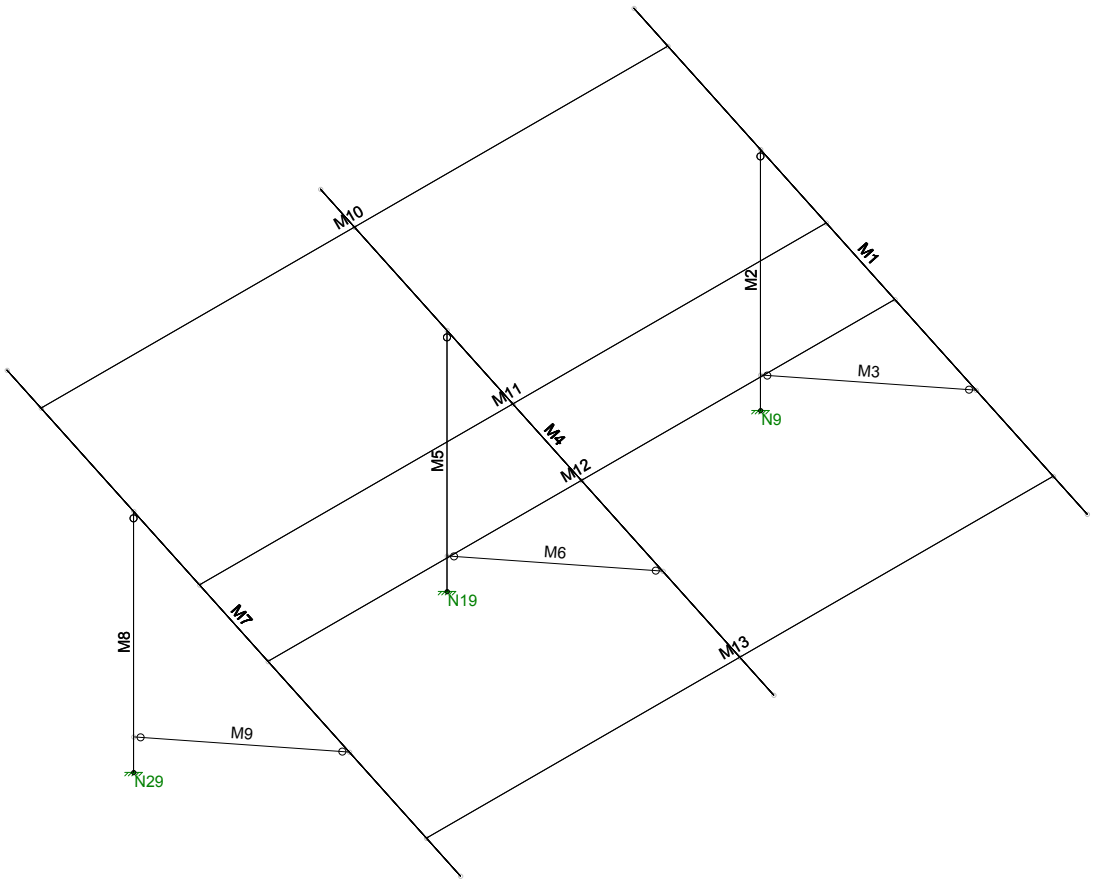


Schletter, Inc.		25° Tilt w/o Seismic Design
HCV	Standard FS Racking System	
	Representative Calculations - ASCE 7-05	

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.

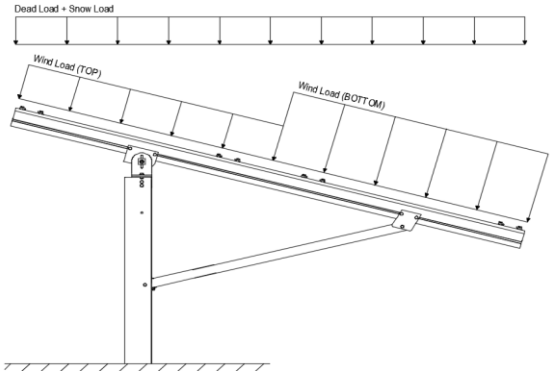
1.2 Construction

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 =	25°
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	*Self-weight of the PV modules.*
g_{MIN} =	1.75 psf	

2.2 Snow Loads

Ground Snow Load, P_g =	30.00 psf	
Sloped Roof Snow Load, P_s =	18.56 psf	*(ASCE 7-05, Eq. 7-2)*
I_s =	1.00	
C_s =	0.82	
C_e =	0.90	
C_t =	1.20	

2.3 Wind Loads

Design Wind Speed, V =	130 mph	Exposure Category = C
Height <	15 ft	Importance Category = II

Peak Velocity Pressure, q_z = 26.53 psf *Including the gust factor, G=0.85. (ASCE 7-05, Eq. 6-15)*

Pressure Coefficients

$Cf+_{TOP}$ =	1.1	*(Pressure)*
$Cf+_{BOTTOM}$ =	1.7	
$Cf-_{TOP}$ =	-2.2	*(Suction)*
$Cf-_{BOTTOM}$ =	-1	

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

2.4 Seismic Loads - 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

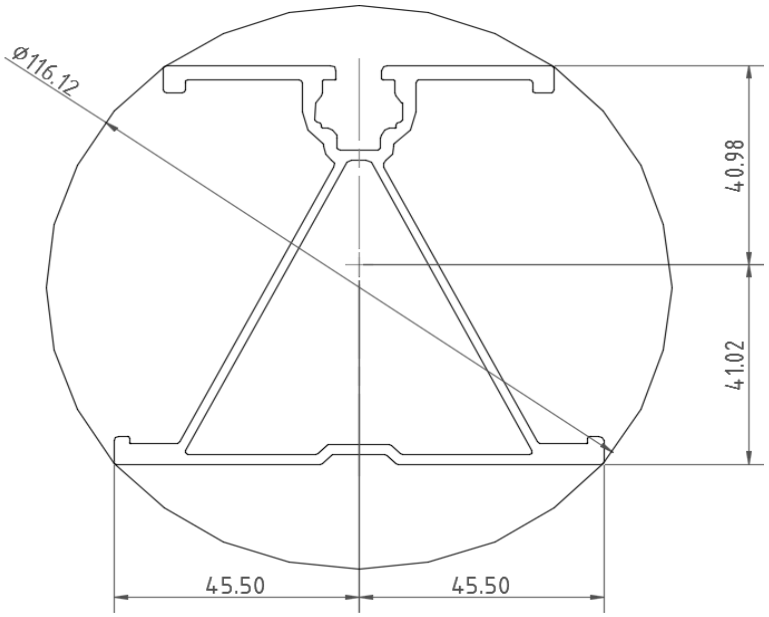
Struts	Location
M3	Outer
M6	Inner
M9	Outer

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 =	78	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 =	1.244	k-ft
M_z =	0.047	k-ft
$M_{y\ allowable}$ =	2.779	k-ft
$M_{z\ allowable}$ =	1.154	k-ft
Utilization =	49%	

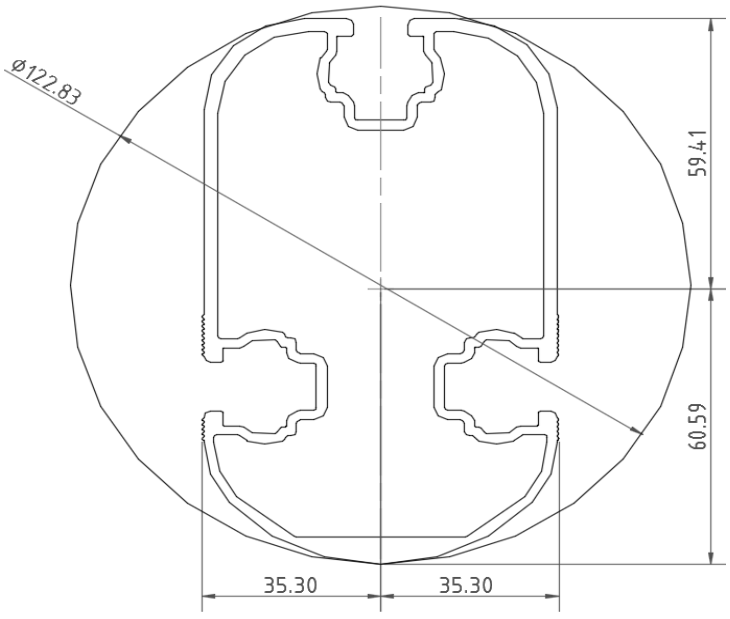


DETAIL VIEW

4.2 Girder Design

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

Girder Type =	**T5**	
Aluminum Type =	6105-T5	
F_{ty} =	35	ksi
L_b =	63.82	in
$\Phi F_{ty\ AXIAL}$ =	30.80	ksi
$\Phi F_{ty\ STRONG\text{-}AXIS}$ =	30.46	ksi
$\Phi F_{ty\ WEAK\text{-}AXIS}$ =	31.56	ksi
S_y =	1.98	in^3
S_x =	1.32	in^3
E =	10100	ksi
I_y =	4.74	in^4
I_x =	1.83	in^4
A =	1.93	in^2
g =	2.32	lbs/ft
M_y =	4.134	k-ft
M_z =	0.000	k-ft
P_n =	0.006	k
$M_{y\ allowable}$ =	5.026	k-ft
$M_{z\ allowable}$ =	3.472	k-ft
$P_{n\ allowable}$ =	59.439	k
Utilization =	82%	

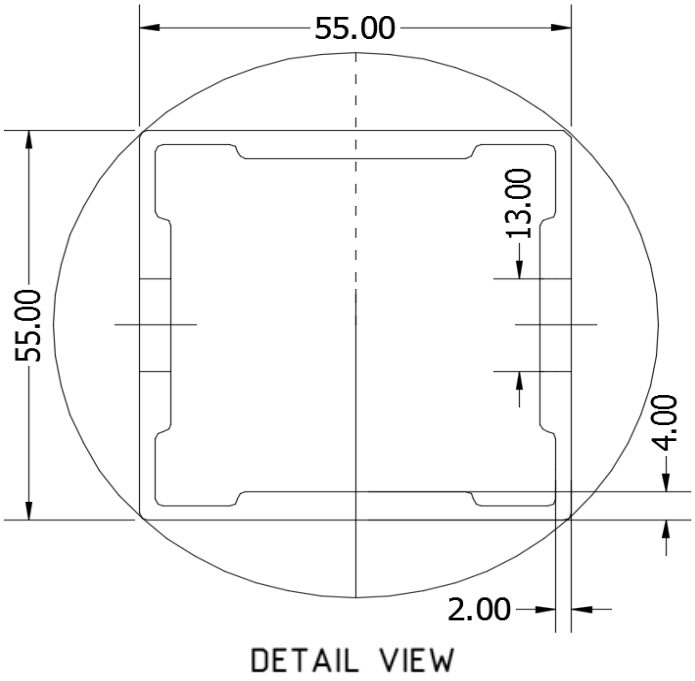


DETAIL VIEW

4.3 Strut Design

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

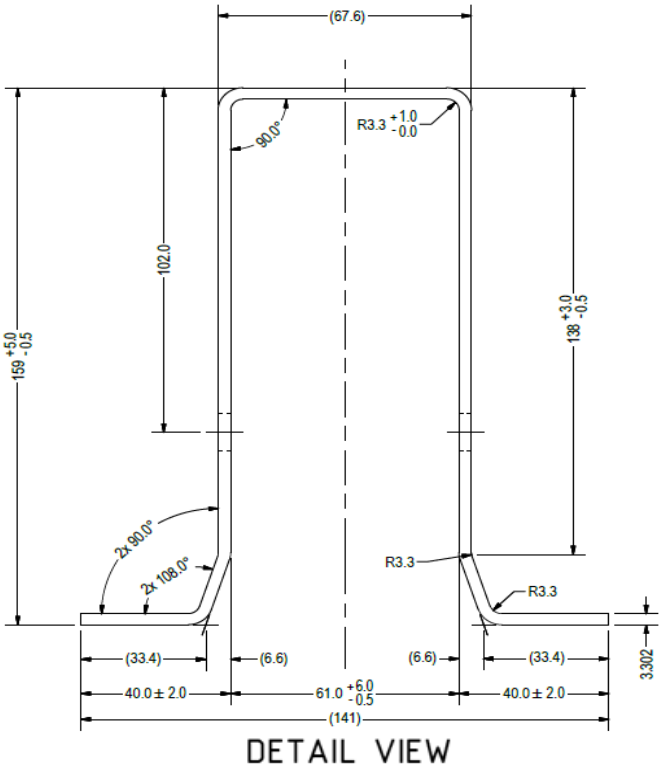
Strut Type =	**55x55**	
Aluminum Type =	6105-T5	
F_{ty} =	35	ksi
L_b =	61.00	in
$\Phi F_{ty\ AXIAL}$ =	13.67	ksi
$\Phi F_{ty\ BENDING}$ =	28.22	ksi
S_y =	0.60	in^3
S_x =	0.60	in^3
E =	10100	ksi
I_y =	0.67	in^4
I_x =	0.67	in^4
A =	0.98	in^2
g =	1.18	lbs/ft
M_y =	0.005	k-ft
M_z =	0.000	k-ft
P_n =	4.439	k
$M_{y\ allowable}$ =	1.408	k-ft
$M_{z\ allowable}$ =	1.408	k-ft
$P_{n\ allowable}$ =	13.425	k
Utilization =	33%	



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 =	72.60	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 =	8.910	k-ft
M_z =	0.000	k-ft
P_r =	-5.087	k
$M_{y\ allowable}$ =	19.207	k-ft
$M_{z\ allowable}$ =	14.389	k-ft
P_c =	38.073	k
Utilization =	56%	



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 =	6.59	k
Maximum Lateral Load =	3.23	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)

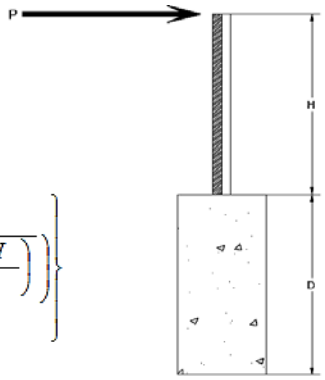
Lateral Force @ Top of Pole, P =	0.80	k
Height of Pole Above Grade, H =	5.05	ft
Diameter of Pole Footing, B =	2.00	ft
Lateral Soil Bearing Capacity, S =	0.10	ksf/ft
Isolated Pole Factor, F =	2	
First Trial Depth, D =	3.25	ft

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

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

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

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



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

Non-Constrained

Lateral Force @ Top of Pole, P =	0.80	k
Height of Pole Above Grade, H =	5.05	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 =	4.30	
Required Footing Depth, D =	7.47	ft

2nd Trial @ D_2 =	5.36	ft
Lateral Soil Bearing @ D/3, S_1 =	0.36	ksf
Lateral Soil Bearing @ D, S_3 =	1.07	ksf
Constant 2.34P/(S_1B), A =	2.61	
Required Footing Depth, D =	5.31	ft

3rd Trial @ D_3 =	5.34	ft
Lateral Soil Bearing @ D/3, S_1 =	0.36	ksf
Lateral Soil Bearing @ D, S_3 =	1.07	ksf
Constant 2.34P/(S_1B), A =	2.62	
Required Footing Depth, D =	5.33	ft

4th Trial @ D_4 =	5.33	ft
Lateral Soil Bearing @ D/3, S_1 =	0.36	ksf
Lateral Soil Bearing @ D, S_3 =	1.07	ksf
Constant 2.34P/(S_1B), A =	2.62	
Required Footing Depth, D =	5.33	ft

5th Trial @ D_5 =	5.33	ft
Lateral Soil Bearing @ D/3, S_1 =	0.36	ksf
Lateral Soil Bearing @ D, S_3 =	1.07	ksf
Constant 2.34P/(S_1B), A =	2.62	
Required Footing Depth, D =	5.50	ft

A 2ft diameter x 5.5ft deep footing unrestrained at ground level is required for the racking structure.

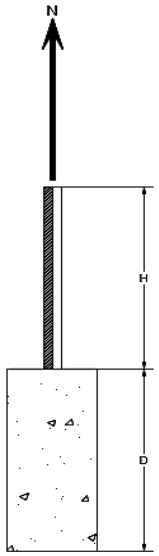
5.4 Uplifting Force Resistance

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

Weight of Concrete, g_{con} =	145	pcf
Uplifting Force, N =	3.16	k
Footing Diameter, B =	2.00	ft
Factor of Safety =	2.50	
Cohesion =	208.85	psf
γ_s =	120.43	pcf
α =	0.45	
Required Concrete Weight, g =	2.07	k
Required Concrete Volume, V =	14.29	ft^3
Required Footing Depth, D =	4.75	ft

Iteration	z	dz	Qs	Side
1	0.2	0.2	118.10	6.83
2	0.4	0.2	118.10	6.73
3	0.6	0.2	118.10	6.62
4	0.8	0.2	118.10	6.52
5	1	0.2	118.10	6.41
6	1.2	0.2	118.10	6.31
7	1.4	0.2	118.10	6.21
8	1.6	0.2	118.10	6.10
9	1.8	0.2	118.10	6.00
10	2	0.2	118.10	5.90
11	2.2	0.2	118.10	5.79
12	2.4	0.2	118.10	5.69
13	2.6	0.2	118.10	5.58
14	2.8	0.2	118.10	5.48
15	3	0.2	118.10	5.38
16	3.2	0.2	118.10	5.27
17	3.4	0.2	118.10	5.17
18	3.6	0.2	118.10	5.07
19	3.8	0.2	118.10	4.96
20	4	0.2	118.10	4.86
21	4.2	0.2	118.10	4.76
22	4.4	0.2	118.10	4.65
23	4.6	0.2	118.10	4.55
24	0	0.0	0.00	4.55
25	0	0.0	0.00	4.55
26	0	0.0	0.00	4.55
27	0	0.0	0.00	4.55
28	0	0.0	0.00	4.55
29	0	0.0	0.00	4.55
30	0	0.0	0.00	4.55
31	0	0.0	0.00	4.55
32	0	0.0	0.00	4.55
33	0	0.0	0.00	4.55
34	0	0.0	0.00	4.55
Max	4.6	Sum	1.09	

A 2ft diameter x 4.75ft deep footing unrestrained at ground level is required for the racking structure.



5.5 Compressive Force Resistance

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

Depth Below Grade, D =	5.50	ft
Footing Diameter, B =	2.00	ft
Compressive Force, P =	3.51	k
Footing Area =	3.14	ft^2
Circumference =	6.28	ft
Skin Friction Area =	15.71	ft^2
Concrete Weight =	0.145	kcf

Bearing Pressure

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

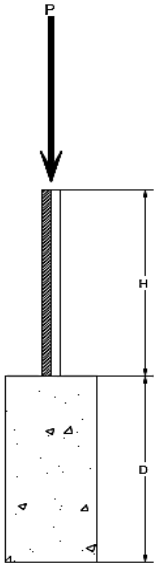
Weight of Concrete

Footing Volume	17.28	ft^3
Weight	2.51	k

Skin Friction Resistance

Skin Friction =	0.15	ksf
Resistance =	2.36	k
1/3 Increase for Wind =	1.33	
Total Resistance =	9.42	k
Applied Force =	6.02	k
Utilization =	64%	

A 2ft diameter footing passes at a depth of 5.5ft.



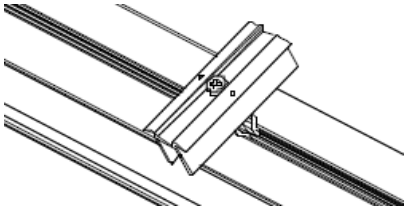
6. DESIGN OF JOINTS AND CONNECTIONS

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.

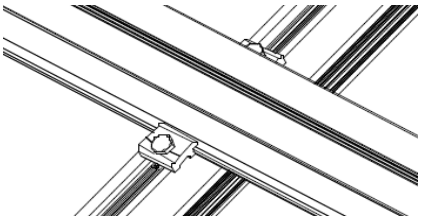
Fastening of Modules to Purlins

Maximum Uplifting Force	=	0.882 k
Allowable Uplift	=	1.214 k
Utilization	=	73%



Fastening of Purlins to Girders

Maximum Uplifting Force	=	2.052 k
Allowable Uplift	=	2.180 k
Utilization	=	94%

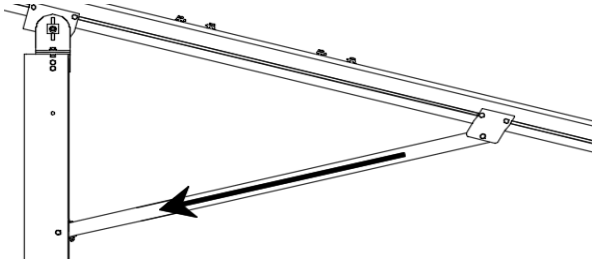


6.2 Strut Connections

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	=	4.439 k
M10 Bolt Shear Capacity	=	8.894 k
Utilization	=	50%

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

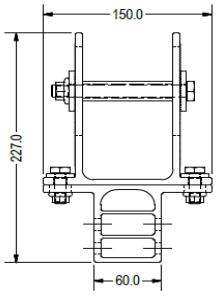


A strut under compression is shown to demonstrate the load transfer from the girder. Single M10 bolts are located at each end of the strut and are subjected to double shear.

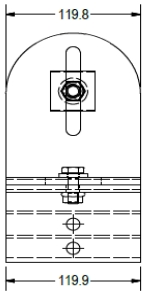
6.3 Girder to Post Connection

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.

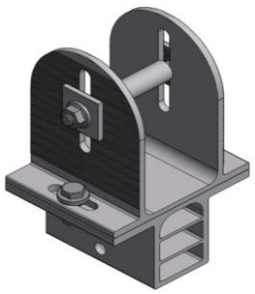
Maximum Tensile Load	=	4.328 k
Allowable Load	=	5.649 k
Utilization	=	77%



FRONT VIEW



SIDE VIEW



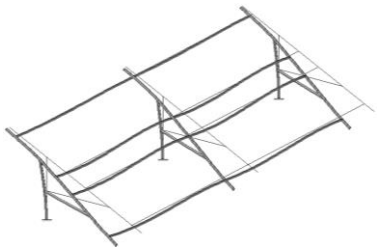
7. SEISMIC DESIGN

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}	=	70.15 in
Allowable Story Drift for All Other Structures, Δ	= {	$0.020h_{sx}$
		1.403 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:		Weak Axis:	
3.4.14		**3.4.14**	
L_b =	78 in	L_b =	78
J =	0.432	J =	0.432
	215.785		137.226
$S1 = \left(\frac{Bc - \frac{\theta_y}{\theta_b}Fcy}{1.6Dc}\right)^2$		$S1 = \left(\frac{Bc - \frac{\theta_y}{\theta_b}Fcy}{1.6Dc}\right)^2$	
S1 =	0.51461	S1 =	0.51461
$S2 = \left(\frac{C_c}{1.6}\right)^2$		$S2 = \left(\frac{C_c}{1.6}\right)^2$	
S2 =	1701.56	S2 =	1701.56
φF_L=	φb[Bc-1.6Dc*√((LbSc)/(Cb*√(IyJ)/2))]	φF_L=	φb[Bc-1.6Dc*√((LbSc)/(Cb*√(IyJ)/2))]
φF_L=	28.6 ksi	φF_L=	29.6
3.4.16		**3.4.16**	
b/t =	32.195	b/t =	37.0588
$S1 = \frac{Bp - \frac{\theta_y}{\theta_b}Fcy}{1.6Dp}$		$S1 = \frac{Bp - \frac{\theta_y}{\theta_b}Fcy}{1.6Dp}$	
S1 =	12.2	S1 =	12.2
$S2 = \frac{k_1 Bp}{1.6Dp}$		$S2 = \frac{k_1 Bp}{1.6Dp}$	
S2 =	46.7	S2 =	46.7
φF_L=	φb[Bp-1.6Dp*b/t]	φF_L=	φb[Bp-1.6Dp*b/t]
φF_L=	25.1 ksi	φF_L=	23.1 ksi
3.4.16.1	Not Used	**3.4.16.1**	
Rb/t =		N/A for Weak Direction	
$S1 = \left(\frac{Bt - 1.17\frac{\theta_y}{\theta_b}Fcy}{1.6Dt}\right)^2$			
S1 =	1.1		
$S2 = C_t$			
S2 =	141.0		
φF_L=	1.17φyFcy		
φF_L=	38.9 ksi		
3.4.18		**3.4.18**	
h/t =	37.0588	h/t =	32.195
$S1 = \frac{Bbr - \frac{\theta_y}{\theta_b}1.3Fcy}{mDbr}$		$S1 = \frac{Bbr - \frac{\theta_y}{\theta_b}1.3Fcy}{mDbr}$	
S1 =	36.9	S1 =	36.9
m =	0.65	m =	0.65
C_0 =	40.985	C_0 =	45.5
Cc =	41.015	Cc =	45.5
$S2 = \frac{k_1 Bbr}{mDbr}$		$S2 = \frac{k_1 Bbr}{mDbr}$	
S2 =	77.2	S2 =	77.3
φF_L=	φb[Bbr-mDbr*h/t]	φF_L=	1.3φyFcy
φF_L=	43.2 ksi	φF_L=	43.2 ksi
φF_LSt=	25.1 ksi	φF_LWk=	23.1 ksi
Ix =	897074 mm^4	Iy =	446476 mm^4
	2.155 in^4		1.073 in^4
y =	41.015 mm	x =	45.5 mm
Sx =	1.335 in^3	Sy =	0.599 in^3
M_{max}St =	2.788 k-ft	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

$\varphi F_L St$= 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)

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

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

φF_L = 13.6667 ksi

3.4.9

b/t = 24.5

S1 = 12.21 (See 3.4.16 above for formula)

S2 = 32.70 (See 3.4.16 above for formula)

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

φF_L = 28.2 ksi

b/t = 24.5

S1 = 12.21

S2 = 32.70

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

φF_L = 28.2 ksi

3.4.10

Rb/t = 0.0

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

S1 = 6.87

S2 = 131.3

$\varphi F_L = \varphi yFcy$

φF_L = 33.25 ksi

φF_L = 13.67 ksi

A = 663.99 mm^2

1.03 in^2

P_{max} = 14.07 kips

A.4 Design of Galvanized Steel Posts

Post Type = **FG8**

Unbraced Length =	72.60	in	
Pr =	-5.09	k	(LRFD Factored Load)
Mr (Strong) =	8.91	k-ft	(LRFD Factored Load)
Mr (Weak) =	0.00	k-ft	(LRFD Factored Load)

Flexural Buckling:

kL/r =	104.47			
4.71√(E/Fy) =	103.55	=>	kL/r	> 4.71√(E/Fy)
Fcr =	23.00	ksi		
Fe =	26.23	ksi		
Pn =	51.291	k		

Torsional/Flexural Torsional Buckling:

Fcr =	17.0733	ksi
Fey =	66.8981	ksi
Fez =	21.7595	ksi
Pn =	38.0734	k

Bending (Strong Axis):

Yielding:

Mn =	21.95	k-ft

Flange Local Buckling:

Mn =	19.207	k-ft

Pr/Pc =	0.0992	<	0.2	
Utilization =	0.56	<	1.0	OK

Bending (Weak Axis):

Yielding:

Mn =	14.65	k-ft

Flange Local Buckling:

Mn =	14.39	k-ft

Pr/Pc =	0.099	<	0.2	
Utilization =	0.00	<	1.0	OK

Combined Forces

Utilization = 56%

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	-46.9	-46.9	0	0
2	M11	Y	-46.9	-46.9	0	0
3	M12	Y	-46.9	-46.9	0	0
4	M13	Y	-46.9	-46.9	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	-81.397	-81.397	0	0
2	M11	y	-81.397	-81.397	0	0
3	M12	y	-125.796	-125.796	0	0
4	M13	y	-125.796	-125.796	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	162.794	162.794	0	0
2	M11	y	162.794	162.794	0	0
3	M12	y	73.997	73.997	0	0
4	M13	y	73.997	73.997	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...	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	591.006	2	2123.98	2	121.31	2	.145	2	.002	3	4.145	1
2		min	-887.689	3	-1701.052	3	-151.751	3	-.197	3	-.005	2	.145	15
3	N19	max	2460.632	2	5653.844	2	0	15	0	1	0	2	6.293	1
4		min	-2387.626	3	-5055.708	3	0	11	0	15	0	3	.206	15
5	N29	max	591.006	2	2123.98	2	151.751	3	.197	3	.005	2	4.145	1
6		min	-887.689	3	-1701.052	3	-121.31	2	-.145	2	-.002	3	.145	15
7	Totals:	max	3642.643	2	9901.804	2	0	3						
8		min	-4163.004	3	-8457.811	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	5	0	1	0	1	0	1
2			min	0	1	-.001	3	0	1	0	1	0	1	0	1
3		2	max	-.221	15	-.473	15	0	5	0	1	0	15	0	4
4			min	-.939	4	-2.011	4	0	1	0	1	0	1	0	15
5		3	max	-5.828	15	300.214	3	-2.937	15	.05	3	.155	1	.293	2
6			min	-145.309	1	-665.851	2	-94.023	1	-.161	2	.005	15	-.131	3
7		4	max	-6.049	15	299.038	3	-2.937	15	.05	3	.096	1	.707	2
8			min	-146.04	1	-667.419	2	-94.023	1	-.161	2	.003	15	-.317	3
9		5	max	-6.269	15	297.861	3	-2.937	15	.05	3	.038	1	1.122	2
10			min	-146.772	1	-668.987	2	-94.023	1	-.161	2	.002	15	-.502	3
11		6	max	376.88	3	556.329	2	8.866	3	0	15	.062	2	1.087	2
12			min	-1168.118	2	-153.025	3	-121.359	1	-.013	3	-.023	3	-.522	3
13		7	max	376.331	3	554.761	2	8.866	3	0	15	0	10	.742	2
14			min	-1168.849	2	-154.201	3	-121.359	1	-.013	3	-.022	1	-.426	3
15		8	max	375.783	3	553.193	2	8.866	3	0	15	-.003	15	.399	2
16			min	-1169.581	2	-155.378	3	-121.359	1	-.013	3	-.097	1	-.33	3
17		9	max	361.176	3	103.139	3	9.683	3	-.001	15	.067	1	.195	2
18			min	-1257.439	2	-47.595	2	-143.332	1	-.105	2	.002	15	-.292	3
19		10	max	360.627	3	101.963	3	9.683	3	-.001	15	.029	3	.225	2
20			min	-1258.17	2	-49.163	2	-143.332	1	-.105	2	-.025	2	-.355	3
21		11	max	360.079	3	100.787	3	9.683	3	-.001	15	.035	3	.256	2
22			min	-1258.901	2	-50.731	2	-143.332	1	-.105	2	-.11	1	-.418	3
23		12	max	341.127	3	773.892	3	35.553	2	.174	3	.088	1	.455	2
24			min	-1342.489	2	-456.423	2	-161.774	3	-.145	2	.003	15	-.747	3
25		13	max	340.578	3	772.715	3	35.553	2	.174	3	.088	1	.738	2
26			min	-1343.22	2	-457.991	2	-161.774	3	-.145	2	-.081	3	-1.227	3
27		14	max	147.033	1	443.037	2	-2.606	15	.125	2	.031	3	1.011	2
28			min	6.489	15	-730.584	3	-76.622	1	-.279	3	-.021	2	-1.686	3
29		15	max	146.302	1	441.469	2	-2.606	15	.125	2	.016	3	.736	2
30			min	6.269	15	-731.76	3	-76.622	1	-.279	3	-.067	1	-1.232	3
31		16	max	145.57	1	439.9	2	-2.606	15	.125	2	.001	3	.463	2
32			min	6.048	15	-732.937	3	-76.622	1	-.279	3	-.115	1	-.778	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	144.839	1	438.332	2	-2.606	15	.125	2	-.005	15	.19	2
34			min	5.827	15	-734.113	3	-76.622	1	-.279	3	-.162	1	-.322	3
35		18	max	.939	4	2.013	4	0	1	0	1	0	15	0	4
36			min	.221	15	.473	15	0	5	0	1	0	1	0	15
37		19	max	0	1	.002	2	0	1	0	1	0	1	0	1
38			min	0	1	-.005	3	0	5	0	1	0	1	0	1
39	M4	1	max	0	1	.013	2	0	1	0	1	0	1	0	1
40			min	0	1	-.004	3	0	1	0	1	0	1	0	1
41		2	max	-.221	15	-.473	15	0	1	0	1	0	1	0	4
42			min	-.939	4	-2.011	4	0	1	0	1	0	1	0	15
43		3	max	5.141	10	868.384	3	0	1	0	1	0	1	.645	2
44			min	-191.115	1	-1707.365	2	0	1	0	1	0	1	-.331	3
45		4	max	4.532	10	867.208	3	0	1	0	1	0	1	1.705	2
46			min	-191.846	1	-1708.933	2	0	1	0	1	0	1	-.869	3
47		5	max	3.922	10	866.032	3	0	1	0	1	0	1	2.767	2
48			min	-192.577	1	-1710.501	2	0	1	0	1	0	1	-1.407	3
49		6	max	1383.686	3	1626.379	2	0	1	0	1	0	1	2.604	2
50			min	-2995.873	2	-712.702	3	0	1	0	1	0	1	-1.365	3
51		7	max	1383.138	3	1624.811	2	0	1	0	1	0	1	1.595	2
52			min	-2996.604	2	-713.878	3	0	1	0	1	0	1	-.923	3
53		8	max	1382.589	3	1623.242	2	0	1	0	1	0	1	.587	2
54			min	-2997.336	2	-715.054	3	0	1	0	1	0	1	-.479	3
55		9	max	1380.717	3	235.23	3	0	1	0	1	0	1	.019	9
56			min	-3017.721	2	-225.287	2	0	1	0	1	0	1	-.249	3
57		10	max	1380.169	3	234.054	3	0	1	0	1	0	1	.135	1
58			min	-3018.452	2	-226.855	2	0	1	0	1	0	1	-.394	3
59		11	max	1379.62	3	232.877	3	0	1	0	1	0	1	.265	2
60			min	-3019.183	2	-228.424	2	0	1	0	1	0	1	-.539	3
61		12	max	1386.438	3	2196.893	3	0	1	0	1	0	1	.916	2
62			min	-3048.109	2	-1543.99	2	0	1	0	1	0	1	-1.463	3
63		13	max	1385.89	3	2195.717	3	0	1	0	1	0	1	1.875	2
64			min	-3048.841	2	-1545.559	2	0	1	0	1	0	1	-2.826	3
65		14	max	194.248	1	1247.007	2	0	1	0	1	0	1	2.796	2
66			min	-2.818	10	-1844.629	3	0	1	0	1	0	1	-4.134	3
67		15	max	193.517	1	1245.438	2	0	1	0	1	0	1	2.023	2
68			min	-3.427	10	-1845.805	3	0	1	0	1	0	1	-2.988	3
69		16	max	192.786	1	1243.87	2	0	1	0	1	0	1	1.251	2
70			min	-4.036	10	-1846.982	3	0	1	0	1	0	1	-1.842	3
71		17	max	192.055	1	1242.302	2	0	1	0	1	0	1	.479	2
72			min	-4.646	10	-1848.158	3	0	1	0	1	0	1	-.696	3
73		18	max	.939	4	2.013	4	0	1	0	1	0	1	0	4
74			min	.221	15	.473	15	0	1	0	1	0	1	0	15
75		19	max	0	1	.005	2	0	1	0	1	0	1	0	1
76			min	0	1	-.01	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	-.001	3	0	5	0	1	0	1	0	1
79		2	max	-.221	15	-.473	15	0	1	0	1	0	1	0	4
80			min	-.939	4	-2.011	4	0	5	0	1	0	15	0	15
81		3	max	-5.828	15	300.214	3	94.023	1	.161	2	-.005	15	.293	2
82			min	-145.309	1	-665.851	2	2.937	15	-.05	3	-.155	1	-.131	3
83		4	max	-6.049	15	299.038	3	94.023	1	.161	2	-.003	15	.707	2
84			min	-146.04	1	-667.419	2	2.937	15	-.05	3	-.096	1	-.317	3
85		5	max	-6.269	15	297.861	3	94.023	1	.161	2	-.002	15	1.122	2
86			min	-146.772	1	-668.987	2	2.937	15	-.05	3	-.038	1	-.502	3
87		6	max	376.88	3	556.329	2	121.359	1	.013	3	.023	3	1.087	2
88			min	-1168.118	2	-153.025	3	-8.866	3	0	15	-.062	2	-.522	3
89		7	max	376.331	3	554.761	2	121.359	1	.013	3	.022	1	.742	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	-1168.849	2	-154.201	3	-8.866	3	0	15	0	10	-.426	3
91		8	max	375.783	3	553.193	2	121.359	1	.013	3	.097	1	.399	2
92			min	-1169.581	2	-155.378	3	-8.866	3	0	15	.003	15	-.33	3
93		9	max	361.176	3	103.139	3	143.332	1	.105	2	-.002	15	.195	2
94			min	-1257.439	2	-47.595	2	-9.683	3	.001	15	-.067	1	-.292	3
95		10	max	360.627	3	101.963	3	143.332	1	.105	2	.025	2	.225	2
96			min	-1258.17	2	-49.163	2	-9.683	3	.001	15	-.029	3	-.355	3
97		11	max	360.079	3	100.787	3	143.332	1	.105	2	.11	1	.256	2
98			min	-1258.901	2	-50.731	2	-9.683	3	.001	15	-.035	3	-.418	3
99		12	max	341.127	3	773.892	3	161.774	3	.145	2	-.003	15	.455	2
100			min	-1342.489	2	-456.423	2	-35.553	2	-.174	3	-.088	1	-.747	3
101		13	max	340.578	3	772.715	3	161.774	3	.145	2	.081	3	.738	2
102			min	-1343.22	2	-457.991	2	-35.553	2	-.174	3	-.088	1	-1.227	3
103		14	max	147.033	1	443.037	2	76.622	1	.279	3	.021	2	1.011	2
104			min	6.489	15	-730.584	3	2.606	15	-.125	2	-.031	3	-1.686	3
105		15	max	146.302	1	441.469	2	76.622	1	.279	3	.067	1	.736	2
106			min	6.269	15	-731.76	3	2.606	15	-.125	2	-.016	3	-1.232	3
107		16	max	145.57	1	439.9	2	76.622	1	.279	3	.115	1	.463	2
108			min	6.048	15	-732.937	3	2.606	15	-.125	2	-.001	3	-.778	3
109		17	max	144.839	1	438.332	2	76.622	1	.279	3	.162	1	.19	2
110			min	5.827	15	-734.113	3	2.606	15	-.125	2	.005	15	-.322	3
111		18	max	.939	4	2.013	4	0	5	0	1	0	1	0	4
112			min	.221	15	.473	15	0	1	0	1	0	15	0	15
113		19	max	0	1	.002	2	0	5	0	1	0	1	0	1
114			min	0	1	-.005	3	0	1	0	1	0	1	0	1
115	M10	1	max	76.628	1	435.065	2	-5.386	15	.012	2	.193	1	.125	2
116			min	2.606	15	-736.405	3	-143.511	1	-.026	3	.006	15	-.279	3
117		2	max	76.628	1	317.904	2	-4.296	15	.012	2	.099	1	.186	3
118			min	2.606	15	-551.795	3	-116.992	1	-.026	3	.003	15	-.147	2
119		3	max	76.628	1	200.743	2	-3.205	15	.012	2	.041	2	.518	3
120			min	2.606	15	-367.185	3	-90.473	1	-.026	3	0	15	-.334	2
121		4	max	76.628	1	83.583	2	-2.115	15	.012	2	.008	10	.716	3
122			min	2.606	15	-182.575	3	-63.954	1	-.026	3	-.031	1	-.437	2
123		5	max	76.628	1	2.035	3	-1.024	15	.012	2	-.003	15	.781	3
124			min	2.606	15	-33.578	2	-37.435	1	-.026	3	-.068	1	-.455	2
125		6	max	76.628	1	186.645	3	.993	9	.012	2	-.003	15	.713	3
126			min	2.606	15	-150.739	2	-24.018	2	-.026	3	-.085	1	-.388	2
127		7	max	76.628	1	371.255	3	18.321	9	.012	2	-.003	15	.512	3
128			min	2.606	15	-267.9	2	-13.246	2	-.026	3	-.084	1	-.237	2
129		8	max	76.628	1	555.865	3	42.123	1	.012	2	-.002	15	.177	3
130			min	2.606	15	-385.06	2	-8.98	10	-.026	3	-.065	2	-.002	10
131		9	max	76.628	1	740.475	3	68.642	1	.012	2	.007	9	.319	2
132			min	2.606	15	-502.221	2	-5.967	10	-.026	3	-.063	2	-.291	3
133		10	max	76.628	1	619.382	2	2.955	10	.026	3	.052	9	.724	2
134			min	2.606	15	-925.084	3	-95.161	1	0	15	-.053	2	-.893	3
135		11	max	76.628	1	502.221	2	5.967	10	.026	3	.007	9	.319	2
136			min	2.606	15	-740.475	3	-68.642	1	-.012	2	-.063	2	-.291	3
137		12	max	76.628	1	385.06	2	8.98	10	.026	3	-.002	15	.177	3
138			min	2.606	15	-555.865	3	-42.123	1	-.012	2	-.065	2	-.002	10
139		13	max	76.628	1	267.9	2	13.246	2	.026	3	-.003	15	.512	3
140			min	2.606	15	-371.255	3	-18.321	9	-.012	2	-.084	1	-.237	2
141		14	max	76.628	1	150.739	2	24.018	2	.026	3	-.003	15	.713	3
142			min	2.606	15	-186.645	3	-.993	9	-.012	2	-.085	1	-.388	2
143		15	max	76.628	1	33.578	2	37.435	1	.026	3	-.003	15	.781	3
144			min	2.606	15	-2.035	3	1.024	15	-.012	2	-.068	1	-.455	2
145		16	max	76.628	1	182.575	3	63.954	1	.026	3	.008	10	.716	3
146			min	2.606	15	-83.583	2	2.115	15	-.012	2	-.031	1	-.437	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	76.628	1	367.185	3	90.473	1	.026	3	.041	2	.518	3
148			min	2.606	15	-200.743	2	3.205	15	-.012	2	0	15	-.334	2
149		18	max	76.628	1	551.795	3	116.992	1	.026	3	.099	1	.186	3
150			min	2.606	15	-317.904	2	4.296	15	-.012	2	.003	15	-.147	2
151		19	max	76.628	1	736.405	3	143.511	1	.026	3	.193	1	.125	2
152			min	2.606	15	-435.065	2	5.386	15	-.012	2	.006	15	-.279	3
153	M11	1	max	143.27	1	401.974	2	-5.693	15	0	15	.23	1	.048	1
154			min	-171.389	3	-675.327	3	-152.104	1	-.006	2	.008	15	-.241	3
155		2	max	143.27	1	284.813	2	-4.602	15	0	15	.13	1	.18	3
156			min	-171.389	3	-490.718	3	-125.585	1	-.006	2	.004	15	-.208	2
157		3	max	143.27	1	167.652	2	-3.512	15	0	15	.056	2	.468	3
158			min	-171.389	3	-306.108	3	-99.066	1	-.006	2	.001	15	-.371	2
159		4	max	143.27	1	50.491	2	-2.421	15	0	15	.015	2	.622	3
160			min	-171.389	3	-121.498	3	-72.546	1	-.006	2	-.017	9	-.45	2
161		5	max	143.27	1	63.112	3	-1.331	15	0	15	.003	3	.643	3
162			min	-171.389	3	-66.669	2	-46.027	1	-.006	2	-.056	1	-.444	2
163		6	max	143.27	1	247.722	3	-.24	15	0	15	-.003	15	.531	3
164			min	-171.389	3	-183.83	2	-29.25	2	-.006	2	-.08	1	-.354	2
165		7	max	143.27	1	432.332	3	13.435	9	0	15	-.003	15	.285	3
166			min	-171.389	3	-300.991	2	-18.477	2	-.006	2	-.084	1	-.179	2
167		8	max	143.27	1	616.942	3	33.53	1	0	15	-.002	15	.081	2
168			min	-171.389	3	-418.152	2	-11.162	10	-.006	2	-.069	1	-.094	3
169		9	max	143.27	1	801.552	3	60.049	1	0	15	0	14	.425	2
170			min	-171.389	3	-535.312	2	-8.149	10	-.006	2	-.071	2	-.606	3
171		10	max	143.27	1	652.473	2	5.136	10	0	3	.041	9	.854	2
172			min	-171.389	3	-986.162	3	-86.569	1	-.006	2	-.065	2	-1.251	3
173		11	max	143.27	1	535.312	2	8.149	10	.006	2	0	14	.425	2
174			min	-171.389	3	-801.552	3	-60.049	1	0	15	-.071	2	-.606	3
175		12	max	143.27	1	418.152	2	11.162	10	.006	2	-.002	15	.081	2
176			min	-171.389	3	-616.942	3	-33.53	1	0	15	-.069	1	-.094	3
177		13	max	143.27	1	300.991	2	18.477	2	.006	2	-.003	15	.285	3
178			min	-171.389	3	-432.332	3	-13.435	9	0	15	-.084	1	-.179	2
179		14	max	143.27	1	183.83	2	29.25	2	.006	2	-.003	15	.531	3
180			min	-171.389	3	-247.722	3	.24	15	0	15	-.08	1	-.354	2
181		15	max	143.27	1	66.669	2	46.027	1	.006	2	.003	3	.643	3
182			min	-171.389	3	-63.112	3	1.331	15	0	15	-.056	1	-.444	2
183		16	max	143.27	1	121.498	3	72.546	1	.006	2	.015	2	.622	3
184			min	-171.389	3	-50.491	2	2.421	15	0	15	-.017	9	-.45	2
185		17	max	143.27	1	306.108	3	99.066	1	.006	2	.056	2	.468	3
186			min	-171.389	3	-167.652	2	3.512	15	0	15	.001	15	-.371	2
187		18	max	143.27	1	490.718	3	125.585	1	.006	2	.13	1	.18	3
188			min	-171.389	3	-284.813	2	4.602	15	0	15	.004	15	-.208	2
189		19	max	143.27	1	675.327	3	152.104	1	.006	2	.23	1	.048	1
190			min	-171.389	3	-401.974	2	5.693	15	0	15	.008	15	-.241	3
191	M12	1	max	6.213	10	597.111	2	-5.766	15	0	12	.245	1	.094	2
192			min	-21.598	1	-260.39	3	-155.521	1	-.005	2	.008	15	0	15
193		2	max	6.213	10	428.644	2	-4.675	15	0	12	.142	1	.214	3
194			min	-21.598	1	-178.39	3	-129.002	1	-.005	2	.004	15	-.276	2
195		3	max	6.213	10	260.178	2	-3.585	15	0	12	.067	2	.313	3
196			min	-21.598	1	-96.39	3	-102.483	1	-.005	2	.001	15	-.525	2
197		4	max	6.213	10	91.712	2	-2.494	15	0	12	.023	2	.353	3
198			min	-21.598	1	-14.39	3	-75.964	1	-.005	2	-.015	9	-.652	2
199		5	max	6.213	10	67.61	3	-1.403	15	0	12	0	10	.334	3
200			min	-21.598	1	-76.755	2	-49.445	1	-.005	2	-.051	1	-.657	2
201		6	max	6.213	10	149.61	3	-.313	15	0	12	-.003	15	.255	3
202			min	-21.598	1	-245.221	2	-33.27	2	-.005	2	-.078	1	-.541	2
203		7	max	6.213	10	231.61	3	12.281	9	0	12	-.003	15	.118	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	-21.598	1	-413.687	2	-22.497	2	-.005	2	-.085	1	-.303	2
205		8	max	6.213	10	313.61	3	30.113	1	0	12	-.002	15	.056	2
206			min	-21.598	1	-582.153	2	-13.427	10	-.005	2	-.073	2	-.079	3
207		9	max	6.213	10	395.61	3	56.632	1	0	12	0	15	.538	2
208			min	-21.598	1	-750.62	2	-10.414	10	-.005	2	-.077	2	-.335	3
209		10	max	6.213	10	919.086	2	7.401	10	0	3	.038	9	1.141	2
210			min	-21.598	1	-477.61	3	-83.151	1	-.005	2	-.074	2	-.651	3
211		11	max	6.213	10	750.62	2	10.414	10	.005	2	0	15	.538	2
212			min	-21.598	1	-395.61	3	-56.632	1	0	12	-.077	2	-.335	3
213		12	max	6.213	10	582.153	2	13.427	10	.005	2	-.002	15	.056	2
214			min	-21.598	1	-313.61	3	-30.113	1	0	12	-.073	2	-.079	3
215		13	max	6.213	10	413.687	2	22.497	2	.005	2	-.003	15	.118	3
216			min	-21.598	1	-231.61	3	-12.281	9	0	12	-.085	1	-.303	2
217		14	max	6.213	10	245.221	2	33.27	2	.005	2	-.003	15	.255	3
218			min	-21.598	1	-149.61	3	.313	15	0	12	-.078	1	-.541	2
219		15	max	6.213	10	76.755	2	49.445	1	.005	2	0	10	.334	3
220			min	-21.598	1	-67.61	3	1.403	15	0	12	-.051	1	-.657	2
221		16	max	6.213	10	14.39	3	75.964	1	.005	2	.023	2	.353	3
222			min	-21.598	1	-91.712	2	2.494	15	0	12	-.015	9	-.652	2
223		17	max	6.213	10	96.39	3	102.483	1	.005	2	.067	2	.313	3
224			min	-21.598	1	-260.178	2	3.585	15	0	12	.001	15	-.525	2
225		18	max	6.213	10	178.39	3	129.002	1	.005	2	.142	1	.214	3
226			min	-21.598	1	-428.644	2	4.675	15	0	12	.004	15	-.276	2
227		19	max	6.213	10	260.39	3	155.521	1	.005	2	.245	1	.094	2
228			min	-21.598	1	-597.111	2	5.766	15	0	12	.008	15	0	15
229	M13	1	max	-2.937	15	663.236	2	-5.387	15	.01	3	.193	1	.161	2
230			min	-93.971	1	-302.608	3	-143.675	1	-.023	2	.006	15	-.05	3
231		2	max	-2.937	15	494.77	2	-4.296	15	.01	3	.099	1	.139	3
232			min	-93.971	1	-220.607	3	-117.156	1	-.023	2	.003	15	-.257	2
233		3	max	-2.937	15	326.304	2	-3.205	15	.01	3	.04	2	.268	3
234			min	-93.971	1	-138.607	3	-90.637	1	-.023	2	0	15	-.553	2
235		4	max	-2.937	15	157.837	2	-2.115	15	.01	3	.008	10	.339	3
236			min	-93.971	1	-56.607	3	-64.118	1	-.023	2	-.032	1	-.728	2
237		5	max	-2.937	15	25.393	3	-1.024	15	.01	3	-.002	12	.35	3
238			min	-93.971	1	-10.629	2	-37.599	1	-.023	2	-.069	1	-.781	2
239		6	max	-2.937	15	107.393	3	.986	9	.01	3	-.003	15	.302	3
240			min	-93.971	1	-179.095	2	-24.328	2	-.023	2	-.087	1	-.713	2
241		7	max	-2.937	15	189.393	3	18.314	9	.01	3	-.003	15	.195	3
242			min	-93.971	1	-347.561	2	-13.555	2	-.023	2	-.085	1	-.523	2
243		8	max	-2.937	15	271.393	3	41.959	1	.01	3	-.002	15	.029	3
244			min	-93.971	1	-516.028	2	-9.169	10	-.023	2	-.067	2	-.211	2
245		9	max	-2.937	15	353.393	3	68.478	1	.01	3	.007	9	.223	2
246			min	-93.971	1	-684.494	2	-6.156	10	-.023	2	-.065	2	-.197	3
247		10	max	-2.937	15	852.96	2	3.144	10	0	15	.051	9	.778	2
248			min	-93.971	1	-435.393	3	-94.997	1	-.023	2	-.055	2	-.482	3
249		11	max	-2.937	15	684.494	2	6.156	10	.023	2	.007	9	.223	2
250			min	-93.971	1	-353.393	3	-68.478	1	-.01	3	-.065	2	-.197	3
251		12	max	-2.937	15	516.028	2	9.169	10	.023	2	-.002	15	.029	3
252			min	-93.971	1	-271.393	3	-41.959	1	-.01	3	-.067	2	-.211	2
253		13	max	-2.937	15	347.561	2	13.555	2	.023	2	-.003	15	.195	3
254			min	-93.971	1	-189.393	3	-18.314	9	-.01	3	-.085	1	-.523	2
255		14	max	-2.937	15	179.095	2	24.328	2	.023	2	-.003	15	.302	3
256			min	-93.971	1	-107.393	3	-.986	9	-.01	3	-.087	1	-.713	2
257		15	max	-2.937	15	10.629	2	37.599	1	.023	2	-.002	12	.35	3
258			min	-93.971	1	-25.393	3	1.024	15	-.01	3	-.069	1	-.781	2
259		16	max	-2.937	15	56.607	3	64.118	1	.023	2	.008	10	.339	3
260			min	-93.971	1	-157.837	2	2.115	15	-.01	3	-.032	1	-.728	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	-2.937	15	138.607	3	90.637	1	.023	2	.04	2	.268	3
262			min	-93.971	1	-326.304	2	3.205	15	-.01	3	0	15	-.553	2
263		18	max	-2.937	15	220.607	3	117.156	1	.023	2	.099	1	.139	3
264			min	-93.971	1	-494.77	2	4.296	15	-.01	3	.003	15	-.257	2
265		19	max	-2.937	15	302.608	3	143.675	1	.023	2	.193	1	.161	2
266			min	-93.971	1	-663.236	2	5.387	15	-.01	3	.006	15	-.05	3
267	M2	1	max	2123.98	2	887.127	3	121.418	2	.002	3	.197	3	4.145	1
268			min	-1701.052	3	-589.826	2	-151.631	3	-.005	2	-.145	2	.145	15
269		2	max	2121.425	2	887.127	3	121.418	2	.002	3	.154	3	4.197	1
270			min	-1702.968	3	-589.826	2	-151.631	3	-.005	2	-.111	2	.143	15
271		3	max	2118.87	2	887.127	3	121.418	2	.002	3	.112	3	4.249	1
272			min	-1704.884	3	-589.826	2	-151.631	3	-.005	2	-.077	1	.142	15
273		4	max	1461.086	2	979.152	1	87.21	2	.001	2	.081	3	4.121	1
274			min	-1470.871	3	32.342	15	-138.035	3	0	3	-.069	2	.136	15
275		5	max	1458.531	2	979.152	1	87.21	2	.001	2	.043	3	3.846	1
276			min	-1472.787	3	32.342	15	-138.035	3	0	3	-.047	1	.127	15
277		6	max	1455.976	2	979.152	1	87.21	2	.001	2	.004	3	3.571	1
278			min	-1474.704	3	32.342	15	-138.035	3	0	3	-.026	1	.118	15
279		7	max	1453.422	2	979.152	1	87.21	2	.001	2	.004	2	3.297	1
280			min	-1476.62	3	32.342	15	-138.035	3	0	3	-.035	3	.109	15
281		8	max	1450.867	2	979.152	1	87.21	2	.001	2	.029	2	3.022	1
282			min	-1478.536	3	32.342	15	-138.035	3	0	3	-.074	3	.1	15
283		9	max	1448.312	2	979.152	1	87.21	2	.001	2	.053	2	2.747	1
284			min	-1480.452	3	32.342	15	-138.035	3	0	3	-.112	3	.091	15
285		10	max	1445.757	2	979.152	1	87.21	2	.001	2	.077	2	2.473	1
286			min	-1482.368	3	32.342	15	-138.035	3	0	3	-.151	3	.082	15
287		11	max	1443.202	2	979.152	1	87.21	2	.001	2	.102	2	2.198	1
288			min	-1484.284	3	32.342	15	-138.035	3	0	3	-.19	3	.073	15
289		12	max	1440.647	2	979.152	1	87.21	2	.001	2	.126	2	1.923	1
290			min	-1486.201	3	32.342	15	-138.035	3	0	3	-.228	3	.064	15
291		13	max	1438.092	2	979.152	1	87.21	2	.001	2	.151	2	1.648	1
292			min	-1488.117	3	32.342	15	-138.035	3	0	3	-.267	3	.054	15
293		14	max	1435.537	2	979.152	1	87.21	2	.001	2	.175	2	1.374	1
294			min	-1490.033	3	32.342	15	-138.035	3	0	3	-.306	3	.045	15
295		15	max	1432.982	2	979.152	1	87.21	2	.001	2	.2	2	1.099	1
296			min	-1491.949	3	32.342	15	-138.035	3	0	3	-.345	3	.036	15
297		16	max	1430.428	2	979.152	1	87.21	2	.001	2	.224	2	.824	1
298			min	-1493.865	3	32.342	15	-138.035	3	0	3	-.383	3	.027	15
299		17	max	1427.873	2	979.152	1	87.21	2	.001	2	.249	2	.549	1
300			min	-1495.781	3	32.342	15	-138.035	3	0	3	-.422	3	.018	15
301		18	max	1425.318	2	979.152	1	87.21	2	.001	2	.273	2	.275	1
302			min	-1497.698	3	32.342	15	-138.035	3	0	3	-.461	3	.009	15
303		19	max	1422.763	2	979.152	1	87.21	2	.001	2	.298	2	0	1
304			min	-1499.614	3	32.342	15	-138.035	3	0	3	-.5	3	0	1
305	M5	1	max	5653.844	2	2384.726	3	0	1	0	1	0	1	6.293	1
306			min	-5055.708	3	-2455.872	2	0	1	0	1	0	1	.206	15
307		2	max	5651.289	2	2384.726	3	0	1	0	1	0	1	6.698	1
308			min	-5057.624	3	-2455.872	2	0	1	0	1	0	1	.209	15
309		3	max	5648.734	2	2384.726	3	0	1	0	1	0	1	7.102	1
310			min	-5059.541	3	-2455.872	2	0	1	0	1	0	1	.212	15
311		4	max	3888.499	2	1669.229	1	0	1	0	1	0	1	7.025	1
312			min	-4222.915	3	48.975	15	0	1	0	1	0	1	.206	15
313		5	max	3885.944	2	1669.229	1	0	1	0	1	0	1	6.557	1
314			min	-4224.831	3	48.975	15	0	1	0	1	0	1	.192	15
315		6	max	3883.389	2	1669.229	1	0	1	0	1	0	1	6.089	1
316			min	-4226.748	3	48.975	15	0	1	0	1	0	1	.179	15
317		7	max	3880.835	2	1669.229	1	0	1	0	1	0	1	5.62	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Mome...	LC	z-z Mome...	LC
318			min	-4228.664	3	48.975	15	0	1	0	1	0	1	.165	15
319		8	max	3878.28	2	1669.229	1	0	1	0	1	0	1	5.152	1
320			min	-4230.58	3	48.975	15	0	1	0	1	0	1	.151	15
321		9	max	3875.725	2	1669.229	1	0	1	0	1	0	1	4.683	1
322			min	-4232.496	3	48.975	15	0	1	0	1	0	1	.137	15
323		10	max	3873.17	2	1669.229	1	0	1	0	1	0	1	4.215	1
324			min	-4234.412	3	48.975	15	0	1	0	1	0	1	.124	15
325		11	max	3870.615	2	1669.229	1	0	1	0	1	0	1	3.747	1
326			min	-4236.328	3	48.975	15	0	1	0	1	0	1	.11	15
327		12	max	3868.06	2	1669.229	1	0	1	0	1	0	1	3.278	1
328			min	-4238.245	3	48.975	15	0	1	0	1	0	1	.096	15
329		13	max	3865.505	2	1669.229	1	0	1	0	1	0	1	2.81	1
330			min	-4240.161	3	48.975	15	0	1	0	1	0	1	.082	15
331		14	max	3862.95	2	1669.229	1	0	1	0	1	0	1	2.342	1
332			min	-4242.077	3	48.975	15	0	1	0	1	0	1	.069	15
333		15	max	3860.395	2	1669.229	1	0	1	0	1	0	1	1.873	1
334			min	-4243.993	3	48.975	15	0	1	0	1	0	1	.055	15
335		16	max	3857.841	2	1669.229	1	0	1	0	1	0	1	1.405	1
336			min	-4245.909	3	48.975	15	0	1	0	1	0	1	.041	15
337		17	max	3855.286	2	1669.229	1	0	1	0	1	0	1	.937	1
338			min	-4247.825	3	48.975	15	0	1	0	1	0	1	.027	15
339		18	max	3852.731	2	1669.229	1	0	1	0	1	0	1	.468	1
340			min	-4249.742	3	48.975	15	0	1	0	1	0	1	.014	15
341		19	max	3850.176	2	1669.229	1	0	1	0	1	0	1	0	1
342			min	-4251.658	3	48.975	15	0	1	0	1	0	1	0	1
343	M8	1	max	2123.98	2	887.127	3	151.631	3	.005	2	.145	2	4.145	1
344			min	-1701.052	3	-589.826	2	-121.418	2	-.002	3	-.197	3	.145	15
345		2	max	2121.425	2	887.127	3	151.631	3	.005	2	.111	2	4.197	1
346			min	-1702.968	3	-589.826	2	-121.418	2	-.002	3	-.154	3	.143	15
347		3	max	2118.87	2	887.127	3	151.631	3	.005	2	.077	1	4.249	1
348			min	-1704.884	3	-589.826	2	-121.418	2	-.002	3	-.112	3	.142	15
349		4	max	1461.086	2	979.152	1	138.035	3	0	3	.069	2	4.121	1
350			min	-1470.871	3	32.342	15	-87.21	2	-.001	2	-.081	3	.136	15
351		5	max	1458.531	2	979.152	1	138.035	3	0	3	.047	1	3.846	1
352			min	-1472.787	3	32.342	15	-87.21	2	-.001	2	-.043	3	.127	15
353		6	max	1455.976	2	979.152	1	138.035	3	0	3	.026	1	3.571	1
354			min	-1474.704	3	32.342	15	-87.21	2	-.001	2	-.004	3	.118	15
355		7	max	1453.422	2	979.152	1	138.035	3	0	3	.035	3	3.297	1
356			min	-1476.62	3	32.342	15	-87.21	2	-.001	2	-.004	2	.109	15
357		8	max	1450.867	2	979.152	1	138.035	3	0	3	.074	3	3.022	1
358			min	-1478.536	3	32.342	15	-87.21	2	-.001	2	-.029	2	.1	15
359		9	max	1448.312	2	979.152	1	138.035	3	0	3	.112	3	2.747	1
360			min	-1480.452	3	32.342	15	-87.21	2	-.001	2	-.053	2	.091	15
361		10	max	1445.757	2	979.152	1	138.035	3	0	3	.151	3	2.473	1
362			min	-1482.368	3	32.342	15	-87.21	2	-.001	2	-.077	2	.082	15
363		11	max	1443.202	2	979.152	1	138.035	3	0	3	.19	3	2.198	1
364			min	-1484.284	3	32.342	15	-87.21	2	-.001	2	-.102	2	.073	15
365		12	max	1440.647	2	979.152	1	138.035	3	0	3	.228	3	1.923	1
366			min	-1486.201	3	32.342	15	-87.21	2	-.001	2	-.126	2	.064	15
367		13	max	1438.092	2	979.152	1	138.035	3	0	3	.267	3	1.648	1
368			min	-1488.117	3	32.342	15	-87.21	2	-.001	2	-.151	2	.054	15
369		14	max	1435.537	2	979.152	1	138.035	3	0	3	.306	3	1.374	1
370			min	-1490.033	3	32.342	15	-87.21	2	-.001	2	-.175	2	.045	15
371		15	max	1432.982	2	979.152	1	138.035	3	0	3	.345	3	1.099	1
372			min	-1491.949	3	32.342	15	-87.21	2	-.001	2	-.2	2	.036	15
373		16	max	1430.428	2	979.152	1	138.035	3	0	3	.383	3	.824	1
374			min	-1493.865	3	32.342	15	-87.21	2	-.001	2	-.224	2	.027	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
375		17	max	1427.873	2	979.152	1	138.035	3	0	3	.422	3	.549	1
376			min	-1495.781	3	32.342	15	-87.21	2	-.001	2	-.249	2	.018	15
377		18	max	1425.318	2	979.152	1	138.035	3	0	3	.461	3	.275	1
378			min	-1497.698	3	32.342	15	-87.21	2	-.001	2	-.273	2	.009	15
379		19	max	1422.763	2	979.152	1	138.035	3	0	3	.5	3	0	1
380			min	-1499.614	3	32.342	15	-87.21	2	-.001	2	-.298	2	0	1
381	M3	1	max	1637.146	2	4.588	4	33.888	2	.01	3	.003	2	0	1
382			min	-595.029	3	1.079	15	-13.911	3	-.022	2	-.002	3	0	1
383		2	max	1636.972	2	4.078	4	33.888	2	.01	3	.013	2	0	15
384			min	-595.16	3	.959	15	-13.911	3	-.022	2	-.006	3	-.001	4
385		3	max	1636.798	2	3.569	4	33.888	2	.01	3	.023	2	0	15
386			min	-595.291	3	.839	15	-13.911	3	-.022	2	-.01	3	-.002	4
387		4	max	1636.623	2	3.059	4	33.888	2	.01	3	.032	2	0	15
388			min	-595.421	3	.719	15	-13.911	3	-.022	2	-.014	3	-.003	4
389		5	max	1636.449	2	2.549	4	33.888	2	.01	3	.042	2	0	15
390			min	-595.552	3	.599	15	-13.911	3	-.022	2	-.018	3	-.004	4
391		6	max	1636.274	2	2.039	4	33.888	2	.01	3	.052	2	-.001	15
392			min	-595.683	3	.479	15	-13.911	3	-.022	2	-.022	3	-.005	4
393		7	max	1636.1	2	1.529	4	33.888	2	.01	3	.062	2	-.001	15
394			min	-595.814	3	.36	15	-13.911	3	-.022	2	-.026	3	-.005	4
395		8	max	1635.926	2	1.02	4	33.888	2	.01	3	.072	2	-.001	15
396			min	-595.945	3	.24	15	-13.911	3	-.022	2	-.03	3	-.006	4
397		9	max	1635.751	2	.51	4	33.888	2	.01	3	.082	2	-.001	15
398			min	-596.075	3	.12	15	-13.911	3	-.022	2	-.034	3	-.006	4
399		10	max	1635.577	2	0	1	33.888	2	.01	3	.092	2	-.001	15
400			min	-596.206	3	0	1	-13.911	3	-.022	2	-.038	3	-.006	4
401		11	max	1635.403	2	-.12	15	33.888	2	.01	3	.102	2	-.001	15
402			min	-596.337	3	-.51	4	-13.911	3	-.022	2	-.042	3	-.006	4
403		12	max	1635.228	2	-.24	15	33.888	2	.01	3	.112	2	-.001	15
404			min	-596.468	3	-1.02	4	-13.911	3	-.022	2	-.046	3	-.006	4
405		13	max	1635.054	2	-.36	15	33.888	2	.01	3	.122	2	-.001	15
406			min	-596.598	3	-1.529	4	-13.911	3	-.022	2	-.05	3	-.005	4
407		14	max	1634.879	2	-.479	15	33.888	2	.01	3	.132	2	-.001	15
408			min	-596.729	3	-2.039	4	-13.911	3	-.022	2	-.054	3	-.005	4
409		15	max	1634.705	2	-.599	15	33.888	2	.01	3	.141	2	0	15
410			min	-596.86	3	-2.549	4	-13.911	3	-.022	2	-.058	3	-.004	4
411		16	max	1634.531	2	-.719	15	33.888	2	.01	3	.151	2	0	15
412			min	-596.991	3	-3.059	4	-13.911	3	-.022	2	-.063	3	-.003	4
413		17	max	1634.356	2	-.839	15	33.888	2	.01	3	.161	2	0	15
414			min	-597.122	3	-3.569	4	-13.911	3	-.022	2	-.067	3	-.002	4
415		18	max	1634.182	2	-.959	15	33.888	2	.01	3	.171	2	0	15
416			min	-597.252	3	-4.078	4	-13.911	3	-.022	2	-.071	3	-.001	4
417		19	max	1634.007	2	-1.079	15	33.888	2	.01	3	.181	2	0	1
418			min	-597.383	3	-4.588	4	-13.911	3	-.022	2	-.075	3	0	1
419	M6	1	max	4439.125	2	4.588	4	0	1	0	1	0	1	0	1
420			min	-2101.236	3	1.079	15	0	1	0	1	0	1	0	1
421		2	max	4438.951	2	4.078	4	0	1	0	1	0	1	0	15
422			min	-2101.367	3	.959	15	0	1	0	1	0	1	-.001	4
423		3	max	4438.776	2	3.569	4	0	1	0	1	0	1	0	15
424			min	-2101.498	3	.839	15	0	1	0	1	0	1	-.002	4
425		4	max	4438.602	2	3.059	4	0	1	0	1	0	1	0	15
426			min	-2101.628	3	.719	15	0	1	0	1	0	1	-.003	4
427		5	max	4438.428	2	2.549	4	0	1	0	1	0	1	0	15
428			min	-2101.759	3	.599	15	0	1	0	1	0	1	-.004	4
429		6	max	4438.253	2	2.039	4	0	1	0	1	0	1	-.001	15
430			min	-2101.89	3	.479	15	0	1	0	1	0	1	-.005	4
431		7	max	4438.079	2	1.529	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	-2102.021	3	.36	15	0	1	0	1	0	1	-.005	4
433		8	max	4437.904	2	1.02	4	0	1	0	1	0	1	-.001	15
434			min	-2102.152	3	.24	15	0	1	0	1	0	1	-.006	4
435		9	max	4437.73	2	.51	4	0	1	0	1	0	1	-.001	15
436			min	-2102.282	3	.12	15	0	1	0	1	0	1	-.006	4
437		10	max	4437.556	2	0	1	0	1	0	1	0	1	-.001	15
438			min	-2102.413	3	0	1	0	1	0	1	0	1	-.006	4
439		11	max	4437.381	2	-.12	15	0	1	0	1	0	1	-.001	15
440			min	-2102.544	3	-.51	4	0	1	0	1	0	1	-.006	4
441		12	max	4437.207	2	-.24	15	0	1	0	1	0	1	-.001	15
442			min	-2102.675	3	-1.02	4	0	1	0	1	0	1	-.006	4
443		13	max	4437.032	2	-.36	15	0	1	0	1	0	1	-.001	15
444			min	-2102.805	3	-1.529	4	0	1	0	1	0	1	-.005	4
445		14	max	4436.858	2	-.479	15	0	1	0	1	0	1	-.001	15
446			min	-2102.936	3	-2.039	4	0	1	0	1	0	1	-.005	4
447		15	max	4436.684	2	-.599	15	0	1	0	1	0	1	0	15
448			min	-2103.067	3	-2.549	4	0	1	0	1	0	1	-.004	4
449		16	max	4436.509	2	-.719	15	0	1	0	1	0	1	0	15
450			min	-2103.198	3	-3.059	4	0	1	0	1	0	1	-.003	4
451		17	max	4436.335	2	-.839	15	0	1	0	1	0	1	0	15
452			min	-2103.329	3	-3.569	4	0	1	0	1	0	1	-.002	4
453		18	max	4436.161	2	-.959	15	0	1	0	1	0	1	0	15
454			min	-2103.459	3	-4.078	4	0	1	0	1	0	1	-.001	4
455		19	max	4435.986	2	-1.079	15	0	1	0	1	0	1	0	1
456			min	-2103.59	3	-4.588	4	0	1	0	1	0	1	0	1
457	M9	1	max	1637.146	2	4.588	4	13.911	3	.022	2	.002	3	0	1
458			min	-595.029	3	1.079	15	-33.888	2	-.01	3	-.003	2	0	1
459		2	max	1636.972	2	4.078	4	13.911	3	.022	2	.006	3	0	15
460			min	-595.16	3	.959	15	-33.888	2	-.01	3	-.013	2	-.001	4
461		3	max	1636.798	2	3.569	4	13.911	3	.022	2	.01	3	0	15
462			min	-595.291	3	.839	15	-33.888	2	-.01	3	-.023	2	-.002	4
463		4	max	1636.623	2	3.059	4	13.911	3	.022	2	.014	3	0	15
464			min	-595.421	3	.719	15	-33.888	2	-.01	3	-.032	2	-.003	4
465		5	max	1636.449	2	2.549	4	13.911	3	.022	2	.018	3	0	15
466			min	-595.552	3	.599	15	-33.888	2	-.01	3	-.042	2	-.004	4
467		6	max	1636.274	2	2.039	4	13.911	3	.022	2	.022	3	-.001	15
468			min	-595.683	3	.479	15	-33.888	2	-.01	3	-.052	2	-.005	4
469		7	max	1636.1	2	1.529	4	13.911	3	.022	2	.026	3	-.001	15
470			min	-595.814	3	.36	15	-33.888	2	-.01	3	-.062	2	-.005	4
471		8	max	1635.926	2	1.02	4	13.911	3	.022	2	.03	3	-.001	15
472			min	-595.945	3	.24	15	-33.888	2	-.01	3	-.072	2	-.006	4
473		9	max	1635.751	2	.51	4	13.911	3	.022	2	.034	3	-.001	15
474			min	-596.075	3	.12	15	-33.888	2	-.01	3	-.082	2	-.006	4
475		10	max	1635.577	2	0	1	13.911	3	.022	2	.038	3	-.001	15
476			min	-596.206	3	0	1	-33.888	2	-.01	3	-.092	2	-.006	4
477		11	max	1635.403	2	-.12	15	13.911	3	.022	2	.042	3	-.001	15
478			min	-596.337	3	-.51	4	-33.888	2	-.01	3	-.102	2	-.006	4
479		12	max	1635.228	2	-.24	15	13.911	3	.022	2	.046	3	-.001	15
480			min	-596.468	3	-1.02	4	-33.888	2	-.01	3	-.112	2	-.006	4
481		13	max	1635.054	2	-.36	15	13.911	3	.022	2	.05	3	-.001	15
482			min	-596.598	3	-1.529	4	-33.888	2	-.01	3	-.122	2	-.005	4
483		14	max	1634.879	2	-.479	15	13.911	3	.022	2	.054	3	-.001	15
484			min	-596.729	3	-2.039	4	-33.888	2	-.01	3	-.132	2	-.005	4
485		15	max	1634.705	2	-.599	15	13.911	3	.022	2	.058	3	0	15
486			min	-596.86	3	-2.549	4	-33.888	2	-.01	3	-.141	2	-.004	4
487		16	max	1634.531	2	-.719	15	13.911	3	.022	2	.063	3	0	15
488			min	-596.991	3	-3.059	4	-33.888	2	-.01	3	-.151	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	1634.356	2	-.839	15	13.911	3	.022	2	.067	3	0	15
490			min	-597.122	3	-3.569	4	-33.888	2	-.01	3	-.161	2	-.002	4
491		18	max	1634.182	2	-.959	15	13.911	3	.022	2	.071	3	0	15
492			min	-597.252	3	-4.078	4	-33.888	2	-.01	3	-.171	2	-.001	4
493		19	max	1634.007	2	-1.079	15	13.911	3	.022	2	.075	3	0	1
494			min	-597.383	3	-4.588	4	-33.888	2	-.01	3	-.181	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	-.007	15	.054	3	.014	1	5.745e-3	3	NC	3	NC	3
2			min	-.207	1	-.561	2	0	15	-1.512e-2	2	236.325	1	4935.008	1
3		2	max	-.007	15	.026	3	.004	1	5.745e-3	3	8437.441	15	NC	2
4			min	-.207	1	-.468	2	0	15	-1.512e-2	2	276.584	1	7847.647	1
5		3	max	-.007	15	-.002	3	0	15	5.35e-3	3	9765.954	15	NC	1
6			min	-.207	1	-.374	2	-.005	1	-1.385e-2	2	333.44	1	NC	1
7		4	max	-.007	15	-.009	15	0	15	4.744e-3	3	NC	15	NC	1
8			min	-.207	1	-.285	2	-.008	1	-1.191e-2	2	415.81	1	NC	1
9		5	max	-.007	15	-.007	15	0	12	4.138e-3	3	NC	15	NC	1
10			min	-.207	1	-.212	1	-.008	1	-9.971e-3	2	535.402	1	NC	1
11		6	max	-.007	15	-.005	15	0	3	3.981e-3	3	NC	5	NC	1
12			min	-.207	1	-.152	1	-.006	1	-9.102e-3	2	702.732	1	NC	1
13		7	max	-.007	15	-.004	15	0	3	4.132e-3	3	NC	5	NC	1
14			min	-.206	1	-.105	1	-.003	2	-8.973e-3	2	936.012	1	NC	1
15		8	max	-.007	15	-.002	15	0	3	4.284e-3	3	NC	5	NC	1
16			min	-.206	1	-.073	3	0	2	-8.845e-3	2	1049.045	3	NC	1
17		9	max	-.007	15	-.001	15	0	15	4.676e-3	3	NC	2	NC	1
18			min	-.206	1	-.071	3	0	3	-8.307e-3	2	1073.989	3	NC	1
19		10	max	-.007	15	.01	2	0	2	5.491e-3	3	NC	5	NC	1
20			min	-.205	1	-.064	3	0	3	-7.045e-3	2	1137.162	3	NC	1
21		11	max	-.007	15	.037	2	0	3	6.307e-3	3	NC	1	NC	1
22			min	-.205	1	-.052	3	0	2	-5.783e-3	2	1264.252	3	NC	1
23		12	max	-.007	15	.061	2	.003	3	5.267e-3	3	NC	4	NC	1
24			min	-.204	1	-.034	3	-.003	1	-4.211e-3	2	1513.317	3	NC	1
25		13	max	-.007	15	.081	1	.006	3	3.178e-3	3	NC	4	NC	1
26			min	-.204	1	-.007	3	-.003	2	-2.465e-3	2	1515.913	2	NC	1
27		14	max	-.007	15	.093	1	.006	3	1.209e-3	3	NC	4	NC	2
28			min	-.203	1	.003	15	0	2	-7.91e-4	2	1397.877	2	9770.006	1
29		15	max	-.007	15	.105	3	.005	1	4.573e-3	3	NC	4	NC	2
30			min	-.203	1	.003	15	0	15	-2.298e-3	2	1494.505	2	7513.522	1
31		16	max	-.007	15	.19	3	.007	1	7.937e-3	3	NC	4	NC	2
32			min	-.203	1	.003	15	0	15	-3.805e-3	2	989.26	3	6858.375	1
33		17	max	-.007	15	.285	3	.004	1	1.13e-2	3	NC	4	NC	2
34			min	-.204	1	.003	15	0	15	-5.312e-3	2	580.98	3	7825.907	1
35		18	max	-.007	15	.384	3	0	15	1.349e-2	3	NC	4	NC	1
36			min	-.204	1	0	10	-.004	1	-6.295e-3	2	405.989	3	NC	1
37		19	max	-.007	15	.484	3	0	15	1.349e-2	3	NC	1	NC	1
38			min	-.204	1	-.014	10	-.013	1	-6.295e-3	2	312.101	3	NC	1
39	M4	1	max	-.01	15	.215	3	0	1	0	1	NC	3	NC	1
40			min	-.349	1	-1.11	2	0	1	0	1	140.615	2	NC	1
41		2	max	-.01	15	.144	3	0	1	0	1	6265.229	15	NC	1
42			min	-.349	1	-.918	2	0	1	0	1	176.059	2	NC	1
43		3	max	-.01	15	.073	3	0	1	0	1	7577.697	15	NC	1
44			min	-.349	1	-.725	2	0	1	0	1	230.195	1	NC	1
45		4	max	-.01	15	.006	3	0	1	0	1	9503.626	15	NC	1
46			min	-.349	1	-.541	2	0	1	0	1	314.033	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
47		5	max	-.01	15	-.011	15	0	1	0	1	NC	15	NC	1
48			min	-.349	1	-.381	2	0	1	0	1	463.345	1	NC	1
49		6	max	-.01	15	-.008	15	0	1	0	1	NC	5	NC	1
50			min	-.348	1	-.265	1	0	1	0	1	448.783	3	NC	1
51		7	max	-.01	15	-.006	15	0	1	0	1	NC	5	NC	1
52			min	-.348	1	-.186	1	0	1	0	1	426.66	3	NC	1
53		8	max	-.01	15	-.004	15	0	1	0	1	NC	5	NC	1
54			min	-.347	1	-.123	1	0	1	0	1	422.997	3	NC	1
55		9	max	-.01	15	-.002	15	0	1	0	1	NC	5	NC	1
56			min	-.346	1	-.099	3	0	1	0	1	427.897	3	NC	1
57		10	max	-.01	15	0	15	0	1	0	1	NC	4	NC	1
58			min	-.345	1	-.092	3	0	1	0	1	437.402	3	NC	1
59		11	max	-.01	15	.049	2	0	1	0	1	NC	4	NC	1
60			min	-.344	1	-.08	3	0	1	0	1	455.635	3	NC	1
61		12	max	-.01	15	.099	2	0	1	0	1	NC	5	NC	1
62			min	-.343	1	-.06	3	0	1	0	1	487.42	3	NC	1
63		13	max	-.01	15	.138	1	0	1	0	1	NC	5	NC	1
64			min	-.342	1	-.022	3	0	1	0	1	456.437	2	NC	1
65		14	max	-.01	15	.155	1	0	1	0	1	NC	5	NC	1
66			min	-.341	1	.005	15	0	1	0	1	438.759	2	NC	1
67		15	max	-.01	15	.19	3	0	1	0	1	NC	5	NC	1
68			min	-.341	1	.005	15	0	1	0	1	479.372	2	NC	1
69		16	max	-.01	15	.366	3	0	1	0	1	NC	5	NC	1
70			min	-.341	1	.004	15	0	1	0	1	593.806	2	NC	1
71		17	max	-.01	15	.566	3	0	1	0	1	NC	5	NC	1
72			min	-.341	1	-.01	10	0	1	0	1	381.215	3	NC	1
73		18	max	-.01	15	.776	3	0	1	0	1	NC	4	NC	1
74			min	-.341	1	-.079	2	0	1	0	1	238.748	3	NC	1
75		19	max	-.01	15	.985	3	0	1	0	1	NC	1	NC	1
76			min	-.341	1	-.157	2	0	1	0	1	173.943	3	NC	1
77	M7	1	max	-.007	15	.054	3	0	15	1.512e-2	2	NC	3	NC	3
78			min	-.207	1	-.561	2	-.014	1	-5.745e-3	3	236.325	1	4935.008	1
79		2	max	-.007	15	.026	3	0	15	1.512e-2	2	8437.441	15	NC	2
80			min	-.207	1	-.468	2	-.004	1	-5.745e-3	3	276.584	1	7847.647	1
81		3	max	-.007	15	-.002	3	.005	1	1.385e-2	2	9765.954	15	NC	1
82			min	-.207	1	-.374	2	0	15	-5.35e-3	3	333.44	1	NC	1
83		4	max	-.007	15	-.009	15	.008	1	1.191e-2	2	NC	15	NC	1
84			min	-.207	1	-.285	2	0	15	-4.744e-3	3	415.81	1	NC	1
85		5	max	-.007	15	-.007	15	.008	1	9.971e-3	2	NC	15	NC	1
86			min	-.207	1	-.212	1	0	12	-4.138e-3	3	535.402	1	NC	1
87		6	max	-.007	15	-.005	15	.006	1	9.102e-3	2	NC	5	NC	1
88			min	-.207	1	-.152	1	0	3	-3.981e-3	3	702.732	1	NC	1
89		7	max	-.007	15	-.004	15	.003	2	8.973e-3	2	NC	5	NC	1
90			min	-.206	1	-.105	1	0	3	-4.132e-3	3	936.012	1	NC	1
91		8	max	-.007	15	-.002	15	0	2	8.845e-3	2	NC	5	NC	1
92			min	-.206	1	-.073	3	0	3	-4.284e-3	3	1049.045	3	NC	1
93		9	max	-.007	15	-.001	15	0	3	8.307e-3	2	NC	2	NC	1
94			min	-.206	1	-.071	3	0	15	-4.676e-3	3	1073.989	3	NC	1
95		10	max	-.007	15	.01	2	0	3	7.045e-3	2	NC	5	NC	1
96			min	-.205	1	-.064	3	0	2	-5.491e-3	3	1137.162	3	NC	1
97		11	max	-.007	15	.037	2	0	2	5.783e-3	2	NC	1	NC	1
98			min	-.205	1	-.052	3	0	3	-6.307e-3	3	1264.252	3	NC	1
99		12	max	-.007	15	.061	2	.003	1	4.211e-3	2	NC	4	NC	1
100			min	-.204	1	-.034	3	-.003	3	-5.267e-3	3	1513.317	3	NC	1
101		13	max	-.007	15	.081	1	.003	2	2.465e-3	2	NC	4	NC	1
102			min	-.204	1	-.007	3	-.006	3	-3.178e-3	3	1515.913	2	NC	1
103		14	max	-.007	15	.093	1	0	2	7.91e-4	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	-.203	1	.003	15	-.006	3	-1.209e-3	3	1397.877	2	9770.006	1
105		15	max	-.007	15	.105	3	0	15	2.298e-3	2	NC	4	NC	2
106			min	-.203	1	.003	15	-.005	1	-4.573e-3	3	1494.505	2	7513.522	1
107		16	max	-.007	15	.19	3	0	15	3.805e-3	2	NC	4	NC	2
108			min	-.203	1	.003	15	-.007	1	-7.937e-3	3	989.26	3	6858.375	1
109		17	max	-.007	15	.285	3	0	15	5.312e-3	2	NC	4	NC	2
110			min	-.204	1	.003	15	-.004	1	-1.13e-2	3	580.98	3	7825.907	1
111		18	max	-.007	15	.384	3	.004	1	6.295e-3	2	NC	4	NC	1
112			min	-.204	1	0	10	0	15	-1.349e-2	3	405.989	3	NC	1
113		19	max	-.007	15	.484	3	.013	1	6.295e-3	2	NC	1	NC	1
114			min	-.204	1	-.014	10	0	15	-1.349e-2	3	312.101	3	NC	1
115	M10	1	max	0	1	.35	3	.204	1	1.334e-2	3	NC	1	NC	1
116			min	0	15	.003	15	.007	15	-3.385e-3	2	NC	1	NC	1
117		2	max	0	1	.469	3	.221	1	1.498e-2	3	NC	4	NC	2
118			min	0	15	-.031	2	.007	15	-4.159e-3	2	1309.581	3	8901.128	1
119		3	max	0	1	.581	3	.247	1	1.662e-2	3	NC	4	NC	3
120			min	0	15	-.08	2	.008	15	-4.933e-3	2	675.28	3	3590.629	1
121		4	max	0	1	.672	3	.275	1	1.826e-2	3	NC	5	NC	3
122			min	0	15	-.116	2	.009	15	-5.707e-3	2	484.557	3	2180.879	1
123		5	max	0	1	.734	3	.301	1	1.989e-2	3	NC	5	NC	5
124			min	0	15	-.134	2	.01	15	-6.48e-3	2	406.578	3	1605.914	1
125		6	max	0	1	.763	3	.321	1	2.153e-2	3	NC	5	NC	5
126			min	0	15	-.133	2	.01	15	-7.254e-3	2	377.216	3	1330.696	1
127		7	max	0	1	.764	3	.334	1	2.317e-2	3	NC	5	NC	5
128			min	0	15	-.117	2	.01	15	-8.028e-3	2	376.483	3	1196.764	1
129		8	max	0	1	.744	3	.34	1	2.481e-2	3	NC	4	NC	5
130			min	0	15	-.091	2	.01	15	-8.802e-3	2	395.492	3	1141.681	1
131		9	max	0	1	.718	3	.341	1	2.645e-2	3	NC	4	NC	5
132			min	0	15	-.065	2	.01	15	-9.576e-3	2	424.299	3	1122.873	2
133		10	max	0	1	.703	3	.341	1	2.809e-2	3	NC	4	NC	5
134			min	0	1	-.053	2	.01	15	-1.035e-2	2	441.429	3	1103.63	2
135		11	max	0	15	.718	3	.341	1	2.645e-2	3	NC	4	NC	5
136			min	0	1	-.065	2	.01	15	-9.576e-3	2	424.299	3	1122.873	2
137		12	max	0	15	.744	3	.34	1	2.481e-2	3	NC	4	NC	5
138			min	0	1	-.091	2	.01	15	-8.802e-3	2	395.492	3	1141.681	1
139		13	max	0	15	.764	3	.334	1	2.317e-2	3	NC	5	NC	5
140			min	0	1	-.117	2	.01	15	-8.028e-3	2	376.483	3	1196.764	1
141		14	max	0	15	.763	3	.321	1	2.153e-2	3	NC	5	NC	5
142			min	0	1	-.133	2	.01	15	-7.254e-3	2	377.216	3	1330.696	1
143		15	max	0	15	.734	3	.301	1	1.989e-2	3	NC	5	NC	5
144			min	0	1	-.134	2	.01	15	-6.48e-3	2	406.578	3	1605.914	1
145		16	max	0	15	.672	3	.275	1	1.826e-2	3	NC	5	NC	3
146			min	0	1	-.116	2	.009	15	-5.707e-3	2	484.557	3	2180.879	1
147		17	max	0	15	.581	3	.247	1	1.662e-2	3	NC	4	NC	3
148			min	0	1	-.08	2	.008	15	-4.933e-3	2	675.28	3	3590.629	1
149		18	max	0	15	.469	3	.221	1	1.498e-2	3	NC	4	NC	2
150			min	0	1	-.031	2	.007	15	-4.159e-3	2	1309.581	3	8901.128	1
151		19	max	0	15	.35	3	.204	1	1.334e-2	3	NC	1	NC	1
152			min	0	1	.003	15	.007	15	-3.385e-3	2	NC	1	NC	1
153	M11	1	max	0	1	.046	2	.205	1	3.672e-3	1	NC	1	NC	1
154			min	-.001	3	-.046	3	.007	15	1.276e-4	15	NC	1	NC	1
155		2	max	0	1	.013	3	.217	1	4.037e-3	1	NC	4	NC	1
156			min	0	3	0	10	.007	15	1.363e-4	15	2653.595	3	NC	1
157		3	max	0	1	.065	3	.24	1	4.403e-3	1	NC	4	NC	3
158			min	0	3	-.036	2	.008	15	1.45e-4	15	1410.558	3	4388.372	1
159		4	max	0	1	.097	3	.268	1	4.769e-3	1	NC	4	NC	3
160			min	0	3	-.057	2	.009	15	1.538e-4	15	1087.04	3	2476.513	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	1	.105	3	.294	1	5.135e-3	1	NC	4	NC	3
162			min	0	3	-.06	2	.009	15	1.625e-4	15	1032.156	3	1743.445	1
163		6	max	0	1	.087	3	.316	1	5.501e-3	1	NC	4	NC	5
164			min	0	3	-.045	2	.01	15	1.712e-4	15	1176.34	3	1399.781	1
165		7	max	0	1	.046	3	.332	1	5.866e-3	1	NC	4	NC	5
166			min	0	3	-.016	2	.01	15	1.8e-4	15	1685.039	3	1229.048	1
167		8	max	0	1	.023	1	.34	1	6.232e-3	1	NC	4	NC	5
168			min	0	3	-.005	3	.01	15	1.887e-4	15	3786.502	3	1150.891	1
169		9	max	0	1	.053	2	.343	1	6.598e-3	1	NC	1	NC	5
170			min	0	3	-.052	3	.01	15	1.974e-4	15	NC	1	1112.401	2
171		10	max	0	1	.068	2	.343	1	6.964e-3	1	NC	4	NC	5
172			min	0	1	-.073	3	.01	15	2.062e-4	15	5704.942	3	1090.081	2
173		11	max	0	3	.053	2	.343	1	6.598e-3	1	NC	1	NC	5
174			min	0	1	-.052	3	.01	15	1.974e-4	15	NC	1	1112.401	2
175		12	max	0	3	.023	1	.34	1	6.232e-3	1	NC	4	NC	5
176			min	0	1	-.005	3	.01	15	1.887e-4	15	3786.502	3	1150.891	1
177		13	max	0	3	.046	3	.332	1	5.866e-3	1	NC	4	NC	5
178			min	0	1	-.016	2	.01	15	1.8e-4	15	1685.039	3	1229.048	1
179		14	max	0	3	.087	3	.316	1	5.501e-3	1	NC	4	NC	5
180			min	0	1	-.045	2	.01	15	1.712e-4	15	1176.34	3	1399.781	1
181		15	max	0	3	.105	3	.294	1	5.135e-3	1	NC	4	NC	3
182			min	0	1	-.06	2	.009	15	1.625e-4	15	1032.156	3	1743.445	1
183		16	max	0	3	.097	3	.268	1	4.769e-3	1	NC	4	NC	3
184			min	0	1	-.057	2	.009	15	1.538e-4	15	1087.04	3	2476.513	1
185		17	max	0	3	.065	3	.24	1	4.403e-3	1	NC	4	NC	3
186			min	0	1	-.036	2	.008	15	1.45e-4	15	1410.558	3	4388.372	1
187		18	max	0	3	.013	3	.217	1	4.037e-3	1	NC	4	NC	1
188			min	0	1	0	10	.007	15	1.363e-4	15	2653.595	3	NC	1
189		19	max	.001	3	.046	2	.205	1	3.672e-3	1	NC	1	NC	1
190			min	0	1	-.046	3	.007	15	1.276e-4	15	NC	1	NC	1
191	M12	1	max	0	10	-.002	15	.206	1	4.677e-3	1	NC	1	NC	1
192			min	0	1	-.072	3	.007	15	1.536e-4	15	NC	1	NC	1
193		2	max	0	10	-.003	15	.216	1	5.007e-3	1	NC	4	NC	1
194			min	0	1	-.107	2	.007	15	1.621e-4	15	2084.522	2	NC	1
195		3	max	0	10	-.004	15	.239	1	5.337e-3	1	NC	4	NC	3
196			min	0	1	-.171	2	.008	15	1.705e-4	15	1125.045	2	4758.526	1
197		4	max	0	10	.004	3	.266	1	5.667e-3	1	NC	5	NC	3
198			min	0	1	-.214	2	.009	15	1.789e-4	15	861.044	2	2594.623	1
199		5	max	0	10	.004	3	.293	1	5.997e-3	1	NC	5	NC	3
200			min	0	1	-.23	2	.009	15	1.873e-4	15	791.394	2	1791.286	1
201		6	max	0	10	-.005	15	.316	1	6.327e-3	1	NC	5	NC	5
202			min	0	1	-.219	2	.01	15	1.957e-4	15	837.48	2	1419.362	1
203		7	max	0	10	-.004	15	.332	1	6.657e-3	1	NC	5	NC	5
204			min	0	1	-.186	2	.01	15	2.041e-4	15	1016.648	2	1234.063	1
205		8	max	0	10	-.004	15	.342	1	6.987e-3	1	NC	3	NC	5
206			min	0	1	-.141	2	.01	15	2.125e-4	15	1437.968	2	1146.916	1
207		9	max	0	10	-.003	15	.346	1	7.317e-3	1	NC	4	NC	5
208			min	0	1	-.102	1	.01	15	2.209e-4	15	2353.617	2	1100.815	2
209		10	max	0	1	-.003	15	.346	1	7.647e-3	1	NC	4	NC	5
210			min	0	1	-.1	3	.01	15	2.294e-4	15	3336.895	2	1076.339	2
211		11	max	0	1	-.003	15	.346	1	7.317e-3	1	NC	4	NC	5
212			min	0	10	-.102	1	.01	15	2.209e-4	15	2353.617	2	1100.815	2
213		12	max	0	1	-.004	15	.342	1	6.987e-3	1	NC	3	NC	5
214			min	0	10	-.141	2	.01	15	2.125e-4	15	1437.968	2	1146.916	1
215		13	max	0	1	-.004	15	.332	1	6.657e-3	1	NC	5	NC	5
216			min	0	10	-.186	2	.01	15	2.041e-4	15	1016.648	2	1234.063	1
217		14	max	0	1	-.005	15	.316	1	6.327e-3	1	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	10	-.219	2	.01	15	1.957e-4	15	837.48	2	1419.362	1
219		15	max	0	1	.004	3	.293	1	5.997e-3	1	NC	5	NC	3
220			min	0	10	-.23	2	.009	15	1.873e-4	15	791.394	2	1791.286	1
221		16	max	0	1	.004	3	.266	1	5.667e-3	1	NC	5	NC	3
222			min	0	10	-.214	2	.009	15	1.789e-4	15	861.044	2	2594.623	1
223		17	max	0	1	-.004	15	.239	1	5.337e-3	1	NC	4	NC	3
224			min	0	10	-.171	2	.008	15	1.705e-4	15	1125.045	2	4758.526	1
225		18	max	0	1	-.003	15	.216	1	5.007e-3	1	NC	4	NC	1
226			min	0	10	-.107	2	.007	15	1.621e-4	15	2084.522	2	NC	1
227		19	max	0	1	-.002	15	.206	1	4.677e-3	1	NC	1	NC	1
228			min	0	10	-.072	3	.007	15	1.536e-4	15	NC	1	NC	1
229	M13	1	max	0	15	.017	3	.207	1	1.254e-2	2	NC	1	NC	1
230			min	0	1	-.435	2	.007	15	-3.75e-3	3	NC	1	NC	1
231		2	max	0	15	.066	3	.226	1	1.401e-2	2	NC	4	NC	2
232			min	0	1	-.566	2	.007	15	-4.392e-3	3	1189.934	2	8469.698	1
233		3	max	0	15	.11	3	.252	1	1.548e-2	2	NC	5	NC	3
234			min	0	1	-.687	2	.008	15	-5.033e-3	3	619.086	2	3454.093	1
235		4	max	0	15	.143	3	.281	1	1.695e-2	2	NC	5	NC	3
236			min	0	1	-.786	2	.009	15	-5.674e-3	3	445.23	2	2108.254	1
237		5	max	0	15	.162	3	.308	1	1.842e-2	2	NC	5	NC	3
238			min	0	1	-.854	2	.01	15	-6.316e-3	3	372.268	2	1555.893	1
239		6	max	0	15	.166	3	.328	1	1.989e-2	2	NC	5	NC	5
240			min	0	1	-.891	2	.01	15	-6.957e-3	3	342.255	2	1290.149	1
241		7	max	0	15	.159	3	.342	1	2.136e-2	2	NC	5	NC	5
242			min	0	1	-.899	2	.011	15	-7.598e-3	3	336.599	2	1159.941	1
243		8	max	0	15	.143	3	.348	1	2.283e-2	2	NC	5	NC	5
244			min	0	1	-.885	2	.011	15	-8.239e-3	3	346.743	2	1105.48	1
245		9	max	0	15	.127	3	.35	1	2.43e-2	2	NC	5	NC	5
246			min	0	1	-.863	2	.01	15	-8.881e-3	3	364.457	2	1078.692	2
247		10	max	0	1	.119	3	.349	1	2.577e-2	2	NC	5	NC	5
248			min	0	1	-.851	2	.01	15	-9.522e-3	3	375.178	2	1060.224	2
249		11	max	0	1	.127	3	.35	1	2.43e-2	2	NC	5	NC	5
250			min	0	15	-.863	2	.01	15	-8.881e-3	3	364.457	2	1078.692	2
251		12	max	0	1	.143	3	.348	1	2.283e-2	2	NC	5	NC	5
252			min	0	15	-.885	2	.011	15	-8.239e-3	3	346.743	2	1105.48	1
253		13	max	0	1	.159	3	.342	1	2.136e-2	2	NC	5	NC	5
254			min	0	15	-.899	2	.011	15	-7.598e-3	3	336.599	2	1159.941	1
255		14	max	0	1	.166	3	.328	1	1.989e-2	2	NC	5	NC	5
256			min	0	15	-.891	2	.01	15	-6.957e-3	3	342.255	2	1290.149	1
257		15	max	0	1	.162	3	.308	1	1.842e-2	2	NC	5	NC	3
258			min	0	15	-.854	2	.01	15	-6.316e-3	3	372.268	2	1555.893	1
259		16	max	0	1	.143	3	.281	1	1.695e-2	2	NC	5	NC	3
260			min	0	15	-.786	2	.009	15	-5.674e-3	3	445.23	2	2108.254	1
261		17	max	0	1	.11	3	.252	1	1.548e-2	2	NC	5	NC	3
262			min	0	15	-.687	2	.008	15	-5.033e-3	3	619.086	2	3454.093	1
263		18	max	0	1	.066	3	.226	1	1.401e-2	2	NC	4	NC	2
264			min	0	15	-.566	2	.007	15	-4.392e-3	3	1189.934	2	8469.698	1
265		19	max	0	1	.017	3	.207	1	1.254e-2	2	NC	1	NC	1
266			min	0	15	-.435	2	.007	15	-3.75e-3	3	NC	1	NC	1
267	M2	1	max	0	1	0	1	0	1	0	1	NC	1	NC	1
268			min	0	1	0	1	0	1	0	1	NC	1	NC	1
269		2	max	0	3	0	15	0	3	1.483e-3	2	NC	1	NC	1
270			min	0	2	0	1	0	2	-6.179e-4	3	NC	1	NC	1
271		3	max	0	3	0	15	0	3	2.966e-3	2	NC	1	NC	1
272			min	0	2	-.004	1	0	2	-1.236e-3	3	NC	1	NC	1
273		4	max	0	3	0	15	0	3	3.473e-3	2	NC	3	NC	1
274			min	0	2	-.008	1	0	2	-1.431e-3	3	7473.191	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
275		5	max	0	3	0	15	.001	3	3.187e-3	2	NC	4	NC	1
276			min	0	2	-.015	1	0	2	-1.283e-3	3	4175.824	1	NC	1
277		6	max	0	3	0	15	.002	3	2.901e-3	2	NC	4	NC	1
278			min	0	2	-.023	1	-.001	2	-1.134e-3	3	2684.798	1	NC	1
279		7	max	0	3	-.001	15	.002	3	2.616e-3	2	NC	5	NC	1
280			min	0	2	-.032	1	-.002	2	-9.861e-4	3	1884.345	1	NC	1
281		8	max	0	3	-.001	15	.003	3	2.33e-3	2	NC	5	NC	1
282			min	0	2	-.043	1	-.002	2	-8.378e-4	3	1404.098	1	NC	1
283		9	max	0	3	-.002	15	.003	3	2.045e-3	2	NC	5	NC	1
284			min	0	2	-.055	1	-.003	2	-6.896e-4	3	1092.814	1	NC	1
285		10	max	0	3	-.002	15	.004	3	1.759e-3	2	NC	5	NC	1
286			min	0	2	-.069	1	-.003	1	-5.413e-4	3	879.197	1	9090.89	3
287		11	max	0	3	-.003	15	.004	3	1.474e-3	2	NC	5	NC	1
288			min	0	2	-.083	1	-.003	1	-3.931e-4	3	726.076	1	8482.907	3
289		12	max	0	3	-.003	15	.004	3	1.188e-3	2	NC	5	NC	1
290			min	0	2	-.099	1	-.004	1	-2.448e-4	3	612.499	1	8172.287	3
291		13	max	0	3	-.004	15	.003	3	9.025e-4	2	NC	5	NC	1
292			min	0	2	-.115	1	-.004	1	-9.658e-5	3	525.864	1	8146.66	3
293		14	max	.001	3	-.004	15	.003	3	6.169e-4	2	NC	15	NC	1
294			min	-.001	2	-.132	1	-.004	1	1.801e-6	15	458.24	1	8449.767	3
295		15	max	.001	3	-.005	15	.002	3	3.314e-4	2	NC	15	NC	1
296			min	-.001	2	-.15	1	-.003	1	-5.189e-5	9	404.426	1	9222.105	3
297		16	max	.001	3	-.006	15	0	3	3.482e-4	3	NC	15	NC	1
298			min	-.001	2	-.168	1	-.003	1	-1.389e-4	1	360.907	1	NC	1
299		17	max	.001	3	-.006	15	0	15	4.964e-4	3	9738.864	15	NC	1
300			min	-.001	2	-.186	1	-.002	1	-3.8e-4	1	325.227	1	NC	1
301		18	max	.001	3	-.007	15	0	10	6.447e-4	3	8855.857	15	NC	1
302			min	-.001	2	-.205	1	-.003	3	-6.211e-4	1	295.628	1	NC	1
303		19	max	.001	3	-.007	15	0	2	7.929e-4	3	8115.42	15	NC	1
304			min	-.001	2	-.224	1	-.006	3	-8.622e-4	1	270.824	1	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	15	0	1	0	1	NC	1	NC	1
308			min	0	2	-.001	1	0	1	0	1	NC	1	NC	1
309		3	max	0	3	0	15	0	1	0	1	NC	1	NC	1
310			min	0	2	-.005	1	0	1	0	1	NC	1	NC	1
311		4	max	0	3	0	15	0	1	0	1	NC	4	NC	1
312			min	0	2	-.013	1	0	1	0	1	4822.535	1	NC	1
313		5	max	0	3	0	15	0	1	0	1	NC	4	NC	1
314			min	-.001	2	-.023	1	0	1	0	1	2626.051	1	NC	1
315		6	max	.001	3	-.001	15	0	1	0	1	NC	5	NC	1
316			min	-.001	2	-.036	1	0	1	0	1	1664.352	1	NC	1
317		7	max	.001	3	-.002	15	0	1	0	1	NC	5	NC	1
318			min	-.001	2	-.052	1	0	1	0	1	1157.575	1	NC	1
319		8	max	.002	3	-.002	15	0	1	0	1	NC	5	NC	1
320			min	-.002	2	-.071	1	0	1	0	1	857.175	1	NC	1
321		9	max	.002	3	-.003	15	0	1	0	1	NC	5	NC	1
322			min	-.002	2	-.091	1	0	1	0	1	664.109	1	NC	1
323		10	max	.002	3	-.003	15	0	1	0	1	NC	5	NC	1
324			min	-.002	2	-.114	1	0	1	0	1	532.45	1	NC	1
325		11	max	.002	3	-.004	15	0	1	0	1	NC	15	NC	1
326			min	-.002	2	-.138	1	0	1	0	1	438.531	1	NC	1
327		12	max	.003	3	-.005	15	0	1	0	1	NC	15	NC	1
328			min	-.002	2	-.164	1	0	1	0	1	369.136	1	NC	1
329		13	max	.003	3	-.006	15	0	1	0	1	NC	15	NC	1
330			min	-.003	2	-.192	1	0	1	0	1	316.367	1	NC	1
331		14	max	.003	3	-.007	15	0	1	0	1	9173.193	15	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	-.22	1	0	1	0	1	275.285	1	NC	1
333		15	max	.003	3	-.007	15	0	1	0	1	8095.402	15	NC	1
334			min	-.003	2	-.25	1	0	1	0	1	242.663	1	NC	1
335		16	max	.003	3	-.008	15	0	1	0	1	7223.901	15	NC	1
336			min	-.003	2	-.28	1	0	1	0	1	216.331	1	NC	1
337		17	max	.004	3	-.009	15	0	1	0	1	6509.446	15	NC	1
338			min	-.003	2	-.311	1	0	1	0	1	194.778	1	NC	1
339		18	max	.004	3	-.01	15	0	1	0	1	5916.785	15	NC	1
340			min	-.004	2	-.343	1	0	1	0	1	176.923	1	NC	1
341		19	max	.004	3	-.011	15	0	1	0	1	5420.173	15	NC	1
342			min	-.004	2	-.374	1	0	1	0	1	161.979	1	NC	1
343	M8	1	max	0	1	0	1	0	1	0	1	NC	1	NC	1
344			min	0	1	0	1	0	1	0	1	NC	1	NC	1
345		2	max	0	3	0	15	0	2	6.179e-4	3	NC	1	NC	1
346			min	0	2	0	1	0	3	-1.483e-3	2	NC	1	NC	1
347		3	max	0	3	0	15	0	2	1.236e-3	3	NC	1	NC	1
348			min	0	2	-.004	1	0	3	-2.966e-3	2	NC	1	NC	1
349		4	max	0	3	0	15	0	2	1.431e-3	3	NC	3	NC	1
350			min	0	2	-.008	1	0	3	-3.473e-3	2	7473.191	1	NC	1
351		5	max	0	3	0	15	0	2	1.283e-3	3	NC	4	NC	1
352			min	0	2	-.015	1	-.001	3	-3.187e-3	2	4175.824	1	NC	1
353		6	max	0	3	0	15	.001	2	1.134e-3	3	NC	4	NC	1
354			min	0	2	-.023	1	-.002	3	-2.901e-3	2	2684.798	1	NC	1
355		7	max	0	3	-.001	15	.002	2	9.861e-4	3	NC	5	NC	1
356			min	0	2	-.032	1	-.002	3	-2.616e-3	2	1884.345	1	NC	1
357		8	max	0	3	-.001	15	.002	2	8.378e-4	3	NC	5	NC	1
358			min	0	2	-.043	1	-.003	3	-2.33e-3	2	1404.098	1	NC	1
359		9	max	0	3	-.002	15	.003	2	6.896e-4	3	NC	5	NC	1
360			min	0	2	-.055	1	-.003	3	-2.045e-3	2	1092.814	1	NC	1
361		10	max	0	3	-.002	15	.003	1	5.413e-4	3	NC	5	NC	1
362			min	0	2	-.069	1	-.004	3	-1.759e-3	2	879.197	1	9090.89	3
363		11	max	0	3	-.003	15	.003	1	3.931e-4	3	NC	5	NC	1
364			min	0	2	-.083	1	-.004	3	-1.474e-3	2	726.076	1	8482.907	3
365		12	max	0	3	-.003	15	.004	1	2.448e-4	3	NC	5	NC	1
366			min	0	2	-.099	1	-.004	3	-1.188e-3	2	612.499	1	8172.287	3
367		13	max	0	3	-.004	15	.004	1	9.658e-5	3	NC	5	NC	1
368			min	0	2	-.115	1	-.003	3	-9.025e-4	2	525.864	1	8146.66	3
369		14	max	.001	3	-.004	15	.004	1	-1.801e-6	15	NC	15	NC	1
370			min	-.001	2	-.132	1	-.003	3	-6.169e-4	2	458.24	1	8449.767	3
371		15	max	.001	3	-.005	15	.003	1	5.189e-5	9	NC	15	NC	1
372			min	-.001	2	-.15	1	-.002	3	-3.314e-4	2	404.426	1	9222.105	3
373		16	max	.001	3	-.006	15	.003	1	1.389e-4	1	NC	15	NC	1
374			min	-.001	2	-.168	1	0	3	-3.482e-4	3	360.907	1	NC	1
375		17	max	.001	3	-.006	15	.002	1	3.8e-4	1	9738.864	15	NC	1
376			min	-.001	2	-.186	1	0	15	-4.964e-4	3	325.227	1	NC	1
377		18	max	.001	3	-.007	15	.003	3	6.211e-4	1	8855.857	15	NC	1
378			min	-.001	2	-.205	1	0	10	-6.447e-4	3	295.628	1	NC	1
379		19	max	.001	3	-.007	15	.006	3	8.622e-4	1	8115.42	15	NC	1
380			min	-.001	2	-.224	1	0	2	-7.929e-4	3	270.824	1	NC	1
381	M3	1	max	.005	1	0	15	0	3	1.384e-3	2	NC	1	NC	1
382			min	0	15	-.002	1	0	2	-5.031e-4	3	NC	1	NC	1
383		2	max	.004	1	0	15	.006	3	1.643e-3	2	NC	1	NC	3
384			min	0	15	-.018	1	-.012	2	-6.24e-4	3	NC	1	5211.713	2
385		3	max	.004	1	-.001	15	.01	3	1.902e-3	2	NC	1	NC	4
386			min	0	15	-.034	1	-.024	2	-7.448e-4	3	NC	1	2635.766	2
387		4	max	.003	1	-.002	15	.015	3	2.161e-3	2	NC	1	NC	4
388			min	0	15	-.05	1	-.035	2	-8.657e-4	3	NC	1	1788.44	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	.003	3	-.003	15	.02	3	2.419e-3	2	NC	1	NC	4
390			min	0	15	-.066	1	-.045	2	-9.865e-4	3	NC	1	1374.174	2
391		6	max	.004	3	-.003	15	.023	3	2.678e-3	2	NC	1	NC	4
392			min	0	15	-.082	1	-.054	2	-1.107e-3	3	NC	1	1134.211	2
393		7	max	.004	3	-.004	15	.027	3	2.937e-3	2	NC	1	NC	5
394			min	0	15	-.097	1	-.062	2	-1.228e-3	3	NC	1	982.693	2
395		8	max	.004	3	-.005	15	.03	3	3.196e-3	2	NC	1	NC	5
396			min	0	10	-.113	1	-.069	2	-1.349e-3	3	NC	1	883.299	2
397		9	max	.004	3	-.005	15	.032	3	3.454e-3	2	NC	1	NC	5
398			min	0	10	-.128	1	-.075	2	-1.47e-3	3	NC	1	818.481	2
399		10	max	.004	3	-.006	15	.034	3	3.713e-3	2	NC	1	NC	5
400			min	0	2	-.144	1	-.078	2	-1.591e-3	3	NC	1	779.324	2
401		11	max	.005	3	-.006	15	.035	3	3.972e-3	2	NC	1	NC	5
402			min	-.001	2	-.159	1	-.08	2	-1.712e-3	3	NC	1	761.69	2
403		12	max	.005	3	-.007	15	.034	3	4.23e-3	2	NC	1	NC	5
404			min	-.002	2	-.174	1	-.079	2	-1.832e-3	3	NC	1	764.832	2
405		13	max	.005	3	-.007	15	.033	3	4.489e-3	2	NC	1	NC	5
406			min	-.003	2	-.189	1	-.076	2	-1.953e-3	3	NC	1	791.41	2
407		14	max	.005	3	-.007	15	.031	3	4.748e-3	2	NC	1	NC	5
408			min	-.003	2	-.204	1	-.07	2	-2.074e-3	3	NC	1	849.092	2
409		15	max	.005	3	-.008	15	.027	3	5.007e-3	2	NC	1	NC	5
410			min	-.004	2	-.219	1	-.061	2	-2.195e-3	3	NC	1	955.528	2
411		16	max	.006	3	-.008	15	.023	3	5.265e-3	2	NC	1	NC	4
412			min	-.004	2	-.234	1	-.05	2	-2.316e-3	3	NC	1	1153.947	2
413		17	max	.006	3	-.009	15	.016	3	5.524e-3	2	NC	1	NC	4
414			min	-.005	2	-.249	1	-.034	2	-2.437e-3	3	NC	1	1576.14	2
415		18	max	.006	3	-.009	15	.009	3	5.783e-3	2	NC	1	NC	4
416			min	-.005	2	-.263	1	-.016	2	-2.558e-3	3	NC	1	2884.034	2
417		19	max	.006	3	-.009	15	.008	1	6.042e-3	2	NC	1	NC	1
418			min	-.006	2	-.278	1	0	3	-2.678e-3	3	NC	1	NC	1
419	M6	1	max	.007	1	0	15	0	1	0	1	NC	1	NC	1
420			min	0	15	-.004	1	0	1	0	1	NC	1	NC	1
421		2	max	.006	1	-.001	15	0	1	0	1	NC	1	NC	1
422			min	0	15	-.031	1	0	1	0	1	NC	1	NC	1
423		3	max	.006	3	-.002	15	0	1	0	1	NC	1	NC	1
424			min	0	15	-.058	1	0	1	0	1	NC	1	NC	1
425		4	max	.007	3	-.003	15	0	1	0	1	NC	1	NC	1
426			min	0	15	-.084	1	0	1	0	1	NC	1	NC	1
427		5	max	.007	3	-.004	15	0	1	0	1	NC	1	NC	1
428			min	0	10	-.111	1	0	1	0	1	NC	1	NC	1
429		6	max	.008	3	-.005	15	0	1	0	1	NC	1	NC	1
430			min	-.001	2	-.138	1	0	1	0	1	NC	1	NC	1
431		7	max	.009	3	-.006	15	0	1	0	1	NC	1	NC	1
432			min	-.003	2	-.164	1	0	1	0	1	NC	1	NC	1
433		8	max	.01	3	-.006	15	0	1	0	1	NC	1	NC	1
434			min	-.004	2	-.191	1	0	1	0	1	NC	1	NC	1
435		9	max	.01	3	-.007	15	0	1	0	1	NC	1	NC	1
436			min	-.006	2	-.217	1	0	1	0	1	NC	1	NC	1
437		10	max	.011	3	-.008	15	0	1	0	1	NC	1	NC	1
438			min	-.007	2	-.244	1	0	1	0	1	NC	1	NC	1
439		11	max	.012	3	-.009	15	0	1	0	1	NC	1	NC	1
440			min	-.009	2	-.27	1	0	1	0	1	NC	1	NC	1
441		12	max	.012	3	-.01	15	0	1	0	1	NC	1	NC	1
442			min	-.01	2	-.296	1	0	1	0	1	NC	1	NC	1
443		13	max	.013	3	-.01	15	0	1	0	1	NC	1	NC	1
444			min	-.012	2	-.322	1	0	1	0	1	NC	1	NC	1
445		14	max	.014	3	-.011	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	-.013	2	-.348	1	0	1	0	1	NC	1	NC	1
447		15	max	.015	3	-.012	15	0	1	0	1	NC	1	NC	1
448			min	-.015	2	-.374	1	0	1	0	1	NC	1	NC	1
449		16	max	.015	3	-.012	15	0	1	0	1	NC	1	NC	1
450			min	-.016	2	-.399	1	0	1	0	1	NC	1	NC	1
451		17	max	.016	3	-.013	15	0	1	0	1	NC	1	NC	1
452			min	-.018	2	-.425	1	0	1	0	1	NC	1	NC	1
453		18	max	.017	3	-.013	15	0	1	0	1	NC	1	NC	1
454			min	-.019	2	-.451	1	0	1	0	1	NC	1	NC	1
455		19	max	.017	3	-.014	15	0	1	0	1	NC	1	NC	1
456			min	-.021	2	-.476	1	0	1	0	1	NC	1	NC	1
457	M9	1	max	.005	1	0	15	0	2	5.031e-4	3	NC	1	NC	1
458			min	0	15	-.002	1	0	3	-1.384e-3	2	NC	1	NC	1
459		2	max	.004	1	0	15	.012	2	6.24e-4	3	NC	1	NC	3
460			min	0	15	-.018	1	-.006	3	-1.643e-3	2	NC	1	5211.713	2
461		3	max	.004	1	-.001	15	.024	2	7.448e-4	3	NC	1	NC	4
462			min	0	15	-.034	1	-.01	3	-1.902e-3	2	NC	1	2635.766	2
463		4	max	.003	1	-.002	15	.035	2	8.657e-4	3	NC	1	NC	4
464			min	0	15	-.05	1	-.015	3	-2.161e-3	2	NC	1	1788.44	2
465		5	max	.003	3	-.003	15	.045	2	9.865e-4	3	NC	1	NC	4
466			min	0	15	-.066	1	-.02	3	-2.419e-3	2	NC	1	1374.174	2
467		6	max	.004	3	-.003	15	.054	2	1.107e-3	3	NC	1	NC	4
468			min	0	15	-.082	1	-.023	3	-2.678e-3	2	NC	1	1134.211	2
469		7	max	.004	3	-.004	15	.062	2	1.228e-3	3	NC	1	NC	5
470			min	0	15	-.097	1	-.027	3	-2.937e-3	2	NC	1	982.693	2
471		8	max	.004	3	-.005	15	.069	2	1.349e-3	3	NC	1	NC	5
472			min	0	10	-.113	1	-.03	3	-3.196e-3	2	NC	1	883.299	2
473		9	max	.004	3	-.005	15	.075	2	1.47e-3	3	NC	1	NC	5
474			min	0	10	-.128	1	-.032	3	-3.454e-3	2	NC	1	818.481	2
475		10	max	.004	3	-.006	15	.078	2	1.591e-3	3	NC	1	NC	5
476			min	0	2	-.144	1	-.034	3	-3.713e-3	2	NC	1	779.324	2
477		11	max	.005	3	-.006	15	.08	2	1.712e-3	3	NC	1	NC	5
478			min	-.001	2	-.159	1	-.035	3	-3.972e-3	2	NC	1	761.69	2
479		12	max	.005	3	-.007	15	.079	2	1.832e-3	3	NC	1	NC	5
480			min	-.002	2	-.174	1	-.034	3	-4.23e-3	2	NC	1	764.832	2
481		13	max	.005	3	-.007	15	.076	2	1.953e-3	3	NC	1	NC	5
482			min	-.003	2	-.189	1	-.033	3	-4.489e-3	2	NC	1	791.41	2
483		14	max	.005	3	-.007	15	.07	2	2.074e-3	3	NC	1	NC	5
484			min	-.003	2	-.204	1	-.031	3	-4.748e-3	2	NC	1	849.092	2
485		15	max	.005	3	-.008	15	.061	2	2.195e-3	3	NC	1	NC	5
486			min	-.004	2	-.219	1	-.027	3	-5.007e-3	2	NC	1	955.528	2
487		16	max	.006	3	-.008	15	.05	2	2.316e-3	3	NC	1	NC	4
488			min	-.004	2	-.234	1	-.023	3	-5.265e-3	2	NC	1	1153.947	2
489		17	max	.006	3	-.009	15	.034	2	2.437e-3	3	NC	1	NC	4
490			min	-.005	2	-.249	1	-.016	3	-5.524e-3	2	NC	1	1576.14	2
491		18	max	.006	3	-.009	15	.016	2	2.558e-3	3	NC	1	NC	4
492			min	-.005	2	-.263	1	-.009	3	-5.783e-3	2	NC	1	2884.034	2
493		19	max	.006	3	-.009	15	0	3	2.678e-3	3	NC	1	NC	1
494			min	-.006	2	-.278	1	-.008	1	-6.042e-3	2	NC	1	NC	1