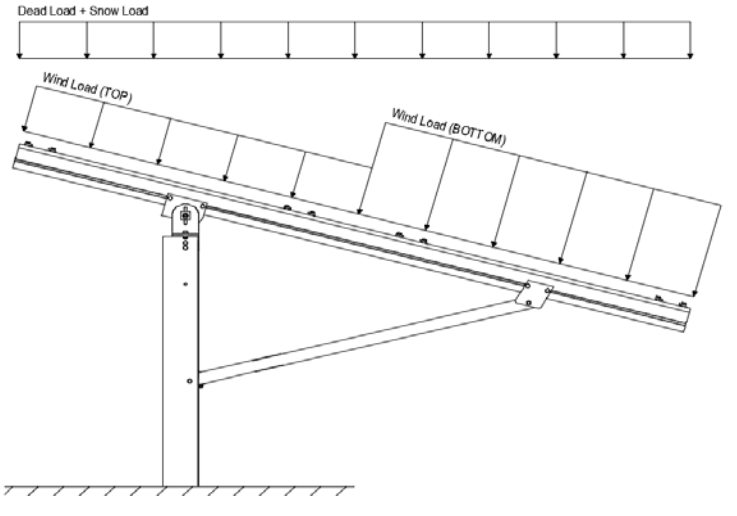
1.2 Construction

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	*Self-weight of the PV modules.*
g_{MIN} =	1.75	psf	

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

2.4 Seismic Loads - N/A

S_S =	0.00	R =	1.25
S_{DS} =	0.00	C_S =	0
S_1 =	0.00	ρ =	1.3
S_{D1} =	0.00	Ω =	1.25
T_a =	0.00	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]	*(ASCE 7, Eq 2.3.2-1 through 2.3.2-7) & (ASCE 7, Section 12.4.3.2)*
0.56D + 1.3E [R]	
1.54D + 1.25E + 0.2S [O]	
0.56D + 1.25E [O]	

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]	*(ASCE 7, Eq 2.4.1-1 through 2.4.1-8) & (ASCE 7, Section 12.4.3.2)*
1.238D + 0.875E [O]	
1.1785D + 0.65625E + 0.75S [O]	
0.362D + 0.875E [O]	

[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

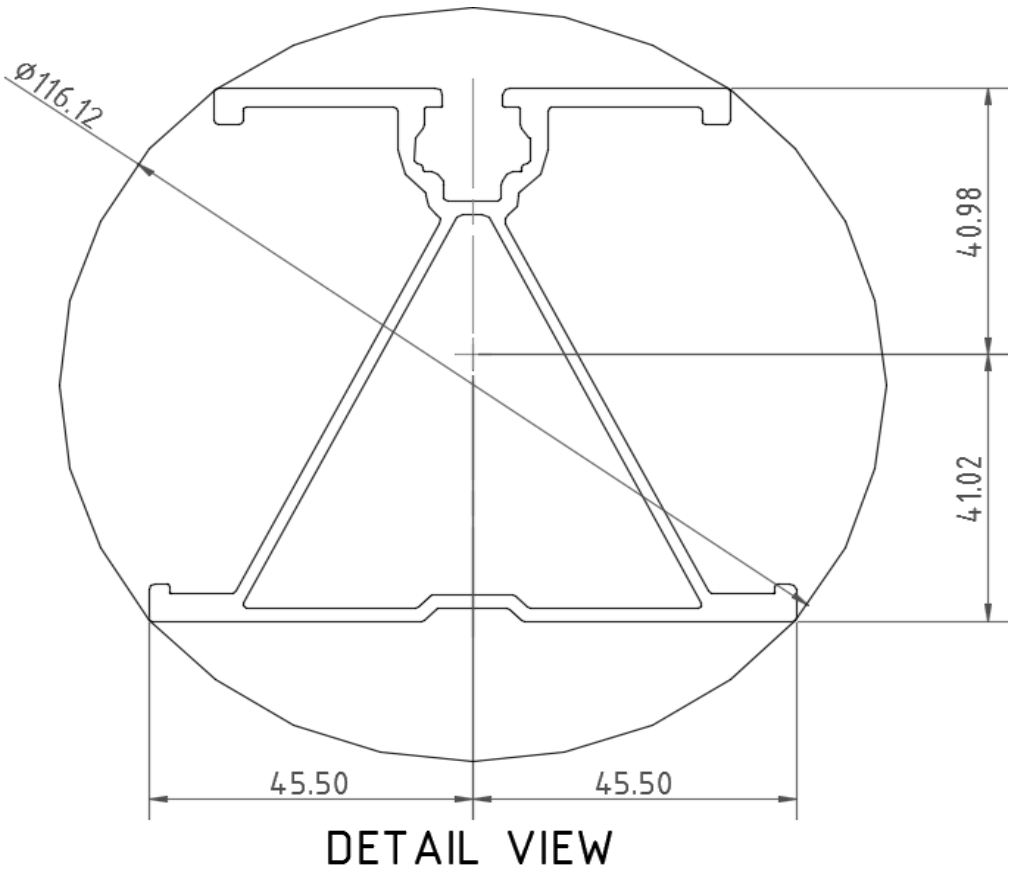
Struts	Location
M3	Outer
M6	Inner
M9	Outer

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).

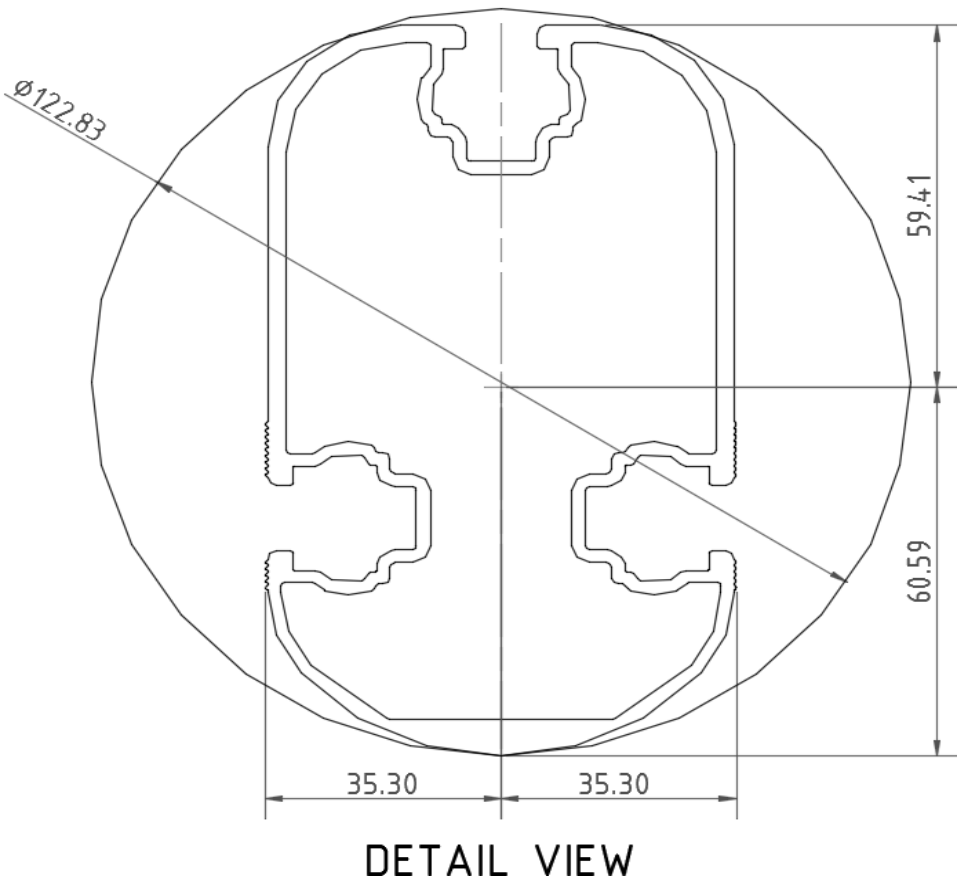
Purlin Type	=	**S1.5**	
Aluminum Type	=	6105-T5	
F_{ty}	=	35	ksi
L_b	=	120	in
$\Phi F_{ty\ STRONG\text{-}AXIS}$	=	25.07	ksi
$\Phi F_{ty\ WEAK\text{-}AXIS}$	=	23.08	ksi
S_y	=	1.33	in^3
S_x	=	0.6	in^3
E	=	10100	ksi
I_y	=	2.16	in^4
I_x	=	1.07	in^4
A	=	1.25	in^2
g	=	1.50	lbs/ft
M_y	=	1.868	k-ft
M_z	=	0.155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

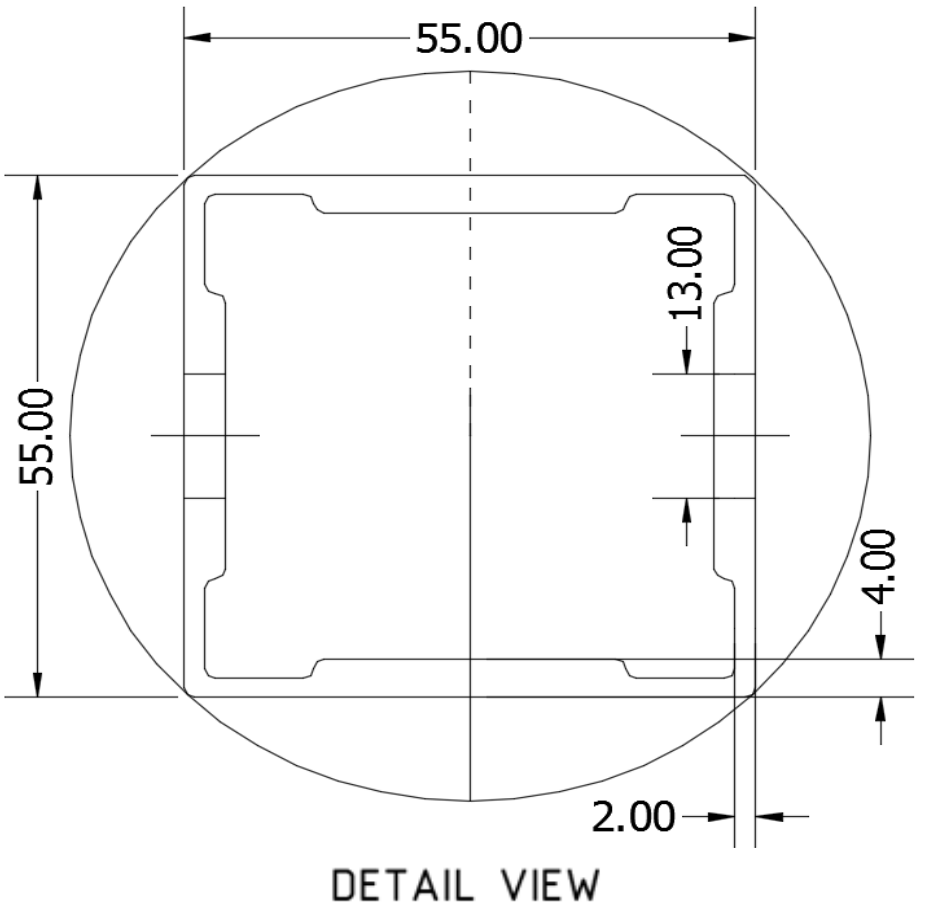
Girder Type	=	**T5**	
Aluminum Type	=	6105-T5	
F_{ty}	=	35	ksi
L_b	=	63.82	in
$\Phi F_{ty\ AXIAL}$	=	30.80	ksi
$\Phi F_{ty\ STRONG\text{-}AXIS}$	=	30.46	ksi
$\Phi F_{ty\ WEAK\text{-}AXIS}$	=	31.56	ksi
S_y	=	1.98	in^3
S_x	=	1.32	in^3
E	=	10100	ksi
I_y	=	4.74	in^4
I_x	=	1.83	in^4
A	=	1.93	in^2
g	=	2.32	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).

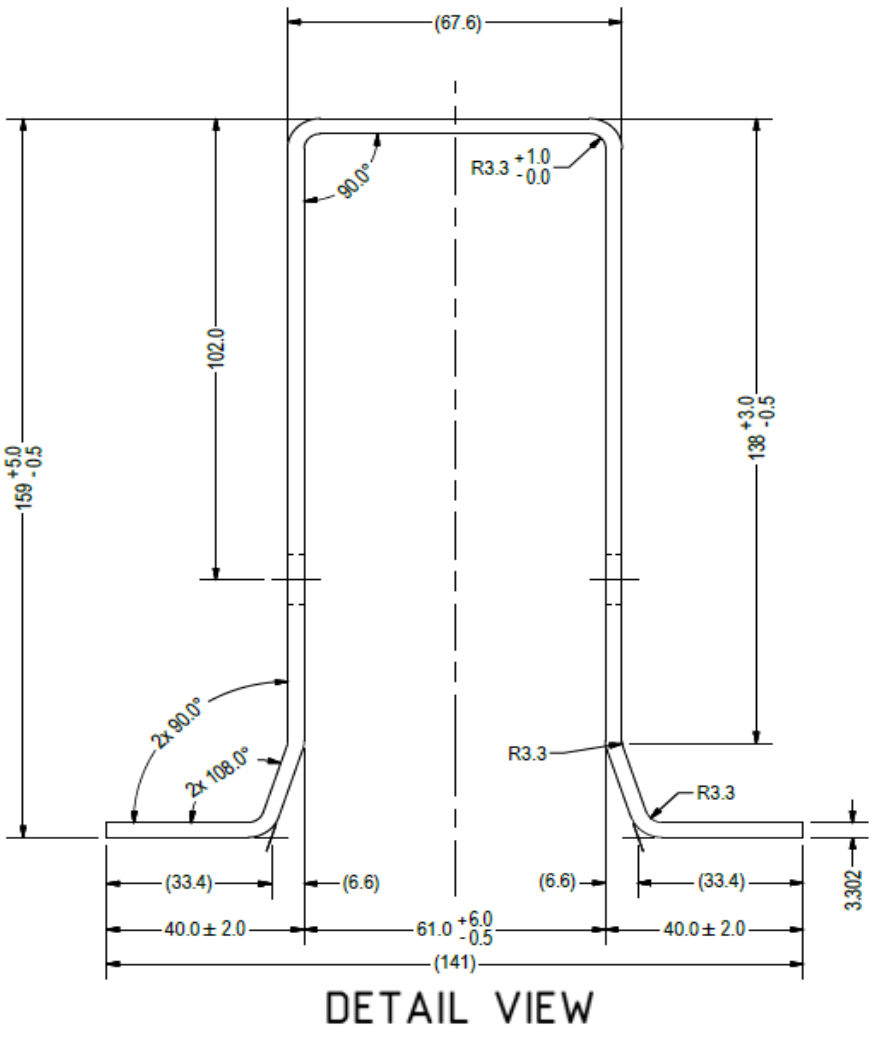
Strut Type =	**55x55**	
Aluminum Type =	6105-T5	
F_{ty} =	35	ksi
L_b =	61.00	in
$\Phi F_{ty\ AXIAL}$ =	13.67	ksi
$\Phi F_{ty\ BENDING}$ =	28.22	ksi
S_y =	0.60	in^3
S_x =	0.60	in^3
E =	10100	ksi
I_y =	0.67	in^4
I_x =	0.67	in^4
A =	0.98	in^2
g =	1.18	lbs/ft
M_y =	0.005	k-ft
M_z =	0.000	k-ft
P_n =	6.353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

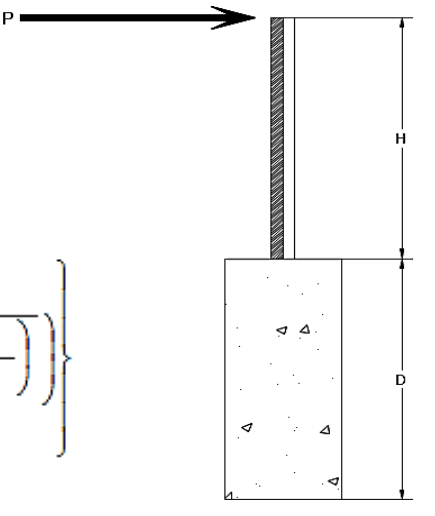
Lateral Force @ Top of Pole, P =	1.90	k
Height of Pole Above Grade, H =	4.47	ft
Diameter of Pole Footing, B =	2.00	ft
Lateral Soil Bearing Capacity, S =	0.10	ksf/ft
Isolated Pole Factor, F =	2	
First Trial Depth, D =	3.25	ft

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

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

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

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



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

Non-Constrained

Lateral Force @ Top of Pole, P =	1.90	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

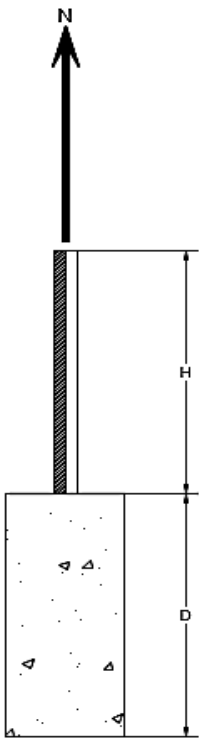
A 2ft diameter x 7.5ft deep footing unrestrained at ground level is required for the racking structure.

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

A 2ft diameter x 5ft deep footing unrestrained at ground level is required for the racking structure.



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	

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

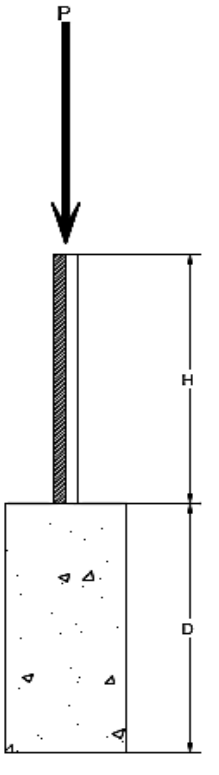
Weight of Concrete

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.



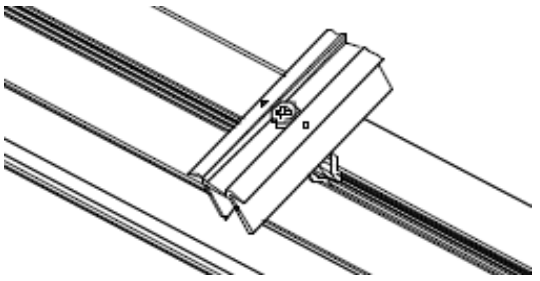
6. DESIGN OF JOINTS AND CONNECTIONS

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.

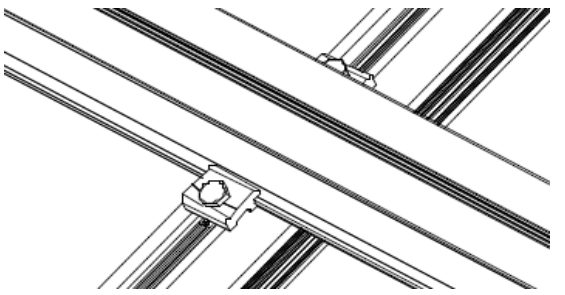
Fastening of Modules to Purlins

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%

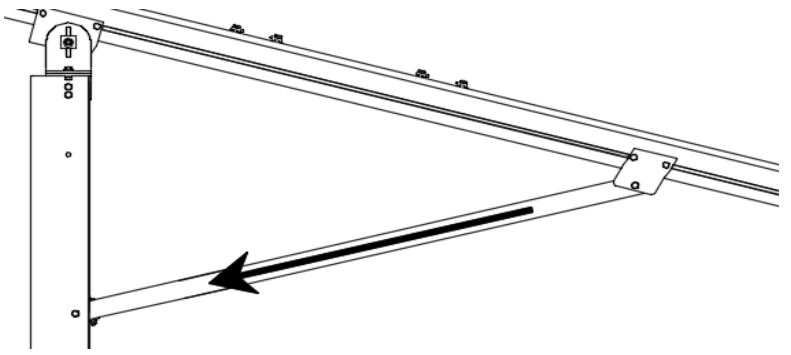


6.2 Strut Connections

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)

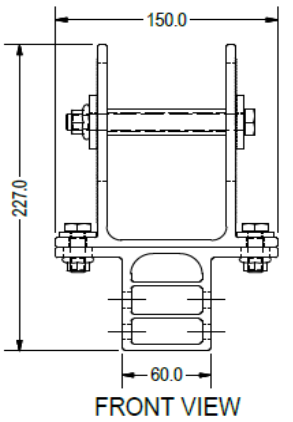


A strut under compression is shown to demonstrate the load transfer from the girder. Single M10 bolts are located at each end of the strut and are subjected to double shear.

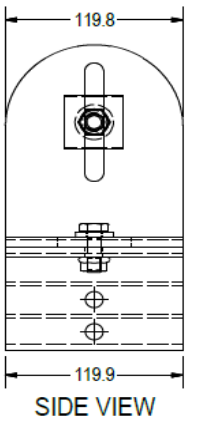
6.3 Girder to Post Connection

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.

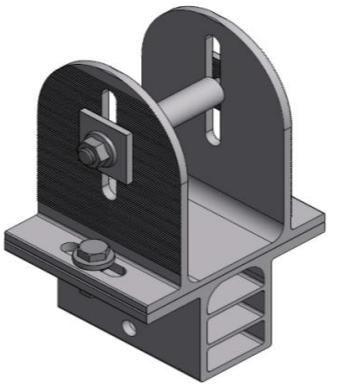
Maximum Tensile Load	=	4.616 k
Allowable Load	=	5.649 k
Utilization	=	82%



FRONT VIEW



SIDE VIEW



7. SEISMIC DESIGN

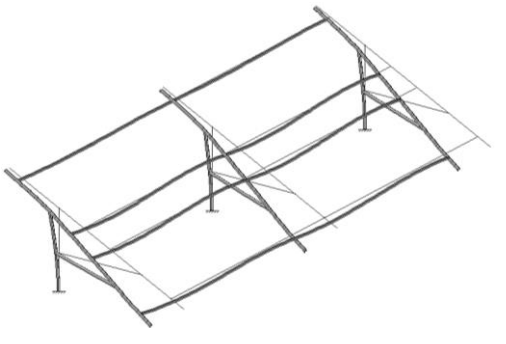
7.1 Seismic Drift - N/A

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}	=	65.92 in
Allowable Story Drift for All Other Structures, Δ	= {	$0.020h_{sx}$
		1.318 in
Max Drift, Δ_{MAX}	=	0 in

N/A

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

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 = 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

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

$\varphi F_L St$ = 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

$\varphi F_L Wk$ = 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

$\varphi F_L St$= 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

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)/(λ²)

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								

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	-54.031	-54.031	0	0
2	M11	Y	-54.031	-54.031	0	0
3	M12	Y	-54.031	-54.031	0	0
4	M13	Y	-54.031	-54.031	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	-90.111	-90.111	0	0
2	M11	y	-90.111	-90.111	0	0
3	M12	y	-141.602	-141.602	0	0
4	M13	y	-141.602	-141.602	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	181.937	181.937	0	0
2	M11	y	181.937	181.937	0	0
3	M12	y	85.82	85.82	0	0
4	M13	y	85.82	85.82	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...	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												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
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	.003	3	6.292	1
2		min	-743.6	3	-1908.422	3	-305.801	3	-.308	3	-.008	2	.191	15
3	N19	max	2137.409	2	7197.089	1	0	3	0	3	0	15	13.58	1
4		min	-2175.931	3	-5639.583	3	0	1	0	10	0	1	.365	15
5	N29	max	516.306	2	2630.094	1	305.801	3	.308	3	.008	2	6.292	1
6		min	-743.6	3	-1908.422	3	-305.026	1	-.325	1	-.003	3	.191	15
7	Totals:	max	3170.021	2	12457.276	1	0	2						
8		min	-3663.132	3	-9456.427	3	0	12						

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	0	3	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	4
4			min	-.76	4	-2.085	4	0	1	0	1	0	1	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	.005	15	-.341	3
9		5	max	-5.517	12	320.118	3	16.827	3	.081	3	.044	1	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
14			min	-1855.501	2	-200.565	3	-238.738	1	-.045	3	-.026	3	-.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	-.003	15	.087	1	.169	1
18			min	-1991.844	1	-65.213	1	-244.608	1	-.241	2	.003	15	-.241	3
19		10	max	628.075	3	88.716	3	51.662	3	-.003	15	.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	-.003	15	.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	.005	15	-.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	5.236	3	.284	1	0	10	1.284	1
28			min	4.813	12	-739.085	3	-151.117	1	-.449	3	-.005	1	-1.699	3
29		15	max	186.452	1	564.359	1	5.236	3	.284	1	.003	3	.934	1
30			min	4.517	12	-740.304	3	-151.117	1	-.449	3	-.099	1	-1.24	3
31		16	max	185.86	1	562.733	1	5.236	3	.284	1	.006	3	.584	1
32			min	4.221	12	-741.524	3	-151.117	1	-.449	3	-.193	1	-.78	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
33		17	max	185.268	1	561.107	1	5.236	3	.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	4	0	1	0	1	0	15	0	4
36			min	.179	15	.491	15	0	5	0	1	0	1	0	15
37		19	max	0	1	0	2	0	1	0	1	0	1	0	1
38			min	0	1	-.003	3	0	5	0	1	0	1	0	1
39	M4	1	max	0	1	.015	2	0	1	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	0	1	0	1	0	1	0	15
43		3	max	-12.079	15	962.848	3	0	1	0	1	0	1	.791	2
44			min	-306.049	1	-2078.483	2	0	1	0	1	0	1	-.368	3
45		4	max	-12.257	15	961.628	3	0	1	0	1	0	1	2.081	2
46			min	-306.641	1	-2080.109	2	0	1	0	1	0	1	-.965	3
47		5	max	-12.436	15	960.409	3	0	1	0	1	0	1	3.372	2
48			min	-307.232	1	-2081.735	2	0	1	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	0	1	0	1	0	1	-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	0	1	0	1	0	1	-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	0	1	0	1	0	1	-.638	3
55		9	max	2053.196	3	291.722	3	0	1	0	1	0	1	.166	1
56			min	-5198.564	2	-277.059	1	0	1	0	1	0	1	-.41	3
57		10	max	2052.752	3	290.503	3	0	1	0	1	0	1	.339	1
58			min	-5199.155	2	-278.685	1	0	1	0	1	0	1	-.591	3
59		11	max	2052.308	3	289.283	3	0	1	0	1	0	1	.512	1
60			min	-5199.747	2	-280.312	1	0	1	0	1	0	1	-.771	3
61		12	max	2033.741	3	2333.563	3	0	1	0	1	0	1	1.329	1
62			min	-5433.07	1	-1949.995	1	0	1	0	1	0	1	-1.759	3
63		13	max	2033.297	3	2332.343	3	0	1	0	1	0	1	2.54	1
64			min	-5433.662	1	-1951.621	1	0	1	0	1	0	1	-3.207	3
65		14	max	307.159	1	1642.687	1	0	1	0	1	0	1	3.702	1
66			min	12.549	15	-2042.371	3	0	1	0	1	0	1	-4.594	3
67		15	max	306.567	1	1641.061	1	0	1	0	1	0	1	2.683	1
68			min	12.371	15	-2043.591	3	0	1	0	1	0	1	-3.326	3
69		16	max	305.975	1	1639.434	1	0	1	0	1	0	1	1.665	1
70			min	12.192	15	-2044.81	3	0	1	0	1	0	1	-2.058	3
71		17	max	305.383	1	1637.808	1	0	1	0	1	0	1	.648	1
72			min	12.014	15	-2046.03	3	0	1	0	1	0	1	-.788	3
73		18	max	.76	4	2.088	4	0	1	0	1	0	1	0	4
74			min	.179	15	.491	15	0	1	0	1	0	1	0	15
75		19	max	0	1	.004	1	0	1	0	1	0	1	0	1
76			min	0	1	-.009	3	0	1	0	1	0	1	0	1
77	M7	1	max	0	1	.006	1	0	1	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	-.49	15	0	1	0	1	0	1	0	4
80			min	-.76	4	-2.085	4	0	3	0	1	0	3	0	15
81		3	max	-4.925	12	322.557	3	178.385	1	.26	2	-.005	12	.327	2
82			min	-184.936	1	-743.97	2	-16.827	3	-.081	3	-.266	1	-.141	3
83		4	max	-5.221	12	321.338	3	178.385	1	.26	2	-.005	15	.79	2
84			min	-185.527	1	-745.596	2	-16.827	3	-.081	3	-.155	1	-.341	3
85		5	max	-5.517	12	320.118	3	178.385	1	.26	2	.01	10	1.253	2
86			min	-186.119	1	-747.222	2	-16.827	3	-.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

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
90			min	-1855.501	2	-200.565	3	-45.822	3	-.017	1	-.015	2	-.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	-45.822	3	-.017	1	-.003	3	-.299	3
93		9	max	628.519	3	89.936	3	244.608	1	.241	2	-.003	15	.169	1
94			min	-1991.844	1	-65.213	1	-51.662	3	.003	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	-51.662	3	.003	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	-51.662	3	.003	15	-.093	3	-.352	3
99		12	max	617.921	3	824.223	3	271.967	3	.426	1	-.005	15	.524	1
100			min	-2181.293	1	-624.004	1	-136.899	2	-.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	-136.899	2	-.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	4.813	12	-739.085	3	-5.236	3	-.284	1	0	10	-1.699	3
105		15	max	186.452	1	564.359	1	151.117	1	.449	3	.099	1	.934	1
106			min	4.517	12	-740.304	3	-5.236	3	-.284	1	-.003	3	-1.24	3
107		16	max	185.86	1	562.733	1	151.117	1	.449	3	.193	1	.584	1
108			min	4.221	12	-741.524	3	-5.236	3	-.284	1	-.006	3	-.78	3
109		17	max	185.268	1	561.107	1	151.117	1	.449	3	.287	1	.235	1
110			min	3.925	12	-742.743	3	-5.236	3	-.284	1	-.009	3	-.32	3
111		18	max	.76	4	2.087	4	0	5	0	1	0	1	0	4
112			min	.179	15	.491	15	0	1	0	1	0	15	0	15
113		19	max	0	1	0	2	0	5	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	-3.334	12	.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	-1.976	12	.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	-.437	3	.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	1.599	3	.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	3.635	3	.007	1	-.005	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	7.017	9	.007	1	-.005	12	.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	0	3	.588	3
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	.009	3	.103	1
130			min	-5.233	3	-511.157	1	-1.295	10	-.02	3	-.071	1	-.004	3
131		9	max	151.089	1	827.348	3	114.325	1	.007	1	.045	9	.756	1
132			min	-5.233	3	-663.847	1	2.456	10	-.02	3	-.039	2	-.814	3
133		10	max	151.089	1	816.538	1	-5.828	15	.02	3	.184	1	1.578	1
134			min	-5.233	3	-1023.905	3	-151.679	1	0	15	-.028	10	-1.843	3
135		11	max	151.089	1	663.847	1	-2.456	10	.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	-5.233	3	-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	-.005	15	1.116	3
144			min	-5.233	3	-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	-5.233	3	-99.605	1	-1.599	3	-.007	1	-.081	1	-.812	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
147		17	max	151.089	1	351.995	3	109.798	1	.02	3	.044	2	.77	3
148			min	-5.233	3	-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	-5.233	3	-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	-5.233	3	-557.676	1	3.334	12	-.007	1	-.011	3	-.449	3
153	M11	1	max	336.676	1	550.784	1	-6.263	12	0	3	.375	1	.236	1
154			min	-323.379	3	-739.758	3	-188.62	1	-.009	1	.012	15	-.521	3
155		2	max	336.676	1	398.094	1	-4.905	12	0	3	.186	1	.191	3
156			min	-323.379	3	-543.201	3	-151.266	1	-.009	1	.006	15	-.304	2
157		3	max	336.676	1	245.403	1	-3.547	12	0	3	.047	2	.686	3
158			min	-323.379	3	-346.643	3	-113.912	1	-.009	1	0	15	-.649	1
159		4	max	336.676	1	92.713	1	-2.19	12	0	3	.005	10	.962	3
160			min	-323.379	3	-150.086	3	-76.558	1	-.009	1	-.067	1	-.837	1
161		5	max	336.676	1	46.471	3	-.832	12	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	4.057	9	0	3	-.002	12	.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	35.503	1	0	3	0	3	.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	.004	3	.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	.039	9	.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	-5.663	15	.009	1	.169	1	1.599	1
172			min	-323.379	3	-1029.257	3	-147.565	1	0	15	-.028	10	-1.969	3
173		11	max	336.676	1	670.74	1	-2.571	10	.009	1	.039	9	.769	1
174			min	-323.379	3	-832.7	3	-110.211	1	0	3	-.042	2	-.934	3
175		12	max	336.676	1	518.049	1	1.18	10	.009	1	.004	3	.109	1
176			min	-323.379	3	-636.142	3	-72.857	1	0	3	-.075	1	-.118	3
177		13	max	336.676	1	365.359	1	4.931	10	.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	13.375	2	.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	39.205	1	.009	1	-.002	12	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	.005	10	.962	3
184			min	-323.379	3	-92.713	1	2.19	12	0	3	-.067	1	-.837	1
185		17	max	336.676	1	346.643	3	113.912	1	.009	1	.047	2	.686	3
186			min	-323.379	3	-245.403	1	3.547	12	0	3	0	15	-.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	.006	15	-.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	.012	15	-.521	3
191	M12	1	max	35.891	2	713.069	2	-4.037	12	.003	3	.402	1	.256	2
192			min	-18.341	9	-294.026	3	-192.706	1	-.01	1	-.003	3	.004	15
193		2	max	35.891	2	515.16	2	-2.68	12	.003	3	.208	1	.332	3
194			min	-18.341	9	-204.265	3	-155.352	1	-.01	1	-.009	3	-.426	2
195		3	max	35.891	2	317.251	2	-1.322	12	.003	3	.065	2	.509	3
196			min	-18.341	9	-114.505	3	-117.999	1	-.01	1	-.011	3	-.889	2
197		4	max	35.891	2	119.341	2	.468	3	.003	3	.012	10	.587	3
198			min	-18.341	9	-24.744	3	-80.645	1	-.01	1	-.054	1	-1.131	2
199		5	max	35.891	2	65.016	3	2.505	3	.003	3	-.005	15	.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	4.541	3	.003	3	-.004	12	.442	3
202			min	-18.341	9	-276.477	2	-17.336	2	-.01	1	-.15	1	-.957	2
203		7	max	35.891	2	244.537	3	31.417	1	.003	3	0	3	.22	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
204			min	-18.341	9	-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	.008	3	.098	2
206			min	-18.341	9	-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	.035	9	.955	2
208			min	-18.341	9	-870.204	2	.554	10	-.01	1	-.051	2	-.522	3
209		10	max	35.891	2	1068.113	2	-4.305	10	.01	1	.155	1	2.031	2
210			min	-18.341	9	-513.819	3	-143.478	1	0	15	-.034	10	-1.043	3
211		11	max	35.891	2	870.204	2	-.554	10	.01	1	.035	9	.955	2
212			min	-18.341	9	-424.058	3	-106.124	1	-.003	3	-.051	2	-.522	3
213		12	max	35.891	2	672.295	2	3.197	10	.01	1	.008	3	.098	2
214			min	-18.341	9	-334.298	3	-68.771	1	-.003	3	-.08	1	-.101	3
215		13	max	35.891	2	474.386	2	6.948	10	.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	17.336	2	.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	43.291	1	.01	1	-.005	15	.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	.012	10	.587	3
222			min	-18.341	9	-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	.065	2	.509	3
224			min	-18.341	9	-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	-18.341	9	-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	-18.341	9	-713.069	2	4.037	12	-.003	3	-.003	3	.004	15
229	M13	1	max	16.827	3	741.02	2	-4.332	12	.011	3	.338	1	.26	2
230			min	-178.256	1	-325.069	3	-183.24	1	-.026	2	0	3	-.081	3
231		2	max	16.827	3	543.111	2	-2.974	12	.011	3	.155	1	.23	3
232			min	-178.256	1	-235.308	3	-145.886	1	-.026	2	-.005	3	-.453	2
233		3	max	16.827	3	345.202	2	-1.616	12	.011	3	.038	2	.442	3
234			min	-178.256	1	-145.548	3	-108.533	1	-.026	2	-.009	3	-.947	2
235		4	max	16.827	3	147.293	2	-.069	3	.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	1.968	3	.011	3	-.005	15	.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	7.609	9	.011	3	-.004	12	.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	0	3	.291	3
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	.008	3	.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	.046	9	.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	-5.861	15	.026	2	.186	1	1.756	2
248			min	-178.256	1	-482.776	3	-152.944	1	-.011	3	-.027	10	-.87	3
249		11	max	16.827	3	842.252	2	-2.982	10	.026	2	.046	9	.71	2
250			min	-178.256	1	-393.015	3	-115.59	1	-.011	3	-.038	2	-.383	3
251		12	max	16.827	3	644.343	2	.769	10	.026	2	.008	3	.004	3
252			min	-178.256	1	-303.255	3	-78.237	1	-.011	3	-.07	1	-.127	1
253		13	max	16.827	3	446.434	2	4.52	10	.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	11.413	2	.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	33.825	1	.026	2	-.005	15	.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	.004	10	.554	3
260			min	-178.256	1	-147.293	2	.069	3	-.011	3	-.086	1	-1.221	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
261		17	max	16.827	3	145.548	3	108.533	1	.026	2	.038	2	.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	.003	3	.308	3	6.292	1
268			min	-1908.422	3	-513.409	2	-305.556	3	-.008	2	-.325	1	.191	15
269		2	max	2627.833	1	743.403	3	305.388	1	.003	3	.232	3	6.324	1
270			min	-1910.117	3	-513.409	2	-305.556	3	-.008	2	-.249	1	.189	15
271		3	max	2625.573	1	743.403	3	305.388	1	.003	3	.156	3	6.356	1
272			min	-1911.813	3	-513.409	2	-305.556	3	-.008	2	-.173	1	.143	12
273		4	max	2623.312	1	743.403	3	305.388	1	.003	3	.08	3	6.388	1
274			min	-1913.508	3	-513.409	2	-305.556	3	-.008	2	-.097	1	.021	3
275		5	max	1972.475	1	1827.403	1	243.145	1	.002	2	.04	3	6.351	1
276			min	-1653.067	3	-39.2	3	-277.465	3	-.001	3	-.09	1	-.136	3
277		6	max	1970.215	1	1827.403	1	243.145	1	.002	2	-.001	15	5.898	1
278			min	-1654.762	3	-39.2	3	-277.465	3	-.001	3	-.03	1	-.127	3
279		7	max	1967.954	1	1827.403	1	243.145	1	.002	2	.043	2	5.444	1
280			min	-1656.457	3	-39.2	3	-277.465	3	-.001	3	-.098	3	-.117	3
281		8	max	1965.693	1	1827.403	1	243.145	1	.002	2	.099	2	4.99	1
282			min	-1658.153	3	-39.2	3	-277.465	3	-.001	3	-.167	3	-.107	3
283		9	max	1963.433	1	1827.403	1	243.145	1	.002	2	.156	2	4.537	1
284			min	-1659.848	3	-39.2	3	-277.465	3	-.001	3	-.236	3	-.097	3
285		10	max	1961.172	1	1827.403	1	243.145	1	.002	2	.212	2	4.083	1
286			min	-1661.544	3	-39.2	3	-277.465	3	-.001	3	-.305	3	-.088	3
287		11	max	1958.912	1	1827.403	1	243.145	1	.002	2	.272	1	3.629	1
288			min	-1663.239	3	-39.2	3	-277.465	3	-.001	3	-.374	3	-.078	3
289		12	max	1956.651	1	1827.403	1	243.145	1	.002	2	.332	1	3.176	1
290			min	-1664.935	3	-39.2	3	-277.465	3	-.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	-277.465	3	-.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	-277.465	3	-.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	-277.465	3	-.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	-277.465	3	-.001	3	-.718	3	-.029	3
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	-277.465	3	-.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	-277.465	3	-.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	-277.465	3	-.001	3	-.925	3	0	1
305	M5	1	max	7197.089	1	2175.366	3	0	1	0	1	0	1	13.58	1
306			min	-5639.583	3	-2118.797	2	0	1	0	1	0	1	.365	15
307		2	max	7194.828	1	2175.366	3	0	1	0	1	0	1	13.903	1
308			min	-5641.278	3	-2118.797	2	0	1	0	1	0	1	.162	12
309		3	max	7192.568	1	2175.366	3	0	1	0	1	0	1	14.225	1
310			min	-5642.974	3	-2118.797	2	0	1	0	1	0	1	-.328	3
311		4	max	7190.307	1	2175.366	3	0	1	0	1	0	1	14.548	1
312			min	-5644.669	3	-2118.797	2	0	1	0	1	0	1	-.868	3
313		5	max	5426.736	1	4223.135	1	0	1	0	1	0	1	14.678	1
314			min	-4779.092	3	-379.393	3	0	1	0	1	0	1	-1.319	3
315		6	max	5424.475	1	4223.135	1	0	1	0	1	0	1	13.63	1
316			min	-4780.787	3	-379.393	3	0	1	0	1	0	1	-1.224	3
317		7	max	5422.215	1	4223.135	1	0	1	0	1	0	1	12.581	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
318			min	-4782.483	3	-379.393	3	0	1	0	1	0	1	-1.13	3
319		8	max	5419.954	1	4223.135	1	0	1	0	1	0	1	11.533	1
320			min	-4784.178	3	-379.393	3	0	1	0	1	0	1	-1.036	3
321		9	max	5417.693	1	4223.135	1	0	1	0	1	0	1	10.484	1
322			min	-4785.874	3	-379.393	3	0	1	0	1	0	1	-.942	3
323		10	max	5415.433	1	4223.135	1	0	1	0	1	0	1	9.436	1
324			min	-4787.569	3	-379.393	3	0	1	0	1	0	1	-.848	3
325		11	max	5413.172	1	4223.135	1	0	1	0	1	0	1	8.387	1
326			min	-4789.265	3	-379.393	3	0	1	0	1	0	1	-.753	3
327		12	max	5410.912	1	4223.135	1	0	1	0	1	0	1	7.339	1
328			min	-4790.96	3	-379.393	3	0	1	0	1	0	1	-.659	3
329		13	max	5408.651	1	4223.135	1	0	1	0	1	0	1	6.291	1
330			min	-4792.656	3	-379.393	3	0	1	0	1	0	1	-.565	3
331		14	max	5406.39	1	4223.135	1	0	1	0	1	0	1	5.242	1
332			min	-4794.351	3	-379.393	3	0	1	0	1	0	1	-.471	3
333		15	max	5404.13	1	4223.135	1	0	1	0	1	0	1	4.194	1
334			min	-4796.046	3	-379.393	3	0	1	0	1	0	1	-.377	3
335		16	max	5401.869	1	4223.135	1	0	1	0	1	0	1	3.145	1
336			min	-4797.742	3	-379.393	3	0	1	0	1	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	0	1	0	1	0	1	-.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	0	1	0	1	0	1	-.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	0	1	0	1	0	1	0	1
343	M8	1	max	2630.094	1	743.403	3	305.556	3	.008	2	.325	1	6.292	1
344			min	-1908.422	3	-513.409	2	-305.388	1	-.003	3	-.308	3	.191	15
345		2	max	2627.833	1	743.403	3	305.556	3	.008	2	.249	1	6.324	1
346			min	-1910.117	3	-513.409	2	-305.388	1	-.003	3	-.232	3	.189	15
347		3	max	2625.573	1	743.403	3	305.556	3	.008	2	.173	1	6.356	1
348			min	-1911.813	3	-513.409	2	-305.388	1	-.003	3	-.156	3	.143	12
349		4	max	2623.312	1	743.403	3	305.556	3	.008	2	.097	1	6.388	1
350			min	-1913.508	3	-513.409	2	-305.388	1	-.003	3	-.08	3	.021	3
351		5	max	1972.475	1	1827.403	1	277.465	3	.001	3	.09	1	6.351	1
352			min	-1653.067	3	-39.2	3	-243.145	1	-.002	2	-.04	3	-.136	3
353		6	max	1970.215	1	1827.403	1	277.465	3	.001	3	.03	1	5.898	1
354			min	-1654.762	3	-39.2	3	-243.145	1	-.002	2	.001	15	-.127	3
355		7	max	1967.954	1	1827.403	1	277.465	3	.001	3	.098	3	5.444	1
356			min	-1656.457	3	-39.2	3	-243.145	1	-.002	2	-.043	2	-.117	3
357		8	max	1965.693	1	1827.403	1	277.465	3	.001	3	.167	3	4.99	1
358			min	-1658.153	3	-39.2	3	-243.145	1	-.002	2	-.099	2	-.107	3
359		9	max	1963.433	1	1827.403	1	277.465	3	.001	3	.236	3	4.537	1
360			min	-1659.848	3	-39.2	3	-243.145	1	-.002	2	-.156	2	-.097	3
361		10	max	1961.172	1	1827.403	1	277.465	3	.001	3	.305	3	4.083	1
362			min	-1661.544	3	-39.2	3	-243.145	1	-.002	2	-.212	2	-.088	3
363		11	max	1958.912	1	1827.403	1	277.465	3	.001	3	.374	3	3.629	1
364			min	-1663.239	3	-39.2	3	-243.145	1	-.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	-243.145	1	-.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	-243.145	1	-.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	-243.145	1	-.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	-243.145	1	-.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	-243.145	1	-.002	2	-.574	1	-.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
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	-243.145	1	-.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	-243.145	1	-.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	-243.145	1	-.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
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	4	0	1	0	1	0	1	0	1
420			min	-2702.337	3	1.118	15	0	1	0	1	0	1	0	1
421		2	max	6352.636	2	4.229	4	0	1	0	1	0	1	0	15
422			min	-2702.442	3	.994	15	0	1	0	1	0	1	-.001	4
423		3	max	6352.497	2	3.7	4	0	1	0	1	0	1	0	15
424			min	-2702.546	3	.87	15	0	1	0	1	0	1	-.002	4
425		4	max	6352.358	2	3.171	4	0	1	0	1	0	1	0	15
426			min	-2702.651	3	.745	15	0	1	0	1	0	1	-.003	4
427		5	max	6352.218	2	2.643	4	0	1	0	1	0	1	-.001	15
428			min	-2702.755	3	.621	15	0	1	0	1	0	1	-.004	4
429		6	max	6352.079	2	2.114	4	0	1	0	1	0	1	-.001	15
430			min	-2702.86	3	.497	15	0	1	0	1	0	1	-.005	4
431		7	max	6351.939	2	1.586	4	0	1	0	1	0	1	-.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
432			min	-2702.964	3	.373	15	0	1	0	1	0	1	-.006	4
433		8	max	6351.8	2	1.057	4	0	1	0	1	0	1	-.001	15
434			min	-2703.069	3	.248	15	0	1	0	1	0	1	-.006	4
435		9	max	6351.661	2	.529	4	0	1	0	1	0	1	-.001	15
436			min	-2703.174	3	.124	15	0	1	0	1	0	1	-.006	4
437		10	max	6351.521	2	0	1	0	1	0	1	0	1	-.001	15
438			min	-2703.278	3	0	1	0	1	0	1	0	1	-.006	4
439		11	max	6351.382	2	-.124	15	0	1	0	1	0	1	-.001	15
440			min	-2703.383	3	-.529	4	0	1	0	1	0	1	-.006	4
441		12	max	6351.242	2	-.248	15	0	1	0	1	0	1	-.001	15
442			min	-2703.487	3	-1.057	4	0	1	0	1	0	1	-.006	4
443		13	max	6351.103	2	-.373	15	0	1	0	1	0	1	-.001	15
444			min	-2703.592	3	-1.586	4	0	1	0	1	0	1	-.006	4
445		14	max	6350.963	2	-.497	15	0	1	0	1	0	1	-.001	15
446			min	-2703.696	3	-2.114	4	0	1	0	1	0	1	-.005	4
447		15	max	6350.824	2	-.621	15	0	1	0	1	0	1	-.001	15
448			min	-2703.801	3	-2.643	4	0	1	0	1	0	1	-.004	4
449		16	max	6350.685	2	-.745	15	0	1	0	1	0	1	0	15
450			min	-2703.905	3	-3.171	4	0	1	0	1	0	1	-.003	4
451		17	max	6350.545	2	-.87	15	0	1	0	1	0	1	0	15
452			min	-2704.01	3	-3.7	4	0	1	0	1	0	1	-.002	4
453		18	max	6350.406	2	-.994	15	0	1	0	1	0	1	0	15
454			min	-2704.115	3	-4.229	4	0	1	0	1	0	1	-.001	4
455		19	max	6350.266	2	-1.118	15	0	1	0	1	0	1	0	1
456			min	-2704.219	3	-4.757	4	0	1	0	1	0	1	0	1
457	M9	1	max	2252.175	2	4.757	4	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	4	28.99	3	.071	2	.015	3	0	15
460			min	-825.594	3	.994	15	-64.038	2	-.034	3	-.032	2	-.001	4
461		3	max	2251.896	2	3.7	4	28.99	3	.071	2	.023	3	0	15
462			min	-825.698	3	.87	15	-64.038	2	-.034	3	-.051	2	-.002	4
463		4	max	2251.757	2	3.171	4	28.99	3	.071	2	.032	3	0	15
464			min	-825.803	3	.745	15	-64.038	2	-.034	3	-.07	2	-.003	4
465		5	max	2251.617	2	2.643	4	28.99	3	.071	2	.04	3	-.001	15
466			min	-825.907	3	.621	15	-64.038	2	-.034	3	-.089	2	-.004	4
467		6	max	2251.478	2	2.114	4	28.99	3	.071	2	.049	3	-.001	15
468			min	-826.012	3	.497	15	-64.038	2	-.034	3	-.107	2	-.005	4
469		7	max	2251.338	2	1.586	4	28.99	3	.071	2	.057	3	-.001	15
470			min	-826.117	3	.373	15	-64.038	2	-.034	3	-.126	2	-.006	4
471		8	max	2251.199	2	1.057	4	28.99	3	.071	2	.066	3	-.001	15
472			min	-826.221	3	.248	15	-64.038	2	-.034	3	-.145	2	-.006	4
473		9	max	2251.06	2	.529	4	28.99	3	.071	2	.074	3	-.001	15
474			min	-826.326	3	.124	15	-64.038	2	-.034	3	-.164	2	-.006	4
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	4
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	4
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	4
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	4
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	4
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	4
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	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
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	4
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	4
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	0	3	-3.151e-2	2	157.437	1	2885.204	1
3		2	max	0	3	.133	3	.008	1	1.309e-2	3	6417.157	15	NC	3
4			min	-.269	1	-.692	1	0	3	-3.151e-2	2	181.685	1	4669.612	1
5		3	max	0	3	.093	3	0	12	1.245e-2	3	7468.71	15	NC	2
6			min	-.269	1	-.578	1	-.007	1	-2.947e-2	2	214.798	1	9954.644	1
7		4	max	0	3	.055	3	0	3	1.148e-2	3	8879.03	15	NC	1
8			min	-.269	1	-.468	1	-.014	1	-2.634e-2	2	260.648	1	NC	1
9		5	max	0	3	.022	3	.001	3	1.05e-2	3	NC	15	NC	1
10			min	-.269	1	-.369	1	-.015	1	-2.321e-2	2	323.342	1	NC	1
11		6	max	0	3	-.003	12	.002	3	1.042e-2	3	NC	15	NC	1
12			min	-.269	1	-.285	1	-.012	1	-2.204e-2	2	404.731	1	NC	1
13		7	max	0	3	-.006	15	.002	3	1.097e-2	3	NC	5	NC	2
14			min	-.268	1	-.218	1	-.006	1	-2.222e-2	2	508.521	1	9227.465	1
15		8	max	0	3	-.005	15	0	3	1.151e-2	3	NC	5	NC	2
16			min	-.267	1	-.16	1	-.002	2	-2.24e-2	2	649.788	1	6671.694	1
17		9	max	0	3	-.003	15	0	15	1.229e-2	3	NC	5	NC	2
18			min	-.267	1	-.108	1	0	3	-2.147e-2	2	629.894	3	6485.456	1
19		10	max	0	3	-.002	15	0	1	1.35e-2	3	NC	5	NC	2
20			min	-.266	1	-.058	1	0	3	-1.857e-2	2	616.754	3	6258.048	1
21		11	max	0	3	0	15	.002	3	1.471e-2	3	NC	5	NC	2
22			min	-.265	1	-.045	3	0	1	-1.588e-2	1	615.544	3	6756.577	1
23		12	max	0	3	.033	1	.007	3	1.191e-2	3	NC	1	NC	1
24			min	-.264	1	-.041	3	-.008	1	-1.178e-2	1	627.756	3	NC	1
25		13	max	-.001	3	.07	1	.013	3	6.845e-3	3	NC	4	NC	1
26			min	-.263	1	-.027	3	-.01	1	-6.647e-3	1	670.749	3	NC	1
27		14	max	-.001	3	.094	1	.014	3	2.009e-3	3	NC	4	NC	2
28			min	-.263	1	.002	12	-.007	2	-1.703e-3	1	791.394	3	8637.84	1
29		15	max	-.001	3	.101	1	.01	3	7.409e-3	3	NC	4	NC	2
30			min	-.263	1	.003	15	-.002	10	-5.118e-3	1	1156.113	3	5644.305	1
31		16	max	-.001	3	.127	3	.008	1	1.281e-2	3	NC	4	NC	2
32			min	-.263	1	.003	15	0	15	-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	.003	15	0	15	-1.195e-2	1	3719.286	3	5118.368	1
35		18	max	-.001	3	.294	3	0	15	2.173e-2	3	NC	4	NC	2
36			min	-.263	1	.002	15	-.006	1	-1.417e-2	1	1102.186	3	9313.19	1
37		19	max	-.001	3	.379	3	0	15	2.173e-2	3	NC	1	NC	1
38			min	-.263	1	.002	15	-.021	1	-1.417e-2	1	647.405	3	NC	1
39	M4	1	max	.041	3	.529	3	0	1	0	1	NC	3	NC	1
40			min	-.614	1	-1.911	1	0	1	0	1	70.568	1	NC	1
41		2	max	.041	3	.419	3	0	1	0	1	3372.01	15	NC	1
42			min	-.614	1	-1.637	1	0	1	0	1	82.477	1	NC	1
43		3	max	.041	3	.309	3	0	1	0	1	4026.621	15	NC	1
44			min	-.614	1	-1.362	1	0	1	0	1	99.267	1	NC	1
45		4	max	.041	3	.203	3	0	1	0	1	4959.47	15	NC	1
46			min	-.614	1	-1.096	1	0	1	0	1	123.56	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
47		5	max	.041	3	.111	3	0	1	0	1	6286.452	15	NC	1
48			min	-.614	1	-.857	1	0	1	0	1	158.541	1	NC	1
49		6	max	.04	3	.041	3	0	1	0	1	8101.476	15	NC	1
50			min	-.613	1	-.661	1	0	1	0	1	206.343	1	NC	1
51		7	max	.039	3	-.005	12	0	1	0	1	NC	15	NC	1
52			min	-.611	1	-.507	1	0	1	0	1	250.011	3	NC	1
53		8	max	.039	3	-.01	15	0	1	0	1	NC	15	NC	1
54			min	-.609	1	-.378	1	0	1	0	1	235.463	3	NC	1
55		9	max	.038	3	-.007	15	0	1	0	1	NC	5	NC	1
56			min	-.607	1	-.26	1	0	1	0	1	225.708	3	NC	1
57		10	max	.037	3	-.004	15	0	1	0	1	NC	5	NC	1
58			min	-.605	1	-.143	1	0	1	0	1	218.641	3	NC	1
59		11	max	.036	3	0	15	0	1	0	1	NC	4	NC	1
60			min	-.603	1	-.095	3	0	1	0	1	214.781	3	NC	1
61		12	max	.035	3	.073	1	0	1	0	1	NC	5	NC	1
62			min	-.601	1	-.096	3	0	1	0	1	214.463	3	NC	1
63		13	max	.035	3	.161	1	0	1	0	1	NC	5	NC	1
64			min	-.599	1	-.073	3	0	1	0	1	222.587	3	NC	1
65		14	max	.034	3	.213	1	0	1	0	1	NC	5	NC	1
66			min	-.597	1	-.006	3	0	1	0	1	250.587	3	NC	1
67		15	max	.034	3	.215	1	0	1	0	1	NC	5	NC	1
68			min	-.597	1	.005	15	0	1	0	1	330.497	3	NC	1
69		16	max	.034	3	.299	3	0	1	0	1	NC	5	NC	1
70			min	-.597	1	.005	15	0	1	0	1	582.292	3	NC	1
71		17	max	.034	3	.503	3	0	1	0	1	NC	5	NC	1
72			min	-.597	1	.003	15	0	1	0	1	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	0	1	0	1	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	0	1	0	1	333.974	3	NC	1
77	M7	1	max	0	3	.172	3	0	3	3.151e-2	2	NC	3	NC	3
78			min	-.269	1	-.806	1	-.026	1	-1.309e-2	3	157.437	1	2885.204	1
79		2	max	0	3	.133	3	0	3	3.151e-2	2	6417.157	15	NC	3
80			min	-.269	1	-.692	1	-.008	1	-1.309e-2	3	181.685	1	4669.612	1
81		3	max	0	3	.093	3	.007	1	2.947e-2	2	7468.71	15	NC	2
82			min	-.269	1	-.578	1	0	12	-1.245e-2	3	214.798	1	9954.644	1
83		4	max	0	3	.055	3	.014	1	2.634e-2	2	8879.03	15	NC	1
84			min	-.269	1	-.468	1	0	3	-1.148e-2	3	260.648	1	NC	1
85		5	max	0	3	.022	3	.015	1	2.321e-2	2	NC	15	NC	1
86			min	-.269	1	-.369	1	-.001	3	-1.05e-2	3	323.342	1	NC	1
87		6	max	0	3	-.003	12	.012	1	2.204e-2	2	NC	15	NC	1
88			min	-.269	1	-.285	1	-.002	3	-1.042e-2	3	404.731	1	NC	1
89		7	max	0	3	-.006	15	.006	1	2.222e-2	2	NC	5	NC	2
90			min	-.268	1	-.218	1	-.002	3	-1.097e-2	3	508.521	1	9227.465	1
91		8	max	0	3	-.005	15	.002	2	2.24e-2	2	NC	5	NC	2
92			min	-.267	1	-.16	1	0	3	-1.151e-2	3	649.788	1	6671.694	1
93		9	max	0	3	-.003	15	0	3	2.147e-2	2	NC	5	NC	2
94			min	-.267	1	-.108	1	0	15	-1.229e-2	3	629.894	3	6485.456	1
95		10	max	0	3	-.002	15	0	3	1.857e-2	2	NC	5	NC	2
96			min	-.266	1	-.058	1	0	1	-1.35e-2	3	616.754	3	6258.048	1
97		11	max	0	3	0	15	0	1	1.588e-2	1	NC	5	NC	2
98			min	-.265	1	-.045	3	-.002	3	-1.471e-2	3	615.544	3	6756.577	1
99		12	max	0	3	.033	1	.008	1	1.178e-2	1	NC	1	NC	1
100			min	-.264	1	-.041	3	-.007	3	-1.191e-2	3	627.756	3	NC	1
101		13	max	-.001	3	.07	1	.01	1	6.647e-3	1	NC	4	NC	1
102			min	-.263	1	-.027	3	-.013	3	-6.845e-3	3	670.749	3	NC	1
103		14	max	-.001	3	.094	1	.007	2	1.703e-3	1	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
104			min	-.263	1	.002	12	-.014	3	-2.009e-3	3	791.394	3	8637.84	1
105		15	max	-.001	3	.101	1	.002	10	5.118e-3	1	NC	4	NC	2
106			min	-.263	1	.003	15	-.01	3	-7.409e-3	3	1156.113	3	5644.305	1
107		16	max	-.001	3	.127	3	0	15	8.533e-3	1	NC	4	NC	2
108			min	-.263	1	.003	15	-.008	1	-1.281e-2	3	2644.953	2	4715.519	1
109		17	max	-.001	3	.208	3	0	15	1.195e-2	1	NC	4	NC	2
110			min	-.263	1	.003	15	-.005	1	-1.821e-2	3	3719.286	3	5118.368	1
111		18	max	-.001	3	.294	3	.006	1	1.417e-2	1	NC	4	NC	2
112			min	-.263	1	.002	15	0	15	-2.173e-2	3	1102.186	3	9313.19	1
113		19	max	-.001	3	.379	3	.021	1	1.417e-2	1	NC	1	NC	1
114			min	-.263	1	.002	15	0	15	-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	0	3	.002	15	.001	3	-2.384e-3	2	NC	1	NC	1
117		2	max	.001	1	.563	3	.316	1	1.338e-2	3	NC	5	NC	3
118			min	0	3	-.124	1	.005	12	-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	0	3	-.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	0	3	-.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	0	3	-.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	0	3	-.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	0	3	-.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	5	NC	5
130			min	0	3	-.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	0	3	0	15	-.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	0	1	.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	0	1	0	15	-.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	5	NC	5
138			min	0	1	-.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	0	1	-.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
142			min	0	1	-.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	0	1	-.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	0	1	-.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	-.001	1	-.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	5	NC	3
150			min	-.001	1	-.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	-.001	1	.002	15	.001	3	-2.384e-3	2	NC	1	NC	1
153	M11	1	max	.003	1	.006	2	.265	1	5.936e-3	1	NC	1	NC	1
154			min	-.003	3	-.044	3	0	3	1.741e-4	15	NC	1	NC	1
155		2	max	.003	1	.17	3	.309	1	6.852e-3	1	NC	5	NC	3
156			min	-.003	3	-.197	1	-.006	3	1.947e-4	15	1118.497	3	5370.704	1
157		3	max	.002	1	.368	3	.391	1	7.767e-3	1	NC	5	NC	3
158			min	-.002	3	-.373	1	-.011	3	2.154e-4	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	-.002	3	-.486	1	-.014	3	1.724e-4	12	440.862	3	1106.553	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
161		5	max	.002	1	.54	3	.559	1	9.599e-3	1	NC	5	NC	3
162			min	-.002	3	-.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	-.001	3	-.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	-.001	3	-.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	5
168			min	0	3	-.199	1	-.031	3	-7.448e-5	3	1175.794	1	654.74	1
169		9	max	0	1	-.001	15	.614	1	1.326e-2	1	NC	4	NC	5
170			min	0	3	-.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	0	1	-.096	3	-.036	3	-2.406e-4	3	4614.706	3	711.014	1
173		11	max	0	3	-.001	15	.614	1	1.326e-2	1	NC	4	NC	5
174			min	0	1	-.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	5
176			min	0	1	-.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	5
178			min	-.001	1	-.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	5	NC	3
180			min	-.001	1	-.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	5	NC	3
182			min	-.002	1	-.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	5	NC	3
184			min	-.002	1	-.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	5	NC	3
186			min	-.002	1	-.373	1	-.011	3	2.154e-4	15	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	-.003	1	-.197	1	-.006	3	1.947e-4	15	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	-.003	1	-.044	3	0	3	1.741e-4	15	NC	1	NC	1
191	M12	1	max	0	2	-.004	15	.267	1	7.002e-3	1	NC	1	NC	1
192			min	0	9	-.127	1	0	3	-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	0	9	-.411	2	.002	3	-1.242e-3	3	799.313	2	6698.74	1
195		3	max	0	2	.23	3	.38	1	8.977e-3	1	NC	5	NC	3
196			min	0	9	-.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	0	9	-.846	2	-.001	3	-1.738e-3	3	326.264	2	1184.654	1
199		5	max	0	2	.312	3	.549	1	1.095e-2	1	NC	15	NC	3
200			min	0	9	-.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	0	9	-.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	0	9	-.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	5
206			min	0	9	-.541	2	-.029	3	-2.732e-3	3	556.784	2	656.69	1
207		9	max	0	2	-.009	12	.618	1	1.49e-2	1	NC	5	NC	5
208			min	0	9	-.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	0	1	-.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	5
212			min	0	2	-.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	5
214			min	0	2	-.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	0	2	-.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	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
218			min	0	2	-.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	0	2	-.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	5	NC	3
222			min	0	2	-.846	2	-.001	3	-1.738e-3	3	326.264	2	1184.654	1
223		17	max	0	9	.23	3	.38	1	8.977e-3	1	NC	5	NC	3
224			min	0	2	-.671	2	.001	3	-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	0	2	-.411	2	.002	3	-1.242e-3	3	799.313	2	6698.74	1
227		19	max	0	9	-.004	15	.267	1	7.002e-3	1	NC	1	NC	1
228			min	0	2	-.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	-.002	1	-.652	1	0	3	-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	-.002	1	-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	15	NC	3
234			min	-.001	1	-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	-.001	1	-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	9468.6	15	NC	3
238			min	0	1	-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	9028.961	15	NC	3
240			min	0	1	-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	9321.467	15	NC	3
242			min	0	1	-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	0	1	-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	0	1	-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	0	1	-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	5
250			min	0	3	-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	NC	15	NC	5
252			min	0	3	-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	9321.467	15	NC	3
254			min	0	3	-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	9028.961	15	NC	3
256			min	0	3	-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	9468.6	15	NC	3
258			min	0	3	-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	NC	15	NC	3
260			min	0	3	-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	0	3	-1.407	2	-.002	3	-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	0	3	-1.047	1	0	3	-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	0	3	-.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	3	1.863e-3	2	NC	1	NC	1
270			min	0	1	-.001	1	0	1	-8.477e-4	3	NC	1	NC	1
271		3	max	0	3	0	15	0	3	3.726e-3	2	NC	1	NC	1
272			min	0	1	-.004	1	0	1	-1.695e-3	3	NC	1	NC	1
273		4	max	0	3	0	15	0	3	5.589e-3	2	NC	3	NC	1
274			min	0	1	-.01	1	-.001	1	-2.543e-3	3	5640.565	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
275		5	max	0	3	0	15	.002	3	7.106e-3	2	NC	3	NC	1
276			min	0	1	-.017	1	-.002	1	-3.228e-3	3	3157.083	1	NC	1
277		6	max	0	3	0	15	.002	3	6.506e-3	2	NC	3	NC	1
278			min	0	1	-.027	1	-.002	1	-2.915e-3	3	2002.413	1	NC	1
279		7	max	0	3	-.001	12	.003	3	5.906e-3	2	NC	3	NC	1
280			min	0	1	-.039	1	-.003	1	-2.602e-3	3	1390.941	1	NC	1
281		8	max	0	3	-.001	12	.003	3	5.305e-3	2	NC	3	NC	2
282			min	0	1	-.052	1	-.004	1	-2.289e-3	3	1028.329	1	9226.856	1
283		9	max	0	3	-.001	12	.003	3	4.705e-3	2	NC	3	NC	2
284			min	0	1	-.067	1	-.004	1	-1.976e-3	3	795.307	1	8006.511	1
285		10	max	0	3	-.002	12	.004	3	4.105e-3	2	NC	3	NC	2
286			min	0	1	-.084	1	-.005	1	-1.663e-3	3	636.696	1	7193.023	1
287		11	max	0	3	-.002	12	.003	3	3.504e-3	2	NC	3	NC	2
288			min	-.001	1	-.102	1	-.005	1	-1.35e-3	3	523.732	1	6675.707	1
289		12	max	0	3	-.002	12	.003	3	2.904e-3	2	NC	3	NC	2
290			min	-.001	1	-.122	1	-.005	1	-1.037e-3	3	440.346	1	6400.53	1
291		13	max	0	3	-.002	12	.002	3	2.303e-3	2	NC	3	NC	2
292			min	-.001	1	-.142	1	-.005	1	-7.246e-4	3	377.028	1	6352.511	1
293		14	max	.001	3	-.002	12	0	3	1.703e-3	2	NC	3	NC	2
294			min	-.001	1	-.164	1	-.004	1	-4.117e-4	3	327.787	1	6563.456	1
295		15	max	.001	3	-.002	12	0	15	1.103e-3	2	NC	3	NC	2
296			min	-.001	1	-.186	1	-.003	1	-9.881e-5	3	288.732	1	7138.003	1
297		16	max	.001	3	-.002	12	0	10	5.024e-4	2	NC	3	NC	2
298			min	-.001	1	-.208	1	-.003	3	-1.059e-4	9	257.241	1	8353.758	1
299		17	max	.001	3	-.002	12	.002	2	5.269e-4	3	NC	3	NC	1
300			min	-.002	1	-.232	1	-.006	3	-4.725e-4	1	231.485	1	8824.172	3
301		18	max	.001	3	-.002	12	.004	2	8.398e-4	3	NC	3	NC	1
302			min	-.002	1	-.255	1	-.01	3	-1.066e-3	1	210.166	1	5543.908	3
303		19	max	.001	3	-.002	3	.008	2	1.153e-3	3	NC	3	NC	1
304			min	-.002	1	-.279	1	-.014	3	-1.659e-3	1	192.338	1	3831.7	3
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	1	0	1	NC	1	NC	1
308			min	0	1	-.002	1	0	1	0	1	NC	1	NC	1
309		3	max	0	3	0	15	0	1	0	1	NC	3	NC	1
310			min	0	1	-.009	1	0	1	0	1	5990.44	1	NC	1
311		4	max	0	3	0	15	0	1	0	1	NC	3	NC	1
312			min	0	1	-.021	1	0	1	0	1	2611.361	1	NC	1
313		5	max	.001	3	0	12	0	1	0	1	NC	3	NC	1
314			min	-.001	1	-.037	1	0	1	0	1	1445.355	1	NC	1
315		6	max	.001	3	0	12	0	1	0	1	NC	3	NC	1
316			min	-.002	1	-.059	1	0	1	0	1	907.137	1	NC	1
317		7	max	.001	3	0	3	0	1	0	1	NC	3	NC	1
318			min	-.002	1	-.086	1	0	1	0	1	625.735	1	NC	1
319		8	max	.002	3	.002	3	0	1	0	1	NC	3	NC	1
320			min	-.002	1	-.116	1	0	1	0	1	460.323	1	NC	1
321		9	max	.002	3	.004	3	0	1	0	1	NC	3	NC	1
322			min	-.002	1	-.151	1	0	1	0	1	354.705	1	NC	1
323		10	max	.002	3	.006	3	0	1	0	1	NC	12	NC	1
324			min	-.003	1	-.189	1	0	1	0	1	283.164	1	NC	1
325		11	max	.002	3	.009	3	0	1	0	1	NC	12	NC	1
326			min	-.003	1	-.231	1	0	1	0	1	232.407	1	NC	1
327		12	max	.003	3	.011	3	0	1	0	1	8729.638	12	NC	1
328			min	-.003	1	-.275	1	0	1	0	1	195.054	1	NC	1
329		13	max	.003	3	.014	3	0	1	0	1	6893.031	12	NC	1
330			min	-.003	1	-.322	1	0	1	0	1	166.763	1	NC	1
331		14	max	.003	3	.017	3	0	1	0	1	5629.722	12	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
332			min	-.004	1	-.37	1	0	1	0	1	144.807	1	NC	1
333		15	max	.003	3	.021	3	0	1	0	1	4943.167	15	NC	1
334			min	-.004	1	-.421	1	0	1	0	1	127.425	1	NC	1
335		16	max	.003	3	.024	3	0	1	0	1	4403.475	15	NC	1
336			min	-.004	1	-.473	1	0	1	0	1	113.43	1	NC	1
337		17	max	.004	3	.027	3	0	1	0	1	3962.15	15	NC	1
338			min	-.004	1	-.526	1	0	1	0	1	101.999	1	NC	1
339		18	max	.004	3	.031	3	0	1	0	1	3596.926	15	NC	1
340			min	-.005	1	-.579	1	0	1	0	1	92.549	1	NC	1
341		19	max	.004	3	.035	3	0	1	0	1	3291.548	15	NC	1
342			min	-.005	1	-.633	1	0	1	0	1	84.655	1	NC	1
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	15	0	1	8.477e-4	3	NC	1	NC	1
346			min	0	1	-.001	1	0	3	-1.863e-3	2	NC	1	NC	1
347		3	max	0	3	0	15	0	1	1.695e-3	3	NC	1	NC	1
348			min	0	1	-.004	1	0	3	-3.726e-3	2	NC	1	NC	1
349		4	max	0	3	0	15	.001	1	2.543e-3	3	NC	3	NC	1
350			min	0	1	-.01	1	0	3	-5.589e-3	2	5640.565	1	NC	1
351		5	max	0	3	0	15	.002	1	3.228e-3	3	NC	3	NC	1
352			min	0	1	-.017	1	-.002	3	-7.106e-3	2	3157.083	1	NC	1
353		6	max	0	3	0	15	.002	1	2.915e-3	3	NC	3	NC	1
354			min	0	1	-.027	1	-.002	3	-6.506e-3	2	2002.413	1	NC	1
355		7	max	0	3	-.001	12	.003	1	2.602e-3	3	NC	3	NC	1
356			min	0	1	-.039	1	-.003	3	-5.906e-3	2	1390.941	1	NC	1
357		8	max	0	3	-.001	12	.004	1	2.289e-3	3	NC	3	NC	2
358			min	0	1	-.052	1	-.003	3	-5.305e-3	2	1028.329	1	9226.856	1
359		9	max	0	3	-.001	12	.004	1	1.976e-3	3	NC	3	NC	2
360			min	0	1	-.067	1	-.003	3	-4.705e-3	2	795.307	1	8006.511	1
361		10	max	0	3	-.002	12	.005	1	1.663e-3	3	NC	3	NC	2
362			min	0	1	-.084	1	-.004	3	-4.105e-3	2	636.696	1	7193.023	1
363		11	max	0	3	-.002	12	.005	1	1.35e-3	3	NC	3	NC	2
364			min	-.001	1	-.102	1	-.003	3	-3.504e-3	2	523.732	1	6675.707	1
365		12	max	0	3	-.002	12	.005	1	1.037e-3	3	NC	3	NC	2
366			min	-.001	1	-.122	1	-.003	3	-2.904e-3	2	440.346	1	6400.53	1
367		13	max	0	3	-.002	12	.005	1	7.246e-4	3	NC	3	NC	2
368			min	-.001	1	-.142	1	-.002	3	-2.303e-3	2	377.028	1	6352.511	1
369		14	max	.001	3	-.002	12	.004	1	4.117e-4	3	NC	3	NC	2
370			min	-.001	1	-.164	1	0	3	-1.703e-3	2	327.787	1	6563.456	1
371		15	max	.001	3	-.002	12	.003	1	9.881e-5	3	NC	3	NC	2
372			min	-.001	1	-.186	1	0	15	-1.103e-3	2	288.732	1	7138.003	1
373		16	max	.001	3	-.002	12	.003	3	1.059e-4	9	NC	3	NC	2
374			min	-.001	1	-.208	1	0	10	-5.024e-4	2	257.241	1	8353.758	1
375		17	max	.001	3	-.002	12	.006	3	4.725e-4	1	NC	3	NC	1
376			min	-.002	1	-.232	1	-.002	2	-5.269e-4	3	231.485	1	8824.172	3
377		18	max	.001	3	-.002	12	.01	3	1.066e-3	1	NC	3	NC	1
378			min	-.002	1	-.255	1	-.004	2	-8.398e-4	3	210.166	1	5543.908	3
379		19	max	.001	3	-.002	3	.014	3	1.659e-3	1	NC	3	NC	1
380			min	-.002	1	-.279	1	-.008	2	-1.153e-3	3	192.338	1	3831.7	3
381	M3	1	max	.015	1	0	12	.001	3	2.154e-3	2	NC	1	NC	1
382			min	0	15	-.005	1	-.002	1	-8.799e-4	3	NC	1	NC	1
383		2	max	.014	1	0	3	.013	3	2.992e-3	2	NC	1	NC	4
384			min	0	15	-.03	1	-.025	2	-1.278e-3	3	NC	1	2572.336	2
385		3	max	.013	1	0	3	.023	3	3.83e-3	2	NC	1	NC	5
386			min	0	15	-.054	1	-.049	2	-1.675e-3	3	NC	1	1304.879	2
387		4	max	.013	1	0	3	.033	3	4.668e-3	2	NC	1	NC	5
388			min	0	15	-.078	1	-.071	2	-2.073e-3	3	NC	1	887.845	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
389		5	max	.012	1	0	3	.043	3	5.506e-3	2	NC	1	NC	5
390			min	0	15	-.102	1	-.091	2	-2.471e-3	3	NC	1	683.914	2
391		6	max	.011	1	0	3	.051	3	6.344e-3	2	NC	1	NC	5
392			min	0	15	-.125	1	-.11	2	-2.869e-3	3	NC	1	565.797	2
393		7	max	.011	1	0	3	.059	3	7.182e-3	2	NC	1	NC	5
394			min	0	15	-.149	1	-.126	2	-3.266e-3	3	NC	1	491.262	2
395		8	max	.01	1	0	3	.065	3	8.019e-3	2	NC	1	NC	5
396			min	0	15	-.173	1	-.14	2	-3.664e-3	3	NC	1	442.447	2
397		9	max	.009	1	.001	3	.07	3	8.857e-3	2	NC	1	NC	5
398			min	0	15	-.197	1	-.15	2	-4.062e-3	3	NC	1	410.731	2
399		10	max	.009	1	.002	3	.073	3	9.695e-3	2	NC	1	NC	5
400			min	0	15	-.22	1	-.157	2	-4.46e-3	3	NC	1	391.748	2
401		11	max	.008	1	.002	3	.075	3	1.053e-2	2	NC	1	NC	5
402			min	0	15	-.243	1	-.16	2	-4.857e-3	3	NC	1	383.492	2
403		12	max	.007	1	.003	3	.074	3	1.137e-2	2	NC	1	NC	5
404			min	0	15	-.267	1	-.159	2	-5.255e-3	3	NC	1	385.646	2
405		13	max	.006	1	.003	3	.071	3	1.221e-2	2	NC	1	NC	5
406			min	0	15	-.29	1	-.152	2	-5.653e-3	3	NC	1	399.602	2
407		14	max	.006	1	.004	3	.066	3	1.305e-2	2	NC	1	NC	5
408			min	0	15	-.313	1	-.141	2	-6.051e-3	3	NC	1	429.286	2
409		15	max	.005	3	.005	3	.058	3	1.388e-2	2	NC	1	NC	5
410			min	0	15	-.336	1	-.123	2	-6.448e-3	3	NC	1	483.691	2
411		16	max	.005	3	.006	3	.048	3	1.472e-2	2	NC	1	NC	5
412			min	0	10	-.359	1	-.1	2	-6.846e-3	3	NC	1	584.806	2
413		17	max	.006	3	.007	3	.035	3	1.556e-2	2	NC	1	NC	5
414			min	0	10	-.382	1	-.07	2	-7.244e-3	3	9121.297	3	799.639	2
415		18	max	.006	3	.008	3	.018	3	1.64e-2	2	NC	1	NC	5
416			min	0	10	-.405	1	-.034	2	-7.642e-3	3	8018.849	3	1464.694	2
417		19	max	.006	3	.009	3	.014	1	1.724e-2	2	NC	1	NC	1
418			min	-.001	2	-.427	1	-.002	3	-8.039e-3	3	7140.71	3	NC	1
419	M6	1	max	.032	1	0	3	0	1	0	1	NC	1	NC	1
420			min	0	15	-.012	1	0	1	0	1	NC	1	NC	1
421		2	max	.03	1	.005	3	0	1	0	1	NC	1	NC	1
422			min	0	15	-.067	1	0	1	0	1	NC	1	NC	1
423		3	max	.028	1	.009	3	0	1	0	1	NC	1	NC	1
424			min	0	15	-.122	1	0	1	0	1	7279.344	3	NC	1
425		4	max	.026	1	.014	3	0	1	0	1	NC	1	NC	1
426			min	0	15	-.176	1	0	1	0	1	4838.115	3	NC	1
427		5	max	.024	1	.018	3	0	1	0	1	NC	1	NC	1
428			min	0	15	-.231	1	0	1	0	1	3613.887	3	NC	1
429		6	max	.022	1	.023	3	0	1	0	1	NC	1	NC	1
430			min	0	15	-.285	1	0	1	0	1	2876.854	3	NC	1
431		7	max	.021	1	.027	3	0	1	0	1	NC	1	NC	1
432			min	0	15	-.34	1	0	1	0	1	2383.748	3	NC	1
433		8	max	.019	1	.032	3	0	1	0	1	NC	1	NC	1
434			min	0	15	-.394	1	0	1	0	1	2030.306	3	NC	1
435		9	max	.017	1	.036	3	0	1	0	1	NC	1	NC	1
436			min	0	15	-.448	1	0	1	0	1	1764.392	3	NC	1
437		10	max	.015	1	.041	3	0	1	0	1	NC	1	NC	1
438			min	0	15	-.502	1	0	1	0	1	1557.033	3	NC	1
439		11	max	.013	1	.046	3	0	1	0	1	NC	1	NC	1
440			min	0	15	-.556	1	0	1	0	1	1390.838	3	NC	1
441		12	max	.011	3	.051	3	0	1	0	1	NC	1	NC	1
442			min	0	15	-.61	1	0	1	0	1	1254.731	3	NC	1
443		13	max	.012	3	.056	3	0	1	0	1	NC	1	NC	1
444			min	0	10	-.664	1	0	1	0	1	1141.321	3	NC	1
445		14	max	.013	3	.061	3	0	1	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
446			min	0	10	-.717	1	0	1	0	1	1045.483	3	NC	1
447		15	max	.014	3	.066	3	0	1	0	1	NC	1	NC	1
448			min	-.002	10	-.771	1	0	1	0	1	963.552	3	NC	1
449		16	max	.015	3	.071	3	0	1	0	1	NC	1	NC	1
450			min	-.004	2	-.825	1	0	1	0	1	892.832	3	NC	1
451		17	max	.016	3	.077	3	0	1	0	1	NC	1	NC	1
452			min	-.006	2	-.878	1	0	1	0	1	831.298	3	NC	1
453		18	max	.017	3	.082	3	0	1	0	1	NC	1	NC	1
454			min	-.008	2	-.931	1	0	1	0	1	777.398	3	NC	1
455		19	max	.018	3	.087	3	0	1	0	1	NC	1	NC	1
456			min	-.01	2	-.985	1	0	1	0	1	729.922	3	NC	1
457	M9	1	max	.015	1	0	12	.002	1	8.799e-4	3	NC	1	NC	1
458			min	0	15	-.005	1	-.001	3	-2.154e-3	2	NC	1	NC	1
459		2	max	.014	1	0	3	.025	2	1.278e-3	3	NC	1	NC	4
460			min	0	15	-.03	1	-.013	3	-2.992e-3	2	NC	1	2572.336	2
461		3	max	.013	1	0	3	.049	2	1.675e-3	3	NC	1	NC	5
462			min	0	15	-.054	1	-.023	3	-3.83e-3	2	NC	1	1304.879	2
463		4	max	.013	1	0	3	.071	2	2.073e-3	3	NC	1	NC	5
464			min	0	15	-.078	1	-.033	3	-4.668e-3	2	NC	1	887.845	2
465		5	max	.012	1	0	3	.091	2	2.471e-3	3	NC	1	NC	5
466			min	0	15	-.102	1	-.043	3	-5.506e-3	2	NC	1	683.914	2
467		6	max	.011	1	0	3	.11	2	2.869e-3	3	NC	1	NC	5
468			min	0	15	-.125	1	-.051	3	-6.344e-3	2	NC	1	565.797	2
469		7	max	.011	1	0	3	.126	2	3.266e-3	3	NC	1	NC	5
470			min	0	15	-.149	1	-.059	3	-7.182e-3	2	NC	1	491.262	2
471		8	max	.01	1	0	3	.14	2	3.664e-3	3	NC	1	NC	5
472			min	0	15	-.173	1	-.065	3	-8.019e-3	2	NC	1	442.447	2
473		9	max	.009	1	.001	3	.15	2	4.062e-3	3	NC	1	NC	5
474			min	0	15	-.197	1	-.07	3	-8.857e-3	2	NC	1	410.731	2
475		10	max	.009	1	.002	3	.157	2	4.46e-3	3	NC	1	NC	5
476			min	0	15	-.22	1	-.073	3	-9.695e-3	2	NC	1	391.748	2
477		11	max	.008	1	.002	3	.16	2	4.857e-3	3	NC	1	NC	5
478			min	0	15	-.243	1	-.075	3	-1.053e-2	2	NC	1	383.492	2
479		12	max	.007	1	.003	3	.159	2	5.255e-3	3	NC	1	NC	5
480			min	0	15	-.267	1	-.074	3	-1.137e-2	2	NC	1	385.646	2
481		13	max	.006	1	.003	3	.152	2	5.653e-3	3	NC	1	NC	5
482			min	0	15	-.29	1	-.071	3	-1.221e-2	2	NC	1	399.602	2
483		14	max	.006	1	.004	3	.141	2	6.051e-3	3	NC	1	NC	5
484			min	0	15	-.313	1	-.066	3	-1.305e-2	2	NC	1	429.286	2
485		15	max	.005	3	.005	3	.123	2	6.448e-3	3	NC	1	NC	5
486			min	0	15	-.336	1	-.058	3	-1.388e-2	2	NC	1	483.691	2
487		16	max	.005	3	.006	3	.1	2	6.846e-3	3	NC	1	NC	5
488			min	0	10	-.359	1	-.048	3	-1.472e-2	2	NC	1	584.806	2
489		17	max	.006	3	.007	3	.07	2	7.244e-3	3	NC	1	NC	5
490			min	0	10	-.382	1	-.035	3	-1.556e-2	2	9121.297	3	799.639	2
491		18	max	.006	3	.008	3	.034	2	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	.002	3	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