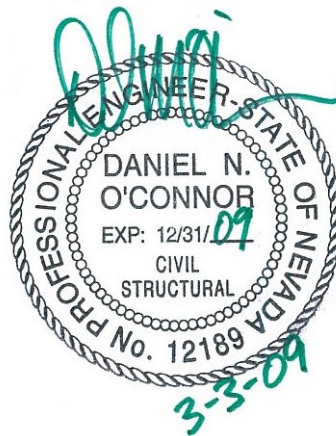
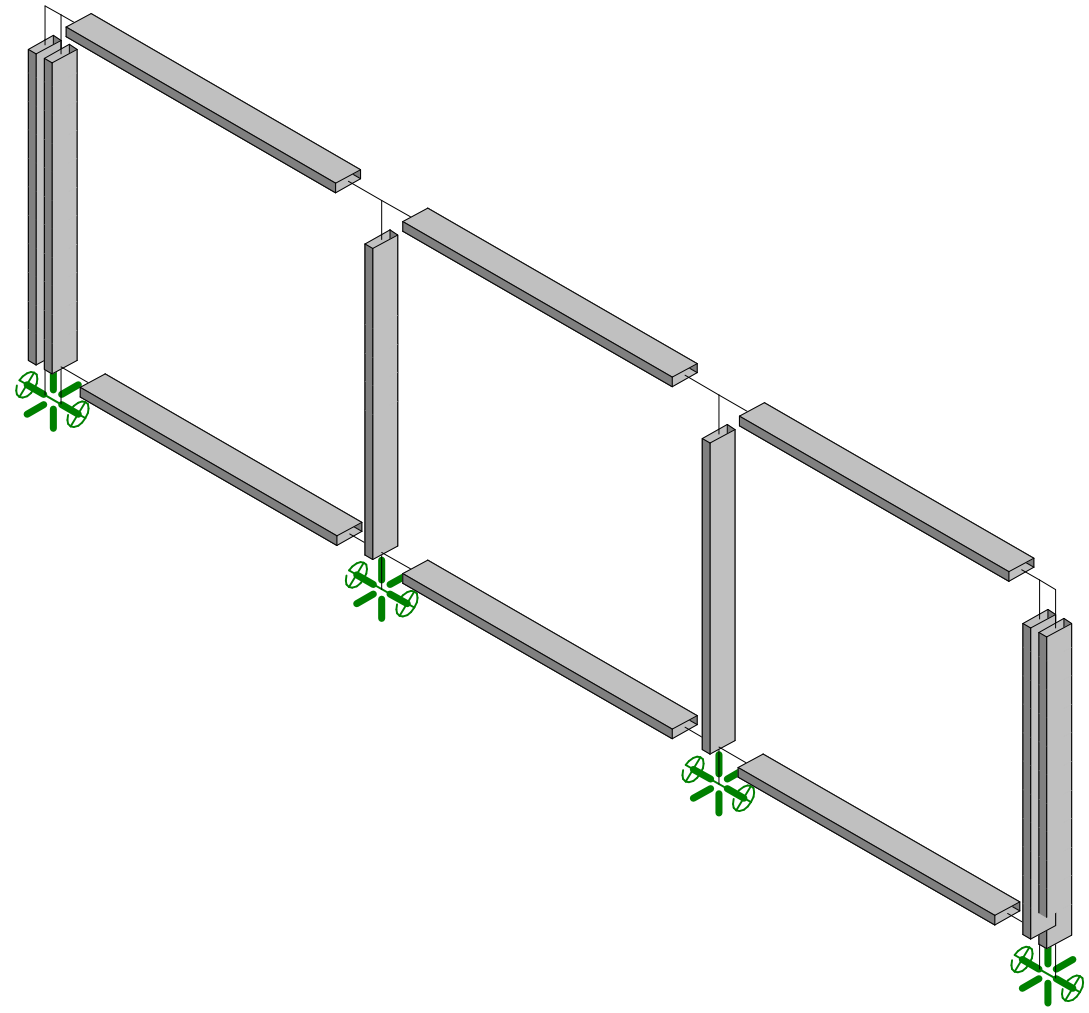
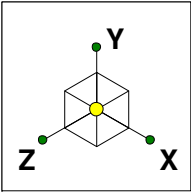


D3b—3" x 1" RECT. TUBE x 42-1/2" HIGH RAIL WITH BOTTOM RAIL

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 Stainless Steel, A554, Grade MT-304 or MT-316, Fy = 30 ksi
Height:	42.5"
Anchor Post:	Carbon Steel: Double HSS 3x1x1/8 Tube Stainless Steel: Double 3"x1"x0.120" Tube
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



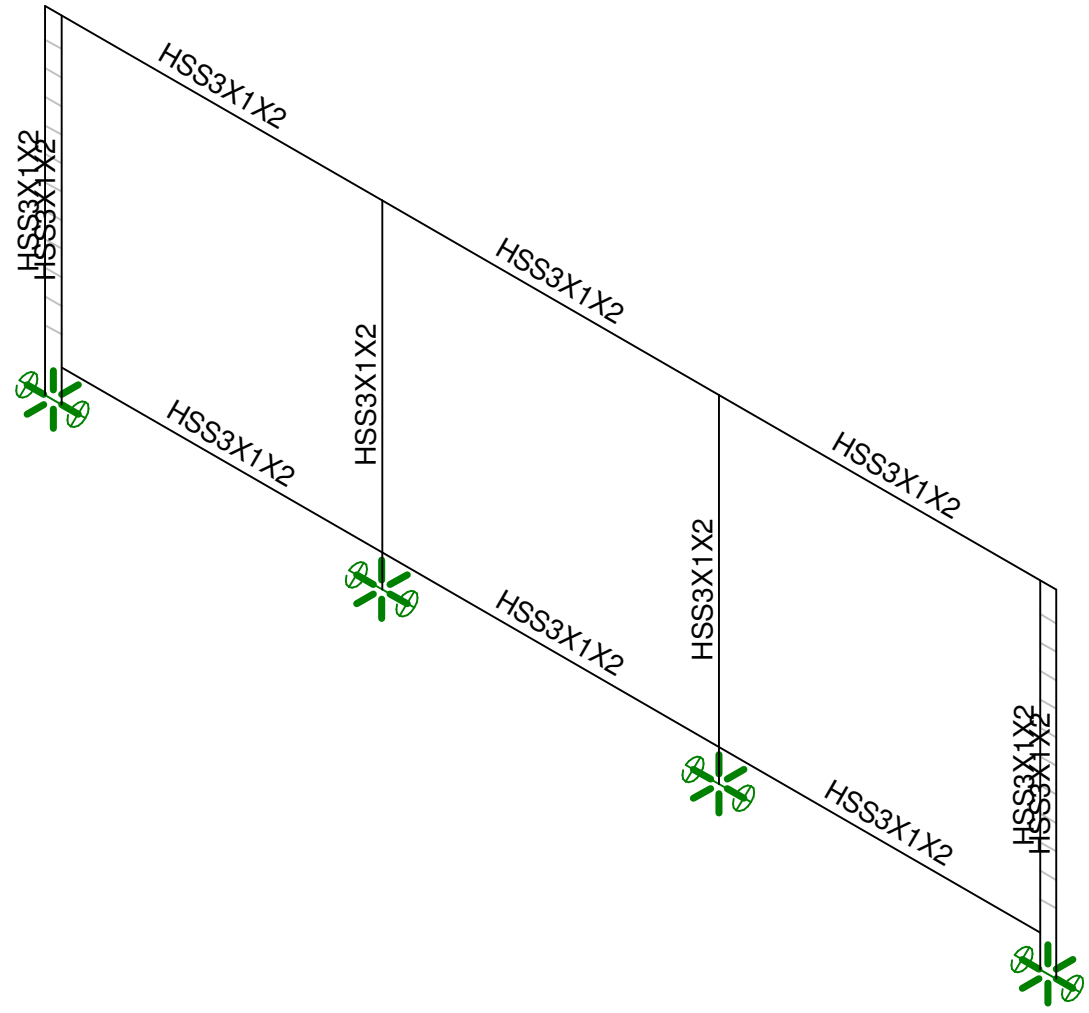
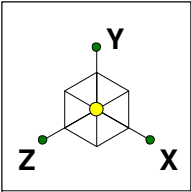
Disclaimer: Analysis and Structural Certification DOES NOT include base plates or anchorage to supporting structure. Where required by the Local Building Official, these shall be reviewed and designed by the project Structural Engineer of Record.



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D3b - 3" x 1" RECT TUBE x 42-1/2" HIGH RAIL W/ BOTTOM RAIL

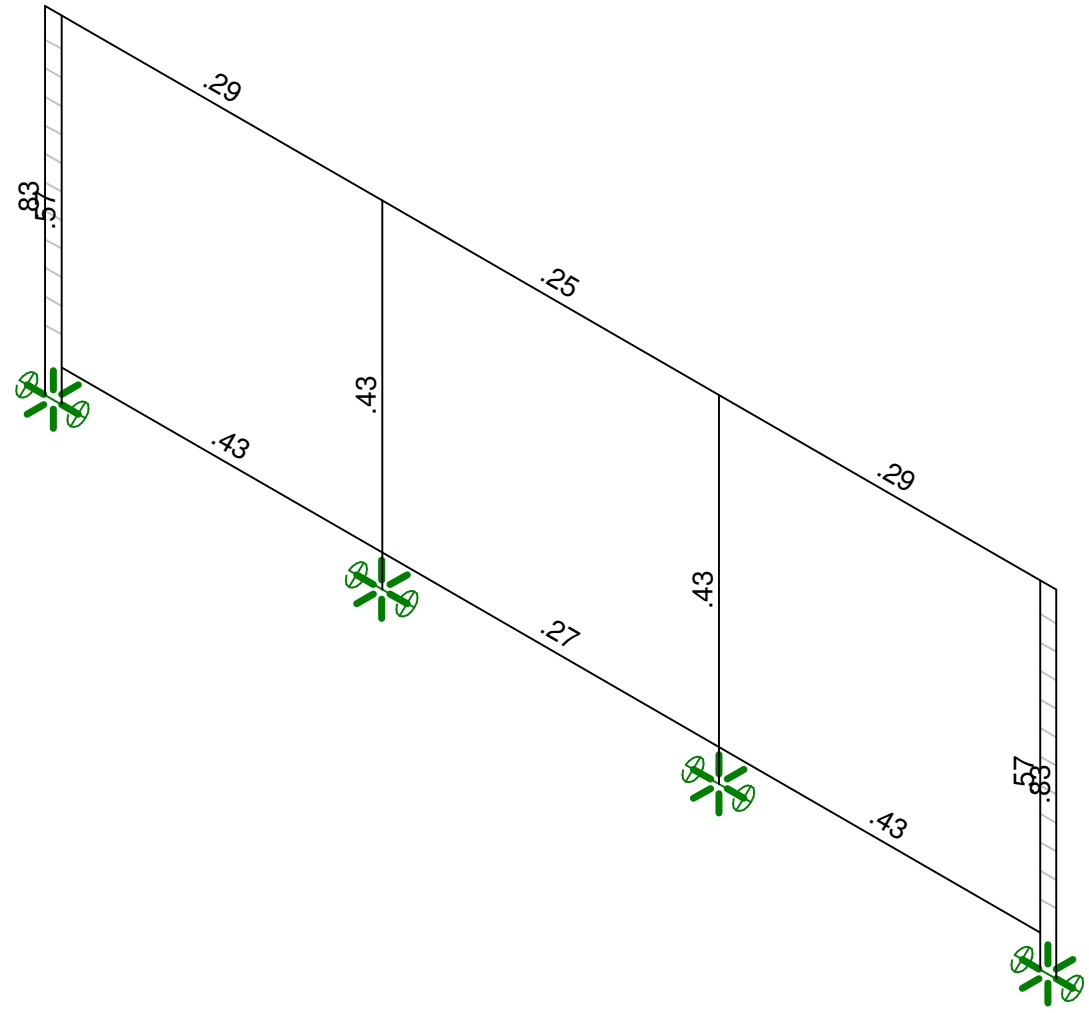
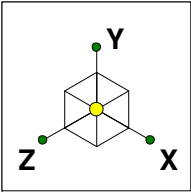
Mar 3, 2009 at 10:31 AM
D3b-3x1.R3D



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D3b - 3" x 1" RECT TUBE x 42-1/2" HIGH RAIL W/ BOTTOM RAIL

Mar 3, 2009 at 10:31 AM
D3b-3x1.R3D

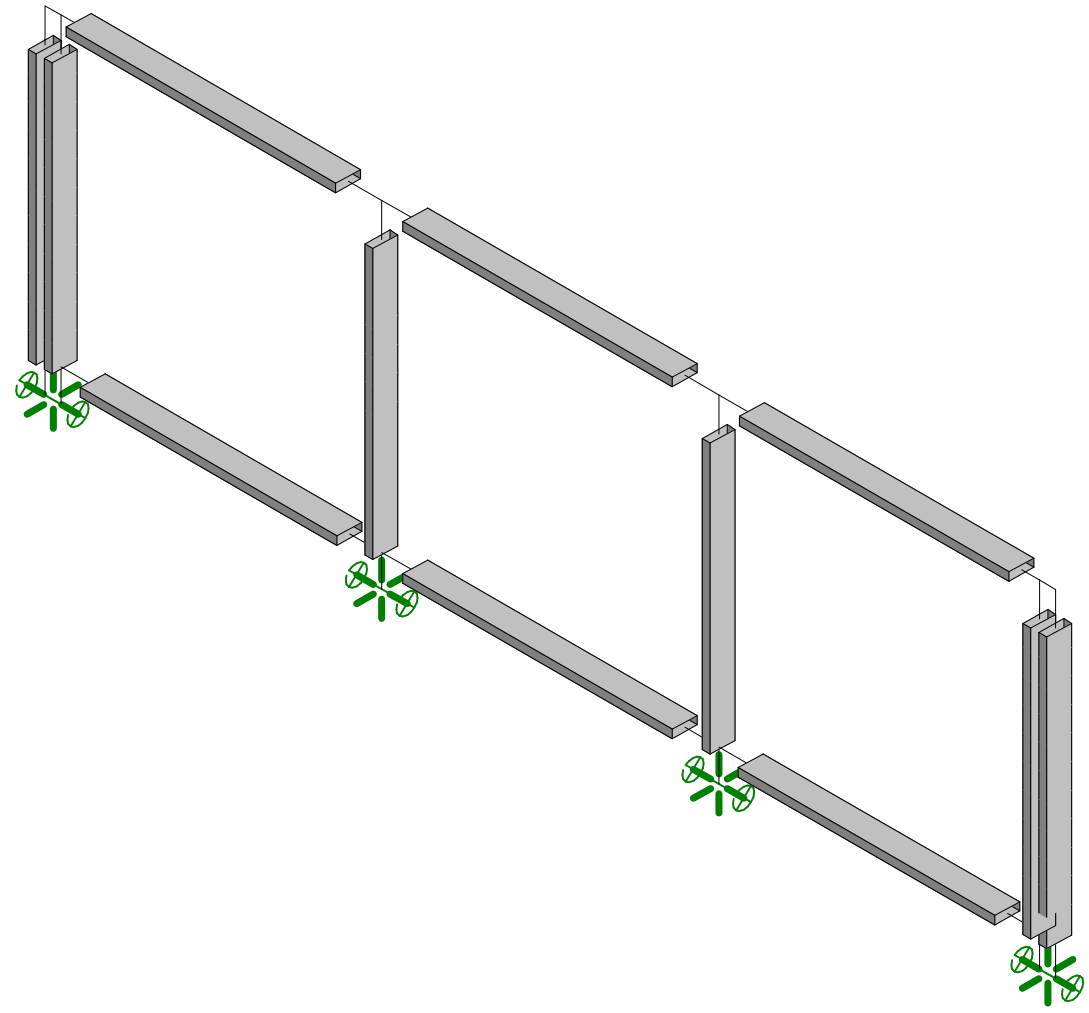
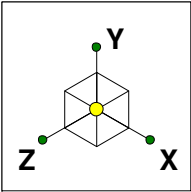


Member Code Checks Displayed
Solution: Envelope

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D3b - 3" x 1" RECT TUBE x 42-1/2" HIGH RAIL W/ BOTTOM RAIL

Mar 3, 2009 at 10:31 AM
D3b-3x1.R3D



Ferrari Shields & Associates

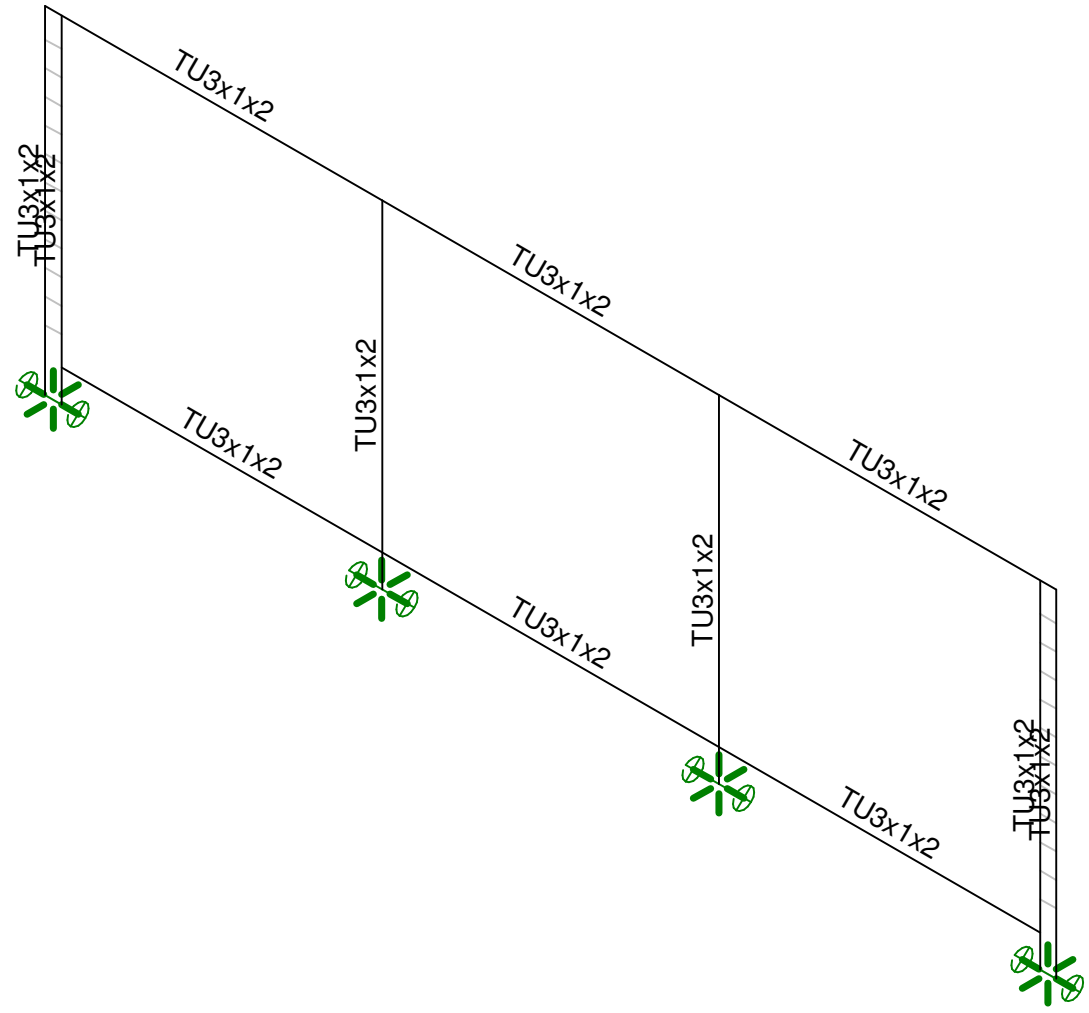
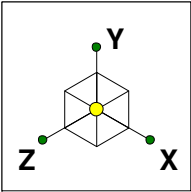
Dan O'Connor

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D3b (SS) - 3" x 1" RECT TUBE x 42-1/2" HIGH RAIL W/ BOTTOM RAIL

Mar 3, 2009 at 10:36 AM

D3b-3x1-ss.R3D

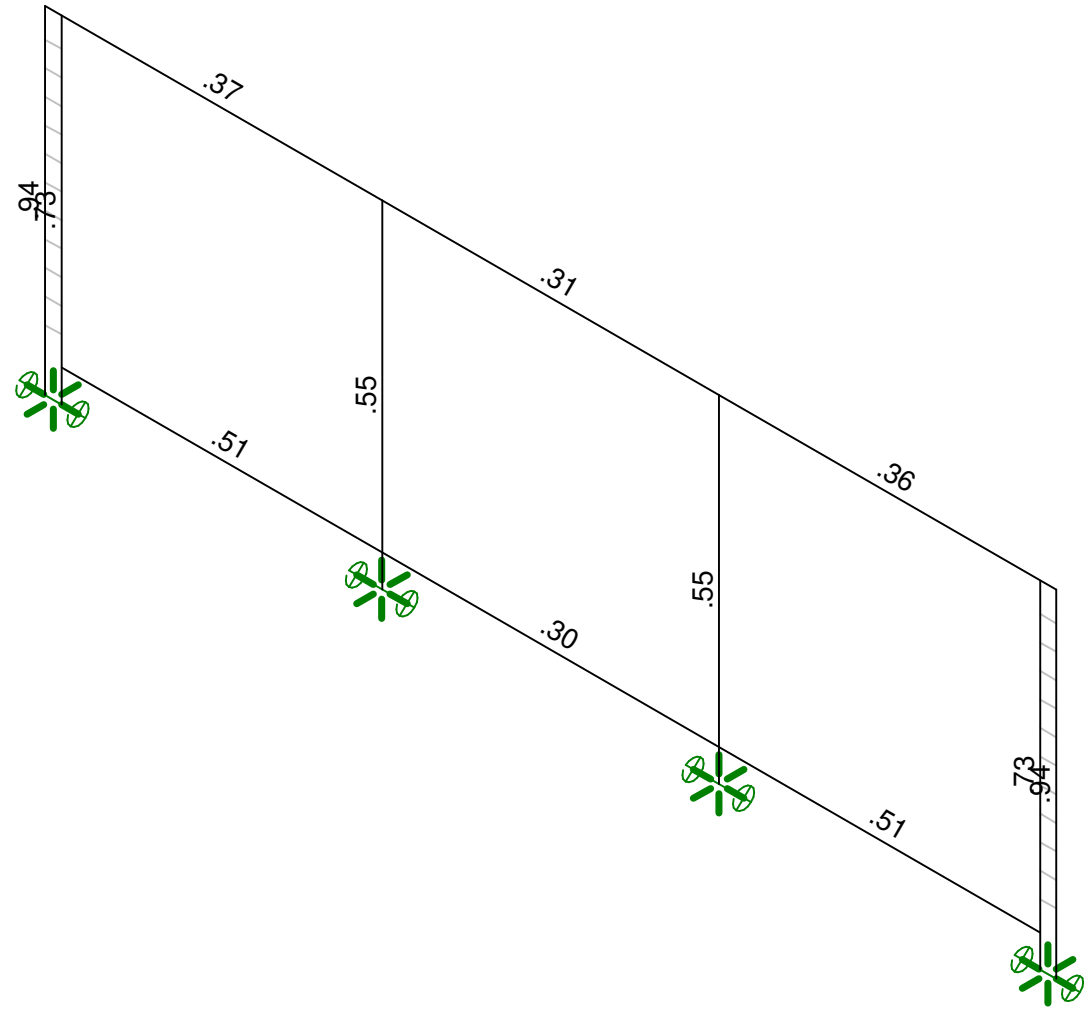
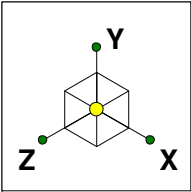


Ferrari Shields & Associates
 Dan O'Connor
 08196

D3b (SS) - 3" x 1" RECT TUBE x 42-1/2" HIGH RAIL W/ BOTTOM RAIL

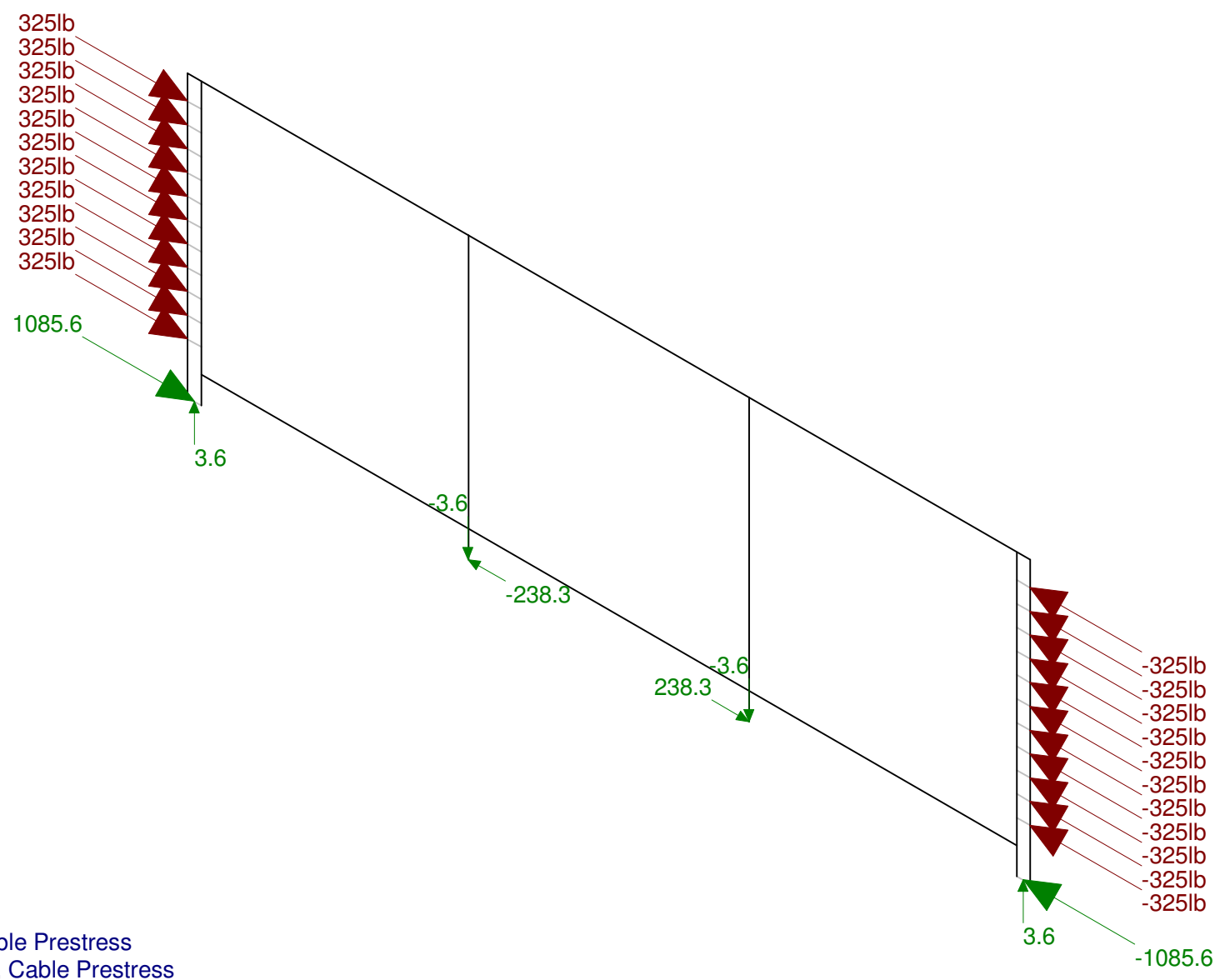
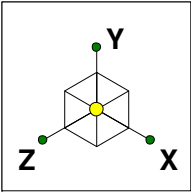
Mar 3, 2009 at 10:35 AM

D3b-3x1-ss.R3D



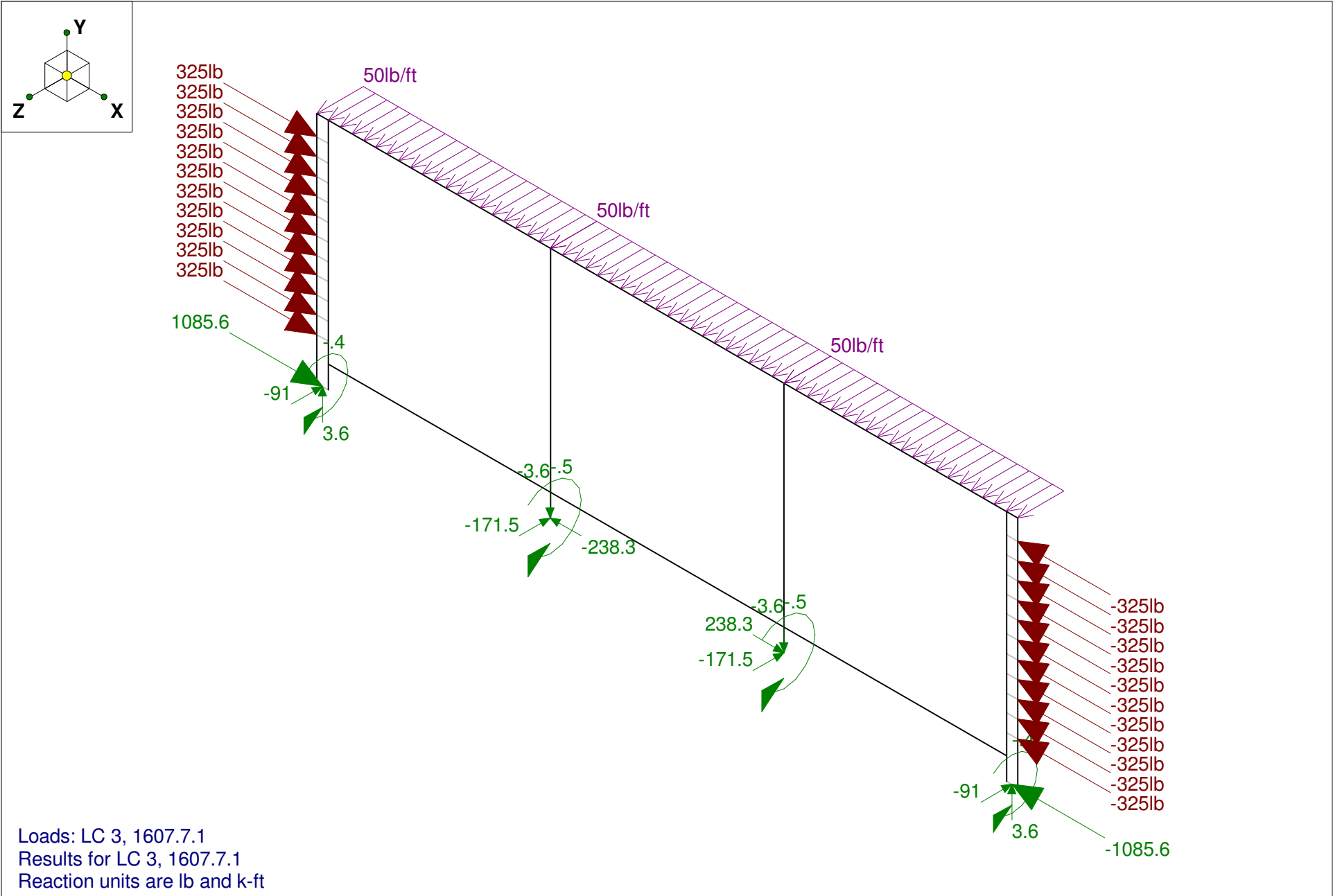
Member Code Checks Displayed
Solution: Envelope

Ferrari Shields & Associates	D3b (SS) - 3" x 1" RECT TUBE x 42-1/2" HIGH RAIL W/ BOTTOM RAIL	
Dan O'Connor		Mar 3, 2009 at 10:36 AM
08196		D3b-3x1-ss.R3D

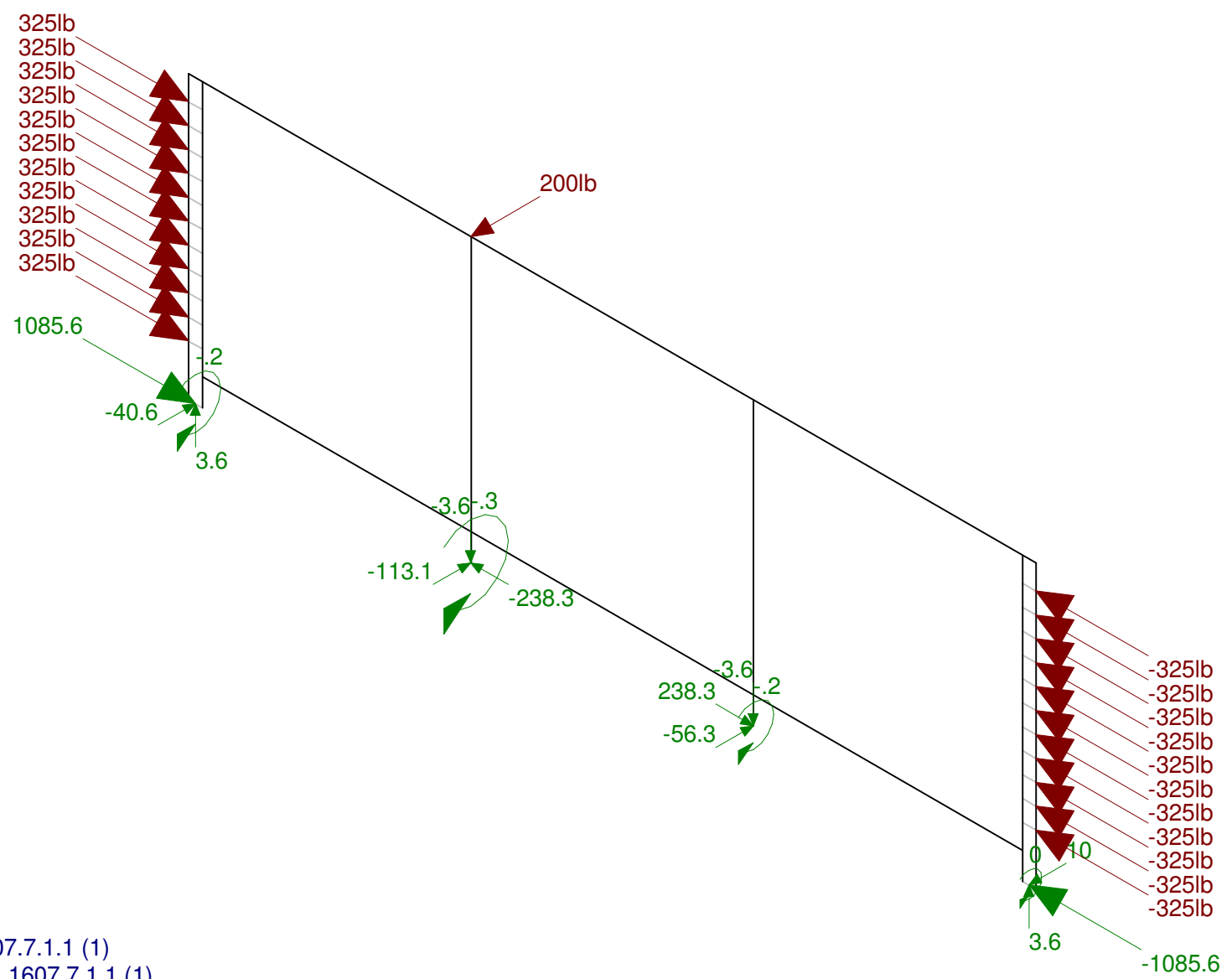
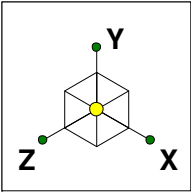


Loads: LC 1, Cable Prestress
 Results for LC 1, Cable Prestress
 Reaction units are lb and k-ft

Ferrari Shields & Associates	D3b - 3" x 1" RECT TUBE x 42-1/2" HIGH RAIL W/ BOTTOM RAIL	
Dan O'Connor		Mar 3, 2009 at 10:32 AM
08196		D3b-3x1.R3D

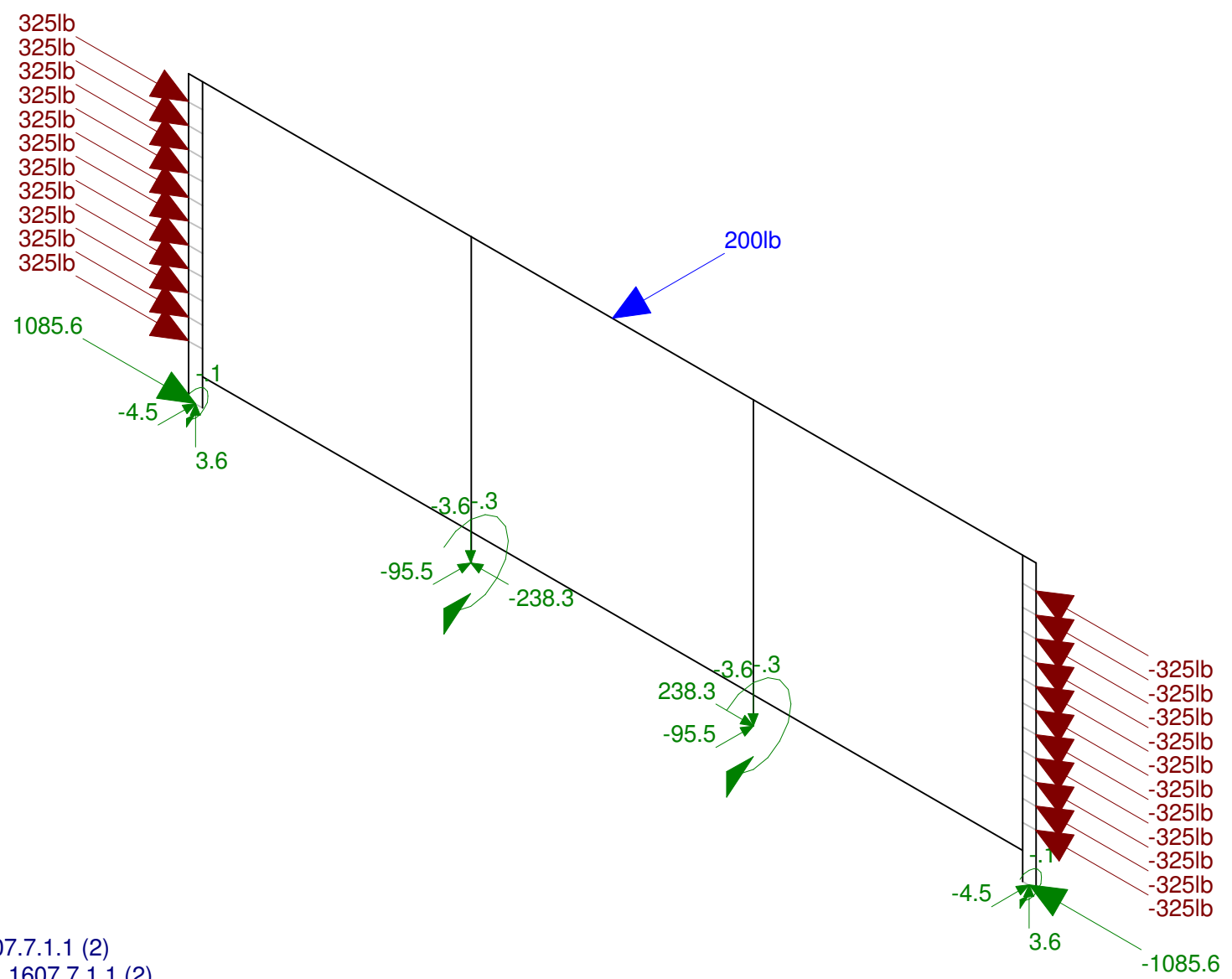
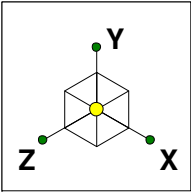


Ferrari Shields & Associates	D3b - 3" x 1" RECT TUBE x 42-1/2" HIGH RAIL W/ BOTTOM RAIL	
Dan O'Connor		Mar 3, 2009 at 10:33 AM
08196		D3b-3x1.R3D



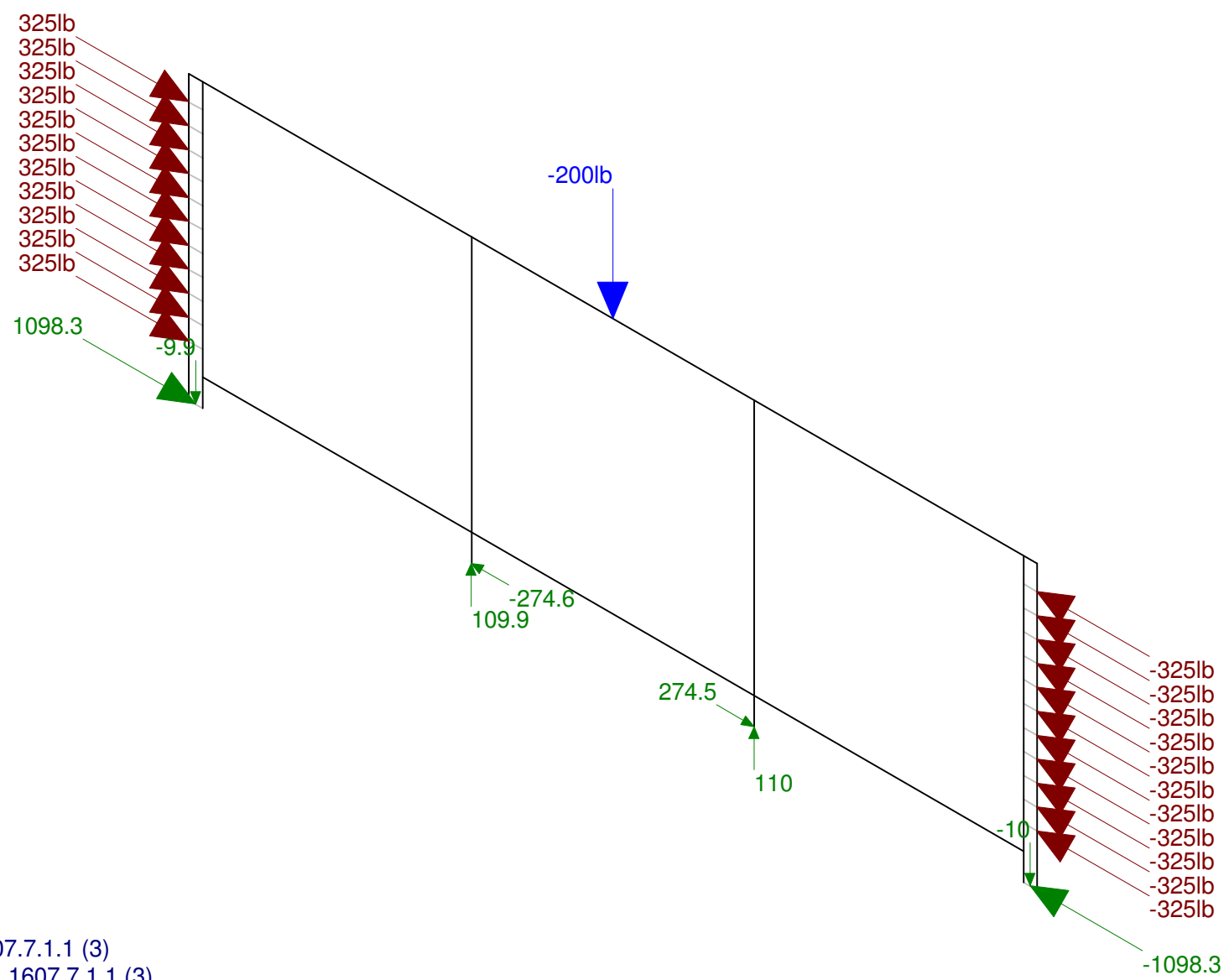
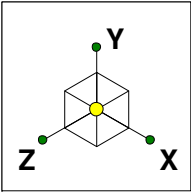
Loads: LC 4, 1607.7.1.1 (1)
 Results for LC 4, 1607.7.1.1 (1)
 Reaction units are lb and k-ft

Ferrari Shields & Associates	D3b - 3" x 1" RECT TUBE x 42-1/2" HIGH RAIL W/ BOTTOM RAIL	
Dan O'Connor		Mar 3, 2009 at 10:33 AM
08196		D3b-3x1.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	D3b - 3" x 1" RECT TUBE x 42-1/2" HIGH RAIL W/ BOTTOM RAIL	
Dan O'Connor		Mar 3, 2009 at 10:33 AM
08196		D3b-3x1.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	D3b - 3" x 1" RECT TUBE x 42-1/2" HIGH RAIL W/ BOTTOM RAIL	
Dan O'Connor		Mar 3, 2009 at 10:33 AM
08196		D3b-3x1.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

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	EPOST	HSS3X1X2	Column	Tube	A500Gr42	Typical	.841	.138	.818	.409
3	IPOST	HSS3X1X2	Column	Tube	A500Gr42	Typical	.841	.138	.818	.409

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		Beam	GEN_RIGID	.25	.005	.005	.01

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	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	EPOST	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	N9	N10		90	EPOST	Column	Tube	A500Gr42	Typical
9	M9	N11	N12		90	EPOST	Column	Tube	A500Gr42	Typical
10	M10	N13	N15			LINK	Beam	None	GEN_RIGID	Default
11	M11	N16	N14			LINK	Beam	None	GEN_RIGID	Default
12	M12	N1	N17			LINK	Beam	None	GEN_RIGID	Default
13	M13	N11	N18			LINK	Beam	None	GEN_RIGID	Default
14	M14	N17	N9			LINK	Beam	None	GEN_RIGID	Default
15	M15	N18	N5			LINK	Beam	None	GEN_RIGID	Default
16	M16	N19	N20		90	RAIL	Beam	Tube	A500Gr42	Typical
17	M17	N20	N22		90	RAIL	Beam	Tube	A500Gr42	Typical
18	M18	N22	N21		90	RAIL	Beam	Tube	A500Gr42	Typical
19	M19	N23	N25			LINK	Beam	None	GEN_RIGID	Default
20	M20	N26	N24			LINK	Beam	None	GEN_RIGID	Default
21	M21	N27	N29			LINK	Beam	None	GEN_RIGID	Default
22	M22	N30	N28			LINK	Beam	None	GEN_RIGID	Default
23	M23	N31	N33			LINK	Beam	None	GEN_RIGID	Default
24	M24	N34	N32			LINK	Beam	None	GEN_RIGID	Default
25	M25	N35	N37			LINK	Beam	None	GEN_RIGID	Default
26	M26	N38	N36			LINK	Beam	None	GEN_RIGID	Default
27	M27	N39	N41			LINK	Beam	None	GEN_RIGID	Default
28	M28	N42	N40			LINK	Beam	None	GEN_RIGID	Default
29	M29	N43	N45			LINK	Beam	None	GEN_RIGID	Default
30	M30	N46	N44			LINK	Beam	None	GEN_RIGID	Default
31	M31	N47	N49			LINK	Beam	None	GEN_RIGID	Default

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
32	M32	N50	N48			LINK	Beam	None	GEN_RIGID	Default
33	M33	N51	N53			LINK	Beam	None	GEN_RIGID	Default
34	M34	N54	N52			LINK	Beam	None	GEN_RIGID	Default
35	M35	N55	N57			LINK	Beam	None	GEN_RIGID	Default
36	M36	N58	N56			LINK	Beam	None	GEN_RIGID	Default
37	M37	N63	N65			LINK	Beam	None	GEN_RIGID	Default
38	M38	N66	N64			LINK	Beam	None	GEN_RIGID	Default

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	N3	max	-238.258	1	109.944	6	0	1	0	1	0	1	0	1
2		min	-274.553	6	-4.589	2	-171.476	3	-533	3	0	1	0	1
3	N7	max	274.516	6	109.953	6	0	1	0	1	0	1	0	1
4		min	238.258	1	-4.589	2	-171.476	3	-533	3	0	1	0	1
5	N17	max	1204.068	2	4.589	2	0	1	0	1	0	1	0	1
6		min	1085.604	1	-9.947	6	-91.024	3	-437	3	0	1	0	1
7	N18	max	-1085.604	1	4.589	2	9.958	4	.002	2	0	1	0	1
8		min	-1204.068	2	-9.95	6	-91.024	3	-437	3	0	1	0	1
9	Totals:	max	0	1	200	6	0	1						
10		min	0	2	0	1	-525	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	-798.772	1	0	1	-47.378	2	.008	3	.024	1	0	1
2			min	-906.801	2	-42.801	3	-55.588	1	0	1	.023	2	-214	3
3		2	max	1533.318	2	27.942	5	-900.116	1	.013	3	-.114	1	0	1
4			min	1471.51	6	-12.989	2	-977.493	2	0	1	-.122	2	-.177	3
5		3	max	6987.19	2	19.834	5	-139.133	1	.014	3	-.105	1	0	1
6			min	6280.552	1	-26.941	3	-173.989	2	0	2	-.117	2	-.119	3
7		4	max	5989.619	2	19.378	5	433.011	2	.014	3	-.071	4	0	1
8			min	5414.153	1	-27.579	3	360.622	6	0	2	-.076	2	-.065	3
9		5	max	511.889	6	13.671	5	821.253	2	.015	3	.088	2	0	2
10			min	471.077	4	-19.173	3	761.989	4	0	2	.08	6	-.014	3
11	M2	1	max	109.944	6	0	1	-238.258	1	0	1	0	1	0	1
12			min	-4.589	2	-171.476	3	-274.655	6	0	1	0	1	-.533	3
13		2	max	61.689	6	0	1	32.956	6	.012	5	-.011	1	0	1
14			min	-58.026	2	-156.314	3	16.502	1	0	2	-.018	6	-.39	3
15		3	max	61.689	6	0	1	32.967	6	.012	5	.011	6	0	1
16			min	-58.026	2	-156.314	3	16.502	1	0	2	.004	1	-.253	3
17		4	max	61.689	6	2.914	2	32.828	6	.012	5	.04	6	.003	2
18			min	-58.026	2	-156.314	3	16.502	1	0	2	.018	1	-.116	3
19		5	max	61.689	6	2.914	2	32.828	6	.012	5	.069	6	.026	4
20			min	-58.026	2	-156.314	3	16.502	1	0	2	.033	1	0	1
21	M3	1	max	816.831	2	12.488	5	-466.16	4	0	2	.088	2	0	2
22			min	758.207	4	-18.953	3	-506.889	6	-.014	3	.08	6	-.015	3
23		2	max	1810.684	2	0	1	-38.592	6	0	2	.103	2	.031	3
24			min	1671.508	6	-66.16	3	-58.345	2	-.021	3	.089	6	-.012	5
25		3	max	1810.684	2	0	1	-38.592	6	0	2	.056	6	.07	3
26			min	1671.508	6	-54.363	4	-58.345	2	-.021	3	.047	1	0	1
27		4	max	1810.684	2	21.34	3	-38.592	6	0	2	.022	6	.11	4

Envelope Member Section Forces (Continued)

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Moment[...]	LC	z-z Moment[...]	LC	
28		min	1671.508	6	-54.363	4	-58.345	2	-.021	3	0	1	0	1	
29	5	max	1810.684	2	65.09	3	-38.592	6	0	2	-.012	6	.157	4	
30		min	1671.508	6	-54.363	4	-58.345	2	-.021	3	-.051	2	0	1	
31	M4	1	max	1828.77	2	52.073	4	0	.012	4	.057	6	.156	4	
32		min	1694.081	4	-100	5	-99.993	6	0	1	-.015	2	0	1	
33	2	max	1828.77	2	52.073	4	0	1	.012	4	-.013	1	.117	5	
34		min	1694.081	4	-100	5	-99.993	6	0	1	-.031	6	0	1	
35	3	max	1828.77	2	100	5	100.007	6	.012	4	-.013	1	.204	5	
36		min	1694.081	4	0	1	0	1	0	1	-.118	6	0	1	
37	4	max	1828.77	2	100	5	100.007	6	.012	4	-.013	1	.117	5	
38		min	1694.081	4	0	1	0	1	0	1	-.031	6	-.002	2	
39	5	max	1828.77	2	100	5	100.007	6	.012	4	.057	6	.029	5	
40		min	1694.081	4	0	1	0	1	0	1	-.015	2	-.026	4	
41	M5	1	max	-798.772	1	4.472	4	55.588	1	0	1	-.023	2	.001	2
42		min	-906.801	2	-42.801	3	47.378	2	-.008	3	-.024	1	-.214	3	
43	2	max	1533.318	2	27.942	5	977.493	2	0	1	.122	2	0	2	
44		min	1471.51	6	-5.73	3	900.116	1	-.013	3	.114	1	-.177	3	
45	3	max	6987.19	2	21.922	4	173.989	2	0	1	.117	2	0	2	
46		min	6280.552	1	-26.941	3	139.133	1	-.014	3	.105	1	-.119	3	
47	4	max	5989.619	2	21.578	4	-360.622	6	0	1	.076	2	0	1	
48		min	5414.153	1	-27.579	3	-433.011	2	-.014	3	.071	4	-.065	3	
49	5	max	511.887	6	14.184	4	-761.989	4	0	1	-.08	6	0	1	
50		min	471.077	4	-19.173	3	-821.253	2	-.015	3	-.088	2	-.014	3	
51	M6	1	max	109.953	6	0	274.618	6	0	1	0	1	0	1	
52		min	-4.589	2	-171.476	3	238.258	1	0	1	0	1	-.533	3	
53	2	max	61.699	6	0	1	-16.502	1	0	1	.018	6	0	1	
54		min	-58.026	2	-156.314	3	-32.91	6	-.013	4	.011	1	-.39	3	
55	3	max	61.699	6	0	1	-16.502	1	0	1	-.004	1	0	1	
56		min	-58.026	2	-156.314	3	-32.91	6	-.013	4	-.011	6	-.253	3	
57	4	max	61.699	6	0	1	-16.502	1	0	1	-.018	1	0	1	
58		min	-58.026	2	-156.314	3	-32.91	6	-.013	4	-.04	6	-.116	3	
59	5	max	61.699	6	0	1	-16.502	1	0	1	-.033	1	.021	3	
60		min	-58.026	2	-156.314	3	-32.91	6	-.013	4	-.069	6	0	1	
61	M7	1	max	1810.684	2	20.349	5	58.345	2	.021	3	-.012	6	.042	5
62		min	1671.509	6	-65.09	3	38.597	6	0	1	-.051	2	-.013	4	
63	2	max	1810.684	2	20.349	5	58.345	2	.021	3	.022	6	.07	3	
64		min	1671.509	6	-21.34	3	38.597	6	0	1	0	1	-.015	4	
65	3	max	1810.684	2	22.41	3	58.345	2	.021	3	.056	6	.07	3	
66		min	1671.509	6	-.516	2	38.597	6	0	1	.047	1	-.016	4	
67	4	max	1810.684	2	66.16	3	58.345	2	.021	3	.103	2	.031	3	
68		min	1671.509	6	-.516	2	38.597	6	0	1	.089	6	-.018	4	
69	5	max	816.831	2	18.953	3	506.888	6	.014	3	.088	2	0	1	
70		min	758.207	4	-13.098	4	466.16	4	0	1	.08	6	-.015	3	
71	M8	1	max	911.39	2	0	1248.581	2	0	1	-.158	1	0	1	
72		min	802.407	1	-49.406	3	1138.869	1	-.009	3	-.175	2	-.223	3	
73	2	max	-1429.268	4	0	1	-681.825	1	.016	3	-.125	1	0	1	
74		min	-1475.292	2	-104.184	3	-740.621	2	0	1	-.134	2	-.171	3	
75	3	max	-6227.696	1	0	1	-139.131	1	.014	3	-.105	1	0	1	
76		min	-6929.164	2	-104.426	3	-173.997	2	0	2	-.117	2	-.122	3	
77	4	max	-5361.297	1	1.094	2	432.918	2	.014	3	-.071	4	0	1	
78		min	-5931.593	2	-104.05	3	360.615	6	0	2	-.076	2	-.06	3	
79	5	max	-418.221	4	1.155	2	993.853	2	.016	3	.139	2	0	2	
80		min	-473.585	6	-89.374	3	908.646	6	0	2	.122	6	-.008	5	

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	
81	M9	1	max	911.39	2	5.439	4	-1138.869	1	.009	3	.175	2	0	2
82			min	802.407	1	-49.406	3	-1248.581	2	0	1	.158	1	-.223	3
83		2	max	-1429.268	4	0	1	740.621	2	0	1	.134	2	0	2
84			min	-1475.292	2	-104.184	3	681.825	1	-.016	3	.125	1	-.171	3
85		3	max	-6227.696	1	0	1	173.997	2	0	1	.117	2	0	2
86			min	-6929.164	2	-104.426	3	139.131	1	-.014	3	.105	1	-.122	3
87		4	max	-5361.297	1	0	1	-360.614	6	0	1	.076	2	0	1
88			min	-5931.593	2	-104.05	3	-432.918	2	-.014	3	.071	4	-.06	3
89		5	max	-418.221	4	0	1	-908.647	6	0	1	-.122	6	0	1
90			min	-473.579	6	-89.374	3	-993.853	2	-.016	3	-.139	2	-.008	5
91	M16	1	max	3236.384	2	15.373	3	53.871	2	.001	3	-.107	6	.036	3
92			min	2983.025	1	0	1	48.616	6	-.003	5	-.117	2	0	1
93		2	max	3236.384	2	15.373	3	53.871	2	.001	3	-.066	6	.024	3
94			min	2983.025	1	0	1	48.616	6	-.003	5	-.072	2	0	1
95		3	max	3236.384	2	15.373	3	53.871	2	.001	3	-.025	1	.011	3
96			min	2983.025	1	0	1	48.616	6	-.003	5	-.027	2	0	1
97		4	max	3236.384	2	15.373	3	53.871	2	.001	3	.018	2	0	4
98			min	2983.025	1	0	1	48.616	6	-.003	5	.015	6	-.003	5
99		5	max	3236.384	2	15.373	3	53.871	2	.001	3	.063	2	0	1
100			min	2983.025	1	0	1	48.616	6	-.003	5	.055	6	-.015	3
101	M17	1	max	2959.161	2	0	1	0	1	.003	4	0	6	0	1
102			min	2694.333	6	-3.075	4	-.004	6	0	1	-.002	2	-.007	4
103		2	max	2959.161	2	0	1	0	1	.003	4	0	6	0	1
104			min	2694.333	6	-3.075	4	-.004	6	0	1	-.002	2	-.006	3
105		3	max	2959.161	2	0	1	0	1	.003	4	0	6	0	1
106			min	2694.333	6	-3.075	4	-.004	6	0	1	-.002	2	-.006	3
107		4	max	2959.161	2	0	1	0	1	.003	4	0	6	0	4
108			min	2694.333	6	-3.075	4	-.004	6	0	1	-.002	2	-.006	3
109		5	max	2959.161	2	0	1	0	1	.003	4	0	6	.003	4
110			min	2694.333	6	-3.075	4	-.004	6	0	1	-.002	2	-.006	3
111	M18	1	max	3236.384	2	0	1	-48.624	6	.003	4	.063	2	0	1
112			min	2983.025	1	-15.373	3	-53.871	2	-.001	3	.055	6	-.015	3
113		2	max	3236.384	2	0	1	-48.624	6	.003	4	.018	2	0	1
114			min	2983.025	1	-15.373	3	-53.871	2	-.001	3	.015	6	-.003	5
115		3	max	3236.384	2	0	1	-48.624	6	.003	4	-.025	1	.011	3
116			min	2983.025	1	-15.373	3	-53.871	2	-.001	3	-.027	2	0	1
117		4	max	3236.384	2	0	1	-48.624	6	.003	4	-.066	6	.024	3
118			min	2983.025	1	-15.373	3	-53.871	2	-.001	3	-.072	2	0	1
119		5	max	3236.384	2	0	1	-48.624	6	.003	4	-.107	6	.036	3
120			min	2983.025	1	-15.373	3	-53.871	2	-.001	3	-.117	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 [k-ft]	Mnzz/om... Cb	Eqn	
1	M1	HSS3X1X2	.828	23.188	2	.428	7.875	z	2	10920.117	21154.469	.683	1.528	2... H1-1a
2	M2	HSS3X1X2	.426	3.938	3	.120	0	z	6	10920.117	21154.469	.683	1.528	1... H1-1b
3	M3	HSS3X1X2	.294	2.188	2	.233	0	z	3	10920.289	21154.469	.683	1.528	1... H1-1b
4	M4	HSS3X1X2	.251	21	6	.044	21	z	6	10920.289	21154.469	.683	1.528	1 H1-1b
5	M5	HSS3X1X2	.825	23.188	2	.429	7.875	z	2	10920.117	21154.469	.683	1.528	2... H1-1a
6	M6	HSS3X1X2	.426	3.938	3	.120	0	z	6	10920.117	21154.469	.683	1.528	1... H1-1b
7	M7	HSS3X1X2	.293	39.813	2	.233	40.25	z	3	10920.289	21154.469	.683	1.528	1... H1-1b
8	M8	HSS3X1X2	.570	4.375	3	.873	4.375	z	2	10920.117	21154.469	.683	1.528	1... H1-1b

Envelope AISC 13th ASD Steel Code Checks (Continued)

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		
9	M9	HSS3X1X2	.570	4.375	3	.874	4.375	z	2	10920.117	21154.469	.683	1.528	1...	H1-1b
10	M16	HSS3X1X2	.431	0	2	.027	0	z	5	11612.675	21154.469	.683	1.528	1...	H1-1a
11	M17	HSS3X1X2	.274	0	2	.005	0	z	4	10920.289	21154.469	.683	1.528	2...	H1-1a
12	M18	HSS3X1X2	.431	40	2	.027	0	z	4	11612.675	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	LDX2101	28000	11154	.3	.65	.49	60
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	TU3x1x2	Beam	Tube	SS316	Typical	.902	.149	.918	.41
2	EPOST	TU3x1x2	Column	Tube	SS316	Typical	.902	.149	.918	.41
3	IPOST	TU3x1x2	Column	Tube	SS316	Typical	.902	.149	.918	.41

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		Beam	GEN_RIGID	.25	.005	.005	.01

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	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	EPOST	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	N9	N10		90	EPOST	Column	Tube	SS316	Typical
9	M9	N11	N12		90	EPOST	Column	Tube	SS316	Typical
10	M10	N13	N15			LINK	Beam	None	GEN_RIGID	Default
11	M11	N16	N14			LINK	Beam	None	GEN_RIGID	Default
12	M12	N1	N17			LINK	Beam	None	GEN_RIGID	Default
13	M13	N11	N18			LINK	Beam	None	GEN_RIGID	Default
14	M14	N17	N9			LINK	Beam	None	GEN_RIGID	Default
15	M15	N18	N5			LINK	Beam	None	GEN_RIGID	Default
16	M16	N19	N20		90	RAIL	Beam	Tube	SS316	Typical
17	M17	N20	N22		90	RAIL	Beam	Tube	SS316	Typical
18	M18	N22	N21		90	RAIL	Beam	Tube	SS316	Typical
19	M19	N23	N25			LINK	Beam	None	GEN_RIGID	Default
20	M20	N26	N24			LINK	Beam	None	GEN_RIGID	Default
21	M21	N27	N29			LINK	Beam	None	GEN_RIGID	Default
22	M22	N30	N28			LINK	Beam	None	GEN_RIGID	Default
23	M23	N31	N33			LINK	Beam	None	GEN_RIGID	Default
24	M24	N34	N32			LINK	Beam	None	GEN_RIGID	Default
25	M25	N35	N37			LINK	Beam	None	GEN_RIGID	Default
26	M26	N38	N36			LINK	Beam	None	GEN_RIGID	Default
27	M27	N39	N41			LINK	Beam	None	GEN_RIGID	Default
28	M28	N42	N40			LINK	Beam	None	GEN_RIGID	Default
29	M29	N43	N45			LINK	Beam	None	GEN_RIGID	Default
30	M30	N46	N44			LINK	Beam	None	GEN_RIGID	Default
31	M31	N47	N49			LINK	Beam	None	GEN_RIGID	Default

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
32	M32	N50	N48			LINK	Beam	None	GEN_RIGID	Default
33	M33	N51	N53			LINK	Beam	None	GEN_RIGID	Default
34	M34	N54	N52			LINK	Beam	None	GEN_RIGID	Default
35	M35	N55	N57			LINK	Beam	None	GEN_RIGID	Default
36	M36	N58	N56			LINK	Beam	None	GEN_RIGID	Default
37	M37	N63	N65			LINK	Beam	None	GEN_RIGID	Default
38	M38	N66	N64			LINK	Beam	None	GEN_RIGID	Default

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	N3	max	-240.53	1	109.989	6	0	1	0	1	0	1	0	1
2		min	-276.941	6	-4.552	2	-171.147	3	-.535	3	0	1	0	1
3	N7	max	276.907	6	109.997	6	0	1	0	1	0	1	0	1
4		min	240.53	1	-4.552	2	-171.147	3	-.535	3	0	1	0	1
5	N17	max	1212.888	2	4.552	2	0	1	0	1	0	1	0	1
6		min	1093.721	1	-9.992	6	-91.353	3	-.43	3	0	1	0	1
7	N18	max	-1093.721	1	4.552	2	9.615	4	.002	2	0	1	0	1
8		min	-1212.888	2	-9.995	6	-91.353	3	-.43	3	0	1	0	1
9	Totals:	max	0	6	200	6	0	1						
10		min	0	2	0	4	-525	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	-804.217	1	0	1	-42.853	2	.008	3	.023	1	0	1
2			min	-912.683	2	-43.238	3	-51.43	1	0	1	.022	2	-.211	3
3		2	max	1514.22	2	26.839	5	-905.948	1	.012	3	-.114	1	0	1
4			min	1453.632	6	-12.952	2	-983.801	2	0	1	-.122	2	-.174	3
5		3	max	6959.566	2	18.889	5	-139.407	1	.014	3	-.106	1	0	1
6			min	6256.074	1	-27.52	3	-174.25	2	0	2	-.117	2	-.117	3
7		4	max	5969.043	2	18.45	5	431.919	2	.014	3	-.071	4	0	1
8			min	5395.755	1	-28.108	3	359.676	6	0	2	-.077	2	-.063	3
9		5	max	518.394	6	13.125	5	819.137	2	.014	3	.088	2	0	2
10			min	477.167	4	-20.203	3	760.054	4	0	2	.08	6	-.013	3
11	M2	1	max	109.989	6	0	1	-240.53	1	0	1	0	1	0	1
12			min	-4.552	2	-171.147	3	-277.04	6	0	1	0	1	-.535	3
13		2	max	61.476	6	0	1	33.112	6	.012	5	-.011	1	0	1
14			min	-58.264	2	-156.748	3	16.651	1	0	2	-.018	6	-.392	3
15		3	max	61.476	6	0	1	33.122	6	.012	5	.011	6	0	1
16			min	-58.264	2	-156.748	3	16.651	1	0	2	.004	1	-.255	3
17		4	max	61.476	6	2.854	2	32.99	6	.012	5	.04	6	.003	2
18			min	-58.264	2	-156.748	3	16.651	1	0	2	.018	1	-.118	3
19		5	max	61.476	6	2.854	2	32.99	6	.012	5	.069	6	.025	4
20			min	-58.264	2	-156.748	3	16.651	1	0	2	.033	1	0	1
21	M3	1	max	814.845	2	12.005	5	-472.449	4	0	2	.088	2	0	2
22			min	756.384	4	-19.985	3	-513.596	6	-.013	3	.08	6	-.014	3
23		2	max	1809.838	2	0	1	-38.795	6	0	2	.103	2	.032	3
24			min	1670.707	6	-65.45	3	-58.571	2	-.019	3	.09	6	-.011	5
25		3	max	1809.838	2	0	1	-38.795	6	0	2	.056	6	.07	3
26			min	1670.707	6	-54.058	4	-58.571	2	-.019	3	.047	1	0	1
27		4	max	1809.838	2	22.05	3	-38.795	6	0	2	.022	6	.11	4

Envelope Member Section Forces (Continued)

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Moment[...]	LC	z-z Moment[...]	LC	
28		min	1670.707	6	-54.058	4	-58.571	2	-.019	3	0	1	0	1	
29	5	max	1809.838	2	65.8	3	-38.795	6	0	2	-.012	6	.158	4	
30		min	1670.707	6	-54.058	4	-58.571	2	-.019	3	-.051	2	0	1	
31	M4	1	max	1828.086	2	52.03	4	0	.011	4	.057	6	.157	4	
32		min	1693.44	4	-100	5	-99.994	6	0	1	-.015	2	0	1	
33	2	max	1828.086	2	52.03	4	0	.011	.011	4	-.013	1	.118	5	
34		min	1693.44	4	-100	5	-99.994	6	0	1	-.031	6	0	1	
35	3	max	1828.086	2	100	5	100.006	6	.011	4	-.013	1	.205	5	
36		min	1693.44	4	0	1	0	1	0	1	-.118	6	0	1	
37	4	max	1828.086	2	100	5	100.006	6	.011	4	-.013	1	.118	5	
38		min	1693.44	4	0	1	0	1	0	1	-.031	6	-.002	2	
39	5	max	1828.086	2	100	5	100.006	6	.011	4	.057	6	.03	5	
40		min	1693.44	4	0	1	0	1	0	1	-.015	2	-.026	4	
41	M5	1	max	-804.217	1	4.225	4	51.43	1	0	1	-.022	2	.001	2
42		min	-912.683	2	-43.238	3	42.853	2	-.008	3	-.023	1	-.211	3	
43	2	max	1514.22	2	26.839	5	983.801	2	0	1	.122	2	0	2	
44		min	1453.632	6	-7.224	3	905.948	1	-.012	3	.114	1	-.174	3	
45	3	max	6959.566	2	21.246	4	174.25	2	0	1	.117	2	0	2	
46		min	6256.074	1	-27.52	3	139.407	1	-.014	3	.106	1	-.117	3	
47	4	max	5969.043	2	20.911	4	-359.676	6	0	1	.077	2	0	1	
48		min	5395.755	1	-28.108	3	-431.919	2	-.014	3	.071	4	-.063	3	
49	5	max	518.393	6	13.982	4	-760.054	4	0	1	-.08	6	0	1	
50		min	477.167	4	-20.203	3	-819.137	2	-.014	3	-.088	2	-.013	3	
51	M6	1	max	109.997	6	0	277.005	6	0	1	0	1	0	1	
52		min	-4.552	2	-171.147	3	240.53	1	0	1	0	1	-.535	3	
53	2	max	61.485	6	0	1	-16.651	1	0	1	.018	6	0	1	
54		min	-58.264	2	-156.748	3	-33.068	6	-.012	4	.011	1	-.392	3	
55	3	max	61.485	6	0	1	-16.651	1	0	1	-.004	1	0	1	
56		min	-58.264	2	-156.748	3	-33.068	6	-.012	4	-.011	6	-.255	3	
57	4	max	61.485	6	0	1	-16.651	1	0	1	-.018	1	0	1	
58		min	-58.264	2	-156.748	3	-33.068	6	-.012	4	-.04	6	-.118	3	
59	5	max	61.485	6	0	1	-16.651	1	0	1	-.033	1	.019	3	
60		min	-58.264	2	-156.748	3	-33.068	6	-.012	4	-.069	6	0	1	
61	M7	1	max	1809.838	2	20.023	5	58.571	2	.019	3	-.012	6	.042	5
62		min	1670.708	6	-65.8	3	38.799	6	0	1	-.051	2	-.013	4	
63	2	max	1809.838	2	20.023	5	58.571	2	.019	3	.022	6	.07	3	
64		min	1670.708	6	-22.05	3	38.799	6	0	1	0	1	-.015	4	
65	3	max	1809.838	2	21.7	3	58.571	2	.019	3	.056	6	.07	3	
66		min	1670.708	6	-.55	2	38.799	6	0	1	.047	1	-.016	4	
67	4	max	1809.838	2	65.45	3	58.571	2	.019	3	.103	2	.032	3	
68		min	1670.708	6	-.55	2	38.799	6	0	1	.09	6	-.017	4	
69	5	max	814.845	2	19.985	3	513.595	6	.013	3	.088	2	0	1	
70		min	756.384	4	-12.948	4	472.449	4	0	1	.08	6	-.014	3	
71	M8	1	max	917.235	2	0	1252.95	2	0	1	-.158	1	0	1	
72		min	807.814	1	-49.265	3	1142.886	1	-.008	3	-.175	2	-.219	3	
73	2	max	-1411.318	4	0	1	-676.278	1	.015	3	-.125	1	0	1	
74		min	-1455.956	2	-101.994	3	-734.582	2	0	1	-.134	2	-.168	3	
75	3	max	-6203.001	1	0	1	-139.404	1	.014	3	-.106	1	0	1	
76		min	-6901.302	2	-101.507	3	-174.259	2	0	2	-.117	2	-.119	3	
77	4	max	-5342.683	1	1.259	2	431.821	2	.014	3	-.071	4	0	1	
78		min	-5910.779	2	-101.086	3	359.668	6	0	2	-.077	2	-.059	3	
79	5	max	-424.094	4	1.251	2	994.993	2	.015	3	.14	2	0	2	
80		min	-479.877	6	-87.757	3	909.541	6	0	2	.123	6	-.007	5	

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
81	M9	1	max	917.235	2	5.349	4	-1142.886	1	.008	3	.175	2	0	2
82			min	807.814	1	-49.265	3	-1252.95	2	0	1	.158	1	-.219	3
83		2	max	-1411.318	4	0	1	734.582	2	0	1	.134	2	0	2
84			min	-1455.956	2	-101.994	3	676.278	1	-.015	3	.125	1	-.168	3
85		3	max	-6203.001	1	0	1	174.259	2	0	1	.117	2	0	2
86			min	-6901.302	2	-101.507	3	139.404	1	-.014	3	.106	1	-.119	3
87		4	max	-5342.683	1	0	1	-359.668	6	0	1	.077	2	0	1
88			min	-5910.779	2	-101.086	3	-431.821	2	-.014	3	.071	4	-.059	3
89		5	max	-424.094	4	0	1	-909.542	6	0	1	-.123	6	0	1
90			min	-479.872	6	-87.757	3	-994.993	2	-.015	3	-.14	2	-.007	5
91	M16	1	max	3246.05	2	14.611	3	54.129	2	.001	3	-.107	6	.034	3
92			min	2991.931	1	0	1	48.861	6	-.003	5	-.117	2	0	1
93		2	max	3246.05	2	14.611	3	54.129	2	.001	3	-.066	6	.022	3
94			min	2991.931	1	0	1	48.861	6	-.003	5	-.072	2	0	1
95		3	max	3246.05	2	14.611	3	54.129	2	.001	3	-.025	1	.01	3
96			min	2991.931	1	0	1	48.861	6	-.003	5	-.027	2	0	1
97		4	max	3246.05	2	14.611	3	54.129	2	.001	3	.018	2	0	4
98			min	2991.931	1	0	1	48.861	6	-.003	5	.015	6	-.002	5
99		5	max	3246.05	2	14.611	3	54.129	2	.001	3	.063	2	0	1
100			min	2991.931	1	0	1	48.861	6	-.003	5	.056	6	-.014	3
101	M17	1	max	2966.203	2	0	1	0	1	.002	4	0	6	0	1
102			min	2700.797	6	-2.939	4	-.004	6	0	1	-.002	2	-.007	4
103		2	max	2966.203	2	0	1	0	1	.002	4	0	6	0	1
104			min	2700.797	6	-2.939	4	-.004	6	0	1	-.002	2	-.006	3
105		3	max	2966.203	2	0	1	0	1	.002	4	0	6	0	1
106			min	2700.797	6	-2.939	4	-.004	6	0	1	-.002	2	-.006	3
107		4	max	2966.203	2	0	1	0	1	.002	4	0	6	0	4
108			min	2700.797	6	-2.939	4	-.004	6	0	1	-.002	2	-.006	3
109		5	max	2966.203	2	0	1	0	1	.002	4	0	6	.003	4
110			min	2700.797	6	-2.939	4	-.004	6	0	1	-.002	2	-.006	3
111	M18	1	max	3246.05	2	0	1	-48.868	6	.003	4	.063	2	0	1
112			min	2991.931	1	-14.611	3	-54.129	2	-.001	3	.056	6	-.014	3
113		2	max	3246.05	2	0	1	-48.868	6	.003	4	.018	2	0	1
114			min	2991.931	1	-14.611	3	-54.129	2	-.001	3	.015	6	-.002	5
115		3	max	3246.05	2	0	1	-48.868	6	.003	4	-.025	1	.01	3
116			min	2991.931	1	-14.611	3	-54.129	2	-.001	3	-.027	2	0	1
117		4	max	3246.05	2	0	1	-48.868	6	.003	4	-.066	6	.022	3
118			min	2991.931	1	-14.611	3	-54.129	2	-.001	3	-.072	2	0	1
119		5	max	3246.05	2	0	1	-48.868	6	.003	4	-.107	6	.034	3
120			min	2991.931	1	-14.611	3	-54.129	2	-.001	3	-.117	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 [k-ft]	Mnzz/om... Cb	Eqn
1	M1	TU3x1x2	.942	22.75	2	.594	7.875	z	2	9977.739	16210.778	.526	1.202	2... H1-1a
2	M2	TU3x1x2	.549	3.938	3	.167	0	z	6	9977.739	16210.778	.526	1.202	1... H1-1b
3	M3	TU3x1x2	.365	2.188	2	.323	0	z	3	9977.855	16210.778	.526	1.202	1... H1-1b
4	M4	TU3x1x2	.310	21	6	.060	21	z	6	9977.855	16210.778	.526	1.202	1... H1-1b
5	M5	TU3x1x2	.939	22.75	2	.595	7.875	z	2	9977.739	16210.778	.526	1.202	2... H1-1a
6	M6	TU3x1x2	.549	3.938	3	.167	0	z	6	9977.739	16210.778	.526	1.202	1... H1-1b
7	M7	TU3x1x2	.365	39.813	2	.323	40.25	z	3	9977.855	16210.778	.526	1.202	1... H1-1b
8	M8	TU3x1x2	.730	4.375	3	1.207	4.375	z	2	9977.739	16210.778	.526	1.202	1... H1-1b

Envelope AISC 13th ASD Steel Code Checks (Continued)

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	
9	M9	TU3x1x2	.730	4.375 3	1.210	4.375	z	2	9977.739	16210.778	.526	1.202	1... H1-1b
10	M16	TU3x1x2	.509	0 2	.037	0	z	5	10438.36	16210.778	.526	1.202	2... H1-1a
11	M17	TU3x1x2	.302	0 2	.007	0	z	4	9977.855	16210.778	.526	1.202	2... H1-1a
12	M18	TU3x1x2	.510	40 2	.037	0	z	4	10438.36	16210.778	.526	1.202	2... H1-1a

***** End of Calculations *****