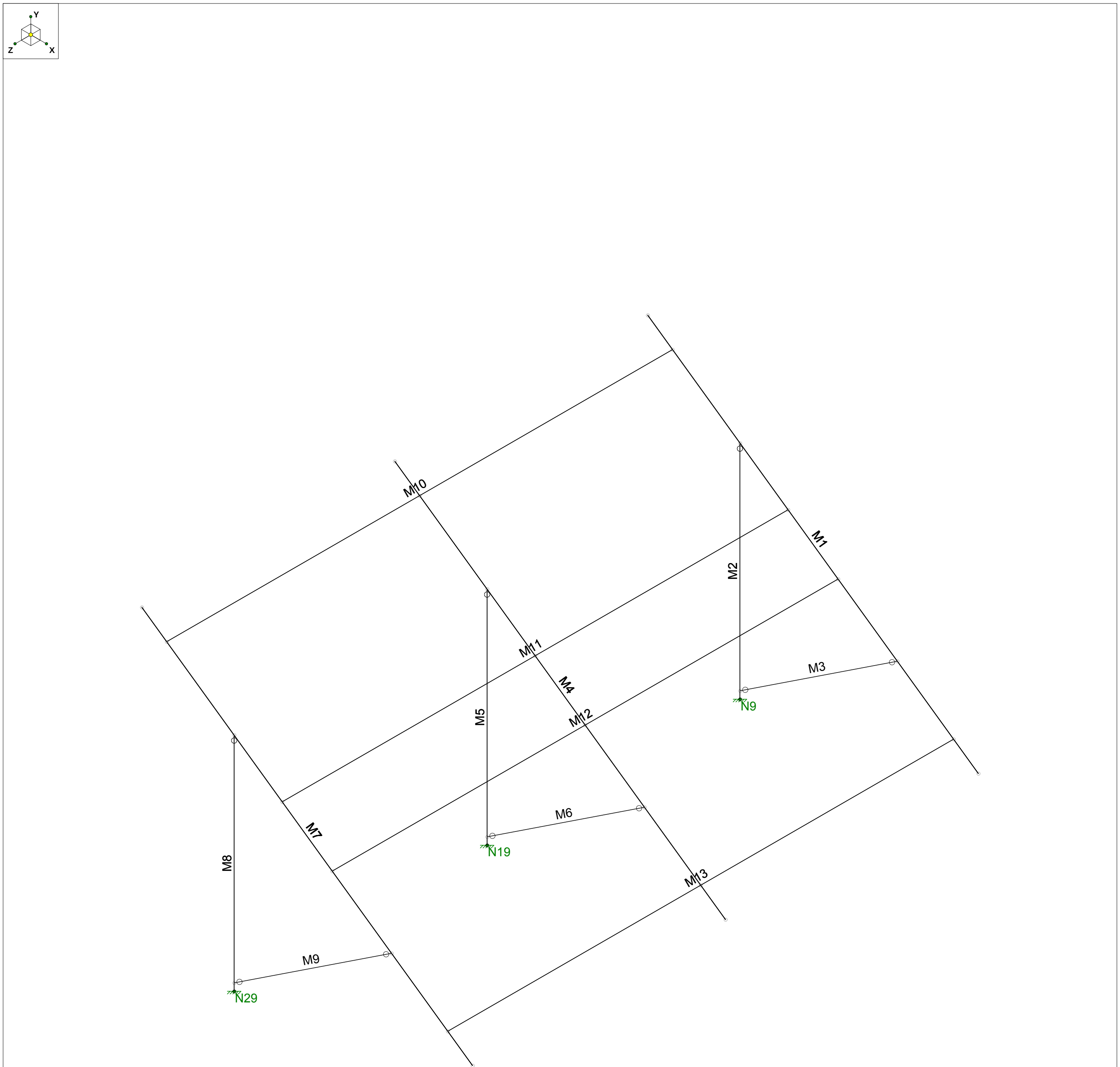


Schletter, Inc.		35° Tilt w/o Seismic Design
HCV	Standard FS Racking System	
	Representative Calculations - ASCE 7-05	

1. INTRODUCTION

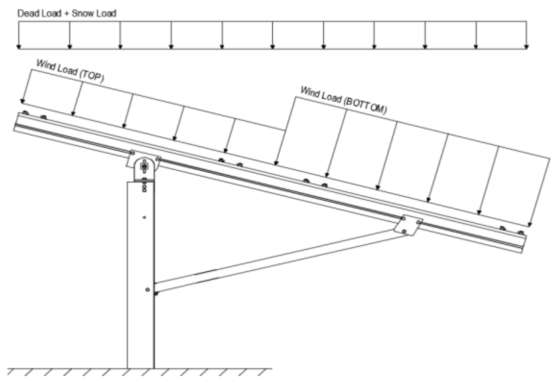
1.1 Project Description
The following sections will cover the determination of forces and structural design calculations for the Schletter, Inc. FS ground mount system.

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 = 110 mph
Height < 15 ft

Exposure Category = C
Importance Category = II

Peak Velocity Pressure, q_z = 19.00 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
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

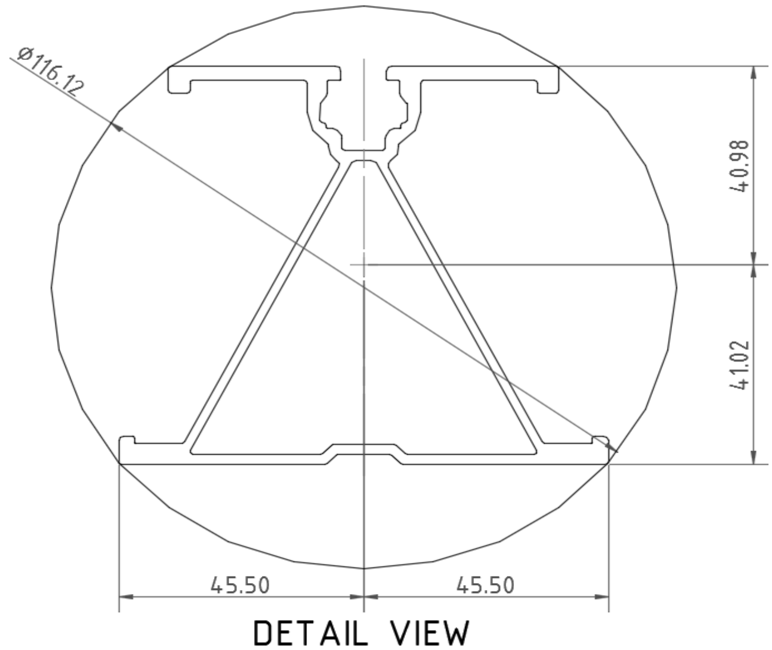
Struts	Location
M3	Outer
M6	Inner
M9	Outer

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).

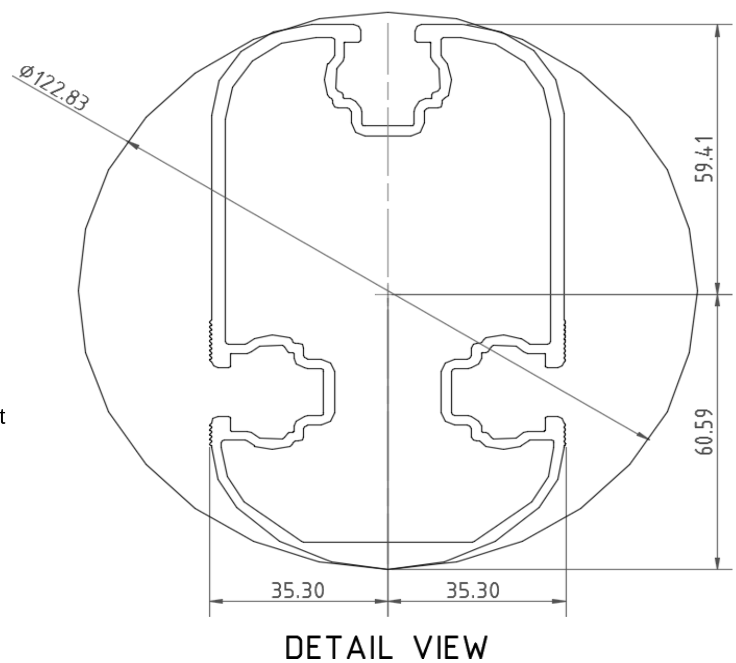
Purlin Type =	**S1.5**	
Aluminum Type =	6105-T5	
F_{ty} =	35	ksi
L_b =	96	in
$\Phi F_{ty\ STRONG\text{-}AXIS}$ =	25.07	ksi
$\Phi F_{ty\ WEAK\text{-}AXIS}$ =	23.08	ksi
S_y =	1.33	in^3
S_x =	0.6	in^3
E =	10100	ksi
I_y =	2.16	in^4
I_x =	1.07	in^4
A =	1.25	in^2
g =	1.50	lbs/ft
M_y =	1.367	k-ft
M_z =	0.161	k-ft
$M_{y\ allowable}$ =	2.779	k-ft
$M_{z\ allowable}$ =	1.154	k-ft
Utilization =	63%	



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).

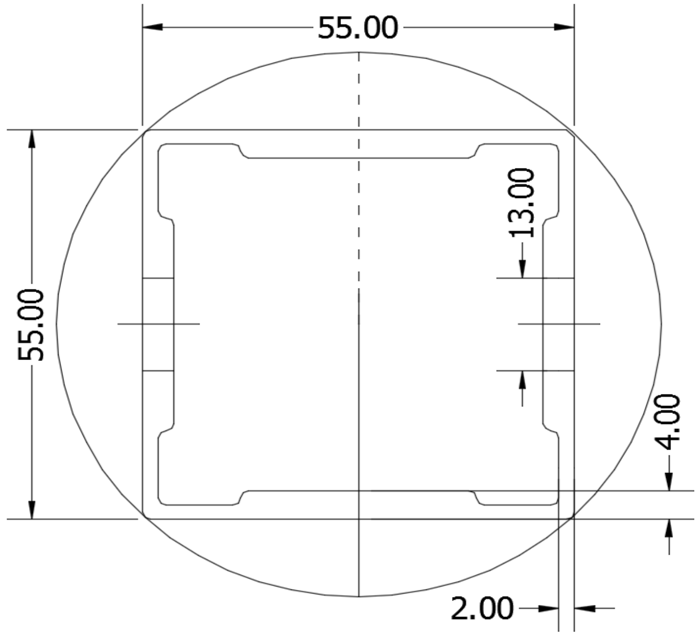
Girder Type =	**T5**	
Aluminum Type =	6105-T5	
F_{ty} =	35	ksi
L_b =	63.82	in
$\Phi F_{ty\ AXIAL}$ =	30.80	ksi
$\Phi F_{ty\ STRONG\text{-}AXIS}$ =	30.46	ksi
$\Phi F_{ty\ WEAK\text{-}AXIS}$ =	31.56	ksi
S_y =	1.98	in^3
S_x =	1.32	in^3
E =	10100	ksi
I_y =	4.74	in^4
I_x =	1.83	in^4
A =	1.93	in^2
g =	2.32	lbs/ft
M_y =	3.946	k-ft
M_z =	0.000	k-ft
P_n =	0.028	k
$M_{y\ allowable}$ =	5.026	k-ft
$M_{z\ allowable}$ =	3.472	k-ft
$P_{n\ allowable}$ =	59.439	k
Utilization =	79%	



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 =	0.004	k-ft
M_z =	0.000	k-ft
P_n =	3.804	k
$M_{y\ allowable}$ =	1.408	k-ft
$M_{z\ allowable}$ =	1.408	k-ft
$P_{n\ allowable}$ =	13.425	k
Utilization =	29%	

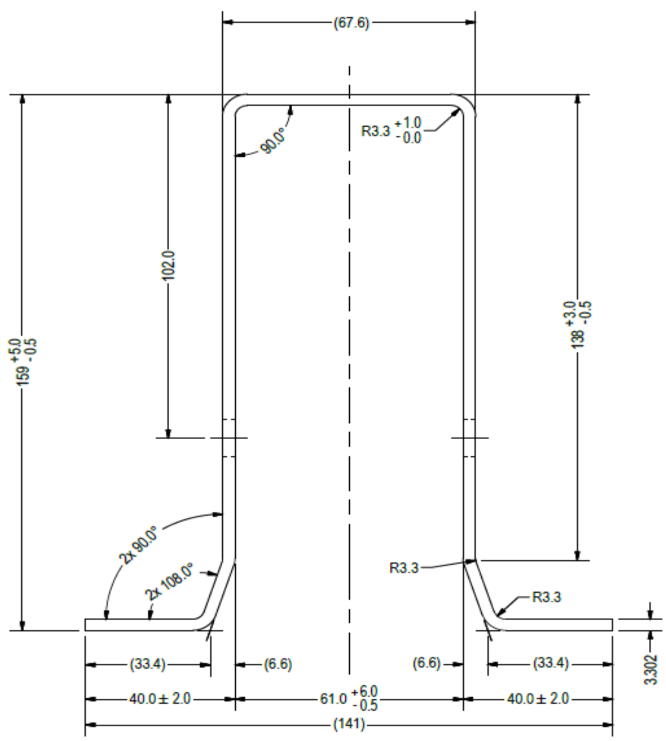


DETAIL VIEW

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 =	15.815	k-ft
M_z =	0.000	k-ft
P_r =	-4.635	k
$M_{y\ allowable}$ =	19.207	k-ft
$M_{z\ allowable}$ =	14.389	k-ft
P_c =	28.060	k
Utilization =	95%	



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 = 5.98 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)

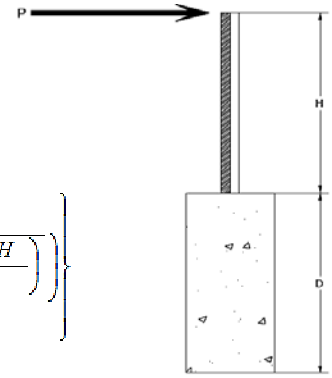
Lateral Force @ Top of Pole, P =	1.04 k
Height of Pole Above Grade, H =	7.14 ft
Diameter of Pole Footing, B =	2.00 ft
Lateral Soil Bearing Capacity, S =	0.10 ksf/ft
Isolated Pole Factor, F =	2
First Trial Depth, D =	3.25 ft
Lateral Bearing @ Bottom =	S_3
Lateral Bearing @ D/3 =	S_1
Required Depth =	D

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

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

$$A = 2.34 \frac{P}{S_1 B}$$

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



	Non-Constrained
Lateral Force @ Top of Pole, P =	1.04 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 =	5.63
Required Footing Depth, D =	10.01 ft
2nd Trial @ D_2 =	6.63 ft
Lateral Soil Bearing @ D/3, S_1 =	0.44 ksf
Lateral Soil Bearing @ D, S_3 =	1.33 ksf
Constant $2.34P/(S_1B)$, A =	2.76
Required Footing Depth, D =	6.22 ft
3rd Trial @ D_3 =	6.42 ft
Lateral Soil Bearing @ D/3, S_1 =	0.43 ksf
Lateral Soil Bearing @ D, S_3 =	1.28 ksf
Constant $2.34P/(S_1B)$, A =	2.85
Required Footing Depth, D =	6.35 ft
4th Trial @ D_4 =	6.38 ft
Lateral Soil Bearing @ D/3, S_1 =	0.43 ksf
Lateral Soil Bearing @ D, S_3 =	1.28 ksf
Constant $2.34P/(S_1B)$, A =	2.87
Required Footing Depth, D =	6.37 ft
5th Trial @ D_5 =	6.38 ft
Lateral Soil Bearing @ D/3, S_1 =	0.43 ksf
Lateral Soil Bearing @ D, S_3 =	1.28 ksf
Constant $2.34P/(S_1B)$, A =	2.87
Required Footing Depth, D =	6.50 ft

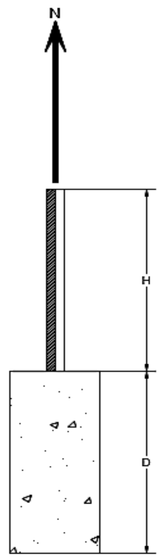
A 2ft diameter x 6.5ft deep footing unrestrained at ground level is required for the racking structure.

5.4 Uplifting Force Resistance

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

Weight of Concrete, g_{con} =	145	pcf
Uplifting Force, N =	2.86	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 =	1.87	k
Required Concrete Volume, V =	12.91	ft^3
Required Footing Depth, D =	4.25	ft

A 2ft diameter x 4.25ft deep footing unrestrained at ground level is required for the racking structure.



Iteration	z	dz	Qs	Side
1	0.2	0.2	118.10	6.18
2	0.4	0.2	118.10	6.08
3	0.6	0.2	118.10	5.98
4	0.8	0.2	118.10	5.87
5	1	0.2	118.10	5.77
6	1.2	0.2	118.10	5.66
7	1.4	0.2	118.10	5.56
8	1.6	0.2	118.10	5.46
9	1.8	0.2	118.10	5.35
10	2	0.2	118.10	5.25
11	2.2	0.2	118.10	5.15
12	2.4	0.2	118.10	5.04
13	2.6	0.2	118.10	4.94
14	2.8	0.2	118.10	4.83
15	3	0.2	118.10	4.73
16	3.2	0.2	118.10	4.63
17	3.4	0.2	118.10	4.52
18	3.6	0.2	118.10	4.42
19	3.8	0.2	118.10	4.32
20	4	0.2	118.10	4.21
21	4.2	0.2	118.10	4.11
22	0	0.0	0.00	4.11
23	0	0.0	0.00	4.11
24	0	0.0	0.00	4.11
25	0	0.0	0.00	4.11
26	0	0.0	0.00	4.11
27	0	0.0	0.00	4.11
28	0	0.0	0.00	4.11
29	0	0.0	0.00	4.11
30	0	0.0	0.00	4.11
31	0	0.0	0.00	4.11
32	0	0.0	0.00	4.11
33	0	0.0	0.00	4.11
34	0	0.0	0.00	4.11
Max	4.2	Sum	0.99	

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 =	3.33	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

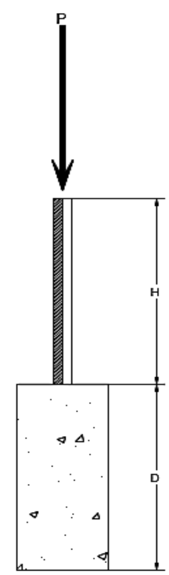
Weight of Concrete

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 =	6.29	k
Utilization =	59%	

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



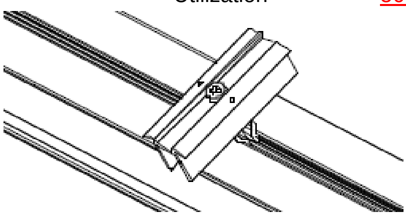
6. DESIGN OF JOINTS AND CONNECTIONS

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

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

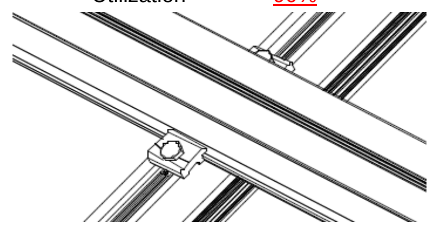
<u>Fastening of Modules to Purlins</u>

Maximum Uplifting Force =	0.686	k
Allowable Uplift =	1.214	k
Utilization =	56%	



<u>Fastening of Purlins to Girders</u>

Maximum Uplifting Force =	1.962	k
Allowable Uplift =	2.180	k
Utilization =	90%	

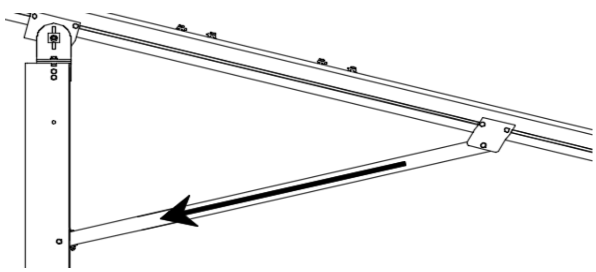


6.2 Strut Connections

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 =	3.804	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)

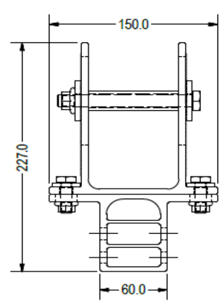


A strut under compression is shown to demonstrate the load transfer from the girder. Single M10 bolts are located at each end of the strut and are subjected to double shear.

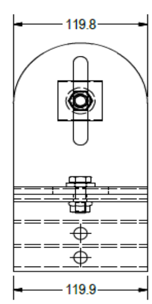
6.3 Girder to Post Connection

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.

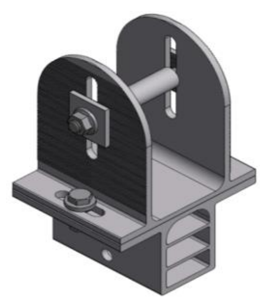
Maximum Tensile Load =	4.141	k
Allowable Load =	5.649	k
Utilization =	73%	



FRONT VIEW



SIDE VIEW



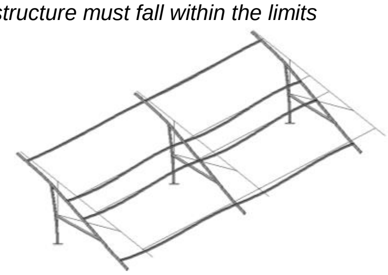
7. SEISMIC DESIGN

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 = 96 in
J = 0.432
265.581

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

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= 28.0 ksi

3.4.16
b/t = 32.195

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

S1 = 12.2

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

S2 = 46.7
φF_L= φb[Bp-1.6Dp*b/t]
φF_L= 25.1 ksi

3.4.16.1 Not Used
Rb/t =

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

S1 = 1.1

$$S2 = C_t$$

S2 = 141.0
φF_L= 1.17φyFcy
φF_L= 38.9 ksi

3.4.18
h/t = 37.0588

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

S1 = 36.9
m = 0.65
C_0 = 40.985
Cc = 41.015

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

S2 = 77.2
φF_L= φb[Bbr-mDbr*h/t]
φF_L= 43.2 ksi

$\varphi F_L St$= 25.1 ksi
Ix = 897074 mm^4
2.155 in^4
y = 41.015 mm
Sx = 1.335 in^3
$M_{max}St$ = 2.788 k-ft

Weak Axis:
3.4.14
L_b = 96
J = 0.432
168.894

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

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= 29.1

3.4.16
b/t = 37.0588

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

S1 = 12.2

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

S2 = 46.7
φF_L= φb[Bp-1.6Dp*b/t]
φF_L= 23.1 ksi

3.4.16.1
N/A for Weak Direction

3.4.18
h/t = 32.195

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

S1 = 36.9
m = 0.65
C_0 = 45.5
Cc = 45.5

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

S2 = 77.3
φF_L= 1.3φyFcy
φF_L= 43.2 ksi

$\varphi F_L Wk$= 23.1 ksi
Iy = 446476 mm^4
1.073 in^4
x = 45.5 mm
Sy = 0.599 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

$\varphi F_L = \varphi b[Bt-Dt*\sqrt{(Rb/t)}]$

$\varphi F_L =$ 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

$\varphi F_L = 1.3\varphi yFcy$

$\varphi F_L =$ 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

$\varphi F_L = 1.3\varphi yFcy$

$\varphi F_L =$ 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

$\varphi F_L Wk =$ 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)

$\varphi F_L = \varphi yFcy$

$\varphi F_L =$ 33.3 ksi

b/t = 16.3333

S1 = 12.21

S2 = 32.70

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

$\varphi F_L =$ 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

$\varphi F_L = \varphi c[Bt-Dt*\sqrt{(Rb/t)}]$

$\varphi F_L =$ 30.80 ksi

$\varphi F_L =$ 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 =	-4.64 k	(LRFD Factored Load)
Mr (Strong) =	15.82 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 =	0.1259 <	0.2	
Utilization =	0.95 <	1.0	OK

Bending (Weak Axis):

Yielding:			
Mn =	14.65 k-ft		
Flange Local Buckling:			
Mn =	14.39 k-ft		
Pr/Pc =	0.126 <	0.2	
Utilization =	0.00 <	1.0	OK

Combined Forces

Utilization = 95%

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	-63.577	-63.577	0	0
2	M11	y	-63.577	-63.577	0	0
3	M12	y	-105.961	-105.961	0	0
4	M13	y	-105.961	-105.961	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	127.153	127.153	0	0
2	M11	y	127.153	127.153	0	0
3	M12	y	63.577	63.577	0	0
4	M13	y	63.577	63.577	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	966.451	2	1920.066	2	158.125	2	.23	2	.01	3	5.23	3
2		min	-1262.687	3	-1434.34	3	-199.193	3	-.335	3	-.021	2	-.043	10
3	N19	max	3045.939	2	5367.89	2	0	3	0	15	0	2	9.471	3
4		min	-3075.816	3	-4574.365	3	0	2	0	2	0	3	-.356	10
5	N29	max	966.451	2	1920.066	2	199.193	3	.335	3	.021	2	5.23	3
6		min	-1262.687	3	-1434.34	3	-158.125	2	-.23	2	-.01	3	-.043	10
7	Totals:	max	4978.842	2	9208.022	2	0	3						
8		min	-5601.19	3	-7443.045	3	0	2						

Envelope Member Section Forces

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Mome...	LC	z-z Mome...	LC
1	M1	1	max	0	1	.006	2	0	15	0	1	0	1	0	1
2			min	0	1	0	3	0	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	-1.818	4	0	1	0	1	0	1	0	15
5		3	max	-8.86	15	297.651	3	-4.482	15	.045	3	.151	1	.274	2
6			min	-150.038	1	-632.618	2	-80.268	1	-.172	2	.009	15	-.126	3
7		4	max	-9.16	15	296.587	3	-4.482	15	.045	3	.102	1	.667	2
8			min	-151.03	1	-634.035	2	-80.268	1	-.172	2	.006	15	-.31	3
9		5	max	-9.459	15	295.524	3	-4.482	15	.045	3	.052	1	1.061	2
10			min	-152.023	1	-635.453	2	-80.268	1	-.172	2	.003	10	-.494	3
11		6	max	140.44	3	545.935	2	-5.337	15	.051	2	.059	2	1.022	2
12			min	-536.394	2	-173.748	3	-117.119	1	-.063	3	-.021	3	-.505	3
13		7	max	139.696	3	544.517	2	-5.337	15	.051	2	.008	10	.684	2
14			min	-537.386	2	-174.811	3	-117.119	1	-.063	3	-.036	3	-.397	3
15		8	max	138.951	3	543.1	2	-5.337	15	.051	2	-.005	15	.346	2
16			min	-538.379	2	-175.875	3	-117.119	1	-.063	3	-.095	1	-.288	3
17		9	max	94.865	3	106.437	3	-7.225	15	-.001	15	.067	3	.146	2
18			min	-651.175	1	-66.687	2	-131.393	1	-.112	2	-.006	10	-.237	3
19		10	max	94.12	3	105.374	3	-7.225	15	-.001	15	.038	3	.188	2
20			min	-652.167	1	-68.104	2	-131.393	1	-.112	2	-.032	2	-.303	3
21		11	max	93.376	3	104.311	3	-7.225	15	-.001	15	.01	3	.231	2
22			min	-653.16	1	-69.521	2	-131.393	1	-.112	2	-.106	1	-.368	3
23		12	max	45.171	3	769.191	3	112.078	2	.249	3	.093	1	.428	2
24			min	-807.996	1	-459.154	2	-283.735	3	-.187	2	.005	15	-.691	3
25		13	max	44.427	3	768.128	3	112.078	2	.249	3	.112	1	.714	2
26			min	-808.988	1	-460.572	2	-283.735	3	-.187	2	-.132	3	-1.168	3
27		14	max	152.774	1	432.122	2	10.923	10	.183	2	.123	3	.988	2
28			min	9.755	15	-703.76	3	-108.551	3	-.365	3	-.079	2	-1.624	3
29		15	max	151.781	1	430.705	2	10.923	10	.183	2	.056	3	.72	2
30			min	9.455	15	-704.823	3	-108.551	3	-.365	3	-.097	1	-1.187	3
31		16	max	150.789	1	429.287	2	10.923	10	.183	2	-.007	15	.453	2
32			min	9.156	15	-705.886	3	-108.551	3	-.365	3	-.129	1	-.75	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	149.796	1	427.87	2	10.923	10	.183	2	-.009	15	.187	2
34			min	8.856	15	-706.949	3	-108.551	3	-.365	3	-.162	1	-.311	3
35		18	max	1.274	4	1.819	4	0	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	0	1	0	1	0	1	0	1
38			min	0	1	-.008	3	0	15	0	1	0	1	0	1
39	M4	1	max	0	1	.014	2	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	28.857	3	955.772	3	0	1	0	1	0	1	.703	2
44			min	-298.693	1	-1823.71	2	0	1	0	1	0	1	-.375	3
45		4	max	28.113	3	954.709	3	0	1	0	1	0	1	1.835	2
46			min	-299.686	1	-1825.128	2	0	1	0	1	0	1	-.968	3
47		5	max	27.368	3	953.646	3	0	1	0	1	0	1	2.969	2
48			min	-300.678	1	-1826.545	2	0	1	0	1	0	1	-1.56	3
49		6	max	717.945	3	1703.264	2	0	1	0	1	0	1	2.807	2
50			min	-1534.067	2	-772.403	3	0	1	0	1	0	1	-1.519	3
51		7	max	717.201	3	1701.846	2	0	1	0	1	0	1	1.75	2
52			min	-1535.059	2	-773.466	3	0	1	0	1	0	1	-1.039	3
53		8	max	716.457	3	1700.429	2	0	1	0	1	0	1	.695	2
54			min	-1536.052	2	-774.53	3	0	1	0	1	0	1	-.559	3
55		9	max	753.218	3	212.422	3	0	1	0	1	0	1	.067	1
56			min	-1663.285	2	-175.352	2	0	1	0	1	0	1	-.308	3
57		10	max	752.474	3	211.359	3	0	1	0	1	0	1	.169	2
58			min	-1664.277	2	-176.769	2	0	1	0	1	0	1	-.44	3
59		11	max	751.729	3	210.296	3	0	1	0	1	0	1	.279	2
60			min	-1665.27	2	-178.187	2	0	1	0	1	0	1	-.571	3
61		12	max	796.728	3	2057.915	3	0	1	0	1	0	1	.878	2
62			min	-1863.769	1	-1409.563	2	0	1	0	1	0	1	-1.445	3
63		13	max	795.983	3	2056.852	3	0	1	0	1	0	1	1.753	2
64			min	-1864.761	1	-1410.981	2	0	1	0	1	0	1	-2.722	3
65		14	max	302.153	1	1158.401	2	0	1	0	1	0	1	2.594	2
66			min	-27.656	3	-1761.773	3	0	1	0	1	0	1	-3.946	3
67		15	max	301.161	1	1156.983	2	0	1	0	1	0	1	1.875	2
68			min	-28.4	3	-1762.836	3	0	1	0	1	0	1	-2.852	3
69		16	max	300.168	1	1155.566	2	0	1	0	1	0	1	1.158	2
70			min	-29.145	3	-1763.899	3	0	1	0	1	0	1	-1.758	3
71		17	max	299.176	1	1154.148	2	0	1	0	1	0	1	.441	2
72			min	-29.889	3	-1764.962	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	2	0	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	0	1	0	1	0	1	0	4
80			min	-1.274	4	-1.818	4	0	15	0	1	0	15	0	15
81		3	max	-8.86	15	297.651	3	80.268	1	.172	2	-.009	15	.274	2
82			min	-150.038	1	-632.618	2	4.482	15	-.045	3	-.151	1	-.126	3
83		4	max	-9.16	15	296.587	3	80.268	1	.172	2	-.006	15	.667	2
84			min	-151.03	1	-634.035	2	4.482	15	-.045	3	-.102	1	-.31	3
85		5	max	-9.459	15	295.524	3	80.268	1	.172	2	-.003	10	1.061	2
86			min	-152.023	1	-635.453	2	4.482	15	-.045	3	-.052	1	-.494	3
87		6	max	140.44	3	545.935	2	117.119	1	.063	3	.021	3	1.022	2
88			min	-536.394	2	-173.748	3	5.337	15	-.051	2	-.059	2	-.505	3
89		7	max	139.696	3	544.517	2	117.119	1	.063	3	.036	3	.684	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	-537.386	2	-174.811	3	5.337	15	-.051	2	-.008	10	-.397	3
91		8	max	138.951	3	543.1	2	117.119	1	.063	3	.095	1	.346	2
92			min	-538.379	2	-175.875	3	5.337	15	-.051	2	.005	15	-.288	3
93		9	max	94.865	3	106.437	3	131.393	1	.112	2	.006	10	.146	2
94			min	-651.175	1	-66.687	2	7.225	15	.001	15	-.067	3	-.237	3
95		10	max	94.12	3	105.374	3	131.393	1	.112	2	.032	2	.188	2
96			min	-652.167	1	-68.104	2	7.225	15	.001	15	-.038	3	-.303	3
97		11	max	93.376	3	104.311	3	131.393	1	.112	2	.106	1	.231	2
98			min	-653.16	1	-69.521	2	7.225	15	.001	15	-.01	3	-.368	3
99		12	max	45.171	3	769.191	3	283.735	3	.187	2	-.005	15	.428	2
100			min	-807.996	1	-459.154	2	-112.078	2	-.249	3	-.093	1	-.691	3
101		13	max	44.427	3	768.128	3	283.735	3	.187	2	.132	3	.714	2
102			min	-808.988	1	-460.572	2	-112.078	2	-.249	3	-.112	1	-1.168	3
103		14	max	152.774	1	432.122	2	108.551	3	.365	3	.079	2	.988	2
104			min	9.755	15	-703.76	3	-10.923	10	-.183	2	-.123	3	-1.624	3
105		15	max	151.781	1	430.705	2	108.551	3	.365	3	.097	1	.72	2
106			min	9.455	15	-704.823	3	-10.923	10	-.183	2	-.056	3	-1.187	3
107		16	max	150.789	1	429.287	2	108.551	3	.365	3	.129	1	.453	2
108			min	9.156	15	-705.886	3	-10.923	10	-.183	2	.007	15	-.75	3
109		17	max	149.796	1	427.87	2	108.551	3	.365	3	.162	1	.187	2
110			min	8.856	15	-706.949	3	-10.923	10	-.183	2	.009	15	-.311	3
111		18	max	1.274	4	1.819	4	0	15	0	1	0	1	0	4
112			min	.299	15	.428	15	0	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	0	1	0	1	0	1	0	1
115	M10	1	max	108.564	3	424.676	2	-8.258	15	.013	2	.184	1	.183	2
116			min	-10.925	10	-709.129	3	-147.845	1	-.025	3	.01	15	-.365	3
117		2	max	108.564	3	313.628	2	-6.436	15	.013	2	.088	3	.187	3
118			min	-10.925	10	-532.191	3	-114.911	1	-.025	3	.004	15	-.145	2
119		3	max	108.564	3	202.579	2	-4.614	15	.013	2	.056	3	.581	3
120			min	-10.925	10	-355.253	3	-81.977	1	-.025	3	-.021	1	-.374	2
121		4	max	108.564	3	91.531	2	-2.793	15	.013	2	.026	3	.819	3
122			min	-10.925	10	-178.315	3	-49.043	1	-.025	3	-.079	1	-.505	2
123		5	max	108.564	3	-.933	15	-.609	10	.013	2	-.001	12	.898	3
124			min	-10.925	10	-23.082	1	-29.604	3	-.025	3	-.108	1	-.537	2
125		6	max	108.564	3	175.561	3	16.825	1	.013	2	-.006	15	.821	3
126			min	-10.925	10	-130.565	2	-26.872	3	-.025	3	-.108	1	-.47	2
127		7	max	108.564	3	352.499	3	49.759	1	.013	2	-.004	15	.586	3
128			min	-10.925	10	-241.613	2	-24.14	3	-.025	3	-.078	1	-.305	2
129		8	max	108.564	3	529.437	3	82.693	1	.013	2	.001	10	.194	3
130			min	-10.925	10	-352.661	2	-21.408	3	-.025	3	-.07	3	-.041	2
131		9	max	108.564	3	706.375	3	115.627	1	.013	2	.069	1	.322	2
132			min	-10.925	10	-463.709	2	-18.676	3	-.025	3	-.088	3	-.355	3
133		10	max	108.564	3	883.313	3	67.782	2	.025	3	.186	1	.784	2
134			min	-10.925	10	-574.757	2	-148.561	1	-.013	2	-.103	3	-1.061	3
135		11	max	108.564	3	463.709	2	18.676	3	.025	3	.069	1	.322	2
136			min	-10.925	10	-706.375	3	-115.627	1	-.013	2	-.088	3	-.355	3
137		12	max	108.564	3	352.661	2	21.408	3	.025	3	.001	10	.194	3
138			min	-10.925	10	-529.437	3	-82.693	1	-.013	2	-.07	3	-.041	2
139		13	max	108.564	3	241.613	2	24.14	3	.025	3	-.004	15	.586	3
140			min	-10.925	10	-352.499	3	-49.759	1	-.013	2	-.078	1	-.305	2
141		14	max	108.564	3	130.565	2	26.872	3	.025	3	-.006	15	.821	3
142			min	-10.925	10	-175.561	3	-16.825	1	-.013	2	-.108	1	-.47	2
143		15	max	108.564	3	23.082	1	29.604	3	.025	3	-.001	12	.898	3
144			min	-10.925	10	.933	15	.609	10	-.013	2	-.108	1	-.537	2
145		16	max	108.564	3	178.315	3	49.043	1	.025	3	.026	3	.819	3
146			min	-10.925	10	-91.531	2	2.793	15	-.013	2	-.079	1	-.505	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	108.564	3	355.253	3	81.977	1	.025	3	.056	3	.581	3
148			min	-10.925	10	-202.579	2	4.614	15	-.013	2	-.021	1	-.374	2
149		18	max	108.564	3	532.191	3	114.911	1	.025	3	.088	3	.187	3
150			min	-10.925	10	-313.628	2	6.436	15	-.013	2	.004	15	-.145	2
151		19	max	108.564	3	709.129	3	147.845	1	.025	3	.184	1	.183	2
152			min	-10.925	10	-424.676	2	8.258	15	-.013	2	.01	15	-.365	3
153	M11	1	max	169.913	2	387.075	2	-8.633	15	0	10	.216	1	.075	2
154			min	-237.834	3	-665.724	3	-153.949	1	-.006	3	.012	15	-.348	3
155		2	max	169.913	2	276.027	2	-6.811	15	0	10	.117	3	.165	3
156			min	-237.834	3	-488.786	3	-121.015	1	-.006	3	.005	10	-.22	2
157		3	max	169.913	2	164.979	2	-4.989	15	0	10	.079	3	.521	3
158			min	-237.834	3	-311.848	3	-88.08	1	-.006	3	-.009	2	-.416	2
159		4	max	169.913	2	53.931	2	-3.168	15	0	10	.043	3	.72	3
160			min	-237.834	3	-134.91	3	-55.146	1	-.006	3	-.063	1	-.513	2
161		5	max	169.913	2	42.028	3	-.761	10	0	10	.01	3	.761	3
162			min	-237.834	3	-57.117	2	-35.976	3	-.006	3	-.097	1	-.512	2
163		6	max	169.913	2	218.966	3	10.722	1	0	10	-.006	15	.645	3
164			min	-237.834	3	-168.165	2	-33.244	3	-.006	3	-.102	1	-.411	2
165		7	max	169.913	2	395.904	3	43.656	1	0	10	-.004	15	.372	3
166			min	-237.834	3	-279.213	2	-30.512	3	-.006	3	-.078	1	-.213	2
167		8	max	169.913	2	572.842	3	76.59	1	0	10	0	10	.085	2
168			min	-237.834	3	-390.261	2	-27.78	3	-.006	3	-.075	3	-.059	3
169		9	max	169.913	2	749.779	3	109.524	1	0	10	.058	1	.481	2
170			min	-237.834	3	-501.309	2	-25.047	3	-.006	3	-.099	3	-.647	3
171		10	max	169.913	2	612.357	2	78.963	14	.006	3	.17	1	.976	2
172			min	-237.834	3	-926.717	3	-142.458	1	-.001	1	-.12	3	-1.392	3
173		11	max	169.913	2	501.309	2	25.047	3	.006	3	.058	1	.481	2
174			min	-237.834	3	-749.779	3	-109.524	1	0	10	-.099	3	-.647	3
175		12	max	169.913	2	390.261	2	27.78	3	.006	3	0	10	.085	2
176			min	-237.834	3	-572.842	3	-76.59	1	0	10	-.075	3	-.059	3
177		13	max	169.913	2	279.213	2	30.512	3	.006	3	-.004	15	.372	3
178			min	-237.834	3	-395.904	3	-43.656	1	0	10	-.078	1	-.213	2
179		14	max	169.913	2	168.165	2	33.244	3	.006	3	-.006	15	.645	3
180			min	-237.834	3	-218.966	3	-10.722	1	0	10	-.102	1	-.411	2
181		15	max	169.913	2	57.117	2	35.976	3	.006	3	.01	3	.761	3
182			min	-237.834	3	-42.028	3	.761	10	0	10	-.097	1	-.512	2
183		16	max	169.913	2	134.91	3	55.146	1	.006	3	.043	3	.72	3
184			min	-237.834	3	-53.931	2	3.168	15	0	10	-.063	1	-.513	2
185		17	max	169.913	2	311.848	3	88.08	1	.006	3	.079	3	.521	3
186			min	-237.834	3	-164.979	2	4.989	15	0	10	-.009	2	-.416	2
187		18	max	169.913	2	488.786	3	121.015	1	.006	3	.117	3	.165	3
188			min	-237.834	3	-276.027	2	6.811	15	0	10	.005	10	-.22	2
189		19	max	169.913	2	665.724	3	153.949	1	.006	3	.216	1	.075	2
190			min	-237.834	3	-387.075	2	8.633	15	0	10	.012	15	-.348	3
191	M12	1	max	25.387	2	607.417	2	-8.692	15	0	10	.229	1	.163	2
192			min	-22.675	9	-283.398	3	-156.326	1	-.005	3	.013	15	.002	15
193		2	max	25.387	2	436.089	2	-6.87	15	0	10	.104	1	.249	3
194			min	-22.675	9	-196.879	3	-123.392	1	-.005	3	.006	15	-.3	2
195		3	max	25.387	2	264.762	2	-5.048	15	0	10	.066	3	.385	3
196			min	-22.675	9	-110.36	3	-90.458	1	-.005	3	0	10	-.612	2
197		4	max	25.387	2	93.434	2	-3.227	15	0	10	.033	3	.445	3
198			min	-22.675	9	-23.842	3	-57.524	1	-.005	3	-.057	1	-.771	2
199		5	max	25.387	2	62.677	3	-1.405	15	0	10	.003	3	.428	3
200			min	-22.675	9	-77.893	2	-32.364	3	-.005	3	-.093	1	-.778	2
201		6	max	25.387	2	149.196	3	8.344	1	0	10	-.006	15	.334	3
202			min	-22.675	9	-249.221	2	-29.632	3	-.005	3	-.1	1	-.633	2
203		7	max	25.387	2	235.715	3	41.278	1	0	10	-.004	15	.163	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	-22.675	9	-420.548	2	-26.899	3	-.005	3	-.078	1	-.335	2
205		8	max	25.387	2	322.233	3	74.212	1	0	10	0	10	.115	2
206			min	-22.675	9	-591.876	2	-24.167	3	-.005	3	-.072	3	-.085	3
207		9	max	25.387	2	408.752	3	107.146	1	0	10	.054	1	.717	2
208			min	-22.675	9	-763.203	2	-21.435	3	-.005	3	-.092	3	-.41	3
209		10	max	25.387	2	934.531	2	78.365	14	.005	3	.164	1	1.472	2
210			min	-22.675	9	-495.271	3	-140.08	1	-.002	1	-.11	3	-.812	3
211		11	max	25.387	2	763.203	2	21.435	3	.005	3	.054	1	.717	2
212			min	-22.675	9	-408.752	3	-107.146	1	0	10	-.092	3	-.41	3
213		12	max	25.387	2	591.876	2	24.167	3	.005	3	0	10	.115	2
214			min	-22.675	9	-322.233	3	-74.212	1	0	10	-.072	3	-.085	3
215		13	max	25.387	2	420.548	2	26.899	3	.005	3	-.004	15	.163	3
216			min	-22.675	9	-235.715	3	-41.278	1	0	10	-.078	1	-.335	2
217		14	max	25.387	2	249.221	2	29.632	3	.005	3	-.006	15	.334	3
218			min	-22.675	9	-149.196	3	-8.344	1	0	10	-.1	1	-.633	2
219		15	max	25.387	2	77.893	2	32.364	3	.005	3	.003	3	.428	3
220			min	-22.675	9	-62.677	3	1.405	15	0	10	-.093	1	-.778	2
221		16	max	25.387	2	23.842	3	57.524	1	.005	3	.033	3	.445	3
222			min	-22.675	9	-93.434	2	3.227	15	0	10	-.057	1	-.771	2
223		17	max	25.387	2	110.36	3	90.458	1	.005	3	.066	3	.385	3
224			min	-22.675	9	-264.762	2	5.048	15	0	10	0	10	-.612	2
225		18	max	25.387	2	196.879	3	123.392	1	.005	3	.104	1	.249	3
226			min	-22.675	9	-436.089	2	6.87	15	0	10	.006	15	-.3	2
227		19	max	25.387	2	283.398	3	156.326	1	.005	3	.229	1	.163	2
228			min	-22.675	9	-607.417	2	8.692	15	0	10	.013	15	.002	15
229	M13	1	max	-4.482	15	630.175	2	-8.261	15	.006	3	.184	1	.172	2
230			min	-80.21	1	-299.759	3	-147.999	1	-.018	2	.01	15	-.045	3
231		2	max	-4.482	15	458.847	2	-6.44	15	.006	3	.085	3	.183	3
232			min	-80.21	1	-213.24	3	-115.065	1	-.018	2	.004	15	-.312	2
233		3	max	-4.482	15	287.52	2	-4.618	15	.006	3	.053	3	.334	3
234			min	-80.21	1	-126.721	3	-82.13	1	-.018	2	-.021	1	-.644	2
235		4	max	-4.482	15	116.192	2	-2.796	15	.006	3	.024	3	.408	3
236			min	-80.21	1	-40.203	3	-49.196	1	-.018	2	-.079	1	-.823	2
237		5	max	-4.482	15	46.316	3	-.724	10	.006	3	-.002	12	.405	3
238			min	-80.21	1	-55.135	2	-28.721	3	-.018	2	-.108	1	-.85	2
239		6	max	-4.482	15	132.835	3	16.672	1	.006	3	-.006	15	.326	3
240			min	-80.21	1	-226.463	2	-25.989	3	-.018	2	-.108	1	-.725	2
241		7	max	-4.482	15	219.354	3	49.606	1	.006	3	-.004	15	.169	3
242			min	-80.21	1	-397.79	2	-23.257	3	-.018	2	-.079	1	-.448	2
243		8	max	-4.482	15	305.872	3	82.54	1	.006	3	0	10	-.002	15
244			min	-80.21	1	-569.118	2	-20.524	3	-.018	2	-.069	3	-.064	3
245		9	max	-4.482	15	392.391	3	115.474	1	.006	3	.068	1	.564	2
246			min	-80.21	1	-740.445	2	-17.792	3	-.018	2	-.086	3	-.375	3
247		10	max	-4.482	15	911.773	2	97.474	9	.018	2	.185	1	1.299	2
248			min	-80.21	1	-478.91	3	-148.408	1	-.006	3	-.1	3	-.762	3
249		11	max	-4.482	15	740.445	2	17.792	3	.018	2	.068	1	.564	2
250			min	-80.21	1	-392.391	3	-115.474	1	-.006	3	-.086	3	-.375	3
251		12	max	-4.482	15	569.118	2	20.524	3	.018	2	0	10	-.002	15
252			min	-80.21	1	-305.872	3	-82.54	1	-.006	3	-.069	3	-.064	3
253		13	max	-4.482	15	397.79	2	23.257	3	.018	2	-.004	15	.169	3
254			min	-80.21	1	-219.354	3	-49.606	1	-.006	3	-.079	1	-.448	2
255		14	max	-4.482	15	226.463	2	25.989	3	.018	2	-.006	15	.326	3
256			min	-80.21	1	-132.835	3	-16.672	1	-.006	3	-.108	1	-.725	2
257		15	max	-4.482	15	55.135	2	28.721	3	.018	2	-.002	12	.405	3
258			min	-80.21	1	-46.316	3	.724	10	-.006	3	-.108	1	-.85	2
259		16	max	-4.482	15	40.203	3	49.196	1	.018	2	.024	3	.408	3
260			min	-80.21	1	-116.192	2	2.796	15	-.006	3	-.079	1	-.823	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	-4.482	15	126.721	3	82.13	1	.018	2	.053	3	.334	3
262			min	-80.21	1	-287.52	2	4.618	15	-.006	3	-.021	1	-.644	2
263		18	max	-4.482	15	213.24	3	115.065	1	.018	2	.085	3	.183	3
264			min	-80.21	1	-458.847	2	6.44	15	-.006	3	.004	15	-.312	2
265		19	max	-4.482	15	299.759	3	147.999	1	.018	2	.184	1	.172	2
266			min	-80.21	1	-630.175	2	8.261	15	-.006	3	.01	15	-.045	3
267	M2	1	max	1920.066	2	1262.276	3	158.186	2	.01	3	.335	3	5.23	3
268			min	-1434.34	3	-966.487	2	-199.128	3	-.021	2	-.23	2	-.043	10
269		2	max	1209.962	2	837.846	3	108.21	2	0	2	.268	3	4.859	3
270			min	-1164.815	3	13.755	10	-175.286	3	0	3	-.176	2	.08	10
271		3	max	1206.856	2	837.846	3	108.21	2	0	2	.208	3	4.573	3
272			min	-1167.145	3	13.755	10	-175.286	3	0	3	-.139	2	.075	10
273		4	max	1203.75	2	837.846	3	108.21	2	0	2	.148	3	4.287	3
274			min	-1169.474	3	13.755	10	-175.286	3	0	3	-.102	2	.07	10
275		5	max	1200.643	2	837.846	3	108.21	2	0	2	.088	3	4.001	3
276			min	-1171.804	3	13.755	10	-175.286	3	0	3	-.065	2	.066	10
277		6	max	1197.537	2	837.846	3	108.21	2	0	2	.028	3	3.715	3
278			min	-1174.134	3	13.755	10	-175.286	3	0	3	-.031	1	.061	10
279		7	max	1194.431	2	837.846	3	108.21	2	0	2	.009	2	3.43	3
280			min	-1176.463	3	13.755	10	-175.286	3	0	3	-.031	3	.056	10
281		8	max	1191.325	2	837.846	3	108.21	2	0	2	.046	2	3.144	3
282			min	-1178.793	3	13.755	10	-175.286	3	0	3	-.091	3	.052	10
283		9	max	1188.219	2	837.846	3	108.21	2	0	2	.083	2	2.858	3
284			min	-1181.122	3	13.755	10	-175.286	3	0	3	-.151	3	.047	10
285		10	max	1185.113	2	837.846	3	108.21	2	0	2	.12	2	2.572	3
286			min	-1183.452	3	13.755	10	-175.286	3	0	3	-.211	3	.042	10
287		11	max	1182.007	2	837.846	3	108.21	2	0	2	.157	2	2.286	3
288			min	-1185.781	3	13.755	10	-175.286	3	0	3	-.271	3	.038	10
289		12	max	1178.901	2	837.846	3	108.21	2	0	2	.194	2	2.001	3
290			min	-1188.111	3	13.755	10	-175.286	3	0	3	-.33	3	.033	10
291		13	max	1175.795	2	837.846	3	108.21	2	0	2	.23	2	1.715	3
292			min	-1190.441	3	13.755	10	-175.286	3	0	3	-.39	3	.028	10
293		14	max	1172.689	2	837.846	3	108.21	2	0	2	.267	2	1.429	3
294			min	-1192.77	3	13.755	10	-175.286	3	0	3	-.45	3	.023	10
295		15	max	1169.583	2	837.846	3	108.21	2	0	2	.304	2	1.143	3
296			min	-1195.1	3	13.755	10	-175.286	3	0	3	-.51	3	.019	10
297		16	max	1166.476	2	837.846	3	108.21	2	0	2	.341	2	.857	3
298			min	-1197.429	3	13.755	10	-175.286	3	0	3	-.57	3	.014	10
299		17	max	1163.37	2	837.846	3	108.21	2	0	2	.378	2	.572	3
300			min	-1199.759	3	13.755	10	-175.286	3	0	3	-.629	3	.009	10
301		18	max	1160.264	2	837.846	3	108.21	2	0	2	.415	2	.286	3
302			min	-1202.088	3	13.755	10	-175.286	3	0	3	-.689	3	.005	10
303		19	max	1157.158	2	837.846	3	108.21	2	0	2	.452	2	0	1
304			min	-1204.418	3	13.755	10	-175.286	3	0	3	-.749	3	0	1
305	M5	1	max	5367.89	2	3073.312	3	0	1	0	1	0	1	9.471	3
306			min	-4574.365	3	-3046.52	2	0	1	0	1	0	1	-.356	10
307		2	max	3267.181	2	1490.508	3	0	1	0	1	0	1	8.643	3
308			min	-3569.077	3	3.743	10	0	1	0	1	0	1	.022	10
309		3	max	3264.075	2	1490.508	3	0	1	0	1	0	1	8.135	3
310			min	-3571.406	3	3.743	10	0	1	0	1	0	1	.02	10
311		4	max	3260.969	2	1490.508	3	0	1	0	1	0	1	7.626	3
312			min	-3573.736	3	3.743	10	0	1	0	1	0	1	.019	10
313		5	max	3257.863	2	1490.508	3	0	1	0	1	0	1	7.118	3
314			min	-3576.066	3	3.743	10	0	1	0	1	0	1	.018	10
315		6	max	3254.757	2	1490.508	3	0	1	0	1	0	1	6.61	3
316			min	-3578.395	3	3.743	10	0	1	0	1	0	1	.017	10
317		7	max	3251.651	2	1490.508	3	0	1	0	1	0	1	6.101	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	-3580.725	3	3.743	10	0	1	0	1	0	1	.015	10
319		8	max	3248.545	2	1490.508	3	0	1	0	1	0	1	5.593	3
320			min	-3583.054	3	3.743	10	0	1	0	1	0	1	.014	10
321		9	max	3245.439	2	1490.508	3	0	1	0	1	0	1	5.084	3
322			min	-3585.384	3	3.743	10	0	1	0	1	0	1	.013	10
323		10	max	3242.333	2	1490.508	3	0	1	0	1	0	1	4.576	3
324			min	-3587.713	3	3.743	10	0	1	0	1	0	1	.011	10
325		11	max	3239.226	2	1490.508	3	0	1	0	1	0	1	4.067	3
326			min	-3590.043	3	3.743	10	0	1	0	1	0	1	.01	10
327		12	max	3236.12	2	1490.508	3	0	1	0	1	0	1	3.559	3
328			min	-3592.373	3	3.743	10	0	1	0	1	0	1	.009	10
329		13	max	3233.014	2	1490.508	3	0	1	0	1	0	1	3.051	3
330			min	-3594.702	3	3.743	10	0	1	0	1	0	1	.008	10
331		14	max	3229.908	2	1490.508	3	0	1	0	1	0	1	2.542	3
332			min	-3597.032	3	3.743	10	0	1	0	1	0	1	.006	10
333		15	max	3226.802	2	1490.508	3	0	1	0	1	0	1	2.034	3
334			min	-3599.361	3	3.743	10	0	1	0	1	0	1	.005	10
335		16	max	3223.696	2	1490.508	3	0	1	0	1	0	1	1.525	3
336			min	-3601.691	3	3.743	10	0	1	0	1	0	1	.004	10
337		17	max	3220.59	2	1490.508	3	0	1	0	1	0	1	1.017	3
338			min	-3604.02	3	3.743	10	0	1	0	1	0	1	.003	10
339		18	max	3217.484	2	1490.508	3	0	1	0	1	0	1	.508	3
340			min	-3606.35	3	3.743	10	0	1	0	1	0	1	.001	10
341		19	max	3214.378	2	1490.508	3	0	1	0	1	0	1	0	1
342			min	-3608.68	3	3.743	10	0	1	0	1	0	1	0	1
343	M8	1	max	1920.066	2	1262.276	3	199.128	3	.021	2	.23	2	5.23	3
344			min	-1434.34	3	-966.487	2	-158.186	2	-.01	3	-.335	3	-.043	10
345		2	max	1209.962	2	837.846	3	175.286	3	0	3	.176	2	4.859	3
346			min	-1164.815	3	13.755	10	-108.21	2	0	2	-.268	3	.08	10
347		3	max	1206.856	2	837.846	3	175.286	3	0	3	.139	2	4.573	3
348			min	-1167.145	3	13.755	10	-108.21	2	0	2	-.208	3	.075	10
349		4	max	1203.75	2	837.846	3	175.286	3	0	3	.102	2	4.287	3
350			min	-1169.474	3	13.755	10	-108.21	2	0	2	-.148	3	.07	10
351		5	max	1200.643	2	837.846	3	175.286	3	0	3	.065	2	4.001	3
352			min	-1171.804	3	13.755	10	-108.21	2	0	2	-.088	3	.066	10
353		6	max	1197.537	2	837.846	3	175.286	3	0	3	.031	1	3.715	3
354			min	-1174.134	3	13.755	10	-108.21	2	0	2	-.028	3	.061	10
355		7	max	1194.431	2	837.846	3	175.286	3	0	3	.031	3	3.43	3
356			min	-1176.463	3	13.755	10	-108.21	2	0	2	-.009	2	.056	10
357		8	max	1191.325	2	837.846	3	175.286	3	0	3	.091	3	3.144	3
358			min	-1178.793	3	13.755	10	-108.21	2	0	2	-.046	2	.052	10
359		9	max	1188.219	2	837.846	3	175.286	3	0	3	.151	3	2.858	3
360			min	-1181.122	3	13.755	10	-108.21	2	0	2	-.083	2	.047	10
361		10	max	1185.113	2	837.846	3	175.286	3	0	3	.211	3	2.572	3
362			min	-1183.452	3	13.755	10	-108.21	2	0	2	-.12	2	.042	10
363		11	max	1182.007	2	837.846	3	175.286	3	0	3	.271	3	2.286	3
364			min	-1185.781	3	13.755	10	-108.21	2	0	2	-.157	2	.038	10
365		12	max	1178.901	2	837.846	3	175.286	3	0	3	.33	3	2.001	3
366			min	-1188.111	3	13.755	10	-108.21	2	0	2	-.194	2	.033	10
367		13	max	1175.795	2	837.846	3	175.286	3	0	3	.39	3	1.715	3
368			min	-1190.441	3	13.755	10	-108.21	2	0	2	-.23	2	.028	10
369		14	max	1172.689	2	837.846	3	175.286	3	0	3	.45	3	1.429	3
370			min	-1192.77	3	13.755	10	-108.21	2	0	2	-.267	2	.023	10
371		15	max	1169.583	2	837.846	3	175.286	3	0	3	.51	3	1.143	3
372			min	-1195.1	3	13.755	10	-108.21	2	0	2	-.304	2	.019	10
373		16	max	1166.476	2	837.846	3	175.286	3	0	3	.57	3	.857	3
374			min	-1197.429	3	13.755	10	-108.21	2	0	2	-.341	2	.014	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	1163.37	2	837.846	3	175.286	3	0	3	.629	3	.572	3
376			min	-1199.759	3	13.755	10	-108.21	2	0	2	-.378	2	.009	10
377		18	max	1160.264	2	837.846	3	175.286	3	0	3	.689	3	.286	3
378			min	-1202.088	3	13.755	10	-108.21	2	0	2	-.415	2	.005	10
379		19	max	1157.158	2	837.846	3	175.286	3	0	3	.749	3	0	1
380			min	-1204.418	3	13.755	10	-108.21	2	0	2	-.452	2	0	1
381	M3	1	max	1275.96	2	4.147	4	49.77	2	.004	3	.011	3	0	1
382			min	-499.405	3	.975	15	-24.019	3	-.005	2	-.022	2	0	1
383		2	max	1275.722	2	3.686	4	49.77	2	.004	3	.004	3	0	15
384			min	-499.583	3	.866	15	-24.019	3	-.005	2	-.008	2	-.001	4
385		3	max	1275.484	2	3.225	4	49.77	2	.004	3	.007	2	0	15
386			min	-499.762	3	.758	15	-24.019	3	-.005	2	-.003	3	-.002	4
387		4	max	1275.246	2	2.765	4	49.77	2	.004	3	.021	2	0	15
388			min	-499.94	3	.65	15	-24.019	3	-.005	2	-.01	3	-.003	4
389		5	max	1275.008	2	2.304	4	49.77	2	.004	3	.036	2	0	15
390			min	-500.119	3	.542	15	-24.019	3	-.005	2	-.017	3	-.004	4
391		6	max	1274.77	2	1.843	4	49.77	2	.004	3	.05	2	-.001	15
392			min	-500.297	3	.433	15	-24.019	3	-.005	2	-.024	3	-.004	4
393		7	max	1274.532	2	1.382	4	49.77	2	.004	3	.064	2	-.001	15
394			min	-500.476	3	.325	15	-24.019	3	-.005	2	-.031	3	-.005	4
395		8	max	1274.294	2	.922	4	49.77	2	.004	3	.079	2	-.001	15
396			min	-500.654	3	.217	15	-24.019	3	-.005	2	-.038	3	-.005	4
397		9	max	1274.056	2	.461	4	49.77	2	.004	3	.093	2	-.001	15
398			min	-500.833	3	.108	15	-24.019	3	-.005	2	-.045	3	-.005	4
399		10	max	1273.818	2	0	1	49.77	2	.004	3	.108	2	-.001	15
400			min	-501.011	3	0	1	-24.019	3	-.005	2	-.052	3	-.005	4
401		11	max	1273.58	2	-.108	15	49.77	2	.004	3	.122	2	-.001	15
402			min	-501.19	3	-.461	4	-24.019	3	-.005	2	-.059	3	-.005	4
403		12	max	1273.342	2	-.217	15	49.77	2	.004	3	.137	2	-.001	15
404			min	-501.368	3	-.922	4	-24.019	3	-.005	2	-.066	3	-.005	4
405		13	max	1273.104	2	-.325	15	49.77	2	.004	3	.151	2	-.001	15
406			min	-501.547	3	-1.382	4	-24.019	3	-.005	2	-.073	3	-.005	4
407		14	max	1272.866	2	-.433	15	49.77	2	.004	3	.166	2	-.001	15
408			min	-501.725	3	-1.843	4	-24.019	3	-.005	2	-.08	3	-.004	4
409		15	max	1272.628	2	-.542	15	49.77	2	.004	3	.18	2	0	15
410			min	-501.904	3	-2.304	4	-24.019	3	-.005	2	-.087	3	-.004	4
411		16	max	1272.39	2	-.65	15	49.77	2	.004	3	.195	2	0	15
412			min	-502.082	3	-2.765	4	-24.019	3	-.005	2	-.094	3	-.003	4
413		17	max	1272.152	2	-.758	15	49.77	2	.004	3	.209	2	0	15
414			min	-502.261	3	-3.225	4	-24.019	3	-.005	2	-.101	3	-.002	4
415		18	max	1271.914	2	-.866	15	49.77	2	.004	3	.223	2	0	15
416			min	-502.439	3	-3.686	4	-24.019	3	-.005	2	-.108	3	-.001	4
417		19	max	1271.676	2	-.975	15	49.77	2	.004	3	.238	2	0	1
418			min	-502.618	3	-4.147	4	-24.019	3	-.005	2	-.115	3	0	1
419	M6	1	max	3797.011	2	4.147	4	0	1	0	1	0	1	0	1
420			min	-1851.621	3	.975	15	0	1	0	1	0	1	0	1
421		2	max	3796.773	2	3.686	4	0	1	0	1	0	1	0	15
422			min	-1851.8	3	.866	15	0	1	0	1	0	1	-.001	4
423		3	max	3796.535	2	3.225	4	0	1	0	1	0	1	0	15
424			min	-1851.978	3	.758	15	0	1	0	1	0	1	-.002	4
425		4	max	3796.297	2	2.765	4	0	1	0	1	0	1	0	15
426			min	-1852.157	3	.65	15	0	1	0	1	0	1	-.003	4
427		5	max	3796.059	2	2.304	4	0	1	0	1	0	1	0	15
428			min	-1852.335	3	.542	15	0	1	0	1	0	1	-.004	4
429		6	max	3795.821	2	1.843	4	0	1	0	1	0	1	-.001	15
430			min	-1852.514	3	.433	15	0	1	0	1	0	1	-.004	4
431		7	max	3795.583	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	-1852.692	3	.325	15	0	1	0	1	0	1	-.005	4
433		8	max	3795.345	2	.922	4	0	1	0	1	0	1	-.001	15
434			min	-1852.871	3	.217	15	0	1	0	1	0	1	-.005	4
435		9	max	3795.107	2	.461	4	0	1	0	1	0	1	-.001	15
436			min	-1853.049	3	.108	15	0	1	0	1	0	1	-.005	4
437		10	max	3794.869	2	0	1	0	1	0	1	0	1	-.001	15
438			min	-1853.228	3	0	1	0	1	0	1	0	1	-.005	4
439		11	max	3794.631	2	-.108	15	0	1	0	1	0	1	-.001	15
440			min	-1853.406	3	-.461	4	0	1	0	1	0	1	-.005	4
441		12	max	3794.393	2	-.217	15	0	1	0	1	0	1	-.001	15
442			min	-1853.585	3	-.922	4	0	1	0	1	0	1	-.005	4
443		13	max	3794.155	2	-.325	15	0	1	0	1	0	1	-.001	15
444			min	-1853.763	3	-1.382	4	0	1	0	1	0	1	-.005	4
445		14	max	3793.917	2	-.433	15	0	1	0	1	0	1	-.001	15
446			min	-1853.942	3	-1.843	4	0	1	0	1	0	1	-.004	4
447		15	max	3793.679	2	-.542	15	0	1	0	1	0	1	0	15
448			min	-1854.12	3	-2.304	4	0	1	0	1	0	1	-.004	4
449		16	max	3793.441	2	-.65	15	0	1	0	1	0	1	0	15
450			min	-1854.299	3	-2.765	4	0	1	0	1	0	1	-.003	4
451		17	max	3793.203	2	-.758	15	0	1	0	1	0	1	0	15
452			min	-1854.477	3	-3.225	4	0	1	0	1	0	1	-.002	4
453		18	max	3792.965	2	-.866	15	0	1	0	1	0	1	0	15
454			min	-1854.656	3	-3.686	4	0	1	0	1	0	1	-.001	4
455		19	max	3792.727	2	-.975	15	0	1	0	1	0	1	0	1
456			min	-1854.834	3	-4.147	4	0	1	0	1	0	1	0	1
457	M9	1	max	1275.96	2	4.147	4	24.019	3	.005	2	.022	2	0	1
458			min	-499.405	3	.975	15	-49.77	2	-.004	3	-.011	3	0	1
459		2	max	1275.722	2	3.686	4	24.019	3	.005	2	.008	2	0	15
460			min	-499.583	3	.866	15	-49.77	2	-.004	3	-.004	3	-.001	4
461		3	max	1275.484	2	3.225	4	24.019	3	.005	2	.003	3	0	15
462			min	-499.762	3	.758	15	-49.77	2	-.004	3	-.007	2	-.002	4
463		4	max	1275.246	2	2.765	4	24.019	3	.005	2	.01	3	0	15
464			min	-499.94	3	.65	15	-49.77	2	-.004	3	-.021	2	-.003	4
465		5	max	1275.008	2	2.304	4	24.019	3	.005	2	.017	3	0	15
466			min	-500.119	3	.542	15	-49.77	2	-.004	3	-.036	2	-.004	4
467		6	max	1274.77	2	1.843	4	24.019	3	.005	2	.024	3	-.001	15
468			min	-500.297	3	.433	15	-49.77	2	-.004	3	-.05	2	-.004	4
469		7	max	1274.532	2	1.382	4	24.019	3	.005	2	.031	3	-.001	15
470			min	-500.476	3	.325	15	-49.77	2	-.004	3	-.064	2	-.005	4
471		8	max	1274.294	2	.922	4	24.019	3	.005	2	.038	3	-.001	15
472			min	-500.654	3	.217	15	-49.77	2	-.004	3	-.079	2	-.005	4
473		9	max	1274.056	2	.461	4	24.019	3	.005	2	.045	3	-.001	15
474			min	-500.833	3	.108	15	-49.77	2	-.004	3	-.093	2	-.005	4
475		10	max	1273.818	2	0	1	24.019	3	.005	2	.052	3	-.001	15
476			min	-501.011	3	0	1	-49.77	2	-.004	3	-.108	2	-.005	4
477		11	max	1273.58	2	-.108	15	24.019	3	.005	2	.059	3	-.001	15
478			min	-501.19	3	-.461	4	-49.77	2	-.004	3	-.122	2	-.005	4
479		12	max	1273.342	2	-.217	15	24.019	3	.005	2	.066	3	-.001	15
480			min	-501.368	3	-.922	4	-49.77	2	-.004	3	-.137	2	-.005	4
481		13	max	1273.104	2	-.325	15	24.019	3	.005	2	.073	3	-.001	15
482			min	-501.547	3	-1.382	4	-49.77	2	-.004	3	-.151	2	-.005	4
483		14	max	1272.866	2	-.433	15	24.019	3	.005	2	.08	3	-.001	15
484			min	-501.725	3	-1.843	4	-49.77	2	-.004	3	-.166	2	-.004	4
485		15	max	1272.628	2	-.542	15	24.019	3	.005	2	.087	3	0	15
486			min	-501.904	3	-2.304	4	-49.77	2	-.004	3	-.18	2	-.004	4
487		16	max	1272.39	2	-.65	15	24.019	3	.005	2	.094	3	0	15
488			min	-502.082	3	-2.765	4	-49.77	2	-.004	3	-.195	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	1272.152	2	-.758	15	24.019	3	.005	2	.101	3	0	15
490			min	-502.261	3	-3.225	4	-49.77	2	-.004	3	-.209	2	-.002	4
491		18	max	1271.914	2	-.866	15	24.019	3	.005	2	.108	3	0	15
492			min	-502.439	3	-3.686	4	-49.77	2	-.004	3	-.223	2	-.001	4
493		19	max	1271.676	2	-.975	15	24.019	3	.005	2	.115	3	0	1
494			min	-502.618	3	-4.147	4	-49.77	2	-.004	3	-.238	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	-.006	10	-.013	15	.014	1	6.118e-3	3	NC	3	NC	2
2			min	-.29	3	-.304	1	0	15	-1.548e-2	2	469.069	1	4748.732	1
3		2	max	-.006	10	-.011	15	.004	1	6.118e-3	3	NC	3	NC	2
4			min	-.29	3	-.244	1	0	15	-1.548e-2	2	593.901	1	7453.786	1
5		3	max	-.006	10	-.009	15	0	15	5.763e-3	3	NC	3	NC	1
6			min	-.29	3	-.184	1	-.005	1	-1.413e-2	2	809.635	1	NC	1
7		4	max	-.006	10	-.007	15	0	15	5.22e-3	3	NC	3	NC	1
8			min	-.29	3	-.126	1	-.009	1	-1.205e-2	2	986.167	9	NC	1
9		5	max	-.006	10	-.005	15	0	15	4.676e-3	3	NC	3	NC	1
10			min	-.29	3	-.114	3	-.009	1	-9.982e-3	2	889.1	2	NC	1
11		6	max	-.006	10	.003	10	0	15	4.904e-3	3	NC	15	NC	1
12			min	-.29	3	-.101	3	-.007	1	-9.499e-3	2	719.083	2	NC	1
13		7	max	-.006	10	.018	2	0	3	5.667e-3	3	NC	1	NC	1
14			min	-.29	3	-.081	3	-.003	2	-1.012e-2	2	645.871	2	NC	1
15		8	max	-.006	10	.029	2	0	3	6.429e-3	3	NC	5	NC	2
16			min	-.29	3	-.055	3	0	2	-1.073e-2	2	611.491	2	9775.378	1
17		9	max	-.005	10	.036	2	0	10	7.345e-3	3	NC	5	NC	2
18			min	-.29	3	-.025	3	0	3	-1.064e-2	2	592.411	2	9788.735	1
19		10	max	-.005	10	.053	1	0	2	8.533e-3	3	NC	5	NC	2
20			min	-.29	3	.003	15	0	3	-9.285e-3	2	579.079	2	9538.091	1
21		11	max	-.005	10	.068	1	.001	3	9.721e-3	3	NC	5	NC	2
22			min	-.29	3	.004	15	0	2	-7.934e-3	2	572.626	2	9897.324	1
23		12	max	-.005	10	.087	3	.004	3	8.235e-3	3	NC	4	NC	1
24			min	-.29	3	.005	15	-.003	2	-6.006e-3	2	573.785	2	NC	1
25		13	max	-.005	10	.139	3	.008	3	5.237e-3	3	NC	4	NC	1
26			min	-.29	3	.006	15	-.004	2	-3.752e-3	2	511.41	3	NC	1
27		14	max	-.005	10	.206	3	.007	3	2.401e-3	3	NC	4	NC	2
28			min	-.29	3	.002	10	-.002	2	-1.596e-3	2	406.477	3	8848.786	1
29		15	max	-.005	10	.296	3	.006	1	6.792e-3	3	NC	4	NC	2
30			min	-.29	3	-.017	10	0	15	-3.805e-3	2	319.609	3	6658.885	1
31		16	max	-.005	10	.402	3	.008	1	1.118e-2	3	NC	4	NC	2
32			min	-.29	3	-.048	2	0	15	-6.014e-3	2	255.097	3	6193.515	1
33		17	max	-.005	10	.519	3	.005	1	1.557e-2	3	NC	4	NC	2
34			min	-.29	3	-.094	2	0	15	-8.223e-3	2	208.826	3	7241.026	1
35		18	max	-.005	10	.639	3	0	15	1.844e-2	3	NC	4	NC	1
36			min	-.29	3	-.142	2	-.004	1	-9.663e-3	2	175.818	3	NC	1
37		19	max	-.005	10	.759	3	0	15	1.844e-2	3	NC	1	NC	1
38			min	-.29	3	-.19	2	-.014	1	-9.663e-3	2	151.841	3	NC	1
39	M4	1	max	-.004	10	-.023	15	0	1	0	1	NC	3	NC	1
40			min	-.513	3	-.665	2	0	1	0	1	316.983	1	NC	1
41		2	max	-.004	10	-.019	15	0	1	0	1	8003.287	2	NC	1
42			min	-.513	3	-.509	2	0	1	0	1	461.874	1	NC	1
43		3	max	-.004	10	-.015	15	0	1	0	1	7468.47	15	NC	1
44			min	-.513	3	-.366	1	0	1	0	1	691.266	9	NC	1
45		4	max	-.004	10	-.011	15	0	1	0	1	9615.363	15	NC	1
46			min	-.513	3	-.24	1	0	1	0	1	466.356	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	-.004	10	-.007	15	0	1	0	1	NC	15	NC	1
48			min	-.513	3	-.189	3	0	1	0	1	327.328	2	NC	1
49		6	max	-.004	10	.006	10	0	1	0	1	NC	5	NC	1
50			min	-.513	3	-.179	3	0	1	0	1	273.878	2	NC	1
51		7	max	-.004	10	.037	2	0	1	0	1	NC	5	NC	1
52			min	-.513	3	-.146	3	0	1	0	1	253.203	2	NC	1
53		8	max	-.003	10	.053	2	0	1	0	1	NC	3	NC	1
54			min	-.514	3	-.099	3	0	1	0	1	245.892	2	NC	1
55		9	max	-.003	10	.06	2	0	1	0	1	NC	4	NC	1
56			min	-.514	3	-.045	3	0	1	0	1	242.91	2	NC	1
57		10	max	-.003	10	.084	1	0	1	0	1	NC	4	NC	1
58			min	-.514	3	.004	15	0	1	0	1	240.133	2	NC	1
59		11	max	-.002	10	.108	1	0	1	0	1	NC	5	NC	1
60			min	-.514	3	.006	15	0	1	0	1	238.408	2	NC	1
61		12	max	-.002	10	.149	3	0	1	0	1	NC	5	NC	1
62			min	-.515	3	.007	15	0	1	0	1	238.189	2	NC	1
63		13	max	-.002	10	.24	3	0	1	0	1	NC	5	NC	1
64			min	-.515	3	.008	15	0	1	0	1	243.053	2	NC	1
65		14	max	-.001	10	.369	3	0	1	0	1	NC	5	NC	1
66			min	-.515	3	-.002	10	0	1	0	1	259.813	2	NC	1
67		15	max	-.001	10	.552	3	0	1	0	1	NC	5	NC	1
68			min	-.515	3	-.047	2	0	1	0	1	207.392	3	NC	1
69		16	max	-.001	10	.773	3	0	1	0	1	NC	5	NC	1
70			min	-.515	3	-.143	2	0	1	0	1	154.428	3	NC	1
71		17	max	-.001	10	1.019	3	0	1	0	1	NC	5	NC	1
72			min	-.515	3	-.256	2	0	1	0	1	120.328	3	NC	1
73		18	max	-.001	10	1.274	3	0	1	0	1	NC	4	NC	1
74			min	-.515	3	-.374	2	0	1	0	1	97.937	3	NC	1
75		19	max	-.001	10	1.528	3	0	1	0	1	NC	1	NC	1
76			min	-.515	3	-.492	2	0	1	0	1	82.603	3	NC	1
77	M7	1	max	-.006	10	-.013	15	0	15	1.548e-2	2	NC	3	NC	2
78			min	-.29	3	-.304	1	-.014	1	-6.118e-3	3	469.069	1	4748.732	1
79		2	max	-.006	10	-.011	15	0	15	1.548e-2	2	NC	3	NC	2
80			min	-.29	3	-.244	1	-.004	1	-6.118e-3	3	593.901	1	7453.786	1
81		3	max	-.006	10	-.009	15	.005	1	1.413e-2	2	NC	3	NC	1
82			min	-.29	3	-.184	1	0	15	-5.763e-3	3	809.635	1	NC	1
83		4	max	-.006	10	-.007	15	.009	1	1.205e-2	2	NC	3	NC	1
84			min	-.29	3	-.126	1	0	15	-5.22e-3	3	986.167	9	NC	1
85		5	max	-.006	10	-.005	15	.009	1	9.982e-3	2	NC	3	NC	1
86			min	-.29	3	-.114	3	0	15	-4.676e-3	3	889.1	2	NC	1
87		6	max	-.006	10	.003	10	.007	1	9.499e-3	2	NC	15	NC	1
88			min	-.29	3	-.101	3	0	15	-4.904e-3	3	719.083	2	NC	1
89		7	max	-.006	10	.018	2	.003	2	1.012e-2	2	NC	1	NC	1
90			min	-.29	3	-.081	3	0	3	-5.667e-3	3	645.871	2	NC	1
91		8	max	-.006	10	.029	2	0	2	1.073e-2	2	NC	5	NC	2
92			min	-.29	3	-.055	3	0	3	-6.429e-3	3	611.491	2	9775.378	1
93		9	max	-.005	10	.036	2	0	3	1.064e-2	2	NC	5	NC	2
94			min	-.29	3	-.025	3	0	10	-7.345e-3	3	592.411	2	9788.735	1
95		10	max	-.005	10	.053	1	0	3	9.285e-3	2	NC	5	NC	2
96			min	-.29	3	.003	15	0	2	-8.533e-3	3	579.079	2	9538.091	1
97		11	max	-.005	10	.068	1	0	2	7.934e-3	2	NC	5	NC	2
98			min	-.29	3	.004	15	-.001	3	-9.721e-3	3	572.626	2	9897.324	1
99		12	max	-.005	10	.087	3	.003	2	6.006e-3	2	NC	4	NC	1
100			min	-.29	3	.005	15	-.004	3	-8.235e-3	3	573.785	2	NC	1
101		13	max	-.005	10	.139	3	.004	2	3.752e-3	2	NC	4	NC	1
102			min	-.29	3	.006	15	-.008	3	-5.237e-3	3	511.41	3	NC	1
103		14	max	-.005	10	.206	3	.002	2	1.596e-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	-.29	3	.002	10	-.007	3	-2.401e-3	3	406.477	3	8848.786	1
105		15	max	-.005	10	.296	3	0	15	3.805e-3	2	NC	4	NC	2
106			min	-.29	3	-.017	10	-.006	1	-6.792e-3	3	319.609	3	6658.885	1
107		16	max	-.005	10	.402	3	0	15	6.014e-3	2	NC	4	NC	2
108			min	-.29	3	-.048	2	-.008	1	-1.118e-2	3	255.097	3	6193.515	1
109		17	max	-.005	10	.519	3	0	15	8.223e-3	2	NC	4	NC	2
110			min	-.29	3	-.094	2	-.005	1	-1.557e-2	3	208.826	3	7241.026	1
111		18	max	-.005	10	.639	3	.004	1	9.663e-3	2	NC	4	NC	1
112			min	-.29	3	-.142	2	0	15	-1.844e-2	3	175.818	3	NC	1
113		19	max	-.005	10	.759	3	.014	1	9.663e-3	2	NC	1	NC	1
114			min	-.29	3	-.19	2	0	15	-1.844e-2	3	151.841	3	NC	1
115	M10	1	max	0	3	.597	3	.29	3	1.617e-2	3	NC	1	NC	1
116			min	0	10	-.125	2	.005	10	-6.465e-3	2	NC	1	NC	1
117		2	max	0	3	.799	3	.304	3	1.816e-2	3	NC	4	NC	2
118			min	0	10	-.23	2	.008	10	-7.506e-3	2	951.783	3	8273.596	1
119		3	max	0	3	.99	3	.33	3	2.016e-2	3	NC	5	NC	4
120			min	0	10	-.326	2	.012	10	-8.548e-3	2	489.105	3	3482.098	1
121		4	max	0	3	1.145	3	.362	3	2.215e-2	3	NC	5	NC	5
122			min	0	10	-.4	2	.014	15	-9.589e-3	2	350.524	3	2264.844	1
123		5	max	0	3	1.25	3	.398	3	2.414e-2	3	NC	5	NC	5
124			min	0	10	-.442	2	.015	15	-1.063e-2	2	294.276	3	1777.445	3
125		6	max	0	3	1.299	3	.434	3	2.614e-2	3	NC	5	NC	5
126			min	0	10	-.451	2	.014	10	-1.167e-2	2	273.644	3	1337.094	3
127		7	max	0	3	1.297	3	.466	3	2.813e-2	3	NC	5	NC	5
128			min	0	10	-.432	2	.011	10	-1.271e-2	2	274.215	3	1092.061	3
129		8	max	0	3	1.26	3	.492	3	3.013e-2	3	NC	4	NC	5
130			min	0	10	-.393	2	.007	10	-1.376e-2	2	289.687	3	951.335	3
131		9	max	0	3	1.211	3	.509	3	3.212e-2	3	NC	4	NC	2
132			min	0	10	-.353	2	.003	10	-1.48e-2	2	312.69	3	876.445	3
133		10	max	0	1	1.186	3	.515	3	3.412e-2	3	NC	4	NC	2
134			min	0	1	-.333	2	.001	10	-1.584e-2	2	326.338	3	852.177	3
135		11	max	0	10	1.211	3	.509	3	3.212e-2	3	NC	4	NC	2
136			min	0	3	-.353	2	.003	10	-1.48e-2	2	312.69	3	876.445	3
137		12	max	0	10	1.26	3	.492	3	3.013e-2	3	NC	4	NC	5
138			min	0	3	-.393	2	.007	10	-1.376e-2	2	289.687	3	951.335	3
139		13	max	0	10	1.297	3	.466	3	2.813e-2	3	NC	5	NC	5
140			min	0	3	-.432	2	.011	10	-1.271e-2	2	274.215	3	1092.061	3
141		14	max	0	10	1.299	3	.434	3	2.614e-2	3	NC	5	NC	5
142			min	0	3	-.451	2	.014	10	-1.167e-2	2	273.644	3	1337.094	3
143		15	max	0	10	1.25	3	.398	3	2.414e-2	3	NC	5	NC	5
144			min	0	3	-.442	2	.015	15	-1.063e-2	2	294.276	3	1777.445	3
145		16	max	0	10	1.145	3	.362	3	2.215e-2	3	NC	5	NC	5
146			min	0	3	-.4	2	.014	15	-9.589e-3	2	350.524	3	2264.844	1
147		17	max	0	10	.99	3	.33	3	2.016e-2	3	NC	5	NC	4
148			min	0	3	-.326	2	.012	10	-8.548e-3	2	489.105	3	3482.098	1
149		18	max	0	10	.799	3	.304	3	1.816e-2	3	NC	4	NC	2
150			min	0	3	-.23	2	.008	10	-7.506e-3	2	951.783	3	8273.596	1
151		19	max	0	10	.597	3	.29	3	1.617e-2	3	NC	1	NC	1
152			min	0	3	-.125	2	.005	10	-6.465e-3	2	NC	1	NC	1
153	M11	1	max	.001	2	.073	1	.29	3	5.587e-3	3	NC	1	NC	1
154			min	-.002	3	.004	15	.005	10	-2.655e-4	10	NC	1	NC	1
155		2	max	.001	2	.173	3	.296	3	6.028e-3	3	NC	4	NC	1
156			min	-.002	3	-.034	2	.008	10	-2.754e-4	10	1697.467	3	NC	1
157		3	max	.001	2	.277	3	.318	3	6.468e-3	3	NC	4	NC	4
158			min	-.001	3	-.099	2	.012	15	-2.852e-4	10	886.124	3	4335.299	1
159		4	max	0	2	.348	3	.349	3	6.909e-3	3	NC	5	NC	5
160			min	-.001	3	-.138	2	.013	15	-2.951e-4	10	665.785	3	2633.287	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	0	2	.376	3	.386	3	7.35e-3	3	NC	5	NC	5
162			min	-.001	3	-.146	2	.015	15	-3.05e-4	10	608.013	3	2007.39	3
163		6	max	0	2	.356	3	.423	3	7.791e-3	3	NC	4	NC	5
164			min	0	3	-.122	2	.015	10	-3.148e-4	10	648.014	3	1437.903	3
165		7	max	0	2	.297	3	.459	3	8.232e-3	3	NC	4	NC	5
166			min	0	3	-.073	2	.012	10	-3.247e-4	10	809.528	3	1137.534	3
167		8	max	0	2	.215	3	.488	3	8.672e-3	3	NC	4	NC	5
168			min	0	3	-.014	10	.008	10	-3.345e-4	10	1234.145	3	970.422	3
169		9	max	0	2	.138	3	.507	3	9.113e-3	3	NC	2	NC	2
170			min	0	3	.006	15	.004	10	-3.444e-4	10	2446.481	3	882.916	3
171		10	max	0	1	.116	1	.515	3	9.554e-3	3	NC	4	NC	2
172			min	0	1	.006	15	.002	10	-3.543e-4	10	4466.233	1	854.641	3
173		11	max	0	3	.138	3	.507	3	9.113e-3	3	NC	2	NC	2
174			min	0	2	.006	15	.004	10	-3.444e-4	10	2446.481	3	882.916	3
175		12	max	0	3	.215	3	.488	3	8.672e-3	3	NC	4	NC	5
176			min	0	2	-.014	10	.008	10	-3.345e-4	10	1234.145	3	970.422	3
177		13	max	0	3	.297	3	.459	3	8.232e-3	3	NC	4	NC	5
178			min	0	2	-.073	2	.012	10	-3.247e-4	10	809.528	3	1137.534	3
179		14	max	0	3	.356	3	.423	3	7.791e-3	3	NC	4	NC	5
180			min	0	2	-.122	2	.015	10	-3.148e-4	10	648.014	3	1437.903	3
181		15	max	.001	3	.376	3	.386	3	7.35e-3	3	NC	5	NC	5
182			min	0	2	-.146	2	.015	15	-3.05e-4	10	608.013	3	2007.39	3
183		16	max	.001	3	.348	3	.349	3	6.909e-3	3	NC	5	NC	5
184			min	0	2	-.138	2	.013	15	-2.951e-4	10	665.785	3	2633.287	1
185		17	max	.001	3	.277	3	.318	3	6.468e-3	3	NC	4	NC	4
186			min	-.001	2	-.099	2	.012	15	-2.852e-4	10	886.124	3	4335.299	1
187		18	max	.002	3	.173	3	.296	3	6.028e-3	3	NC	4	NC	1
188			min	-.001	2	-.034	2	.008	10	-2.754e-4	10	1697.467	3	NC	1
189		19	max	.002	3	.073	1	.29	3	5.587e-3	3	NC	1	NC	1
190			min	-.001	2	.004	15	.005	10	-2.655e-4	10	NC	1	NC	1
191	M12	1	max	0	2	.034	2	.29	3	4.054e-3	3	NC	1	NC	1
192			min	0	9	-.036	3	.006	10	1.676e-4	15	NC	1	NC	1
193		2	max	0	2	.034	3	.301	3	4.418e-3	3	NC	4	NC	1
194			min	0	9	-.084	2	.006	10	1.758e-4	15	1624.656	2	NC	1
195		3	max	0	2	.089	3	.324	3	4.782e-3	3	NC	5	NC	2
196			min	0	9	-.184	2	.009	10	1.839e-4	15	879.433	2	4763.181	1
197		4	max	0	2	.12	3	.356	3	5.146e-3	3	NC	5	NC	5
198			min	0	9	-.247	2	.012	10	1.921e-4	15	683.516	2	2797.116	1
199		5	max	0	2	.123	3	.392	3	5.51e-3	3	NC	5	NC	5
200			min	0	9	-.262	2	.013	10	2.003e-4	15	648.8	2	1883.566	3
201		6	max	0	2	.1	3	.428	3	5.874e-3	3	NC	5	NC	5
202			min	0	9	-.229	2	.013	10	2.026e-4	10	730.091	2	1387.372	3
203		7	max	0	2	.057	3	.462	3	6.238e-3	3	NC	4	NC	5
204			min	0	9	-.157	2	.011	10	1.856e-4	10	1004.362	2	1117.346	3
205		8	max	0	2	.004	3	.489	3	6.602e-3	3	NC	4	NC	5
206			min	0	9	-.065	2	.008	10	1.687e-4	10	1936.45	2	964.326	3
207		9	max	0	2	.021	1	.507	3	6.966e-3	3	NC	1	NC	2
208			min	0	9	-.044	3	.005	10	1.517e-4	10	NC	1	883.438	3
209		10	max	0	1	.057	2	.514	3	7.33e-3	3	NC	4	NC	2
210			min	0	1	-.065	3	.003	10	1.348e-4	10	6654.07	3	857.249	3
211		11	max	0	9	.021	1	.507	3	6.966e-3	3	NC	1	NC	2
212			min	0	2	-.044	3	.005	10	1.517e-4	10	NC	1	883.438	3
213		12	max	0	9	.004	3	.489	3	6.602e-3	3	NC	4	NC	5
214			min	0	2	-.065	2	.008	10	1.687e-4	10	1936.45	2	964.326	3
215		13	max	0	9	.057	3	.462	3	6.238e-3	3	NC	4	NC	5
216			min	0	2	-.157	2	.011	10	1.856e-4	10	1004.362	2	1117.346	3
217		14	max	0	9	.1	3	.428	3	5.874e-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	-.229	2	.013	10	2.026e-4	10	730.091	2	1387.372	3
219		15	max	0	9	.123	3	.392	3	5.51e-3	3	NC	5	NC	5
220			min	0	2	-.262	2	.013	10	2.003e-4	15	648.8	2	1883.566	3
221		16	max	0	9	.12	3	.356	3	5.146e-3	3	NC	5	NC	5
222			min	0	2	-.247	2	.012	10	1.921e-4	15	683.516	2	2797.116	1
223		17	max	0	9	.089	3	.324	3	4.782e-3	3	NC	5	NC	2
224			min	0	2	-.184	2	.009	10	1.839e-4	15	879.433	2	4763.181	1
225		18	max	0	9	.034	3	.301	3	4.418e-3	3	NC	4	NC	1
226			min	0	2	-.084	2	.006	10	1.758e-4	15	1624.656	2	NC	1
227		19	max	0	9	.034	2	.29	3	4.054e-3	3	NC	1	NC	1
228			min	0	2	-.036	3	.006	10	1.676e-4	15	NC	1	NC	1
229	M13	1	max	0	15	-.01	15	.29	3	8.515e-3	2	NC	1	NC	1
230			min	0	1	-.223	1	.006	10	5.457e-5	3	NC	1	NC	1
231		2	max	0	15	-.013	15	.305	3	9.898e-3	2	NC	4	NC	2
232			min	0	1	-.356	2	.009	10	-3.88e-4	3	1165.509	2	8120.162	1
233		3	max	0	15	-.006	12	.33	3	1.128e-2	2	NC	5	NC	4
234			min	0	1	-.502	2	.012	15	-8.305e-4	3	617.933	2	3426.803	1
235		4	max	0	15	.026	3	.363	3	1.266e-2	2	NC	5	NC	5
236			min	0	1	-.608	2	.014	15	-1.273e-3	3	460.28	2	2229.691	1
237		5	max	0	15	.033	3	.398	3	1.405e-2	2	NC	5	NC	5
238			min	0	1	-.664	2	.015	15	-1.716e-3	3	406.129	2	1774.435	3
239		6	max	0	15	.015	3	.433	3	1.543e-2	2	NC	5	NC	5
240			min	0	1	-.667	2	.016	15	-2.158e-3	3	403.473	2	1340.666	3
241		7	max	0	15	-.017	12	.465	3	1.681e-2	2	NC	5	NC	5
242			min	0	1	-.626	2	.014	10	-2.601e-3	3	442.07	2	1098.28	3
243		8	max	0	15	-.019	15	.49	3	1.82e-2	2	NC	5	NC	5
244			min	0	1	-.557	2	.01	10	-3.043e-3	3	525.294	2	958.727	3
245		9	max	0	15	-.018	15	.507	3	1.958e-2	2	NC	3	NC	2
246			min	0	1	-.488	2	.006	10	-3.486e-3	3	647.818	2	884.382	3
247		10	max	0	1	-.017	15	.513	3	2.096e-2	2	NC	3	NC	2
248			min	0	1	-.455	2	.004	10	-3.928e-3	3	728.862	2	860.295	3
249		11	max	0	1	-.018	15	.507	3	1.958e-2	2	NC	3	NC	2
250			min	0	15	-.488	2	.006	10	-3.486e-3	3	647.818	2	884.382	3
251		12	max	0	1	-.019	15	.49	3	1.82e-2	2	NC	5	NC	5
252			min	0	15	-.557	2	.01	10	-3.043e-3	3	525.294	2	958.727	3
253		13	max	0	1	-.017	12	.465	3	1.681e-2	2	NC	5	NC	5
254			min	0	15	-.626	2	.014	10	-2.601e-3	3	442.07	2	1098.28	3
255		14	max	0	1	.015	3	.433	3	1.543e-2	2	NC	5	NC	5
256			min	0	15	-.667	2	.016	15	-2.158e-3	3	403.473	2	1340.666	3
257		15	max	0	1	.033	3	.398	3	1.405e-2	2	NC	5	NC	5
258			min	0	15	-.664	2	.015	15	-1.716e-3	3	406.129	2	1774.435	3
259		16	max	0	1	.026	3	.363	3	1.266e-2	2	NC	5	NC	5
260			min	0	15	-.608	2	.014	15	-1.273e-3	3	460.28	2	2229.691	1
261		17	max	0	1	-.006	12	.33	3	1.128e-2	2	NC	5	NC	4
262			min	0	15	-.502	2	.012	15	-8.305e-4	3	617.933	2	3426.803	1
263		18	max	0	1	-.013	15	.305	3	9.898e-3	2	NC	4	NC	2
264			min	0	15	-.356	2	.009	10	-3.88e-4	3	1165.509	2	8120.162	1
265		19	max	0	1	-.01	15	.29	3	8.515e-3	2	NC	1	NC	1
266			min	0	15	-.223	1	.006	10	5.457e-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	3.999e-3	2	NC	1	NC	1
270			min	0	2	-.002	3	0	2	-1.972e-3	3	NC	1	NC	1
271		3	max	0	3	0	10	0	3	3.676e-3	2	NC	1	NC	1
272			min	0	2	-.007	3	0	2	-1.744e-3	3	NC	1	NC	1
273		4	max	0	3	0	10	.002	3	3.353e-3	2	NC	1	NC	1
274			min	0	2	-.014	3	-.001	2	-1.517e-3	3	5127.883	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	.003	3	3.03e-3	2	NC	2	NC	1
276			min	0	2	-.025	3	-.002	2	-1.29e-3	3	2969.184	3	NC	1
277		6	max	0	3	0	10	.005	3	2.707e-3	2	NC	2	NC	1
278			min	0	2	-.038	3	-.003	2	-1.063e-3	3	1949.486	3	NC	1
279		7	max	0	3	0	10	.006	3	2.384e-3	2	NC	2	NC	1
280			min	0	2	-.053	3	-.004	2	-8.358e-4	3	1386.866	3	8429.25	3
281		8	max	0	3	0	10	.008	3	2.061e-3	2	NC	5	NC	1
282			min	0	2	-.071	3	-.005	2	-6.086e-4	3	1043.014	3	6962.99	3
283		9	max	0	3	-.001	10	.009	3	1.737e-3	2	NC	5	NC	1
284			min	0	2	-.09	3	-.006	2	-3.815e-4	3	817.319	3	6002.268	3
285		10	max	0	3	-.002	10	.01	3	1.414e-3	2	NC	5	NC	1
286			min	0	2	-.111	3	-.007	2	-1.543e-4	3	661.02	3	5367.797	3
287		11	max	0	3	-.002	10	.011	3	1.091e-3	2	NC	5	NC	1
288			min	0	2	-.134	3	-.007	2	3.058e-6	15	548.181	3	4965.418	3
289		12	max	0	3	-.002	10	.011	3	7.683e-4	2	NC	10	NC	1
290			min	0	2	-.159	3	-.008	2	-4.182e-5	9	463.98	3	4748.497	3
291		13	max	0	3	-.003	10	.011	3	5.271e-4	3	NC	10	NC	1
292			min	0	2	-.184	3	-.008	2	-1.204e-4	9	399.438	3	4703.773	3
293		14	max	0	3	-.003	10	.01	3	7.543e-4	3	NC	10	NC	1
294			min	-.001	2	-.211	3	-.008	2	-1.989e-4	9	348.847	3	4853.34	3
295		15	max	.001	3	-.004	10	.008	3	9.814e-4	3	NC	10	NC	1
296			min	-.001	2	-.239	3	-.007	1	-4.27e-4	1	308.458	3	5272.307	3
297		16	max	.001	3	-.004	10	.006	3	1.209e-3	3	NC	10	NC	1
298			min	-.001	2	-.267	3	-.006	1	-6.811e-4	1	275.703	3	6165.979	3
299		17	max	.001	3	-.004	10	.002	3	1.436e-3	3	NC	10	NC	1
300			min	-.001	2	-.296	3	-.005	1	-9.351e-4	1	248.78	3	8178.453	3
301		18	max	.001	3	-.005	10	0	15	1.663e-3	3	NC	10	NC	1
302			min	-.001	2	-.325	3	-.003	1	-1.189e-3	1	226.395	3	NC	1
303		19	max	.001	3	-.005	10	.002	2	1.89e-3	3	NC	10	NC	1
304			min	-.001	2	-.355	3	-.008	3	-1.493e-3	2	207.599	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	6169.769	3	NC	1
311		4	max	0	3	0	10	0	1	0	1	NC	2	NC	1
312			min	0	2	-.026	3	0	1	0	1	2863.647	3	NC	1
313		5	max	0	3	0	10	0	1	0	1	NC	2	NC	1
314			min	0	2	-.044	3	0	1	0	1	1661.533	3	NC	1
315		6	max	.001	3	0	10	0	1	0	1	NC	2	NC	1
316			min	-.001	2	-.067	3	0	1	0	1	1092.099	3	NC	1
317		7	max	.001	3	0	10	0	1	0	1	NC	2	NC	1
318			min	-.001	2	-.095	3	0	1	0	1	777.431	3	NC	1
319		8	max	.002	3	0	10	0	1	0	1	NC	5	NC	1
320			min	-.002	2	-.126	3	0	1	0	1	584.935	3	NC	1
321		9	max	.002	3	0	10	0	1	0	1	NC	5	NC	1
322			min	-.002	2	-.161	3	0	1	0	1	458.504	3	NC	1
323		10	max	.002	3	0	10	0	1	0	1	NC	10	NC	1
324			min	-.002	2	-.199	3	0	1	0	1	370.907	3	NC	1
325		11	max	.002	3	0	10	0	1	0	1	NC	10	NC	1
326			min	-.002	2	-.239	3	0	1	0	1	307.646	3	NC	1
327		12	max	.003	3	0	10	0	1	0	1	NC	10	NC	1
328			min	-.002	2	-.283	3	0	1	0	1	260.427	3	NC	1
329		13	max	.003	3	0	10	0	1	0	1	NC	10	NC	1
330			min	-.003	2	-.329	3	0	1	0	1	224.225	3	NC	1
331		14	max	.003	3	0	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	-.376	3	0	1	0	1	195.844	3	NC	1
333		15	max	.003	3	0	10	0	1	0	1	NC	10	NC	1
334			min	-.003	2	-.425	3	0	1	0	1	173.182	3	NC	1
335		16	max	.003	3	0	10	0	1	0	1	NC	10	NC	1
336			min	-.003	2	-.476	3	0	1	0	1	154.801	3	NC	1
337		17	max	.004	3	0	10	0	1	0	1	NC	10	NC	1
338			min	-.003	2	-.527	3	0	1	0	1	139.692	3	NC	1
339		18	max	.004	3	0	10	0	1	0	1	NC	10	NC	1
340			min	-.004	2	-.58	3	0	1	0	1	127.128	3	NC	1
341		19	max	.004	3	0	10	0	1	0	1	NC	10	NC	1
342			min	-.004	2	-.632	3	0	1	0	1	116.578	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	1.972e-3	3	NC	1	NC	1
346			min	0	2	-.002	3	0	3	-3.999e-3	2	NC	1	NC	1
347		3	max	0	3	0	10	0	2	1.744e-3	3	NC	1	NC	1
348			min	0	2	-.007	3	0	3	-3.676e-3	2	NC	1	NC	1
349		4	max	0	3	0	10	.001	2	1.517e-3	3	NC	1	NC	1
350			min	0	2	-.014	3	-.002	3	-3.353e-3	2	5127.883	3	NC	1
351		5	max	0	3	0	10	.002	2	1.29e-3	3	NC	2	NC	1
352			min	0	2	-.025	3	-.003	3	-3.03e-3	2	2969.184	3	NC	1
353		6	max	0	3	0	10	.003	2	1.063e-3	3	NC	2	NC	1
354			min	0	2	-.038	3	-.005	3	-2.707e-3	2	1949.486	3	NC	1
355		7	max	0	3	0	10	.004	2	8.358e-4	3	NC	2	NC	1
356			min	0	2	-.053	3	-.006	3	-2.384e-3	2	1386.866	3	8429.25	3
357		8	max	0	3	0	10	.005	2	6.086e-4	3	NC	5	NC	1
358			min	0	2	-.071	3	-.008	3	-2.061e-3	2	1043.014	3	6962.99	3
359		9	max	0	3	-.001	10	.006	2	3.815e-4	3	NC	5	NC	1
360			min	0	2	-.09	3	-.009	3	-1.737e-3	2	817.319	3	6002.268	3
361		10	max	0	3	-.002	10	.007	2	1.543e-4	3	NC	5	NC	1
362			min	0	2	-.111	3	-.01	3	-1.414e-3	2	661.02	3	5367.797	3
363		11	max	0	3	-.002	10	.007	2	-3.058e-6	15	NC	5	NC	1
364			min	0	2	-.134	3	-.011	3	-1.091e-3	2	548.181	3	4965.418	3
365		12	max	0	3	-.002	10	.008	2	4.182e-5	9	NC	10	NC	1
366			min	0	2	-.159	3	-.011	3	-7.683e-4	2	463.98	3	4748.497	3
367		13	max	0	3	-.003	10	.008	2	1.204e-4	9	NC	10	NC	1
368			min	0	2	-.184	3	-.011	3	-5.271e-4	3	399.438	3	4703.773	3
369		14	max	0	3	-.003	10	.008	2	1.989e-4	9	NC	10	NC	1
370			min	-.001	2	-.211	3	-.01	3	-7.543e-4	3	348.847	3	4853.34	3
371		15	max	.001	3	-.004	10	.007	1	4.27e-4	1	NC	10	NC	1
372			min	-.001	2	-.239	3	-.008	3	-9.814e-4	3	308.458	3	5272.307	3
373		16	max	.001	3	-.004	10	.006	1	6.811e-4	1	NC	10	NC	1
374			min	-.001	2	-.267	3	-.006	3	-1.209e-3	3	275.703	3	6165.979	3
375		17	max	.001	3	-.004	10	.005	1	9.351e-4	1	NC	10	NC	1
376			min	-.001	2	-.296	3	-.002	3	-1.436e-3	3	248.78	3	8178.453	3
377		18	max	.001	3	-.005	10	.003	1	1.189e-3	1	NC	10	NC	1
378			min	-.001	2	-.325	3	0	15	-1.663e-3	3	226.395	3	NC	1
379		19	max	.001	3	-.005	10	.008	3	1.493e-3	2	NC	10	NC	1
380			min	-.001	2	-.355	3	-.002	2	-1.89e-3	3	207.599	3	NC	1
381	M3	1	max	0	3	0	10	0	3	2.241e-3	2	NC	1	NC	1
382			min	0	2	0	3	0	2	-1.08e-3	3	NC	1	NC	1
383		2	max	0	3	0	15	.006	3	2.305e-3	2	NC	1	NC	3
384			min	0	2	-.018	3	-.012	2	-1.126e-3	3	NC	1	4963.276	2
385		3	max	0	3	-.001	15	.013	3	2.368e-3	2	NC	1	NC	4
386			min	0	2	-.036	3	-.025	2	-1.173e-3	3	NC	1	2465.263	2
387		4	max	.001	3	-.002	15	.019	3	2.432e-3	2	NC	1	NC	4
388			min	-.001	2	-.053	3	-.037	2	-1.219e-3	3	NC	1	1646.028	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	.025	3	2.496e-3	2	NC	1	NC	4
390			min	-.002	2	-.071	3	-.049	2	-1.266e-3	3	NC	1	1246.582	2
391		6	max	.001	3	-.003	15	.031	3	2.56e-3	2	NC	1	NC	5
392			min	-.002	2	-.088	3	-.06	2	-1.312e-3	3	NC	1	1015.535	2
393		7	max	.002	3	-.004	15	.036	3	2.623e-3	2	NC	1	NC	5
394			min	-.003	2	-.105	3	-.07	2	-1.359e-3	3	NC	1	869.488	2
395		8	max	.002	3	-.005	15	.04	3	2.687e-3	2	NC	1	NC	5
396			min	-.003	2	-.123	3	-.079	2	-1.405e-3	3	NC	1	773.128	2
397		9	max	.002	3	-.005	15	.044	3	2.751e-3	2	NC	1	NC	5
398			min	-.003	2	-.14	3	-.086	2	-1.452e-3	3	NC	1	709.325	2
399		10	max	.002	3	-.006	15	.046	3	2.815e-3	2	NC	1	NC	5
400			min	-.004	2	-.157	3	-.091	2	-1.498e-3	3	NC	1	669.26	2
401		11	max	.002	3	-.006	15	.048	3	2.879e-3	2	NC	1	NC	5
402			min	-.004	2	-.175	3	-.094	2	-1.545e-3	3	NC	1	648.638	2
403		12	max	.002	3	-.007	15	.048	3	2.942e-3	2	NC	1	NC	5
404			min	-.005	2	-.192	3	-.094	2	-1.591e-3	3	NC	1	646.264	2
405		13	max	.003	3	-.007	15	.047	3	3.006e-3	2	NC	1	NC	5
406			min	-.005	2	-.209	3	-.091	2	-1.638e-3	3	NC	1	663.908	2
407		14	max	.003	3	-.008	10	.044	3	3.07e-3	2	NC	1	NC	5
408			min	-.006	2	-.226	3	-.085	2	-1.684e-3	3	NC	1	707.525	2
409		15	max	.003	3	-.008	10	.04	3	3.134e-3	2	NC	1	NC	5
410			min	-.006	2	-.243	3	-.075	2	-1.731e-3	3	NC	1	791.236	2
411		16	max	.003	3	-.008	10	.034	3	3.197e-3	2	NC	1	NC	5
412			min	-.006	2	-.259	3	-.061	2	-1.777e-3	3	NC	1	949.95	2
413		17	max	.003	3	-.008	10	.025	3	3.261e-3	2	NC	1	NC	4
414			min	-.007	2	-.276	3	-.044	2	-1.824e-3	3	NC	1	1290.394	2
415		18	max	.003	3	-.008	10	.015	3	3.325e-3	2	NC	1	NC	4
416			min	-.007	2	-.293	3	-.021	2	-1.87e-3	3	NC	1	2349.014	2
417		19	max	.004	3	-.008	10	.008	1	3.389e-3	2	NC	1	NC	1
418			min	-.008	2	-.31	3	0	15	-1.917e-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	0	15	0	1	0	1	NC	1	NC	1
422			min	-.002	2	-.031	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	-.062	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	-.093	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	-.123	3	0	1	0	1	NC	1	NC	1
429		6	max	.004	3	-.005	15	0	1	0	1	NC	1	NC	1
430			min	-.007	2	-.154	3	0	1	0	1	NC	1	NC	1
431		7	max	.005	3	-.006	10	0	1	0	1	NC	1	NC	1
432			min	-.008	2	-.184	3	0	1	0	1	NC	1	NC	1
433		8	max	.006	3	-.006	10	0	1	0	1	NC	1	NC	1
434			min	-.009	2	-.215	3	0	1	0	1	NC	1	NC	1
435		9	max	.006	3	-.007	10	0	1	0	1	NC	1	NC	1
436			min	-.011	2	-.245	3	0	1	0	1	NC	1	NC	1
437		10	max	.007	3	-.008	10	0	1	0	1	NC	1	NC	1
438			min	-.012	2	-.276	3	0	1	0	1	NC	1	NC	1
439		11	max	.007	3	-.008	10	0	1	0	1	NC	1	NC	1
440			min	-.013	2	-.306	3	0	1	0	1	NC	1	NC	1
441		12	max	.008	3	-.009	10	0	1	0	1	NC	1	NC	1
442			min	-.014	2	-.336	3	0	1	0	1	NC	1	NC	1
443		13	max	.009	3	-.009	10	0	1	0	1	NC	1	NC	1
444			min	-.016	2	-.366	3	0	1	0	1	NC	1	NC	1
445		14	max	.009	3	-.009	10	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	-.396	3	0	1	0	1	NC	1	NC	1
447		15	max	.01	3	-.01	10	0	1	0	1	NC	1	NC	1
448			min	-.018	2	-.426	3	0	1	0	1	NC	1	NC	1
449		16	max	.011	3	-.01	10	0	1	0	1	NC	1	NC	1
450			min	-.019	2	-.456	3	0	1	0	1	NC	1	NC	1
451		17	max	.011	3	-.01	10	0	1	0	1	NC	1	NC	1
452			min	-.021	2	-.486	3	0	1	0	1	NC	1	NC	1
453		18	max	.012	3	-.01	10	0	1	0	1	NC	1	NC	1
454			min	-.022	2	-.516	3	0	1	0	1	NC	1	NC	1
455		19	max	.012	3	-.01	10	0	1	0	1	NC	1	NC	1
456			min	-.023	2	-.546	3	0	1	0	1	NC	1	NC	1
457	M9	1	max	0	3	0	10	0	2	1.08e-3	3	NC	1	NC	1
458			min	0	2	0	3	0	3	-2.241e-3	2	NC	1	NC	1
459		2	max	0	3	0	15	.012	2	1.126e-3	3	NC	1	NC	3
460			min	0	2	-.018	3	-.006	3	-2.305e-3	2	NC	1	4963.276	2
461		3	max	0	3	-.001	15	.025	2	1.173e-3	3	NC	1	NC	4
462			min	0	2	-.036	3	-.013	3	-2.368e-3	2	NC	1	2465.263	2
463		4	max	.001	3	-.002	15	.037	2	1.219e-3	3	NC	1	NC	4
464			min	-.001	2	-.053	3	-.019	3	-2.432e-3	2	NC	1	1646.028	2
465		5	max	.001	3	-.003	15	.049	2	1.266e-3	3	NC	1	NC	4
466			min	-.002	2	-.071	3	-.025	3	-2.496e-3	2	NC	1	1246.582	2
467		6	max	.001	3	-.003	15	.06	2	1.312e-3	3	NC	1	NC	5
468			min	-.002	2	-.088	3	-.031	3	-2.56e-3	2	NC	1	1015.535	2
469		7	max	.002	3	-.004	15	.07	2	1.359e-3	3	NC	1	NC	5
470			min	-.003	2	-.105	3	-.036	3	-2.623e-3	2	NC	1	869.488	2
471		8	max	.002	3	-.005	15	.079	2	1.405e-3	3	NC	1	NC	5
472			min	-.003	2	-.123	3	-.04	3	-2.687e-3	2	NC	1	773.128	2
473		9	max	.002	3	-.005	15	.086	2	1.452e-3	3	NC	1	NC	5
474			min	-.003	2	-.14	3	-.044	3	-2.751e-3	2	NC	1	709.325	2
475		10	max	.002	3	-.006	15	.091	2	1.498e-3	3	NC	1	NC	5
476			min	-.004	2	-.157	3	-.046	3	-2.815e-3	2	NC	1	669.26	2
477		11	max	.002	3	-.006	15	.094	2	1.545e-3	3	NC	1	NC	5
478			min	-.004	2	-.175	3	-.048	3	-2.879e-3	2	NC	1	648.638	2
479		12	max	.002	3	-.007	15	.094	2	1.591e-3	3	NC	1	NC	5
480			min	-.005	2	-.192	3	-.048	3	-2.942e-3	2	NC	1	646.264	2
481		13	max	.003	3	-.007	15	.091	2	1.638e-3	3	NC	1	NC	5
482			min	-.005	2	-.209	3	-.047	3	-3.006e-3	2	NC	1	663.908	2
483		14	max	.003	3	-.008	10	.085	2	1.684e-3	3	NC	1	NC	5
484			min	-.006	2	-.226	3	-.044	3	-3.07e-3	2	NC	1	707.525	2
485		15	max	.003	3	-.008	10	.075	2	1.731e-3	3	NC	1	NC	5
486			min	-.006	2	-.243	3	-.04	3	-3.134e-3	2	NC	1	791.236	2
487		16	max	.003	3	-.008	10	.061	2	1.777e-3	3	NC	1	NC	5
488			min	-.006	2	-.259	3	-.034	3	-3.197e-3	2	NC	1	949.95	2
489		17	max	.003	3	-.008	10	.044	2	1.824e-3	3	NC	1	NC	4
490			min	-.007	2	-.276	3	-.025	3	-3.261e-3	2	NC	1	1290.394	2
491		18	max	.003	3	-.008	10	.021	2	1.87e-3	3	NC	1	NC	4
492			min	-.007	2	-.293	3	-.015	3	-3.325e-3	2	NC	1	2349.014	2
493		19	max	.004	3	-.008	10	0	15	1.917e-3	3	NC	1	NC	1
494			min	-.008	2	-.31	3	-.008	1	-3.389e-3	2	NC	1	NC	1