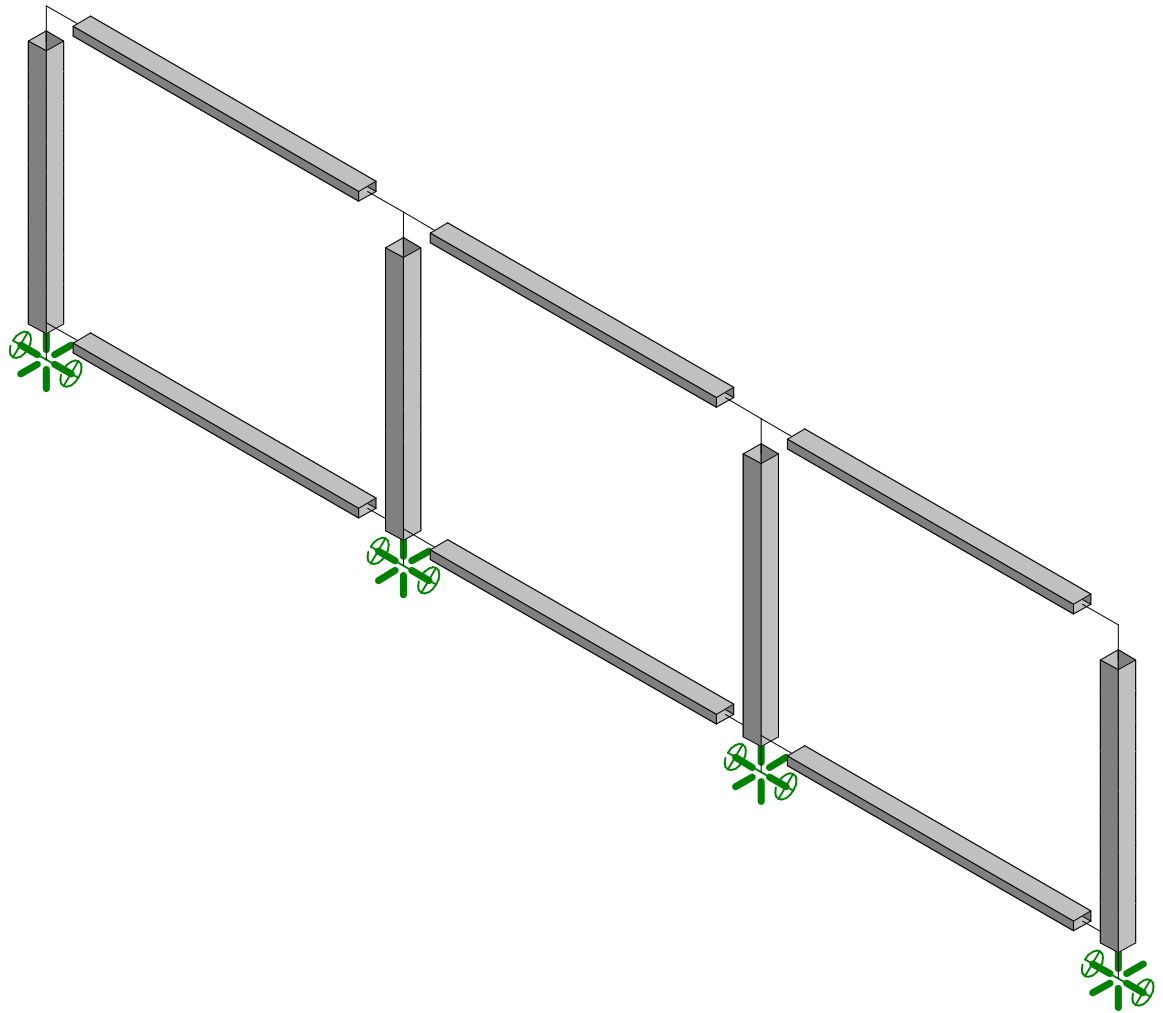
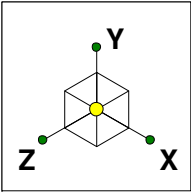


D5—2" SQ x 36-1/2" HIGH RAIL WITH 2"x1" RECT TOP RAIL WITH BOTTOM RAIL

Building Code:	2006 <i>International Building Code</i> 2007 <i>California Building Code</i> AISC <i>Steel Construction Manual</i>, 13th ed—ASD
Material:	Carbon Steel, A500, Grade B, Fy = 42 ksi Stainless Steel, A554, Grade MT-304 or MT-316, Fy = 30 ksi
Height:	36.5"
Anchor Post:	Carbon Steel: HSS 2x2x1/8 Tube Stainless Steel: 2"x2"x0.180" Tube
Intermediate Posts:	Carbon Steel: HSS 2x2x1/8 Tube Stainless Steel: 2"x2"x0.120" Tube
Top Rail:	Carbon Steel: HSS 2x1x1/8 Tube Stainless Steel: 2"x1"x0.120" Tube
Bottom Rail:	Carbon Steel: HSS 2x1x1/8 Tube Stainless Steel: 2"x1"x0.120" Tube
Number of Cables:	9
Cable Spacing:	3.10"



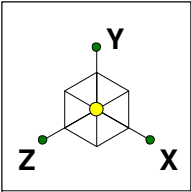
Disclaimer: Analysis and Structural Certification DOES NOT include base plates or anchorage to supporting structure. Where required by the Local Building Official, these shall be reviewed and designed by the project Structural Engineer of Record.



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D5 - 2" SQ. TUBE x 36.5" HIGH RAIL W/ 2"x1" TOP RAIL W/ BTM RAIL

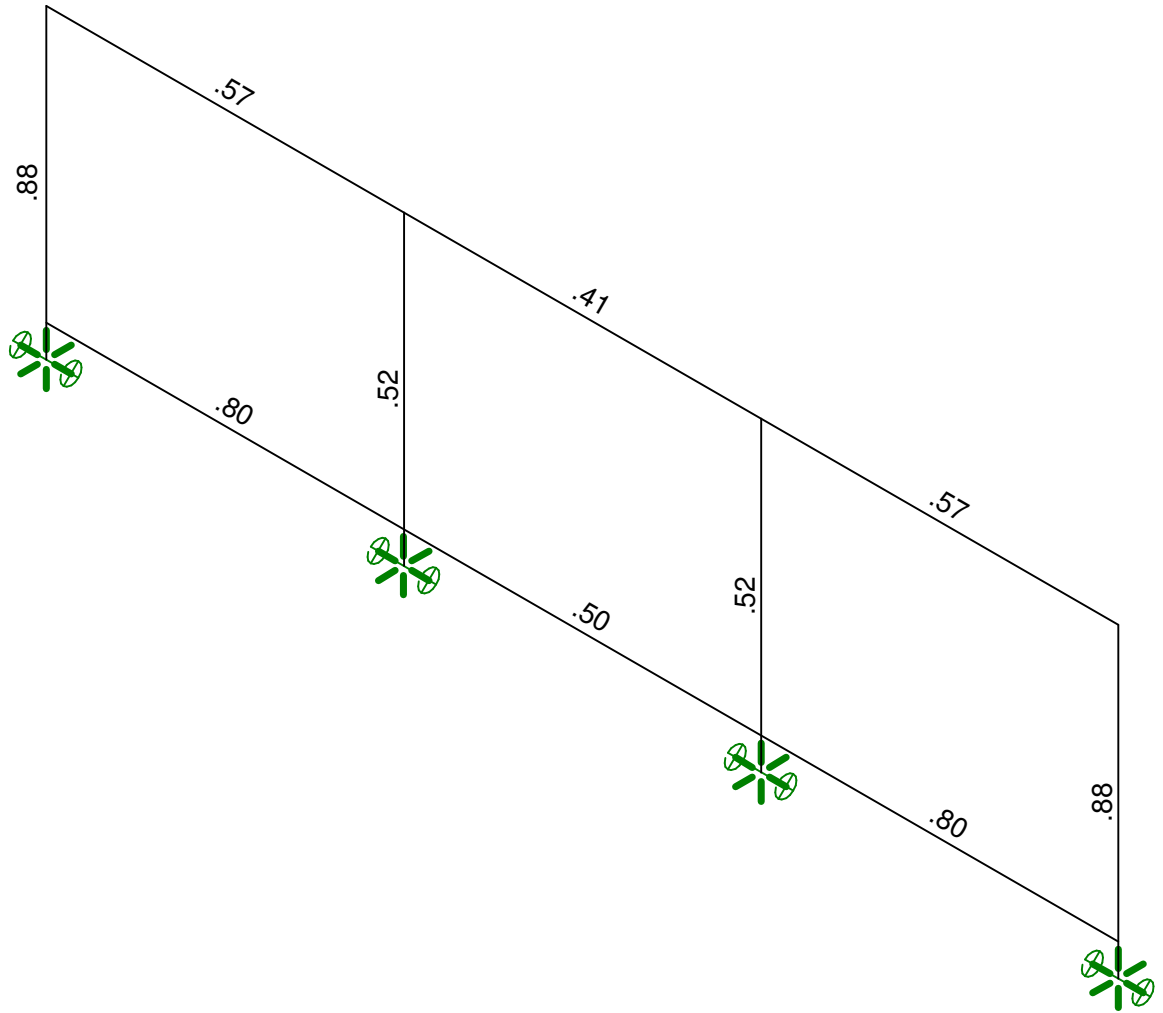
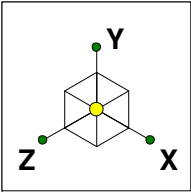
Nov 4, 2008 at 1:34 PM
D5.R3D



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D5 - 2" SQ. TUBE x 36.5" HIGH RAIL W/ 2"x1" TOP RAIL W/ BTM RAIL

Nov 4, 2008 at 1:34 PM
D5.R3D

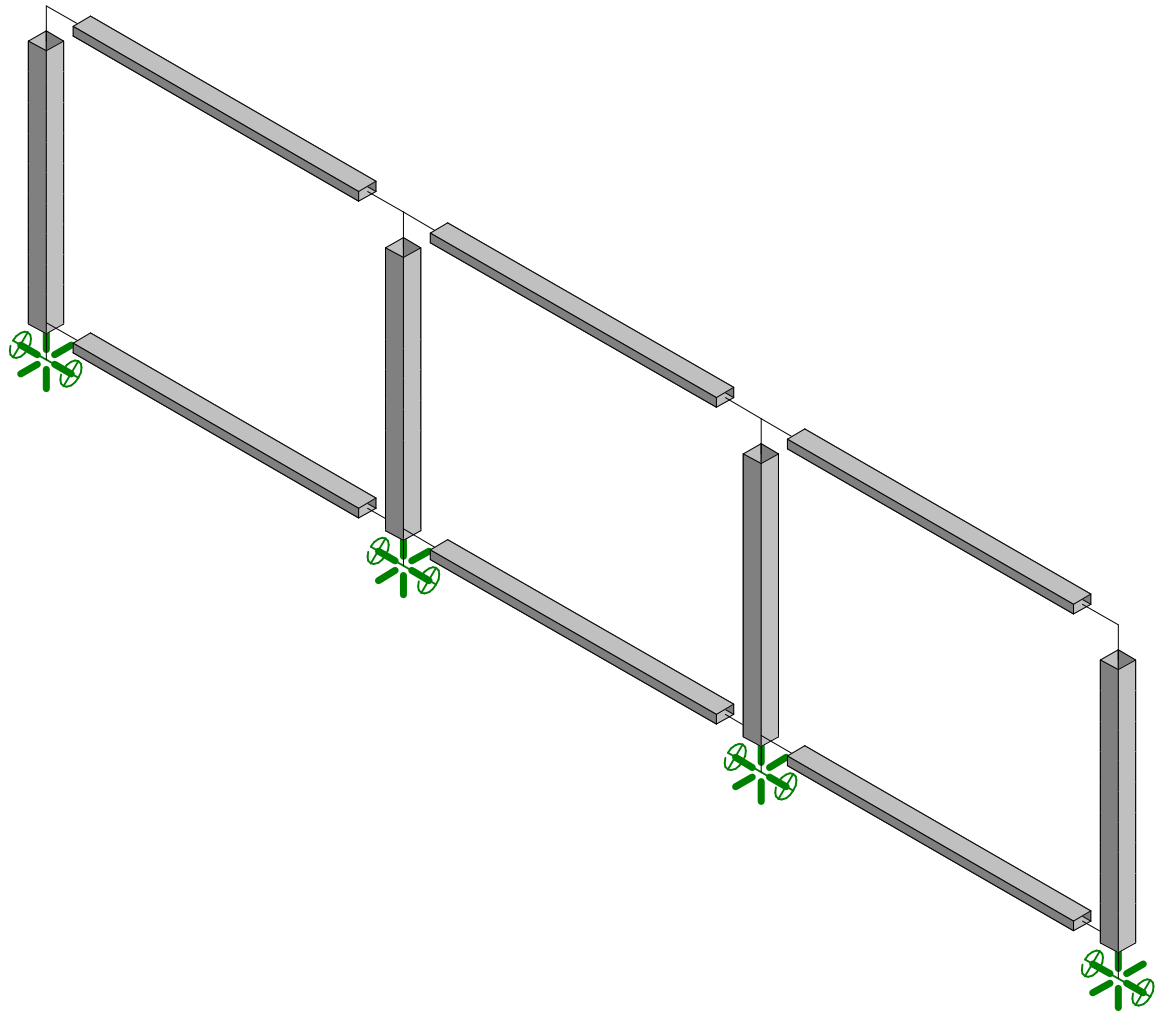
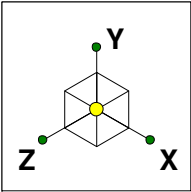


Member Code Checks Displayed
Solution: Envelope

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D5 - 2" SQ. TUBE x 36.5" HIGH RAIL W/ 2"x1" TOP RAIL W/ BTM RAIL
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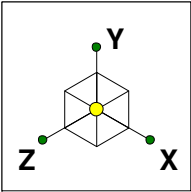
Nov 4, 2008 at 1:35 PM
D5.R3D



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D5 (SS) - 2" SQ. TUBE x 36.5" HIGH RAIL W/ 2"x1" TOP RAIL W/ BTM RAIL

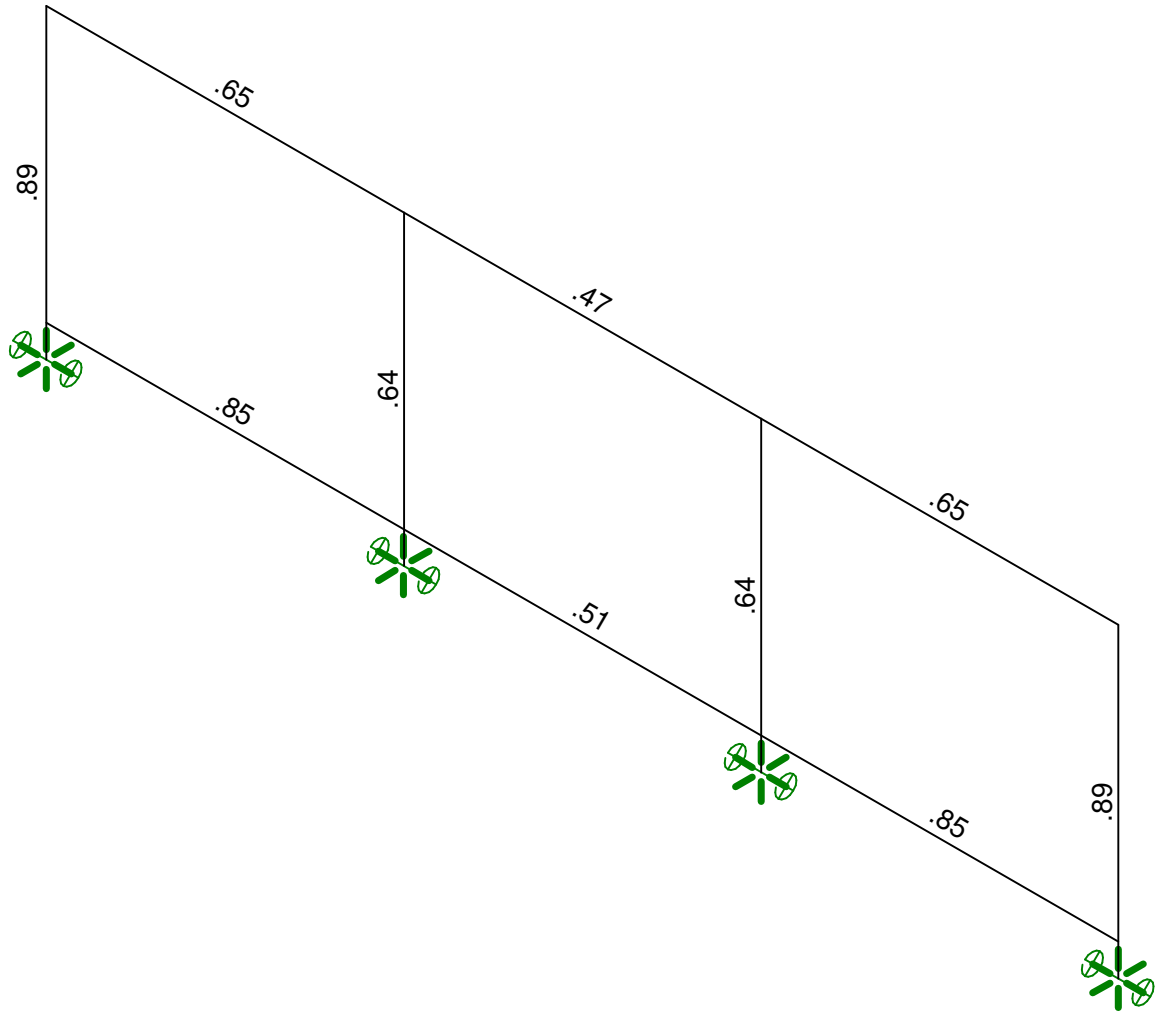
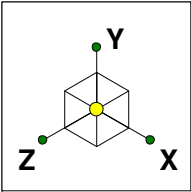
Nov 4, 2008 at 1:50 PM
D5-ss.R3D



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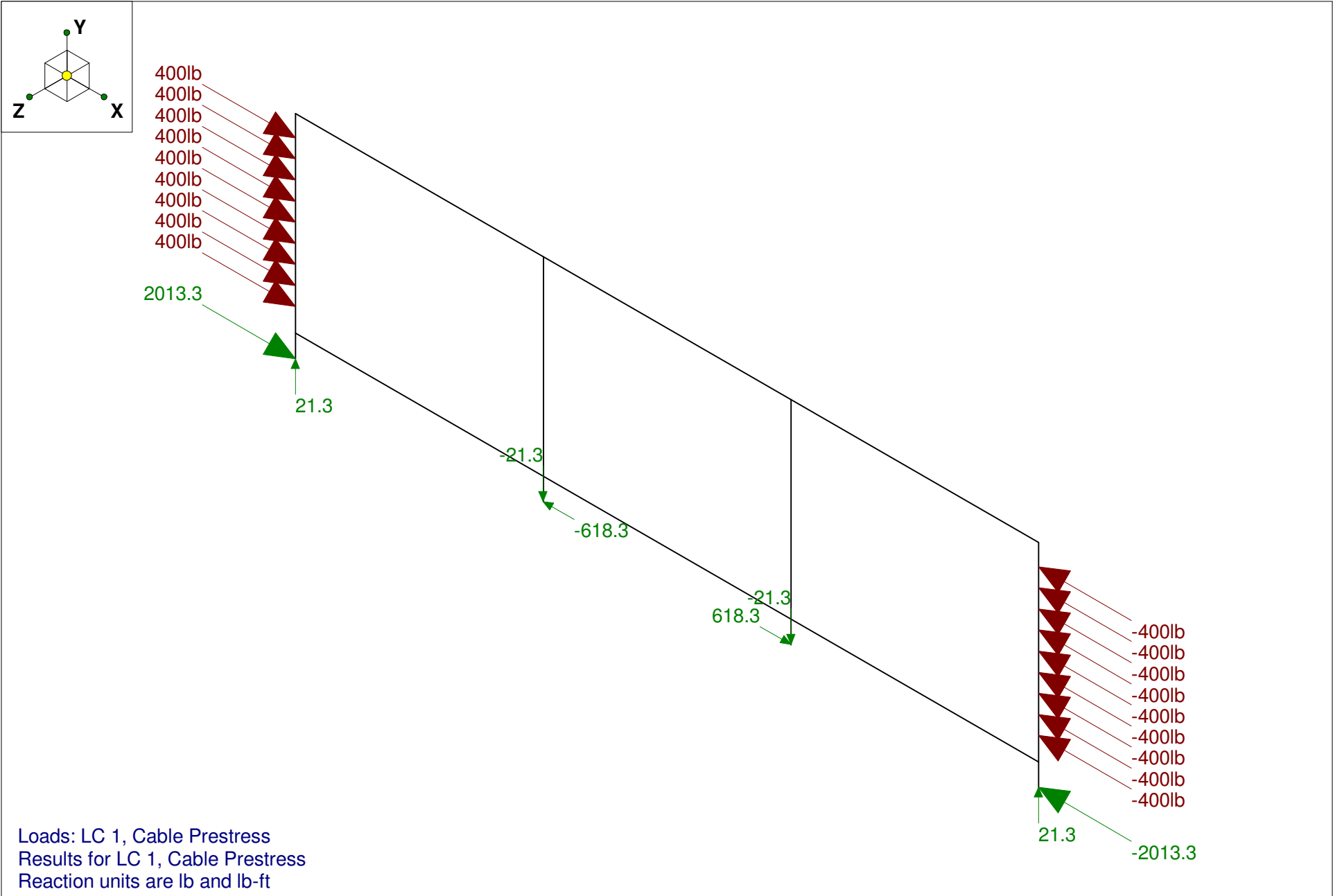
D5 (SS) - 2" SQ. TUBE x 36.5" HIGH RAIL W/ 2"x1" TOP RAIL W/ BTM RAIL

Nov 4, 2008 at 1:51 PM
 D5-ss.R3D



Member Code Checks Displayed
 Solution: Envelope
 Reaction units are lb and lb-ft

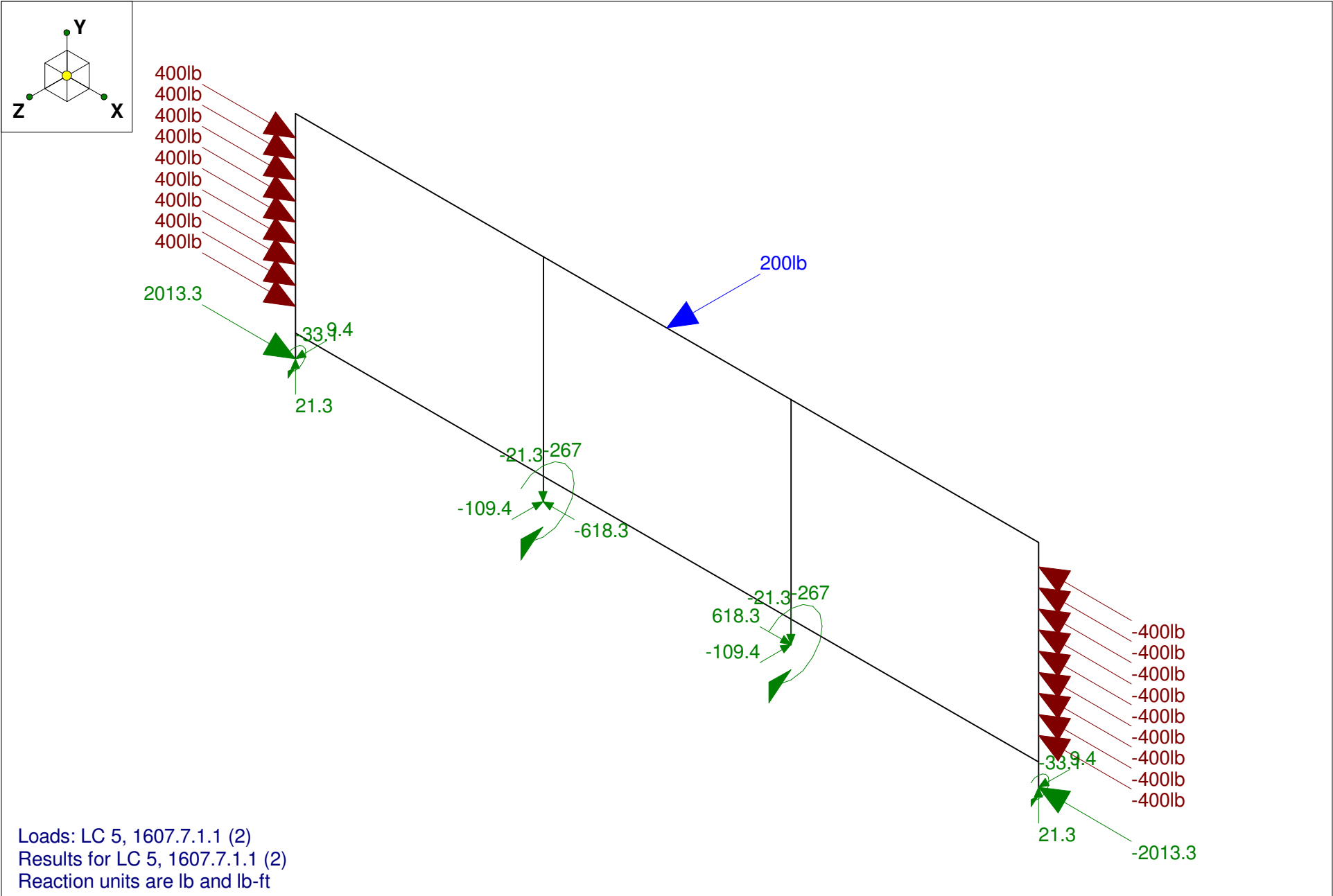
Ferrari Shields & Associates	D5 (SS) - 2" SQ. TUBE x 36.5" HIGH RAIL W/ 2"x1" TOP RAIL W/ BTM RAIL	
D. O'Connor		Nov 4, 2008 at 1:51 PM
08196		D5-ss.R3D



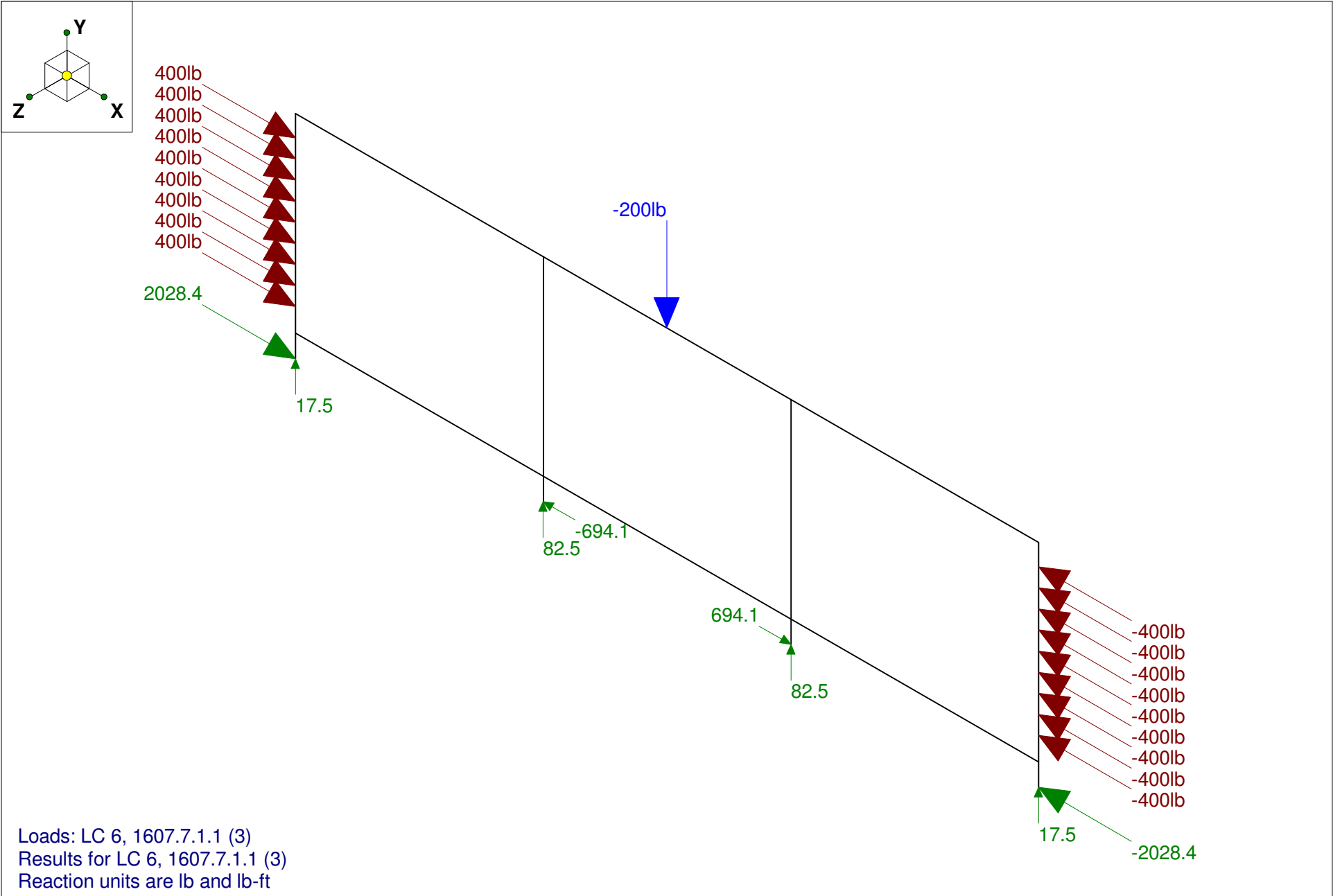
Ferrari Shields & Associates
D. O'Connor
08196

D5 - 2" SQ. TUBE x 36.5" HIGH RAIL W/ 2"x1" TOP RAIL W/ BTM RAIL

Nov 4, 2008 at 1:36 PM
D5.R3D



Ferrari Shields & Associates	D5 - 2" SQ. TUBE x 36.5" HIGH RAIL W/ 2"x1" TOP RAIL W/ BTM RAIL	
D. O'Connor		Nov 4, 2008 at 1:41 PM
08196		D5.R3D



Ferrari Shields & Associates	D5 - 2" SQ. TUBE x 36.5" HIGH RAIL W/ 2"x1" TOP RAIL W/ BTM RAIL	
D. O'Connor		Nov 4, 2008 at 1:41 PM
08196		D5.R3D

Global

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation	Yes
Include Warping	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Vertical Axis	Y

Hot Rolled Steel Code	AISC : ASD 13th
Cold Formed Steel Code	AISI 01: ASD
Wood Code	NDS 2005: ASD
Wood Temperature	< 100F
Concrete Code	ACI 2005

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	PCA Load Contour
Parame Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections	Yes
Bad Framing Warnings	No
Unused Force Warnings	Yes

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E5 F)	Density[k/ft^3]	Yield[ksi]
1	A500Gr42	29000	11154	.3	.65	.49	42
2	SS316	28000	11154	.3	.65	.49	30

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	RAIL	HSS2X1X2	Beam	Tube	A500Gr42	Typical	.609	.092	.28	.238
2	POST	HSS2X2X2	Column	Tube	A500Gr42	Typical	.841	.487	.487	.797
3	IPOST	HSS2X2X2	Column	Tube	A500Gr42	Typical	.841	.487	.487	.797

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area (Mem...	Surface (Pl...
1	Cable Prestress	None				18				
2	1607.7.1.2	None				16				
3	1607.7.1	None						3		
4	1607.7.1.1 (1)	None				1				
5	1607.7.1.1 (2)	None					1			
6	1607.7.1.1 (3)	None					1			

Load Combinations

	Description	Solve PDelta	SR...	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor
1	Cable Prestress	Yes	C	1	1						

Load Combinations (Continued)

	Description	Solve	PDelta	SR...	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor
2	1607.7.1.2	Yes	C		1	1	2	1					
3	1607.7.1	Yes	C		1	1	3	1					
4	1607.7.1.1 (1)	Yes	C		1	1	4	1					
5	1607.7.1.1 (2)	Yes	C		1	1	5	1					
6	1607.7.1.1 (3)	Yes	C		1	1	6	1					

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2		90	POST	Column	Tube	A500Gr42	Typical
2	M2	N3	N4		90	IPOST	Column	Tube	A500Gr42	Typical
3	M3	N2	N4		90	RAIL	Beam	Tube	A500Gr42	Typical
4	M4	N4	N8		90	RAIL	Beam	Tube	A500Gr42	Typical
5	M5	N5	N6		90	POST	Column	Tube	A500Gr42	Typical
6	M6	N7	N8		90	IPOST	Column	Tube	A500Gr42	Typical
7	M7	N8	N6		90	RAIL	Beam	Tube	A500Gr42	Typical
8	M8	N31	N32		90	RAIL	Beam	Tube	A500Gr42	Typical
9	M9	N32	N34		90	RAIL	Beam	Tube	A500Gr42	Typical
10	M10	N34	N33		90	RAIL	Beam	Tube	A500Gr42	Typical

Envelope Joint Reactions

Joint		X [lb]	lc	Y [lb]	lc	Z [lb]	lc	MX [lb-ft]	lc	MY [lb-ft]	lc	MZ [lb-ft]	lc	
1	N1	max	2192.281	2	22.865	2	9.413	5	0	1	0	1	0	1
2		min	2013.291	1	17.49	6	-75.062	3	-288.077	3	0	1	0	1
3	N3	max	-618.326	1	82.509	6	0	1	0	1	0	1	0	1
4		min	-694.101	6	-22.865	2	-187.438	3	-500.454	3	0	1	0	1
5	N5	max	-2013.291	1	22.865	2	13.357	4	2.733	4	0	1	0	1
6		min	-2192.281	2	17.49	6	-75.062	3	-288.077	3	0	1	0	1
7	N7	max	694.104	6	82.51	6	0	1	0	1	0	1	0	1
8		min	618.326	1	-22.865	2	-187.438	3	-500.454	3	0	1	0	1
9	Totals:	max	0	1	200	6	0	1						
10		min	0	6	0	2	-525	3						

Envelope Member Section Forces

Member	Sec	Axial[lb]	lc	y Shear[lb]	lc	z Shear[lb]	lc	Torque[lb-ft]	lc	y-y Moment[...]	lc	z-z Moment[...]	lc
1	M1	1	max	22.865	2	9.411	5	2192.139	2	0	1	0	1
2			min	17.49	6	-75.078	3	2013.168	1	0	1	-288.077	3
3		2	max	75.779	2	0	1	-1595.726	1	39.269	3	-89.255	6
4			min	65.592	6	-91.705	3	-1745.662	2	-599	2	-92.359	2
5		3	max	75.779	2	0	1	-395.183	1	39.269	3	-871.241	1
6			min	65.592	6	-91.869	3	-424.819	2	-599	2	-958.177	2
7		4	max	75.779	2	0	1	896.34	2	39.269	3	-780.324	1
8			min	65.592	6	-91.969	3	802.352	6	-599	2	-835.143	2
9		5	max	75.779	2	0	1	1696.666	2	39.269	3	178.641	2
10			min	65.592	6	-92.001	3	1602.622	6	-599	2	160.447	6
11	M2	1	max	82.509	6	0	1	-618.326	1	0	1	0	1
12			min	-22.865	2	-187.438	3	-694.236	6	0	1	0	1
13		2	max	34.408	6	0	1	110.59	6	36.999	5	-88.914	1
14			min	-75.779	2	-171.021	3	74.536	1	-1.801	2	-99.258	6

Envelope Member Section Forces (Continued)

Member	Sec		Axial[lb]	lc	y Shear[lb]	lc	z Shear[lb]	lc	Torque[lb-ft]	lc	y-y Moment[...]	lc	z-z Moment[...]	lc	
15	3	max	34.408	6	0	1	110.617	6	36.999	5	-16.305	6	0	1	
16		min	-75.779	2	-171.021	3	74.536	1	-1.801	2	-35.802	2	-242.066	3	
17	4	max	34.408	6	1.851	2	110.594	6	36.999	5	66.651	6	1.616	2	
18		min	-75.779	2	-171.021	3	74.536	1	-1.801	2	22.892	1	-113.798	3	
19	5	max	34.408	6	1.851	2	110.594	6	36.999	5	149.598	6	28.709	4	
20		min	-75.779	2	-171.021	3	74.536	1	-1.801	2	78.795	1	0	1	
21	M3	1	max	1695.581	2	0	-65.59	6	.509	2	178.641	2	.599	2	
22		min	1601.751	6	-95.847	3	-75.762	2	-16.057	5	160.447	6	-39.269	3	
23	2	max	1695.581	2	0	1	-65.59	6	.509	2	112.349	2	25.456	3	
24		min	1601.751	6	-52.097	3	-75.762	2	-16.057	5	103.056	6	-17.001	5	
25	3	max	1695.581	2	0	1	-65.59	6	.509	2	46.057	2	51.901	3	
26		min	1601.751	6	-39.965	4	-75.762	2	-16.057	5	42.664	1	-7.457	5	
27	4	max	1695.581	2	35.403	3	-65.59	6	.509	2	-11.726	6	70.303	4	
28		min	1601.751	6	-39.965	4	-75.762	2	-16.057	5	-20.235	2	0	1	
29	5	max	1695.581	2	79.153	3	-65.59	6	.509	2	-69.117	6	105.272	4	
30		min	1601.751	6	-39.965	4	-75.762	2	-16.057	5	-86.527	2	-10.054	3	
31	M4	1	max	1776.223	2	44.498	4	0	14.196	4	80.481	6	104.457	4	
32		min	1679.525	4	-100	5	-100	6	0	1	-1.363	2	-27.24	3	
33	2	max	1776.223	2	44.498	4	0	1	14.196	4	-1.286	1	65.521	4	
34		min	1679.525	4	-100	5	-100	6	0	1	-7.019	6	0	1	
35	3	max	1776.223	2	100	5	100	6	14.196	4	-1.286	1	149.633	5	
36		min	1679.525	4	0	1	0	1	0	1	-94.519	6	-.005	2	
37	4	max	1776.223	2	100	5	100	6	14.196	4	-1.286	1	62.133	5	
38		min	1679.525	4	0	1	0	1	0	1	-7.019	6	-12.35	4	
39	5	max	1776.223	2	100	5	100	6	14.196	4	80.481	6	0	1	
40		min	1679.525	4	0	1	0	1	0	1	-1.363	2	-51.286	4	
41	M5	1	max	22.865	2	13.357	4	-2013.168	1	0	1	0	2.733	4	
42		min	17.49	6	-75.078	3	-2192.139	2	0	1	0	1	-288.077	3	
43	2	max	75.779	2	4.236	4	1745.662	2	0	1	92.359	2	.366	2	
44		min	65.592	6	-91.705	3	1595.726	1	-39.269	3	89.255	6	-221.241	3	
45	3	max	75.779	2	4.233	4	424.819	2	0	1	958.177	2	.076	2	
46		min	65.592	6	-91.869	3	395.183	1	-39.269	3	871.241	1	-152.4	3	
47	4	max	75.779	2	4.228	4	-802.351	6	0	1	835.143	2	0	1	
48		min	65.592	6	-91.969	3	-896.34	2	-39.269	3	780.324	1	-83.462	3	
49	5	max	75.779	2	4.222	4	-1602.622	6	0	1	-160.447	6	0	1	
50		min	65.592	6	-92.001	3	-1696.666	2	-39.269	3	-178.641	2	-16.057	5	
51	M6	1	max	82.51	6	0	694.239	6	0	1	0	1	0	1	
52		min	-22.865	2	-187.438	3	618.326	1	0	1	0	1	-500.454	3	
53	2	max	34.408	6	0	1	-74.536	1	0	1	99.255	6	0	1	
54		min	-75.779	2	-171.021	3	-110.6	6	-36.999	5	88.914	1	-370.333	3	
55	3	max	34.408	6	0	1	-74.536	1	0	1	35.802	2	0	1	
56		min	-75.779	2	-171.021	3	-110.6	6	-36.999	5	16.304	6	-242.066	3	
57	4	max	34.408	6	0	1	-74.536	1	0	1	-22.892	1	0	1	
58		min	-75.779	2	-171.021	3	-110.6	6	-36.999	5	-66.647	6	-113.798	3	
59	5	max	34.408	6	0	1	-74.536	1	0	1	-78.795	1	16.057	5	
60		min	-75.779	2	-171.021	3	-110.6	6	-36.999	5	-149.598	6	-3.59	4	
61	M7	1	max	1695.581	2	10.908	5	75.762	2	16.057	5	-69.117	6	11.632	5
62		min	1601.75	6	-79.153	3	65.59	6	0	1	-86.527	2	-17.874	4	
63	2	max	1695.581	2	10.908	5	75.762	2	16.057	5	-11.726	6	40.064	3	
64		min	1601.75	6	-35.403	3	65.59	6	0	1	-20.235	2	-16.839	4	
65	3	max	1695.581	2	10.908	5	75.762	2	16.057	5	46.057	2	51.901	3	
66		min	1601.75	6	-1.182	4	65.59	6	0	1	42.664	1	-15.805	4	
67	4	max	1695.581	2	52.097	3	75.762	2	16.057	5	112.349	2	25.456	3	

Envelope Member Section Forces (Continued)

Member	Sec	Axial[lb]	lc	y Shear[lb]	lc	z Shear[lb]	lc	Torque[lb-ft]	lc	y-y Moment[lb-ft]	lc	z-z Moment[lb-ft]	lc		
68		min	1601.75	6	-1.182	4	65.59	6	0	1	103.056	6	-17.001	5	
69	5	max	1695.581	2	95.847	3	75.762	2	16.057	5	178.641	2	0	1	
70		min	1601.75	6	-1.182	4	65.59	6	0	1	160.447	6	-39.269	3	
71	M8	1	max	4337.101	2	16.22	3	52.915	2	.108	2	-105.777	6	39.269	3
72		min	4008.302	1	-.429	2	48.1	6	-3.623	5	-115.66	2	-.599	2	
73	2	max	4337.101	2	16.22	3	52.915	2	.108	2	-63.69	6	25.077	3	
74		min	4008.302	1	-.429	2	48.1	6	-3.623	5	-69.359	2	-.224	2	
75	3	max	4337.101	2	16.22	3	52.915	2	.108	2	-21.272	1	11.625	4	
76		min	4008.302	1	-.429	2	48.1	6	-3.623	5	-23.059	2	-.122	5	
77	4	max	4337.101	2	16.22	3	52.915	2	.108	2	23.242	2	.526	2	
78		min	4008.302	1	-.429	2	48.1	6	-3.623	5	20.485	6	-13.455	5	
79	5	max	4337.101	2	16.22	3	52.915	2	.108	2	69.542	2	.901	2	
80		min	4008.302	1	-.429	2	48.1	6	-3.623	5	62.572	6	-26.789	5	
81	M9	1	max	3586.962	2	0	1	0	6	3.228	4	-6.735	6	10.21	5
82		min	3221.916	6	-7.491	4	0	1	0	1	-8.109	2	-10.54	4	
83	2	max	3586.962	2	0	1	0	6	3.228	4	-6.735	6	10.21	5	
84		min	3221.916	6	-7.491	4	0	1	0	1	-8.109	2	-3.985	4	
85	3	max	3586.962	2	0	1	0	6	3.228	4	-6.734	6	10.21	5	
86		min	3221.916	6	-7.491	4	0	1	0	1	-8.109	2	-.316	3	
87	4	max	3586.962	2	0	1	0	6	3.228	4	-6.734	6	10.21	5	
88		min	3221.916	6	-7.491	4	0	1	0	1	-8.109	2	-.316	3	
89	5	max	3586.962	2	0	1	0	6	3.228	4	-6.734	6	15.679	4	
90		min	3221.916	6	-7.491	4	0	1	0	1	-8.109	2	-.316	3	
91	M10	1	max	4337.101	2	0	1	-48.1	6	3.623	5	69.542	2	0	1
92		min	4008.302	1	-16.22	3	-52.915	2	0	1	62.572	6	-26.789	5	
93	2	max	4337.101	2	0	1	-48.1	6	3.623	5	23.242	2	0	1	
94		min	4008.302	1	-16.22	3	-52.915	2	0	1	20.485	6	-13.455	5	
95	3	max	4337.101	2	0	1	-48.1	6	3.623	5	-21.272	1	10.884	3	
96		min	4008.302	1	-16.22	3	-52.915	2	0	1	-23.059	2	-1.999	4	
97	4	max	4337.101	2	0	1	-48.1	6	3.623	5	-63.69	6	25.077	3	
98		min	4008.302	1	-16.22	3	-52.915	2	0	1	-69.359	2	0	1	
99	5	max	4337.101	2	0	1	-48.1	6	3.623	5	-105.777	6	39.269	3	
100		min	4008.302	1	-16.22	3	-52.915	2	0	1	-115.66	2	0	1	

Envelope AISC 13th ASD Steel Code Checks

Member	Shape	Code Check	Loc[in]	lc	Shear...	Loc[in]	Dir	lc	Pnc/om [lb]	Pnt/om [lb]	Mnyy/om [lb-ft]	Mnzz/om ...	Cb	LRFD E...	
1	M1	HSS2X2X2	.876	20.25	3	.393	3.75	z	3	18435.907	21154.469	1227.129	1227.129	1...	H1-1b
2	M2	HSS2X2X2	.522	3.75	3	.150	3.75	z	5	18435.907	21154.469	1227.129	1227.129	1...	H1-1b
3	M3	HSS2X1X2	.574	0	3	.081	0	z	5	7484.423	15307.164	467.512	768.177	1...	H1-1a
4	M4	HSS2X1X2	.408	21	6	.045	0	z	4	7484.423	15307.164	467.512	768.177	1...	H1-1a
5	M5	HSS2X2X2	.876	20.25	3	.393	3.75	z	3	18435.907	21154.469	1227.129	1227.129	1...	H1-1b
6	M6	HSS2X2X2	.522	3.75	3	.150	3.75	z	5	18435.907	21154.469	1227.129	1227.129	1...	H1-1b
7	M7	HSS2X1X2	.574	42	3	.081	0	z	5	7484.423	15307.164	467.512	768.177	1...	H1-1a
8	M8	HSS2X1X2	.800	0	2	.033	0	z	5	7484.423	15307.164	467.512	768.177	2...	H1-1a
9	M9	HSS2X1X2	.496	0	2	.010	0	z	4	7484.423	15307.164	467.512	768.177	2...	H1-1a
10	M10	HSS2X1X2	.800	42	2	.033	0	z	5	7484.423	15307.164	467.512	768.177	2...	H1-1a

Global

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation	Yes
Include Warping	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Vertical Axis	Y

Hot Rolled Steel Code	AISC : ASD 13th
Cold Formed Steel Code	AISI 01: ASD
Wood Code	NDS 2005: ASD
Wood Temperature	< 100F
Concrete Code	ACI 2005

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	PCA Load Contour
Parame Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections	Yes
Bad Framing Warnings	No
Unused Force Warnings	Yes

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (1/E5 F)	Density[k/ft^3]	Yield[ksi]
1	A500Gr42	29000	11154	.3	.65	.49	42
2	SS316	28000	11154	.3	.65	.49	30

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	RAIL	TU2x1x2	Beam	Tube	SS316	Typical	.662	.102	.321	.238
2	POST	TU2x2x3	Column	Tube	SS316	Typical	1.27	.668	.668	1.15
3	IPOST	TU2x2x2	Column	Tube	SS316	Typical	.902	.534	.534	.797

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area (Mem...)	Surface (Pl...)
1	Cable Prestress	None				18				
2	1607.7.1.2	None				16				
3	1607.7.1	None						3		
4	1607.7.1.1 (1)	None				1				
5	1607.7.1.1 (2)	None					1			
6	1607.7.1.1 (3)	None					1			

Load Combinations

	Description	Solve PDelta	SR...	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor
1	Cable Prestress	Yes	C	1	1						

Load Combinations (Continued)

	Description	Solve	PDelta	SR...	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor
2	1607.7.1.2	Yes	C		1	1	2	1					
3	1607.7.1	Yes	C		1	1	3	1					
4	1607.7.1.1 (1)	Yes	C		1	1	4	1					
5	1607.7.1.1 (2)	Yes	C		1	1	5	1					
6	1607.7.1.1 (3)	Yes	C		1	1	6	1					

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2		90	POST	Column	Tube	SS316	Typical
2	M2	N3	N4		90	IPOST	Column	Tube	SS316	Typical
3	M3	N2	N4		90	RAIL	Beam	Tube	SS316	Typical
4	M4	N4	N8		90	RAIL	Beam	Tube	SS316	Typical
5	M5	N5	N6		90	POST	Column	Tube	SS316	Typical
6	M6	N7	N8		90	IPOST	Column	Tube	SS316	Typical
7	M7	N8	N6		90	RAIL	Beam	Tube	SS316	Typical
8	M8	N31	N32		90	RAIL	Beam	Tube	SS316	Typical
9	M9	N32	N34		90	RAIL	Beam	Tube	SS316	Typical
10	M10	N34	N33		90	RAIL	Beam	Tube	SS316	Typical

Envelope Joint Reactions

	Joint		X [lb]	lc	Y [lb]	lc	Z [lb]	lc	MX [lb-ft]	lc	MY [lb-ft]	lc	MZ [lb-ft]	lc
1	N1	max	2024.521	2	16.721	2	8.711	5	0	1	0	1	0	1
2		min	1858.367	1	11.686	6	-76.471	3	-305.343	3	0	1	0	1
3	N3	max	-583.197	1	88.314	6	0	1	0	1	0	1	0	1
4		min	-658.958	6	-16.721	2	-186.029	3	-482.872	3	0	1	0	1
5	N5	max	-1858.367	1	16.721	2	13.001	4	1.008	4	0	1	0	1
6		min	-2024.521	2	11.686	6	-76.471	3	-305.343	3	0	1	0	1
7	N7	max	658.963	6	88.314	6	0	1	0	1	0	1	0	1
8		min	583.197	1	-16.721	2	-186.029	3	-482.872	3	0	1	0	1
9	Totals:	max	0	4	200	6	0	1						
10		min	0	1	0	2	-525	3						

Envelope Member Section Forces

	Member	Sec		Axial[lb]	lc	y Shear[lb]	lc	z Shear[lb]	lc	Torque[lb-ft]	lc	y-y Moment[...]	lc	z-z Moment[...]	lc
1	M1	1	max	16.721	2	8.709	5	2024.426	2	0	1	0	1	0	1
2			min	11.686	6	-76.481	3	1858.285	1	0	1	0	1	-305.343	3
3		2	max	65.407	2	0	1	-1582.712	1	50.706	3	-140.698	6	0	1
4			min	55.895	6	-97.512	3	-1731.497	2	-.172	2	-148.433	2	-235.318	3
5		3	max	65.407	2	0	1	-382.334	1	50.706	3	-913.192	6	0	1
6			min	55.895	6	-97.625	3	-410.85	2	-.172	2	-1003.678	2	-162.141	3
7		4	max	65.407	2	0	1	909.995	2	50.706	3	-812.836	1	0	1
8			min	55.895	6	-97.695	3	814.722	6	-.172	2	-870.273	2	-88.896	3
9		5	max	65.407	2	0	1	1710.219	2	50.706	3	153.704	2	.318	2
10			min	55.895	6	-97.718	3	1614.905	6	-.172	2	137.173	6	-15.614	3
11	M2	1	max	88.314	6	0	1	-583.197	1	0	1	0	1	0	1
12			min	-16.721	2	-186.029	3	-659.09	6	0	1	0	1	-482.872	3
13		2	max	44.105	6	0	1	104.463	6	36.11	5	-85.178	1	0	1
14			min	-65.407	2	-165.144	3	68.473	1	-1.357	2	-95.55	6	-355.966	3

Envelope Member Section Forces (Continued)

Member	Sec		Axial[lb]	lc	y Shear[lb]	lc	z Shear[lb]	lc	Torque[lb-ft]	lc	y-y Moment[lb-ft]	lc	z-z Moment[lb-ft]	lc	
15	3	max	44.105	6	0	1	104.495	6	36.11	5	-17.192	6	0	1	
16		min	-65.407	2	-165.144	3	68.473	1	-1.357	2	-36.673	2	-232.106	3	
17	4	max	44.105	6	2.23	2	104.47	6	36.11	5	61.172	6	1.956	2	
18		min	-65.407	2	-165.144	3	68.473	1	-1.357	2	17.532	1	-108.246	3	
19	5	max	44.105	6	2.23	2	104.47	6	36.11	5	139.526	6	27.029	4	
20		min	-65.407	2	-165.144	3	68.473	1	-1.357	2	68.888	1	0	1	
21	M3	1	max	1709.476	2	0	1	-55.897	6	.318	2	153.704	2	.172	2
22		min	1614.317	6	-102.073	3	-65.395	2	-15.614	3	137.173	6	-50.706	3	
23	2	max	1709.476	2	0	1	-55.897	6	.318	2	96.484	2	19.467	3	
24		min	1614.317	6	-58.323	3	-65.395	2	-15.614	3	88.264	6	-20.215	5	
25	3	max	1709.476	2	0	1	-55.897	6	.318	2	39.354	6	51.359	3	
26		min	1614.317	6	-43.702	4	-65.395	2	-15.614	3	36.366	1	-8.96	5	
27	4	max	1709.476	2	29.177	3	-55.897	6	.318	2	-9.556	6	72.528	4	
28		min	1614.317	6	-43.702	4	-65.395	2	-15.614	3	-17.957	2	0	1	
29	5	max	1709.476	2	72.927	3	-55.897	6	.318	2	-58.466	6	110.767	4	
30		min	1614.317	6	-43.702	4	-65.395	2	-15.614	3	-75.177	2	0	1	
31	M4	1	max	1783.575	2	44.89	4	0	1	12.72	4	81.06	6	107.58	4
32		min	1686.248	4	-100	5	-100	6	0	1	-701	2	-22.56	5	
33	2	max	1783.575	2	44.89	4	0	1	12.72	4	-672	1	68.301	4	
34		min	1686.248	4	-100	5	-100	6	0	1	-6.44	6	0	1	
35	3	max	1783.575	2	100	5	100	6	12.72	4	-672	1	152.44	5	
36		min	1686.248	4	0	1	0	1	0	1	-93.94	6	0	1	
37	4	max	1783.575	2	100	5	100	6	12.72	4	-672	1	64.94	5	
38		min	1686.248	4	0	1	0	1	0	1	-6.44	6	-10.257	4	
39	5	max	1783.575	2	100	5	100	6	12.72	4	81.06	6	0	1	
40		min	1686.248	4	0	1	0	1	0	1	-701	2	-49.536	4	
41	M5	1	max	16.721	2	13.001	4	-1858.285	1	0	1	0	1	1.008	4
42		min	11.686	6	-76.481	3	-2024.426	2	0	1	0	1	-305.343	3	
43	2	max	65.407	2	3.315	4	1731.497	2	0	1	148.433	2	.287	2	
44		min	55.895	6	-97.512	3	1582.712	1	-50.706	3	140.697	6	-235.318	3	
45	3	max	65.407	2	3.313	4	410.85	2	0	1	1003.678	2	.036	2	
46		min	55.895	6	-97.625	3	382.334	1	-50.706	3	913.191	6	-162.141	3	
47	4	max	65.407	2	3.309	4	-814.722	6	0	1	870.273	2	0	1	
48		min	55.895	6	-97.695	3	-909.995	2	-50.706	3	812.836	1	-88.896	3	
49	5	max	65.407	2	3.306	4	-1614.904	6	0	1	-137.173	6	0	1	
50		min	55.895	6	-97.718	3	-1710.219	2	-50.706	3	-153.704	2	-15.614	3	
51	M6	1	max	88.314	6	0	1	659.095	6	0	1	0	1	0	1
52		min	-16.721	2	-186.029	3	583.197	1	0	1	0	1	-482.872	3	
53	2	max	44.105	6	0	1	-68.473	1	0	1	95.547	6	0	1	
54		min	-65.407	2	-165.144	3	-104.475	6	-36.11	5	85.178	1	-355.966	3	
55	3	max	44.105	6	0	1	-68.473	1	0	1	36.673	2	0	1	
56		min	-65.407	2	-165.144	3	-104.475	6	-36.11	5	17.19	6	-232.106	3	
57	4	max	44.105	6	0	1	-68.473	1	0	1	-17.532	1	0	1	
58		min	-65.407	2	-165.144	3	-104.475	6	-36.11	5	-61.168	6	-108.246	3	
59	5	max	44.105	6	0	1	-68.473	1	0	1	-68.888	1	15.614	3	
60		min	-65.407	2	-165.144	3	-104.475	6	-36.11	5	-139.525	6	-2.806	4	
61	M7	1	max	1709.476	2	12.863	5	65.395	2	15.614	3	-58.465	6	13.55	5
62		min	1614.316	6	-72.927	3	55.897	6	0	1	-75.177	2	-17.628	4	
63	2	max	1709.476	2	12.863	5	65.395	2	15.614	3	-9.556	6	44.969	3	
64		min	1614.316	6	-29.177	3	55.897	6	0	1	-17.957	2	-17.232	4	
65	3	max	1709.476	2	14.573	3	65.395	2	15.614	3	39.354	6	51.359	3	
66		min	1614.316	6	-.453	4	55.897	6	0	1	36.366	1	-16.835	4	
67	4	max	1709.476	2	58.323	3	65.395	2	15.614	3	96.484	2	19.467	3	

Envelope Member Section Forces (Continued)

Member	Sec	Axial[lb]	lc	y Shear[lb]	lc	z Shear[lb]	lc	Torque[lb-ft]	lc	y-y Moment[lb-ft]	lc	z-z Moment[lb-ft]	lc		
68		min	1614.316	6	-.453	4	55.897	6	0	1	88.263	6	-20.215	5	
69	5	max	1709.476	2	102.073	3	65.395	2	15.614	3	153.704	2	0	1	
70		min	1614.316	6	-.453	4	55.897	6	0	1	137.173	6	-50.706	3	
71	M8	1	max	4155.445	2	20.683	3	48.687	2	.016	2	-96.709	6	50.706	3
72		min	3840.592	1	-.229	2	44.207	6	-3.479	3	-105.808	2	-.172	2	
73	2	max	4155.445	2	20.683	3	48.687	2	.016	2	-58.027	6	32.608	3	
74		min	3840.592	1	-.229	2	44.207	6	-3.479	3	-63.207	2	0	1	
75	3	max	4155.445	2	20.683	3	48.687	2	.016	2	-19.015	1	14.51	3	
76		min	3840.592	1	-.229	2	44.207	6	-3.479	3	-20.606	2	0	1	
77	4	max	4155.445	2	20.683	3	48.687	2	.016	2	21.995	2	.428	2	
78		min	3840.592	1	-.229	2	44.207	6	-3.479	3	19.336	6	-12.542	5	
79	5	max	4155.445	2	20.683	3	48.687	2	.016	2	64.596	2	.628	2	
80		min	3840.592	1	-.229	2	44.207	6	-3.479	3	58.017	6	-27.212	5	
81	M9	1	max	3449.895	2	0	1	0	6	2.888	4	-6.694	6	8.898	5
82		min	3097.105	6	-7.239	4	0	1	0	1	-8.066	2	-10.88	4	
83	2	max	3449.895	2	0	1	0	6	2.888	4	-6.694	6	8.898	5	
84		min	3097.105	6	-7.239	4	0	1	0	1	-8.066	2	-4.546	4	
85	3	max	3449.895	2	0	1	0	6	2.888	4	-6.694	6	8.898	5	
86		min	3097.105	6	-7.239	4	0	1	0	1	-8.066	2	-1.127	3	
87	4	max	3449.895	2	0	1	0	6	2.888	4	-6.694	6	8.898	5	
88		min	3097.105	6	-7.239	4	0	1	0	1	-8.066	2	-1.127	3	
89	5	max	3449.895	2	0	1	0	6	2.888	4	-6.694	6	14.455	4	
90		min	3097.105	6	-7.239	4	0	1	0	1	-8.066	2	-1.127	3	
91	M10	1	max	4155.445	2	0	1	-44.207	6	3.479	3	64.596	2	0	1
92		min	3840.592	1	-20.683	3	-48.687	2	0	1	58.017	6	-27.212	5	
93	2	max	4155.445	2	0	1	-44.207	6	3.479	3	21.995	2	0	1	
94		min	3840.592	1	-20.683	3	-48.687	2	0	1	19.336	6	-12.542	5	
95	3	max	4155.445	2	0	1	-44.207	6	3.479	3	-19.015	1	14.51	3	
96		min	3840.592	1	-20.683	3	-48.687	2	0	1	-20.606	2	-.706	4	
97	4	max	4155.445	2	0	1	-44.207	6	3.479	3	-58.027	6	32.608	3	
98		min	3840.592	1	-20.683	3	-48.687	2	0	1	-63.207	2	0	1	
99	5	max	4155.445	2	0	1	-44.207	6	3.479	3	-96.708	6	50.706	3	
100		min	3840.592	1	-20.683	3	-48.687	2	0	1	-105.808	2	0	1	

Envelope AISC 13th ASD Steel Code Checks

Member	Shape	Code Check	Loc[in]	lc	Shear ...	Loc[in]	Dir	lc	Pnc/om [lb]	Pnt/om [lb]	Mnyy/om [lb-ft]	Mnzz/om ...	Cb	LRFD E...	
1	M1	TU2x2x3	.893	20.25	3	.405	3.75	z	3	20397.912	22814.371	1257.485	1257.485	1...	H1-1b
2	M2	TU2x2x2	.642	3.75	3	.195	3.75	z	5	14674.53	16210.778	953.677	953.677	1...	H1-1b
3	M3	TU2x1x2	.646	0	3	.105	0	z	3	7068.776	11892.216	368.263	615.269	1...	H1-1a
4	M4	TU2x1x2	.470	21	6	.060	21	z	6	7068.776	11892.216	368.263	615.269	1...	H1-1a
5	M5	TU2x2x3	.893	20.25	3	.405	3.75	z	3	20397.912	22814.371	1257.485	1257.485	1...	H1-1b
6	M6	TU2x2x2	.642	3.75	3	.195	3.75	z	5	14674.53	16210.778	953.677	953.677	1...	H1-1b
7	M7	TU2x1x2	.646	42	3	.105	0	z	3	7068.776	11892.216	368.263	615.269	1...	H1-1a
8	M8	TU2x1x2	.852	0	3	.042	0	z	3	7068.776	11892.216	368.263	615.269	2...	H1-1a
9	M9	TU2x1x2	.509	42	2	.013	0	z	4	7068.776	11892.216	368.263	615.269	2...	H1-1a
10	M10	TU2x1x2	.852	42	3	.042	0	z	3	7068.776	11892.216	368.263	615.269	2...	H1-1a

*** End of Calculations ***