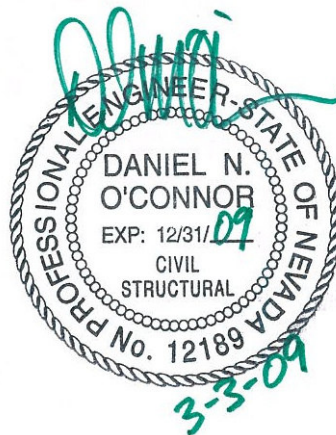
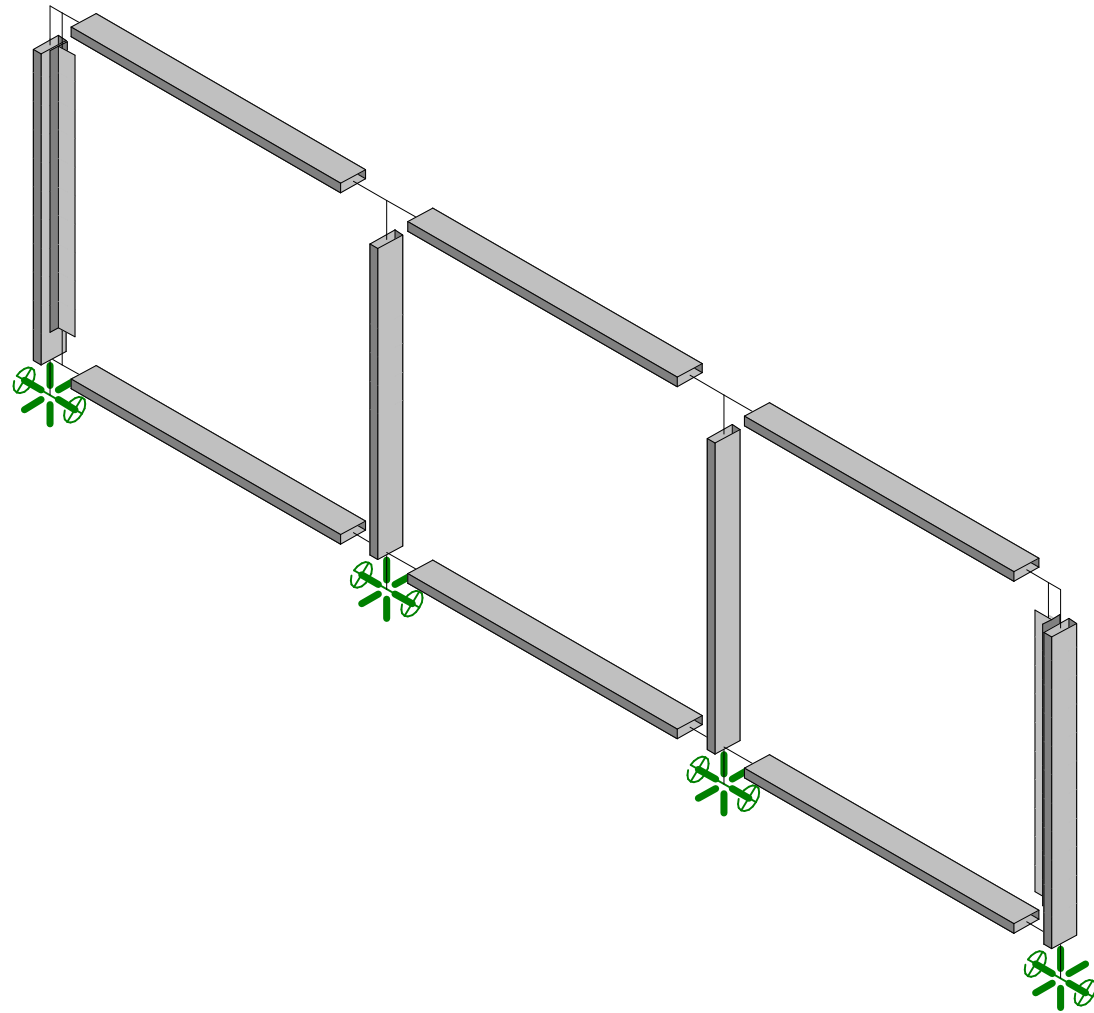
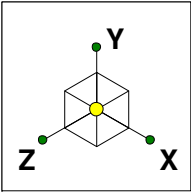


D9b—3"x1" RECT. TUBE x 42-1/2" HIGH RAIL WITH 2"x1-1/2"x1/4" TEE FOR USE WITH ADJUST-A-JAW™ AND FIXED JAW HARDWARE, WITH BOTTOM RAIL

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 (Tee) Stainless Steel, A554, Grade MT-304 or MT-316, Fy = 30 ksi Stainless Steel, LDX 2101 (UNS S32101), Fy = 60 ksi (Anchor Post and Tee)
Height:	42.5"
Anchor Post:	Carbon Steel: HSS 3x1x1/8 Tube with 2"x1.5"x1/4" Tee Stainless Steel: 3"x1"x0.120" Tube (LDX 2101) with 2"x1.5"x1/4" Tee (LDX 2101)
Intermediate Posts:	Carbon Steel: HSS 3x1x1/8 Tube Stainless Steel: 3"x1"x0.120" Tube
Top Rail:	Carbon Steel: HSS 3x1x1/8 Tube Stainless Steel: 3"x1"x0.120" Tube
Bottom Rail:	Carbon Steel: HSS 3x1x1/8 Tube Stainless Steel: 3"x1"x0.120" Tube
Number of Cables:	11
Cable Spacing:	3.08"
Cable Prestress:	325 lbs



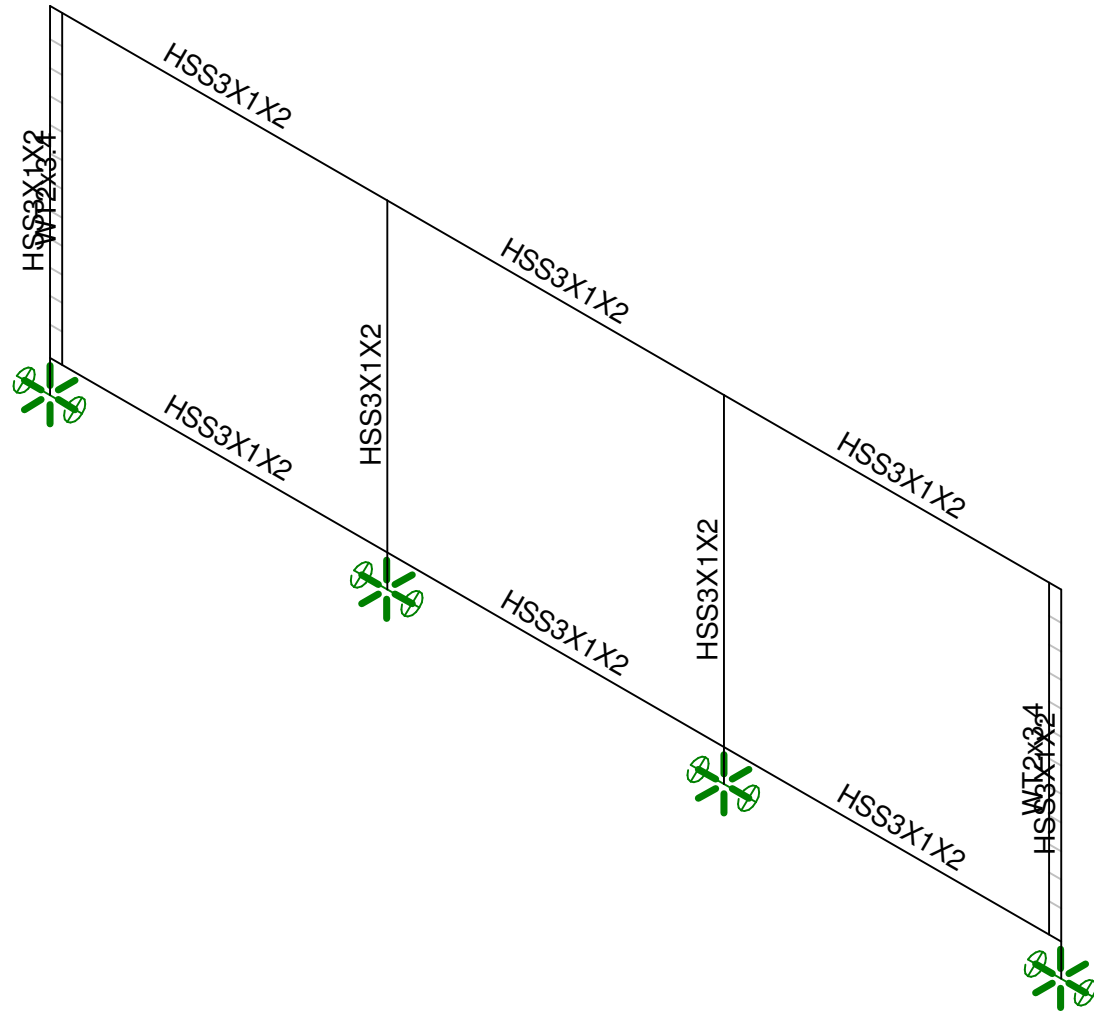
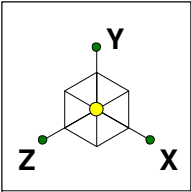
Disclaimer: Analysis and Structural Certification DOES NOT include base plates or anchorage to supporting structure. Where required by the Local Building Official, these shall be reviewed and designed by the project Structural Engineer of Record.



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D9b - 3x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL

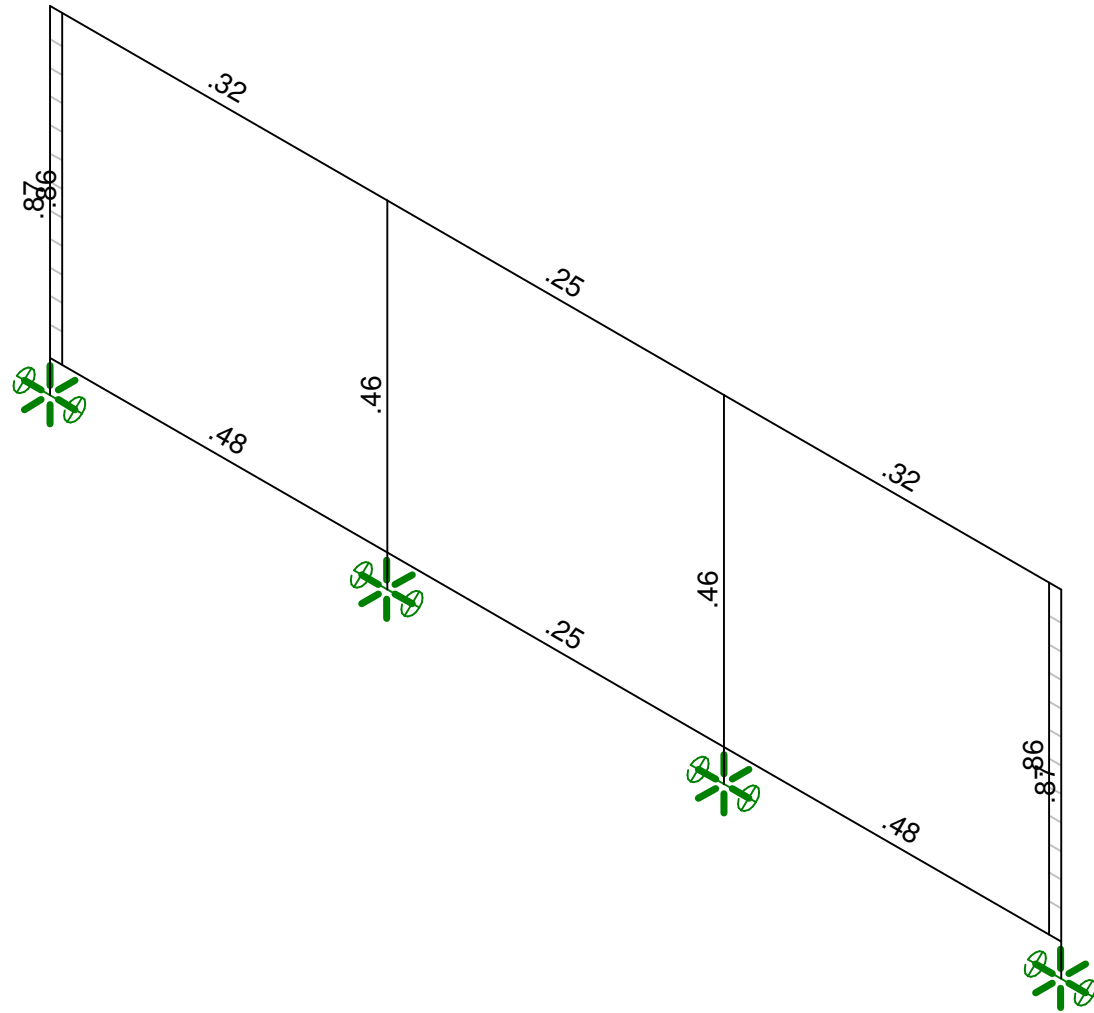
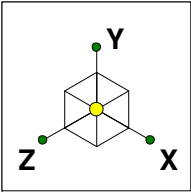
Mar 3, 2009 at 9:39 AM
D9b.R3D



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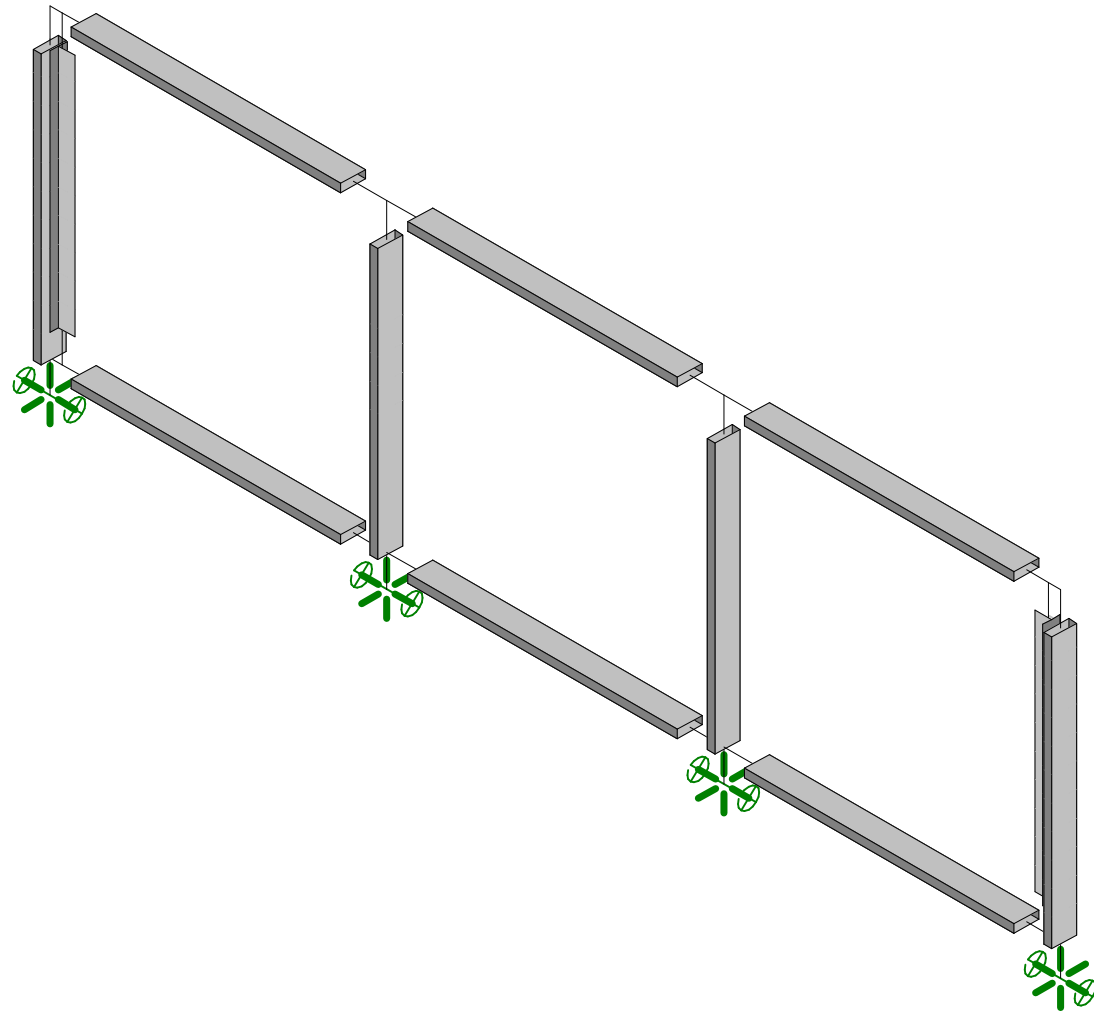
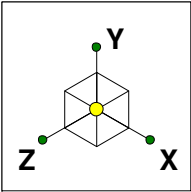
D9b - 3x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL

Mar 3, 2009 at 9:39 AM
D9b.R3D



Member Code Checks Displayed
Solution: Envelope

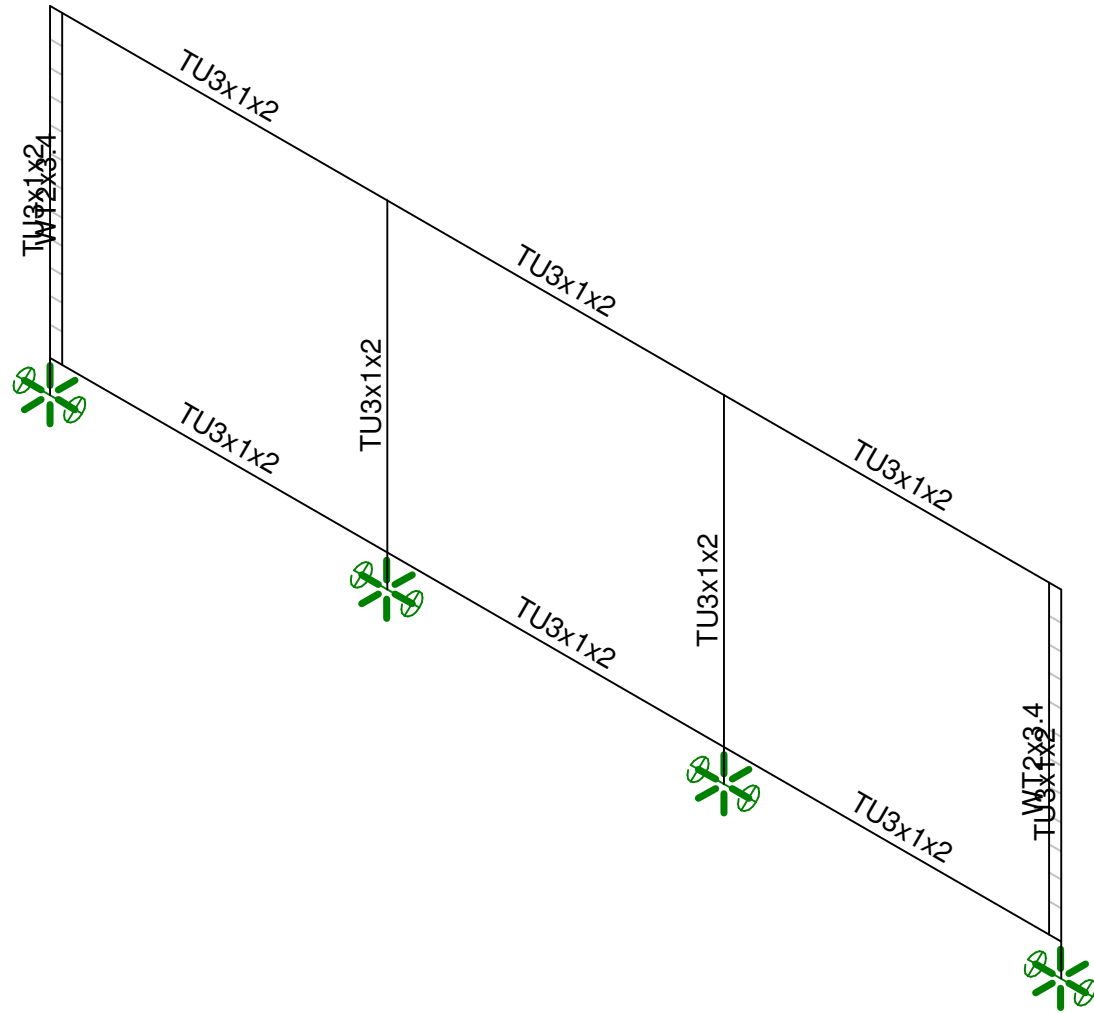
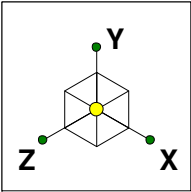
Ferrari Shields & Associates	D9b - 3x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL	
D. O'Connor		Mar 3, 2009 at 9:39 AM
08196		D9b.R3D



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D9b (SS) - 3x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL

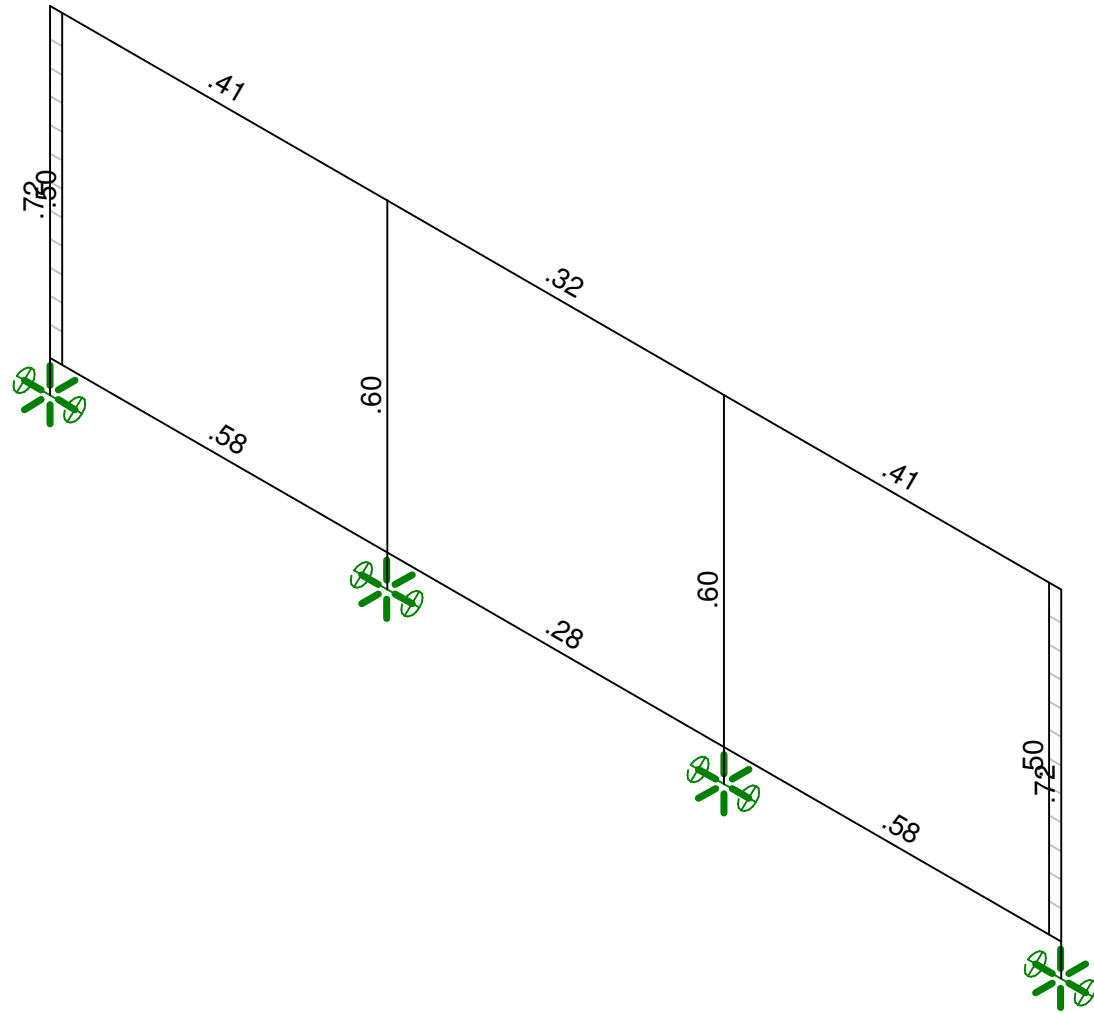
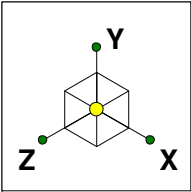
Mar 3, 2009 at 9:51 AM
D9b-ss.R3D



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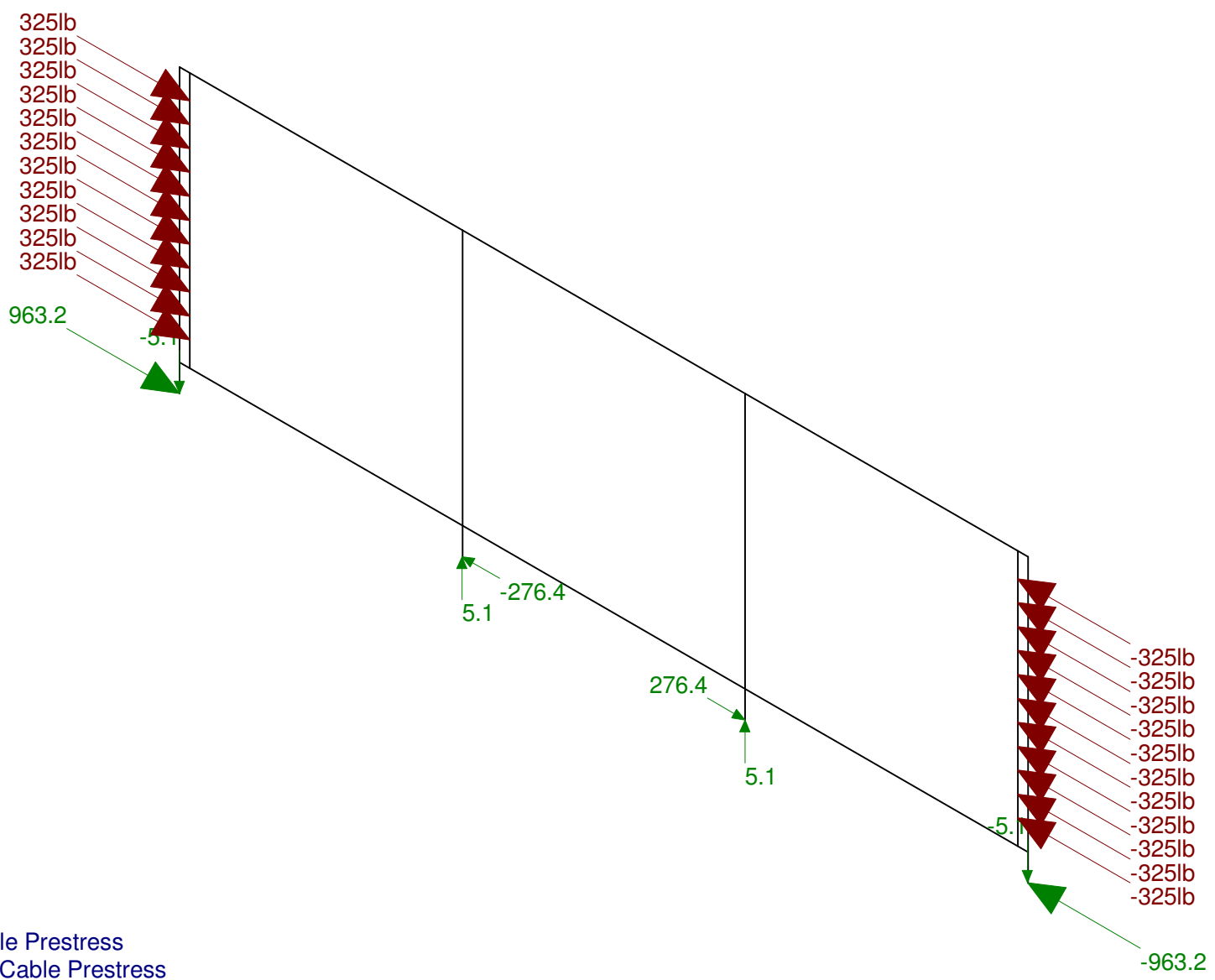
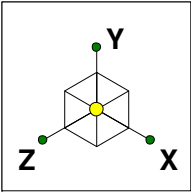
D9b (SS) - 3x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL

Mar 3, 2009 at 9:51 AM
 D9b-ss.R3D



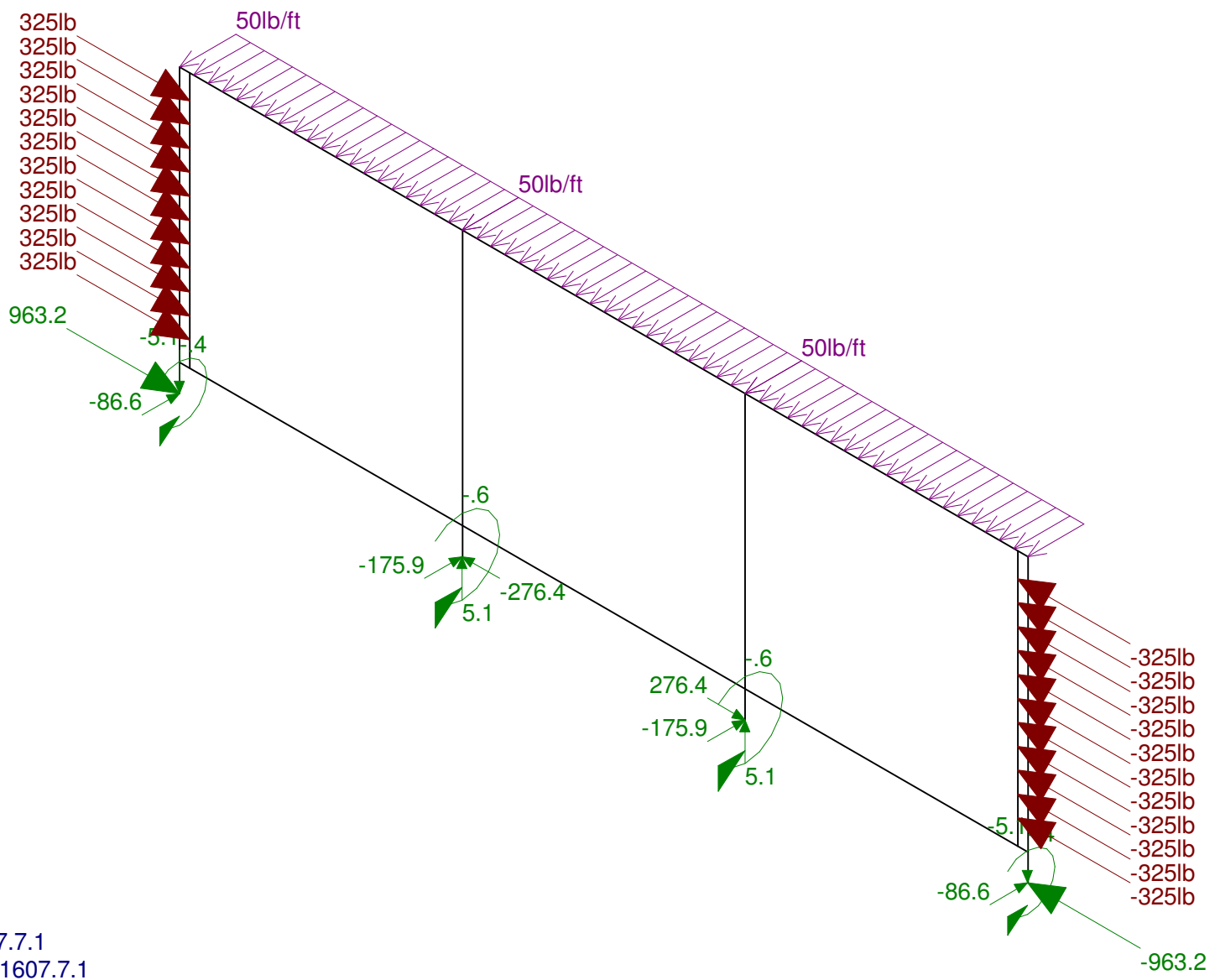
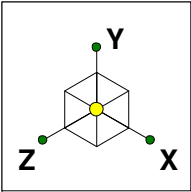
Member Code Checks Displayed
Solution: Envelope

Ferrari Shields & Associates	D9b (SS) - 3x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL	
D. O'Connor		Mar 3, 2009 at 9:51 AM
08196		D9b-ss.R3D



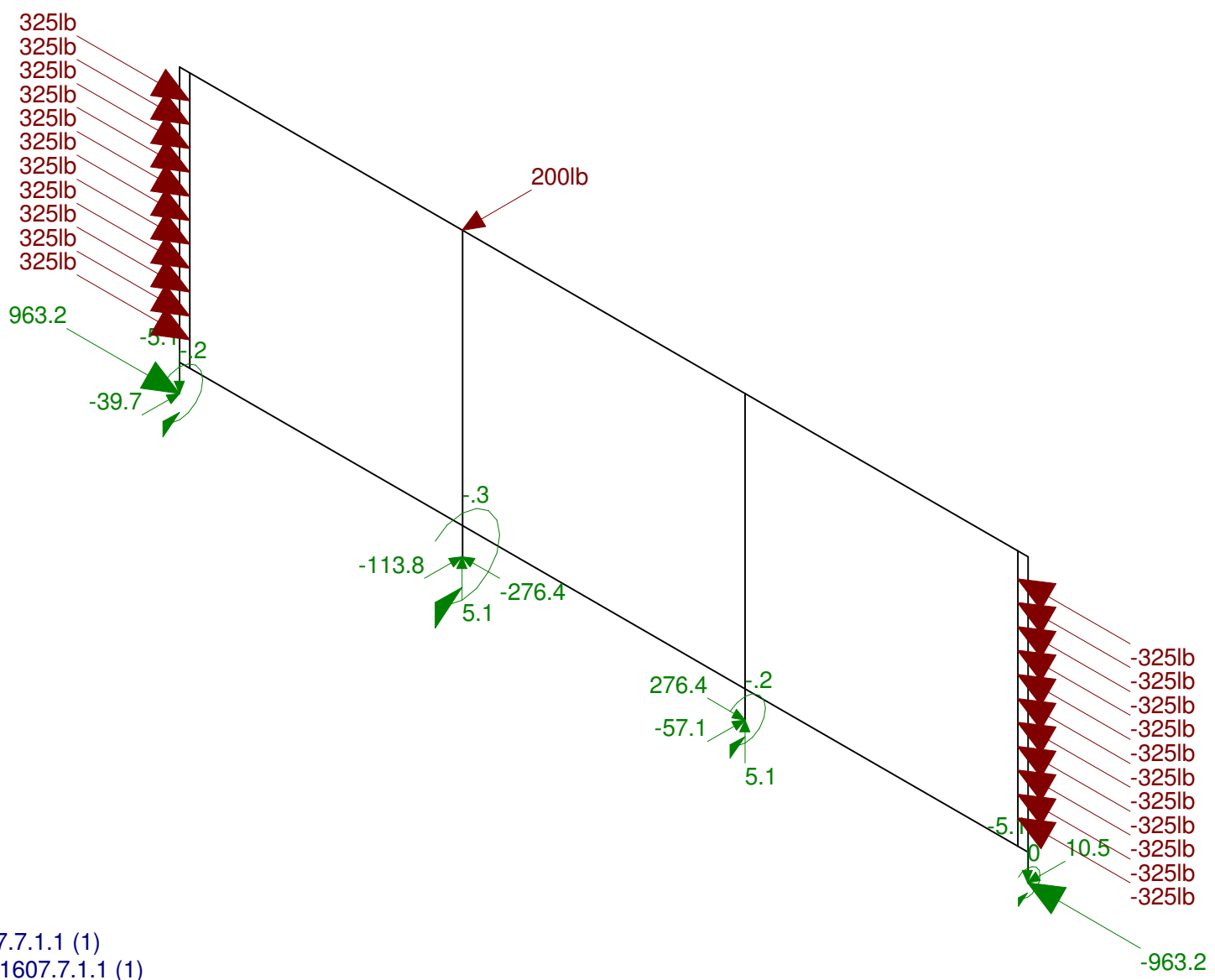
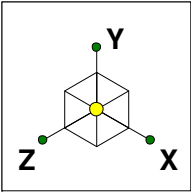
Loads: LC 1, Cable Prestress
 Results for LC 1, Cable Prestress
 Reaction units are lb and k-ft

Ferrari Shields & Associates	D9b - 3x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL	
D. O'Connor		Mar 3, 2009 at 11:19 AM
08196		D9b.R3D



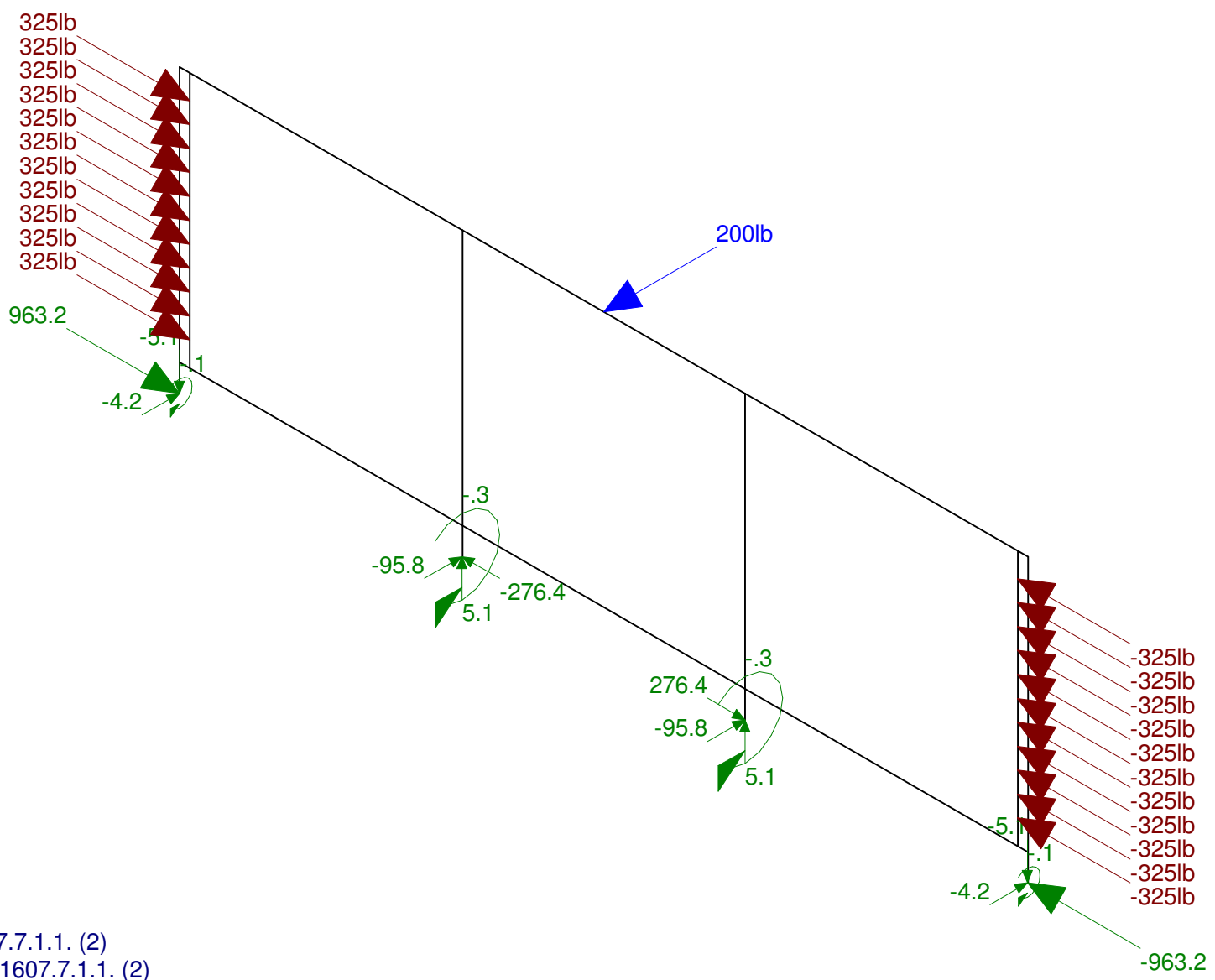
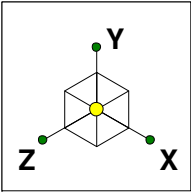
Loads: LC 3, 1607.7.1
 Results for LC 3, 1607.7.1
 Reaction units are lb and k-ft

Ferrari Shields & Associates	D9b - 3x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL	
D. O'Connor		Mar 3, 2009 at 11:19 AM
08196		D9b.R3D



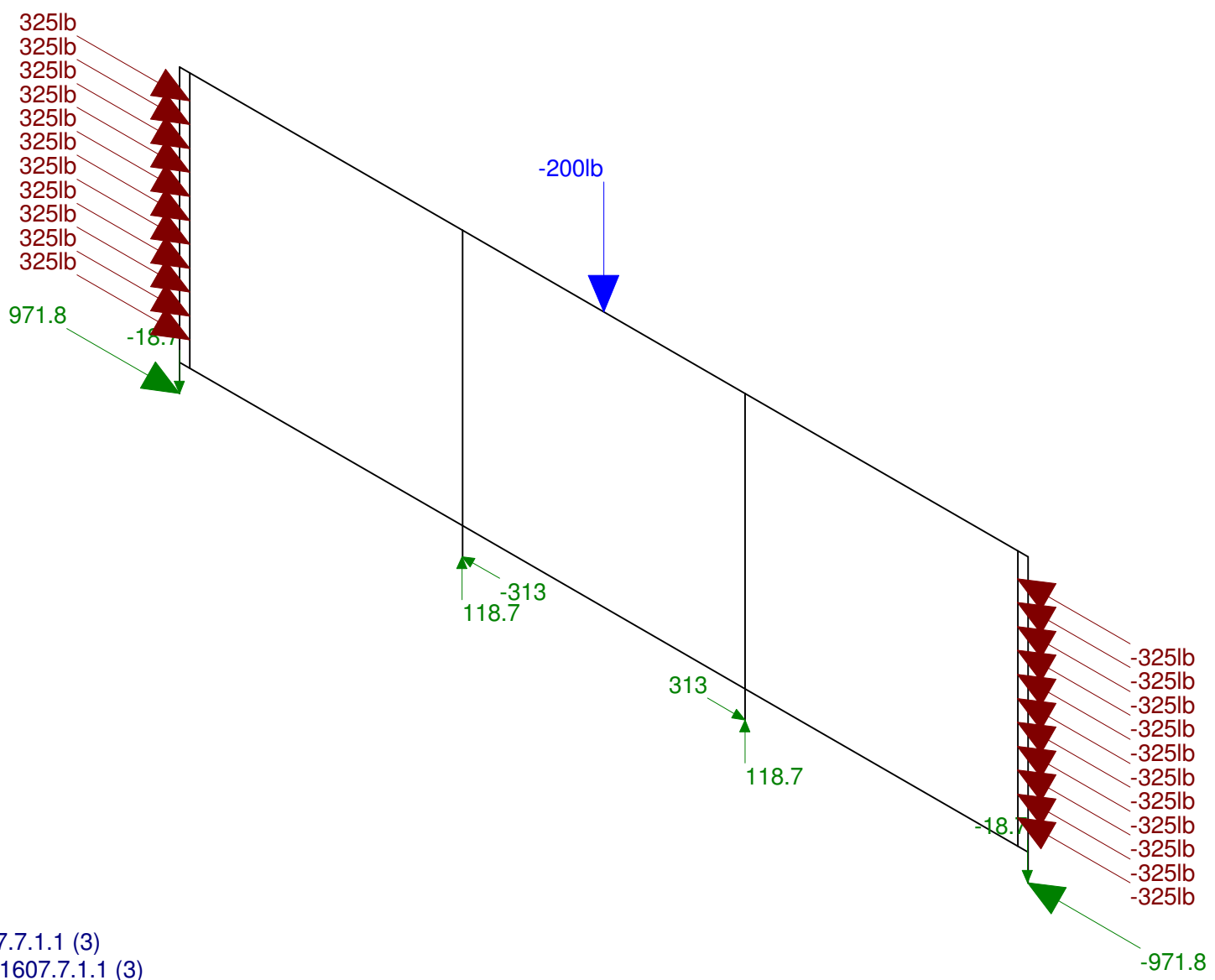
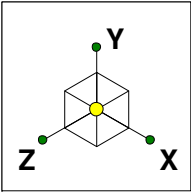
Loads: LC 4, 1607.7.1.1 (1)
 Results for LC 4, 1607.7.1.1 (1)
 Reaction units are lb and k-ft

Ferrari Shields & Associates	D9b - 3x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL	
D. O'Connor		Mar 3, 2009 at 11:20 AM
08196		D9b.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	D9b - 3x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL	
D. O'Connor		Mar 3, 2009 at 11:20 AM
08196		D9b.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	D9b - 3x1 TUBE x 42-1/2" HIGH RAIL W/ T2x1.5x0.25 W/ BTM RAIL	
D. O'Connor		Mar 3, 2009 at 11:20 AM
08196		D9b.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 (1E5 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	HSS3X1X2	Beam	Tube	A500Gr42	Typical	.841	.138	.818	.409
2	POST	HSS3X1X2	Column	Tube	A500Gr42	Typical	.841	.138	.818	.409
3	TEE	WT2x3.4	Column	W Tee	A36	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	POST	Column	Tube	A500Gr42	Typical
2	M2	N3	N4		90	POST	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	POST	Column	Tube	A500Gr42	Typical
7	M7	N8	N6		90	RAIL	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	RAIL	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	RAIL	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	1061.772	2	-5.045	2	0	1	0	1	0	1	0
2		min	963.229	1	-18.657	6	-86.592	3	-.415	3	0	1	0
3	N3	max	-276.427	1	118.655	6	0	1	0	1	0	1	0
4		min	-312.989	6	5.045	2	-175.89	3	-.565	3	0	1	0
5	N5	max	-963.229	1	-5.049	2	10.525	4	.002	2	0	1	0
6		min	-1061.771	2	-18.664	6	-86.593	3	-.415	3	0	1	0
7	N7	max	312.975	6	118.664	6	0	1	0	1	0	1	0
8		min	276.445	1	5.047	2	-175.89	3	-.565	3	0	1	0
9	Totals:	max	.021	2	199.998	6	0	1					
10		min	.019	1	-.002	2	-524.964	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	-5.045	2	0	1	1061.772	2	0	1	0	1
2			min	-18.657	6	-86.592	3	963.229	1	0	1	-415	3
3		2	max	1607.961	2	71.391	5	-452.996	1	.013	3	-.083	4
4			min	1538.267	6	-19.331	2	-491.798	2	0	2	-.089	2
5		3	max	7013.997	2	66.957	5	-77.517	1	.013	3	-.132	1
6			min	6296.801	1	-19.719	2	-97.189	2	0	2	-.147	2
7		4	max	5962.778	2	66.538	5	253.935	2	.013	3	-.102	1
8			min	5387.234	1	-12.226	2	211.65	6	-.001	2	-.112	2
9		5	max	299.355	6	38.133	5	474.776	2	.017	3	.042	2
10			min	270.296	4	-10.745	3	440.69	4	-.002	2	.038	6
11	M2	1	max	118.655	6	0	1	-276.431	1	0	1	0	1
12			min	5.045	2	-175.894	3	-313.091	6	0	1	-565	3
13		2	max	55.812	6	0	1	32.835	6	.012	5	-.009	1
14			min	-64.462	2	-164.953	3	16.358	1	-.001	2	-.016	6
15		3	max	55.812	6	0	1	32.839	6	.012	5	.013	6
16			min	-64.462	2	-164.953	3	16.358	1	-.001	2	.006	1
17		4	max	55.812	6	2.46	2	32.706	6	.012	5	.042	6
18			min	-64.462	2	-164.953	3	16.358	1	-.001	2	.02	1
19		5	max	55.812	6	2.46	2	32.706	6	.012	5	.071	6
20			min	-64.462	2	-164.953	3	16.358	1	-.001	2	.034	1
21	M3	1	max	472.063	2	37.546	5	-266.85	4	.001	2	.042	2
22			min	438.356	4	-10.128	3	-295.846	6	-.017	3	.038	6
23		2	max	1823.415	2	0	1	-44.198	6	.001	2	.115	2
24			min	1682.569	6	-57.048	3	-64.46	2	-.018	5	.1	6
25		3	max	1823.415	2	0	1	-44.198	6	.001	2	.062	6
26			min	1682.569	6	-50.004	4	-64.46	2	-.018	5	.053	1
27		4	max	1823.415	2	30.452	3	-44.198	6	.001	2	.023	6
28			min	1682.569	6	-50.004	4	-64.46	2	-.018	5	.002	1
29		5	max	1823.415	2	74.202	3	-44.198	6	.001	2	-.016	6
30			min	1682.569	6	-50.004	4	-64.46	2	-.018	5	-.054	2
31	M4	1	max	1841.341	2	51.945	4	0	1	.013	4	.055	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	1704.887	4	-100	5	-99.993	6	0	3	-.017	2	0	1	
33	2	max	1841.341	2	51.945	4	0	1	.013	4	-.015	1	.114	5	
34		min	1704.887	4	-100	5	-99.993	6	0	3	-.033	6	0	1	
35	3	max	1841.341	2	100	5	100.007	6	.013	4	-.015	1	.202	5	
36		min	1704.887	4	0	1	0	2	0	3	-.12	6	0	2	
37	4	max	1841.341	2	100	5	100.007	6	.013	4	-.015	1	.114	5	
38		min	1704.887	4	0	1	0	2	0	3	-.033	6	-.002	2	
39	5	max	1841.341	2	100	5	100.007	6	.013	4	.055	6	.027	5	
40		min	1704.887	4	0	1	0	2	0	3	-.017	2	-.029	4	
41	M5	1	max	-5.049	2	10.525	4	-963.229	1	0	1	0	.002	2	
42		min	-18.664	6	-86.593	3	-1061.771	2	0	1	0	1	-.415	3	
43	2	max	1607.961	2	71.391	5	491.8	2	0	1	.089	2	0	2	
44		min	1538.263	6	0	1	452.998	1	-.013	3	.083	4	-.287	3	
45	3	max	7014.029	2	66.957	5	97.189	2	0	1	.147	2	0	2	
46		min	6296.83	1	-.54	3	77.517	1	-.013	3	.132	1	-.186	3	
47	4	max	5962.809	2	66.538	5	-211.651	6	0	1	.112	2	0	1	
48		min	5387.262	1	-1.604	3	-253.936	2	-.013	3	.102	1	-.102	3	
49	5	max	299.36	6	38.133	5	-440.691	4	0	1	-.038	6	0	1	
50		min	270.303	4	-10.745	3	-474.777	2	-.017	3	-.042	2	-.017	3	
51	M6	1	max	118.664	6	0	313.078	6	0	1	0	1	0	1	
52		min	5.047	2	-175.894	3	276.45	1	0	1	0	1	-.565	3	
53	2	max	55.822	6	0	1	-16.356	1	0	1	.016	6	0	1	
54		min	-64.461	2	-164.953	3	-32.785	6	-.013	4	.009	1	-.418	3	
55	3	max	55.822	6	0	1	-16.356	1	0	1	-.006	1	0	1	
56		min	-64.461	2	-164.953	3	-32.785	6	-.013	4	-.013	6	-.273	3	
57	4	max	55.822	6	0	1	-16.356	1	0	1	-.02	1	0	1	
58		min	-64.461	2	-164.953	3	-32.785	6	-.013	4	-.042	6	-.129	3	
59	5	max	55.822	6	0	1	-16.356	1	0	1	-.034	1	.018	5	
60		min	-64.461	2	-164.953	3	-32.785	6	-.013	4	-.071	6	0	2	
61	M7	1	max	1823.417	2	17.655	5	64.458	2	.018	5	-.016	6	.039	5
62		min	1682.572	6	-74.202	3	44.2	6	0	1	-.054	2	-.016	4	
63	2	max	1823.417	2	17.655	5	64.458	2	.018	5	.023	6	.063	3	
64		min	1682.572	6	-30.452	3	44.2	6	0	1	.002	1	-.016	4	
65	3	max	1823.417	2	17.655	5	64.458	2	.018	5	.062	6	.07	3	
66		min	1682.572	6	-.635	2	44.2	6	0	1	.053	1	-.016	4	
67	4	max	1823.417	2	57.048	3	64.458	2	.018	5	.115	2	.04	3	
68		min	1682.572	6	-.635	2	44.2	6	0	1	.1	6	-.017	4	
69	5	max	472.064	2	10.127	3	295.85	6	.017	3	.042	2	0	1	
70		min	438.357	4	-37.546	5	266.857	4	0	1	.038	6	-.017	3	
71	M8	1	max	632.014	2	1244.683	2	50.714	5	0	1	0	1	.246	2
72		min	558.389	1	1167.585	1	0	1	-.001	3	-.049	3	.225	1	
73	2	max	-3296.238	1	993.372	2	124.752	3	0	1	.005	4	-.275	1	
74		min	-3524.228	2	895.778	1	0	1	0	3	-.041	3	-.298	2	
75	3	max	-6238.245	1	240.257	2	128.206	3	0	1	.006	4	-.366	1	
76		min	-6949.569	2	191.626	1	0	1	0	3	-.022	3	-.411	2	
77	4	max	-4174.983	1	-755.602	6	127.402	3	0	1	0	1	-.311	1	
78		min	-4564.606	2	-859.796	2	0	1	0	3	-.029	3	-.343	2	
79	5	max	-211.717	4	-1240.533	6	88.559	3	0	1	.002	3	.156	2	
80		min	-255.175	6	-1351.352	2	0	1	0	3	-.002	4	.133	6	
81	M9	1	max	632.005	2	1244.667	2	2.244	2	.001	3	.049	3	.246	2
82		min	558.382	1	1167.57	1	-50.715	5	0	1	0	1	.225	1	
83	2	max	-3296.227	1	993.367	2	0	1	0	3	.041	3	-.275	1	
84		min	-3524.217	2	895.773	1	-124.753	3	0	2	0	1	-.298	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	-6238.214	1	240.258	2	0	1	0	3	.022	3	-.366	1
86			min	-6949.535	2	191.628	1	-128.206	3	0	2	-.002	5	-4.11	2
87		4	max	-4174.958	1	-755.601	6	8.436	2	0	3	.029	3	-.311	1
88			min	-4564.578	2	-859.794	2	-127.4	3	0	2	0	2	-.343	2
89		5	max	-211.708	4	-1240.531	6	5.859	2	0	3	.001	5	.156	2
90			min	-255.173	6	-1351.352	2	-88.559	3	0	2	-.002	3	.133	6
91	M30	1	max	1841.843	2	2.477	2	-506.156	1	0	1	.161	2	.024	3
92			min	1686.29	1	-41.212	5	-576.24	2	-.05	3	.145	1	0	1
93		2	max	3081.319	2	10.898	3	70.356	2	0	2	-.095	1	.02	3
94			min	2849.665	1	0	1	63.559	6	-.003	5	-.103	2	0	1
95		3	max	3081.319	2	10.898	3	70.356	2	0	2	-.038	1	.01	3
96			min	2849.665	1	0	1	63.559	6	-.003	5	-.042	2	0	1
97		4	max	3081.319	2	10.898	3	70.356	2	0	2	.02	2	.002	4
98			min	2849.665	1	0	1	63.559	6	-.003	5	.017	6	-.002	5
99		5	max	3081.319	2	10.898	3	70.356	2	0	2	.081	2	0	2
100			min	2849.665	1	0	1	63.559	6	-.003	5	.072	6	-.011	5
101	M31	1	max	2762.061	2	0	1	-.001	1	.003	4	.001	6	.001	5
102			min	2518.431	6	-2.463	4	-.006	6	0	3	0	1	-.005	4
103		2	max	2762.061	2	0	1	-.001	1	.003	4	.001	6	.001	5
104			min	2518.431	6	-2.463	4	-.006	6	0	3	0	1	-.003	4
105		3	max	2762.061	2	0	1	-.001	1	.003	4	.001	6	.001	5
106			min	2518.431	6	-2.463	4	-.006	6	0	3	0	1	-.002	3
107		4	max	2762.061	2	0	1	-.001	1	.003	4	.001	6	.002	4
108			min	2518.431	6	-2.463	4	-.006	6	0	3	0	1	-.002	3
109		5	max	2762.061	2	0	1	-.001	1	.003	4	.001	6	.004	4
110			min	2518.431	6	-2.463	4	-.006	6	0	3	0	1	-.002	3
111	M32	1	max	3081.337	2	0	1	-63.569	6	.003	5	.081	2	0	1
112			min	2849.682	1	-10.898	3	-70.36	2	0	1	.072	6	-.011	5
113		2	max	3081.337	2	0	1	-63.569	6	.003	5	.02	2	0	3
114			min	2849.682	1	-10.898	3	-70.36	2	0	1	.017	6	-.003	4
115		3	max	3081.337	2	0	1	-63.569	6	.003	5	-.038	1	.01	3
116			min	2849.682	1	-10.898	3	-70.36	2	0	1	-.042	2	0	1
117		4	max	3081.337	2	0	1	-63.569	6	.003	5	-.095	1	.02	3
118			min	2849.682	1	-10.898	3	-70.36	2	0	1	-.103	2	0	1
119		5	max	1841.846	2	41.212	5	576.246	2	.05	3	.161	2	.024	3
120			min	1686.293	1	0	1	506.161	1	0	1	.145	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	HSS3X1X2	.872	22.75	3	.465	0	z	2	10920.117	21154.469	.683	1.528	1... H1-1a
2	M2	HSS3X1X2	.465	3.938	3	.137	0	z	6	10920.117	21154.469	.683	1.528	1... H1-1b
3	M3	HSS3X1X2	.322	1.75	2	.152	0	z	3	10920.289	21154.469	.683	1.528	1... H1-1b
4	M4	HSS3X1X2	.254	21	6	.044	21	z	6	10920.289	21154.469	.683	1.528	1 H1-1b
5	M5	HSS3X1X2	.872	22.75	3	.465	0	z	2	10920.117	21154.469	.683	1.528	1... H1-1a
6	M6	HSS3X1X2	.465	3.938	3	.137	0	z	6	10920.117	21154.469	.683	1.528	1... H1-1b
7	M7	HSS3X1X2	.321	40.25	2	.152	40.688	z	3	10920.289	21154.469	.683	1.528	1... H1-1b
8	M8	WT2x3.4	.859	19	2	.209	34.438	y	2	12922.193	20209.581	.486	.709	1... H1-1a
9	M9	WT2x3.4	.861	19	2	.210	34.438	y	2	12922.193	20209.581	.486	.709	1... H1-1a
10	M30	HSS3X1X2	.484	1.75	2	.325	0	z	3	10920.289	21154.469	.683	1.528	1... H1-1a
11	M31	HSS3X1X2	.253	0	2	.006	0	z	4	10920.289	21154.469	.683	1.528	2... H1-1a
12	M32	HSS3X1X2	.484	40.25	2	.325	40.688	z	3	10920.289	21154.469	.683	1.528	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	TU3x1x2	Beam	Tube	SS316	Typical	.902	.149	.918	.41
2	POST	TU3x1x2	Column	Tube	SS316	Typical	.902	.149	.918	.41
3	EPOST	TU3x1x2	Column	Tube	LDX2101	Typical	.902	.149	.918	.41
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	LDX2101	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	LDX2101	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	1104.852	2	-4.541	2	0	1	0	1	0	1	0	1
2		min	1002.552	1	-18.188	6	-87.167	3	-.41	3	0	1	0	1
3	N3	max	-284.575	1	118.184	6	0	1	0	1	0	1	0	1
4		min	-321.298	6	4.539	2	-175.33	3	-.565	3	0	1	0	1
5	N5	max	-1002.545	1	-4.536	2	10.149	4	.002	2	0	1	0	1
6		min	-1104.844	2	-18.186	6	-87.177	3	-.41	3	0	1	0	1
7	N7	max	321.26	6	118.189	6	0	1	0	1	0	1	0	1
8		min	284.568	1	4.537	2	-175.331	3	-.565	3	0	1	0	1
9	Totals:	max	0	1	199.999	6	0	1						
10		min	0	2	0	2	-525.005	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	-4.541	2	0	1	1104.852	2	0	1	0	1
2			min	-18.188	6	-87.167	3	1002.552	1	0	1	0	3
3		2	max	1534.343	2	67.769	5	-478.304	1	.012	3	-.086	4
4			min	1470.83	6	-19.372	2	-519.259	2	0	2	-.092	2
5		3	max	6986.216	2	63.686	5	-82.78	1	.012	3	-.137	1
6			min	6271.092	1	-19.533	2	-103.609	2	0	2	-.152	2
7		4	max	5945.454	2	63.297	5	266.316	2	.012	3	-.106	1
8			min	5371.319	1	-11.898	2	221.87	6	-.001	2	-.116	2
9		5	max	298.99	6	35.541	5	495.999	2	.016	3	.045	2
10			min	268.6	4	-15.162	3	460.448	4	-.002	2	.04	6
11	M2	1	max	118.184	6	0	1	-284.579	1	0	1	0	1
12			min	4.539	2	-175.334	3	-321.398	6	0	1	0	3
13		2	max	53.665	6	0	1	33.498	6	.011	5	-.009	1
14			min	-66.784	2	-164.942	3	17.005	1	-.001	2	-.016	6
15		3	max	53.665	6	0	1	33.502	6	.011	5	.013	6
16			min	-66.784	2	-164.942	3	17.005	1	-.001	2	.006	1
17		4	max	53.665	6	2.467	2	33.378	6	.011	5	.043	6
18			min	-66.784	2	-164.942	3	17.005	1	-.001	2	.021	1
19		5	max	53.665	6	2.467	2	33.378	6	.011	5	.072	6
20			min	-66.784	2	-164.942	3	17.005	1	-.001	2	.036	1
21	M3	1	max	493.332	2	34.932	5	-265.023	4	.001	2	.045	2
22			min	458.149	4	-14.678	3	-295.347	6	-.017	3	.04	6
23		2	max	1819.495	2	0	1	-46.361	6	.001	2	.119	2
24			min	1678.971	6	-56.852	3	-66.803	2	-.016	5	.104	6
25		3	max	1819.495	2	0	1	-46.361	6	.001	2	.064	6
26			min	1678.971	6	-49.932	4	-66.803	2	-.016	5	.055	1
27		4	max	1819.495	2	30.648	3	-46.361	6	.001	2	.023	6
28			min	1678.971	6	-49.932	4	-66.803	2	-.016	5	.002	1
29		5	max	1819.495	2	74.398	3	-46.361	6	.001	2	-.018	6
30			min	1678.971	6	-49.932	4	-66.803	2	-.016	5	-.057	2
31	M4	1	max	1838.133	2	51.916	4	0	2	.012	4	.054	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	1701.94	4	-100	5	-99.993	6	0	3	-.017	2	0	1	
33	2	max	1838.133	2	51.916	4	0	2	.012	4	-.016	1	.115	5	
34		min	1701.94	4	-100	5	-99.993	6	0	3	-.033	6	0	1	
35	3	max	1838.133	2	100	5	100.007	6	.012	4	-.016	1	.203	5	
36		min	1701.94	4	0	1	0	1	0	3	-.121	6	0	2	
37	4	max	1838.133	2	100	5	100.007	6	.012	4	-.016	1	.115	5	
38		min	1701.94	4	0	1	0	1	0	3	-.033	6	-.002	2	
39	5	max	1838.133	2	100	5	100.007	6	.012	4	.054	6	.028	5	
40		min	1701.94	4	0	1	0	1	0	3	-.017	2	-.029	4	
41	M5	1	max	-4.536	2	10.149	4	-1002.545	1	0	1	0	.002	2	
42		min	-18.186	6	-87.177	3	-1104.844	2	0	1	0	1	-.41	3	
43	2	max	1534.381	2	67.766	5	519.259	2	0	1	.092	2	0	2	
44		min	1470.859	6	0	1	478.303	1	-.012	3	.086	4	-.287	3	
45	3	max	6986.215	2	63.683	5	103.608	2	0	1	.152	2	0	2	
46		min	6271.09	1	-4.243	3	82.779	1	-.012	3	.137	1	-.186	3	
47	4	max	5945.43	2	63.296	5	-221.87	6	0	1	.116	2	0	1	
48		min	5371.298	1	-5.271	3	-266.316	2	-.012	3	.106	1	-.102	3	
49	5	max	298.979	6	35.54	5	-460.446	4	0	1	-.04	6	0	1	
50		min	268.592	4	-15.165	3	-495.997	2	-.016	3	-.045	2	-.017	3	
51	M6	1	max	118.189	6	0	1	321.36	6	0	1	0	1	1	
52		min	4.537	2	-175.335	3	284.572	1	0	1	0	1	-.565	3	
53	2	max	53.673	6	0	1	-17.007	1	0	1	.016	6	0	1	
54		min	-66.786	2	-164.943	3	-33.455	6	-.012	4	.009	1	-.418	3	
55	3	max	53.673	6	0	1	-17.007	1	0	1	-.006	1	0	1	
56		min	-66.786	2	-164.943	3	-33.455	6	-.012	4	-.013	6	-.274	3	
57	4	max	53.673	6	0	1	-17.007	1	0	1	-.021	1	0	1	
58		min	-66.786	2	-164.943	3	-33.455	6	-.012	4	-.043	6	-.13	3	
59	5	max	53.673	6	0	1	-17.007	1	0	1	-.036	1	.016	5	
60		min	-66.786	2	-164.943	3	-33.455	6	-.012	4	-.072	6	0	2	
61	M7	1	max	1819.492	2	17.463	5	66.804	2	.016	5	-.018	6	.039	5
62		min	1678.97	6	-74.399	3	46.366	6	0	1	-.057	2	-.016	4	
63	2	max	1819.492	2	17.463	5	66.804	2	.016	5	.023	6	.064	3	
64		min	1678.97	6	-30.649	3	46.366	6	0	1	.002	1	-.016	4	
65	3	max	1819.492	2	17.463	5	66.804	2	.016	5	.064	6	.072	3	
66		min	1678.97	6	-.653	2	46.366	6	0	1	.055	1	-.016	4	
67	4	max	1819.492	2	56.851	3	66.804	2	.016	5	.119	2	.041	3	
68		min	1678.97	6	-.653	2	46.366	6	0	1	.104	6	-.016	4	
69	5	max	493.33	2	14.68	3	295.336	6	.017	3	.045	2	0	1	
70		min	458.147	4	-34.931	5	265.016	4	0	1	.04	6	-.016	3	
71	M8	1	max	692.366	2	1215.861	2	49.268	5	0	1	0	.247	2	
72		min	612.688	1	1140.606	1	0	1	-.001	3	-.045	3	.226	1	
73	2	max	-3240.472	1	974.029	2	118.914	3	0	1	.005	4	-.264	1	
74		min	-3462.661	2	878.408	1	0	1	0	3	-.036	3	-.286	2	
75	3	max	-6210.393	1	237.741	2	121.894	3	0	1	.006	4	-.352	1	
76		min	-6919.429	2	189.946	1	0	1	0	3	-.019	3	-.395	2	
77	4	max	-4155.984	1	-736.411	6	121.203	3	0	1	0	1	-.3	1	
78		min	-4543.556	2	-838.067	2	0	1	0	3	-.027	3	-.331	2	
79	5	max	-207.894	4	-1217.008	6	83.998	3	0	1	.002	3	.158	2	
80		min	-252.646	6	-1326.162	2	0	1	0	3	-.002	4	.135	6	
81	M9	1	max	692.384	2	1215.86	2	1.586	2	.001	3	.045	3	.247	2
82		min	612.704	1	1140.604	1	-49.269	5	0	1	0	1	.226	1	
83	2	max	-3240.448	1	974.037	2	0	1	0	3	.036	3	-.264	1	
84		min	-3462.634	2	878.415	1	-118.917	3	0	2	0	1	-.286	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	-6210.396	1	237.745	2	0	1	0	3	.019	3	-.352	1
86			min	-6919.433	2	189.95	1	-121.896	3	0	2	-.003	5	-.395	2
87		4	max	-4156.007	1	-736.413	6	8.364	2	0	3	.027	3	-.3	1
88			min	-4543.582	2	-838.069	2	-121.21	3	0	2	0	2	-.331	2
89		5	max	-207.904	4	-1217.007	6	5.791	2	0	3	.001	5	.158	2
90			min	-252.662	6	-1326.162	2	-84.002	3	0	2	-.002	3	.135	6
91	M30	1	max	1918.072	2	1.847	2	-559.126	1	0	1	.166	2	.023	3
92			min	1756.523	1	-40.245	5	-635.172	2	-.046	3	.15	1	0	1
93		2	max	3128.327	2	10.348	3	72.176	2	0	2	-.097	1	.019	3
94			min	2892.589	1	0	1	65.237	6	-.003	5	-.106	2	0	1
95		3	max	3128.327	2	10.348	3	72.176	2	0	2	-.039	1	.01	3
96			min	2892.589	1	0	1	65.237	6	-.003	5	-.043	2	0	1
97		4	max	3128.327	2	10.348	3	72.176	2	0	2	.02	2	.002	4
98			min	2892.589	1	0	1	65.237	6	-.003	5	.017	6	-.002	5
99		5	max	3128.327	2	10.348	3	72.176	2	0	2	.083	2	0	2
100			min	2892.589	1	0	1	65.237	6	-.003	5	.074	6	-.01	5
101	M31	1	max	2799.45	2	0	3	0	2	.002	4	.001	6	.001	5
102			min	2552.621	6	-2.257	4	-.004	6	0	3	0	1	-.004	4
103		2	max	2799.45	2	0	3	0	2	.002	4	.001	6	.001	5
104			min	2552.621	6	-2.257	4	-.004	6	0	3	0	1	-.002	4
105		3	max	2799.45	2	0	3	0	2	.002	4	.001	6	.001	5
106			min	2552.621	6	-2.257	4	-.004	6	0	3	0	1	-.002	3
107		4	max	2799.45	2	0	3	0	2	.002	4	.001	6	.002	4
108			min	2552.621	6	-2.257	4	-.004	6	0	3	0	1	-.002	3
109		5	max	2799.45	2	0	3	0	2	.002	4	.001	6	.004	4
110			min	2552.621	6	-2.257	4	-.004	6	0	3	0	1	-.002	3
111	M32	1	max	3128.321	2	0	1	-65.242	6	.003	5	.083	2	0	1
112			min	2892.584	1	-10.348	3	-72.174	2	0	1	.074	6	-.01	5
113		2	max	3128.321	2	0	1	-65.242	6	.003	5	.02	2	0	3
114			min	2892.584	1	-10.348	3	-72.174	2	0	1	.017	6	-.003	4
115		3	max	3128.321	2	0	1	-65.242	6	.003	5	-.039	1	.01	3
116			min	2892.584	1	-10.348	3	-72.174	2	0	1	-.043	2	0	1
117		4	max	3128.321	2	0	1	-65.242	6	.003	5	-.097	1	.019	3
118			min	2892.584	1	-10.348	3	-72.174	2	0	1	-.106	2	0	1
119		5	max	1918.065	2	40.245	5	635.155	2	.046	3	.166	2	.023	3
120			min	1756.516	1	0	1	559.111	1	0	1	.15	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	TU3x1x2	.724	23.188	2	.334	0	z	2	12260.923	32421.557	1.052	2.403	2... H1-1a
2	M2	TU3x1x2	.600	3.938	3	.194	0	z	6	9977.739	16210.778	.526	1.202	1... H1-1b
3	M3	TU3x1x2	.412	1.75	2	.208	0	z	3	9977.855	16210.778	.526	1.202	1... H1-1b
4	M4	TU3x1x2	.315	21	6	.060	21	z	6	9977.855	16210.778	.526	1.202	1... H1-1b
5	M5	TU3x1x2	.722	23.188	2	.334	0	z	2	12260.923	32421.557	1.052	2.403	2... H1-1a
6	M6	TU3x1x2	.600	3.938	3	.194	0	z	6	9977.739	16210.778	.526	1.202	1... H1-1b
7	M7	TU3x1x2	.411	40.25	2	.208	40.688	z	3	9977.855	16210.778	.526	1.202	1... H1-1b
8	M8	WT2x3.4	.503	19	2	.123	34.438	y	2	15757.755	33682.635	.809	1.182	1... H1-1a
9	M9	WT2x3.4	.504	19	2	.124	34.438	y	2	15757.755	33682.635	.809	1.182	1... H1-1a
10	M30	TU3x1x2	.582	1.75	2	.468	0	z	3	9977.855	16210.778	.526	1.202	1... H1-1a
11	M31	TU3x1x2	.281	0	2	.007	0	z	4	9977.855	16210.778	.526	1.202	2... H1-1a
12	M32	TU3x1x2	.582	40.25	2	.468	40.688	z	3	9977.855	16210.778	.526	1.202	2... H1-1a

*** End of Calculations ***