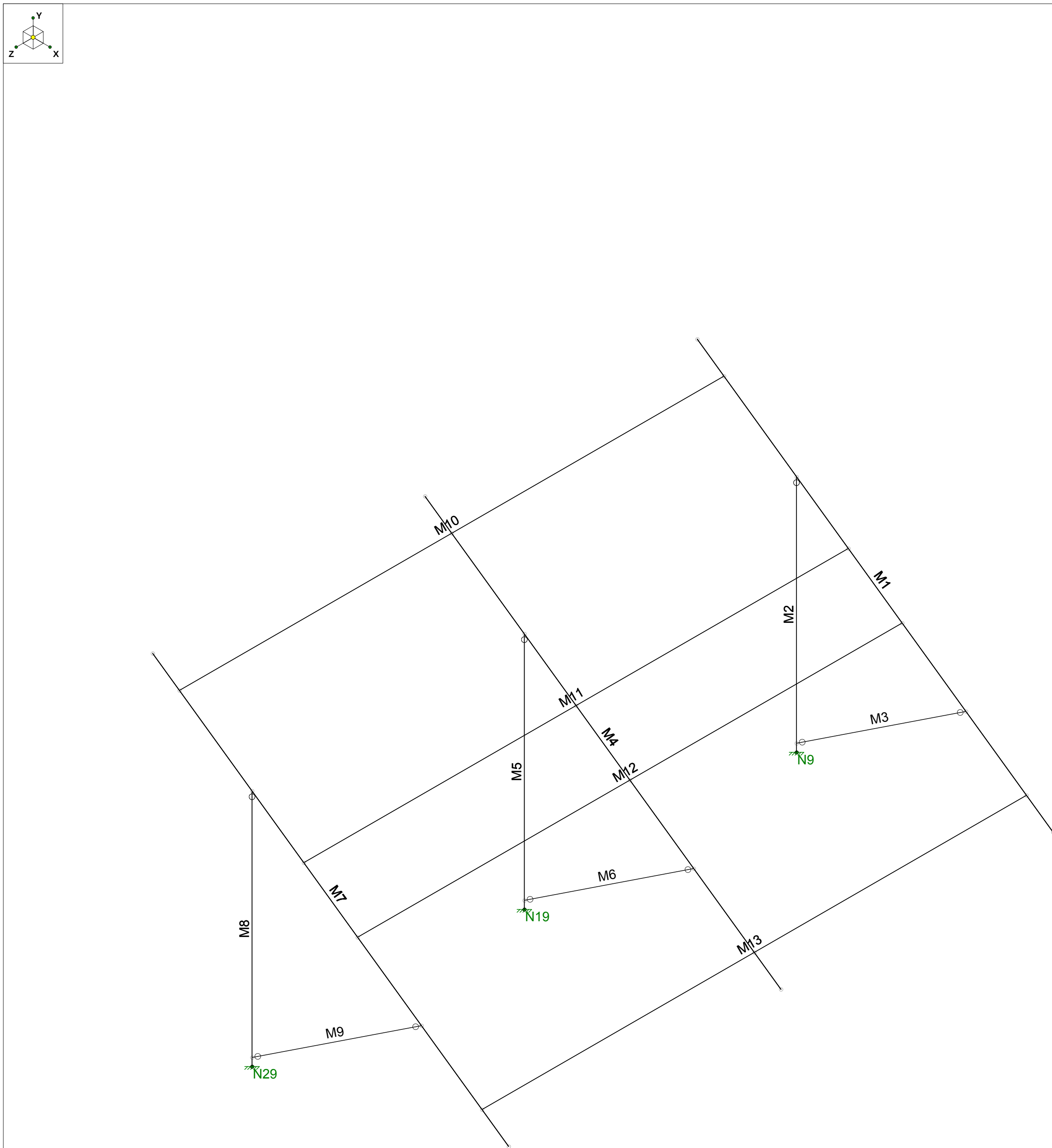


Schletter, Inc.		35° Tilt w/o Seismic Design
HCV	Standard FS Racking System	
	Representative Calculations - ASCE 7-05	

1. INTRODUCTION

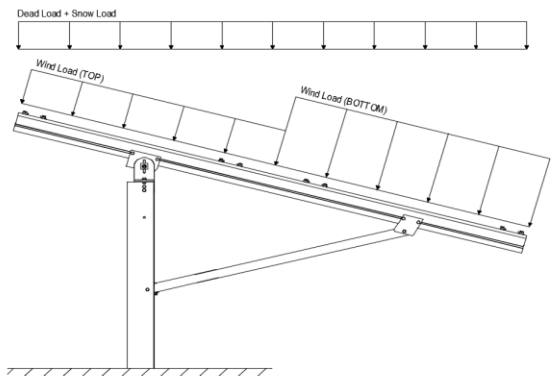
1.1 Project Description
The following sections will cover the determination of forces and structural design calculations for the Schletter, Inc. FS ground mount system.

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

PV modules are required to meet the following specifications:

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

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



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

1.3 Technical Codes
- ASCE 7-05 - Chapter 6, Wind Loads
- ASCE 7-05 - Chapter 7, Snow Loads
- ASCE 7-05 - Chapter 2, Combination of Loads
- International Building Code, IBC, 2003, 2006, 2009
- Aluminum Design Manual, Eighth Edition, 2005

2. LOAD ACTIONS

2.1 Permanent Loads
g_{MAX} = 3.00 psf
g_{MIN} = 1.75 psf

Self-weight of the PV modules.

2.2 Snow Loads
Ground Snow Load, P_g = 30.00 psf
Sloped Roof Snow Load, P_s = 14.43 psf *(ASCE 7-05, Eq. 7-2)*
I_s = 1.00
C_s = 0.64
C_e = 0.90
C_t = 1.20

2.3 Wind Loads
Design Wind Speed, V = 100 mph — Exposure Category = C
Height < 15 ft — Importance Category = II

Peak Velocity Pressure, q_z = 15.70 psf *Including the gust factor, G=0.85. (ASCE 7-05, Eq. 6-15)*

Pressure Coefficients

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

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

2.4 Seismic Loads - 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 + 0.8W
1.2D + 1.6W + 0.5S
0.9D + 1.6W ^{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 + 1.0W
1.0D + 0.75L + 0.75W + 0.75S
0.6D + 1.0W ^{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

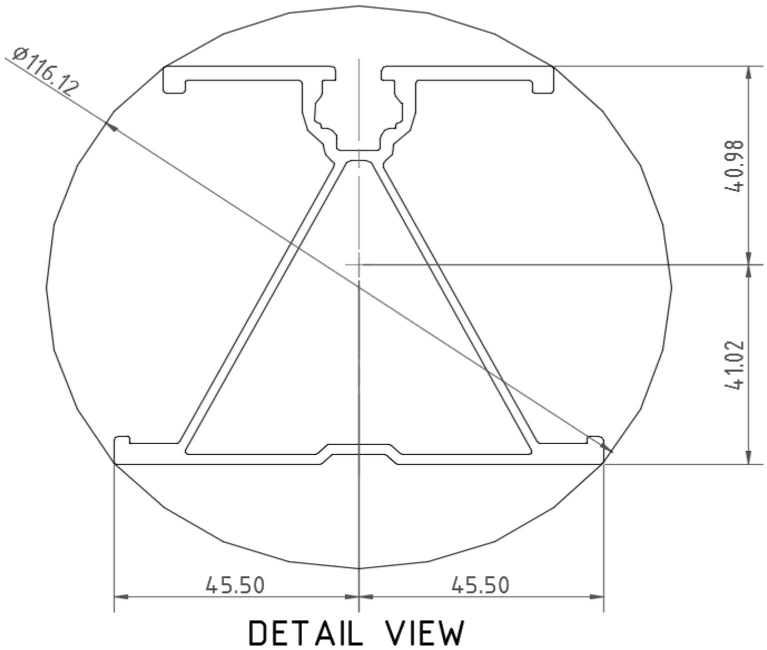
Struts	Location
M3	Outer
M6	Inner
M9	Outer

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).

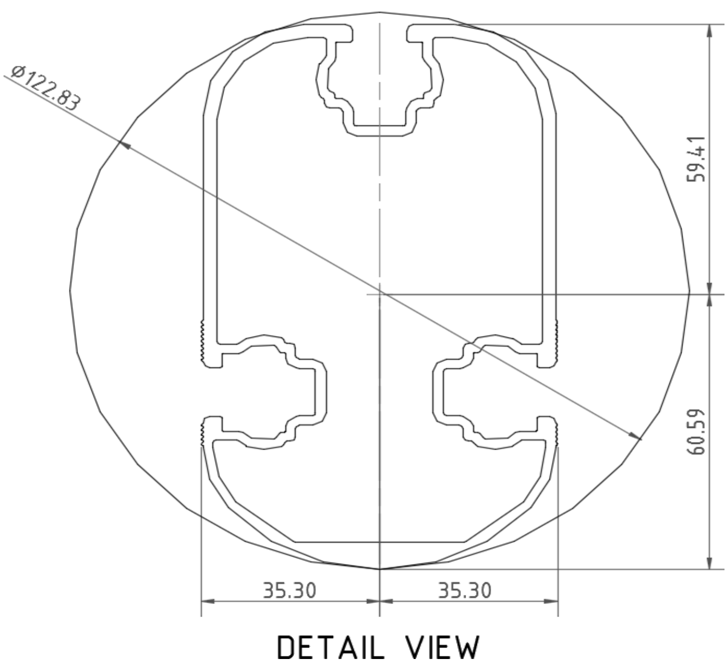
Purlin Type =	**S1.5**	
Aluminum Type =	6105-T5	
F_{ty} =	35	ksi
L_b =	114	in
$\Phi F_{ty\ STRONG\text{-}AXIS}$ =	25.07	ksi
$\Phi F_{ty\ WEAK\text{-}AXIS}$ =	23.08	ksi
S_y =	1.33	in^3
S_x =	0.6	in^3
E =	10100	ksi
I_y =	2.16	in^4
I_x =	1.07	in^4
A =	1.25	in^2
g =	1.50	lbs/ft
M_y =	1.738	k-ft
M_z =	0.123	k-ft
$M_{y\ allowable}$ =	2.779	k-ft
$M_{z\ allowable}$ =	1.154	k-ft
Utilization =	73%	



4.2 Girder Design

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

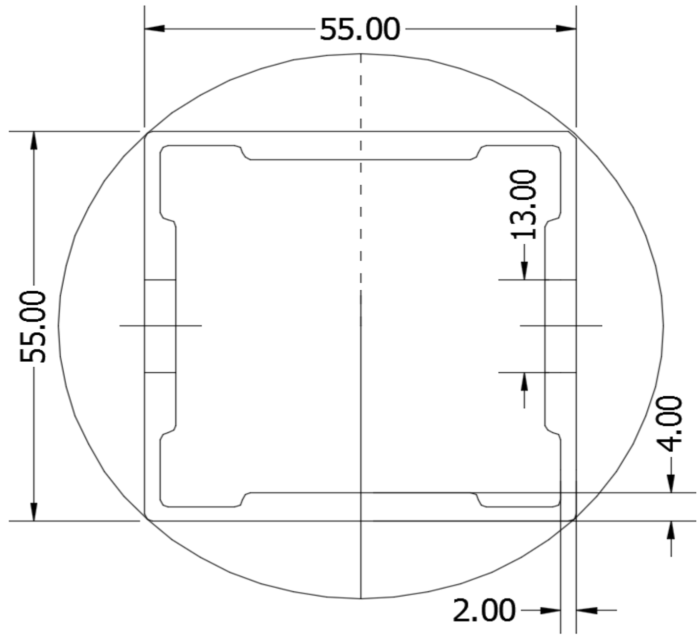
Girder Type =	**T5**	
Aluminum Type =	6105-T5	
F_{ty} =	35	ksi
L_b =	63.82	in
$\Phi F_{ty\ AXIAL}$ =	30.80	ksi
$\Phi F_{ty\ STRONG\text{-}AXIS}$ =	30.46	ksi
$\Phi F_{ty\ WEAK\text{-}AXIS}$ =	31.56	ksi
S_y =	1.98	in^3
S_x =	1.32	in^3
E =	10100	ksi
I_y =	4.74	in^4
I_x =	1.83	in^4
A =	1.93	in^2
g =	2.32	lbs/ft
M_y =	3.925	k-ft
M_z =	0.000	k-ft
P_n =	0.007	k
$M_{y\ allowable}$ =	5.026	k-ft
$M_{z\ allowable}$ =	3.472	k-ft
$P_{n\ allowable}$ =	59.439	k
Utilization =	78%	



4.3 Strut Design

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

Strut Type =	**55x55**	
Aluminum Type =	6105-T5	
F_{ty} =	35	ksi
L_b =	61.00	in
$\Phi F_{ty\ AXIAL}$ =	13.67	ksi
$\Phi F_{ty\ BENDING}$ =	28.22	ksi
S_y =	0.60	in^3
S_x =	0.60	in^3
E =	10100	ksi
I_y =	0.67	in^4
I_x =	0.67	in^4
A =	0.98	in^2
g =	1.18	lbs/ft
M_y =	0.000	k-ft
M_z =	0.313	k-ft
P_n =	3.821	k
$M_{y\ allowable}$ =	1.408	k-ft
$M_{z\ allowable}$ =	1.408	k-ft
$P_{n\ allowable}$ =	13.425	k
Utilization =	51%	

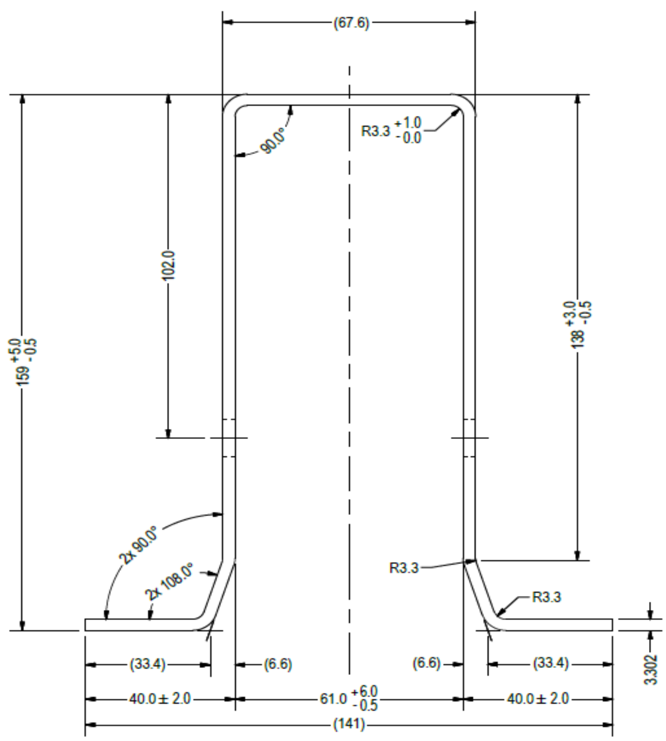


DETAIL VIEW

4.4 Post Design

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

Post Type =	**FG8**	
Steel Type =	J2340	
F_{ty} =	60	ksi
L_b =	85.68	in
Φ =	0.90	
ΦF_{ty} =	54.00	ksi
S_y =	3.46	in^3
S_x =	1.55	in^3
E =	29000	ksi
I_y =	10.94	in^4
I_x =	4.31	in^4
A =	2.23	in^2
g =	7.59	lbs/ft
M_y =	16.381	k-ft
M_z =	0.000	k-ft
P_r =	-4.477	k
$M_{y\ allowable}$ =	19.207	k-ft
$M_{z\ allowable}$ =	14.389	k-ft
P_c =	28.060	k
Utilization =	97%	



DETAIL VIEW

5. FOUNDATION DESIGN CALCULATIONS

5.1 Rammed Post Foundations

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

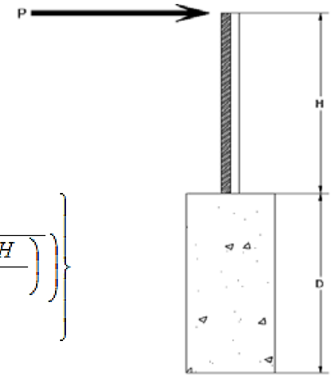
Maximum Tensile Load =	5.77	k
Maximum Lateral Load =	4.00	k

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 =	1.08	k
Height of Pole Above Grade, H =	7.14	ft
Diameter of Pole Footing, B =	2.00	ft
Lateral Soil Bearing Capacity, S =	0.10	ksf/ft
Isolated Pole Factor, F =	2	
First Trial Depth, D =	3.25	ft

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

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

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

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

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

<u>Non-Constrained</u>

Lateral Force @ Top of Pole, P =	1.08	k
Height of Pole Above Grade, H =	7.14	ft
Diameter of Pole Footing, B =	2.00	ft
Lateral Soil Bearing Capacity, S =	0.20	ksf/ft

1st Trial @ D_1 =	3.25	ft
Lateral Soil Bearing @ D/3, S_1 =	0.22	ksf
Lateral Soil Bearing @ D, S_3 =	0.65	ksf
Constant $2.34P/(S_1B)$, A =	5.85	
Required Footing Depth, D =	10.28	ft
2nd Trial @ D_2 =	6.76	ft
Lateral Soil Bearing @ D/3, S_1 =	0.45	ksf
Lateral Soil Bearing @ D, S_3 =	1.35	ksf
Constant $2.34P/(S_1B)$, A =	2.81	
Required Footing Depth, D =	6.29	ft
3rd Trial @ D_3 =	6.53	ft
Lateral Soil Bearing @ D/3, S_1 =	0.44	ksf
Lateral Soil Bearing @ D, S_3 =	1.31	ksf
Constant $2.34P/(S_1B)$, A =	2.91	
Required Footing Depth, D =	6.44	ft
4th Trial @ D_4 =	6.48	ft
Lateral Soil Bearing @ D/3, S_1 =	0.43	ksf
Lateral Soil Bearing @ D, S_3 =	1.30	ksf
Constant $2.34P/(S_1B)$, A =	2.93	
Required Footing Depth, D =	6.46	ft
5th Trial @ D_5 =	6.47	ft
Lateral Soil Bearing @ D/3, S_1 =	0.43	ksf
Lateral Soil Bearing @ D, S_3 =	1.29	ksf
Constant $2.34P/(S_1B)$, A =	2.94	
Required Footing Depth, D =	6.50	ft

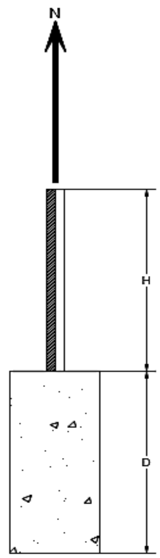
<u>A 2ft diameter x 6.5ft deep footing unrestrained at ground level is required for the racking structure.</u>

5.4 Uplifting Force Resistance

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

Weight of Concrete, g_{con} =	145	pcf
Uplifting Force, N =	2.76	k
Footing Diameter, B =	2.00	ft
Factor of Safety =	2.50	
Cohesion =	208.85	psf
γ_s =	120.43	pcf
α =	0.45	
Required Concrete Weight, g =	1.82	k
Required Concrete Volume, V =	12.55	ft^3
Required Footing Depth, D =	4.00	ft

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



Iteration	z	dz	Qs	Side
1	0.2	0.2	118.10	5.96
2	0.4	0.2	118.10	5.86
3	0.6	0.2	118.10	5.76
4	0.8	0.2	118.10	5.65
5	1	0.2	118.10	5.55
6	1.2	0.2	118.10	5.45
7	1.4	0.2	118.10	5.34
8	1.6	0.2	118.10	5.24
9	1.8	0.2	118.10	5.13
10	2	0.2	118.10	5.03
11	2.2	0.2	118.10	4.93
12	2.4	0.2	118.10	4.82
13	2.6	0.2	118.10	4.72
14	2.8	0.2	118.10	4.62
15	3	0.2	118.10	4.51
16	3.2	0.2	118.10	4.41
17	3.4	0.2	118.10	4.30
18	3.6	0.2	118.10	4.20
19	3.8	0.2	118.10	4.10
20	4	0.2	118.10	3.99
21	0	0.0	0.00	3.99
22	0	0.0	0.00	3.99
23	0	0.0	0.00	3.99
24	0	0.0	0.00	3.99
25	0	0.0	0.00	3.99
26	0	0.0	0.00	3.99
27	0	0.0	0.00	3.99
28	0	0.0	0.00	3.99
29	0	0.0	0.00	3.99
30	0	0.0	0.00	3.99
31	0	0.0	0.00	3.99
32	0	0.0	0.00	3.99
33	0	0.0	0.00	3.99
34	0	0.0	0.00	3.99
Max	4	Sum	0.94	

5.5 Compressive Force Resistance

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

Depth Below Grade, D =	6.50	ft
Footing Diameter, B =	2.00	ft
Compressive Force, P =	3.53	k
Footing Area =	3.14	ft^2
Circumference =	6.28	ft
Skin Friction Area =	21.99	ft^2
Concrete Weight =	0.145	kcf

Bearing Pressure

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

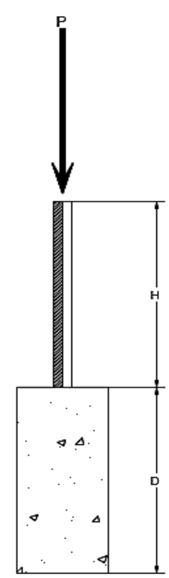
Weight of Concrete

Footing Volume	20.42	ft^3
Weight	2.96	k

Skin Friction Resistance

Skin Friction =	0.15	ksf
Resistance =	3.30	k
1/3 Increase for Wind =	1.33	
Total Resistance =	10.68	k
Applied Force =	6.49	k
Utilization =	61%	

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



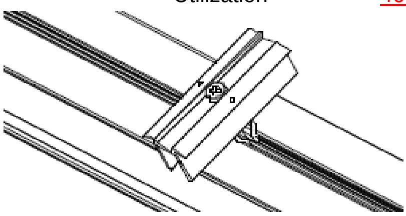
6. DESIGN OF JOINTS AND CONNECTIONS

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

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

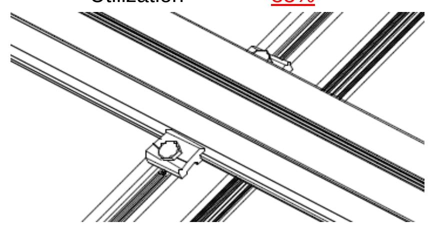
Fastening of Modules to Purlins

Maximum Uplifting Force =	0.564 k
Allowable Uplift =	1.214 k
Utilization =	46%



Fastening of Purlins to Girders

Maximum Uplifting Force =	1.911 k
Allowable Uplift =	2.180 k
Utilization =	88%

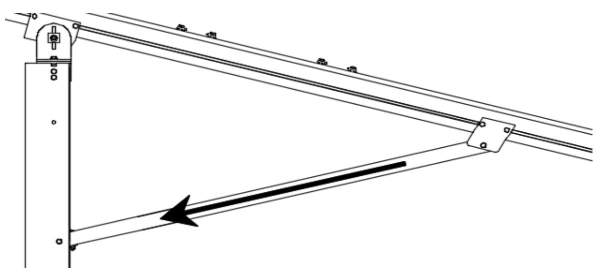


6.2 Strut Connections

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

Maximum Axial Load =	3.821 k
M10 Bolt Shear Capacity =	8.894 k
Utilization =	43%

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

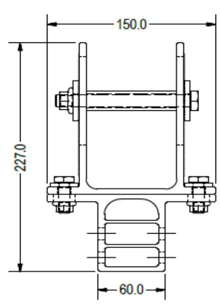


A strut under compression is shown to demonstrate the load transfer from the girder. Single M10 bolts are located at each end of the strut and are subjected to double shear.

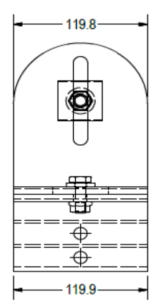
6.3 Girder to Post Connection

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

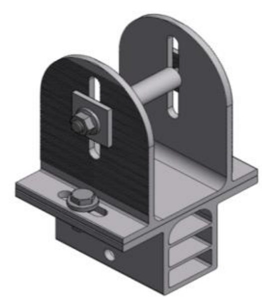
Maximum Tensile Load =	4.045 k
Allowable Load =	5.649 k
Utilization =	72%



FRONT VIEW



SIDE VIEW



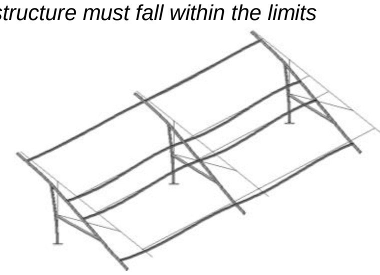
7. SEISMIC DESIGN

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} =	77.78 in
Allowable Story Drift for All Other Structures, Δ = {	$0.020h_{sx}$
	1.556 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 = 114 in

J = 0.432

315.377

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

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= 27.5 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 = 114

J = 0.432

200.561

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

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= 28.8

3.4.16

b/t = 37.0588

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

S1 = 12.2

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

S2 = 46.7

φF_L= φb[Bp-1.6Dp*b/t]

φF_L= 23.1 ksi

3.4.16.1

N/A for Weak Direction

3.4.18

h/t = 32.195

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

S1 = 36.9

m = 0.65

C_0 = 45.5

Cc = 45.5

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

S2 = 77.3

φF_L= 1.3φyFcy

φF_L= 43.2 ksi

φF_LWk= 23.1 ksi

Iy = 446476 mm^4

1.073 in^4

x = 45.5 mm

Sy = 0.599 in^3

M_{max}Wk = 1.152 k-ft

Compression

3.4.9

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

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

3.4.10

Rb/t = 0.0

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

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

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

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

Girder = **T5**

Strong Axis:
3.4.14

L_b = 63.8189 in
J = 1.98
82.1278

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

S1 = 0.51461

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

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

3.4.16

b/t = 4.5

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

S1 = 12.2

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

S2 = 46.7
φF_L= φyFcy
φF_L= 33.3 ksi

Weak Axis:
3.4.14

L_b = 63.8189
J = 1.98
89.1294

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

S1 = 0.51461

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

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

3.4.16

b/t = 16.3333

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

S1 = 12.2

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

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

3.4.16.1 Used

Rb/t = 20.0

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

S1 = 1.1

$S2 = C_t$

S2 = 141.0

φF_L= φb[Bt-Dt*√(Rb/t)]

φF_L= 30.8 ksi

3.4.16.1

N/A for Weak Direction

3.4.18

h/t = 16.3333

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

S1 = 37.9

m = 0.63

C_0 = 61.046

Cc = 58.954

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

S2 = 79.4

φF_L= 1.3φyFcy

φF_L= 43.2 ksi

3.4.18

h/t = 4.5

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

S1 = 36.9

m = 0.65

C_0 = 35

Cc = 35

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

S2 = 77.3

φF_L= 1.3φyFcy

φF_L= 43.2 ksi

φF_LSt= 30.5 ksi

Ix = 1970917 mm^4

4.735 in^4

y = 61.046 mm

Sx = 1.970 in^3

M_{max}St = 5.001 k-ft

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)/(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 =	85.68	in	
Pr =	-4.48	k	(LRFD Factored Load)
Mr (Strong) =	16.38	k-ft	(LRFD Factored Load)
Mr (Weak) =	0.00	k-ft	(LRFD Factored Load)

Flexural Buckling:

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

Torsional/Flexural Torsional Buckling:

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

Bending (Strong Axis):

Yielding:			
Mn =	21.95 k-ft		
Flange Local Buckling:			
Mn =	19.207 k-ft		
Pr/Pc =	0.1216 <	0.2	
Utilization =	0.97 <	1.0	OK

Bending (Weak Axis):

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

Combined Forces

Utilization = 97%

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	-32.97	-32.97	0	0
2	M11	Y	-32.97	-32.97	0	0
3	M12	Y	-32.97	-32.97	0	0
4	M13	Y	-32.97	-32.97	0	0

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

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M10	y	-52.543	-52.543	0	0
2	M11	y	-52.543	-52.543	0	0
3	M12	y	-87.571	-87.571	0	0
4	M13	y	-87.571	-87.571	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	105.085	105.085	0	0
2	M11	y	105.085	105.085	0	0
3	M12	y	52.543	52.543	0	0
4	M13	y	52.543	52.543	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 + 0.8W	Yes	Y		1	1.2	3	1.6	4	.8														
2	LRFD 1.2D + 1.6W + 0.5S	Yes	Y		1	1.2	3	.5	4	1.6														
3	LRFD 0.9D + 1.6W	Yes	Y		2	.9					5	1.6												
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...
8																								
9	ASD 1.0D + 1.0S	Yes	Y		1	1	3	1																
10	ASD 1.0D + 1.0W	Yes	Y		1	1			4	1														
11	ASD 1.0D + 0.75L + 0.75W + 0....	Yes	Y		1	1	3	.75	4	.75														
12	ASD 0.6D + 1.0W	Yes	Y		2	.6					5	1												
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	938.786	2	1966.501	2	208.689	2	.304	2	.014	3	4.934	3
2		min	-1210.015	3	-1404.103	3	-244.855	3	-.408	3	-.027	2	.036	10
3	N19	max	3008.685	2	5482.747	2	0	2	0	1	0	3	9.838	3
4		min	-3077.002	3	-4421.782	3	0	3	0	15	0	10	-.236	10
5	N29	max	938.786	2	1966.501	2	244.855	3	.408	3	.027	2	4.934	3
6		min	-1210.015	3	-1404.103	3	-208.689	2	-.304	2	-.014	3	.036	10
7	Totals:	max	4886.258	2	9415.749	2	0	2						
8		min	-5497.032	3	-7229.988	3	0	3						

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	15	0	1	0	1	0	1
2			min	0	1	0	3	-.001	1	0	1	0	1	0	1
3		2	max	-.299	15	-.428	15	0	15	0	1	0	15	0	4
4			min	-1.274	4	-1.817	4	-.001	1	0	1	0	1	0	15
5		3	max	-10.298	15	289.23	3	-6.155	15	.057	3	.211	1	.272	2
6			min	-176.44	1	-630.169	2	-111.271	1	-.21	2	.012	15	-.121	3
7		4	max	-10.597	15	288.167	3	-6.155	15	.057	3	.142	1	.663	2
8			min	-177.433	1	-631.586	2	-111.271	1	-.21	2	.008	15	-.3	3
9		5	max	-10.896	15	287.104	3	-6.155	15	.057	3	.073	1	1.055	2
10			min	-178.425	1	-633.004	2	-111.271	1	-.21	2	.004	15	-.478	3
11		6	max	144.128	3	553.572	2	-7.456	15	.084	2	.078	2	1.013	2
12			min	-550.893	2	-177.768	3	-162.24	1	-.088	3	-.029	3	-.486	3
13		7	max	143.384	3	552.154	2	-7.456	15	.084	2	.01	10	.67	2
14			min	-551.886	2	-178.831	3	-162.24	1	-.088	3	-.037	3	-.376	3
15		8	max	142.639	3	550.737	2	-7.456	15	.084	2	-.007	15	.328	2
16			min	-552.878	2	-179.894	3	-162.24	1	-.088	3	-.131	1	-.264	3
17		9	max	105.546	3	97.311	3	-9.577	15	-.001	15	.074	1	.125	2
18			min	-723.01	1	-68.887	2	-175.088	1	-.149	2	-.007	10	-.21	3
19		10	max	104.802	3	96.248	3	-9.577	15	-.001	15	.047	3	.168	2
20			min	-724.003	1	-70.304	2	-175.088	1	-.149	2	-.043	2	-.27	3
21		11	max	104.057	3	95.184	3	-9.577	15	-.001	15	.027	3	.212	2
22			min	-724.995	1	-71.722	2	-175.088	1	-.149	2	-.143	1	-.33	3
23		12	max	63.172	3	749.374	3	143.306	2	.326	3	.13	1	.416	2
24			min	-906.194	1	-473.224	2	-328.41	3	-.265	2	.007	15	-.642	3
25		13	max	62.428	3	748.311	3	143.306	2	.326	3	.158	1	.71	2
26			min	-907.186	1	-474.641	2	-328.41	3	-.265	2	-.17	3	-1.107	3
27		14	max	179.28	1	434.919	2	11.566	10	.225	2	.149	3	.993	2
28			min	11.195	15	-672.768	3	-115.746	3	-.419	3	-.104	2	-1.552	3
29		15	max	178.287	1	433.502	2	11.566	10	.225	2	.077	3	.723	2
30			min	10.896	15	-673.831	3	-115.746	3	-.419	3	-.136	1	-1.134	3
31		16	max	177.295	1	432.084	2	11.566	10	.225	2	.005	3	.455	2
32			min	10.596	15	-674.894	3	-115.746	3	-.419	3	-.181	1	-.715	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	176.302	1	430.667	2	11.566	10	.225	2	-.012	15	.187	2
34			min	10.297	15	-675.957	3	-115.746	3	-.419	3	-.227	1	-.296	3
35		18	max	1.274	4	1.819	4	.001	1	0	1	0	15	0	4
36			min	.299	15	.428	15	0	15	0	1	0	1	0	15
37		19	max	0	1	.004	2	.001	1	0	1	0	1	0	1
38			min	0	1	-.008	3	0	15	0	1	0	1	0	1
39	M4	1	max	0	1	.015	2	0	1	0	1	0	1	0	1
40			min	0	1	-.002	3	0	1	0	1	0	1	0	1
41		2	max	-.299	15	-.427	15	0	1	0	1	0	1	0	4
42			min	-1.274	4	-1.816	4	0	1	0	1	0	1	0	15
43		3	max	8.454	3	929.12	3	0	1	0	1	0	1	.716	2
44			min	-357.041	1	-1847.015	2	0	1	0	1	0	1	-.367	3
45		4	max	7.71	3	928.057	3	0	1	0	1	0	1	1.863	2
46			min	-358.034	1	-1848.432	2	0	1	0	1	0	1	-.943	3
47		5	max	6.965	3	926.994	3	0	1	0	1	0	1	3.011	2
48			min	-359.026	1	-1849.85	2	0	1	0	1	0	1	-1.519	3
49		6	max	670.847	3	1701.907	2	0	1	0	1	0	1	2.855	2
50			min	-1568.344	2	-730.93	3	0	1	0	1	0	1	-1.486	3
51		7	max	670.102	3	1700.489	2	0	1	0	1	0	1	1.8	2
52			min	-1569.337	2	-731.993	3	0	1	0	1	0	1	-1.032	3
53		8	max	669.358	3	1699.072	2	0	1	0	1	0	1	.745	2
54			min	-1570.329	2	-733.057	3	0	1	0	1	0	1	-.577	3
55		9	max	682.912	3	220.868	3	0	1	0	1	0	1	.114	1
56			min	-1754.04	1	-176.59	2	0	1	0	1	0	1	-.345	3
57		10	max	682.167	3	219.805	3	0	1	0	1	0	1	.22	2
58			min	-1755.033	1	-178.007	2	0	1	0	1	0	1	-.482	3
59		11	max	681.423	3	218.742	3	0	1	0	1	0	1	.331	2
60			min	-1756.025	1	-179.425	2	0	1	0	1	0	1	-.618	3
61		12	max	702.561	3	2014.431	3	0	1	0	1	0	1	.937	2
62			min	-2100.572	1	-1427.098	2	0	1	0	1	0	1	-1.477	3
63		13	max	701.817	3	2013.368	3	0	1	0	1	0	1	1.823	2
64			min	-2101.564	1	-1428.515	2	0	1	0	1	0	1	-2.727	3
65		14	max	360.294	1	1192.613	2	0	1	0	1	0	1	2.674	2
66			min	-6.638	3	-1750.451	3	0	1	0	1	0	1	-3.925	3
67		15	max	359.301	1	1191.196	2	0	1	0	1	0	1	1.934	2
68			min	-7.382	3	-1751.514	3	0	1	0	1	0	1	-2.838	3
69		16	max	358.309	1	1189.778	2	0	1	0	1	0	1	1.195	2
70			min	-8.127	3	-1752.577	3	0	1	0	1	0	1	-1.751	3
71		17	max	357.316	1	1188.361	2	0	1	0	1	0	1	.457	2
72			min	-8.871	3	-1753.64	3	0	1	0	1	0	1	-.663	3
73		18	max	1.274	4	1.82	4	0	1	0	1	0	1	0	4
74			min	.299	15	.428	15	0	1	0	1	0	1	0	15
75		19	max	0	1	.011	2	0	1	0	1	0	1	0	1
76			min	0	1	-.017	3	0	1	0	1	0	1	0	1
77	M7	1	max	0	1	.006	1	.001	1	0	1	0	1	0	1
78			min	0	1	0	3	0	15	0	1	0	1	0	1
79		2	max	-.299	15	-.428	15	.001	1	0	1	0	1	0	4
80			min	-1.274	4	-1.817	4	0	15	0	1	0	15	0	15
81		3	max	-10.298	15	289.23	3	111.271	1	.21	2	-.012	15	.272	2
82			min	-176.44	1	-630.169	2	6.155	15	-.057	3	-.211	1	-.121	3
83		4	max	-10.597	15	288.167	3	111.271	1	.21	2	-.008	15	.663	2
84			min	-177.433	1	-631.586	2	6.155	15	-.057	3	-.142	1	-.3	3
85		5	max	-10.896	15	287.104	3	111.271	1	.21	2	-.004	15	1.055	2
86			min	-178.425	1	-633.004	2	6.155	15	-.057	3	-.073	1	-.478	3
87		6	max	144.128	3	553.572	2	162.24	1	.088	3	.029	3	1.013	2
88			min	-550.893	2	-177.768	3	7.456	15	-.084	2	-.078	2	-.486	3
89		7	max	143.384	3	552.154	2	162.24	1	.088	3	.037	3	.67	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	-551.886	2	-178.831	3	7.456	15	-.084	2	-.01	10	-.376	3
91		8	max	142.639	3	550.737	2	162.24	1	.088	3	.131	1	.328	2
92			min	-552.878	2	-179.894	3	7.456	15	-.084	2	.007	15	-.264	3
93		9	max	105.546	3	97.311	3	175.088	1	.149	2	.007	10	.125	2
94			min	-723.01	1	-68.887	2	9.577	15	.001	15	-.074	1	-.21	3
95		10	max	104.802	3	96.248	3	175.088	1	.149	2	.043	2	.168	2
96			min	-724.003	1	-70.304	2	9.577	15	.001	15	-.047	3	-.27	3
97		11	max	104.057	3	95.184	3	175.088	1	.149	2	.143	1	.212	2
98			min	-724.995	1	-71.722	2	9.577	15	.001	15	-.027	3	-.33	3
99		12	max	63.172	3	749.374	3	328.41	3	.265	2	-.007	15	.416	2
100			min	-906.194	1	-473.224	2	-143.306	2	-.326	3	-.13	1	-.642	3
101		13	max	62.428	3	748.311	3	328.41	3	.265	2	.17	3	.71	2
102			min	-907.186	1	-474.641	2	-143.306	2	-.326	3	-.158	1	-1.107	3
103		14	max	179.28	1	434.919	2	115.746	3	.419	3	.104	2	.993	2
104			min	11.195	15	-672.768	3	-11.566	10	-.225	2	-.149	3	-1.552	3
105		15	max	178.287	1	433.502	2	115.746	3	.419	3	.136	1	.723	2
106			min	10.896	15	-673.831	3	-11.566	10	-.225	2	-.077	3	-1.134	3
107		16	max	177.295	1	432.084	2	115.746	3	.419	3	.181	1	.455	2
108			min	10.596	15	-674.894	3	-11.566	10	-.225	2	-.005	3	-.715	3
109		17	max	176.302	1	430.667	2	115.746	3	.419	3	.227	1	.187	2
110			min	10.297	15	-675.957	3	-11.566	10	-.225	2	.012	15	-.296	3
111		18	max	1.274	4	1.819	4	0	15	0	1	0	1	0	4
112			min	.299	15	.428	15	-.001	1	0	1	0	15	0	15
113		19	max	0	1	.004	2	0	15	0	1	0	1	0	1
114			min	0	1	-.008	3	-.001	1	0	1	0	1	0	1
115	M10	1	max	115.76	3	427.436	2	-9.698	15	.012	2	.256	1	.225	2
116			min	-11.568	10	-678.247	3	-174.373	1	-.023	3	.014	15	-.419	3
117		2	max	115.76	3	314.202	2	-7.535	15	.012	2	.093	1	.206	3
118			min	-11.568	10	-505.404	3	-135.264	1	-.023	3	.005	15	-.166	2
119		3	max	115.76	3	200.967	2	-5.372	15	.012	2	.047	3	.648	3
120			min	-11.568	10	-332.56	3	-96.155	1	-.023	3	-.029	1	-.438	2
121		4	max	115.76	3	87.733	2	-3.209	15	.012	2	.019	3	.908	3
122			min	-11.568	10	-159.717	3	-57.046	1	-.023	3	-.11	1	-.59	2
123		5	max	115.76	3	13.126	3	-1.046	15	.012	2	-.004	12	.986	3
124			min	-11.568	10	-28.627	1	-21.669	3	-.023	3	-.15	1	-.623	2
125		6	max	115.76	3	185.97	3	21.173	1	.012	2	-.008	15	.881	3
126			min	-11.568	10	-138.736	2	-18.425	3	-.023	3	-.148	1	-.537	2
127		7	max	115.76	3	358.813	3	60.282	1	.012	2	-.006	15	.593	3
128			min	-11.568	10	-251.97	2	-15.18	3	-.023	3	-.105	1	-.33	2
129		8	max	115.76	3	531.657	3	99.391	1	.012	2	0	10	.123	3
130			min	-11.568	10	-365.205	2	-11.936	3	-.023	3	-.059	3	-.007	10
131		9	max	115.76	3	704.5	3	138.5	1	.012	2	.105	1	.441	2
132			min	-11.568	10	-478.439	2	-8.692	3	-.023	3	-.069	3	-.529	3
133		10	max	115.76	3	591.674	2	5.447	3	.012	2	.272	1	1.005	2
134			min	-11.568	10	-877.343	3	-177.61	1	-.023	3	-.077	3	-1.364	3
135		11	max	115.76	3	478.439	2	8.692	3	.023	3	.105	1	.441	2
136			min	-11.568	10	-704.5	3	-138.5	1	-.012	2	-.069	3	-.529	3
137		12	max	115.76	3	365.205	2	11.936	3	.023	3	0	10	.123	3
138			min	-11.568	10	-531.657	3	-99.391	1	-.012	2	-.059	3	-.007	10
139		13	max	115.76	3	251.97	2	15.18	3	.023	3	-.006	15	.593	3
140			min	-11.568	10	-358.813	3	-60.282	1	-.012	2	-.105	1	-.33	2
141		14	max	115.76	3	138.736	2	18.425	3	.023	3	-.008	15	.881	3
142			min	-11.568	10	-185.97	3	-21.173	1	-.012	2	-.148	1	-.537	2
143		15	max	115.76	3	28.627	1	21.669	3	.023	3	-.004	12	.986	3
144			min	-11.568	10	-13.126	3	1.046	15	-.012	2	-.15	1	-.623	2
145		16	max	115.76	3	159.717	3	57.046	1	.023	3	.019	3	.908	3
146			min	-11.568	10	-87.733	2	3.209	15	-.012	2	-.11	1	-.59	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
147		17	max	115.76	3	332.56	3	96.155	1	.023	3	.047	3	.648	3
148			min	-11.568	10	-200.967	2	5.372	15	-.012	2	-.029	1	-.438	2
149		18	max	115.76	3	505.404	3	135.264	1	.023	3	.093	1	.206	3
150			min	-11.568	10	-314.202	2	7.535	15	-.012	2	.005	15	-.166	2
151		19	max	115.76	3	678.247	3	174.373	1	.023	3	.256	1	.225	2
152			min	-11.568	10	-427.436	2	9.698	15	-.012	2	.014	15	-.419	3
153	M11	1	max	221.983	2	398.929	2	-10.064	15	0	10	.294	1	.118	1
154			min	-295.224	3	-655.094	3	-180.378	1	-.006	3	.017	15	-.44	3
155		2	max	221.983	2	285.695	2	-7.901	15	0	10	.124	1	.16	3
156			min	-295.224	3	-482.251	3	-141.268	1	-.006	3	.007	15	-.246	2
157		3	max	221.983	2	172.46	2	-5.737	15	0	10	.068	3	.578	3
158			min	-295.224	3	-309.407	3	-102.159	1	-.006	3	-.011	2	-.487	2
159		4	max	221.983	2	59.226	2	-3.574	15	0	10	.035	3	.814	3
160			min	-295.224	3	-136.564	3	-63.05	1	-.006	3	-.091	1	-.61	2
161		5	max	221.983	2	36.279	3	-1.411	15	0	10	.005	3	.867	3
162			min	-295.224	3	-54.008	2	-26.483	3	-.006	3	-.137	1	-.612	2
163		6	max	221.983	2	209.123	3	15.168	1	0	10	-.008	15	.737	3
164			min	-295.224	3	-167.243	2	-23.239	3	-.006	3	-.142	1	-.496	2
165		7	max	221.983	2	381.966	3	54.278	1	0	10	-.006	15	.425	3
166			min	-295.224	3	-280.477	2	-19.994	3	-.006	3	-.105	1	-.259	2
167		8	max	221.983	2	554.81	3	93.387	1	0	10	0	10	.096	2
168			min	-295.224	3	-393.712	2	-16.75	3	-.006	3	-.064	3	-.069	3
169		9	max	221.983	2	727.653	3	132.496	1	0	10	.092	1	.572	2
170			min	-295.224	3	-506.946	2	-13.506	3	-.006	3	-.08	3	-.746	3
171		10	max	221.983	2	620.18	2	10.261	3	0	2	.252	1	1.167	2
172			min	-295.224	3	-900.497	3	-171.605	1	-.006	3	-.092	3	-1.606	3
173		11	max	221.983	2	506.946	2	13.506	3	.006	3	.092	1	.572	2
174			min	-295.224	3	-727.653	3	-132.496	1	0	10	-.08	3	-.746	3
175		12	max	221.983	2	393.712	2	16.75	3	.006	3	0	10	.096	2
176			min	-295.224	3	-554.81	3	-93.387	1	0	10	-.064	3	-.069	3
177		13	max	221.983	2	280.477	2	19.994	3	.006	3	-.006	15	.425	3
178			min	-295.224	3	-381.966	3	-54.278	1	0	10	-.105	1	-.259	2
179		14	max	221.983	2	167.243	2	23.239	3	.006	3	-.008	15	.737	3
180			min	-295.224	3	-209.123	3	-15.168	1	0	10	-.142	1	-.496	2
181		15	max	221.983	2	54.008	2	26.483	3	.006	3	.005	3	.867	3
182			min	-295.224	3	-36.279	3	1.411	15	0	10	-.137	1	-.612	2
183		16	max	221.983	2	136.564	3	63.05	1	.006	3	.035	3	.814	3
184			min	-295.224	3	-59.226	2	3.574	15	0	10	-.091	1	-.61	2
185		17	max	221.983	2	309.407	3	102.159	1	.006	3	.068	3	.578	3
186			min	-295.224	3	-172.46	2	5.737	15	0	10	-.011	2	-.487	2
187		18	max	221.983	2	482.251	3	141.268	1	.006	3	.124	1	.16	3
188			min	-295.224	3	-285.695	2	7.901	15	0	10	.007	15	-.246	2
189		19	max	221.983	2	655.094	3	180.378	1	.006	3	.294	1	.118	1
190			min	-295.224	3	-398.929	2	10.064	15	0	10	.017	15	-.44	3
191	M12	1	max	34.977	2	617.305	2	-10.129	15	0	10	.309	1	.232	2
192			min	-25.453	9	-278.32	3	-182.738	1	-.004	3	.017	15	.003	15
193		2	max	34.977	2	444.912	2	-7.966	15	0	10	.137	1	.275	3
194			min	-25.453	9	-194.214	3	-143.629	1	-.004	3	.008	15	-.328	2
195		3	max	34.977	2	272.519	2	-5.803	15	0	10	.054	3	.436	3
196			min	-25.453	9	-110.108	3	-104.519	1	-.004	3	0	10	-.707	2
197		4	max	34.977	2	100.126	2	-3.639	15	0	10	.025	3	.508	3
198			min	-25.453	9	-26.002	3	-65.41	1	-.004	3	-.084	1	-.904	2
199		5	max	34.977	2	58.103	3	-1.476	15	0	10	-.001	12	.491	3
200			min	-25.453	9	-72.267	2	-26.301	1	-.004	3	-.132	1	-.918	2
201		6	max	34.977	2	142.209	3	12.808	1	0	10	-.008	15	.385	3
202			min	-25.453	9	-244.659	2	-20.077	3	-.004	3	-.14	1	-.751	2
203		7	max	34.977	2	226.315	3	51.918	1	0	10	-.006	15	.191	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	-25.453	9	-417.052	2	-16.833	3	-.004	3	-.105	1	-.402	2
205		8	max	34.977	2	310.421	3	91.027	1	0	10	-.002	15	.129	2
206			min	-25.453	9	-589.445	2	-13.589	3	-.004	3	-.06	3	-.093	3
207		9	max	34.977	2	394.527	3	130.136	1	0	10	.087	1	.843	2
208			min	-25.453	9	-761.838	2	-10.344	3	-.004	3	-.073	3	-.465	3
209		10	max	34.977	2	934.231	2	7.1	3	0	10	.245	1	1.738	2
210			min	-25.453	9	-478.632	3	-169.245	1	-.004	3	-.082	3	-.926	3
211		11	max	34.977	2	761.838	2	10.344	3	.004	3	.087	1	.843	2
212			min	-25.453	9	-394.527	3	-130.136	1	0	10	-.073	3	-.465	3
213		12	max	34.977	2	589.445	2	13.589	3	.004	3	-.002	15	.129	2
214			min	-25.453	9	-310.421	3	-91.027	1	0	10	-.06	3	-.093	3
215		13	max	34.977	2	417.052	2	16.833	3	.004	3	-.006	15	.191	3
216			min	-25.453	9	-226.315	3	-51.918	1	0	10	-.105	1	-.402	2
217		14	max	34.977	2	244.659	2	20.077	3	.004	3	-.008	15	.385	3
218			min	-25.453	9	-142.209	3	-12.808	1	0	10	-.14	1	-.751	2
219		15	max	34.977	2	72.267	2	26.301	1	.004	3	-.001	12	.491	3
220			min	-25.453	9	-58.103	3	1.476	15	0	10	-.132	1	-.918	2
221		16	max	34.977	2	26.002	3	65.41	1	.004	3	.025	3	.508	3
222			min	-25.453	9	-100.126	2	3.639	15	0	10	-.084	1	-.904	2
223		17	max	34.977	2	110.108	3	104.519	1	.004	3	.054	3	.436	3
224			min	-25.453	9	-272.519	2	5.803	15	0	10	0	10	-.707	2
225		18	max	34.977	2	194.214	3	143.629	1	.004	3	.137	1	.275	3
226			min	-25.453	9	-444.912	2	7.966	15	0	10	.008	15	-.328	2
227		19	max	34.977	2	278.32	3	182.738	1	.004	3	.309	1	.232	2
228			min	-25.453	9	-617.305	2	10.129	15	0	10	.017	15	.003	15
229	M13	1	max	-6.155	15	627.792	2	-9.698	15	.004	3	.256	1	.21	2
230			min	-111.175	1	-291.351	3	-174.366	1	-.016	2	.014	15	-.057	3
231		2	max	-6.155	15	455.4	2	-7.535	15	.004	3	.092	1	.206	3
232			min	-111.175	1	-207.245	3	-135.257	1	-.016	2	.005	15	-.361	2
233		3	max	-6.155	15	283.007	2	-5.372	15	.004	3	.045	3	.38	3
234			min	-111.175	1	-123.139	3	-96.148	1	-.016	2	-.03	1	-.751	2
235		4	max	-6.155	15	110.614	2	-3.209	15	.004	3	.018	3	.466	3
236			min	-111.175	1	-39.034	3	-57.039	1	-.016	2	-.111	1	-.959	2
237		5	max	-6.155	15	45.072	3	-1.045	15	.004	3	-.004	12	.463	3
238			min	-111.175	1	-61.779	2	-21.093	3	-.016	2	-.15	1	-.984	2
239		6	max	-6.155	15	129.178	3	21.18	1	.004	3	-.008	15	.371	3
240			min	-111.175	1	-234.172	2	-17.848	3	-.016	2	-.149	1	-.828	2
241		7	max	-6.155	15	213.284	3	60.289	1	.004	3	-.006	15	.19	3
242			min	-111.175	1	-406.564	2	-14.604	3	-.016	2	-.106	1	-.49	2
243		8	max	-6.155	15	297.39	3	99.398	1	.004	3	0	10	.03	2
244			min	-111.175	1	-578.957	2	-11.36	3	-.016	2	-.058	3	-.079	3
245		9	max	-6.155	15	381.495	3	138.507	1	.004	3	.104	1	.732	2
246			min	-111.175	1	-751.35	2	-8.115	3	-.016	2	-.068	3	-.438	3
247		10	max	-6.155	15	923.743	2	-2.577	12	.016	2	.271	1	1.616	2
248			min	-111.175	1	16.276	15	-177.617	1	-.013	1	-.075	3	-.885	3
249		11	max	-6.155	15	751.35	2	8.115	3	.016	2	.104	1	.732	2
250			min	-111.175	1	-381.495	3	-138.507	1	-.004	3	-.068	3	-.438	3
251		12	max	-6.155	15	578.957	2	11.36	3	.016	2	0	10	.03	2
252			min	-111.175	1	-297.39	3	-99.398	1	-.004	3	-.058	3	-.079	3
253		13	max	-6.155	15	406.564	2	14.604	3	.016	2	-.006	15	.19	3
254			min	-111.175	1	-213.284	3	-60.289	1	-.004	3	-.106	1	-.49	2
255		14	max	-6.155	15	234.172	2	17.848	3	.016	2	-.008	15	.371	3
256			min	-111.175	1	-129.178	3	-21.18	1	-.004	3	-.149	1	-.828	2
257		15	max	-6.155	15	61.779	2	21.093	3	.016	2	-.004	12	.463	3
258			min	-111.175	1	-45.072	3	1.045	15	-.004	3	-.15	1	-.984	2
259		16	max	-6.155	15	39.034	3	57.039	1	.016	2	.018	3	.466	3
260			min	-111.175	1	-110.614	2	3.209	15	-.004	3	-.111	1	-.959	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	-6.155	15	123.139	3	96.148	1	.016	2	.045	3	.38	3
262			min	-111.175	1	-283.007	2	5.372	15	-.004	3	-.03	1	-.751	2
263		18	max	-6.155	15	207.245	3	135.257	1	.016	2	.092	1	.206	3
264			min	-111.175	1	-455.4	2	7.535	15	-.004	3	.005	15	-.361	2
265		19	max	-6.155	15	291.351	3	174.366	1	.016	2	.256	1	.21	2
266			min	-111.175	1	-627.792	2	9.698	15	-.004	3	.014	15	-.057	3
267	M2	1	max	1966.501	2	1209.635	3	208.772	2	.014	3	.408	3	4.934	3
268			min	-1404.103	3	-938.803	2	-244.777	3	-.027	2	-.304	2	.036	10
269		2	max	1328.93	1	789.718	3	142.957	2	.001	2	.326	3	4.579	3
270			min	-1137.082	3	26.51	10	-212.777	3	0	3	-.232	2	.154	10
271		3	max	1325.824	1	789.718	3	142.957	2	.001	2	.253	3	4.31	3
272			min	-1139.412	3	26.51	10	-212.777	3	0	3	-.183	2	.145	10
273		4	max	1322.718	1	789.718	3	142.957	2	.001	2	.181	3	4.041	3
274			min	-1141.741	3	26.51	10	-212.777	3	0	3	-.134	2	.136	10
275		5	max	1319.612	1	789.718	3	142.957	2	.001	2	.108	3	3.771	3
276			min	-1144.071	3	26.51	10	-212.777	3	0	3	-.086	2	.127	10
277		6	max	1316.506	1	789.718	3	142.957	2	.001	2	.035	3	3.502	3
278			min	-1146.4	3	26.51	10	-212.777	3	0	3	-.044	1	.118	10
279		7	max	1313.399	1	789.718	3	142.957	2	.001	2	.012	2	3.233	3
280			min	-1148.73	3	26.51	10	-212.777	3	0	3	-.037	3	.109	10
281		8	max	1310.293	1	789.718	3	142.957	2	.001	2	.061	2	2.963	3
282			min	-1151.059	3	26.51	10	-212.777	3	0	3	-.11	3	.099	10
283		9	max	1307.187	1	789.718	3	142.957	2	.001	2	.109	2	2.694	3
284			min	-1153.389	3	26.51	10	-212.777	3	0	3	-.182	3	.09	10
285		10	max	1304.081	1	789.718	3	142.957	2	.001	2	.158	2	2.424	3
286			min	-1155.719	3	26.51	10	-212.777	3	0	3	-.255	3	.081	10
287		11	max	1300.975	1	789.718	3	142.957	2	.001	2	.207	2	2.155	3
288			min	-1158.048	3	26.51	10	-212.777	3	0	3	-.328	3	.072	10
289		12	max	1297.869	1	789.718	3	142.957	2	.001	2	.256	2	1.886	3
290			min	-1160.378	3	26.51	10	-212.777	3	0	3	-.4	3	.063	10
291		13	max	1294.763	1	789.718	3	142.957	2	.001	2	.304	2	1.616	3
292			min	-1162.707	3	26.51	10	-212.777	3	0	3	-.473	3	.054	10
293		14	max	1291.657	1	789.718	3	142.957	2	.001	2	.353	2	1.347	3
294			min	-1165.037	3	26.51	10	-212.777	3	0	3	-.545	3	.045	10
295		15	max	1288.551	1	789.718	3	142.957	2	.001	2	.402	2	1.078	3
296			min	-1167.366	3	26.51	10	-212.777	3	0	3	-.618	3	.036	10
297		16	max	1285.445	1	789.718	3	142.957	2	.001	2	.451	2	.808	3
298			min	-1169.696	3	26.51	10	-212.777	3	0	3	-.69	3	.027	10
299		17	max	1282.339	1	789.718	3	142.957	2	.001	2	.5	2	.539	3
300			min	-1172.026	3	26.51	10	-212.777	3	0	3	-.763	3	.018	10
301		18	max	1279.232	1	789.718	3	142.957	2	.001	2	.548	2	.269	3
302			min	-1174.355	3	26.51	10	-212.777	3	0	3	-.836	3	.009	10
303		19	max	1276.126	1	789.718	3	142.957	2	.001	2	.597	2	0	1
304			min	-1176.685	3	26.51	10	-212.777	3	0	3	-.908	3	0	1
305	M5	1	max	5482.747	2	3074.507	3	0	1	0	1	0	1	9.838	3
306			min	-4421.782	3	-3009.182	2	0	1	0	1	0	1	-.236	10
307		2	max	3382.428	1	1552.282	3	0	1	0	1	0	1	9.001	3
308			min	-3456.877	3	23.046	10	0	1	0	1	0	1	.134	10
309		3	max	3379.322	1	1552.282	3	0	1	0	1	0	1	8.472	3
310			min	-3459.207	3	23.046	10	0	1	0	1	0	1	.126	10
311		4	max	3376.216	1	1552.282	3	0	1	0	1	0	1	7.942	3
312			min	-3461.537	3	23.046	10	0	1	0	1	0	1	.118	10
313		5	max	3373.11	1	1552.282	3	0	1	0	1	0	1	7.413	3
314			min	-3463.866	3	23.046	10	0	1	0	1	0	1	.11	10
315		6	max	3370.004	1	1552.282	3	0	1	0	1	0	1	6.883	3
316			min	-3466.196	3	23.046	10	0	1	0	1	0	1	.102	10
317		7	max	3366.898	1	1552.282	3	0	1	0	1	0	1	6.354	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
318			min	-3468.525	3	23.046	10	0	1	0	1	0	1	.094	10
319		8	max	3363.792	1	1552.282	3	0	1	0	1	0	1	5.824	3
320			min	-3470.855	3	23.046	10	0	1	0	1	0	1	.086	10
321		9	max	3360.686	1	1552.282	3	0	1	0	1	0	1	5.295	3
322			min	-3473.184	3	23.046	10	0	1	0	1	0	1	.079	10
323		10	max	3357.58	1	1552.282	3	0	1	0	1	0	1	4.765	3
324			min	-3475.514	3	23.046	10	0	1	0	1	0	1	.071	10
325		11	max	3354.473	1	1552.282	3	0	1	0	1	0	1	4.236	3
326			min	-3477.844	3	23.046	10	0	1	0	1	0	1	.063	10
327		12	max	3351.367	1	1552.282	3	0	1	0	1	0	1	3.706	3
328			min	-3480.173	3	23.046	10	0	1	0	1	0	1	.055	10
329		13	max	3348.261	1	1552.282	3	0	1	0	1	0	1	3.177	3
330			min	-3482.503	3	23.046	10	0	1	0	1	0	1	.047	10
331		14	max	3345.155	1	1552.282	3	0	1	0	1	0	1	2.647	3
332			min	-3484.832	3	23.046	10	0	1	0	1	0	1	.039	10
333		15	max	3342.049	1	1552.282	3	0	1	0	1	0	1	2.118	3
334			min	-3487.162	3	23.046	10	0	1	0	1	0	1	.031	10
335		16	max	3338.943	1	1552.282	3	0	1	0	1	0	1	1.588	3
336			min	-3489.491	3	23.046	10	0	1	0	1	0	1	.024	10
337		17	max	3335.837	1	1552.282	3	0	1	0	1	0	1	1.059	3
338			min	-3491.821	3	23.046	10	0	1	0	1	0	1	.016	10
339		18	max	3332.731	1	1552.282	3	0	1	0	1	0	1	.529	3
340			min	-3494.151	3	23.046	10	0	1	0	1	0	1	.008	10
341		19	max	3329.625	1	1552.282	3	0	1	0	1	0	1	0	1
342			min	-3496.48	3	23.046	10	0	1	0	1	0	1	0	1
343	M8	1	max	1966.501	2	1209.635	3	244.777	3	.027	2	.304	2	4.934	3
344			min	-1404.103	3	-938.803	2	-208.772	2	-.014	3	-.408	3	.036	10
345		2	max	1328.93	1	789.718	3	212.777	3	0	3	.232	2	4.579	3
346			min	-1137.082	3	26.51	10	-142.957	2	-.001	2	-.326	3	.154	10
347		3	max	1325.824	1	789.718	3	212.777	3	0	3	.183	2	4.31	3
348			min	-1139.412	3	26.51	10	-142.957	2	-.001	2	-.253	3	.145	10
349		4	max	1322.718	1	789.718	3	212.777	3	0	3	.134	2	4.041	3
350			min	-1141.741	3	26.51	10	-142.957	2	-.001	2	-.181	3	.136	10
351		5	max	1319.612	1	789.718	3	212.777	3	0	3	.086	2	3.771	3
352			min	-1144.071	3	26.51	10	-142.957	2	-.001	2	-.108	3	.127	10
353		6	max	1316.506	1	789.718	3	212.777	3	0	3	.044	1	3.502	3
354			min	-1146.4	3	26.51	10	-142.957	2	-.001	2	-.035	3	.118	10
355		7	max	1313.399	1	789.718	3	212.777	3	0	3	.037	3	3.233	3
356			min	-1148.73	3	26.51	10	-142.957	2	-.001	2	-.012	2	.109	10
357		8	max	1310.293	1	789.718	3	212.777	3	0	3	.11	3	2.963	3
358			min	-1151.059	3	26.51	10	-142.957	2	-.001	2	-.061	2	.099	10
359		9	max	1307.187	1	789.718	3	212.777	3	0	3	.182	3	2.694	3
360			min	-1153.389	3	26.51	10	-142.957	2	-.001	2	-.109	2	.09	10
361		10	max	1304.081	1	789.718	3	212.777	3	0	3	.255	3	2.424	3
362			min	-1155.719	3	26.51	10	-142.957	2	-.001	2	-.158	2	.081	10
363		11	max	1300.975	1	789.718	3	212.777	3	0	3	.328	3	2.155	3
364			min	-1158.048	3	26.51	10	-142.957	2	-.001	2	-.207	2	.072	10
365		12	max	1297.869	1	789.718	3	212.777	3	0	3	.4	3	1.886	3
366			min	-1160.378	3	26.51	10	-142.957	2	-.001	2	-.256	2	.063	10
367		13	max	1294.763	1	789.718	3	212.777	3	0	3	.473	3	1.616	3
368			min	-1162.707	3	26.51	10	-142.957	2	-.001	2	-.304	2	.054	10
369		14	max	1291.657	1	789.718	3	212.777	3	0	3	.545	3	1.347	3
370			min	-1165.037	3	26.51	10	-142.957	2	-.001	2	-.353	2	.045	10
371		15	max	1288.551	1	789.718	3	212.777	3	0	3	.618	3	1.078	3
372			min	-1167.366	3	26.51	10	-142.957	2	-.001	2	-.402	2	.036	10
373		16	max	1285.445	1	789.718	3	212.777	3	0	3	.69	3	.808	3
374			min	-1169.696	3	26.51	10	-142.957	2	-.001	2	-.451	2	.027	10

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	1282.339	1	789.718	3	212.777	3	0	3	.763	3	.539	3
376			min	-1172.026	3	26.51	10	-142.957	2	-.001	2	-.5	2	.018	10
377		18	max	1279.232	1	789.718	3	212.777	3	0	3	.836	3	.269	3
378			min	-1174.355	3	26.51	10	-142.957	2	-.001	2	-.548	2	.009	10
379		19	max	1276.126	1	789.718	3	212.777	3	0	3	.908	3	0	1
380			min	-1176.685	3	26.51	10	-142.957	2	-.001	2	-.597	2	0	1
381	M3	1	max	1281.636	2	4.147	4	65.531	2	.005	3	.014	3	0	1
382			min	-494.623	3	.975	15	-32.215	3	-.007	2	-.029	2	0	1
383		2	max	1281.398	2	3.686	4	65.531	2	.005	3	.005	3	0	15
384			min	-494.802	3	.866	15	-32.215	3	-.007	2	-.01	2	-.001	4
385		3	max	1281.16	2	3.225	4	65.531	2	.005	3	.009	2	0	15
386			min	-494.98	3	.758	15	-32.215	3	-.007	2	-.004	3	-.002	4
387		4	max	1280.922	2	2.765	4	65.531	2	.005	3	.028	2	0	15
388			min	-495.159	3	.65	15	-32.215	3	-.007	2	-.014	3	-.003	4
389		5	max	1280.684	2	2.304	4	65.531	2	.005	3	.047	2	0	15
390			min	-495.337	3	.542	15	-32.215	3	-.007	2	-.023	3	-.004	4
391		6	max	1280.446	2	1.843	4	65.531	2	.005	3	.066	2	-.001	15
392			min	-495.516	3	.433	15	-32.215	3	-.007	2	-.033	3	-.004	4
393		7	max	1280.208	2	1.382	4	65.531	2	.005	3	.085	2	-.001	15
394			min	-495.694	3	.325	15	-32.215	3	-.007	2	-.042	3	-.005	4
395		8	max	1279.97	2	.922	4	65.531	2	.005	3	.104	2	-.001	15
396			min	-495.873	3	.217	15	-32.215	3	-.007	2	-.051	3	-.005	4
397		9	max	1279.732	2	.461	4	65.531	2	.005	3	.123	2	-.001	15
398			min	-496.051	3	.108	15	-32.215	3	-.007	2	-.061	3	-.005	4
399		10	max	1279.494	2	0	1	65.531	2	.005	3	.142	2	-.001	15
400			min	-496.23	3	0	1	-32.215	3	-.007	2	-.07	3	-.005	4
401		11	max	1279.256	2	-.108	15	65.531	2	.005	3	.161	2	-.001	15
402			min	-496.408	3	-.461	4	-32.215	3	-.007	2	-.079	3	-.005	4
403		12	max	1279.018	2	-.217	15	65.531	2	.005	3	.18	2	-.001	15
404			min	-496.587	3	-.922	4	-32.215	3	-.007	2	-.089	3	-.005	4
405		13	max	1278.78	2	-.325	15	65.531	2	.005	3	.199	2	-.001	15
406			min	-496.765	3	-1.382	4	-32.215	3	-.007	2	-.098	3	-.005	4
407		14	max	1278.542	2	-.433	15	65.531	2	.005	3	.218	2	-.001	15
408			min	-496.944	3	-1.843	4	-32.215	3	-.007	2	-.107	3	-.004	4
409		15	max	1278.304	2	-.542	15	65.531	2	.005	3	.237	2	0	15
410			min	-497.122	3	-2.304	4	-32.215	3	-.007	2	-.117	3	-.004	4
411		16	max	1278.066	2	-.65	15	65.531	2	.005	3	.256	2	0	15
412			min	-497.301	3	-2.765	4	-32.215	3	-.007	2	-.126	3	-.003	4
413		17	max	1277.828	2	-.758	15	65.531	2	.005	3	.275	2	0	15
414			min	-497.479	3	-3.225	4	-32.215	3	-.007	2	-.135	3	-.002	4
415		18	max	1277.59	2	-.866	15	65.531	2	.005	3	.294	2	0	15
416			min	-497.658	3	-3.686	4	-32.215	3	-.007	2	-.145	3	-.001	4
417		19	max	1277.352	2	-.975	15	65.531	2	.005	3	.313	2	0	1
418			min	-497.836	3	-4.147	4	-32.215	3	-.007	2	-.154	3	0	1
419	M6	1	max	3820.573	2	4.147	4	0	1	0	1	0	1	0	1
420			min	-1778.577	3	.975	15	0	1	0	1	0	1	0	1
421		2	max	3820.335	2	3.686	4	0	1	0	1	0	1	0	15
422			min	-1778.755	3	.866	15	0	1	0	1	0	1	-.001	4
423		3	max	3820.097	2	3.225	4	0	1	0	1	0	1	0	15
424			min	-1778.934	3	.758	15	0	1	0	1	0	1	-.002	4
425		4	max	3819.859	2	2.765	4	0	1	0	1	0	1	0	15
426			min	-1779.112	3	.65	15	0	1	0	1	0	1	-.003	4
427		5	max	3819.621	2	2.304	4	0	1	0	1	0	1	0	15
428			min	-1779.291	3	.542	15	0	1	0	1	0	1	-.004	4
429		6	max	3819.383	2	1.843	4	0	1	0	1	0	1	-.001	15
430			min	-1779.47	3	.433	15	0	1	0	1	0	1	-.004	4
431		7	max	3819.145	2	1.382	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	-1779.648	3	.325	15	0	1	0	1	0	1	-.005	4
433		8	max	3818.907	2	.922	4	0	1	0	1	0	1	-.001	15
434			min	-1779.827	3	.217	15	0	1	0	1	0	1	-.005	4
435		9	max	3818.669	2	.461	4	0	1	0	1	0	1	-.001	15
436			min	-1780.005	3	.108	15	0	1	0	1	0	1	-.005	4
437		10	max	3818.431	2	0	1	0	1	0	1	0	1	-.001	15
438			min	-1780.184	3	0	1	0	1	0	1	0	1	-.005	4
439		11	max	3818.193	2	-.108	15	0	1	0	1	0	1	-.001	15
440			min	-1780.362	3	-.461	4	0	1	0	1	0	1	-.005	4
441		12	max	3817.955	2	-.217	15	0	1	0	1	0	1	-.001	15
442			min	-1780.541	3	-.922	4	0	1	0	1	0	1	-.005	4
443		13	max	3817.717	2	-.325	15	0	1	0	1	0	1	-.001	15
444			min	-1780.719	3	-1.382	4	0	1	0	1	0	1	-.005	4
445		14	max	3817.479	2	-.433	15	0	1	0	1	0	1	-.001	15
446			min	-1780.898	3	-1.843	4	0	1	0	1	0	1	-.004	4
447		15	max	3817.241	2	-.542	15	0	1	0	1	0	1	0	15
448			min	-1781.076	3	-2.304	4	0	1	0	1	0	1	-.004	4
449		16	max	3817.003	2	-.65	15	0	1	0	1	0	1	0	15
450			min	-1781.255	3	-2.765	4	0	1	0	1	0	1	-.003	4
451		17	max	3816.765	2	-.758	15	0	1	0	1	0	1	0	15
452			min	-1781.433	3	-3.225	4	0	1	0	1	0	1	-.002	4
453		18	max	3816.527	2	-.866	15	0	1	0	1	0	1	0	15
454			min	-1781.612	3	-3.686	4	0	1	0	1	0	1	-.001	4
455		19	max	3816.289	2	-.975	15	0	1	0	1	0	1	0	1
456			min	-1781.79	3	-4.147	4	0	1	0	1	0	1	0	1
457	M9	1	max	1281.636	2	4.147	4	32.215	3	.007	2	.029	2	0	1
458			min	-494.623	3	.975	15	-65.531	2	-.005	3	-.014	3	0	1
459		2	max	1281.398	2	3.686	4	32.215	3	.007	2	.01	2	0	15
460			min	-494.802	3	.866	15	-65.531	2	-.005	3	-.005	3	-.001	4
461		3	max	1281.16	2	3.225	4	32.215	3	.007	2	.004	3	0	15
462			min	-494.98	3	.758	15	-65.531	2	-.005	3	-.009	2	-.002	4
463		4	max	1280.922	2	2.765	4	32.215	3	.007	2	.014	3	0	15
464			min	-495.159	3	.65	15	-65.531	2	-.005	3	-.028	2	-.003	4
465		5	max	1280.684	2	2.304	4	32.215	3	.007	2	.023	3	0	15
466			min	-495.337	3	.542	15	-65.531	2	-.005	3	-.047	2	-.004	4
467		6	max	1280.446	2	1.843	4	32.215	3	.007	2	.033	3	-.001	15
468			min	-495.516	3	.433	15	-65.531	2	-.005	3	-.066	2	-.004	4
469		7	max	1280.208	2	1.382	4	32.215	3	.007	2	.042	3	-.001	15
470			min	-495.694	3	.325	15	-65.531	2	-.005	3	-.085	2	-.005	4
471		8	max	1279.97	2	.922	4	32.215	3	.007	2	.051	3	-.001	15
472			min	-495.873	3	.217	15	-65.531	2	-.005	3	-.104	2	-.005	4
473		9	max	1279.732	2	.461	4	32.215	3	.007	2	.061	3	-.001	15
474			min	-496.051	3	.108	15	-65.531	2	-.005	3	-.123	2	-.005	4
475		10	max	1279.494	2	0	1	32.215	3	.007	2	.07	3	-.001	15
476			min	-496.23	3	0	1	-65.531	2	-.005	3	-.142	2	-.005	4
477		11	max	1279.256	2	-.108	15	32.215	3	.007	2	.079	3	-.001	15
478			min	-496.408	3	-.461	4	-65.531	2	-.005	3	-.161	2	-.005	4
479		12	max	1279.018	2	-.217	15	32.215	3	.007	2	.089	3	-.001	15
480			min	-496.587	3	-.922	4	-65.531	2	-.005	3	-.18	2	-.005	4
481		13	max	1278.78	2	-.325	15	32.215	3	.007	2	.098	3	-.001	15
482			min	-496.765	3	-1.382	4	-65.531	2	-.005	3	-.199	2	-.005	4
483		14	max	1278.542	2	-.433	15	32.215	3	.007	2	.107	3	-.001	15
484			min	-496.944	3	-1.843	4	-65.531	2	-.005	3	-.218	2	-.004	4
485		15	max	1278.304	2	-.542	15	32.215	3	.007	2	.117	3	0	15
486			min	-497.122	3	-2.304	4	-65.531	2	-.005	3	-.237	2	-.004	4
487		16	max	1278.066	2	-.65	15	32.215	3	.007	2	.126	3	0	15
488			min	-497.301	3	-2.765	4	-65.531	2	-.005	3	-.256	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	1277.828	2	-.758	15	32.215	3	.007	2	.135	3	0	15
490			min	-497.479	3	-3.225	4	-65.531	2	-.005	3	-.275	2	-.002	4
491		18	max	1277.59	2	-.866	15	32.215	3	.007	2	.145	3	0	15
492			min	-497.658	3	-3.686	4	-65.531	2	-.005	3	-.294	2	-.001	4
493		19	max	1277.352	2	-.975	15	32.215	3	.007	2	.154	3	0	1
494			min	-497.836	3	-4.147	4	-65.531	2	-.005	3	-.313	2	0	1

Envelope Member Section Deflections

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
1	M1	1	max	-.01	10	-.015	15	.02	1	8.059e-3	3	NC	3	NC	3
2			min	-.273	3	-.332	1	.001	15	-1.978e-2	2	401.147	1	3377.937	1
3		2	max	-.01	10	-.013	15	.006	1	8.059e-3	3	NC	3	NC	2
4			min	-.273	3	-.267	1	0	15	-1.978e-2	2	497.032	1	5285.968	1
5		3	max	-.01	10	-.01	15	0	15	7.611e-3	3	NC	3	NC	1
6			min	-.273	3	-.203	1	-.006	1	-1.813e-2	2	653.415	1	NC	1
7		4	max	-.01	10	-.007	15	0	15	6.923e-3	3	NC	3	NC	1
8			min	-.273	3	-.141	1	-.012	1	-1.56e-2	2	860.717	9	NC	1
9		5	max	-.01	10	-.005	15	0	15	6.236e-3	3	NC	3	NC	1
10			min	-.273	3	-.108	3	-.012	1	-1.306e-2	2	1026.668	9	NC	1
11		6	max	-.01	10	0	10	0	3	6.582e-3	3	NC	15	NC	1
12			min	-.273	3	-.095	3	-.009	1	-1.262e-2	2	817.81	2	NC	1
13		7	max	-.01	10	.014	2	.001	3	7.643e-3	3	NC	1	NC	2
14			min	-.273	3	-.075	3	-.004	2	-1.363e-2	2	721.724	2	8834.173	1
15		8	max	-.01	10	.027	2	.001	3	8.704e-3	3	NC	1	NC	2
16			min	-.273	3	-.051	3	-.001	2	-1.464e-2	2	676.033	2	6992.628	1
17		9	max	-.01	10	.037	1	0	15	9.878e-3	3	NC	5	NC	2
18			min	-.273	3	-.022	3	0	3	-1.463e-2	2	649.167	2	6988.632	1
19		10	max	-.01	10	.057	1	0	2	1.125e-2	3	NC	5	NC	2
20			min	-.273	3	.003	15	0	3	-1.284e-2	2	628.92	2	6844.948	1
21		11	max	-.01	10	.075	1	.002	3	1.262e-2	3	NC	5	NC	2
22			min	-.273	3	.004	15	0	2	-1.105e-2	2	616.432	2	7151.373	1
23		12	max	-.01	10	.091	1	.006	3	1.061e-2	3	NC	4	NC	2
24			min	-.273	3	.005	15	-.004	2	-8.366e-3	2	612.236	2	8943.861	1
25		13	max	-.009	10	.131	3	.01	3	6.689e-3	3	NC	4	NC	2
26			min	-.273	3	.006	15	-.006	2	-5.181e-3	2	542.361	3	8842.559	1
27		14	max	-.009	10	.195	3	.009	3	2.964e-3	3	NC	4	NC	2
28			min	-.273	3	.005	10	-.002	2	-2.126e-3	2	431.701	3	6379.472	1
29		15	max	-.009	10	.279	3	.009	1	8.003e-3	3	NC	4	NC	2
30			min	-.273	3	-.013	10	0	15	-4.838e-3	2	339.495	3	4778.973	1
31		16	max	-.009	10	.379	3	.011	1	1.304e-2	3	NC	4	NC	3
32			min	-.273	3	-.036	10	0	15	-7.549e-3	2	270.872	3	4438.944	1
33		17	max	-.009	10	.489	3	.006	1	1.808e-2	3	NC	4	NC	2
34			min	-.273	3	-.079	2	0	15	-1.026e-2	2	221.64	3	5188.062	1
35		18	max	-.009	10	.603	3	0	15	2.137e-2	3	NC	4	NC	2
36			min	-.273	3	-.125	2	-.005	1	-1.203e-2	2	186.538	3	9655.669	1
37		19	max	-.009	10	.716	3	-.001	15	2.137e-2	3	NC	1	NC	1
38			min	-.273	3	-.172	2	-.019	1	-1.203e-2	2	161.057	3	NC	1
39	M4	1	max	-.011	10	-.028	15	0	1	0	1	NC	3	NC	1
40			min	-.535	3	-.717	1	0	1	0	1	256.713	1	NC	1
41		2	max	-.011	10	-.023	15	0	1	0	1	8612.14	12	NC	1
42			min	-.535	3	-.569	1	0	1	0	1	358.402	1	NC	1
43		3	max	-.011	10	-.018	15	0	1	0	1	6156.301	15	NC	1
44			min	-.535	3	-.42	1	0	1	0	1	557.545	9	NC	1
45		4	max	-.011	10	-.013	15	0	1	0	1	7917.092	15	NC	1
46			min	-.535	3	-.279	1	0	1	0	1	498.159	2	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	-.011	10	-.008	15	0	1	0	1	NC	15	NC	1
48			min	-.535	3	-.199	3	0	1	0	1	337.376	2	NC	1
49		6	max	-.011	10	.004	10	0	1	0	1	NC	15	NC	1
50			min	-.535	3	-.186	3	0	1	0	1	277.64	2	NC	1
51		7	max	-.011	10	.037	2	0	1	0	1	NC	5	NC	1
52			min	-.535	3	-.152	3	0	1	0	1	254.038	2	NC	1
53		8	max	-.01	10	.057	2	0	1	0	1	NC	3	NC	1
54			min	-.535	3	-.104	3	0	1	0	1	244.782	2	NC	1
55		9	max	-.01	10	.069	1	0	1	0	1	NC	4	NC	1
56			min	-.535	3	-.048	3	0	1	0	1	240.302	2	NC	1
57		10	max	-.01	10	.102	1	0	1	0	1	NC	4	NC	1
58			min	-.536	3	.005	15	0	1	0	1	236.401	2	NC	1
59		11	max	-.009	10	.132	1	0	1	0	1	NC	5	NC	1
60			min	-.536	3	.007	15	0	1	0	1	233.861	2	NC	1
61		12	max	-.009	10	.157	1	0	1	0	1	NC	5	NC	1
62			min	-.536	3	.009	15	0	1	0	1	233.078	2	NC	1
63		13	max	-.008	10	.251	3	0	1	0	1	NC	5	NC	1
64			min	-.537	3	.01	15	0	1	0	1	237.481	2	NC	1
65		14	max	-.008	10	.384	3	0	1	0	1	NC	5	NC	1
66			min	-.537	3	.002	10	0	1	0	1	253.635	2	NC	1
67		15	max	-.008	10	.57	3	0	1	0	1	NC	5	NC	1
68			min	-.537	3	-.042	10	0	1	0	1	194.968	3	NC	1
69		16	max	-.008	10	.796	3	0	1	0	1	NC	5	NC	1
70			min	-.537	3	-.133	2	0	1	0	1	146.827	3	NC	1
71		17	max	-.008	10	1.046	3	0	1	0	1	NC	5	NC	1
72			min	-.537	3	-.248	2	0	1	0	1	115.299	3	NC	1
73		18	max	-.008	10	1.304	3	0	1	0	1	NC	4	NC	1
74			min	-.537	3	-.37	2	0	1	0	1	94.337	3	NC	1
75		19	max	-.008	10	1.562	3	0	1	0	1	NC	1	NC	1
76			min	-.537	3	-.491	2	0	1	0	1	79.853	3	NC	1
77	M7	1	max	-.01	10	-.015	15	-.001	15	1.978e-2	2	NC	3	NC	3
78			min	-.273	3	-.332	1	-.02	1	-8.059e-3	3	401.147	1	3377.937	1
79		2	max	-.01	10	-.013	15	0	15	1.978e-2	2	NC	3	NC	2
80			min	-.273	3	-.267	1	-.006	1	-8.059e-3	3	497.032	1	5285.968	1
81		3	max	-.01	10	-.01	15	.006	1	1.813e-2	2	NC	3	NC	1
82			min	-.273	3	-.203	1	0	15	-7.611e-3	3	653.415	1	NC	1
83		4	max	-.01	10	-.007	15	.012	1	1.56e-2	2	NC	3	NC	1
84			min	-.273	3	-.141	1	0	15	-6.923e-3	3	860.717	9	NC	1
85		5	max	-.01	10	-.005	15	.012	1	1.306e-2	2	NC	3	NC	1
86			min	-.273	3	-.108	3	0	15	-6.236e-3	3	1026.668	9	NC	1
87		6	max	-.01	10	0	10	.009	1	1.262e-2	2	NC	15	NC	1
88			min	-.273	3	-.095	3	0	3	-6.582e-3	3	817.81	2	NC	1
89		7	max	-.01	10	.014	2	.004	2	1.363e-2	2	NC	1	NC	2
90			min	-.273	3	-.075	3	-.001	3	-7.643e-3	3	721.724	2	8834.173	1
91		8	max	-.01	10	.027	2	.001	2	1.464e-2	2	NC	1	NC	2
92			min	-.273	3	-.051	3	-.001	3	-8.704e-3	3	676.033	2	6992.628	1
93		9	max	-.01	10	.037	1	0	3	1.463e-2	2	NC	5	NC	2
94			min	-.273	3	-.022	3	0	15	-9.878e-3	3	649.167	2	6988.632	1
95		10	max	-.01	10	.057	1	0	3	1.284e-2	2	NC	5	NC	2
96			min	-.273	3	.003	15	0	2	-1.125e-2	3	628.92	2	6844.948	1
97		11	max	-.01	10	.075	1	0	2	1.105e-2	2	NC	5	NC	2
98			min	-.273	3	.004	15	-.002	3	-1.262e-2	3	616.432	2	7151.373	1
99		12	max	-.01	10	.091	1	.004	2	8.366e-3	2	NC	4	NC	2
100			min	-.273	3	.005	15	-.006	3	-1.061e-2	3	612.236	2	8943.861	1
101		13	max	-.009	10	.131	3	.006	2	5.181e-3	2	NC	4	NC	2
102			min	-.273	3	.006	15	-.01	3	-6.689e-3	3	542.361	3	8842.559	1
103		14	max	-.009	10	.195	3	.002	2	2.126e-3	2	NC	4	NC	2

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
104			min	-.273	3	.005	10	-.009	3	-2.964e-3	3	431.701	3	6379.472	1
105		15	max	-.009	10	.279	3	0	15	4.838e-3	2	NC	4	NC	2
106			min	-.273	3	-.013	10	-.009	1	-8.003e-3	3	339.495	3	4778.973	1
107		16	max	-.009	10	.379	3	0	15	7.549e-3	2	NC	4	NC	3
108			min	-.273	3	-.036	10	-.011	1	-1.304e-2	3	270.872	3	4438.944	1
109		17	max	-.009	10	.489	3	0	15	1.026e-2	2	NC	4	NC	2
110			min	-.273	3	-.079	2	-.006	1	-1.808e-2	3	221.64	3	5188.062	1
111		18	max	-.009	10	.603	3	.005	1	1.203e-2	2	NC	4	NC	2
112			min	-.273	3	-.125	2	0	15	-2.137e-2	3	186.538	3	9655.669	1
113		19	max	-.009	10	.716	3	.019	1	1.203e-2	2	NC	1	NC	1
114			min	-.273	3	-.172	2	.001	15	-2.137e-2	3	161.057	3	NC	1
115	M10	1	max	.001	3	.563	3	.273	3	1.527e-2	3	NC	1	NC	1
116			min	0	10	-.109	2	.009	10	-6.188e-3	2	NC	1	NC	1
117		2	max	0	3	.842	3	.29	3	1.742e-2	3	NC	4	NC	2
118			min	0	10	-.265	2	.013	15	-7.306e-3	2	817.224	3	5530.995	1
119		3	max	0	3	1.104	3	.321	3	1.957e-2	3	NC	5	NC	5
120			min	0	10	-.407	2	.016	15	-8.423e-3	2	421.361	3	2290.568	1
121		4	max	0	3	1.31	3	.36	3	2.171e-2	3	NC	5	NC	5
122			min	0	10	-.512	2	.019	15	-9.54e-3	2	305.127	3	1487.761	1
123		5	max	0	3	1.438	3	.403	3	2.386e-2	3	NC	5	NC	5
124			min	0	10	-.565	2	.021	15	-1.066e-2	2	260.751	3	1212.812	1
125		6	max	0	3	1.479	3	.445	3	2.601e-2	3	NC	5	NC	5
126			min	0	10	-.563	2	.022	15	-1.177e-2	2	248.972	3	1158.917	1
127		7	max	0	3	1.444	3	.482	3	2.816e-2	3	NC	5	NC	5
128			min	0	10	-.515	2	.021	15	-1.289e-2	2	258.907	3	1093.723	3
129		8	max	0	3	1.358	3	.511	3	3.031e-2	3	NC	5	NC	5
130			min	0	10	-.439	2	.019	10	-1.401e-2	2	287.008	3	958.809	3
131		9	max	0	3	1.262	3	.53	3	3.246e-2	3	NC	4	NC	5
132			min	0	10	-.363	2	.012	10	-1.513e-2	2	326.345	3	887.942	3
133		10	max	0	1	1.214	3	.537	3	3.461e-2	3	NC	4	NC	2
134			min	0	1	-.328	2	.008	10	-1.624e-2	2	350.207	3	865.394	3
135		11	max	0	10	1.262	3	.53	3	3.246e-2	3	NC	4	NC	5
136			min	0	3	-.363	2	.012	10	-1.513e-2	2	326.345	3	887.942	3
137		12	max	0	10	1.358	3	.511	3	3.031e-2	3	NC	5	NC	5
138			min	0	3	-.439	2	.019	10	-1.401e-2	2	287.008	3	958.809	3
139		13	max	0	10	1.444	3	.482	3	2.816e-2	3	NC	5	NC	5
140			min	0	3	-.515	2	.021	15	-1.289e-2	2	258.907	3	1093.723	3
141		14	max	0	10	1.479	3	.445	3	2.601e-2	3	NC	5	NC	5
142			min	0	3	-.563	2	.022	15	-1.177e-2	2	248.972	3	1158.917	1
143		15	max	0	10	1.438	3	.403	3	2.386e-2	3	NC	5	NC	5
144			min	0	3	-.565	2	.021	15	-1.066e-2	2	260.751	3	1212.812	1
145		16	max	0	10	1.31	3	.36	3	2.171e-2	3	NC	5	NC	5
146			min	0	3	-.512	2	.019	15	-9.54e-3	2	305.127	3	1487.761	1
147		17	max	0	10	1.104	3	.321	3	1.957e-2	3	NC	5	NC	5
148			min	0	3	-.407	2	.016	15	-8.423e-3	2	421.361	3	2290.568	1
149		18	max	0	10	.842	3	.29	3	1.742e-2	3	NC	4	NC	2
150			min	0	3	-.265	2	.013	15	-7.306e-3	2	817.224	3	5530.995	1
151		19	max	0	10	.563	3	.273	3	1.527e-2	3	NC	1	NC	1
152			min	-.001	3	-.109	2	.009	10	-6.188e-3	2	NC	1	NC	1
153	M11	1	max	.002	2	.081	1	.273	3	5.221e-3	3	NC	1	NC	1
154			min	-.003	3	.005	15	.01	10	-1.489e-4	10	NC	1	NC	1
155		2	max	.002	2	.233	3	.28	3	5.756e-3	3	NC	4	NC	2
156			min	-.002	3	-.084	2	.012	15	-1.68e-4	10	1297.176	3	7756.526	1
157		3	max	.002	2	.396	3	.306	3	6.29e-3	3	NC	5	NC	5
158			min	-.002	3	-.194	2	.015	15	-1.872e-4	10	673.172	3	2797.766	1
159		4	max	.001	2	.509	3	.343	3	6.825e-3	3	NC	5	NC	5
160			min	-.002	3	-.262	2	.018	15	-2.063e-4	10	504.6	3	1708.221	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	.001	2	.552	3	.387	3	7.36e-3	3	NC	5	NC	5
162			min	-.001	3	-.276	2	.02	15	-2.255e-4	10	461.166	3	1342.442	1
163		6	max	0	2	.519	3	.432	3	7.895e-3	3	NC	5	NC	5
164			min	-.001	3	-.238	2	.021	15	-2.446e-4	10	493.844	3	1249.728	1
165		7	max	0	2	.423	3	.473	3	8.429e-3	3	NC	5	NC	5
166			min	0	3	-.156	2	.02	15	-2.637e-4	10	624.401	3	1141.138	3
167		8	max	0	2	.29	3	.506	3	8.964e-3	3	NC	4	NC	5
168			min	0	3	-.053	2	.019	15	-2.829e-4	10	981.156	3	978.476	3
169		9	max	0	2	.165	3	.528	3	9.499e-3	3	NC	1	NC	5
170			min	0	3	.006	15	.012	10	-3.02e-4	10	2129.144	3	894.151	3
171		10	max	0	1	.141	1	.536	3	1.003e-2	3	NC	4	NC	2
172			min	0	1	.008	15	.009	10	-3.212e-4	10	3798.998	1	867.287	3
173		11	max	0	3	.165	3	.528	3	9.499e-3	3	NC	1	NC	5
174			min	0	2	.006	15	.012	10	-3.02e-4	10	2129.144	3	894.151	3
175		12	max	0	3	.29	3	.506	3	8.964e-3	3	NC	4	NC	5
176			min	0	2	-.053	2	.019	15	-2.829e-4	10	981.156	3	978.476	3
177		13	max	0	3	.423	3	.473	3	8.429e-3	3	NC	5	NC	5
178			min	0	2	-.156	2	.02	15	-2.637e-4	10	624.401	3	1141.138	3
179		14	max	.001	3	.519	3	.432	3	7.895e-3	3	NC	5	NC	5
180			min	0	2	-.238	2	.021	15	-2.446e-4	10	493.844	3	1249.728	1
181		15	max	.001	3	.552	3	.387	3	7.36e-3	3	NC	5	NC	5
182			min	-.001	2	-.276	2	.02	15	-2.255e-4	10	461.166	3	1342.442	1
183		16	max	.002	3	.509	3	.343	3	6.825e-3	3	NC	5	NC	5
184			min	-.001	2	-.262	2	.018	15	-2.063e-4	10	504.6	3	1708.221	1
185		17	max	.002	3	.396	3	.306	3	6.29e-3	3	NC	5	NC	5
186			min	-.002	2	-.194	2	.015	15	-1.872e-4	10	673.172	3	2797.766	1
187		18	max	.002	3	.233	3	.28	3	5.756e-3	3	NC	4	NC	2
188			min	-.002	2	-.084	2	.012	15	-1.68e-4	10	1297.176	3	7756.526	1
189		19	max	.003	3	.081	1	.273	3	5.221e-3	3	NC	1	NC	1
190			min	-.002	2	.005	15	.01	10	-1.489e-4	10	NC	1	NC	1
191	M12	1	max	0	2	.032	2	.273	3	3.855e-3	3	NC	1	NC	1
192			min	0	9	-.033	3	.01	10	1.891e-4	15	NC	1	NC	1
193		2	max	0	2	.081	3	.286	3	4.271e-3	3	NC	4	NC	2
194			min	0	9	-.162	2	.012	15	2.005e-4	15	1172.579	2	9159.337	1
195		3	max	0	2	.17	3	.315	3	4.687e-3	3	NC	5	NC	5
196			min	0	9	-.329	2	.015	15	2.119e-4	15	631.216	2	3053.125	1
197		4	max	0	2	.222	3	.354	3	5.102e-3	3	NC	5	NC	5
198			min	0	9	-.435	2	.018	15	2.233e-4	15	488.416	2	1808.268	1
199		5	max	0	2	.23	3	.397	3	5.518e-3	3	NC	5	NC	5
200			min	0	9	-.462	2	.02	15	2.347e-4	15	461.654	2	1397.152	1
201		6	max	0	2	.195	3	.439	3	5.934e-3	3	NC	5	NC	5
202			min	0	9	-.409	2	.021	15	2.461e-4	15	516.901	2	1285.352	1
203		7	max	0	2	.126	3	.478	3	6.349e-3	3	NC	5	NC	5
204			min	0	9	-.291	2	.02	15	2.575e-4	15	705.343	2	1114.259	3
205		8	max	0	2	.042	3	.508	3	6.765e-3	3	NC	4	NC	5
206			min	0	9	-.139	2	.019	15	2.689e-4	15	1331.581	2	969.283	3
207		9	max	0	2	.009	1	.528	3	7.181e-3	3	NC	1	NC	5
208			min	0	9	-.034	3	.013	10	2.803e-4	15	7126.844	2	893.429	3
209		10	max	0	1	.063	2	.535	3	7.596e-3	3	NC	4	NC	2
210			min	0	1	-.068	3	.01	10	2.917e-4	15	6427.028	3	869.269	3
211		11	max	0	9	.009	1	.528	3	7.181e-3	3	NC	1	NC	5
212			min	0	2	-.034	3	.013	10	2.803e-4	15	7126.844	2	893.429	3
213		12	max	0	9	.042	3	.508	3	6.765e-3	3	NC	4	NC	5
214			min	0	2	-.139	2	.019	15	2.689e-4	15	1331.581	2	969.283	3
215		13	max	0	9	.126	3	.478	3	6.349e-3	3	NC	5	NC	5
216			min	0	2	-.291	2	.02	15	2.575e-4	15	705.343	2	1114.259	3
217		14	max	0	9	.195	3	.439	3	5.934e-3	3	NC	5	NC	5

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	-.409	2	.021	15	2.461e-4	15	516.901	2	1285.352	1
219		15	max	0	9	.23	3	.397	3	5.518e-3	3	NC	5	NC	5
220			min	0	2	-.462	2	.02	15	2.347e-4	15	461.654	2	1397.152	1
221		16	max	0	9	.222	3	.354	3	5.102e-3	3	NC	5	NC	5
222			min	0	2	-.435	2	.018	15	2.233e-4	15	488.416	2	1808.268	1
223		17	max	0	9	.17	3	.315	3	4.687e-3	3	NC	5	NC	5
224			min	0	2	-.329	2	.015	15	2.119e-4	15	631.216	2	3053.125	1
225		18	max	0	9	.081	3	.286	3	4.271e-3	3	NC	4	NC	2
226			min	0	2	-.162	2	.012	15	2.005e-4	15	1172.579	2	9159.337	1
227		19	max	0	9	.032	2	.273	3	3.855e-3	3	NC	1	NC	1
228			min	0	2	-.033	3	.01	10	1.891e-4	15	NC	1	NC	1
229	M13	1	max	0	15	-.012	15	.273	3	8.656e-3	1	NC	1	NC	1
230			min	-.001	1	-.245	1	.01	10	3.811e-5	3	NC	1	NC	1
231		2	max	0	15	-.012	12	.291	3	1.004e-2	2	NC	5	NC	2
232			min	0	1	-.448	2	.013	15	-3.547e-4	3	910.49	2	5437.832	1
233		3	max	0	15	.067	3	.322	3	1.152e-2	2	NC	5	NC	5
234			min	0	1	-.667	2	.016	15	-7.474e-4	3	484.864	2	2260.492	1
235		4	max	0	15	.117	3	.361	3	1.3e-2	2	NC	5	NC	5
236			min	0	1	-.822	2	.019	15	-1.14e-3	3	364.798	2	1469.961	1
237		5	max	0	15	.126	3	.403	3	1.448e-2	2	NC	15	NC	5
238			min	0	1	-.893	2	.021	15	-1.533e-3	3	327.421	2	1198.142	1
239		6	max	0	15	.095	3	.444	3	1.595e-2	2	NC	15	NC	5
240			min	0	1	-.879	2	.022	15	-1.926e-3	3	334.31	2	1143.436	1
241		7	max	0	15	.031	3	.481	3	1.743e-2	2	NC	5	NC	5
242			min	0	1	-.793	2	.021	15	-2.319e-3	3	382.703	2	1097.357	3
243		8	max	0	15	-.024	15	.509	3	1.891e-2	2	NC	5	NC	5
244			min	0	1	-.665	2	.019	15	-2.711e-3	3	487.664	2	963.978	3
245		9	max	0	15	-.022	15	.528	3	2.039e-2	2	NC	3	NC	5
246			min	0	1	-.56	1	.015	10	-3.104e-3	3	664.129	2	893.881	3
247		10	max	0	1	-.021	15	.535	3	2.186e-2	2	NC	5	NC	2
248			min	0	1	-.518	1	.011	10	-3.497e-3	3	799.558	2	871.595	3
249		11	max	0	1	-.022	15	.528	3	2.039e-2	2	NC	3	NC	5
250			min	0	15	-.56	1	.015	10	-3.104e-3	3	664.129	2	893.881	3
251		12	max	0	1	-.024	15	.509	3	1.891e-2	2	NC	5	NC	5
252			min	0	15	-.665	2	.019	15	-2.711e-3	3	487.664	2	963.978	3
253		13	max	0	1	.031	3	.481	3	1.743e-2	2	NC	5	NC	5
254			min	0	15	-.793	2	.021	15	-2.319e-3	3	382.703	2	1097.357	3
255		14	max	0	1	.095	3	.444	3	1.595e-2	2	NC	15	NC	5
256			min	0	15	-.879	2	.022	15	-1.926e-3	3	334.31	2	1143.436	1
257		15	max	0	1	.126	3	.403	3	1.448e-2	2	NC	15	NC	5
258			min	0	15	-.893	2	.021	15	-1.533e-3	3	327.421	2	1198.142	1
259		16	max	0	1	.117	3	.361	3	1.3e-2	2	NC	5	NC	5
260			min	0	15	-.822	2	.019	15	-1.14e-3	3	364.798	2	1469.961	1
261		17	max	0	1	.067	3	.322	3	1.152e-2	2	NC	5	NC	5
262			min	0	15	-.667	2	.016	15	-7.474e-4	3	484.864	2	2260.492	1
263		18	max	0	1	-.012	12	.291	3	1.004e-2	2	NC	5	NC	2
264			min	0	15	-.448	2	.013	15	-3.547e-4	3	910.49	2	5437.832	1
265		19	max	.001	1	-.012	15	.273	3	8.656e-3	1	NC	1	NC	1
266			min	0	15	-.245	1	.01	10	3.811e-5	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	10	0	3	5.257e-3	2	NC	1	NC	1
270			min	0	2	-.002	3	0	2	-2.622e-3	3	NC	1	NC	1
271		3	max	0	3	0	10	.001	3	4.83e-3	2	NC	1	NC	1
272			min	0	1	-.006	3	0	2	-2.326e-3	3	NC	1	NC	1
273		4	max	0	3	0	10	.002	3	4.402e-3	2	NC	1	NC	1
274			min	0	1	-.014	3	-.002	2	-2.031e-3	3	5438.767	3	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
275		5	max	0	3	0	10	.004	3	3.975e-3	2	NC	2	NC	1
276			min	0	1	-.023	3	-.003	2	-1.735e-3	3	3149.488	3	NC	1
277		6	max	0	3	-.001	10	.006	3	3.547e-3	2	NC	2	NC	1
278			min	0	1	-.036	3	-.004	2	-1.44e-3	3	2067.971	3	8910.678	3
279		7	max	0	3	-.001	10	.008	3	3.12e-3	2	NC	5	NC	1
280			min	0	1	-.05	3	-.006	2	-1.144e-3	3	1471.2	3	6977.592	3
281		8	max	0	3	-.002	10	.009	3	2.692e-3	2	NC	5	NC	1
282			min	0	1	-.067	3	-.007	2	-8.49e-4	3	1106.461	3	5760.599	3
283		9	max	0	3	-.003	10	.011	3	2.265e-3	2	NC	5	NC	1
284			min	0	1	-.085	3	-.008	2	-5.536e-4	3	867.049	3	4963.566	3
285		10	max	0	3	-.003	10	.012	3	1.837e-3	2	NC	5	NC	4
286			min	0	1	-.105	3	-.009	2	-2.581e-4	3	701.247	3	4437.288	3
287		11	max	0	3	-.004	10	.013	3	1.41e-3	2	NC	5	NC	4
288			min	0	1	-.127	3	-.01	2	5.768e-6	15	581.546	3	4103.436	3
289		12	max	0	3	-.005	10	.013	3	9.825e-4	2	NC	10	NC	4
290			min	0	1	-.15	3	-.01	2	-5.011e-5	9	492.223	3	3923.186	3
291		13	max	0	3	-.005	10	.013	3	6.282e-4	3	NC	10	NC	4
292			min	-.001	1	-.174	3	-.01	2	-1.696e-4	9	423.755	3	3885.403	3
293		14	max	0	3	-.006	10	.012	3	9.236e-4	3	NC	10	NC	4
294			min	-.001	1	-.199	3	-.01	1	-2.89e-4	9	370.085	3	4008.208	3
295		15	max	.001	3	-.007	10	.01	3	1.219e-3	3	NC	10	NC	4
296			min	-.001	1	-.225	3	-.009	1	-6.306e-4	1	327.239	3	4353.518	3
297		16	max	.001	3	-.008	10	.007	3	1.514e-3	3	9170.547	10	NC	1
298			min	-.001	1	-.252	3	-.008	1	-9.85e-4	1	292.49	3	5090.732	3
299		17	max	.001	3	-.009	10	.003	3	1.81e-3	3	8255.214	10	NC	1
300			min	-.001	1	-.279	3	-.007	1	-1.339e-3	1	263.928	3	6751.417	3
301		18	max	.001	3	-.01	10	0	15	2.105e-3	3	7497.268	10	NC	1
302			min	-.001	1	-.307	3	-.004	1	-1.694e-3	1	240.18	3	NC	1
303		19	max	.001	3	-.011	10	.002	2	2.401e-3	3	6863.121	10	NC	1
304			min	-.002	1	-.335	3	-.009	3	-2.048e-3	1	220.241	3	NC	1
305	M5	1	max	0	1	0	1	0	1	0	1	NC	1	NC	1
306			min	0	1	0	1	0	1	0	1	NC	1	NC	1
307		2	max	0	3	0	10	0	1	0	1	NC	1	NC	1
308			min	0	2	-.003	3	0	1	0	1	NC	1	NC	1
309		3	max	0	3	0	10	0	1	0	1	NC	1	NC	1
310			min	0	2	-.012	3	0	1	0	1	5934.196	3	NC	1
311		4	max	0	3	0	10	0	1	0	1	NC	2	NC	1
312			min	0	2	-.027	3	0	1	0	1	2752.319	3	NC	1
313		5	max	0	3	0	10	0	1	0	1	NC	2	NC	1
314			min	0	2	-.046	3	0	1	0	1	1596.461	3	NC	1
315		6	max	.001	3	0	10	0	1	0	1	NC	2	NC	1
316			min	-.001	2	-.07	3	0	1	0	1	1049.163	3	NC	1
317		7	max	.001	3	0	10	0	1	0	1	NC	5	NC	1
318			min	-.001	2	-.099	3	0	1	0	1	746.794	3	NC	1
319		8	max	.002	3	-.001	10	0	1	0	1	NC	5	NC	1
320			min	-.002	2	-.131	3	0	1	0	1	561.848	3	NC	1
321		9	max	.002	3	-.002	10	0	1	0	1	NC	10	NC	1
322			min	-.002	2	-.167	3	0	1	0	1	440.388	3	NC	1
323		10	max	.002	3	-.002	10	0	1	0	1	NC	10	NC	1
324			min	-.002	2	-.207	3	0	1	0	1	356.24	3	NC	1
325		11	max	.002	3	-.003	10	0	1	0	1	NC	10	NC	1
326			min	-.002	2	-.249	3	0	1	0	1	295.473	3	NC	1
327		12	max	.002	3	-.003	10	0	1	0	1	NC	10	NC	1
328			min	-.002	2	-.295	3	0	1	0	1	250.117	3	NC	1
329		13	max	.003	3	-.004	10	0	1	0	1	NC	10	NC	1
330			min	-.003	2	-.342	3	0	1	0	1	215.345	3	NC	1
331		14	max	.003	3	-.005	10	0	1	0	1	NC	10	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
332			min	-.003	2	-.392	3	0	1	0	1	188.085	3	NC	1
333		15	max	.003	3	-.005	10	0	1	0	1	NC	10	NC	1
334			min	-.003	2	-.443	3	0	1	0	1	166.319	3	NC	1
335		16	max	.003	3	-.006	10	0	1	0	1	NC	10	NC	1
336			min	-.003	2	-.496	3	0	1	0	1	148.666	3	NC	1
337		17	max	.004	3	-.007	10	0	1	0	1	NC	10	NC	1
338			min	-.003	2	-.549	3	0	1	0	1	134.154	3	NC	1
339		18	max	.004	3	-.008	10	0	1	0	1	9730.909	10	NC	1
340			min	-.004	2	-.603	3	0	1	0	1	122.088	3	NC	1
341		19	max	.004	3	-.008	10	0	1	0	1	8865.344	10	NC	1
342			min	-.004	2	-.658	3	0	1	0	1	111.955	3	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	10	0	2	2.622e-3	3	NC	1	NC	1
346			min	0	2	-.002	3	0	3	-5.257e-3	2	NC	1	NC	1
347		3	max	0	3	0	10	0	2	2.326e-3	3	NC	1	NC	1
348			min	0	1	-.006	3	-.001	3	-4.83e-3	2	NC	1	NC	1
349		4	max	0	3	0	10	.002	2	2.031e-3	3	NC	1	NC	1
350			min	0	1	-.014	3	-.002	3	-4.402e-3	2	5438.767	3	NC	1
351		5	max	0	3	0	10	.003	2	1.735e-3	3	NC	2	NC	1
352			min	0	1	-.023	3	-.004	3	-3.975e-3	2	3149.488	3	NC	1
353		6	max	0	3	-.001	10	.004	2	1.44e-3	3	NC	2	NC	1
354			min	0	1	-.036	3	-.006	3	-3.547e-3	2	2067.971	3	8910.678	3
355		7	max	0	3	-.001	10	.006	2	1.144e-3	3	NC	5	NC	1
356			min	0	1	-.05	3	-.008	3	-3.12e-3	2	1471.2	3	6977.592	3
357		8	max	0	3	-.002	10	.007	2	8.49e-4	3	NC	5	NC	1
358			min	0	1	-.067	3	-.009	3	-2.692e-3	2	1106.461	3	5760.599	3
359		9	max	0	3	-.003	10	.008	2	5.536e-4	3	NC	5	NC	1
360			min	0	1	-.085	3	-.011	3	-2.265e-3	2	867.049	3	4963.566	3
361		10	max	0	3	-.003	10	.009	2	2.581e-4	3	NC	5	NC	4
362			min	0	1	-.105	3	-.012	3	-1.837e-3	2	701.247	3	4437.288	3
363		11	max	0	3	-.004	10	.01	2	-5.768e-6	15	NC	5	NC	4
364			min	0	1	-.127	3	-.013	3	-1.41e-3	2	581.546	3	4103.436	3
365		12	max	0	3	-.005	10	.01	2	5.011e-5	9	NC	10	NC	4
366			min	0	1	-.15	3	-.013	3	-9.825e-4	2	492.223	3	3923.186	3
367		13	max	0	3	-.005	10	.01	2	1.696e-4	9	NC	10	NC	4
368			min	-.001	1	-.174	3	-.013	3	-6.282e-4	3	423.755	3	3885.403	3
369		14	max	0	3	-.006	10	.01	1	2.89e-4	9	NC	10	NC	4
370			min	-.001	1	-.199	3	-.012	3	-9.236e-4	3	370.085	3	4008.208	3
371		15	max	.001	3	-.007	10	.009	1	6.306e-4	1	NC	10	NC	4
372			min	-.001	1	-.225	3	-.01	3	-1.219e-3	3	327.239	3	4353.518	3
373		16	max	.001	3	-.008	10	.008	1	9.85e-4	1	9170.547	10	NC	1
374			min	-.001	1	-.252	3	-.007	3	-1.514e-3	3	292.49	3	5090.732	3
375		17	max	.001	3	-.009	10	.007	1	1.339e-3	1	8255.214	10	NC	1
376			min	-.001	1	-.279	3	-.003	3	-1.81e-3	3	263.928	3	6751.417	3
377		18	max	.001	3	-.01	10	.004	1	1.694e-3	1	7497.268	10	NC	1
378			min	-.001	1	-.307	3	0	15	-2.105e-3	3	240.18	3	NC	1
379		19	max	.001	3	-.011	10	.009	3	2.048e-3	1	6863.121	10	NC	1
380			min	-.002	1	-.335	3	-.002	2	-2.401e-3	3	220.241	3	NC	1
381	M3	1	max	0	3	0	10	0	3	2.947e-3	2	NC	1	NC	1
382			min	0	10	0	3	0	2	-1.441e-3	3	NC	1	NC	1
383		2	max	0	3	0	15	.008	3	3.03e-3	2	NC	1	NC	4
384			min	0	2	-.017	3	-.016	2	-1.498e-3	3	NC	1	3769.432	2
385		3	max	0	3	-.002	15	.017	3	3.113e-3	2	NC	1	NC	4
386			min	0	2	-.034	3	-.033	2	-1.556e-3	3	NC	1	1872.283	2
387		4	max	.001	3	-.002	15	.025	3	3.197e-3	2	NC	1	NC	4
388			min	-.001	2	-.05	3	-.049	2	-1.613e-3	3	NC	1	1250.104	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	.001	3	-.003	15	.033	3	3.28e-3	2	NC	1	NC	5
390			min	-.002	2	-.067	3	-.065	2	-1.671e-3	3	NC	1	946.739	2
391		6	max	.001	3	-.004	15	.041	3	3.364e-3	2	NC	1	NC	5
392			min	-.002	2	-.083	3	-.079	2	-1.728e-3	3	NC	1	771.268	2
393		7	max	.002	3	-.005	15	.047	3	3.447e-3	2	NC	1	NC	5
394			min	-.003	2	-.099	3	-.092	2	-1.786e-3	3	NC	1	660.35	2
395		8	max	.002	3	-.005	15	.053	3	3.53e-3	2	NC	1	NC	5
396			min	-.003	2	-.116	3	-.104	2	-1.843e-3	3	NC	1	587.168	2
397		9	max	.002	3	-.006	15	.058	3	3.614e-3	2	NC	1	NC	5
398			min	-.003	2	-.132	3	-.113	2	-1.901e-3	3	NC	1	538.712	2
399		10	max	.002	3	-.007	15	.062	3	3.697e-3	2	NC	1	NC	5
400			min	-.004	2	-.148	3	-.12	2	-1.958e-3	3	NC	1	508.284	2
401		11	max	.002	3	-.007	15	.064	3	3.781e-3	2	NC	1	NC	5
402			min	-.004	2	-.165	3	-.123	2	-2.016e-3	3	NC	1	492.623	2
403		12	max	.002	3	-.008	15	.064	3	3.864e-3	2	NC	1	NC	5
404			min	-.005	2	-.181	3	-.123	2	-2.073e-3	3	NC	1	490.82	2
405		13	max	.003	3	-.008	15	.062	3	3.947e-3	2	NC	1	NC	5
406			min	-.005	2	-.197	3	-.119	2	-2.131e-3	3	NC	1	504.22	2
407		14	max	.003	3	-.009	15	.059	3	4.031e-3	2	NC	1	NC	5
408			min	-.006	2	-.213	3	-.111	2	-2.188e-3	3	NC	1	537.346	2
409		15	max	.003	3	-.009	15	.053	3	4.114e-3	2	NC	1	NC	5
410			min	-.006	2	-.229	3	-.098	2	-2.246e-3	3	NC	1	600.923	2
411		16	max	.003	3	-.01	15	.044	3	4.198e-3	2	NC	1	NC	5
412			min	-.006	2	-.244	3	-.081	2	-2.303e-3	3	NC	1	721.463	2
413		17	max	.003	3	-.01	15	.033	3	4.281e-3	2	NC	1	NC	5
414			min	-.007	2	-.26	3	-.057	2	-2.361e-3	3	NC	1	980.021	2
415		18	max	.003	3	-.011	15	.019	3	4.364e-3	2	NC	1	NC	4
416			min	-.007	2	-.276	3	-.028	2	-2.418e-3	3	NC	1	1784.018	2
417		19	max	.004	3	-.011	15	.011	1	4.448e-3	2	NC	1	NC	1
418			min	-.008	2	-.292	3	0	15	-2.476e-3	3	NC	1	NC	1
419	M6	1	max	.001	3	0	10	0	1	0	1	NC	1	NC	1
420			min	0	2	0	3	0	1	0	1	NC	1	NC	1
421		2	max	.002	3	-.001	15	0	1	0	1	NC	1	NC	1
422			min	-.002	2	-.033	3	0	1	0	1	NC	1	NC	1
423		3	max	.002	3	-.002	15	0	1	0	1	NC	1	NC	1
424			min	-.003	2	-.065	3	0	1	0	1	NC	1	NC	1
425		4	max	.003	3	-.003	15	0	1	0	1	NC	1	NC	1
426			min	-.004	2	-.097	3	0	1	0	1	NC	1	NC	1
427		5	max	.004	3	-.004	15	0	1	0	1	NC	1	NC	1
428			min	-.005	2	-.129	3	0	1	0	1	NC	1	NC	1
429		6	max	.004	3	-.006	15	0	1	0	1	NC	1	NC	1
430			min	-.007	2	-.16	3	0	1	0	1	NC	1	NC	1
431		7	max	.005	3	-.007	15	0	1	0	1	NC	1	NC	1
432			min	-.008	2	-.192	3	0	1	0	1	NC	1	NC	1
433		8	max	.005	3	-.008	15	0	1	0	1	NC	1	NC	1
434			min	-.009	2	-.224	3	0	1	0	1	NC	1	NC	1
435		9	max	.006	3	-.009	15	0	1	0	1	NC	1	NC	1
436			min	-.011	2	-.256	3	0	1	0	1	NC	1	NC	1
437		10	max	.007	3	-.01	15	0	1	0	1	NC	1	NC	1
438			min	-.012	2	-.287	3	0	1	0	1	NC	1	NC	1
439		11	max	.007	3	-.011	15	0	1	0	1	NC	1	NC	1
440			min	-.013	2	-.319	3	0	1	0	1	NC	1	NC	1
441		12	max	.008	3	-.011	15	0	1	0	1	NC	1	NC	1
442			min	-.014	2	-.351	3	0	1	0	1	NC	1	NC	1
443		13	max	.008	3	-.012	15	0	1	0	1	NC	1	NC	1
444			min	-.016	2	-.382	3	0	1	0	1	NC	1	NC	1
445		14	max	.009	3	-.013	15	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	-.017	2	-.413	3	0	1	0	1	NC	1	NC	1
447		15	max	.01	3	-.014	15	0	1	0	1	NC	1	NC	1
448			min	-.018	2	-.445	3	0	1	0	1	NC	1	NC	1
449		16	max	.01	3	-.015	15	0	1	0	1	NC	1	NC	1
450			min	-.019	2	-.476	3	0	1	0	1	NC	1	NC	1
451		17	max	.011	3	-.016	15	0	1	0	1	NC	1	NC	1
452			min	-.021	2	-.507	3	0	1	0	1	NC	1	NC	1
453		18	max	.011	3	-.017	15	0	1	0	1	NC	1	NC	1
454			min	-.022	2	-.538	3	0	1	0	1	NC	1	NC	1
455		19	max	.012	3	-.017	15	0	1	0	1	NC	1	NC	1
456			min	-.023	2	-.57	3	0	1	0	1	NC	1	NC	1
457	M9	1	max	0	3	0	10	0	2	1.441e-3	3	NC	1	NC	1
458			min	0	10	0	3	0	3	-2.947e-3	2	NC	1	NC	1
459		2	max	0	3	0	15	.016	2	1.498e-3	3	NC	1	NC	4
460			min	0	2	-.017	3	-.008	3	-3.03e-3	2	NC	1	3769.432	2
461		3	max	0	3	-.002	15	.033	2	1.556e-3	3	NC	1	NC	4
462			min	0	2	-.034	3	-.017	3	-3.113e-3	2	NC	1	1872.283	2
463		4	max	.001	3	-.002	15	.049	2	1.613e-3	3	NC	1	NC	4
464			min	-.001	2	-.05	3	-.025	3	-3.197e-3	2	NC	1	1250.104	2
465		5	max	.001	3	-.003	15	.065	2	1.671e-3	3	NC	1	NC	5
466			min	-.002	2	-.067	3	-.033	3	-3.28e-3	2	NC	1	946.739	2
467		6	max	.001	3	-.004	15	.079	2	1.728e-3	3	NC	1	NC	5
468			min	-.002	2	-.083	3	-.041	3	-3.364e-3	2	NC	1	771.268	2
469		7	max	.002	3	-.005	15	.092	2	1.786e-3	3	NC	1	NC	5
470			min	-.003	2	-.099	3	-.047	3	-3.447e-3	2	NC	1	660.35	2
471		8	max	.002	3	-.005	15	.104	2	1.843e-3	3	NC	1	NC	5
472			min	-.003	2	-.116	3	-.053	3	-3.53e-3	2	NC	1	587.168	2
473		9	max	.002	3	-.006	15	.113	2	1.901e-3	3	NC	1	NC	5
474			min	-.003	2	-.132	3	-.058	3	-3.614e-3	2	NC	1	538.712	2
475		10	max	.002	3	-.007	15	.12	2	1.958e-3	3	NC	1	NC	5
476			min	-.004	2	-.148	3	-.062	3	-3.697e-3	2	NC	1	508.284	2
477		11	max	.002	3	-.007	15	.123	2	2.016e-3	3	NC	1	NC	5
478			min	-.004	2	-.165	3	-.064	3	-3.781e-3	2	NC	1	492.623	2
479		12	max	.002	3	-.008	15	.123	2	2.073e-3	3	NC	1	NC	5
480			min	-.005	2	-.181	3	-.064	3	-3.864e-3	2	NC	1	490.82	2
481		13	max	.003	3	-.008	15	.119	2	2.131e-3	3	NC	1	NC	5
482			min	-.005	2	-.197	3	-.062	3	-3.947e-3	2	NC	1	504.22	2
483		14	max	.003	3	-.009	15	.111	2	2.188e-3	3	NC	1	NC	5
484			min	-.006	2	-.213	3	-.059	3	-4.031e-3	2	NC	1	537.346	2
485		15	max	.003	3	-.009	15	.098	2	2.246e-3	3	NC	1	NC	5
486			min	-.006	2	-.229	3	-.053	3	-4.114e-3	2	NC	1	600.923	2
487		16	max	.003	3	-.01	15	.081	2	2.303e-3	3	NC	1	NC	5
488			min	-.006	2	-.244	3	-.044	3	-4.198e-3	2	NC	1	721.463	2
489		17	max	.003	3	-.01	15	.057	2	2.361e-3	3	NC	1	NC	5
490			min	-.007	2	-.26	3	-.033	3	-4.281e-3	2	NC	1	980.021	2
491		18	max	.003	3	-.011	15	.028	2	2.418e-3	3	NC	1	NC	4
492			min	-.007	2	-.276	3	-.019	3	-4.364e-3	2	NC	1	1784.018	2
493		19	max	.004	3	-.011	15	0	15	2.476e-3	3	NC	1	NC	1
494			min	-.008	2	-.292	3	-.011	1	-4.448e-3	2	NC	1	NC	1