

Schletter, Inc.	Standard FS Racking System Representative Calculations - ASCE 7-10	25° Tilt w/o Seismic Design
HCV		

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 7-10 - Chapter 26-31, Wind Loads
- ASCE 7-10 - Chapter 7, Snow Loads
- ASCE 7-10 - Chapter 2, Combination of Loads
- International Building Code, IBC, 2012, 2015
- Aluminum Design Manual, Eighth Edition, 2005

2. LOAD ACTIONS

2.1 Permanent Loads

g_{MAX} =	3.00 psf	Self-weight of the PV modules.
g_{MIN} =	1.75 psf	

2.2 Snow Loads

Ground Snow Load, P_g =	30.00 psf	(ASCE 7-10, Eq. 7.4-1)
Sloped Roof Snow Load, P_s =	18.56 psf	
I_s =	1.00	
C_s =	0.82	
C_e =	0.90	
C_t =	1.20	

2.3 Wind Loads

Design Wind Speed, V =	150 mph	Exposure Category = C
Height <	15 ft	Importance Category = II
Peak Velocity Pressure, q_z =	35.33 psf	Including the gust factor, $G=0.85$. (ASCE 7-10, Eq. 27.3-1)

Pressure Coefficients

$C_{f+ TOP}$ =	1.1	(Pressure)
$C_{f+ BOTTOM}$ =	1.7	
$C_{f- TOP}$ =	-2.2	(Suction)
$C_{f- BOTTOM}$ =	-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:

$$\begin{aligned}
 &1.2D + 1.6S + 0.5W \\
 &1.2D + 1.0W + 0.5S \\
 &0.9D + 1.0W^M \\
 &1.54D + 1.3E + 0.2S^R \quad (\text{ASCE 7, Eq 2.3.2-1 through 2.3.2-7}) \text{ \& } (\text{ASCE 7, Section 12.4.3.2}) \\
 &0.56D + 1.3E^R \\
 &1.54D + 1.25E + 0.2S^O \\
 &0.56D + 1.25E^O
 \end{aligned}$$

Allowable Stress Design, ASD

Member deflection checks and foundation designs are done according to the following ASD load combinations:

$$\begin{aligned}
 &1.0D + 1.0S \\
 &1.0D + 0.6W \\
 &1.0D + 0.75L + 0.45W + 0.75S \\
 &0.6D + 0.6W^M \quad (\text{ASCE 7, Eq 2.4.1-1 through 2.4.1-8}) \text{ \& } (\text{ASCE 7, Section 12.4.3.2}) \\
 &1.238D + 0.875E^O \\
 &1.1785D + 0.65625E + 0.75S^O \\
 &0.362D + 0.875E^O
 \end{aligned}$$

^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.

<u>Purlins</u>	<u>Location</u>	<u>Posts</u>	<u>Location</u>
M10	Top	M2	Outer
M11	Mid-Top	M5	Inner
M12	Mid-Bottom	M8	Outer
M13	Bottom		
<u>Girders</u>	<u>Location</u>	<u>Reactions</u>	<u>Location</u>
M1	Outer	N9	Outer
M4	Inner	N19	Inner
M7	Outer	N29	Outer
<u>Struts</u>	<u>Location</u>		
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 continuous 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
ΦF_{ty} STRONG-AXIS =	25.07 ksi
ΦF_{ty} WEAK-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 =	1.536 k-ft
M_z =	0.042 k-ft
$M_{y \text{ allowable}}$ =	2.779 k-ft
$M_{z \text{ allowable}}$ =	1.154 k-ft
Utilization =	59%

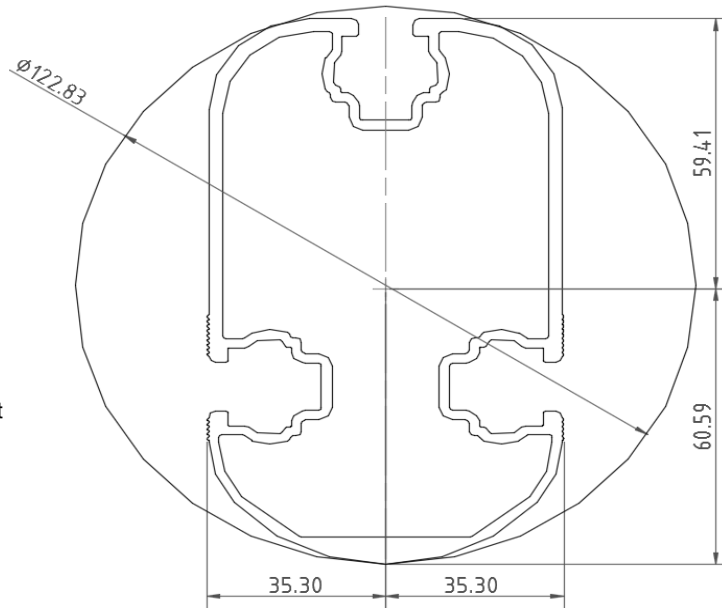


DETAIL VIEW

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
ΦF_{ty} AXIAL =	30.80 ksi
ΦF_{ty} STRONG-AXIS =	30.46 ksi
ΦF_{ty} WEAK-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 =	4.313 k-ft
M_z =	0.000 k-ft
P_n =	0.013 k
$M_{y \text{ allowable}}$ =	5.026 k-ft
$M_{z \text{ allowable}}$ =	3.472 k-ft
$P_{n \text{ allowable}}$ =	59.439 k
Utilization =	86%



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 = 6.73 k
Maximum Lateral Load = 3.27 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 = 0.98 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

$$S_3 = \text{Min} (D, 12')$$

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

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

$$D = \left\{ 0.5 A \left(1 + \sqrt{1 + \left(\frac{4.36 H}{A} \right)^2} \right) \right\}$$

Lateral Bearing @ Bottom = S_3

Lateral Bearing @ D/3 = S_1

Required Depth = D

Non-Constrained

Lateral Force @ Top of Pole, P = 0.98 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 $2.34P/(S_1 B)$, A = 5.27

Required Footing Depth, D = 8.63 ft

2nd Trial @ D_2 = 5.94 ft

Lateral Soil Bearing @ D/3, S_1 = 0.40 ksf

Lateral Soil Bearing @ D, S_3 = 1.19 ksf

Constant $2.34P/(S_1 B)$, A = 2.88

Required Footing Depth, D = 5.68 ft

3rd Trial @ D_3 = 5.81 ft

Lateral Soil Bearing @ D/3, S_1 = 0.39 ksf

Lateral Soil Bearing @ D, S_3 = 1.16 ksf

Constant $2.34P/(S_1 B)$, A = 2.95

Required Footing Depth, D = 5.76 ft

4th Trial @ D_4 = 5.79 ft

Lateral Soil Bearing @ D/3, S_1 = 0.39 ksf

Lateral Soil Bearing @ D, S_3 = 1.16 ksf

Constant $2.34P/(S_1 B)$, A = 2.96

Required Footing Depth, D = 5.78 ft

5th Trial @ D_5 = 5.78 ft

Lateral Soil Bearing @ D/3, S_1 = 0.39 ksf

Lateral Soil Bearing @ D, S_3 = 1.16 ksf

Constant $2.34P/(S_1 B)$, A = 2.96

Required Footing Depth, D = 6.00 ft

A 2ft diameter x 6ft 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 =	3.09 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 =	2.00 k
Required Concrete Volume, V =	13.82 ft ³
Required Footing Depth, D =	<u>4.50</u> ft

A 2ft diameter x 4.5ft deep footing unrestrained at ground level is required for the racking structure.



Iteration	z	dz	Qs	Side
1	0.2	0.2	118.10	6.68
2	0.4	0.2	118.10	6.58
3	0.6	0.2	118.10	6.47
4	0.8	0.2	118.10	6.37
5	1	0.2	118.10	6.26
6	1.2	0.2	118.10	6.16
7	1.4	0.2	118.10	6.06
8	1.6	0.2	118.10	5.95
9	1.8	0.2	118.10	5.85
10	2	0.2	118.10	5.75
11	2.2	0.2	118.10	5.64
12	2.4	0.2	118.10	5.54
13	2.6	0.2	118.10	5.44
14	2.8	0.2	118.10	5.33
15	3	0.2	118.10	5.23
16	3.2	0.2	118.10	5.12
17	3.4	0.2	118.10	5.02
18	3.6	0.2	118.10	4.92
19	3.8	0.2	118.10	4.81
20	4	0.2	118.10	4.71
21	4.2	0.2	118.10	4.61
22	4.4	0.2	118.10	4.50
23	4.6	0.2	118.10	4.40
24	0	0.0	0.00	4.40
25	0	0.0	0.00	4.40
26	0	0.0	0.00	4.40
27	0	0.0	0.00	4.40
28	0	0.0	0.00	4.40
29	0	0.0	0.00	4.40
30	0	0.0	0.00	4.40
31	0	0.0	0.00	4.40
32	0	0.0	0.00	4.40
33	0	0.0	0.00	4.40
34	0	0.0	0.00	4.40
Max	4.6	Sum	1.09	

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 =	6.00 ft
Footing Diameter, B =	2.00 ft
Compressive Force, P =	3.83 k

Footing Area =	3.14 ft ²
Circumference =	6.28 ft
Skin Friction Area =	18.85 ft ²
Concrete Weight =	0.145 kcf

<u>Bearing Pressure</u>	
Bearing Area =	3.14 ft ²
Bearing Capacity =	1.5 ksf
Resistance =	4.71 k

<u>Weight of Concrete</u>	
Footing Volume	18.85 ft ³
Weight	2.73 k

<u>Skin Friction Resistance</u>	
Skin Friction =	0.15 ksf
Resistance =	2.83 k
1/3 Increase for Wind =	1.33
Total Resistance =	10.05 k
Applied Force =	6.56 k
Utilization =	<u>65%</u>

A 2ft diameter footing passes at a depth of 6ft.



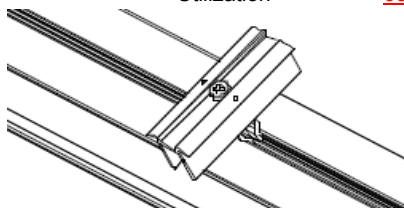
6. DESIGN OF JOINTS AND CONNECTIONS

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.

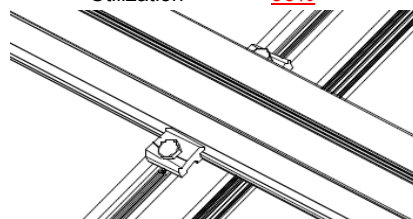
Fastening of Modules to Purlins

Maximum Uplifting Force =	0.732 k
Allowable Uplift =	1.214 k
Utilization =	<u>60%</u>



Fastening of Purlins to Girders

Maximum Uplifting Force =	2.088 k
Allowable Uplift =	2.180 k
Utilization =	<u>96%</u>



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 =	4.736 k
M10 Bolt Shear Capacity =	8.894 k
Utilization =	<u>53%</u>

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

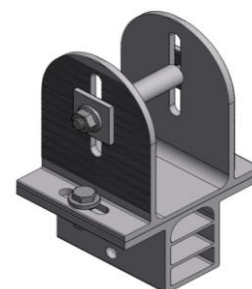
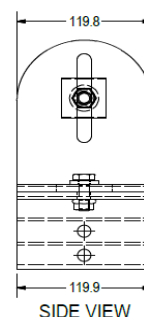
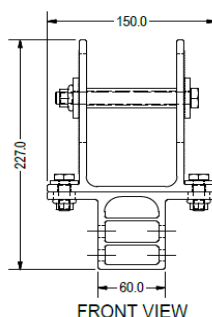


A strut under compression is shown to demonstrate the load transfer from the girder. Single M10 bolts are located at each end of the strut and are subjected to double shear.

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 =	4.417 k
Allowable Load =	5.649 k
Utilization =	<u>78%</u>



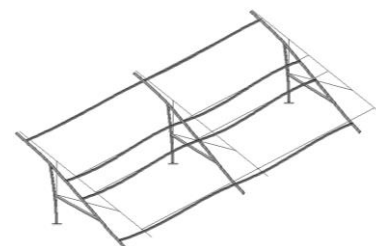
7. SEISMIC DESIGN

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 =	$\{ 0.020h_{sx}$
Max Drift, Δ_{MAX} =	1.403 in
	<u>N/A</u>

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

$$L_b = 96 \text{ in}$$

$$J = 0.432$$

$$265.581$$

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

$$S1 = 0.51461$$

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

$$S2 = 1701.56$$

$$\phi F_L = \phi b [Bc - 1.6Dc \sqrt{((LbSc)/(Cb \sqrt{(lyJ)/2}))}]$$

$$\phi F_L = 28.0 \text{ ksi}$$

Weak Axis:

3.4.14

$$L_b = 96$$

$$J = 0.432$$

$$168.894$$

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

$$S1 = 0.51461$$

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

$$S2 = 1701.56$$

$$\phi F_L = \phi b [Bc - 1.6Dc \sqrt{((LbSc)/(Cb \sqrt{(lyJ)/2}))}]$$

$$\phi F_L = 29.1$$

3.4.16

$$b/t = 32.195$$

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

$$S1 = 12.2$$

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

$$S2 = 46.7$$

$$\phi F_L = \phi b [Bp - 1.6Dp \cdot b/t]$$

$$\phi F_L = 25.1 \text{ ksi}$$

3.4.16

$$b/t = 37.0588$$

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

$$S1 = 12.2$$

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

$$S2 = 46.7$$

$$\phi F_L = \phi b [Bp - 1.6Dp \cdot b/t]$$

$$\phi F_L = 23.1 \text{ ksi}$$

3.4.16.1 Not Used

$$Rb/t =$$

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

$$S1 = 1.1$$

$$S2 = C_t$$

$$S2 = 141.0$$

$$\phi F_L = 1.17 \phi y Fcy$$

$$\phi F_L = 38.9 \text{ ksi}$$

3.4.16.1

N/A for Weak Direction

3.4.18

$$h/t = 37.0588$$

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

$$S1 = 36.9$$

$$m = 0.65$$

$$C_0 = 40.985$$

$$Cc = 41.015$$

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

$$S2 = 77.2$$

$$\phi F_L = \phi b [Bbr - mDbr \cdot h/t]$$

$$\phi F_L = 43.2 \text{ ksi}$$

$$\phi F_L St = 25.1 \text{ ksi}$$

$$I_x = 897074 \text{ mm}^4$$

$$2.155 \text{ in}^4$$

$$y = 41.015 \text{ mm}$$

$$S_x = 1.335 \text{ in}^3$$

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

3.4.18

$$h/t = 32.195$$

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

$$S1 = 36.9$$

$$m = 0.65$$

$$C_0 = 45.5$$

$$Cc = 45.5$$

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

$$S2 = 77.3$$

$$\phi F_L = 1.3 \phi y Fcy$$

$$\phi F_L = 43.2 \text{ ksi}$$

$$\phi F_L Wk = 23.1 \text{ ksi}$$

$$I_y = 446476 \text{ mm}^4$$

$$1.073 \text{ in}^4$$

$$x = 45.5 \text{ mm}$$

$$S_y = 0.599 \text{ in}^3$$

$$M_{\max} Wk = 1.152 \text{ k-ft}$$

Compression

3.4.9

$$\begin{aligned} b/t &= 32.195 \\ S1 &= 12.21 \text{ (See 3.4.16 above for formula)} \\ S2 &= 32.70 \text{ (See 3.4.16 above for formula)} \\ \phi F_L &= \phi c [Bp - 1.6Dp \cdot b/t] \\ \phi F_L &= 25.1 \text{ ksi} \end{aligned}$$

$$\begin{aligned} b/t &= 37.0588 \\ S1 &= 12.21 \\ S2 &= 32.70 \\ \phi F_L &= (\phi c k_2 \cdot \sqrt{(BpE)}) / (1.6b/t) \\ \phi F_L &= 21.9 \text{ ksi} \end{aligned}$$

3.4.10

$$\begin{aligned} Rb/t &= 0.0 \\ S1 &= \left(\frac{Bt - \frac{\theta_y}{\theta_b} Fcy}{Dt} \right)^2 \\ S1 &= 6.87 \\ S2 &= 131.3 \\ \phi F_L &= \phi_y Fcy \\ \phi F_L &= 33.25 \text{ ksi} \\ \phi F_L &= 21.94 \text{ ksi} \\ A &= 1215.13 \text{ mm}^2 \\ &= 1.88 \text{ in}^2 \\ P_{\max} &= 41.32 \text{ kips} \end{aligned}$$

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

Girder = **T5**

Strong Axis:

3.4.14

$$\begin{aligned} L_b &= 63.8189 \text{ in} \\ J &= 1.98 \\ &= 82.1278 \\ S1 &= \left(\frac{Bc - \frac{\theta_y}{\theta_b} Fcy}{1.6Dc} \right)^2 \\ S1 &= 0.51461 \\ S2 &= \left(\frac{C_c}{1.6} \right)^2 \\ S2 &= 1701.56 \\ \phi F_L &= \phi b [Bc - 1.6Dc \cdot \sqrt{((LbSc)/(Cb \cdot \sqrt{(IyJ)/2}))}] \\ \phi F_L &= 30.5 \text{ ksi} \end{aligned}$$

Weak Axis:

3.4.14

$$\begin{aligned} L_b &= 63.8189 \\ J &= 1.98 \\ &= 89.1294 \\ S1 &= \left(\frac{Bc - \frac{\theta_y}{\theta_b} Fcy}{1.6Dc} \right)^2 \\ S1 &= 0.51461 \\ S2 &= \left(\frac{C_c}{1.6} \right)^2 \\ S2 &= 1701.56 \\ \phi F_L &= \phi b [Bc - 1.6Dc \cdot \sqrt{((LbSc)/(Cb \cdot \sqrt{(IyJ)/2}))}] \\ \phi F_L &= 30.3 \end{aligned}$$

3.4.16

$$\begin{aligned} b/t &= 4.5 \\ S1 &= \frac{Bp - \frac{\theta_y}{\theta_b} Fcy}{1.6Dp} \\ S1 &= 12.2 \\ S2 &= \frac{k_1 Bp}{1.6Dp} \\ S2 &= 46.7 \\ \phi F_L &= \phi_y Fcy \\ \phi F_L &= 33.3 \text{ ksi} \end{aligned}$$

3.4.16

$$\begin{aligned} b/t &= 16.3333 \\ S1 &= \frac{Bp - \frac{\theta_y}{\theta_b} Fcy}{1.6Dp} \\ S1 &= 12.2 \\ S2 &= \frac{k_1 Bp}{1.6Dp} \\ S2 &= 46.7 \\ \phi F_L &= \phi b [Bp - 1.6Dp \cdot b/t] \\ \phi F_L &= 31.6 \text{ ksi} \end{aligned}$$

3.4.16.1 Used

$$Rb/t = 20.0$$

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

$$S1 = 1.1$$

$$S2 = C_t$$

$$S2 = 141.0$$

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

$$\phi F_L = 30.8 \text{ ksi}$$

3.4.18

$$h/t = 16.3333$$

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

$$S1 = 37.9$$

$$m = 0.63$$

$$C_0 = 61.046$$

$$Cc = 58.954$$

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

$$S2 = 79.4$$

$$\phi F_L = 1.3\phi y Fcy$$

$$\phi F_L = 43.2 \text{ ksi}$$

$$\phi F_L St = 30.5 \text{ ksi}$$

$$I_x = 1970917 \text{ mm}^4$$

$$4.735 \text{ in}^4$$

$$y = 61.046 \text{ mm}$$

$$S_x = 1.970 \text{ in}^3$$

$$M_{max} St = 5.001 \text{ k-ft}$$

3.4.16.1

N/A for Weak Direction

3.4.18

$$h/t = 4.5$$

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

$$S1 = 36.9$$

$$m = 0.65$$

$$C_0 = 35$$

$$Cc = 35$$

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

$$S2 = 77.3$$

$$\phi F_L = 1.3\phi y Fcy$$

$$\phi F_L = 43.2 \text{ ksi}$$

$$\phi F_L Wk = 31.6 \text{ ksi}$$

$$I_y = 763048 \text{ mm}^4$$

$$1.833 \text{ in}^4$$

$$x = 35 \text{ mm}$$

$$S_y = 1.330 \text{ in}^3$$

$$M_{max} Wk = 3.499 \text{ k-ft}$$

Compression

3.4.9

$$b/t = 4.5$$

$$S1 = 12.21 \text{ (See 3.4.16 above for formula)}$$

$$S2 = 32.70 \text{ (See 3.4.16 above for formula)}$$

$$\phi F_L = \phi y Fcy$$

$$\phi F_L = 33.3 \text{ ksi}$$

$$b/t = 16.3333$$

$$S1 = 12.21$$

$$S2 = 32.70$$

$$\phi F_L = \phi c [Bp - 1.6Dp \sqrt{b/t}]$$

$$\phi F_L = 31.6 \text{ ksi}$$

3.4.10

$$Rb/t = 20.0$$

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

$$S1 = 6.87$$

$$S2 = 131.3$$

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

$$\phi F_L = 30.80 \text{ ksi}$$

$$\phi F_L = 30.80 \text{ ksi}$$

$$A = 1215.13 \text{ mm}^2$$

$$1.88 \text{ in}^2$$

$$P_{max} = 58.01 \text{ kips}$$

A.3 Design of Aluminum Struts - Aluminum Design Manual, 2005 Edition

Strut = **55x55**

Strong Axis:

3.4.14

$$L_b = 61 \text{ in}$$

$$J = 0.942$$

$$95.1963$$

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

$$S1 = 0.51461$$

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

$$S2 = 1701.56$$

$$\phi F_L = \phi b [Bc - 1.6Dc \sqrt{((L_b S_c) / (C_b \sqrt{(I_y J) / 2}))}]$$

$$\phi F_L = 30.2 \text{ ksi}$$

Weak Axis:

3.4.14

$$L_b = 61$$

$$J = 0.942$$

$$95.1963$$

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

$$S1 = 0.51461$$

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

$$S2 = 1701.56$$

$$\phi F_L = \phi b [Bc - 1.6Dc \sqrt{((L_b S_c) / (C_b \sqrt{(I_y J) / 2}))}]$$

$$\phi F_L = 30.2$$

3.4.16

$$b/t = 24.5$$

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

$$S1 = 12.2$$

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

$$S2 = 46.7$$

$$\phi F_L = \phi b [Bp - 1.6Dp \sqrt{b/t}]$$

$$\phi F_L = 28.2 \text{ ksi}$$

3.4.16

$$b/t = 24.5$$

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

$$S1 = 12.2$$

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

$$S2 = 46.7$$

$$\phi F_L = \phi b [Bp - 1.6Dp \sqrt{b/t}]$$

$$\phi F_L = 28.2 \text{ ksi}$$

3.4.16.1 Not Used

$$Rb/t = 0.0$$

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

$$S1 = 1.1$$

$$S2 = C_t$$

$$S2 = 141.0$$

$$\phi F_L = 1.17 \phi y Fcy$$

$$\phi F_L = 38.9 \text{ ksi}$$

3.4.16.1

N/A for Weak Direction

3.4.18

$$h/t = 24.5$$

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

$$S1 = 36.9$$

$$m = 0.65$$

$$C_0 = 27.5$$

$$Cc = 27.5$$

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

$$S2 = 77.3$$

$$\phi F_L = 1.3 \phi y Fcy$$

$$\phi F_L = 43.2 \text{ ksi}$$

$$\phi F_L St = 28.2 \text{ ksi}$$

$$I_x = 279836 \text{ mm}^4$$

$$0.672 \text{ in}^4$$

$$y = 27.5 \text{ mm}$$

$$S_x = 0.621 \text{ in}^3$$

$$M_{\max} St = 1.460 \text{ k-ft}$$

3.4.18

$$h/t = 24.5$$

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

$$S1 = 36.9$$

$$m = 0.65$$

$$C_0 = 27.5$$

$$Cc = 27.5$$

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

$$S2 = 77.3$$

$$\phi F_L = 1.3 \phi y Fcy$$

$$\phi F_L = 43.2 \text{ ksi}$$

$$\phi F_L Wk = 28.2 \text{ ksi}$$

$$I_y = 279836 \text{ mm}^4$$

$$0.672 \text{ in}^4$$

$$x = 27.5 \text{ mm}$$

$$S_y = 0.621 \text{ in}^3$$

$$M_{\max} Wk = 1.460 \text{ k-ft}$$

Compression

3.4.7

$$\lambda = 1.41113$$

$$r = 0.81 \text{ in}$$

$$S1^* = \frac{Bc - Fcy}{1.6Dc^*}$$

$$S1^* = 0.33515$$

$$S2^* = \frac{Cc}{\pi} \sqrt{Fcy/E}$$

$$S2^* = 1.23671$$

$$\phi_{cc} = 0.77756$$

$$\phi F_L = (\phi_{cc} Fcy)/(\lambda^2)$$

$$\phi F_L = 13.6667 \text{ ksi}$$

3.4.9

$$b/t = 24.5$$

$$S1 = 12.21 \text{ (See 3.4.16 above for formula)}$$

$$S2 = 32.70 \text{ (See 3.4.16 above for formula)}$$

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

$$\phi F_L = 28.2 \text{ ksi}$$

$$b/t = 24.5$$

$$S1 = 12.21$$

$$S2 = 32.70$$

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

$$\phi F_L = 28.2 \text{ ksi}$$

3.4.10

$$Rb/t = 0.0$$

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

$$S1 = 6.87$$

$$S2 = 131.3$$

$$\phi F_L = \phi_y Fcy$$

$$\phi F_L = 33.25 \text{ ksi}$$

$$\phi F_L = 13.67 \text{ ksi}$$

$$A = 663.99 \text{ mm}^2$$

$$1.03 \text{ in}^2$$

$$P_{\max} = 14.07 \text{ kips}$$

A.4 Design of Galvanized Steel Posts

Post Type = **FG8**

Unbraced Length = 72.60 in
 $P_r = -5.20$ k (LRFD Factored Load)
 M_r (Strong) = 9.59 k-ft (LRFD Factored Load)
 M_r (Weak) = 0.00 k-ft (LRFD Factored Load)

Flexural Buckling:

$kL/r = 104.47$
 $4.71\sqrt{E/F_y} = 103.55 \Rightarrow kL/r > 4.71\sqrt{E/F_y}$
 $F_{cr} = 23.00$ ksi
 $F_e = 26.23$ ksi
 $P_n = 51.291$ k

Torsional/Flexural Torsional Buckling:

$F_{cr} = 17.0733$ ksi
 $F_{ey} = 66.8981$ ksi
 $F_{ez} = 21.7595$ ksi
 $P_n = 38.0734$ k

Bending (Strong Axis):

Yielding:
 $M_n = 21.95$ k-ft

Flange Local Buckling:

$M_n = 19.207$ k-ft

$P_r/P_c = 0.1014 < 0.2$
Utilization = $0.60 < 1.0$ OK

Bending (Weak Axis):

Yielding:
 $M_n = 14.65$ k-ft

Flange Local Buckling:

$M_n = 14.39$ k-ft

$P_r/P_c = 0.101 < 0.2$
Utilization = $0.00 < 1.0$ OK

Combined Forces

Utilization = **60%**

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.



Company : Schletter, Inc.
Designer : HCV
Job Number :
Model Name : Standard FS Racking System

Sept 14, 2015

Checked By: _____

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	-108.369	-108.369	0	0
2	M11	y	-108.369	-108.369	0	0
3	M12	y	-167.479	-167.479	0	0
4	M13	y	-167.479	-167.479	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	216.738	216.738	0	0
2	M11	y	216.738	216.738	0	0
3	M12	y	98.517	98.517	0	0
4	M13	y	98.517	98.517	0	0

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	LRFD 1.2D + 1.6S + 0.5W	Yes	Y		1	1.2	3	1.6	4	.5										
2	LRFD 1.2D + 1.0W + 0.5S	Yes	Y		1	1.2	3	.5	4	1										
3	LRFD 0.9D + 1.0W	Yes	Y		2	.9					5	1								
4	LATERAL - LRFD 1.54D + 1.3E ...	Yes	Y		1	1.54	3	.2			6	1.3								
5	LATERAL - LRFD 0.56D + 1.3E	Yes	Y		1	.56					6	1.3								
6	LATERAL - LRFD 1.54D + 1.25...	Yes	Y		1	1.54	3	.2			6	1.25								
7	LATERAL - LRFD 0.56D + 1.25E	Yes	Y		1	.56					6	1.25								





Company : Schletter, Inc.
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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	166.027	1	460.852	2	-3.579	15	.17	2	-.007	15	.198	2
34		min	6.832	15	-728.843	3	-97.898	1	-.346	3	-.213	1	-.318	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	.014	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	-2.01	4	0	1	0	1	0	1	0	15
43	3	max	-7.028	12	896.777	3	0	1	0	1	0	1	.7	2
44		min	-259.454	1	-1843.344	2	0	1	0	1	0	1	-.344	3
45	4	max	-7.394	12	895.601	3	0	1	0	1	0	1	1.845	2
46		min	-260.185	1	-1844.912	2	0	1	0	1	0	1	-.9	3
47	5	max	-7.759	12	894.425	3	0	1	0	1	0	1	2.99	2
48		min	-260.916	1	-1846.48	2	0	1	0	1	0	1	-1.455	3
49	6	max	1394.068	3	1715.527	2	0	1	0	1	0	1	2.829	2
50		min	-3236.618	2	-701.554	3	0	1	0	1	0	1	-1.425	3
51	7	max	1393.519	3	1713.958	2	0	1	0	1	0	1	1.765	2
52		min	-3237.35	2	-702.731	3	0	1	0	1	0	1	-.989	3
53	8	max	1392.971	3	1712.39	2	0	1	0	1	0	1	.702	2
54		min	-3238.081	2	-703.907	3	0	1	0	1	0	1	-.553	3
55	9	max	1384.638	3	256.268	3	0	1	0	1	0	1	.084	1
56		min	-3300.906	2	-229.618	2	0	1	0	1	0	1	-.331	3
57	10	max	1384.09	3	255.092	3	0	1	0	1	0	1	.219	1
58		min	-3301.637	2	-231.186	2	0	1	0	1	0	1	-.49	3
59	11	max	1383.541	3	253.916	3	0	1	0	1	0	1	.356	1
60		min	-3302.369	2	-232.755	2	0	1	0	1	0	1	-.648	3
61	12	max	1382.995	3	2237.65	3	0	1	0	1	0	1	1.033	2
62		min	-3373.253	2	-1622.657	2	0	1	0	1	0	1	-1.594	3
63	13	max	1382.447	3	2236.474	3	0	1	0	1	0	1	2.04	2
64		min	-3373.985	2	-1624.225	2	0	1	0	1	0	1	-2.983	3
65	14	max	262.03	1	1339.108	2	0	1	0	1	0	1	3.008	2
66		min	8.926	12	-1922.461	3	0	1	0	1	0	1	-4.313	3
67	15	max	261.299	1	1337.539	2	0	1	0	1	0	1	2.178	2
68		min	8.56	12	-1923.638	3	0	1	0	1	0	1	-3.12	3
69	16	max	260.567	1	1335.971	2	0	1	0	1	0	1	1.348	2
70		min	8.194	12	-1924.814	3	0	1	0	1	0	1	-1.926	3
71	17	max	259.836	1	1334.403	2	0	1	0	1	0	1	.52	2
72		min	7.829	12	-1925.99	3	0	1	0	1	0	1	-.731	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	-.011	3	0	1	0	1	0	1	0	1
77	M7	1	max	0	.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	-6.824	15	297.275	3	122.988	1	.196	2	-.007	15	.298	2
82		min	-166.218	1	-676.803	2	2.859	12	-.057	3	-.2	1	-.129	3
83	4	max	-7.044	15	296.098	3	122.988	1	.196	2	-.005	15	.718	2
84		min	-166.949	1	-678.371	2	2.859	12	-.057	3	-.124	1	-.313	3
85	5	max	-7.265	15	294.922	3	122.988	1	.196	2	-.001	10	1.14	2
86		min	-167.68	1	-679.94	2	2.859	12	-.057	3	-.047	1	-.497	3
87	6	max	384.49	3	582.03	2	162.218	1	.032	3	.031	3	1.098	2
88		min	-1203.584	2	-165.198	3	-15.62	3	-.01	2	-.083	2	-.511	3
89	7	max	383.941	3	580.461	2	162.218	1	.032	3	.024	1	.738	2



Company : Schletter, Inc.
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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	-1204.315	2	-166.374	3	-15.62	3	-.01	2	-.005	10	-.408	3
91		8	max	383.393	3	578.893	2	162.218	1	.032	3	.124	1	.378	2
92			min	-1205.046	2	-167.55	3	-15.62	3	-.01	2	.004	15	-.304	3
93		9	max	368.619	3	97.036	3	179.074	1	.143	2	-.003	15	.167	2
94			min	-1294.058	2	-55.775	2	-16.243	3	.002	15	-.078	1	-.26	3
95		10	max	368.071	3	95.859	3	179.074	1	.143	2	.037	2	.202	2
96			min	-1294.79	2	-57.343	2	-16.243	3	.002	15	-.039	3	-.319	3
97		11	max	367.522	3	94.683	3	179.074	1	.143	2	.144	1	.238	2
98			min	-1295.521	2	-58.912	2	-16.243	3	.002	15	-.049	3	-.379	3
99		12	max	348.855	3	791.137	3	212.716	3	.227	2	-.004	15	.454	2
100			min	-1433.558	1	-497.006	2	-70.245	2	-.259	3	-.113	1	-.712	3
101		13	max	348.306	3	789.961	3	212.716	3	.227	2	.112	3	.763	2
102			min	-1434.289	1	-498.574	2	-70.245	2	-.259	3	-.126	1	-1.203	3
103		14	max	168.221	1	465.557	2	97.898	1	.346	3	.03	1	1.06	2
104			min	7.494	15	-725.314	3	3.579	15	-.17	2	-.04	3	-1.672	3
105		15	max	167.489	1	463.989	2	97.898	1	.346	3	.091	1	.772	2
106			min	7.274	15	-726.49	3	3.579	15	-.17	2	-.022	3	-1.222	3
107		16	max	166.758	1	462.42	2	97.898	1	.346	3	.152	1	.484	2
108			min	7.053	15	-727.666	3	3.579	15	-.17	2	-.005	3	-.77	3
109		17	max	166.027	1	460.852	2	97.898	1	.346	3	.213	1	.198	2
110			min	6.832	15	-728.843	3	3.579	15	-.17	2	.007	15	-.318	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	97.902	1	457.556	2	-6.391	15	.011	2	.252	1	.17	2
116			min	3.579	15	-731.153	3	-164.767	1	-.024	3	.009	15	-.346	3
117		2	max	97.902	1	332.795	2	-5.049	15	.011	2	.12	1	.22	3
118			min	3.579	15	-542.814	3	-132.128	1	-.024	3	.004	15	-.181	2
119		3	max	97.902	1	208.034	2	-3.707	15	.011	2	.036	2	.619	3
120			min	3.579	15	-354.475	3	-99.489	1	-.024	3	0	9	-.421	2
121		4	max	97.902	1	83.272	2	-2.365	15	.011	2	.005	10	.85	3
122			min	3.579	15	-166.136	3	-66.85	1	-.024	3	-.057	1	-.551	2
123		5	max	97.902	1	22.203	3	-1.022	15	.011	2	-.004	15	.914	3
124			min	3.579	15	-41.489	2	-34.212	1	-.024	3	-.102	1	-.57	2
125		6	max	97.902	1	210.542	3	5.008	9	.011	2	-.005	15	.811	3
126			min	3.579	15	-166.25	2	-15.077	2	-.024	3	-.117	1	-.477	2
127		7	max	97.902	1	398.881	3	31.066	1	.011	2	-.004	15	.54	3
128			min	3.579	15	-291.011	2	-6.141	10	-.024	3	-.104	1	-.274	2
129		8	max	97.902	1	587.22	3	63.705	1	.011	2	-.002	15	.102	3
130			min	3.579	15	-415.773	2	-2.433	10	-.024	3	-.062	1	.001	15
131		9	max	97.902	1	775.559	3	96.344	1	.011	2	.026	9	.465	2
132			min	3.579	15	-540.534	2	1.275	10	-.024	3	-.044	2	-.504	3
133		10	max	97.902	1	350.139	10	128.983	1	0	15	.109	1	1.001	2
134			min	3.579	15	-963.898	3	-5.022	3	-.024	3	-.028	10	-1.277	3
135		11	max	97.902	1	540.534	2	-1.275	10	.024	3	.026	9	.465	2
136			min	3.579	15	-775.559	3	-96.344	1	-.011	2	-.044	2	-.504	3
137		12	max	97.902	1	415.773	2	2.433	10	.024	3	-.002	15	.102	3
138			min	3.579	15	-587.22	3	-63.705	1	-.011	2	-.062	1	.001	15
139		13	max	97.902	1	291.011	2	6.141	10	.024	3	-.004	15	.54	3
140			min	3.579	15	-398.881	3	-31.066	1	-.011	2	-.104	1	-.274	2
141		14	max	97.902	1	166.25	2	15.077	2	.024	3	-.005	15	.811	3
142			min	3.579	15	-210.542	3	-5.008	9	-.011	2	-.117	1	-.477	2
143		15	max	97.902	1	41.489	2	34.212	1	.024	3	-.004	15	.914	3
144			min	3.579	15	-22.203	3	1.022	15	-.011	2	-.102	1	-.57	2
145		16	max	97.902	1	166.136	3	66.85	1	.024	3	.005	10	.85	3
146			min	3.579	15	-83.272	2	2.365	15	-.011	2	-.057	1	-.551	2



Company : Schletter, Inc.
Designer : HCV
Job Number :
Model Name : Standard FS Racking System

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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	97.902	1	354.475	3	99.489	1	.024	3	.036	2	.619	3
148		min	3.579	15	-208.034	2	3.707	15	-.011	2	0	9	-.421	2
149	18	max	97.902	1	542.814	3	132.128	1	.024	3	.12	1	.22	3
150		min	3.579	15	-332.795	2	5.049	15	-.011	2	.004	15	-.181	2
151	19	max	97.902	1	731.153	3	164.767	1	.024	3	.252	1	.17	2
152		min	3.579	15	-457.556	2	6.391	15	-.011	2	.009	15	-.346	3
153	M11	1	max	199.621	1	434.346	2	-6.666	15	0	.289	1	.101	1
154		min	-228.872	3	-698.676	3	-171.756	1	-.006	1	.01	15	-.351	3
155	2	max	199.621	1	309.585	2	-5.324	15	0	15	.151	1	.186	3
156		min	-228.872	3	-510.337	3	-139.117	1	-.006	1	.005	15	-.246	2
157	3	max	199.621	1	184.823	2	-3.982	15	0	15	.048	2	.556	3
158		min	-228.872	3	-321.998	3	-106.478	1	-.006	1	0	15	-.466	2
159	4	max	199.621	1	60.595	1	-2.639	15	0	15	.011	3	.759	3
160		min	-228.872	3	-133.659	3	-73.839	1	-.006	1	-.038	1	-.575	2
161	5	max	199.621	1	54.68	3	-1.297	15	0	15	.002	3	.794	3
162		min	-228.872	3	-64.699	2	-41.2	1	-.006	1	-.089	1	-.573	2
163	6	max	199.621	1	243.019	3	.631	9	0	15	-.004	12	.661	3
164		min	-228.872	3	-189.46	2	-18.336	2	-.006	1	-.112	1	-.46	2
165	7	max	199.621	1	431.358	3	24.078	1	0	15	-.004	15	.362	3
166		min	-228.872	3	-314.222	2	-7.194	10	-.006	1	-.105	1	-.236	2
167	8	max	199.621	1	619.697	3	56.717	1	0	15	-.002	15	.099	2
168		min	-228.872	3	-438.983	2	-3.925	3	-.006	1	-.069	1	-.105	3
169	9	max	199.621	1	808.036	3	89.356	1	0	15	.018	9	.544	2
170		min	-228.872	3	-563.744	2	-1.912	3	-.006	1	-.05	2	-.74	3
171	10	max	199.621	1	996.375	3	.101	3	0	15	.09	1	1.101	2
172		min	-228.872	3	-596.222	12	-121.995	1	-.006	1	-.031	10	-1.542	3
173	11	max	199.621	1	563.744	2	1.912	3	.006	1	.018	9	.544	2
174		min	-228.872	3	-808.036	3	-89.356	1	0	15	-.05	2	-.74	3
175	12	max	199.621	1	438.983	2	3.925	3	.006	1	-.002	15	.099	2
176		min	-228.872	3	-619.697	3	-56.717	1	0	15	-.069	1	-.105	3
177	13	max	199.621	1	314.222	2	7.194	10	.006	1	-.004	15	.362	3
178		min	-228.872	3	-431.358	3	-24.078	1	0	15	-.105	1	-.236	2
179	14	max	199.621	1	189.46	2	18.336	2	.006	1	-.004	12	.661	3
180		min	-228.872	3	-243.019	3	-.631	9	0	15	-.112	1	-.46	2
181	15	max	199.621	1	64.699	2	41.2	1	.006	1	.002	3	.794	3
182		min	-228.872	3	-54.68	3	1.297	15	0	15	-.089	1	-.573	2
183	16	max	199.621	1	133.659	3	73.839	1	.006	1	.011	3	.759	3
184		min	-228.872	3	-60.595	1	2.639	15	0	15	-.038	1	-.575	2
185	17	max	199.621	1	321.998	3	106.478	1	.006	1	.048	2	.556	3
186		min	-228.872	3	-184.823	2	3.982	15	0	15	0	15	-.466	2
187	18	max	199.621	1	510.337	3	139.117	1	.006	1	.151	1	.186	3
188		min	-228.872	3	-309.585	2	5.324	15	0	15	.005	15	-.246	2
189	19	max	199.621	1	698.676	3	171.756	1	.006	1	.289	1	.101	1
190		min	-228.872	3	-434.346	2	6.666	15	0	15	.01	15	-.351	3
191	M12	1	max	17.262	2	631.068	2	-6.743	15	0	.307	1	.152	2
192		min	-20.429	9	-266.414	3	-175.096	1	-.006	1	.011	15	.002	15
193	2	max	17.262	2	453.764	2	-5.401	15	0	3	.166	1	.26	3
194		min	-20.429	9	-183.161	3	-142.457	1	-.006	1	.005	15	-.33	2
195	3	max	17.262	2	276.461	2	-4.059	15	0	3	.06	2	.386	3
196		min	-20.429	9	-99.907	3	-109.818	1	-.006	1	.001	15	-.654	2
197	4	max	17.262	2	99.158	2	-2.717	15	0	3	.012	10	.437	3
198		min	-20.429	9	-16.653	3	-77.179	1	-.006	1	-.03	1	-.821	2
199	5	max	17.262	2	66.6	3	-1.375	15	0	3	-.003	12	.415	3
200		min	-20.429	9	-78.146	2	-44.54	1	-.006	1	-.084	1	-.831	2
201	6	max	17.262	2	149.854	3	-.032	15	0	3	-.004	15	.319	3
202		min	-20.429	9	-255.449	2	-22.023	2	-.006	1	-.109	1	-.682	2
203	7	max	17.262	2	233.108	3	20.738	1	0	3	-.004	15	.149	3



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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	-20.429	9	-432.753	2	-9.163	10	-.006	1	-.105	1	-.376	2
205		8	max	17.262	2	316.361	3	53.377	1	0	3	-.002	15	.087	2
206			min	-20.429	9	-610.056	2	-5.455	10	-.006	1	-.072	1	-.095	3
207		9	max	17.262	2	399.615	3	86.015	1	0	3	.016	9	.708	2
208			min	-20.429	9	-787.36	2	-1.747	10	-.006	1	-.057	2	-.414	3
209		10	max	17.262	2	964.663	2	3.892	3	0	3	.081	9	1.487	2
210			min	-20.429	9	15.754	15	-118.654	1	-.006	1	-.037	10	-.806	3
211		11	max	17.262	2	787.36	2	1.747	10	.006	1	.016	9	.708	2
212			min	-20.429	9	-399.615	3	-86.015	1	0	3	-.057	2	-.414	3
213		12	max	17.262	2	610.056	2	5.455	10	.006	1	-.002	15	.087	2
214			min	-20.429	9	-316.361	3	-53.377	1	0	3	-.072	1	-.095	3
215		13	max	17.262	2	432.753	2	9.163	10	.006	1	-.004	15	.149	3
216			min	-20.429	9	-233.108	3	-20.738	1	0	3	-.105	1	-.376	2
217		14	max	17.262	2	255.449	2	22.023	2	.006	1	-.004	15	.319	3
218			min	-20.429	9	-149.854	3	.032	15	0	3	-.109	1	-.682	2
219		15	max	17.262	2	78.146	2	44.54	1	.006	1	-.003	12	.415	3
220			min	-20.429	9	-66.6	3	1.375	15	0	3	-.084	1	-.831	2
221		16	max	17.262	2	16.653	3	77.179	1	.006	1	.012	10	.437	3
222			min	-20.429	9	-99.158	2	2.717	15	0	3	-.03	1	-.821	2
223		17	max	17.262	2	99.907	3	109.818	1	.006	1	.06	2	.386	3
224			min	-20.429	9	-276.461	2	4.059	15	0	3	.001	15	-.654	2
225		18	max	17.262	2	183.161	3	142.457	1	.006	1	.166	1	.26	3
226			min	-20.429	9	-453.764	2	5.401	15	0	3	.005	15	-.33	2
227		19	max	17.262	2	266.414	3	175.096	1	.006	1	.307	1	.152	2
228			min	-20.429	9	-631.068	2	6.743	15	0	3	.011	15	.002	15
229	M13	1	max	-2.86	12	674.145	2	-6.382	15	.009	3	.25	1	.196	2
230			min	-122.907	1	-299.669	3	-164.492	1	-.023	2	.009	15	-.057	3
231		2	max	-2.86	12	496.842	2	-5.04	15	.009	3	.118	1	.173	3
232			min	-122.907	1	-216.415	3	-131.853	1	-.023	2	.004	15	-.325	2
233		3	max	-2.86	12	319.538	2	-3.698	15	.009	3	.034	2	.328	3
234			min	-122.907	1	-133.162	3	-99.214	1	-.023	2	-.002	9	-.688	2
235		4	max	-2.86	12	142.235	2	-2.356	15	.009	3	.004	10	.409	3
236			min	-122.907	1	-49.908	3	-66.575	1	-.023	2	-.058	1	-.893	2
237		5	max	-2.86	12	33.346	3	-1.013	15	.009	3	-.004	12	.417	3
238			min	-122.907	1	-35.069	2	-33.936	1	-.023	2	-.103	1	-.941	2
239		6	max	-2.86	12	116.599	3	5.149	9	.009	3	-.005	15	.35	3
240			min	-122.907	1	-212.372	2	-14.866	2	-.023	2	-.119	1	-.831	2
241		7	max	-2.86	12	199.853	3	31.341	1	.009	3	-.004	15	.209	3
242			min	-122.907	1	-389.676	2	-6.039	10	-.023	2	-.105	1	-.563	2
243		8	max	-2.86	12	283.106	3	63.98	1	.009	3	-.002	15	-.004	15
244			min	-122.907	1	-566.979	2	-2.332	10	-.023	2	-.063	1	-.138	1
245		9	max	-2.86	12	366.36	3	96.619	1	.009	3	.026	9	.445	2
246			min	-122.907	1	-744.282	2	1.376	10	-.023	2	-.045	2	-.294	3
247		10	max	-2.86	12	921.586	2	4.364	3	.009	3	.109	1	1.185	2
248			min	-122.907	1	14.681	15	-129.258	1	-.023	2	-.029	10	-.657	3
249		11	max	-2.86	12	744.282	2	-1.376	10	.023	2	.026	9	.445	2
250			min	-122.907	1	-366.36	3	-96.619	1	-.009	3	-.045	2	-.294	3
251		12	max	-2.86	12	566.979	2	2.332	10	.023	2	-.002	15	-.004	15
252			min	-122.907	1	-283.106	3	-63.98	1	-.009	3	-.063	1	-.138	1
253		13	max	-2.86	12	389.676	2	6.039	10	.023	2	-.004	15	.209	3
254			min	-122.907	1	-199.853	3	-31.341	1	-.009	3	-.105	1	-.563	2
255		14	max	-2.86	12	212.372	2	14.866	2	.023	2	-.005	15	.35	3
256			min	-122.907	1	-116.599	3	-5.149	9	-.009	3	-.119	1	-.831	2
257		15	max	-2.86	12	35.069	2	33.936	1	.023	2	-.004	12	.417	3
258			min	-122.907	1	-33.346	3	1.013	15	-.009	3	-.103	1	-.941	2
259		16	max	-2.86	12	49.908	3	66.575	1	.023	2	.004	10	.409	3
260			min	-122.907	1	-142.235	2	2.356	15	-.009	3	-.058	1	-.893	2



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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	-2.86	12	133.162	3	99.214	1	.023	2	.034	2	.328	3
262			min	-122.907	1	-319.538	2	3.698	15	-.009	3	-.002	9	-.688	2
263		18	max	-2.86	12	216.415	3	131.853	1	.023	2	.118	1	.173	3
264			min	-122.907	1	-496.842	2	5.04	15	-.009	3	.004	15	-.325	2
265		19	max	-2.86	12	299.669	3	164.492	1	.023	2	.25	1	.196	2
266			min	-122.907	1	-674.145	2	6.382	15	-.009	3	.009	15	-.057	3
267	M2	1	max	2218.289	2	896.487	3	173.079	2	.003	3	.261	3	4.545	1
268			min	-1719.994	3	-623.783	2	-203.227	3	-.007	2	-.204	2	.165	15
269		2	max	2215.734	2	896.487	3	173.079	2	.003	3	.204	3	4.6	1
270			min	-1721.911	3	-623.783	2	-203.227	3	-.007	2	-.159	1	.163	15
271		3	max	2213.179	2	896.487	3	173.079	2	.003	3	.147	3	4.654	1
272			min	-1723.827	3	-623.783	2	-203.227	3	-.007	2	-.114	1	.161	15
273		4	max	1547.377	1	1072.285	1	126.482	2	.001	2	.107	3	4.513	1
274			min	-1484.908	3	36.789	15	-184.063	3	0	3	-.1	1	.155	15
275		5	max	1544.822	1	1072.285	1	126.482	2	.001	2	.055	3	4.212	1
276			min	-1486.825	3	36.789	15	-184.063	3	0	3	-.067	1	.145	15
277		6	max	1542.267	1	1072.285	1	126.482	2	.001	2	.004	3	3.911	1
278			min	-1488.741	3	36.789	15	-184.063	3	0	3	-.034	1	.134	15
279		7	max	1539.712	1	1072.285	1	126.482	2	.001	2	.012	2	3.61	1
280			min	-1490.657	3	36.789	15	-184.063	3	0	3	-.048	3	.124	15
281		8	max	1537.157	1	1072.285	1	126.482	2	.001	2	.047	2	3.309	1
282			min	-1492.573	3	36.789	15	-184.063	3	0	3	-.1	3	.114	15
283		9	max	1534.602	1	1072.285	1	126.482	2	.001	2	.083	2	3.009	1
284			min	-1494.489	3	36.789	15	-184.063	3	0	3	-.151	3	.103	15
285		10	max	1532.047	1	1072.285	1	126.482	2	.001	2	.118	2	2.708	1
286			min	-1496.405	3	36.789	15	-184.063	3	0	3	-.203	3	.093	15
287		11	max	1529.492	1	1072.285	1	126.482	2	.001	2	.154	2	2.407	1
288			min	-1498.322	3	36.789	15	-184.063	3	0	3	-.255	3	.083	15
289		12	max	1526.937	1	1072.285	1	126.482	2	.001	2	.189	2	2.106	1
290			min	-1500.238	3	36.789	15	-184.063	3	0	3	-.306	3	.072	15
291		13	max	1524.383	1	1072.285	1	126.482	2	.001	2	.225	2	1.805	1
292			min	-1502.154	3	36.789	15	-184.063	3	0	3	-.358	3	.062	15
293		14	max	1521.828	1	1072.285	1	126.482	2	.001	2	.26	2	1.504	1
294			min	-1504.07	3	36.789	15	-184.063	3	0	3	-.41	3	.052	15
295		15	max	1519.273	1	1072.285	1	126.482	2	.001	2	.296	2	1.203	1
296			min	-1505.986	3	36.789	15	-184.063	3	0	3	-.461	3	.041	15
297		16	max	1516.718	1	1072.285	1	126.482	2	.001	2	.331	2	.903	1
298			min	-1507.902	3	36.789	15	-184.063	3	0	3	-.513	3	.031	15
299		17	max	1514.163	1	1072.285	1	126.482	2	.001	2	.367	2	.602	1
300			min	-1509.819	3	36.789	15	-184.063	3	0	3	-.565	3	.021	15
301		18	max	1511.608	1	1072.285	1	126.482	2	.001	2	.402	2	.301	1
302			min	-1511.735	3	36.789	15	-184.063	3	0	3	-.616	3	.01	15
303		19	max	1509.053	1	1072.285	1	126.482	2	.001	2	.438	2	0	1
304			min	-1513.651	3	36.789	15	-184.063	3	0	3	-.668	3	0	1
305	M5	1	max	6077.184	2	2466.115	3	0	1	0	1	0	1	7.984	1
306			min	-5168.906	3	-2474.273	2	0	1	0	1	0	1	.263	15
307		2	max	6074.629	2	2466.115	3	0	1	0	1	0	1	8.395	1
308			min	-5170.822	3	-2474.273	2	0	1	0	1	0	1	.266	15
309		3	max	6072.074	2	2466.115	3	0	1	0	1	0	1	8.806	1
310			min	-5172.738	3	-2474.273	2	0	1	0	1	0	1	.269	15
311		4	max	4199.4	2	2060.39	1	0	1	0	1	0	1	8.671	1
312			min	-4327.034	3	62.079	15	0	1	0	1	0	1	.261	15
313		5	max	4196.845	2	2060.39	1	0	1	0	1	0	1	8.093	1
314			min	-4328.95	3	62.079	15	0	1	0	1	0	1	.244	15
315		6	max	4194.29	2	2060.39	1	0	1	0	1	0	1	7.515	1
316			min	-4330.866	3	62.079	15	0	1	0	1	0	1	.226	15
317		7	max	4191.735	2	2060.39	1	0	1	0	1	0	1	6.937	1



Company : Schletter, Inc.
Designer : HCV
Job Number :
Model Name : Standard FS Racking System

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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	-4332.782	3	62.079	15	0	1	0	1	0	1	.209	15
319		8	max	4189.18	2	2060.39	1	0	1	0	1	0	1	6.359	1
320			min	-4334.698	3	62.079	15	0	1	0	1	0	1	.192	15
321		9	max	4186.625	2	2060.39	1	0	1	0	1	0	1	5.781	1
322			min	-4336.614	3	62.079	15	0	1	0	1	0	1	.174	15
323		10	max	4184.07	2	2060.39	1	0	1	0	1	0	1	5.203	1
324			min	-4338.531	3	62.079	15	0	1	0	1	0	1	.157	15
325		11	max	4181.515	2	2060.39	1	0	1	0	1	0	1	4.625	1
326			min	-4340.447	3	62.079	15	0	1	0	1	0	1	.139	15
327		12	max	4178.961	2	2060.39	1	0	1	0	1	0	1	4.047	1
328			min	-4342.363	3	62.079	15	0	1	0	1	0	1	.122	15
329		13	max	4176.406	2	2060.39	1	0	1	0	1	0	1	3.469	1
330			min	-4344.279	3	62.079	15	0	1	0	1	0	1	.105	15
331		14	max	4173.851	2	2060.39	1	0	1	0	1	0	1	2.89	1
332			min	-4346.195	3	62.079	15	0	1	0	1	0	1	.087	15
333		15	max	4171.296	2	2060.39	1	0	1	0	1	0	1	2.312	1
334			min	-4348.111	3	62.079	15	0	1	0	1	0	1	.07	15
335		16	max	4168.741	2	2060.39	1	0	1	0	1	0	1	1.734	1
336			min	-4350.028	3	62.079	15	0	1	0	1	0	1	.052	15
337		17	max	4166.186	2	2060.39	1	0	1	0	1	0	1	1.156	1
338			min	-4351.944	3	62.079	15	0	1	0	1	0	1	.035	15
339		18	max	4163.631	2	2060.39	1	0	1	0	1	0	1	.578	1
340			min	-4353.86	3	62.079	15	0	1	0	1	0	1	.017	15
341		19	max	4161.076	2	2060.39	1	0	1	0	1	0	1	0	1
342			min	-4355.776	3	62.079	15	0	1	0	1	0	1	0	1
343	M8	1	max	2218.289	2	896.487	3	203.227	3	.007	2	.204	2	4.545	1
344			min	-1719.994	3	-623.783	2	-173.079	2	-.003	3	-.261	3	.165	15
345		2	max	2215.734	2	896.487	3	203.227	3	.007	2	.159	1	4.6	1
346			min	-1721.911	3	-623.783	2	-173.079	2	-.003	3	-.204	3	.163	15
347		3	max	2213.179	2	896.487	3	203.227	3	.007	2	.114	1	4.654	1
348			min	-1723.827	3	-623.783	2	-173.079	2	-.003	3	-.147	3	.161	15
349		4	max	1547.377	1	1072.285	1	184.063	3	0	3	.1	1	4.513	1
350			min	-1484.908	3	36.789	15	-126.482	2	-.001	2	-.107	3	.155	15
351		5	max	1544.822	1	1072.285	1	184.063	3	0	3	.067	1	4.212	1
352			min	-1486.825	3	36.789	15	-126.482	2	-.001	2	-.055	3	.145	15
353		6	max	1542.267	1	1072.285	1	184.063	3	0	3	.034	1	3.911	1
354			min	-1488.741	3	36.789	15	-126.482	2	-.001	2	-.004	3	.134	15
355		7	max	1539.712	1	1072.285	1	184.063	3	0	3	.048	3	3.61	1
356			min	-1490.657	3	36.789	15	-126.482	2	-.001	2	-.012	2	.124	15
357		8	max	1537.157	1	1072.285	1	184.063	3	0	3	.1	3	3.309	1
358			min	-1492.573	3	36.789	15	-126.482	2	-.001	2	-.047	2	.114	15
359		9	max	1534.602	1	1072.285	1	184.063	3	0	3	.151	3	3.009	1
360			min	-1494.489	3	36.789	15	-126.482	2	-.001	2	-.083	2	.103	15
361		10	max	1532.047	1	1072.285	1	184.063	3	0	3	.203	3	2.708	1
362			min	-1496.405	3	36.789	15	-126.482	2	-.001	2	-.118	2	.093	15
363		11	max	1529.492	1	1072.285	1	184.063	3	0	3	.255	3	2.407	1
364			min	-1498.322	3	36.789	15	-126.482	2	-.001	2	-.154	2	.083	15
365		12	max	1526.937	1	1072.285	1	184.063	3	0	3	.306	3	2.106	1
366			min	-1500.238	3	36.789	15	-126.482	2	-.001	2	-.189	2	.072	15
367		13	max	1524.383	1	1072.285	1	184.063	3	0	3	.358	3	1.805	1
368			min	-1502.154	3	36.789	15	-126.482	2	-.001	2	-.225	2	.062	15
369		14	max	1521.828	1	1072.285	1	184.063	3	0	3	.41	3	1.504	1
370			min	-1504.07	3	36.789	15	-126.482	2	-.001	2	-.26	2	.052	15
371		15	max	1519.273	1	1072.285	1	184.063	3	0	3	.461	3	1.203	1
372			min	-1505.986	3	36.789	15	-126.482	2	-.001	2	-.296	2	.041	15
373		16	max	1516.718	1	1072.285	1	184.063	3	0	3	.513	3	.903	1
374			min	-1507.902	3	36.789	15	-126.482	2	-.001	2	-.331	2	.031	15



Company : Schletter, Inc.
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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	1514.163	1	1072.285	1	184.063	3	0	3	.565	3	.602	1
376			min	-1509.819	3	36.789	15	-126.482	2	-.001	2	-.367	2	.021	15
377		18	max	1511.608	1	1072.285	1	184.063	3	0	3	.616	3	.301	1
378			min	-1511.735	3	36.789	15	-126.482	2	-.001	2	-.402	2	.01	15
379		19	max	1509.053	1	1072.285	1	184.063	3	0	3	.668	3	0	1
380			min	-1513.651	3	36.789	15	-126.482	2	-.001	2	-.438	2	0	1
381	M3	1	max	1685.999	2	4.588	4	46.132	2	.014	3	.004	2	0	1
382			min	-607.262	3	1.079	15	-19.596	3	-.03	2	-.002	3	0	1
383		2	max	1685.825	2	4.078	4	46.132	2	.014	3	.017	2	0	15
384			min	-607.393	3	.959	15	-19.596	3	-.03	2	-.008	3	-.001	4
385		3	max	1685.65	2	3.569	4	46.132	2	.014	3	.031	2	0	15
386			min	-607.523	3	.839	15	-19.596	3	-.03	2	-.014	3	-.002	4
387		4	max	1685.476	2	3.059	4	46.132	2	.014	3	.044	2	0	15
388			min	-607.654	3	.719	15	-19.596	3	-.03	2	-.019	3	-.003	4
389		5	max	1685.301	2	2.549	4	46.132	2	.014	3	.058	2	0	15
390			min	-607.785	3	.599	15	-19.596	3	-.03	2	-.025	3	-.004	4
391		6	max	1685.127	2	2.039	4	46.132	2	.014	3	.071	2	-.001	15
392			min	-607.916	3	.479	15	-19.596	3	-.03	2	-.031	3	-.005	4
393		7	max	1684.953	2	1.529	4	46.132	2	.014	3	.085	2	-.001	15
394			min	-608.047	3	.36	15	-19.596	3	-.03	2	-.036	3	-.005	4
395		8	max	1684.778	2	1.02	4	46.132	2	.014	3	.098	2	-.001	15
396			min	-608.177	3	.24	15	-19.596	3	-.03	2	-.042	3	-.006	4
397		9	max	1684.604	2	.51	4	46.132	2	.014	3	.112	2	-.001	15
398			min	-608.308	3	.12	15	-19.596	3	-.03	2	-.048	3	-.006	4
399		10	max	1684.429	2	0	1	46.132	2	.014	3	.125	2	-.001	15
400			min	-608.439	3	0	1	-19.596	3	-.03	2	-.054	3	-.006	4
401		11	max	1684.255	2	-.12	15	46.132	2	.014	3	.139	2	-.001	15
402			min	-608.57	3	-.51	4	-19.596	3	-.03	2	-.059	3	-.006	4
403		12	max	1684.081	2	-.24	15	46.132	2	.014	3	.152	2	-.001	15
404			min	-608.701	3	-1.02	4	-19.596	3	-.03	2	-.065	3	-.006	4
405		13	max	1683.906	2	-.36	15	46.132	2	.014	3	.166	2	-.001	15
406			min	-608.831	3	-1.529	4	-19.596	3	-.03	2	-.071	3	-.005	4
407		14	max	1683.732	2	-.479	15	46.132	2	.014	3	.179	2	-.001	15
408			min	-608.962	3	-2.039	4	-19.596	3	-.03	2	-.077	3	-.005	4
409		15	max	1683.558	2	-.599	15	46.132	2	.014	3	.193	2	0	15
410			min	-609.093	3	-2.549	4	-19.596	3	-.03	2	-.082	3	-.004	4
411		16	max	1683.383	2	-.719	15	46.132	2	.014	3	.206	2	0	15
412			min	-609.224	3	-3.059	4	-19.596	3	-.03	2	-.088	3	-.003	4
413		17	max	1683.209	2	-.839	15	46.132	2	.014	3	.22	2	0	15
414			min	-609.354	3	-3.569	4	-19.596	3	-.03	2	-.094	3	-.002	4
415		18	max	1683.034	2	-.959	15	46.132	2	.014	3	.233	2	0	15
416			min	-609.485	3	-4.078	4	-19.596	3	-.03	2	-.099	3	-.001	4
417		19	max	1682.86	2	-1.079	15	46.132	2	.014	3	.247	2	0	1
418			min	-609.616	3	-4.588	4	-19.596	3	-.03	2	-.105	3	0	1
419	M6	1	max	4736.429	2	4.588	4	0	1	0	1	0	1	0	1
420			min	-2125.16	3	1.079	15	0	1	0	1	0	1	0	1
421		2	max	4736.255	2	4.078	4	0	1	0	1	0	1	0	15
422			min	-2125.29	3	.959	15	0	1	0	1	0	1	-.001	4
423		3	max	4736.08	2	3.569	4	0	1	0	1	0	1	0	15
424			min	-2125.421	3	.839	15	0	1	0	1	0	1	-.002	4
425		4	max	4735.906	2	3.059	4	0	1	0	1	0	1	0	15
426			min	-2125.552	3	.719	15	0	1	0	1	0	1	-.003	4
427		5	max	4735.731	2	2.549	4	0	1	0	1	0	1	0	15
428			min	-2125.683	3	.599	15	0	1	0	1	0	1	-.004	4
429		6	max	4735.557	2	2.039	4	0	1	0	1	0	1	-.001	15
430			min	-2125.813	3	.479	15	0	1	0	1	0	1	-.005	4
431		7	max	4735.383	2	1.529	4	0	1	0	1	0	1	-.001	15



Company : Schletter, Inc.
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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	-2125.944	3	.36	15	0	1	0	1	0	1	-.005	4
433		8	max	4735.208	2	1.02	4	0	1	0	1	0	1	-.001	15
434			min	-2126.075	3	.24	15	0	1	0	1	0	1	-.006	4
435		9	max	4735.034	2	.51	4	0	1	0	1	0	1	-.001	15
436			min	-2126.206	3	.12	15	0	1	0	1	0	1	-.006	4
437		10	max	4734.86	2	0	1	0	1	0	1	0	1	-.001	15
438			min	-2126.337	3	0	1	0	1	0	1	0	1	-.006	4
439		11	max	4734.685	2	-.12	15	0	1	0	1	0	1	-.001	15
440			min	-2126.467	3	-.51	4	0	1	0	1	0	1	-.006	4
441		12	max	4734.511	2	-.24	15	0	1	0	1	0	1	-.001	15
442			min	-2126.598	3	-1.02	4	0	1	0	1	0	1	-.006	4
443		13	max	4734.336	2	-.36	15	0	1	0	1	0	1	-.001	15
444			min	-2126.729	3	-1.529	4	0	1	0	1	0	1	-.005	4
445		14	max	4734.162	2	-.479	15	0	1	0	1	0	1	-.001	15
446			min	-2126.86	3	-2.039	4	0	1	0	1	0	1	-.005	4
447		15	max	4733.988	2	-.599	15	0	1	0	1	0	1	0	15
448			min	-2126.991	3	-2.549	4	0	1	0	1	0	1	-.004	4
449		16	max	4733.813	2	-.719	15	0	1	0	1	0	1	0	15
450			min	-2127.121	3	-3.059	4	0	1	0	1	0	1	-.003	4
451		17	max	4733.639	2	-.839	15	0	1	0	1	0	1	0	15
452			min	-2127.252	3	-3.569	4	0	1	0	1	0	1	-.002	4
453		18	max	4733.464	2	-.959	15	0	1	0	1	0	1	0	15
454			min	-2127.383	3	-4.078	4	0	1	0	1	0	1	-.001	4
455		19	max	4733.29	2	-1.079	15	0	1	0	1	0	1	0	1
456			min	-2127.514	3	-4.588	4	0	1	0	1	0	1	0	1
457	M9	1	max	1685.999	2	4.588	4	19.596	3	.03	2	.002	3	0	1
458			min	-607.262	3	1.079	15	-46.132	2	-.014	3	-.004	2	0	1
459		2	max	1685.825	2	4.078	4	19.596	3	.03	2	.008	3	0	15
460			min	-607.393	3	.959	15	-46.132	2	-.014	3	-.017	2	-.001	4
461		3	max	1685.65	2	3.569	4	19.596	3	.03	2	.014	3	0	15
462			min	-607.523	3	.839	15	-46.132	2	-.014	3	-.031	2	-.002	4
463		4	max	1685.476	2	3.059	4	19.596	3	.03	2	.019	3	0	15
464			min	-607.654	3	.719	15	-46.132	2	-.014	3	-.044	2	-.003	4
465		5	max	1685.301	2	2.549	4	19.596	3	.03	2	.025	3	0	15
466			min	-607.785	3	.599	15	-46.132	2	-.014	3	-.058	2	-.004	4
467		6	max	1685.127	2	2.039	4	19.596	3	.03	2	.031	3	-.001	15
468			min	-607.916	3	.479	15	-46.132	2	-.014	3	-.071	2	-.005	4
469		7	max	1684.953	2	1.529	4	19.596	3	.03	2	.036	3	-.001	15
470			min	-608.047	3	.36	15	-46.132	2	-.014	3	-.085	2	-.005	4
471		8	max	1684.778	2	1.02	4	19.596	3	.03	2	.042	3	-.001	15
472			min	-608.177	3	.24	15	-46.132	2	-.014	3	-.098	2	-.006	4
473		9	max	1684.604	2	.51	4	19.596	3	.03	2	.048	3	-.001	15
474			min	-608.308	3	.12	15	-46.132	2	-.014	3	-.112	2	-.006	4
475		10	max	1684.429	2	0	1	19.596	3	.03	2	.054	3	-.001	15
476			min	-608.439	3	0	1	-46.132	2	-.014	3	-.125	2	-.006	4
477		11	max	1684.255	2	-.12	15	19.596	3	.03	2	.059	3	-.001	15
478			min	-608.57	3	-.51	4	-46.132	2	-.014	3	-.139	2	-.006	4
479		12	max	1684.081	2	-.24	15	19.596	3	.03	2	.065	3	-.001	15
480			min	-608.701	3	-1.02	4	-46.132	2	-.014	3	-.152	2	-.006	4
481		13	max	1683.906	2	-.36	15	19.596	3	.03	2	.071	3	-.001	15
482			min	-608.831	3	-1.529	4	-46.132	2	-.014	3	-.166	2	-.005	4
483		14	max	1683.732	2	-.479	15	19.596	3	.03	2	.077	3	-.001	15
484			min	-608.962	3	-2.039	4	-46.132	2	-.014	3	-.179	2	-.005	4
485		15	max	1683.558	2	-.599	15	19.596	3	.03	2	.082	3	0	15
486			min	-609.093	3	-2.549	4	-46.132	2	-.014	3	-.193	2	-.004	4
487		16	max	1683.383	2	-.719	15	19.596	3	.03	2	.088	3	0	15
488			min	-609.224	3	-3.059	4	-46.132	2	-.014	3	-.206	2	-.003	4



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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	1683.209	2	-839	15	19.596	3	.03	2	.094	3	0	15
490		min	-609.354	3	-3.569	4	-46.132	2	-.014	3	-.22	2	-.002	4
491	18	max	1683.034	2	-.959	15	19.596	3	.03	2	.099	3	0	15
492		min	-609.485	3	-4.078	4	-46.132	2	-.014	3	-.233	2	-.001	4
493	19	max	1682.86	2	-1.079	15	19.596	3	.03	2	.105	3	0	1
494		min	-609.616	3	-4.588	4	-46.132	2	-.014	3	-.247	2	0	1

Envelope Member Section Deflections

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC	
1	M1	1	max	-0.008	15	.048	3	.019	1	7.558e-3	3	NC	3	NC	3	
2			min	-0.227	1	-0.571	1	0	15	-1.975e-2	2	218.178	1	3760.767	1	
3			2	max	-0.008	15	.022	3	.006	1	7.558e-3	3	8637.639	12	NC	3
4				min	-0.227	1	-0.483	1	0	15	-1.975e-2	2	254.885	1	5970.925	1
5			3	max	-0.008	15	-0.004	12	0	15	7.112e-3	3	8652.808	15	NC	1
6				min	-0.227	1	-0.394	1	-0.006	1	-1.822e-2	2	306.499	1	NC	1
7			4	max	-0.008	15	-.01	15	0	15	6.429e-3	3	NC	15	NC	1
8				min	-0.227	1	-0.309	1	-0.01	1	-1.586e-2	2	380.808	1	NC	1
9			5	max	-0.008	15	-0.008	15	0	12	5.745e-3	3	NC	15	NC	1
10				min	-0.227	1	-0.232	1	-0.011	1	-1.351e-2	2	487.706	1	NC	1
11			6	max	-0.008	15	-0.006	15	.001	3	5.691e-3	3	NC	15	NC	1
12				min	-0.227	1	-0.168	1	-0.009	1	-1.261e-2	2	635.295	1	NC	1
13			7	max	-0.008	15	-0.004	15	.001	3	6.073e-3	3	NC	5	NC	1
14				min	-0.226	1	-0.117	1	-0.004	2	-1.273e-2	2	837.581	1	NC	1
15			8	max	-0.008	15	-0.003	15	0	3	6.455e-3	3	NC	5	NC	2
16				min	-0.226	1	-0.074	1	0	2	-1.285e-2	2	1133.674	3	8000.163	1
17			9	max	-0.008	15	-0.002	15	0	15	7.098e-3	3	NC	2	NC	2
18				min	-0.225	1	-0.067	3	0	3	-1.23e-2	2	1168.983	3	7991.534	1
19			10	max	-0.008	15	.007	2	0	2	8.203e-3	3	NC	5	NC	2
20				min	-0.225	1	-0.059	3	0	3	-1.058e-2	2	1246.043	3	7732.557	1
21			11	max	-0.008	15	.035	2	0	3	9.308e-3	3	NC	1	NC	2
22				min	-0.224	1	-0.048	3	0	2	-8.867e-3	2	1395.351	3	8025.125	1
23		12	max	-0.008	15	.063	1	.004	3	7.712e-3	3	NC	4	NC	1	
24			min	-0.224	1	-0.031	3	-0.004	1	-6.501e-3	2	1685.865	3	NC	1	
25		13	max	-0.008	15	.088	1	.008	3	4.589e-3	3	NC	4	NC	1	
26			min	-0.223	1	-0.005	3	-0.005	2	-3.768e-3	2	1478.294	2	NC	1	
27		14	max	-0.008	15	.102	1	.008	3	1.626e-3	3	NC	3	NC	2	
28			min	-0.223	1	.004	15	-0.002	2	-1.14e-3	2	1356.385	2	7889.677	1	
29		15	max	-0.008	15	.103	1	.006	1	5.794e-3	3	NC	4	NC	2	
30			min	-0.223	1	.004	15	0	15	-3.189e-3	2	1446.845	2	5905.888	1	
31		16	max	-0.008	15	.186	3	.008	1	9.961e-3	3	NC	4	NC	3	
32			min	-0.223	1	.004	15	0	15	-5.237e-3	2	975.001	3	5333.496	1	
33		17	max	-0.008	15	.279	3	.005	1	1.413e-2	3	NC	4	NC	2	
34			min	-0.223	1	.004	15	0	15	-7.285e-3	2	581.429	3	6059.915	1	
35		18	max	-0.008	15	.376	3	0	15	1.684e-2	3	NC	4	NC	1	
36			min	-0.223	1	0	10	-0.005	1	-8.621e-3	2	408.949	3	NC	1	
37		19	max	-0.008	15	.473	3	0	15	1.684e-2	3	NC	1	NC	1	
38			min	-0.223	1	-0.016	10	-0.017	1	-8.621e-3	2	315.484	3	NC	1	
39	M4	1	max	-0.013	15	.221	3	0	1	0	1	NC	3	NC	1	
40			min	-0.432	1	-1.254	2	0	1	0	1	119.436	1	NC	1	
41			2	max	-0.013	15	.146	3	0	1	0	1	4886.026	15	NC	1
42				min	-0.432	1	-1.04	2	0	1	0	1	144.165	1	NC	1
43			3	max	-0.013	15	.071	3	0	1	0	1	5904.135	15	NC	1
44				min	-0.432	1	-0.824	2	0	1	0	1	181.932	1	NC	1
45			4	max	-0.013	15	0	3	0	1	0	1	7395.405	15	NC	1
46				min	-0.432	1	-0.622	1	0	1	0	1	243.21	1	NC	1



Company : Schletter, Inc.
Designer : HCV
Job Number :
Model Name : Standard FS Racking System

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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	-.013	15	-.013	15	0	1	0	1	9594.983	15	NC	1
48			min	-.432	1	-.457	1	0	1	0	1	347.213	1	NC	1
49		6	max	-.013	15	-.01	15	0	1	0	1	NC	15	NC	1
50			min	-.431	1	-.326	1	0	1	0	1	422.863	3	NC	1
51		7	max	-.013	15	-.007	15	0	1	0	1	NC	5	NC	1
52			min	-.43	1	-.228	1	0	1	0	1	400.794	3	NC	1
53		8	max	-.013	15	-.005	15	0	1	0	1	NC	5	NC	1
54			min	-.429	1	-.149	1	0	1	0	1	396.332	3	NC	1
55		9	max	-.013	15	-.003	15	0	1	0	1	NC	1	NC	1
56			min	-.428	1	-.114	3	0	1	0	1	400.593	3	NC	1
57		10	max	-.013	15	.002	10	0	1	0	1	NC	4	NC	1
58			min	-.427	1	-.106	3	0	1	0	1	410.298	3	NC	1
59		11	max	-.013	15	.06	2	0	1	0	1	NC	4	NC	1
60			min	-.426	1	-.091	3	0	1	0	1	429.619	3	NC	1
61		12	max	-.013	15	.121	1	0	1	0	1	NC	5	NC	1
62			min	-.425	1	-.068	3	0	1	0	1	463.994	3	NC	1
63		13	max	-.013	15	.17	1	0	1	0	1	NC	5	NC	1
64			min	-.423	1	-.023	3	0	1	0	1	437.589	2	NC	1
65		14	max	-.013	15	.192	1	0	1	0	1	NC	5	NC	1
66			min	-.422	1	.006	15	0	1	0	1	417.944	2	NC	1
67		15	max	-.013	15	.207	3	0	1	0	1	NC	5	NC	1
68			min	-.422	1	.006	15	0	1	0	1	455.111	2	NC	1
69		16	max	-.013	15	.394	3	0	1	0	1	NC	5	NC	1
70			min	-.422	1	.005	15	0	1	0	1	562.756	2	NC	1
71		17	max	-.013	15	.608	3	0	1	0	1	NC	5	NC	1
72			min	-.422	1	-.001	10	0	1	0	1	346.164	3	NC	1
73		18	max	-.013	15	.832	3	0	1	0	1	NC	4	NC	1
74			min	-.422	1	-.065	2	0	1	0	1	219.444	3	NC	1
75		19	max	-.013	15	1.055	3	0	1	0	1	NC	1	NC	1
76			min	-.422	1	-.147	2	0	1	0	1	160.766	3	NC	1
77	M7	1	max	-.008	15	.048	3	0	15	1.975e-2	2	NC	3	NC	3
78			min	-.227	1	-.571	1	-.019	1	-7.558e-3	3	218.178	1	3760.767	1
79		2	max	-.008	15	.022	3	0	15	1.975e-2	2	8637.639	12	NC	3
80			min	-.227	1	-.483	1	-.006	1	-7.558e-3	3	254.885	1	5970.925	1
81		3	max	-.008	15	-.004	12	.006	1	1.822e-2	2	8652.808	15	NC	1
82			min	-.227	1	-.394	1	0	15	-7.112e-3	3	306.499	1	NC	1
83		4	max	-.008	15	-.01	15	.01	1	1.586e-2	2	NC	15	NC	1
84			min	-.227	1	-.309	1	0	15	-6.429e-3	3	380.808	1	NC	1
85		5	max	-.008	15	-.008	15	.011	1	1.351e-2	2	NC	15	NC	1
86			min	-.227	1	-.232	1	0	12	-5.745e-3	3	487.706	1	NC	1
87		6	max	-.008	15	-.006	15	.009	1	1.261e-2	2	NC	15	NC	1
88			min	-.227	1	-.168	1	-.001	3	-5.691e-3	3	635.295	1	NC	1
89		7	max	-.008	15	-.004	15	.004	2	1.273e-2	2	NC	5	NC	1
90			min	-.226	1	-.117	1	-.001	3	-6.073e-3	3	837.581	1	NC	1
91		8	max	-.008	15	-.003	15	0	2	1.285e-2	2	NC	5	NC	2
92			min	-.226	1	-.074	1	0	3	-6.455e-3	3	1133.674	3	8000.163	1
93		9	max	-.008	15	-.002	15	0	3	1.23e-2	2	NC	2	NC	2
94			min	-.225	1	-.067	3	0	15	-7.098e-3	3	1168.983	3	7991.534	1
95		10	max	-.008	15	.007	2	0	3	1.058e-2	2	NC	5	NC	2
96			min	-.225	1	-.059	3	0	2	-8.203e-3	3	1246.043	3	7732.557	1
97		11	max	-.008	15	.035	2	0	2	8.867e-3	2	NC	1	NC	2
98			min	-.224	1	-.048	3	0	3	-9.308e-3	3	1395.351	3	8025.125	1
99		12	max	-.008	15	.063	1	.004	1	6.501e-3	2	NC	4	NC	1
100			min	-.224	1	-.031	3	-.004	3	-7.712e-3	3	1685.865	3	NC	1
101		13	max	-.008	15	.088	1	.005	2	3.768e-3	2	NC	4	NC	1
102			min	-.223	1	-.005	3	-.008	3	-4.589e-3	3	1478.294	2	NC	1
103		14	max	-.008	15	.102	1	.002	2	1.14e-3	2	NC	3	NC	2



Company : Schletter, Inc.
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Job Number :
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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	-.223	1	.004	15	-.008	3	-1.626e-3	3	1356.385	2	7889.677	1
105		max	-.008	15	.103	1	0	15	3.189e-3	2	NC	4	NC	2
106		min	-.223	1	.004	15	-.006	1	-5.794e-3	3	1446.845	2	5905.888	1
107		max	-.008	15	.186	3	0	15	5.237e-3	2	NC	4	NC	3
108		min	-.223	1	.004	15	-.008	1	-9.961e-3	3	975.001	3	5333.496	1
109		max	-.008	15	.279	3	0	15	7.285e-3	2	NC	4	NC	2
110		min	-.223	1	.004	15	-.005	1	-1.413e-2	3	581.429	3	6059.915	1
111		max	-.008	15	.376	3	.005	1	8.621e-3	2	NC	4	NC	1
112		min	-.223	1	0	10	0	15	-1.684e-2	3	408.949	3	NC	1
113		max	-.008	15	.473	3	.017	1	8.621e-3	2	NC	1	NC	1
114		min	-.223	1	-.016	10	0	15	-1.684e-2	3	315.484	3	NC	1
115	M10	max	0	1	.342	3	.223	1	1.304e-2	3	NC	1	NC	1
116		min	0	15	.003	15	.008	15	-3.5e-3	2	NC	1	NC	1
117		max	0	1	.526	3	.253	1	1.492e-2	3	NC	4	NC	2
118		min	0	15	-.07	2	.009	15	-4.325e-3	2	1043.979	3	6357.5	1
119		max	0	1	.697	3	.299	1	1.68e-2	3	NC	5	NC	3
120		min	0	15	-.152	2	.01	15	-5.151e-3	2	540.998	3	2530.991	1
121		max	0	1	.83	3	.347	1	1.867e-2	3	NC	5	NC	5
122		min	0	15	-.209	2	.012	15	-5.976e-3	2	393.475	3	1548.285	1
123		max	0	1	.911	3	.388	1	2.055e-2	3	NC	5	NC	5
124		min	0	15	-.231	2	.013	15	-6.802e-3	2	337.681	3	1161.297	1
125		max	0	1	.935	3	.417	1	2.243e-2	3	NC	5	NC	5
126		min	0	15	-.219	2	.014	15	-7.627e-3	2	323.908	3	988.807	1
127		max	0	1	.909	3	.432	1	2.431e-2	3	NC	5	NC	5
128		min	0	15	-.177	2	.014	15	-8.453e-3	2	338.637	3	920.742	1
129		max	0	1	.85	3	.433	1	2.618e-2	3	NC	4	NC	5
130		min	0	15	-.118	2	.014	15	-9.278e-3	2	377.792	3	914.084	1
131		max	0	1	.786	3	.427	1	2.806e-2	3	NC	4	NC	5
132		min	0	15	-.063	2	.013	15	-1.01e-2	2	432.475	3	941.009	1
133		max	0	1	.754	3	.422	1	2.994e-2	3	NC	4	NC	5
134		min	0	1	-.037	2	.013	15	-1.093e-2	2	465.824	3	962.604	1
135		max	0	15	.786	3	.427	1	2.806e-2	3	NC	4	NC	5
136		min	0	1	-.063	2	.013	15	-1.01e-2	2	432.475	3	941.009	1
137		max	0	15	.85	3	.433	1	2.618e-2	3	NC	4	NC	5
138		min	0	1	-.118	2	.014	15	-9.278e-3	2	377.792	3	914.084	1
139		max	0	15	.909	3	.432	1	2.431e-2	3	NC	5	NC	5
140		min	0	1	-.177	2	.014	15	-8.453e-3	2	338.637	3	920.742	1
141		max	0	15	.935	3	.417	1	2.243e-2	3	NC	5	NC	5
142		min	0	1	-.219	2	.014	15	-7.627e-3	2	323.908	3	988.807	1
143		max	0	15	.911	3	.388	1	2.055e-2	3	NC	5	NC	5
144		min	0	1	-.231	2	.013	15	-6.802e-3	2	337.681	3	1161.297	1
145		max	0	15	.83	3	.347	1	1.867e-2	3	NC	5	NC	5
146		min	0	1	-.209	2	.012	15	-5.976e-3	2	393.475	3	1548.285	1
147		max	0	15	.697	3	.299	1	1.68e-2	3	NC	5	NC	3
148		min	0	1	-.152	2	.01	15	-5.151e-3	2	540.998	3	2530.991	1
149		max	0	15	.526	3	.253	1	1.492e-2	3	NC	4	NC	2
150		min	0	1	-.07	2	.009	15	-4.325e-3	2	1043.979	3	6357.5	1
151		max	0	15	.342	3	.223	1	1.304e-2	3	NC	1	NC	1
152		min	0	1	.003	15	.008	15	-3.5e-3	2	NC	1	NC	1
153	M11	max	.002	1	.044	2	.224	1	4.114e-3	1	NC	1	NC	1
154		min	-.002	3	-.043	3	.008	15	1.467e-4	15	NC	1	NC	1
155		max	.001	1	.066	3	.246	1	4.594e-3	1	NC	4	NC	2
156		min	-.002	3	-.042	2	.009	15	1.589e-4	15	1775.178	3	8648.926	1
157		max	.001	1	.163	3	.288	1	5.073e-3	1	NC	5	NC	3
158		min	-.001	3	-.114	2	.01	15	1.712e-4	15	934.227	3	3012.654	1
159		max	.001	1	.226	3	.335	1	5.552e-3	1	NC	5	NC	3
160		min	-.001	3	-.157	2	.011	15	1.834e-4	15	714.064	3	1732.163	1



Company : Schletter, Inc.
Designer : HCV
Job Number :
Model Name : Standard FS Racking System

Sept 14, 2015

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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	.243	3	.378	1	6.031e-3	1	NC	5	NC	3
162			min	0	3	-.165	2	.013	15	1.957e-4	15	672.367	3	1251.292	1
163		6	max	0	1	.211	3	.409	1	6.51e-3	1	NC	5	NC	5
164			min	0	3	-.137	2	.014	15	2.079e-4	15	757.87	3	1037.379	1
165		7	max	0	1	.138	3	.427	1	6.99e-3	1	NC	4	NC	5
166			min	0	3	-.081	2	.014	15	2.202e-4	15	1063.542	3	945.91	1
167		8	max	0	1	.043	3	.432	1	7.469e-3	1	NC	4	NC	5
168			min	0	3	-.011	2	.014	15	2.324e-4	15	2234.823	3	923.067	1
169		9	max	0	1	.055	1	.429	1	7.948e-3	1	NC	1	NC	5
170			min	0	3	-.044	3	.013	15	2.447e-4	15	NC	1	938.073	1
171		10	max	0	1	.082	1	.425	1	8.427e-3	1	NC	4	NC	5
172			min	0	1	-.084	3	.013	15	2.57e-4	15	4674.45	3	954.387	1
173		11	max	0	3	.055	1	.429	1	7.948e-3	1	NC	1	NC	5
174			min	0	1	-.044	3	.013	15	2.447e-4	15	NC	1	938.073	1
175		12	max	0	3	.043	3	.432	1	7.469e-3	1	NC	4	NC	5
176			min	0	1	-.011	2	.014	15	2.324e-4	15	2234.823	3	923.067	1
177		13	max	0	3	.138	3	.427	1	6.99e-3	1	NC	4	NC	5
178			min	0	1	-.081	2	.014	15	2.202e-4	15	1063.542	3	945.91	1
179		14	max	0	3	.211	3	.409	1	6.51e-3	1	NC	5	NC	5
180			min	0	1	-.137	2	.014	15	2.079e-4	15	757.87	3	1037.379	1
181		15	max	0	3	.243	3	.378	1	6.031e-3	1	NC	5	NC	3
182			min	0	1	-.165	2	.013	15	1.957e-4	15	672.367	3	1251.292	1
183		16	max	.001	3	.226	3	.335	1	5.552e-3	1	NC	5	NC	3
184			min	-.001	1	-.157	2	.011	15	1.834e-4	15	714.064	3	1732.163	1
185		17	max	.001	3	.163	3	.288	1	5.073e-3	1	NC	5	NC	3
186			min	-.001	1	-.114	2	.01	15	1.712e-4	15	934.227	3	3012.654	1
187		18	max	.002	3	.066	3	.246	1	4.594e-3	1	NC	4	NC	2
188			min	-.001	1	-.042	2	.009	15	1.589e-4	15	1775.178	3	8648.926	1
189		19	max	.002	3	.044	2	.224	1	4.114e-3	1	NC	1	NC	1
190			min	-.002	1	-.043	3	.008	15	1.467e-4	15	NC	1	NC	1
191	M12	1	max	0	2	-.002	15	.226	1	5.085e-3	1	NC	1	NC	1
192			min	0	9	-.068	3	.008	15	1.741e-4	15	NC	1	NC	1
193		2	max	0	2	-.001	3	.244	1	5.58e-3	1	NC	4	NC	1
194			min	0	9	-.172	2	.008	15	1.872e-4	15	1403.644	2	NC	1
195		3	max	0	2	.05	3	.284	1	6.075e-3	1	NC	5	NC	3
196			min	0	9	-.289	2	.01	15	2.004e-4	15	756.739	2	3291.11	1
197		4	max	0	2	.077	3	.331	1	6.569e-3	1	NC	5	NC	3
198			min	0	9	-.366	2	.011	15	2.135e-4	15	581.024	2	1826.458	1
199		5	max	0	2	.078	3	.374	1	7.064e-3	1	NC	5	NC	5
200			min	0	9	-.392	2	.013	15	2.266e-4	15	538.551	2	1293.219	1
201		6	max	0	2	.052	3	.407	1	7.559e-3	1	NC	5	NC	5
202			min	0	9	-.367	2	.013	15	2.398e-4	15	579.504	2	1057.505	1
203		7	max	0	2	.007	3	.427	1	8.054e-3	1	NC	5	NC	5
204			min	0	9	-.3	2	.014	15	2.529e-4	15	726.82	2	954.089	1
205		8	max	0	2	-.005	15	.434	1	8.549e-3	1	NC	5	NC	5
206			min	0	9	-.21	2	.014	15	2.661e-4	15	1101.993	2	923.074	1
207		9	max	0	2	-.004	15	.432	1	9.044e-3	1	NC	4	NC	5
208			min	0	9	-.135	1	.013	15	2.792e-4	15	2119.82	2	932.068	1
209		10	max	0	1	-.003	15	.429	1	9.539e-3	1	NC	4	NC	5
210			min	0	1	-.115	3	.013	15	2.923e-4	15	3546.848	1	945.704	1
211		11	max	0	9	-.004	15	.432	1	9.044e-3	1	NC	4	NC	5
212			min	0	2	-.135	1	.013	15	2.792e-4	15	2119.82	2	932.068	1
213		12	max	0	9	-.005	15	.434	1	8.549e-3	1	NC	5	NC	5
214			min	0	2	-.21	2	.014	15	2.661e-4	15	1101.993	2	923.074	1
215		13	max	0	9	.007	3	.427	1	8.054e-3	1	NC	5	NC	5
216			min	0	2	-.3	2	.014	15	2.529e-4	15	726.82	2	954.089	1
217		14	max	0	9	.052	3	.407	1	7.559e-3	1	NC	5	NC	5



Company : Schletter, Inc.
Designer : HCV
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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	-.367	2	.013	15	2.398e-4	15	579.504	2	1057.505	1
219	15	max	0	9	.078	3	.374	1	7.064e-3	1	NC	5	NC	5
220		min	0	2	-.392	2	.013	15	2.266e-4	15	538.551	2	1293.219	1
221	16	max	0	9	.077	3	.331	1	6.569e-3	1	NC	5	NC	3
222		min	0	2	-.366	2	.011	15	2.135e-4	15	581.024	2	1826.458	1
223	17	max	0	9	.05	3	.284	1	6.075e-3	1	NC	5	NC	3
224		min	0	2	-.289	2	.01	15	2.004e-4	15	756.739	2	3291.11	1
225	18	max	0	9	-.001	3	.244	1	5.58e-3	1	NC	4	NC	1
226		min	0	2	-.172	2	.008	15	1.872e-4	15	1403.644	2	NC	1
227	19	max	0	9	-.002	15	.226	1	5.085e-3	1	NC	1	NC	1
228		min	0	2	-.068	3	.008	15	1.741e-4	15	NC	1	NC	1
229	M13	1	max	0	.013	3	.227	1	1.259e-2	2	NC	1	NC	1
230		min	0	1	-.452	1	.008	15	-3.546e-3	3	NC	1	NC	1
231	2	max	0	12	.092	3	.259	1	1.439e-2	2	NC	5	NC	3
232		min	0	1	-.649	2	.009	15	-4.27e-3	3	911.323	2	6048.296	1
233	3	max	0	12	.161	3	.306	1	1.619e-2	2	NC	5	NC	3
234		min	0	1	-.84	2	.011	15	-4.995e-3	3	477.825	2	2441.183	1
235	4	max	0	12	.21	3	.355	1	1.8e-2	2	NC	5	NC	3
236		min	0	1	-.989	2	.012	15	-5.72e-3	3	348.669	2	1502.588	1
237	5	max	0	12	.234	3	.397	1	1.98e-2	2	NC	5	NC	5
238		min	0	1	-1.083	2	.013	15	-6.445e-3	3	297.976	2	1130.417	1
239	6	max	0	12	.232	3	.426	1	2.16e-2	2	NC	15	NC	5
240		min	0	1	-1.118	2	.014	15	-7.169e-3	3	282.403	2	963.709	1
241	7	max	0	12	.209	3	.441	1	2.341e-2	2	NC	15	NC	5
242		min	0	1	-1.102	2	.014	15	-7.894e-3	3	289.087	2	897.402	1
243	8	max	0	12	.172	3	.443	1	2.521e-2	2	NC	15	NC	5
244		min	0	1	-1.052	2	.014	15	-8.619e-3	3	312.722	2	890.153	1
245	9	max	0	12	.137	3	.437	1	2.702e-2	2	NC	5	NC	5
246		min	0	1	-.994	2	.013	15	-9.344e-3	3	345.355	2	915.182	1
247	10	max	0	1	.12	3	.432	1	2.882e-2	2	NC	5	NC	5
248		min	0	1	-.965	2	.013	15	-1.007e-2	3	364.562	2	935.458	1
249	11	max	0	1	.137	3	.437	1	2.702e-2	2	NC	5	NC	5
250		min	0	12	-.994	2	.013	15	-9.344e-3	3	345.355	2	915.182	1
251	12	max	0	1	.172	3	.443	1	2.521e-2	2	NC	15	NC	5
252		min	0	12	-1.052	2	.014	15	-8.619e-3	3	312.722	2	890.153	1
253	13	max	0	1	.209	3	.441	1	2.341e-2	2	NC	15	NC	5
254		min	0	12	-1.102	2	.014	15	-7.894e-3	3	289.087	2	897.402	1
255	14	max	0	1	.232	3	.426	1	2.16e-2	2	NC	15	NC	5
256		min	0	12	-1.118	2	.014	15	-7.169e-3	3	282.403	2	963.709	1
257	15	max	0	1	.234	3	.397	1	1.98e-2	2	NC	5	NC	5
258		min	0	12	-1.083	2	.013	15	-6.445e-3	3	297.976	2	1130.417	1
259	16	max	0	1	.21	3	.355	1	1.8e-2	2	NC	5	NC	3
260		min	0	12	-.989	2	.012	15	-5.72e-3	3	348.669	2	1502.588	1
261	17	max	0	1	.161	3	.306	1	1.619e-2	2	NC	5	NC	3
262		min	0	12	-.84	2	.011	15	-4.995e-3	3	477.825	2	2441.183	1
263	18	max	0	1	.092	3	.259	1	1.439e-2	2	NC	5	NC	3
264		min	0	12	-.649	2	.009	15	-4.27e-3	3	911.323	2	6048.296	1
265	19	max	0	1	.013	3	.227	1	1.259e-2	2	NC	1	NC	1
266		min	0	12	-.452	1	.008	15	-3.546e-3	3	NC	1	NC	1
267	M2	1	max	0	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	2.027e-3	2	NC	1	NC	1
270		min	0	2	0	1	0	2	-8.705e-4	3	NC	1	NC	1
271	3	max	0	3	0	15	0	3	4.055e-3	2	NC	1	NC	1
272		min	0	2	-.004	1	0	1	-1.741e-3	3	NC	1	NC	1
273	4	max	0	3	0	15	.001	3	4.748e-3	2	NC	3	NC	1
274		min	0	2	-.009	1	0	1	-2.017e-3	3	6816.684	1	NC	1



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Envelope Member Section Deflections (Continued)

Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
275	5	max	0	3	0	15	.002	3	4.359e-3	2	NC	4	NC	1
276		min	0	2	-0.016	1	-.001	1	-1.81e-3	3	3810.069	1	NC	1
277	6	max	0	3	0	15	.002	3	3.969e-3	2	NC	4	NC	1
278		min	0	2	-.025	1	-.002	1	-1.603e-3	3	2450.034	1	NC	1
279	7	max	0	3	-.001	15	.003	3	3.579e-3	2	NC	5	NC	1
280		min	0	2	-.035	1	-.003	1	-1.396e-3	3	1719.752	1	NC	1
281	8	max	0	3	-.002	15	.004	3	3.19e-3	2	NC	5	NC	1
282		min	0	2	-.047	1	-.003	1	-1.189e-3	3	1281.546	1	8554.413	3
283	9	max	0	3	-.002	15	.004	3	2.8e-3	2	NC	5	NC	1
284		min	0	2	-.061	1	-.004	1	-9.825e-4	3	997.483	1	7475.589	3
285	10	max	0	3	-.003	15	.005	3	2.411e-3	2	NC	5	NC	1
286		min	0	2	-.076	1	-.004	1	-7.756e-4	3	802.534	1	6760.401	3
287	11	max	0	3	-.003	15	.005	3	2.021e-3	2	NC	5	NC	1
288		min	0	2	-.091	1	-.005	1	-5.687e-4	3	662.785	1	6312.48	3
289	12	max	0	3	-.004	15	.005	3	1.632e-3	2	NC	5	NC	1
290		min	0	2	-.108	1	-.005	1	-3.618e-4	3	559.122	1	6084.793	3
291	13	max	0	3	-.004	15	.004	3	1.242e-3	2	NC	15	NC	1
292		min	-.001	2	-.126	1	-.005	1	-1.549e-4	3	480.047	1	6068.689	3
293	14	max	.001	3	-.005	15	.004	3	8.526e-4	2	NC	15	NC	1
294		min	-.001	2	-.145	1	-.005	1	3.531e-6	15	418.322	1	6297.179	3
295	15	max	.001	3	-.006	15	.002	3	4.63e-4	2	NC	15	NC	1
296		min	-.001	2	-.164	1	-.005	1	-6.877e-5	9	369.201	1	6875.352	3
297	16	max	.001	3	-.006	15	0	3	4.657e-4	3	9499.584	15	NC	1
298		min	-.001	2	-.184	1	-.004	1	-1.998e-4	1	329.476	1	8077.234	3
299	17	max	.001	3	-.007	15	0	15	6.726e-4	3	8564.157	15	NC	1
300		min	-.001	2	-.204	1	-.003	1	-5.473e-4	1	296.907	1	NC	1
301	18	max	.001	3	-.008	15	0	10	8.795e-4	3	7787.579	15	NC	1
302		min	-.001	2	-.225	1	-.005	3	-8.948e-4	1	269.887	1	NC	1
303	19	max	.001	3	-.008	15	.002	2	1.086e-3	3	7136.398	15	NC	1
304		min	-.002	2	-.245	1	-.008	3	-1.242e-3	1	247.245	1	NC	1
305	M5	1	max	0	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	-.002	1	0	1	0	1	NC	1	NC	1
309	3	max	0	3	0	15	0	1	0	1	NC	2	NC	1
310		min	0	2	-.007	1	0	1	0	1	9064.825	1	NC	1
311	4	max	0	3	0	15	0	1	0	1	NC	4	NC	1
312		min	0	2	-.016	1	0	1	0	1	3820.265	1	NC	1
313	5	max	.001	3	0	15	0	1	0	1	NC	5	NC	1
314		min	-.001	2	-.029	1	0	1	0	1	2093.287	1	NC	1
315	6	max	.001	3	-.001	15	0	1	0	1	NC	5	NC	1
316		min	-.001	2	-.046	1	0	1	0	1	1331.227	1	NC	1
317	7	max	.001	3	-.002	15	0	1	0	1	NC	5	NC	1
318		min	-.002	2	-.065	1	0	1	0	1	927.868	1	NC	1
319	8	max	.002	3	-.003	15	0	1	0	1	NC	5	NC	1
320		min	-.002	2	-.088	1	0	1	0	1	688.087	1	NC	1
321	9	max	.002	3	-.004	15	0	1	0	1	NC	5	NC	1
322		min	-.002	2	-.114	1	0	1	0	1	533.673	1	NC	1
323	10	max	.002	3	-.004	15	0	1	0	1	NC	15	NC	1
324		min	-.002	2	-.142	1	0	1	0	1	428.217	1	NC	1
325	11	max	.002	3	-.005	15	0	1	0	1	NC	15	NC	1
326		min	-.002	2	-.172	1	0	1	0	1	352.905	1	NC	1
327	12	max	.003	3	-.006	15	0	1	0	1	9661.2	15	NC	1
328		min	-.003	2	-.204	1	0	1	0	1	297.208	1	NC	1
329	13	max	.003	3	-.007	15	0	1	0	1	8294.639	15	NC	1
330		min	-.003	2	-.238	1	0	1	0	1	254.825	1	NC	1
331	14	max	.003	3	-.008	15	0	1	0	1	7227.965	15	NC	1



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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	-.273	1	0	1	0	1	221.809	1	NC	1
333	15	max	.003	3	-.01	15	0	1	0	1	6379.118	15	NC	1
334		min	-.003	2	-.31	1	0	1	0	1	195.578	1	NC	1
335	16	max	.003	3	-.011	15	0	1	0	1	5692.676	15	NC	1
336		min	-.004	2	-.348	1	0	1	0	1	174.397	1	NC	1
337	17	max	.004	3	-.012	15	0	1	0	1	5129.885	15	NC	1
338		min	-.004	2	-.386	1	0	1	0	1	157.052	1	NC	1
339	18	max	.004	3	-.013	15	0	1	0	1	4663.001	15	NC	1
340		min	-.004	2	-.425	1	0	1	0	1	142.679	1	NC	1
341	19	max	.004	3	-.014	15	0	1	0	1	4271.756	15	NC	1
342		min	-.004	2	-.464	1	0	1	0	1	130.646	1	NC	1
343	M8	1	max	0	1	0	1	0	1	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	8.705e-4	3	NC	1	NC	1
346		min	0	2	0	1	0	3	-2.027e-3	2	NC	1	NC	1
347	3	max	0	3	0	15	0	1	1.741e-3	3	NC	1	NC	1
348		min	0	2	-.004	1	0	3	-4.055e-3	2	NC	1	NC	1
349	4	max	0	3	0	15	0	1	2.017e-3	3	NC	3	NC	1
350		min	0	2	-.009	1	-.001	3	-4.748e-3	2	6816.684	1	NC	1
351	5	max	0	3	0	15	.001	1	1.81e-3	3	NC	4	NC	1
352		min	0	2	-.016	1	-.002	3	-4.359e-3	2	3810.069	1	NC	1
353	6	max	0	3	0	15	.002	1	1.603e-3	3	NC	4	NC	1
354		min	0	2	-.025	1	-.002	3	-3.969e-3	2	2450.034	1	NC	1
355	7	max	0	3	-.001	15	.003	1	1.396e-3	3	NC	5	NC	1
356		min	0	2	-.035	1	-.003	3	-3.579e-3	2	1719.752	1	NC	1
357	8	max	0	3	-.002	15	.003	1	1.189e-3	3	NC	5	NC	1
358		min	0	2	-.047	1	-.004	3	-3.19e-3	2	1281.546	1	8554.413	3
359	9	max	0	3	-.002	15	.004	1	9.825e-4	3	NC	5	NC	1
360		min	0	2	-.061	1	-.004	3	-2.8e-3	2	997.483	1	7475.589	3
361	10	max	0	3	-.003	15	.004	1	7.756e-4	3	NC	5	NC	1
362		min	0	2	-.076	1	-.005	3	-2.411e-3	2	802.534	1	6760.401	3
363	11	max	0	3	-.003	15	.005	1	5.687e-4	3	NC	5	NC	1
364		min	0	2	-.091	1	-.005	3	-2.021e-3	2	662.785	1	6312.48	3
365	12	max	0	3	-.004	15	.005	1	3.618e-4	3	NC	5	NC	1
366		min	0	2	-.108	1	-.005	3	-1.632e-3	2	559.122	1	6084.793	3
367	13	max	0	3	-.004	15	.005	1	1.549e-4	3	NC	15	NC	1
368		min	-.001	2	-.126	1	-.004	3	-1.242e-3	2	480.047	1	6068.689	3
369	14	max	.001	3	-.005	15	.005	1	-3.531e-6	15	NC	15	NC	1
370		min	-.001	2	-.145	1	-.004	3	-8.526e-4	2	418.322	1	6297.179	3
371	15	max	.001	3	-.006	15	.005	1	6.877e-5	9	NC	15	NC	1
372		min	-.001	2	-.164	1	-.002	3	-4.63e-4	2	369.201	1	6875.352	3
373	16	max	.001	3	-.006	15	.004	1	1.998e-4	1	9499.584	15	NC	1
374		min	-.001	2	-.184	1	0	3	-4.657e-4	3	329.476	1	8077.234	3
375	17	max	.001	3	-.007	15	.003	1	5.473e-4	1	8564.157	15	NC	1
376		min	-.001	2	-.204	1	0	15	-6.726e-4	3	296.907	1	NC	1
377	18	max	.001	3	-.008	15	.005	3	8.948e-4	1	7787.579	15	NC	1
378		min	-.001	2	-.225	1	0	10	-8.795e-4	3	269.887	1	NC	1
379	19	max	.001	3	-.008	15	.008	3	1.242e-3	1	7136.398	15	NC	1
380		min	-.002	2	-.245	1	-.002	2	-1.086e-3	3	247.245	1	NC	1
381	M3	1	max	.005	1	0	15	0	1.89e-3	2	NC	1	NC	1
382		min	0	15	-.003	1	0	1	-7.181e-4	3	NC	1	NC	1
383	2	max	.005	1	0	15	.008	3	2.247e-3	2	NC	1	NC	4
384		min	0	15	-.02	1	-.017	2	-8.867e-4	3	NC	1	3823.123	2
385	3	max	.004	1	-.002	15	.015	3	2.603e-3	2	NC	1	NC	4
386		min	0	15	-.037	1	-.032	2	-1.055e-3	3	NC	1	1933.632	2
387	4	max	.004	1	-.002	15	.021	3	2.96e-3	2	NC	1	NC	4
388		min	0	15	-.055	1	-.047	2	-1.224e-3	3	NC	1	1312.103	2



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Checked By: _____

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	.027	3	3.317e-3	2	NC	1	NC	5
390			min	0	15	-.072	1	-.061	2	-1.392e-3	3	NC	1	1008.229	2
391		6	max	.004	3	-.004	15	.033	3	3.673e-3	2	NC	1	NC	5
392			min	0	15	-.089	1	-.074	2	-1.561e-3	3	NC	1	832.211	2
393		7	max	.004	3	-.004	15	.038	3	4.03e-3	2	NC	1	NC	5
394			min	0	10	-.106	1	-.085	2	-1.729e-3	3	NC	1	721.07	2
395		8	max	.004	3	-.005	15	.042	3	4.386e-3	2	NC	1	NC	5
396			min	0	10	-.123	1	-.095	2	-1.898e-3	3	NC	1	648.167	2
397		9	max	.004	3	-.006	15	.045	3	4.743e-3	2	NC	1	NC	5
398			min	0	10	-.14	1	-.102	2	-2.067e-3	3	NC	1	600.627	2
399		10	max	.004	3	-.006	15	.047	3	5.1e-3	2	NC	1	NC	5
400			min	-.001	2	-.157	1	-.107	2	-2.235e-3	3	NC	1	571.913	2
401		11	max	.005	3	-.007	15	.049	3	5.456e-3	2	NC	1	NC	5
402			min	-.002	2	-.174	1	-.109	2	-2.404e-3	3	NC	1	558.992	2
403		12	max	.005	3	-.007	15	.048	3	5.813e-3	2	NC	1	NC	5
404			min	-.002	2	-.19	1	-.108	2	-2.572e-3	3	NC	1	561.316	2
405		13	max	.005	3	-.008	15	.047	3	6.169e-3	2	NC	1	NC	5
406			min	-.003	2	-.207	1	-.104	2	-2.741e-3	3	NC	1	580.839	2
407		14	max	.005	3	-.008	15	.043	3	6.526e-3	2	NC	1	NC	5
408			min	-.003	2	-.223	1	-.096	2	-2.909e-3	3	NC	1	623.192	2
409		15	max	.005	3	-.009	15	.038	3	6.882e-3	2	NC	1	NC	5
410			min	-.004	2	-.24	1	-.084	2	-3.078e-3	3	NC	1	701.329	2
411		16	max	.006	3	-.009	15	.032	3	7.239e-3	2	NC	1	NC	5
412			min	-.004	2	-.256	1	-.068	2	-3.247e-3	3	NC	1	846.983	2
413		17	max	.006	3	-.01	15	.023	3	7.596e-3	2	NC	1	NC	5
414			min	-.005	2	-.272	1	-.048	2	-3.415e-3	3	NC	1	1156.895	2
415		18	max	.006	3	-.01	15	.012	3	7.952e-3	2	NC	1	NC	4
416			min	-.006	2	-.289	1	-.023	2	-3.584e-3	3	NC	1	2116.944	2
417		19	max	.006	3	-.01	15	.01	1	8.309e-3	2	NC	1	NC	1
418			min	-.006	2	-.305	1	0	3	-3.752e-3	3	NC	1	NC	1
419	M6	1	max	.009	1	0	15	0	1	0	1	NC	1	NC	1
420			min	0	15	-.005	1	0	1	0	1	NC	1	NC	1
421		2	max	.008	1	-.001	15	0	1	0	1	NC	1	NC	1
422			min	0	15	-.038	1	0	1	0	1	NC	1	NC	1
423		3	max	.006	1	-.002	15	0	1	0	1	NC	1	NC	1
424			min	0	15	-.071	1	0	1	0	1	NC	1	NC	1
425		4	max	.007	3	-.004	15	0	1	0	1	NC	1	NC	1
426			min	0	15	-.104	1	0	1	0	1	NC	1	NC	1
427		5	max	.008	3	-.005	15	0	1	0	1	NC	1	NC	1
428			min	0	10	-.136	1	0	1	0	1	NC	1	NC	1
429		6	max	.009	3	-.006	15	0	1	0	1	NC	1	NC	1
430			min	0	10	-.169	1	0	1	0	1	NC	1	NC	1
431		7	max	.009	3	-.007	15	0	1	0	1	NC	1	NC	1
432			min	-.002	2	-.202	1	0	1	0	1	NC	1	NC	1
433		8	max	.01	3	-.008	15	0	1	0	1	NC	1	NC	1
434			min	-.004	2	-.235	1	0	1	0	1	NC	1	NC	1
435		9	max	.011	3	-.009	15	0	1	0	1	NC	1	NC	1
436			min	-.005	2	-.267	1	0	1	0	1	NC	1	NC	1
437		10	max	.011	3	-.01	15	0	1	0	1	NC	1	NC	1
438			min	-.007	2	-.3	1	0	1	0	1	NC	1	NC	1
439		11	max	.012	3	-.011	15	0	1	0	1	NC	1	NC	1
440			min	-.009	2	-.332	1	0	1	0	1	NC	1	NC	1
441		12	max	.013	3	-.012	15	0	1	0	1	NC	1	NC	1
442			min	-.01	2	-.364	1	0	1	0	1	NC	1	NC	1
443		13	max	.014	3	-.013	15	0	1	0	1	NC	1	NC	1
444			min	-.012	2	-.396	1	0	1	0	1	NC	1	NC	1
445		14	max	.014	3	-.014	15	0	1	0	1	NC	1	NC	1



Company : Schletter, Inc.
Designer : HCV
Job Number :
Model Name : Standard FS Racking System

Sept 14, 2015

Checked By: _____

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	-.428	1	0	1	0	1	NC	1	NC	1
447		15	max	.015	3	-.014	15	0	1	0	1	NC	1	NC	1
448			min	-.015	2	-.46	1	0	1	0	1	NC	1	NC	1
449		16	max	.016	3	-.015	15	0	1	0	1	NC	1	NC	1
450			min	-.017	2	-.492	1	0	1	0	1	NC	1	NC	1
451		17	max	.016	3	-.016	15	0	1	0	1	NC	1	NC	1
452			min	-.018	2	-.524	1	0	1	0	1	NC	1	NC	1
453		18	max	.017	3	-.017	15	0	1	0	1	NC	1	NC	1
454			min	-.02	2	-.556	1	0	1	0	1	NC	1	NC	1
455		19	max	.018	3	-.018	15	0	1	0	1	NC	1	NC	1
456			min	-.021	2	-.587	1	0	1	0	1	NC	1	NC	1
457	M9	1	max	.005	1	0	15	0	1	7.181e-4	3	NC	1	NC	1
458			min	0	15	-.003	1	0	3	-1.89e-3	2	NC	1	NC	1
459		2	max	.005	1	0	15	.017	2	8.867e-4	3	NC	1	NC	4
460			min	0	15	-.02	1	-.008	3	-2.247e-3	2	NC	1	3823.123	2
461		3	max	.004	1	-.002	15	.032	2	1.055e-3	3	NC	1	NC	4
462			min	0	15	-.037	1	-.015	3	-2.603e-3	2	NC	1	1933.632	2
463		4	max	.004	1	-.002	15	.047	2	1.224e-3	3	NC	1	NC	4
464			min	0	15	-.055	1	-.021	3	-2.96e-3	2	NC	1	1312.103	2
465		5	max	.003	3	-.003	15	.061	2	1.392e-3	3	NC	1	NC	5
466			min	0	15	-.072	1	-.027	3	-3.317e-3	2	NC	1	1008.229	2
467		6	max	.004	3	-.004	15	.074	2	1.561e-3	3	NC	1	NC	5
468			min	0	15	-.089	1	-.033	3	-3.673e-3	2	NC	1	832.211	2
469		7	max	.004	3	-.004	15	.085	2	1.729e-3	3	NC	1	NC	5
470			min	0	10	-.106	1	-.038	3	-4.03e-3	2	NC	1	721.07	2
471		8	max	.004	3	-.005	15	.095	2	1.898e-3	3	NC	1	NC	5
472			min	0	10	-.123	1	-.042	3	-4.386e-3	2	NC	1	648.167	2
473		9	max	.004	3	-.006	15	.102	2	2.067e-3	3	NC	1	NC	5
474			min	0	10	-.14	1	-.045	3	-4.743e-3	2	NC	1	600.627	2
475		10	max	.004	3	-.006	15	.107	2	2.235e-3	3	NC	1	NC	5
476			min	-.001	2	-.157	1	-.047	3	-5.1e-3	2	NC	1	571.913	2
477		11	max	.005	3	-.007	15	.109	2	2.404e-3	3	NC	1	NC	5
478			min	-.002	2	-.174	1	-.049	3	-5.456e-3	2	NC	1	558.992	2
479		12	max	.005	3	-.007	15	.108	2	2.572e-3	3	NC	1	NC	5
480			min	-.002	2	-.19	1	-.048	3	-5.813e-3	2	NC	1	561.316	2
481		13	max	.005	3	-.008	15	.104	2	2.741e-3	3	NC	1	NC	5
482			min	-.003	2	-.207	1	-.047	3	-6.169e-3	2	NC	1	580.839	2
483		14	max	.005	3	-.008	15	.096	2	2.909e-3	3	NC	1	NC	5
484			min	-.003	2	-.223	1	-.043	3	-6.526e-3	2	NC	1	623.192	2
485		15	max	.005	3	-.009	15	.084	2	3.078e-3	3	NC	1	NC	5
486			min	-.004	2	-.24	1	-.038	3	-6.882e-3	2	NC	1	701.329	2
487		16	max	.006	3	-.009	15	.068	2	3.247e-3	3	NC	1	NC	5
488			min	-.004	2	-.256	1	-.032	3	-7.239e-3	2	NC	1	846.983	2
489		17	max	.006	3	-.01	15	.048	2	3.415e-3	3	NC	1	NC	5
490			min	-.005	2	-.272	1	-.023	3	-7.596e-3	2	NC	1	1156.895	2
491		18	max	.006	3	-.01	15	.023	2	3.584e-3	3	NC	1	NC	4
492			min	-.006	2	-.289	1	-.012	3	-7.952e-3	2	NC	1	2116.944	2
493		19	max	.006	3	-.01	15	0	3	3.752e-3	3	NC	1	NC	1
494			min	-.006	2	-.305	1	-.01	1	-8.309e-3	2	NC	1	NC	1