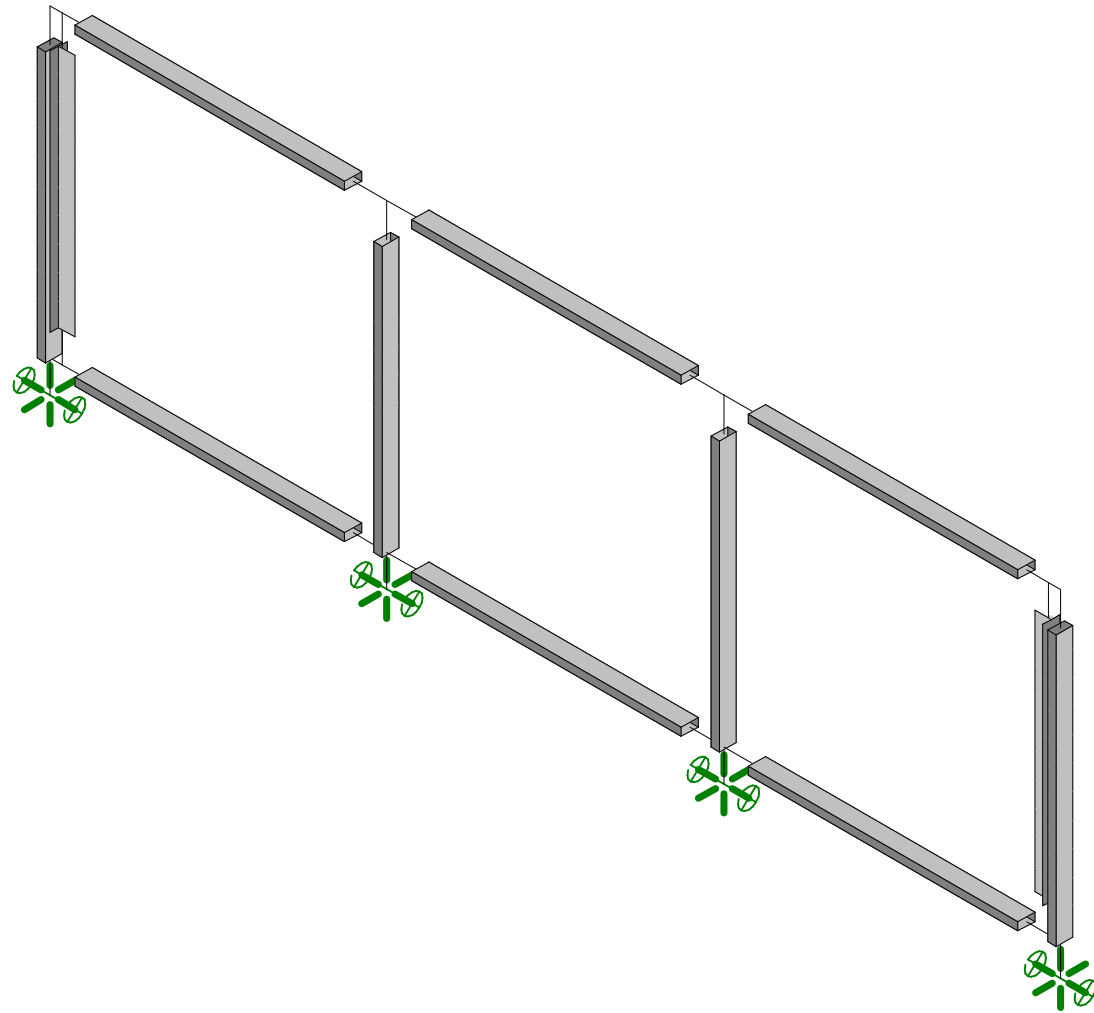
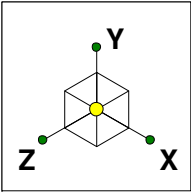


**D9a—2"x1" RECT. TUBE x 42-1/2" HIGH RAIL WITH 2"x1-1/2"x1/4" TEE
FOR USE WITH ADJUST-A-JAW™ AND FIXED JAW HARDWARE,
WITH BOTTOM RAIL**

Building Code:	2006 International Building Code 2007 California Building Code AISC Steel Construction Manual, 13th ed—ASD
Material:	Carbon Steel, A500, Grade B, Fy = 42 ksi (HSS Tube) Carbon Steel, A36, Fy = 36 ksi (Flat Bar and Tee) Stainless Steel, A554, Grade MT-304 or MT-316, Fy = 30 ksi Stainless Steel, LDX 2101 (UNS S32101), Fy = 60 ksi (Tee)
Height:	42.5"
Anchor Post:	Carbon Steel: 2"x1" Flat Bar with 2"x1.5"x 1/4" Tee Stainless Steel: 2"x1" Flat Bar with 2"x1.5"x 1/4" Tee (LDX 2101)
Intermediate Posts:	Carbon Steel: HSS 2x1x1/8 Tube Stainless Steel: 2"x1"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:	11
Cable Spacing:	3.08"
Cable Prestress:	325 lbs



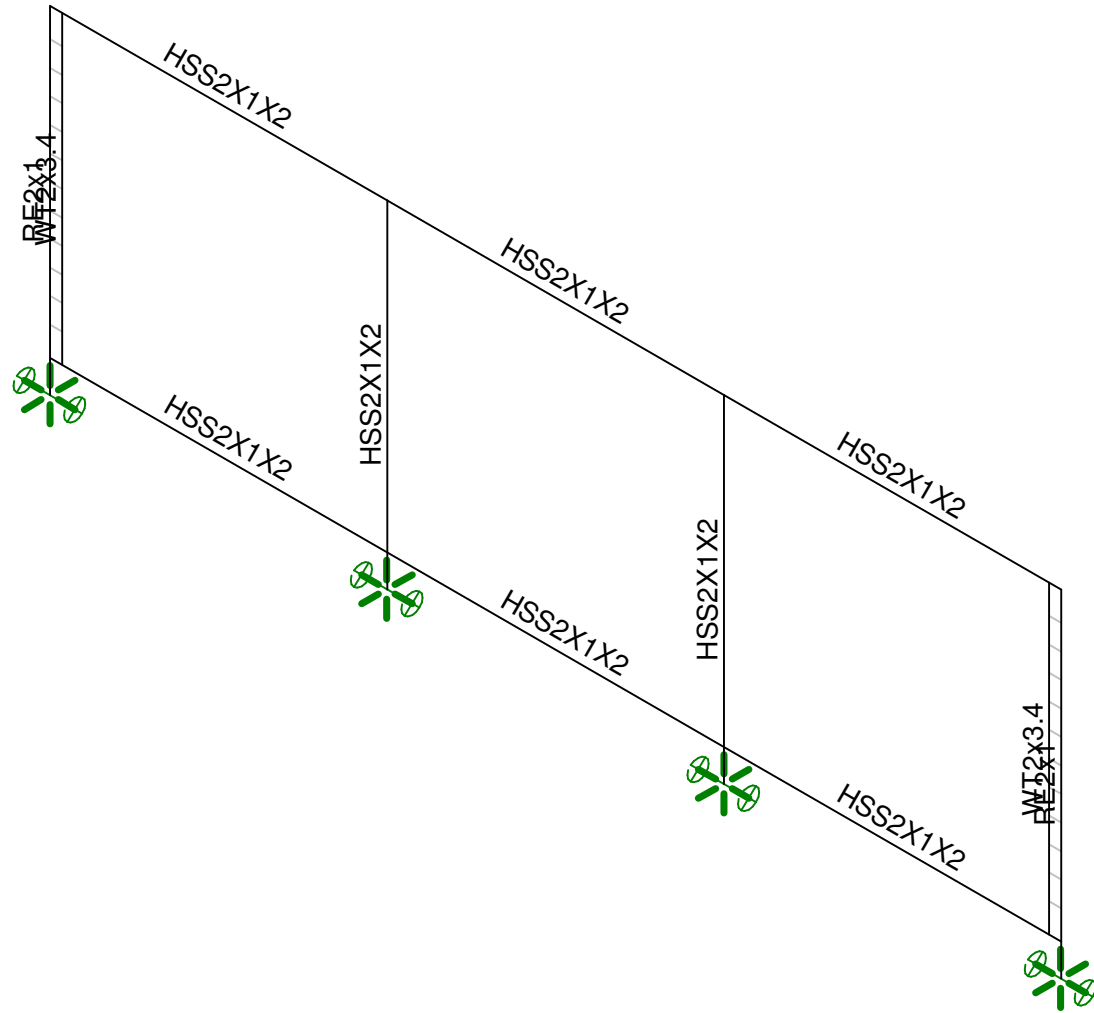
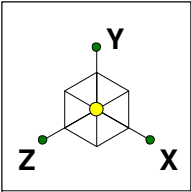
Disclaimer: Analysis and Structural Certification DOES NOT include base plates or anchorage to supporting structure. Where required by the Local Building Official, these shall be reviewed and designed by the project Structural Engineer of Record.



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D9a - 2x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL

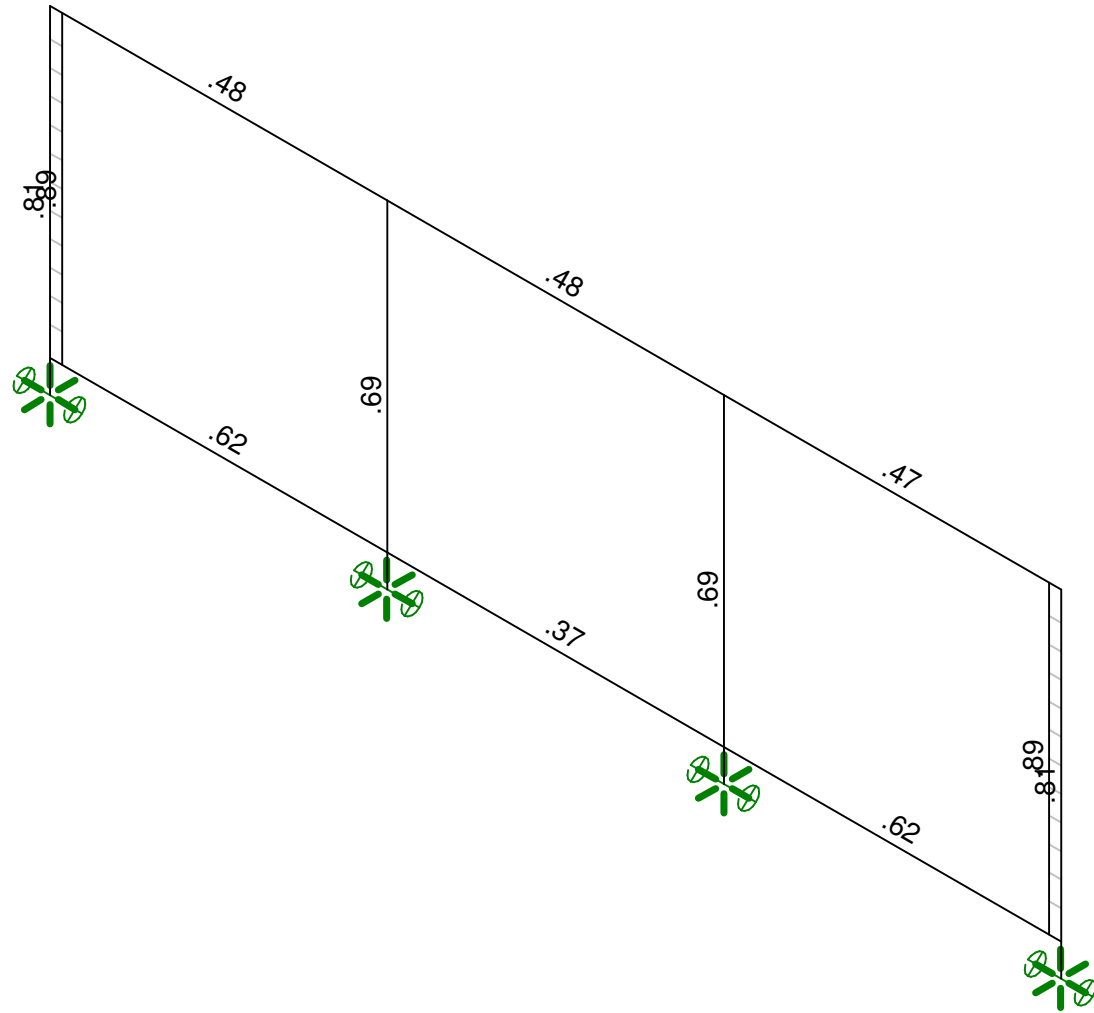
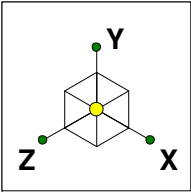
Mar 3, 2009 at 9:29 AM
D9a.R3D



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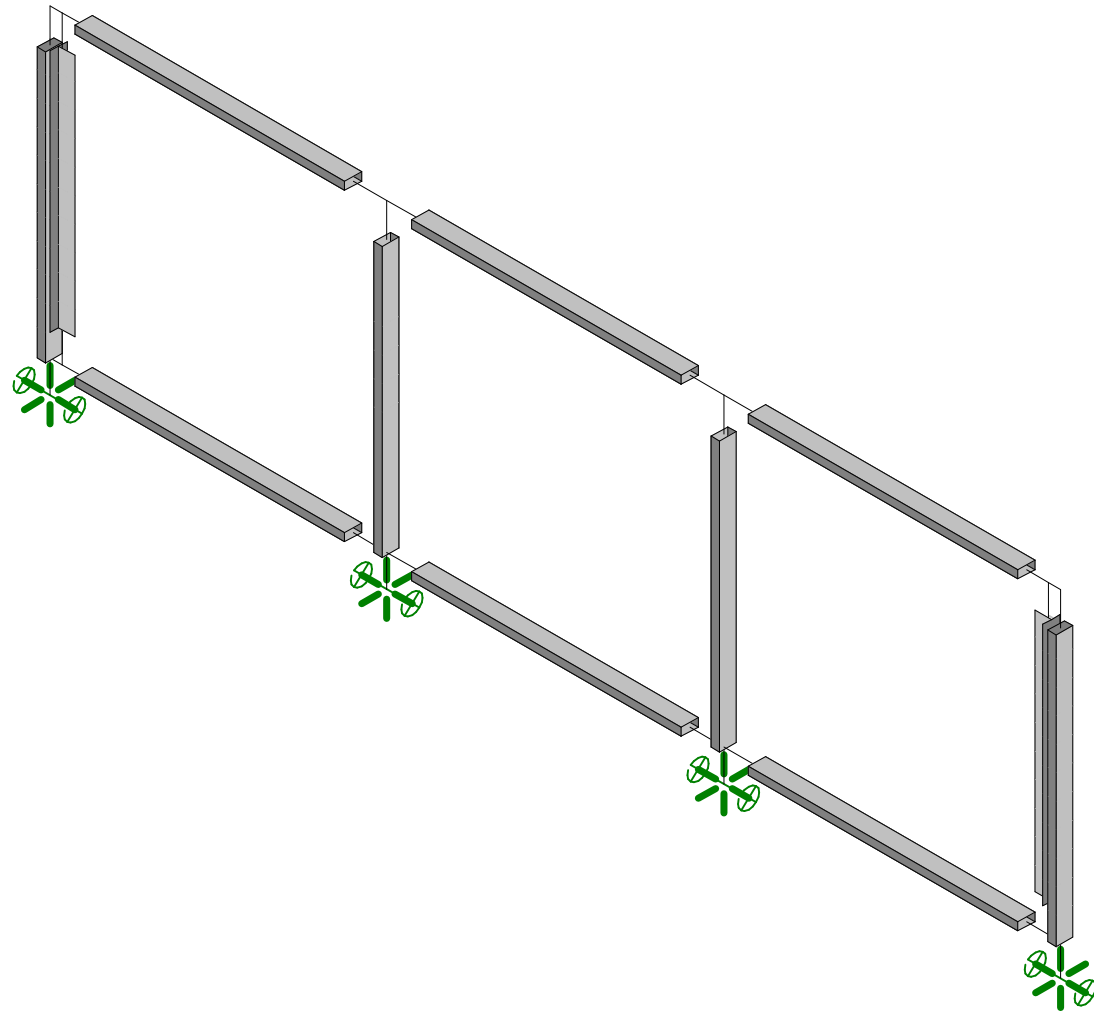
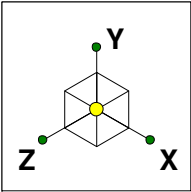
D9a - 2x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL

Mar 3, 2009 at 9:29 AM
D9a.R3D



Member Code Checks Displayed
Solution: Envelope

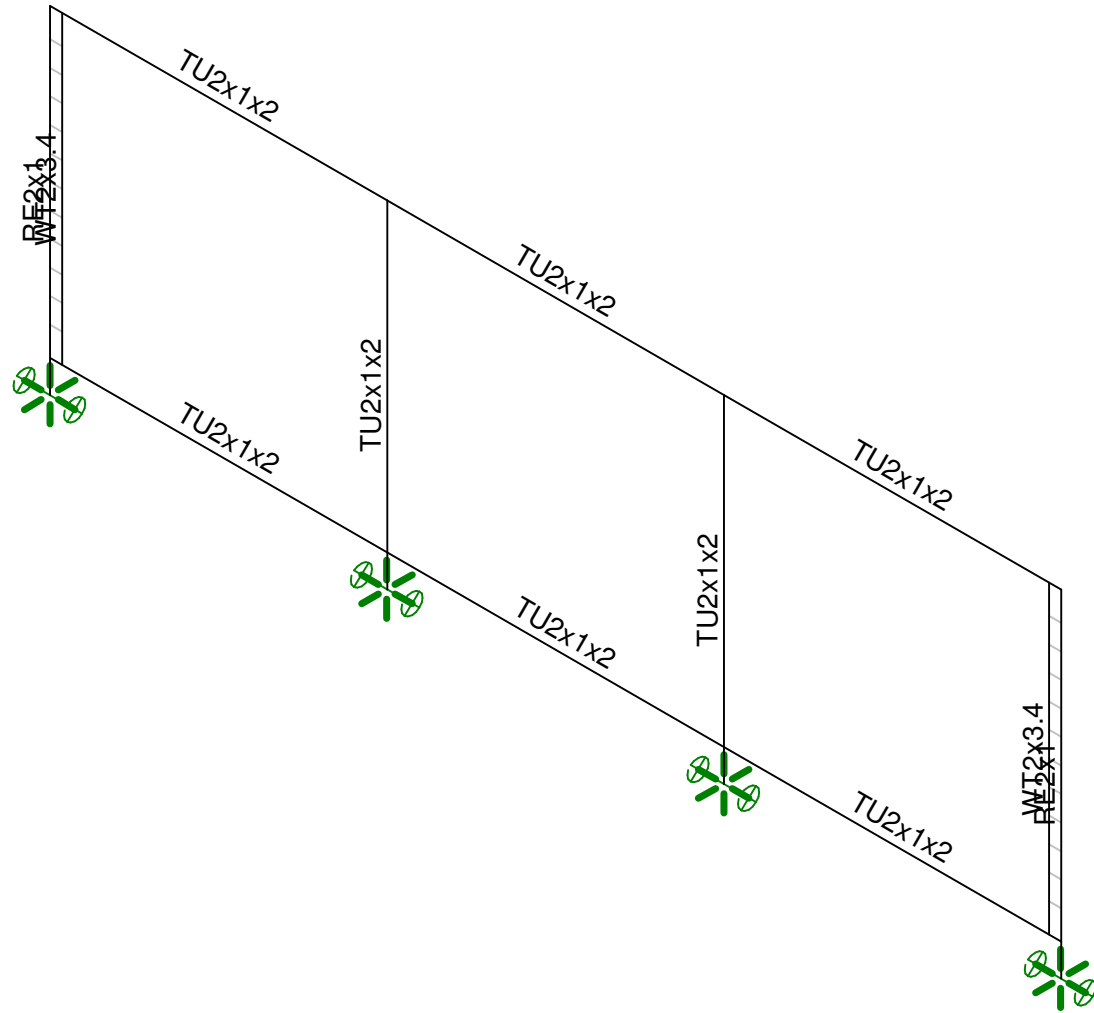
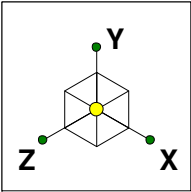
Ferrari Shields & Associates	D9a - 2x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL	
D. O'Connor		Mar 3, 2009 at 9:29 AM
08196		D9a.R3D



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D9a (SS) - 2x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL

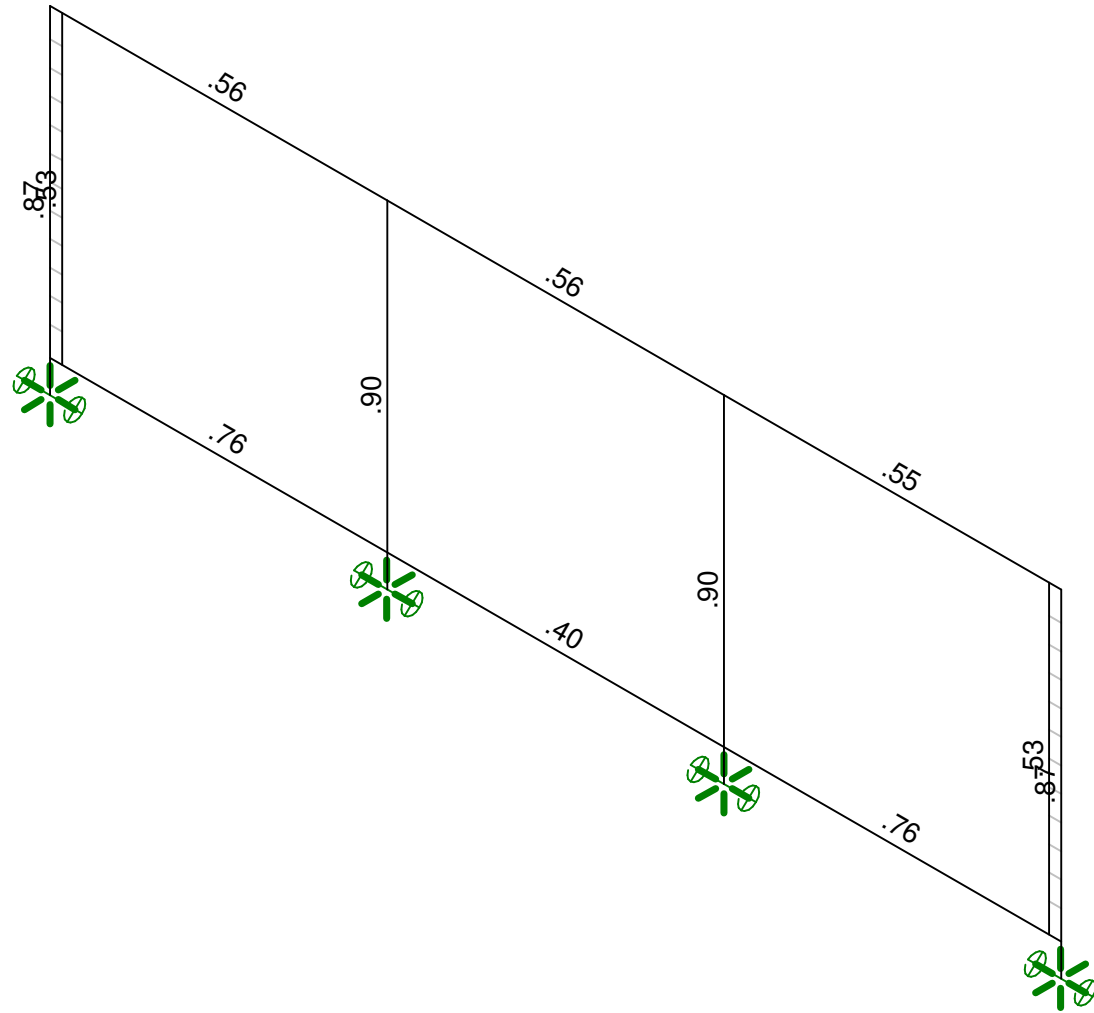
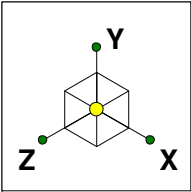
Mar 3, 2009 at 9:26 AM
D9a-ss.R3D



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D9a (SS) - 2x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL

Mar 3, 2009 at 9:27 AM
 D9a-ss.R3D

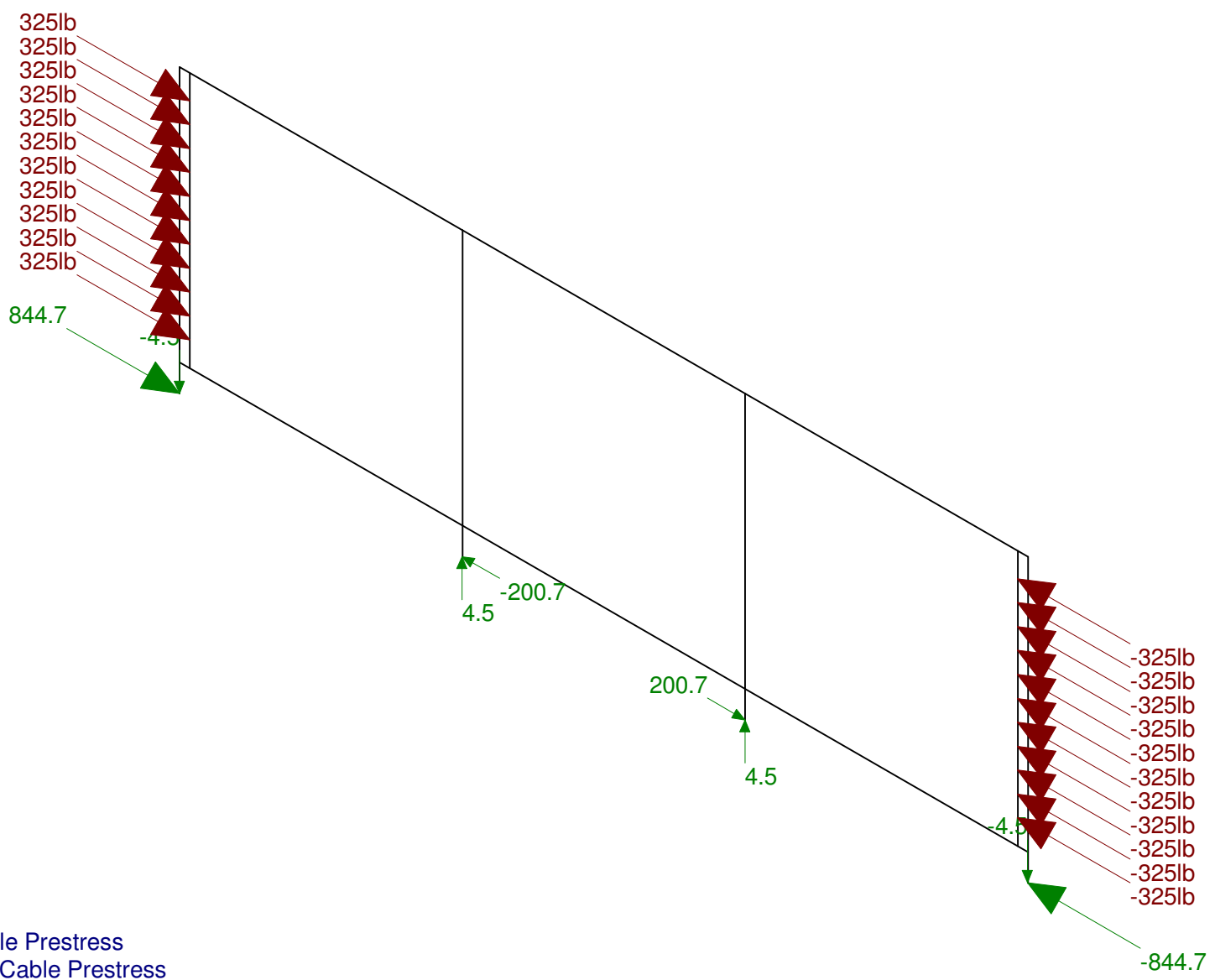
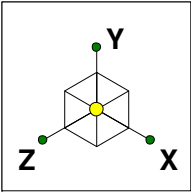


Member Code Checks Displayed
Solution: Envelope

Ferrari Shields & Associates
D. O'Connor
08196

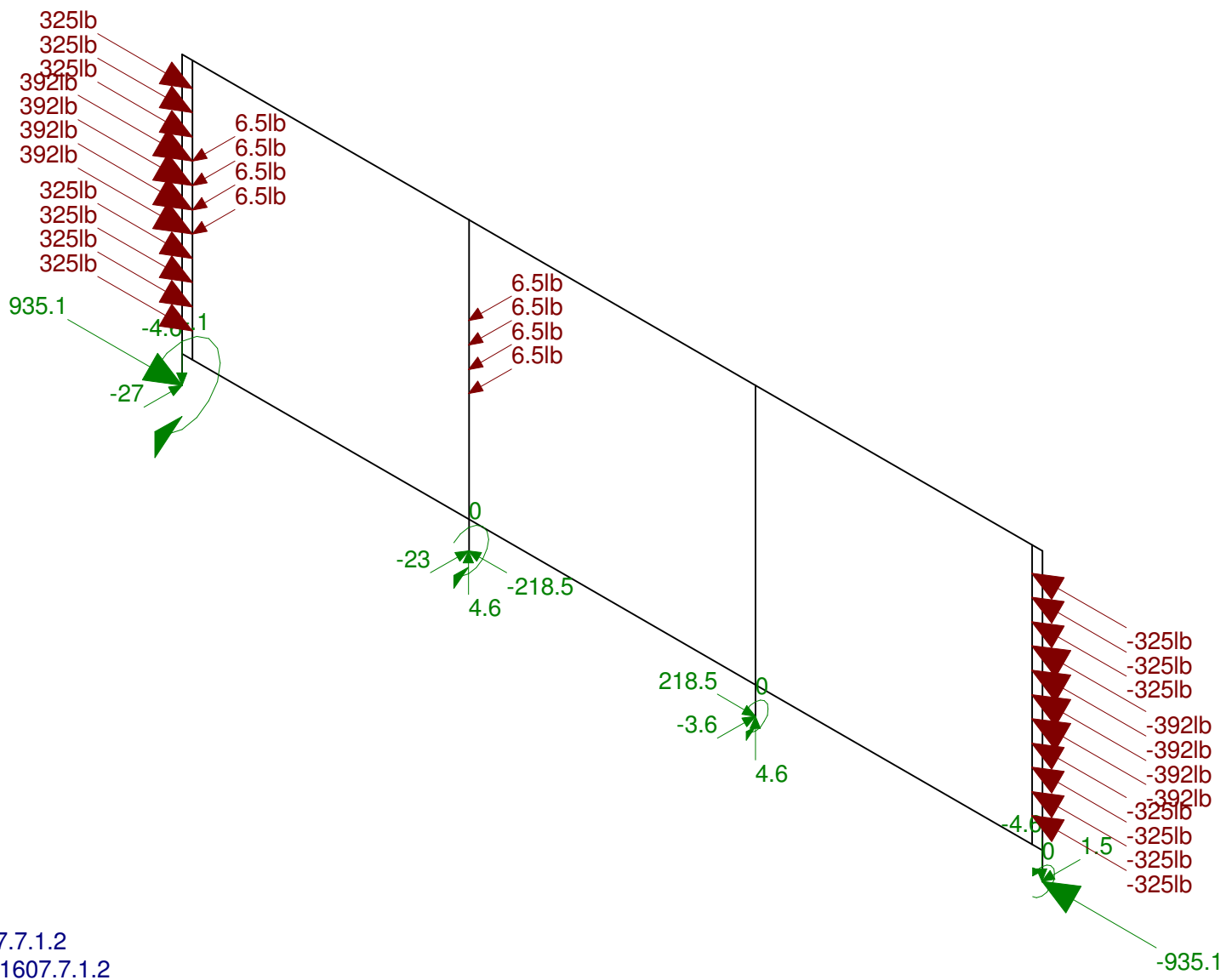
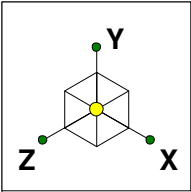
D9a (SS) - 2x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL

Mar 3, 2009 at 9:27 AM
D9a-ss.R3D



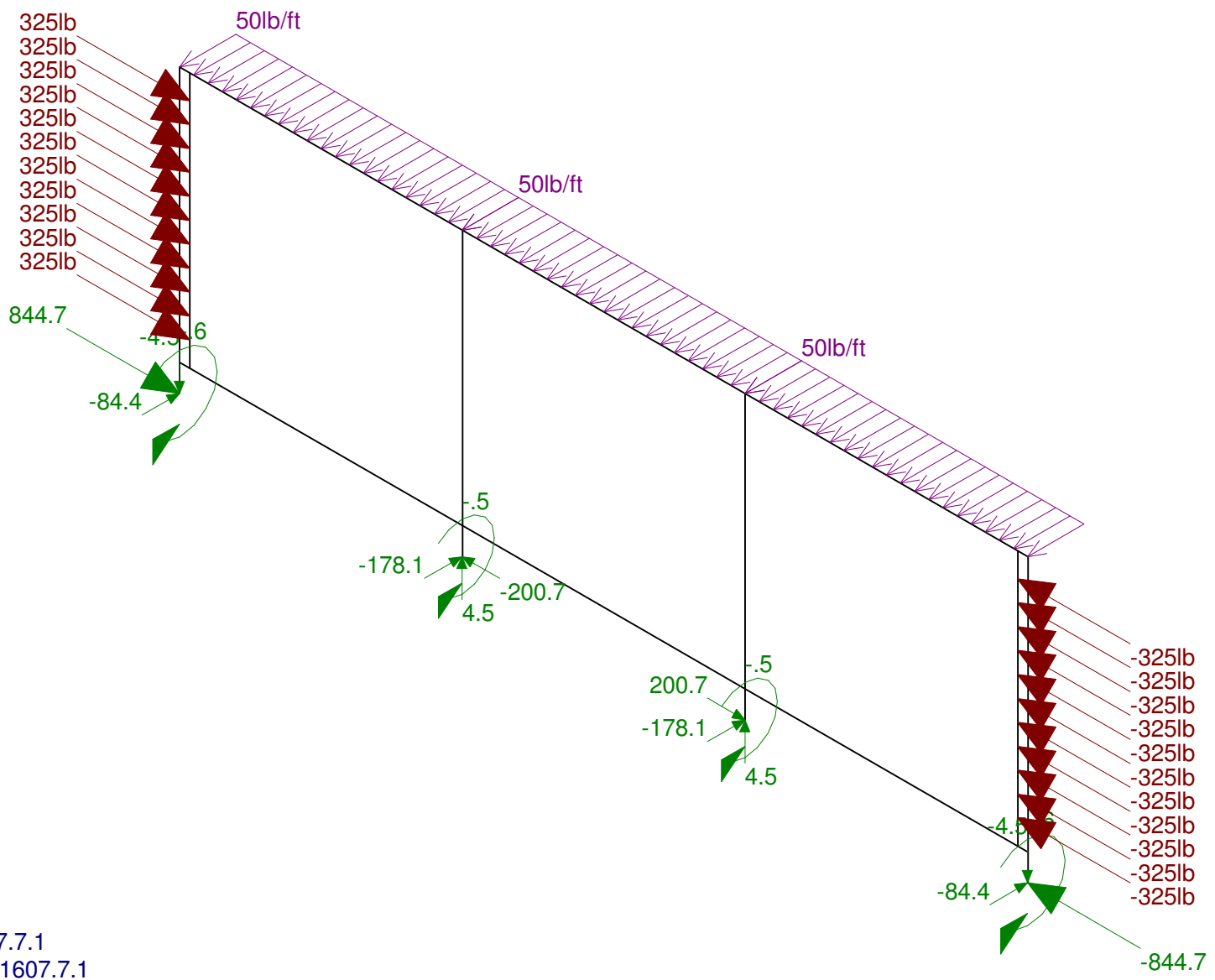
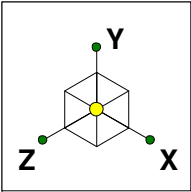
Loads: LC 1, Cable Prestress
 Results for LC 1, Cable Prestress
 Reaction units are lb and k-ft

Ferrari Shields & Associates	D9a - 2x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL	
D. O'Connor		Mar 3, 2009 at 11:16 AM
08196		D9a.R3D



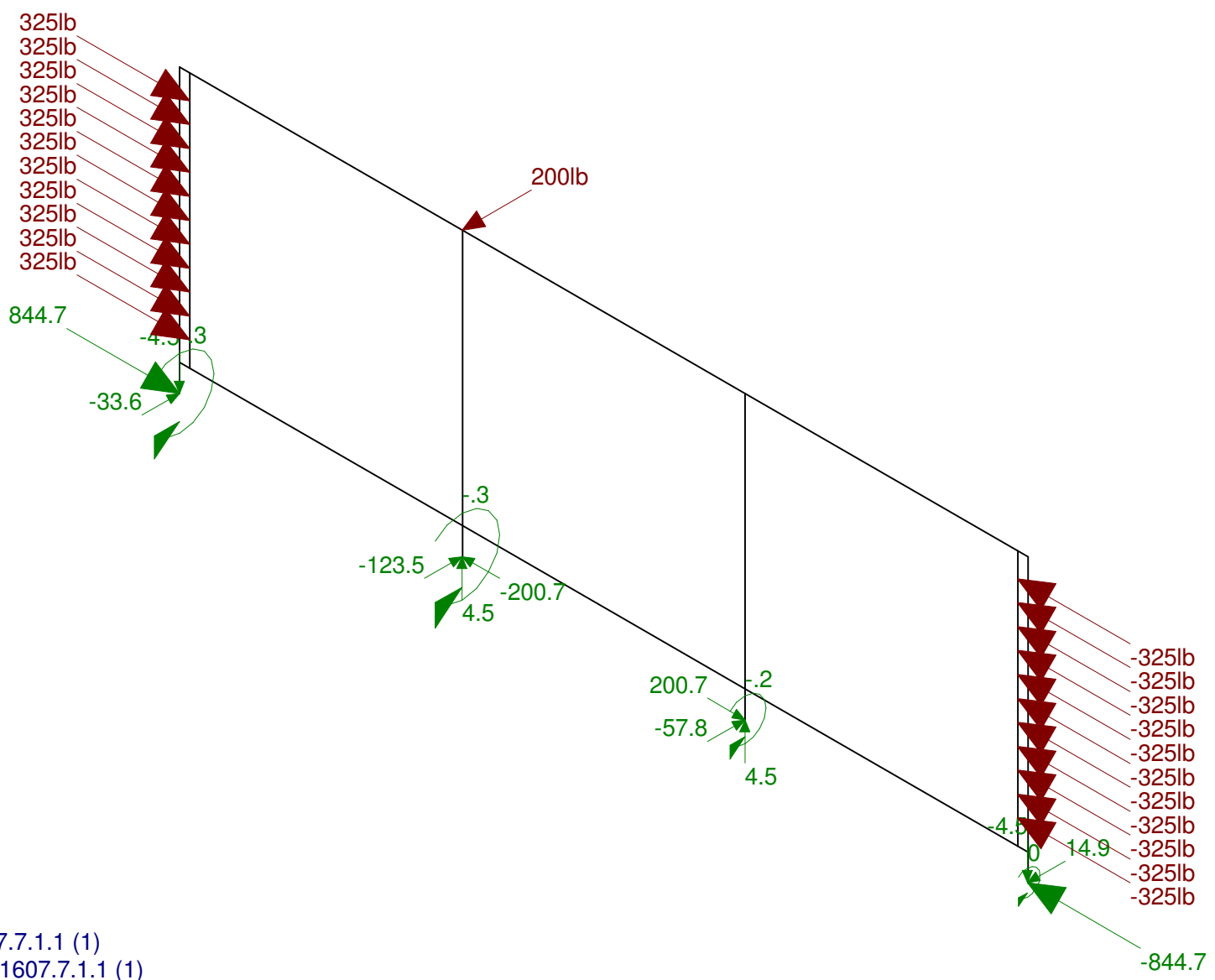
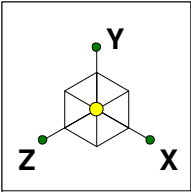
Loads: LC 2, 1607.7.1.2
 Results for LC 2, 1607.7.1.2
 Reaction units are lb and k-ft

Ferrari Shields & Associates	D9a - 2x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL	
D. O'Connor		Mar 3, 2009 at 11:17 AM
08196		D9a.R3D



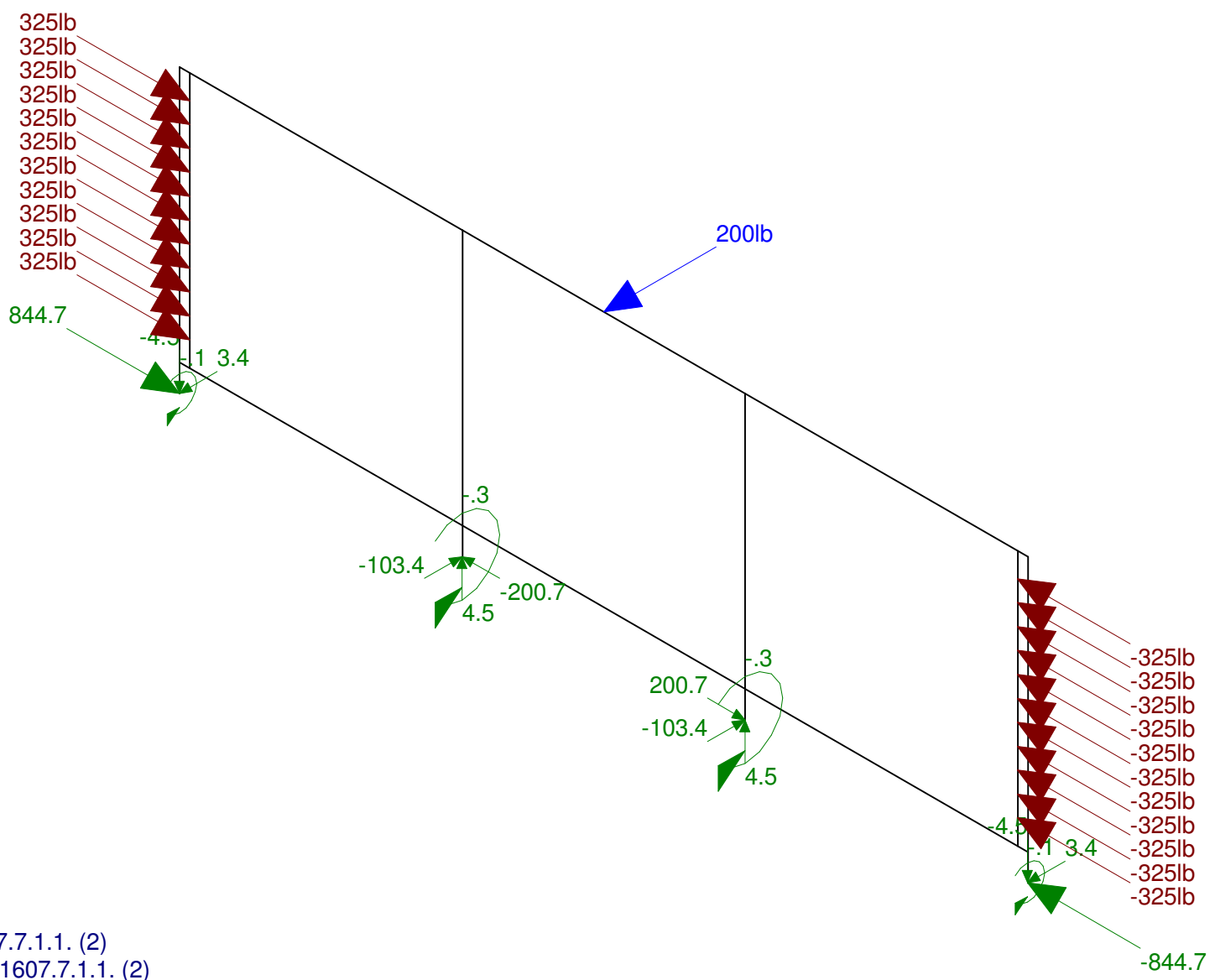
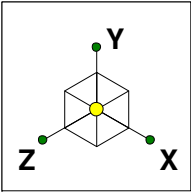
Loads: LC 3, 1607.7.1
 Results for LC 3, 1607.7.1
 Reaction units are lb and k-ft

Ferrari Shields & Associates	D9a - 2x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL	Mar 3, 2009 at 11:17 AM
D. O'Connor		D9a.R3D
08196		



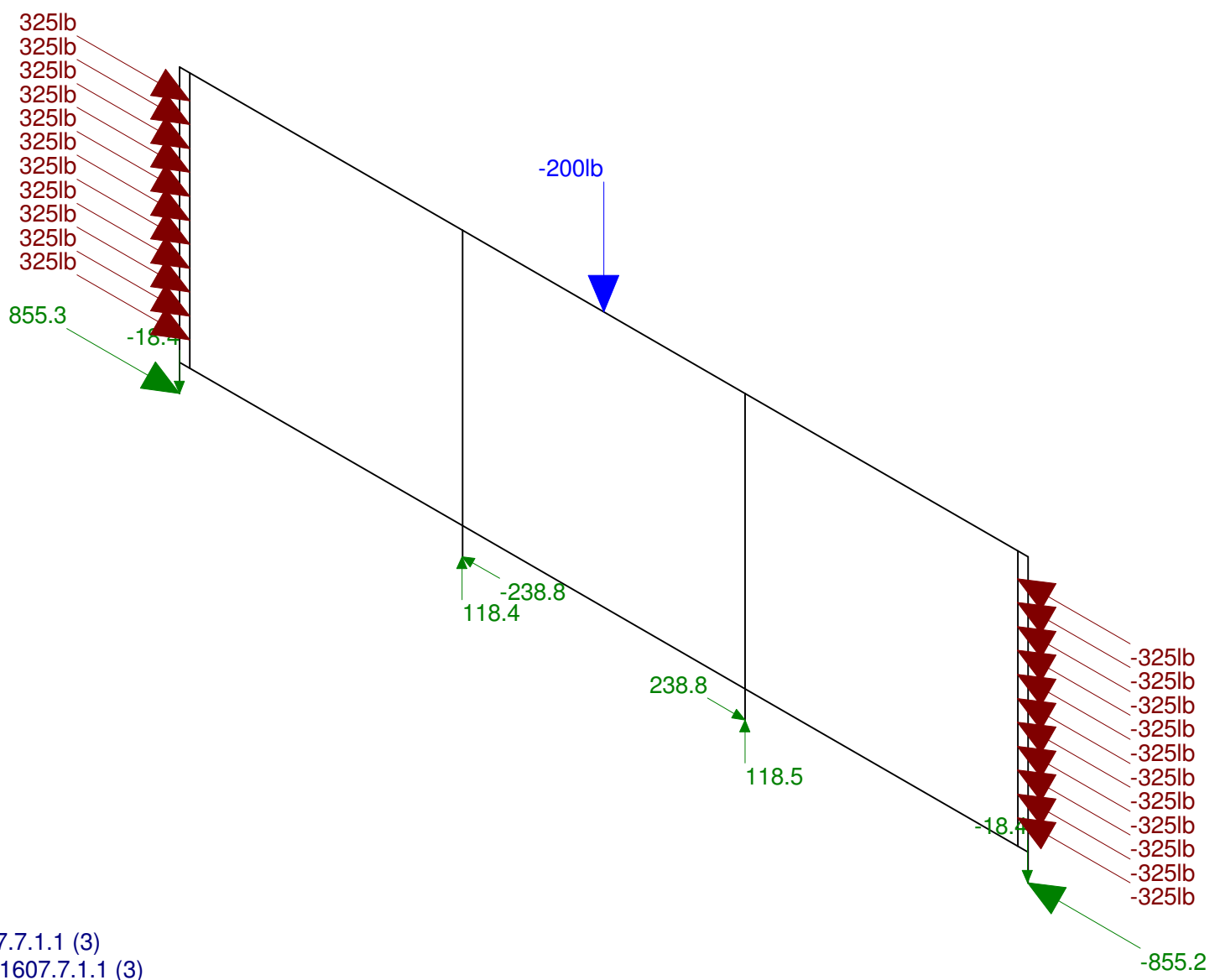
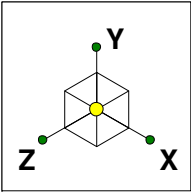
Loads: LC 4, 1607.7.1.1 (1)
 Results for LC 4, 1607.7.1.1 (1)
 Reaction units are lb and k-ft

Ferrari Shields & Associates	D9a - 2x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL	
D. O'Connor		Mar 3, 2009 at 11:17 AM
08196		D9a.R3D



Loads: LC 5, 1607.7.1.1. (2)
 Results for LC 5, 1607.7.1.1. (2)
 Reaction units are lb and k-ft

Ferrari Shields & Associates	D9a - 2x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL	
D. O'Connor		Mar 3, 2009 at 11:18 AM
08196		D9a.R3D



Loads: LC 6, 1607.7.1.1 (3)
 Results for LC 6, 1607.7.1.1 (3)
 Reaction units are lb and k-ft

Ferrari Shields & Associates	D9a - 2x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL	
D. O'Connor		Mar 3, 2009 at 11:18 AM
08196		D9a.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
Masonry Code	MSJC 05/IBC 06 ASD

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	A36	29000	11154	.3	.65	.49	36
3	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	ERAIL	HSS2X1X2	Beam	Tube	A500Gr42	Typical	.609	.092	.28	.238
3	POST	HSS2X1X2	Column	Tube	A500Gr42	Typical	.609	.092	.28	.238
4	EPOST	RE2x1	Column	Tube	A36	Typical	2	.167	.667	.457
5	TEE	WT2x3.4	Column	W Tee	A36	Typical	.938	.169	.348	.018

General Material Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (1/E5 F)	Density[k/ft^3]
1	GEN_RIGID	1e+6		.3	.65	0

General Section Sets

	Label	Shape	Type	Material	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	LINK	ARB_LINK_1	Beam	GEN_RIGID	1e+6	1e+6	1e+6	1

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area (Mem...	Surface (Pl...
1	Cable Prestress	None				22				
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	BLC Factor
1	Cable Prestress	Yes	C		1	1							
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	EPOST	Column	Tube	A36	Typical
2	M2	N3	N4		90	POST	Column	Tube	A500Gr42	Typical
3	M3	N2	N4		90	ERAIL	Beam	Tube	A500Gr42	Typical
4	M4	N4	N8		90	RAIL	Beam	Tube	A500Gr42	Typical
5	M5	N5	N6		90	EPOST	Column	Tube	A36	Typical
6	M6	N7	N8		90	POST	Column	Tube	A500Gr42	Typical
7	M7	N8	N6		90	ERAIL	Beam	Tube	A500Gr42	Typical
8	M8	N14	N13		180	TEE	Column	W Tee	A36	Typical
9	M9	N12	N11			TEE	Column	W Tee	A36	Typical
10	M10	N15	N17			LINK	Beam	None	GEN_RIGID	Typical
11	M11	N18	N16			LINK	Beam	None	GEN_RIGID	Typical
12	M12	N19	N21			LINK	Beam	None	GEN_RIGID	Typical
13	M13	N22	N20			LINK	Beam	None	GEN_RIGID	Typical
14	M14	N23	N25			LINK	Beam	None	GEN_RIGID	Typical
15	M15	N26	N24			LINK	Beam	None	GEN_RIGID	Typical
16	M16	N27	N29			LINK	Beam	None	GEN_RIGID	Typical
17	M17	N30	N28			LINK	Beam	None	GEN_RIGID	Typical
18	M18	N31	N33			LINK	Beam	None	GEN_RIGID	Typical
19	M19	N34	N32			LINK	Beam	None	GEN_RIGID	Typical
20	M20	N35	N37			LINK	Beam	None	GEN_RIGID	Typical
21	M21	N38	N36			LINK	Beam	None	GEN_RIGID	Typical
22	M22	N39	N41			LINK	Beam	None	GEN_RIGID	Typical
23	M23	N42	N40			LINK	Beam	None	GEN_RIGID	Typical
24	M24	N43	N45			LINK	Beam	None	GEN_RIGID	Typical
25	M25	N46	N44			LINK	Beam	None	GEN_RIGID	Typical
26	M26	N47	N49			LINK	Beam	None	GEN_RIGID	Typical
27	M27	N50	N48			LINK	Beam	None	GEN_RIGID	Typical
28	M28	N51	N53			LINK	Beam	None	GEN_RIGID	Typical
29	M29	N54	N52			LINK	Beam	None	GEN_RIGID	Typical
30	M30	N9	N59		90	ERAIL	Beam	Tube	A500Gr42	Typical
31	M31	N59	N60		90	RAIL	Beam	Tube	A500Gr42	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
32	M32	N60	N10		90	ERAIL	Beam	Tube	A500Gr42	Typical
33	M33	N61	N63			LINK	Beam	None	GEN_RIGID	Typical
34	M34	N64	N62			LINK	Beam	None	GEN_RIGID	Typical

Envelope Joint Reactions

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC	
1	N1	max	935.061	2	-4.535	4	3.435	5	0	1	0	1	0	1
2		min	844.689	1	-18.438	6	-84.396	3	-.558	3	0	1	0	1
3	N3	max	-200.679	1	118.435	6	0	1	0	1	0	1	0	1
4		min	-238.808	6	4.536	4	-178.118	3	-.483	3	0	1	0	1
5	N5	max	-844.694	1	-4.538	3	14.916	4	0	2	0	1	0	1
6		min	-935.067	2	-18.447	6	-84.364	3	-.558	3	0	1	0	1
7	N7	max	238.761	6	118.451	6	0	1	0	1	0	1	0	1
8		min	200.685	1	4.537	3	-178.116	3	-.483	3	0	1	0	1
9	Totals:	max	0	2	200	6	0	1						
10		min	0	4	0	2	-524.993	3						

Envelope Member Section Forces

Member	Sec	Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Moment[...]	LC	z-z Moment[...]	LC
1	M1	1	max	-4.535	4	3.435	5	935.061	2	0	1	0	1
2			min	-18.438	6	-84.396	3	844.689	1	0	1	-558	3
3		2	max	2330.189	2	198.359	3	-950.881	1	.041	3	-146	1
4			min	2208.169	6	-16.421	2	-1032.73	2	0	1	-157	2
5		3	max	8269.055	2	166.484	5	-156.517	1	.04	3	-128	1
6			min	7433.371	1	-18.903	2	-197.564	2	0	1	-142	2
7		4	max	7053.695	2	165.478	5	542.243	2	.04	3	-.086	4
8			min	6377.291	1	-10.152	2	452.562	6	0	2	-.092	2
9		5	max	501.343	2	89.71	5	826.823	2	.055	3	.067	2
10			min	467.543	4	-3.18	2	766.999	4	0	2	.061	6
11	M2	1	max	118.435	6	0	1	-200.685	1	0	1	0	1
12			min	4.536	4	-178.128	3	-238.947	6	0	1	-483	3
13		2	max	80	6	0	1	28.564	6	.021	5	-.009	1
14			min	-38.214	2	-146.621	3	11.992	1	0	2	-.016	6
15		3	max	80	6	0	1	28.586	6	.021	5	.009	6
16			min	-38.214	2	-146.621	3	11.992	1	0	2	.001	1
17		4	max	80	6	4.174	2	28.361	6	.021	5	.034	6
18			min	-38.214	2	-146.621	3	11.992	1	0	2	.012	1
19		5	max	80	6	4.174	2	28.361	6	.021	5	.058	6
20			min	-38.214	2	-146.621	3	11.992	1	0	2	.022	1
21	M3	1	max	822.854	2	86.721	5	-462.498	4	0	2	.067	2
22			min	763.632	4	-2.837	2	-495.731	6	-.034	3	.061	6
23		2	max	1834.75	2	0	1	-20.173	6	0	2	.067	2
24			min	1692.912	6	-85.614	3	-38.404	2	-.036	3	.056	6
25		3	max	1834.75	2	0	1	-20.173	6	0	2	.039	6
26			min	1692.912	6	-64.891	4	-38.404	2	-.036	3	.03	1
27		4	max	1834.75	2	1.886	3	-20.173	6	0	2	.021	6
28			min	1692.912	6	-64.891	4	-38.404	2	-.036	3	0	2
29		5	max	1834.75	2	45.636	3	-20.173	6	0	2	.003	6
30			min	1692.912	6	-64.891	4	-38.404	2	-.036	3	-.034	2
31	M4	1	max	1847.865	2	54.367	4	0	1	.016	4	.062	6

Envelope Member Section Forces (Continued)

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Moment[...]	LC	z-z Moment[...]	LC
32		min	1711.337	4	-100	5	-99.989	6	0	1	-.009	2	0	1
33	2	max	1847.865	2	54.367	4	0	1	.016	4	-.009	1	.115	5
34		min	1711.337	4	-100	5	-99.989	6	0	1	-.026	6	0	1
35	3	max	1847.865	2	100	5	100.011	6	.016	4	-.009	1	.202	5
36		min	1711.337	4	0	3	0	2	0	1	-.113	6	0	1
37	4	max	1847.865	2	100	5	100.011	6	.016	4	-.009	1	.115	5
38		min	1711.337	4	0	1	0	2	0	1	-.026	6	0	2
39	5	max	1847.865	2	100	5	100.011	6	.016	4	.062	6	.044	3
40		min	1711.337	4	0	1	0	2	0	1	-.009	2	-.028	4
41	M5	1	max	-4.538	3	14.916	4	-844.694	1	0	0	1	0	2
42		min	-18.447	6	-84.364	3	-935.067	2	0	1	0	1	-.558	3
43	2	max	2330.16	2	198.402	3	1032.729	2	0	1	.157	2	0	1
44		min	2208.121	6	0	1	950.88	1	-.041	3	.146	1	-.401	3
45	3	max	8269.032	2	166.494	5	197.568	2	0	1	.142	2	0	1
46		min	7433.351	1	0	1	156.52	1	-.04	3	.128	1	-.248	3
47	4	max	7053.702	2	165.488	5	-452.555	6	0	1	.092	2	0	1
48		min	6377.297	1	0	1	-542.238	2	-.04	3	.086	3	-.151	3
49	5	max	501.349	2	89.713	5	-767.002	3	0	1	-.061	6	0	1
50		min	467.549	3	0	1	-826.826	2	-.055	3	-.067	2	-.034	3
51	M6	1	max	118.451	6	0	1	238.9	6	0	0	1	0	1
52		min	4.537	3	-178.127	3	200.69	1	0	1	0	1	-.483	3
53	2	max	80.017	6	0	1	-11.991	1	0	1	.016	6	0	1
54		min	-38.213	2	-146.618	3	-28.49	6	-.021	5	.009	1	-.349	3
55	3	max	80.017	6	0	1	-11.991	1	0	1	-.001	1	0	1
56		min	-38.213	2	-146.618	3	-28.49	6	-.021	5	-.009	6	-.22	3
57	4	max	80.017	6	0	1	-11.991	1	0	1	-.012	1	0	1
58		min	-38.213	2	-146.618	3	-28.49	6	-.021	5	-.034	6	-.092	3
59	5	max	80.017	6	0	1	-11.991	1	0	1	-.022	1	.036	3
60		min	-38.213	2	-146.618	3	-28.49	6	-.021	5	-.059	6	0	1
61	M7	1	max	1834.752	2	28.813	5	38.402	2	.036	.003	6	.063	3
62		min	1692.915	6	-45.633	3	20.178	6	0	1	-.034	2	-.008	4
63	2	max	1834.752	2	28.813	5	38.402	2	.036	3	.021	6	.084	3
64		min	1692.915	6	-1.883	3	20.178	6	0	1	0	2	-.014	4
65	3	max	1834.752	2	41.867	3	38.402	2	.036	3	.039	6	.066	3
66		min	1692.915	6	0	1	20.178	6	0	1	.03	1	-.021	4
67	4	max	1834.752	2	85.617	3	38.402	2	.036	3	.067	2	.01	3
68		min	1692.915	6	0	1	20.178	6	0	1	.056	6	-.028	4
69	5	max	822.857	2	0	1	495.738	6	.034	3	.067	2	0	1
70		min	763.635	4	-86.723	5	462.504	3	0	1	.061	6	-.055	3
71	M8	1	max	338.877	2	696.597	2	99.988	5	0	0	1	.123	2
72		min	285.952	1	659.399	6	0	1	-.004	3	-.069	3	.113	6
73	2	max	-4179.68	1	542.519	2	325.62	3	0	1	.007	4	-.21	1
74		min	-4478.175	2	488.972	1	0	1	-.002	3	-.055	3	-.227	2
75	3	max	-7398.577	1	127.361	2	329.674	3	0	1	.01	4	-.293	1
76		min	-8230.819	2	100.9	1	0	1	-.002	3	-.023	3	-.328	2
77	4	max	-5046.545	1	-419.775	6	328.812	3	0	1	0	1	-.237	1
78		min	-5519.1	2	-477.459	2	0	1	-.002	3	-.062	3	-.261	2
79	5	max	-432.776	3	-919.469	6	200.987	3	0	1	0	1	.091	2
80		min	-480.904	6	-1011.895	2	0	1	-.003	3	-.006	4	.072	6
81	M9	1	max	338.864	2	696.597	2	8.633	2	.004	.069	3	.123	2
82		min	285.941	1	659.362	6	-99.981	5	0	1	0	1	.113	6
83	2	max	-4179.705	1	542.519	2	0	1	.002	3	.055	3	-.21	1
84		min	-4478.203	2	488.972	1	-325.609	3	0	1	0	5	-.227	2

Envelope Member Section Forces (Continued)

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Moment[...]	LC	z-z Moment[...]	LC	
85		3	max	-7398.596	1	127.358	2	0	1	.002	3	.023	3	-.293	1
86			min	-8230.84	2	100.898	1	-329.66	3	0	1	-.009	5	-.328	2
87		4	max	-5046.53	1	-419.776	6	1.951	2	.002	3	.062	3	-.237	1
88			min	-5519.082	2	-477.46	2	-328.79	3	0	2	0	1	-.261	2
89		5	max	-432.769	4	-919.469	6	.957	2	.003	3	.005	5	.091	2
90			min	-480.903	6	-1011.896	2	-200.975	3	0	2	0	2	.072	6
91	M30	1	max	2248.972	2	9.36	2	-258.596	1	0	1	.068	2	.071	3
92			min	2060.744	1	-81.308	5	-310.339	2	-.074	3	.059	1	0	1
93		2	max	2943.267	2	31.419	3	43.532	2	0	2	-.056	6	.056	3
94			min	2720.303	1	0	1	39.015	6	-.005	5	-.061	2	0	1
95		3	max	2943.267	2	31.419	3	43.532	2	0	2	-.021	1	.029	3
96			min	2720.303	1	0	1	39.015	6	-.005	5	-.023	2	0	1
97		4	max	2943.267	2	31.419	3	43.532	2	0	2	.015	2	.003	4
98			min	2720.303	1	0	1	39.015	6	-.005	5	.012	6	-.003	5
99		5	max	2943.267	2	31.419	3	43.532	2	0	2	.053	2	0	1
100			min	2720.303	1	0	1	39.015	6	-.005	5	.047	6	-.026	3
101	M31	1	max	2711.675	2	0	1	0	1	.004	4	-.001	6	0	1
102			min	2470.046	6	-4.624	4	-.008	6	0	1	-.003	2	-.011	4
103		2	max	2711.675	2	0	1	0	1	.004	4	-.001	6	0	1
104			min	2470.046	6	-4.624	4	-.008	6	0	1	-.003	2	-.008	3
105		3	max	2711.675	2	0	1	0	1	.004	4	-.001	6	0	1
106			min	2470.046	6	-4.624	4	-.008	6	0	1	-.003	2	-.008	3
107		4	max	2711.675	2	0	1	0	1	.004	4	-.001	6	0	4
108			min	2470.046	6	-4.624	4	-.008	6	0	1	-.003	2	-.008	3
109		5	max	2711.675	2	0	1	0	1	.004	4	-.001	6	.005	4
110			min	2470.046	6	-4.624	4	-.008	6	0	1	-.003	2	-.008	3
111	M32	1	max	2943.272	2	0	1	-39.029	6	.005	5	.053	2	0	1
112			min	2720.307	1	-31.421	3	-43.533	2	0	1	.047	6	-.026	3
113		2	max	2943.272	2	0	1	-39.029	6	.005	5	.015	2	.001	3
114			min	2720.307	1	-31.421	3	-43.533	2	0	1	.012	6	-.003	5
115		3	max	2943.272	2	0	1	-39.029	6	.005	5	-.021	1	.029	3
116			min	2720.307	1	-31.421	3	-43.533	2	0	1	-.023	2	0	1
117		4	max	2943.272	2	0	1	-39.029	6	.005	5	-.056	6	.056	3
118			min	2720.307	1	-31.421	3	-43.533	2	0	1	-.061	2	0	1
119		5	max	2248.977	2	81.315	5	310.351	2	.074	3	.068	2	.071	3
120			min	2060.749	1	0	1	258.606	1	0	1	.059	1	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 [k-ft]	Mnzz/om... Cb	Eqn	
1	M1	RE2x1	.806	22.75	3	.132	4.375	z	3	14201.058	43113.772	.898	1.796	1... H1-1a
2	M2	HSS2X1X2	.694	3.938	3	.105	0	z	6	7484.295	15307.164	.468	.768	1... H1-1b
3	M3	HSS2X1X2	.479	42	4	.311	0	z	3	7484.423	15307.164	.468	.768	2... H1-1a
4	M4	HSS2X1X2	.479	21	5	.052	0	z	4	7484.423	15307.164	.468	.768	1... H1-1a
5	M5	RE2x1	.806	22.75	3	.132	4.375	z	3	14201.058	43113.772	.898	1.796	1... H1-1a
6	M6	HSS2X1X2	.694	3.938	3	.105	0	z	6	7484.295	15307.164	.468	.768	1... H1-1b
7	M7	HSS2X1X2	.467	40.25	3	.311	40.688	z	3	7484.423	15307.164	.468	.768	1... H1-1a
8	M8	WT2x3.4	.892	19.396	3	.175	34.438	y	3	16463.059	20209.581	.486	.709	1 H1-1a
9	M9	WT2x3.4	.892	19.396	3	.175	34.438	y	3	16463.059	20209.581	.486	.709	1 H1-1a
10	M30	HSS2X1X2	.617	1.75	3	.346	0	z	3	7484.423	15307.164	.468	.768	2... H1-1a
11	M31	HSS2X1X2	.368	0	2	.012	0	z	4	7484.423	15307.164	.468	.768	2... H1-1a
12	M32	HSS2X1X2	.617	40.25	3	.346	40.688	z	3	7484.423	15307.164	.468	.768	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
Masonry Code	MSJC 05/IBC 06 ASD

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	46
2	A36	29000	11154	.3	.65	.49	36
3	SS316	28000	11154	.3	.65	.49	30
4	LDX2101	28000	11154	.3	.65	.49	60

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	TU2x1x2	Column	Tube	SS316	Typical	.662	.102	.321	.238
3	EPOST	RE2x1	Column	Tube	SS316	Typical	2	.167	.667	.457
4	TEE	WT2x3.4	Column	W Tee	LDX2101	Typical	.938	.169	.348	.018

General Material Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (1E5 F)	Density[k/ft^3]
1	GEN_RIGID	1e+6		.3	.65	0

General Section Sets

	Label	Shape	Type	Material	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	LINK	ARB_LINK_1	Beam	GEN_RIGID	1e+6	1e+6	1e+6	1

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area (Mem...	Surface (Pl...
1	Cable Prestress	None				22				
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	BLC Factor
1	Cable Prestress	Yes	C		1	1							
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	EPOST	Column	Tube	SS316	Typical
2	M2	N3	N4		90	POST	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	EPOST	Column	Tube	SS316	Typical
6	M6	N7	N8		90	POST	Column	Tube	SS316	Typical
7	M7	N8	N6		90	RAIL	Beam	Tube	SS316	Typical
8	M8	N14	N13		180	TEE	Column	W Tee	LDX2101	Typical
9	M9	N12	N11			TEE	Column	W Tee	LDX2101	Typical
10	M10	N15	N17			LINK	Beam	None	GEN_RIGID	Typical
11	M11	N18	N16			LINK	Beam	None	GEN_RIGID	Typical
12	M12	N19	N21			LINK	Beam	None	GEN_RIGID	Typical
13	M13	N22	N20			LINK	Beam	None	GEN_RIGID	Typical
14	M14	N23	N25			LINK	Beam	None	GEN_RIGID	Typical
15	M15	N26	N24			LINK	Beam	None	GEN_RIGID	Typical
16	M16	N27	N29			LINK	Beam	None	GEN_RIGID	Typical
17	M17	N30	N28			LINK	Beam	None	GEN_RIGID	Typical
18	M18	N31	N33			LINK	Beam	None	GEN_RIGID	Typical
19	M19	N34	N32			LINK	Beam	None	GEN_RIGID	Typical
20	M20	N35	N37			LINK	Beam	None	GEN_RIGID	Typical
21	M21	N38	N36			LINK	Beam	None	GEN_RIGID	Typical
22	M22	N39	N41			LINK	Beam	None	GEN_RIGID	Typical
23	M23	N42	N40			LINK	Beam	None	GEN_RIGID	Typical
24	M24	N43	N45			LINK	Beam	None	GEN_RIGID	Typical
25	M25	N46	N44			LINK	Beam	None	GEN_RIGID	Typical
26	M26	N47	N49			LINK	Beam	None	GEN_RIGID	Typical
27	M27	N50	N48			LINK	Beam	None	GEN_RIGID	Typical
28	M28	N51	N53			LINK	Beam	None	GEN_RIGID	Typical
29	M29	N54	N52			LINK	Beam	None	GEN_RIGID	Typical
30	M30	N9	N59		90	RAIL	Beam	Tube	SS316	Typical
31	M31	N59	N60		90	RAIL	Beam	Tube	SS316	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
32	M32	N60	N10		90	RAIL	Beam	Tube	SS316	Typical
33	M33	N61	N63			LINK	Beam	None	GEN_RIGID	Typical
34	M34	N64	N62			LINK	Beam	None	GEN_RIGID	Typical

Envelope Joint Reactions

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC	
1	N1	max	985.735	2	-4.455	3	2.343	5	0	1	0	1	0	1
2		min	891.302	1	-18.324	6	-85.074	3	-.545	3	0	1	0	1
3	N3	max	-213.129	1	118.319	6	0	1	0	1	0	1	0	1
4		min	-251.355	6	4.453	3	-177.421	3	-.496	3	0	1	0	1
5	N5	max	-891.298	1	-4.452	4	14.472	4	0	2	0	1	0	1
6		min	-985.73	2	-18.327	6	-85.087	3	-.545	3	0	1	0	1
7	N7	max	251.298	6	118.331	6	0	1	0	1	0	1	0	1
8		min	213.121	1	4.452	4	-177.422	3	-.496	3	0	1	0	1
9	Totals:	max	-.003	1	199.999	6	0	1						
10		min	-.004	2	-.001	2	-525.004	3						

Envelope Member Section Forces

Member	Sec	Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Moment[...]	LC	z-z Moment[...]	LC
1	M1	1	max	-4.455	3	2.343	5	985.735	2	0	1	0	1
2			min	-18.324	6	-85.074	3	891.302	1	0	1	0	1
3		2	max	2211.096	2	169.284	3	-946.578	1	.037	3	-.144	1
4			min	2098.559	6	-17.856	2	-1028.015	2	0	1	-.154	2
5		3	max	8178.779	2	153.381	5	-158.275	1	.036	3	-.126	1
6			min	7350.526	1	-20.383	2	-199.287	2	0	1	-.14	2
7		4	max	6984.164	2	152.404	5	535.57	2	.036	3	-.085	3
8			min	6313.664	1	-11.703	2	446.733	6	0	2	-.091	2
9		5	max	510.057	6	82.216	5	821.258	2	.05	3	.07	2
10			min	474.684	3	-4.112	2	761.943	3	0	2	.064	6
11	M2	1	max	118.319	6	0	1	-213.134	1	0	1	0	1
12			min	4.453	3	-177.43	3	-251.489	6	0	1	0	1
13		2	max	76.96	6	0	1	29.399	6	.019	5	-.01	1
14			min	-41.51	2	-149.088	3	12.817	1	0	2	-.017	6
15		3	max	76.96	6	0	1	29.419	6	.019	5	.009	6
16			min	-41.51	2	-149.088	3	12.817	1	0	2	.002	1
17		4	max	76.96	6	3.853	2	29.21	6	.019	5	.035	6
18			min	-41.51	2	-149.088	3	12.817	1	0	2	.013	1
19		5	max	76.96	6	3.853	2	29.21	6	.019	5	.06	6
20			min	-41.51	2	-149.088	3	12.817	1	0	2	.024	1
21	M3	1	max	817.156	2	79.593	5	-469.561	3	0	2	.07	2
22			min	758.459	4	-3.708	2	-504.817	6	-.031	3	.064	6
23		2	max	1829.817	2	0	1	-23.217	6	0	2	.073	2
24			min	1688.379	6	-81.333	3	-41.704	2	-.032	3	.062	6
25		3	max	1829.817	2	0	1	-23.217	6	0	2	.041	6
26			min	1688.379	6	-62.858	4	-41.704	2	-.032	3	.033	1
27		4	max	1829.817	2	6.167	3	-23.217	6	0	2	.021	6
28			min	1688.379	6	-62.858	4	-41.704	2	-.032	3	0	2
29		5	max	1829.817	2	49.917	3	-23.217	6	0	2	0	6
30			min	1688.379	6	-62.858	4	-41.704	2	-.032	3	-.037	2
31	M4	1	max	1843.839	2	54.144	4	0	2	.016	4	.061	6

Envelope Member Section Forces (Continued)

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Moment[...]	LC	z-z Moment[...]	LC	
32		min	1707.605	4	-100	5	-99.99	6	0	3	-.01	2	0	1	
33	2	max	1843.839	2	54.144	4	0	2	.016	4	-.009	1	.115	5	
34		min	1707.605	4	-100	5	-99.99	6	0	3	-.027	6	0	1	
35	3	max	1843.839	2	100	5	100.01	6	.016	4	-.009	1	.202	5	
36		min	1707.605	4	0	1	0	1	0	3	-.114	6	0	1	
37	4	max	1843.839	2	100	5	100.01	6	.016	4	-.009	1	.115	5	
38		min	1707.605	4	0	1	0	1	0	3	-.026	6	0	2	
39	5	max	1843.839	2	100	5	100.01	6	.016	4	.061	6	.04	3	
40		min	1707.605	4	0	1	0	1	0	3	-.01	2	-.028	4	
41	M5	1	max	-4.452	4	14.472	4	-891.298	1	0	0	1	0	2	
42		min	-18.327	6	-85.087	3	-985.73	2	0	1	0	1	-.545	3	
43	2	max	2211.121	2	169.269	3	1028.014	2	0	1	.154	2	0	1	
44		min	2098.563	6	0	1	946.577	1	-.037	3	.144	1	-.388	3	
45	3	max	8178.784	2	153.378	5	199.284	2	0	1	.14	2	0	2	
46		min	7350.53	1	0	1	158.273	1	-.036	3	.126	1	-.242	3	
47	4	max	6984.15	2	152.403	5	-446.735	6	0	1	.091	2	0	1	
48		min	6313.652	1	0	1	-535.574	2	-.036	3	.085	3	-.144	3	
49	5	max	510.05	6	82.215	5	-761.94	4	0	1	-.064	6	0	1	
50		min	474.677	4	0	1	-821.255	2	-.05	3	-.07	2	-.031	3	
51	M6	1	max	118.331	6	0	251.432	6	0	1	0	1	0	1	
52		min	4.452	4	-177.431	3	213.126	1	0	1	0	1	-.496	3	
53	2	max	76.974	6	0	1	-12.819	1	0	1	.017	6	0	1	
54		min	-41.511	2	-149.089	3	-29.333	6	-.019	5	.01	1	-.36	3	
55	3	max	76.974	6	0	1	-12.819	1	0	1	-.002	1	0	1	
56		min	-41.511	2	-149.089	3	-29.333	6	-.019	5	-.009	6	-.229	3	
57	4	max	76.974	6	0	1	-12.819	1	0	1	-.013	1	0	1	
58		min	-41.511	2	-149.089	3	-29.333	6	-.019	5	-.035	6	-.099	3	
59	5	max	76.974	6	0	1	-12.819	1	0	1	-.024	1	.032	3	
60		min	-41.511	2	-149.089	3	-29.333	6	-.019	5	-.06	6	0	1	
61	M7	1	max	1829.816	2	27.38	5	41.705	2	.032	3	0	.056	3	
62		min	1688.38	6	-49.918	3	23.224	6	0	1	-.037	2	-.01	4	
63	2	max	1829.816	2	27.38	5	41.705	2	.032	3	.021	6	.08	3	
64		min	1688.38	6	-6.168	3	23.224	6	0	1	0	2	-.015	4	
65	3	max	1829.816	2	37.582	3	41.705	2	.032	3	.041	6	.067	3	
66		min	1688.38	6	-.058	2	23.224	6	0	1	.033	1	-.021	4	
67	4	max	1829.816	2	81.332	3	41.705	2	.032	3	.073	2	.015	3	
68		min	1688.38	6	-.058	2	23.224	6	0	1	.062	6	-.027	4	
69	5	max	817.153	2	0	1	504.81	6	.031	3	.07	2	0	1	
70		min	758.456	4	-79.592	5	469.553	4	0	1	.064	6	-.05	3	
71	M8	1	max	425.544	2	695.811	2	91.189	5	0	0	1	.131	2	
72		min	363.98	1	658.542	6	0	1	-.003	3	-.067	3	.12	1	
73	2	max	-4073.566	1	550.53	2	293.605	3	0	1	.007	4	-.207	1	
74		min	-4362.529	2	496.241	1	0	1	-.001	3	-.056	3	-.223	2	
75	3	max	-7312.763	1	130.845	2	297.707	3	0	1	.01	4	-.29	1	
76		min	-8137.274	2	103.917	1	0	1	-.001	3	-.025	3	-.325	2	
77	4	max	-4985.967	1	-422.782	6	296.817	3	0	1	0	1	-.235	1	
78		min	-5452.742	2	-480.975	2	0	1	-.001	3	-.058	3	-.259	2	
79	5	max	-436.91	4	-920.521	6	181.445	3	0	1	0	1	.097	2	
80		min	-487.013	6	-1012.663	2	0	1	-.002	3	-.005	4	.078	6	
81	M9	1	max	425.558	2	695.813	2	9.752	2	.003	3	.067	3	.131	2
82		min	363.992	1	658.509	6	-91.191	5	0	1	0	1	.12	6	
83	2	max	-4073.546	1	550.531	2	0	1	.001	3	.056	3	-.207	1	
84		min	-4362.506	2	496.241	1	-293.607	3	0	1	0	1	-.223	2	

Envelope Member Section Forces (Continued)

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Moment[...]	LC	z-z Moment[...]	LC	
85		3	max	-7312.76	1	130.846	2	0	1	.001	3	.025	3	-.29	1
86			min	-8137.27	2	103.919	1	-297.71	3	0	1	-.008	5	-.325	2
87		4	max	-4985.986	1	-422.782	6	3.761	2	.001	3	.058	3	-.235	1
88			min	-5452.763	2	-480.975	2	-296.828	3	0	2	0	1	-.259	2
89		5	max	-436.918	3	-920.518	6	2.106	2	.002	3	.004	5	.097	2
90			min	-487.027	6	-1012.661	2	-181.448	3	0	2	0	4	.078	6
91	M30	1	max	2306.053	2	10.352	2	-334.226	1	0	1	.08	2	.066	3
92			min	2113.537	1	-73.58	5	-394.434	2	-.07	3	.07	1	0	1
93		2	max	2998.934	2	28.258	3	46.738	2	0	2	-.06	6	.051	3
94			min	2771.528	1	0	1	41.961	6	-.005	5	-.066	2	0	1
95		3	max	2998.934	2	28.258	3	46.738	2	0	2	-.023	1	.026	3
96			min	2771.528	1	0	1	41.961	6	-.005	5	-.025	2	0	1
97		4	max	2998.934	2	28.258	3	46.738	2	0	2	.016	2	.003	4
98			min	2771.528	1	0	1	41.961	6	-.005	5	.013	6	-.003	5
99		5	max	2998.934	2	28.258	3	46.738	2	0	2	.057	2	0	2
100			min	2771.528	1	0	1	41.961	6	-.005	5	.05	6	-.023	3
101	M31	1	max	2752.828	2	0	3	0	2	.004	4	-.001	6	0	1
102			min	2507.865	6	-4.234	4	-.006	6	0	3	-.003	2	-.011	4
103		2	max	2752.828	2	0	3	0	2	.004	4	-.001	6	0	1
104			min	2507.865	6	-4.234	4	-.006	6	0	3	-.003	2	-.007	3
105		3	max	2752.828	2	0	3	0	2	.004	4	-.001	6	0	1
106			min	2507.865	6	-4.234	4	-.006	6	0	3	-.003	2	-.007	3
107		4	max	2752.828	2	0	3	0	2	.004	4	-.001	6	0	4
108			min	2507.865	6	-4.234	4	-.006	6	0	3	-.003	2	-.007	3
109		5	max	2752.828	2	0	3	0	2	.004	4	-.001	6	.004	4
110			min	2507.865	6	-4.234	4	-.006	6	0	3	-.003	2	-.007	3
111	M32	1	max	2998.927	2	0	1	-41.971	6	.005	5	.057	2	0	1
112			min	2771.522	1	-28.258	3	-46.736	2	0	1	.05	6	-.023	3
113		2	max	2998.927	2	0	1	-41.971	6	.005	5	.016	2	.001	3
114			min	2771.522	1	-28.258	3	-46.736	2	0	1	.013	6	-.003	4
115		3	max	2998.927	2	0	1	-41.971	6	.005	5	-.023	1	.026	3
116			min	2771.522	1	-28.258	3	-46.736	2	0	1	-.025	2	0	1
117		4	max	2998.927	2	0	1	-41.971	6	.005	5	-.06	6	.051	3
118			min	2771.522	1	-28.258	3	-46.736	2	0	1	-.066	2	0	1
119		5	max	2306.047	2	73.579	5	394.421	2	.07	3	.08	2	.066	3
120			min	2113.532	1	0	1	334.215	1	0	1	.07	1	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 [k-ft]	Mnzz/om... Cb	Eqn	
1	M1	RE2x1	.868	22.75	3	.152	4.375	z	3	13711.366	35928.144	.749	1.497	1... H1-1a
2	M2	TU2x1x2	.902	3.938	3	.152	0	z	6	7068.688	11892.216	.368	.615	1... H1-1b
3	M3	TU2x1x2	.559	42	4	.418	0	z	3	7068.776	11892.216	.368	.615	2... H1-1a
4	M4	TU2x1x2	.557	21	5	.069	0	z	4	7068.776	11892.216	.368	.615	1... H1-1a
5	M5	RE2x1	.868	22.75	3	.152	4.375	z	3	13711.366	35928.144	.749	1.497	1... H1-1a
6	M6	TU2x1x2	.902	3.938	3	.152	0	z	6	7068.688	11892.216	.368	.615	1... H1-1b
7	M7	TU2x1x2	.550	40.25	3	.418	40.688	z	3	7068.776	11892.216	.368	.615	1... H1-1a
8	M8	WT2x3.4	.525	19.396	3	.103	34.438	y	3	23642.553	33682.635	.809	1.182	1 H1-1a
9	M9	WT2x3.4	.525	19.396	3	.103	34.438	y	3	23642.553	33682.635	.809	1.182	1 H1-1a
10	M30	TU2x1x2	.762	0	3	.510	0	z	3	7068.776	11892.216	.368	.615	2... H3-6
11	M31	TU2x1x2	.397	0	2	.016	0	z	4	7068.776	11892.216	.368	.615	2... H1-1a
12	M32	TU2x1x2	.762	42	3	.510	40.688	z	3	7068.776	11892.216	.368	.615	2... H3-6

*** End of Calculations ***