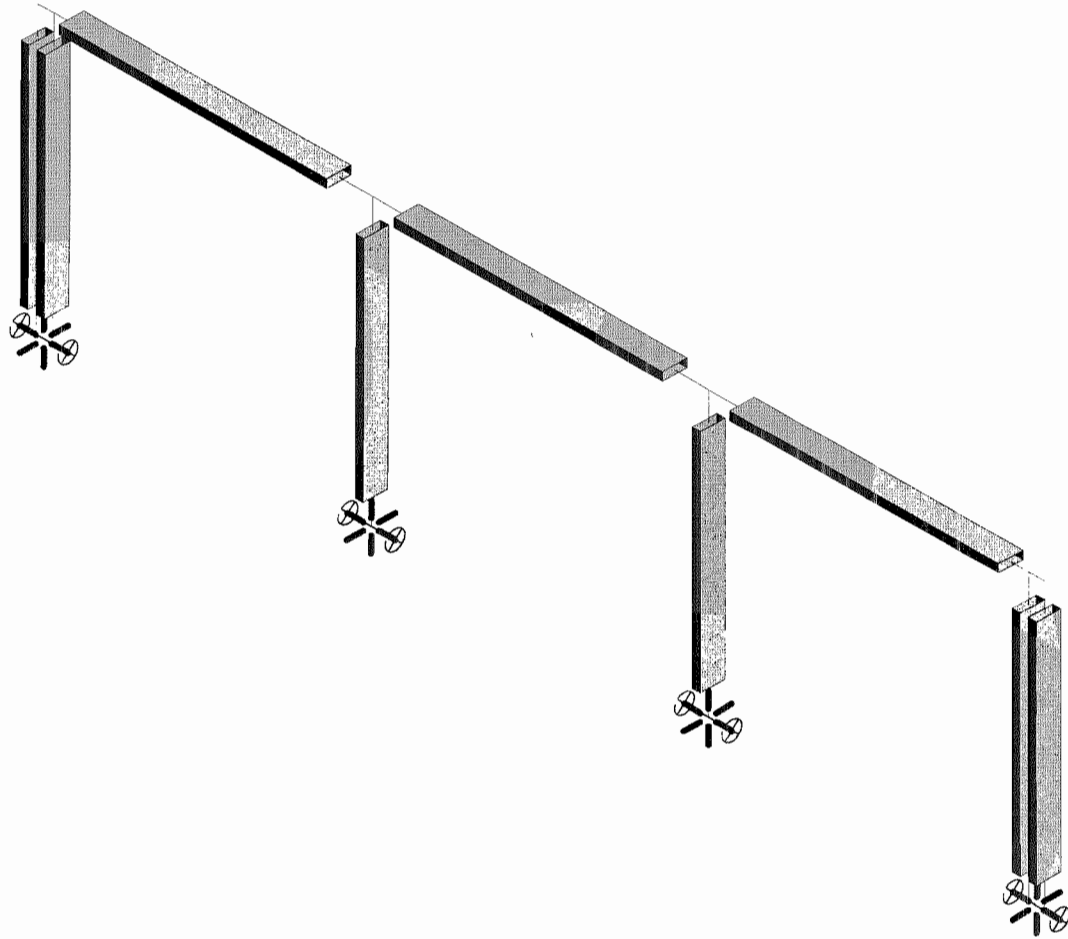
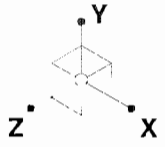


**D2b—3" x 1" RECT. TUBE x 36-1/2" HIGH RAIL WITHOUT BOTTOM RAIL**

Building Code:	<b>2006 International Building Code 2007 California Building Code AISC Steel Construction Manual, 13th ed—ASD</b>
Material:	<b>Carbon Steel, A500, Grade B, Fy = 42 ksi Stainless Steel, A554, Grade MT-304 or MT-316, Fy = 30 ksi Stainless Steel, LDX 2101 (UNS S32101), Fy = 60 ksi (Anchor Post)</b>
Height:	<b>36.5"</b>
Anchor Post:	<b>Carbon Steel: Double HSS 3x1x1/8 Tube Stainless Steel: Double 3"x1"x0.120" Tube (LDX 2101)</b>
Intermediate Posts:	<b>Carbon Steel: HSS 3x1x1/8 Tube Stainless Steel: 3"x1"x0.120" Tube</b>
Top Rail:	<b>Carbon Steel: HSS 3x1x1/8 Tube Stainless Steel: 3"x1"x0.120" Tube</b>
Bottom Rail:	<b>None</b>
Number of Cables:	<b>10</b>
Cable Spacing:	<b>3.23"</b>



**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.



Ferrari Shields & Associates

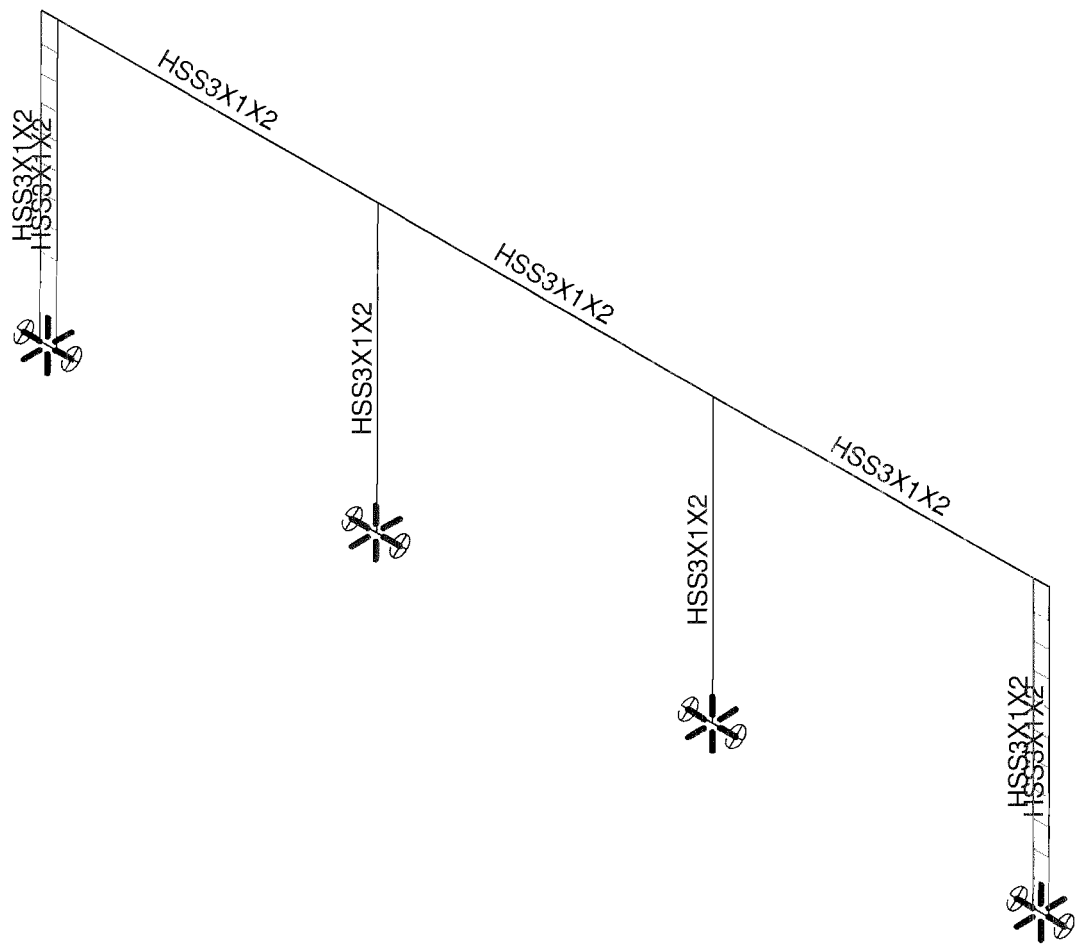
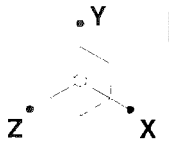
o/c

08196

D2b - 3"x1" RECT TUBE x 36.5" HIGH RAIL W/O BOTTOM RAIL

Oct 29, 2008 at 1:40 PM

D2-3x1.R3D



Ferrari Shields & Associates

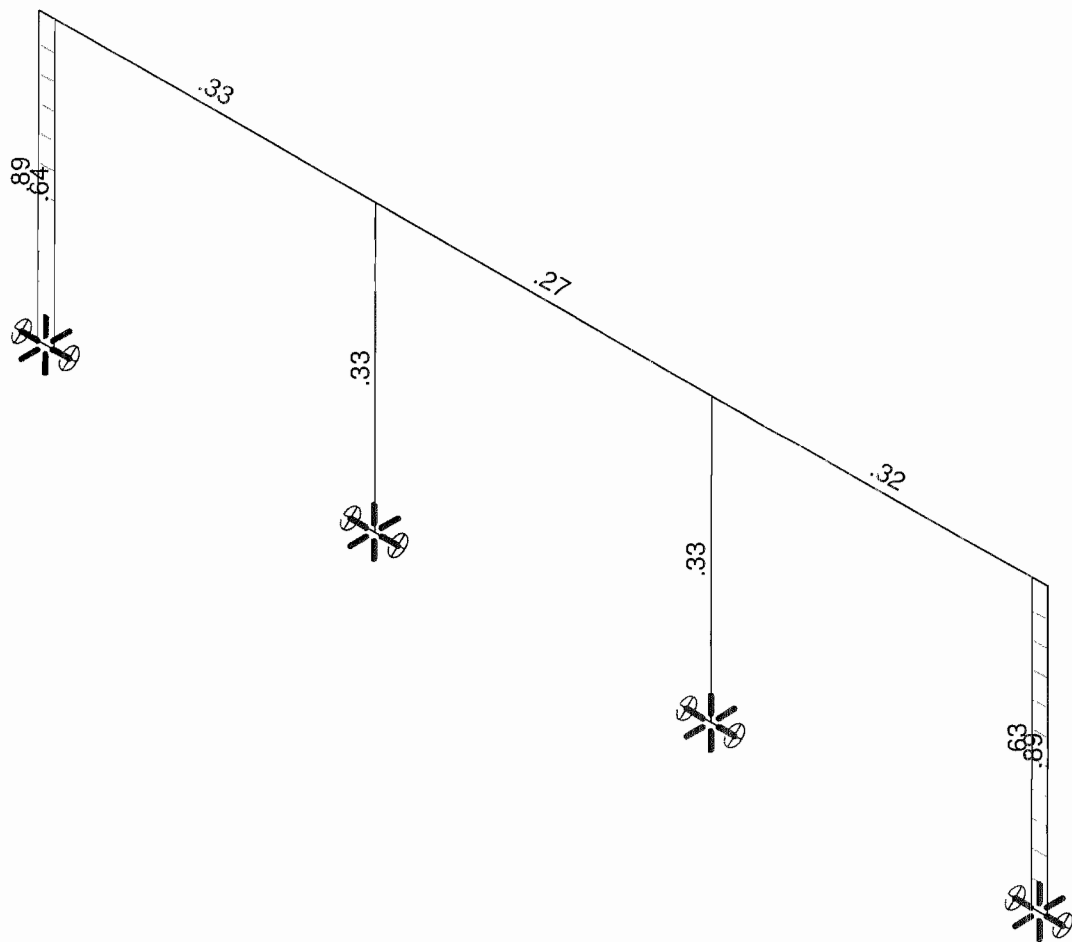
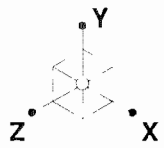
o/c

08196

D2b - 3"x1" RECT TUBE x 36.5" HIGH RAIL W/O BOTTOM RAIL

Oct 29, 2008 at 1:41 PM

D2-3x1.R3D



Member Code Checks Displayed  
Solution: Envelope

Ferrari Shields & Associates

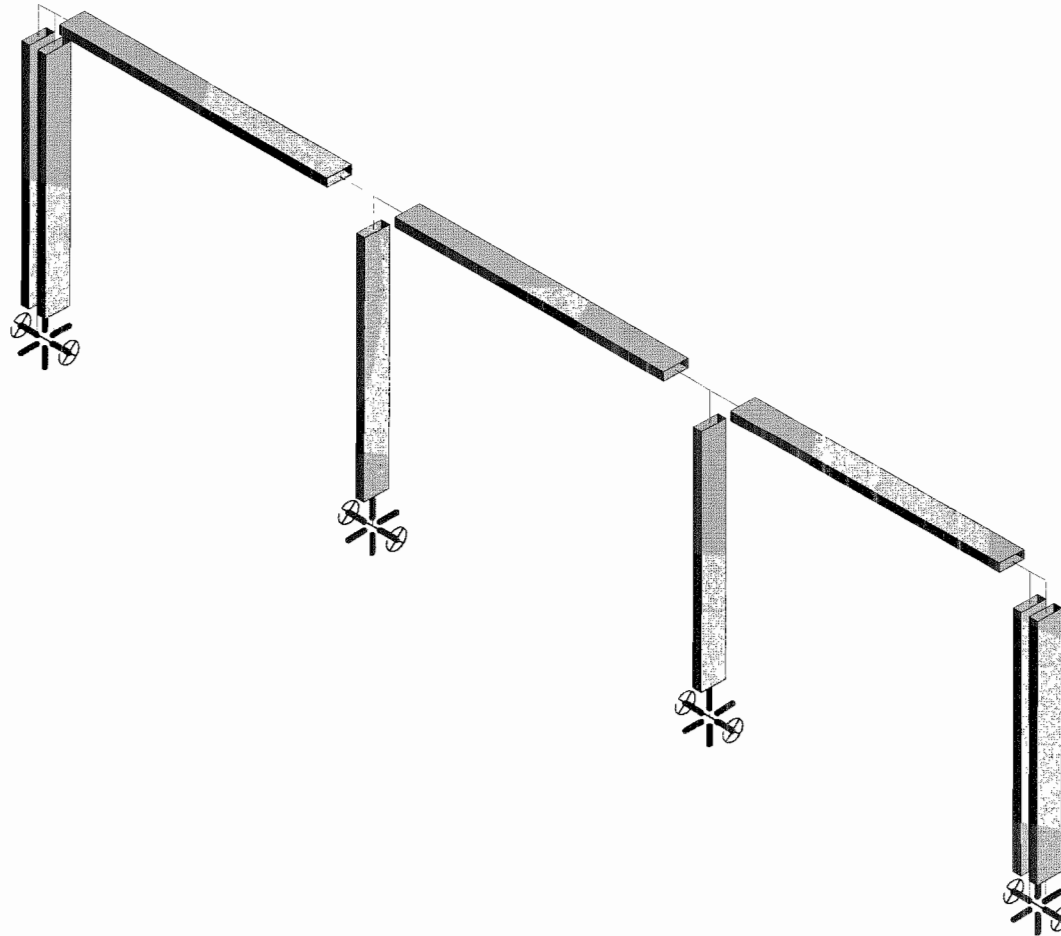
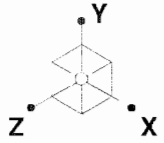
o/c

08196

D2b - 3"x1" RECT TUBE x 36.5" HIGH RAIL W/O BOTTOM RAIL

Oct 29, 2008 at 1:41 PM

D2-3x1.R3D



Ferrari Shields & Associates

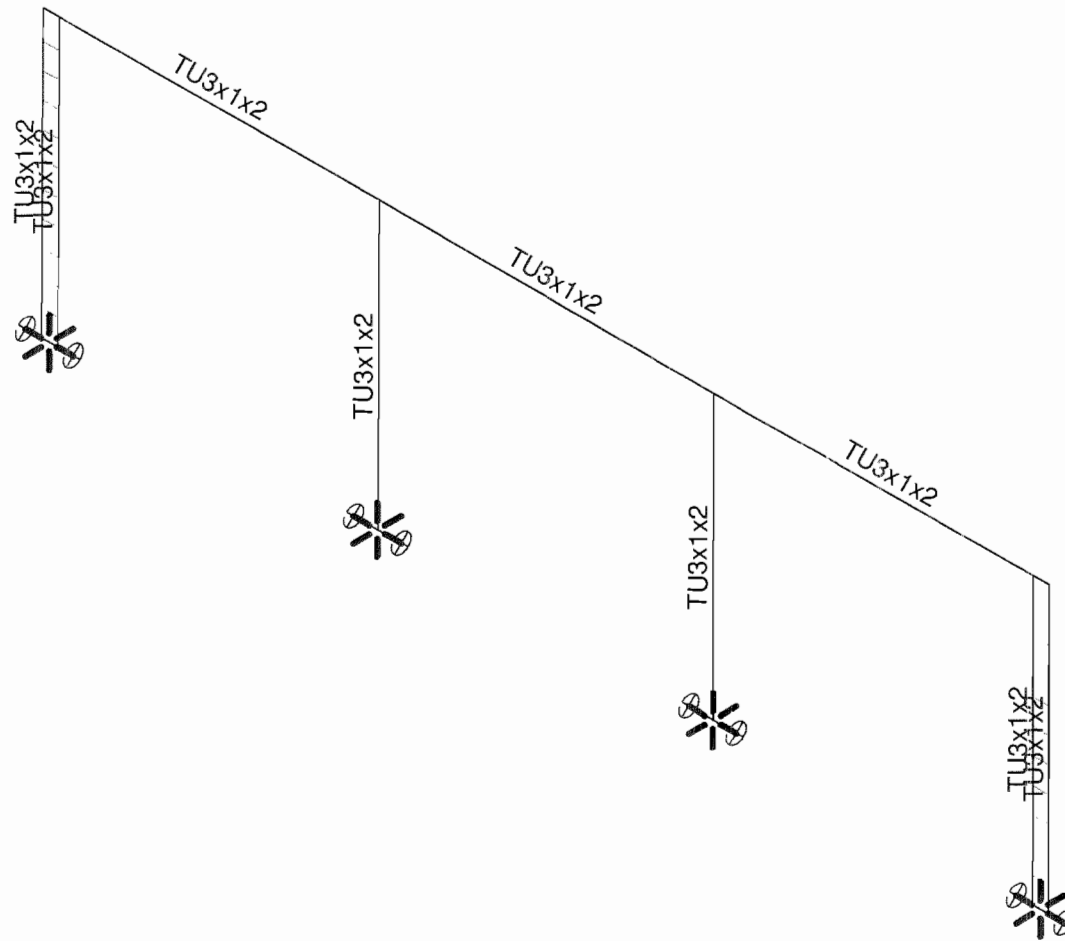
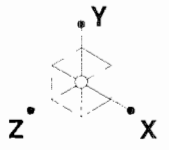
o/c

08196

D2b (SS) - 3"x1" RECT TUBE x 36.5" HIGH RAIL W/O BOTTOM RAIL

Dec 10, 2008 at 9:30 AM

D2-3x1-ss.R3D



Ferrari Shields & Associates

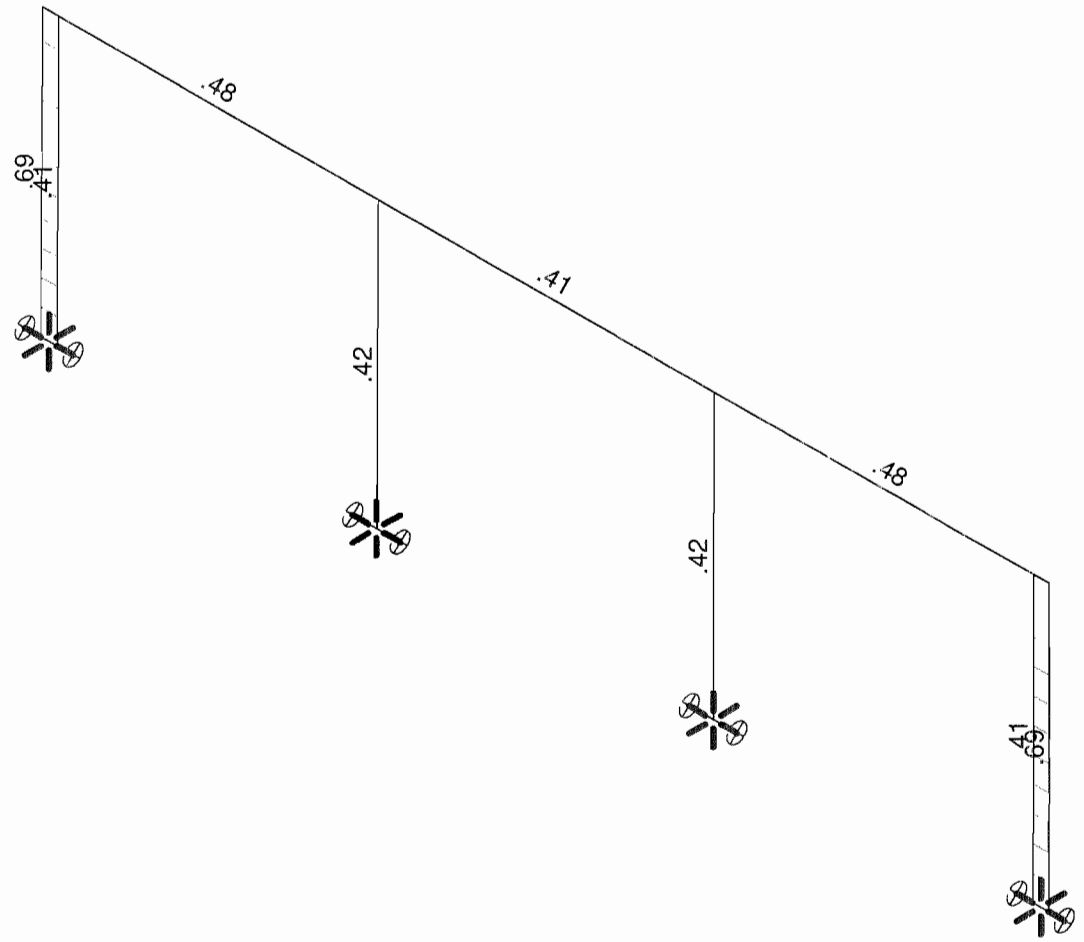
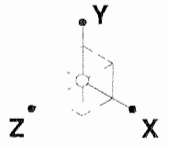
D2b (SS) - 3"x1" RECT TUBE x 36.5" HIGH RAIL W/O BOTTOM RAIL

o/c

08196

Dec 10, 2008 at 9:30 AM

D2-3x1-ss.R3D



Member Code Checks Displayed  
Solution: Envelope

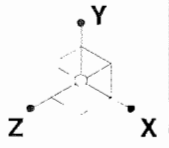
Ferrari Shields & Associates

D2b (SS) - 3"x1" RECT TUBE x 36.5" HIGH RAIL W/O BOTTOM RAIL

Dec 10, 2008 at 9:31 AM

o/c  
08196

D2-3x1-ss.R3D



400lb  
400lb  
400lb  
400lb  
400lb  
400lb  
400lb  
400lb  
400lb  
400lb



56.4

-1974.2

-56.4  
9.6



-56.4

-9.6

1974.2



56.4

-400lb  
-400lb  
-400lb  
-400lb  
-400lb  
-400lb  
-400lb  
-400lb  
-400lb

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

Ferrari Shields & Associates

o/c  
08196

D2b - 3"x1" RECT TUBE x 36.5" HIGH RAIL W/O BOTTOM RAIL

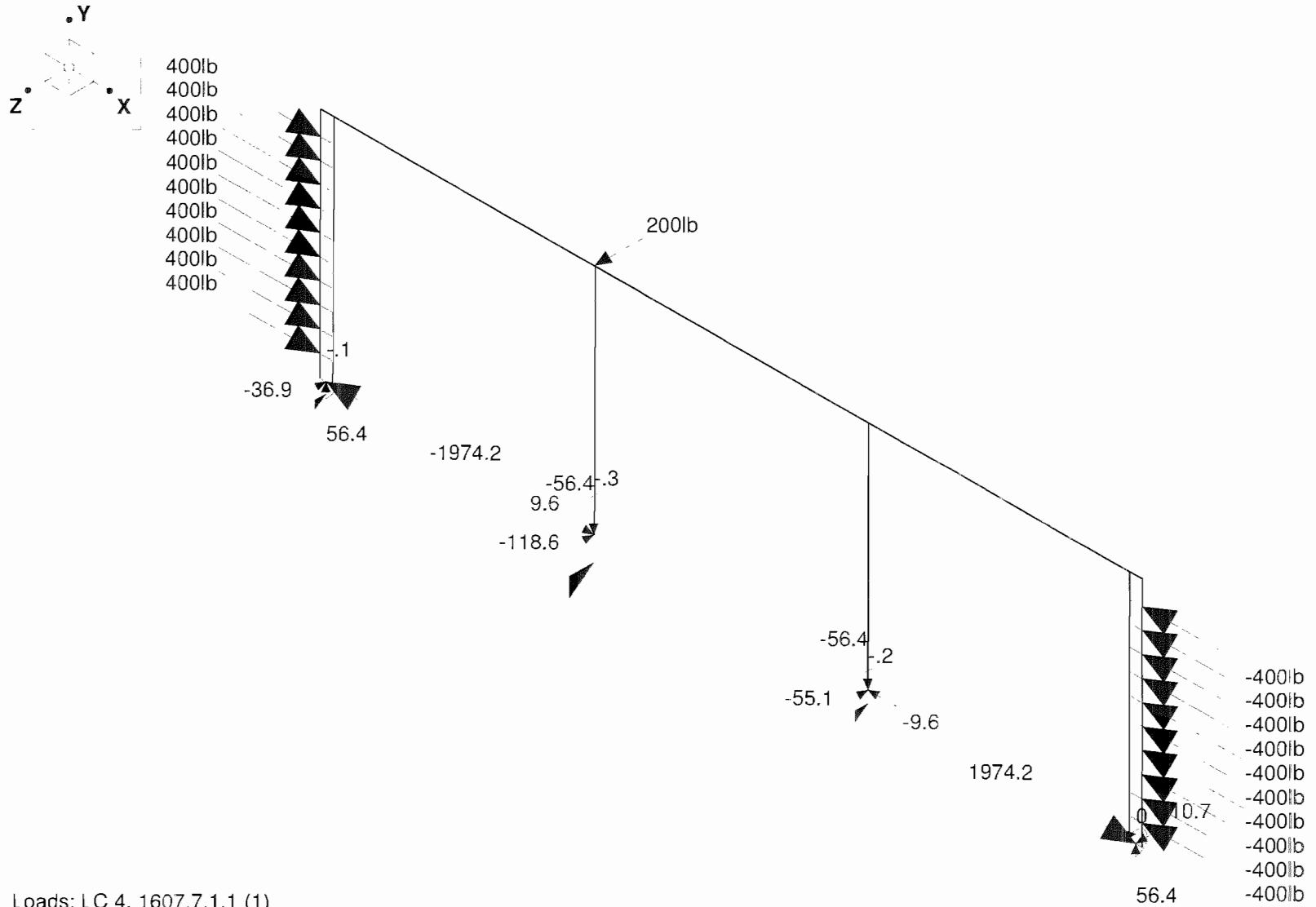
Oct 29, 2008 at 1:49 PM

D2-3x1.R3D









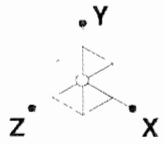
Loads: LC 4, 1607.7.1.1 (1)  
 Results for LC 4, 1607.7.1.1 (1)  
 Reaction units are lb and k-ft

Ferrari Shields & Associates

D2b - 3"x1" RECT TUBE x 36.5" HIGH RAIL W/O BOTTOM RAIL

o'c  
 08196

Oct 29, 2008 at 1:49 PM  
 D2-3x1.R3D

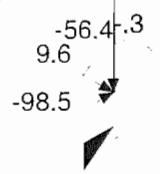


400lb  
400lb  
400lb  
400lb  
400lb  
400lb  
400lb  
400lb  
400lb  
400lb



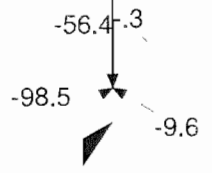
-1.5  
56.4

-1974.2



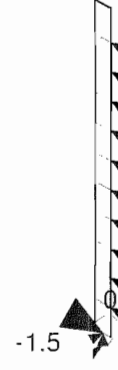
-56.4  
9.6  
-98.5

200lb



-56.4  
-98.5  
-9.6

1974.2



-1.5  
56.4

-400lb  
-400lb  
-400lb  
-400lb  
-400lb  
-400lb  
-400lb  
-400lb

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

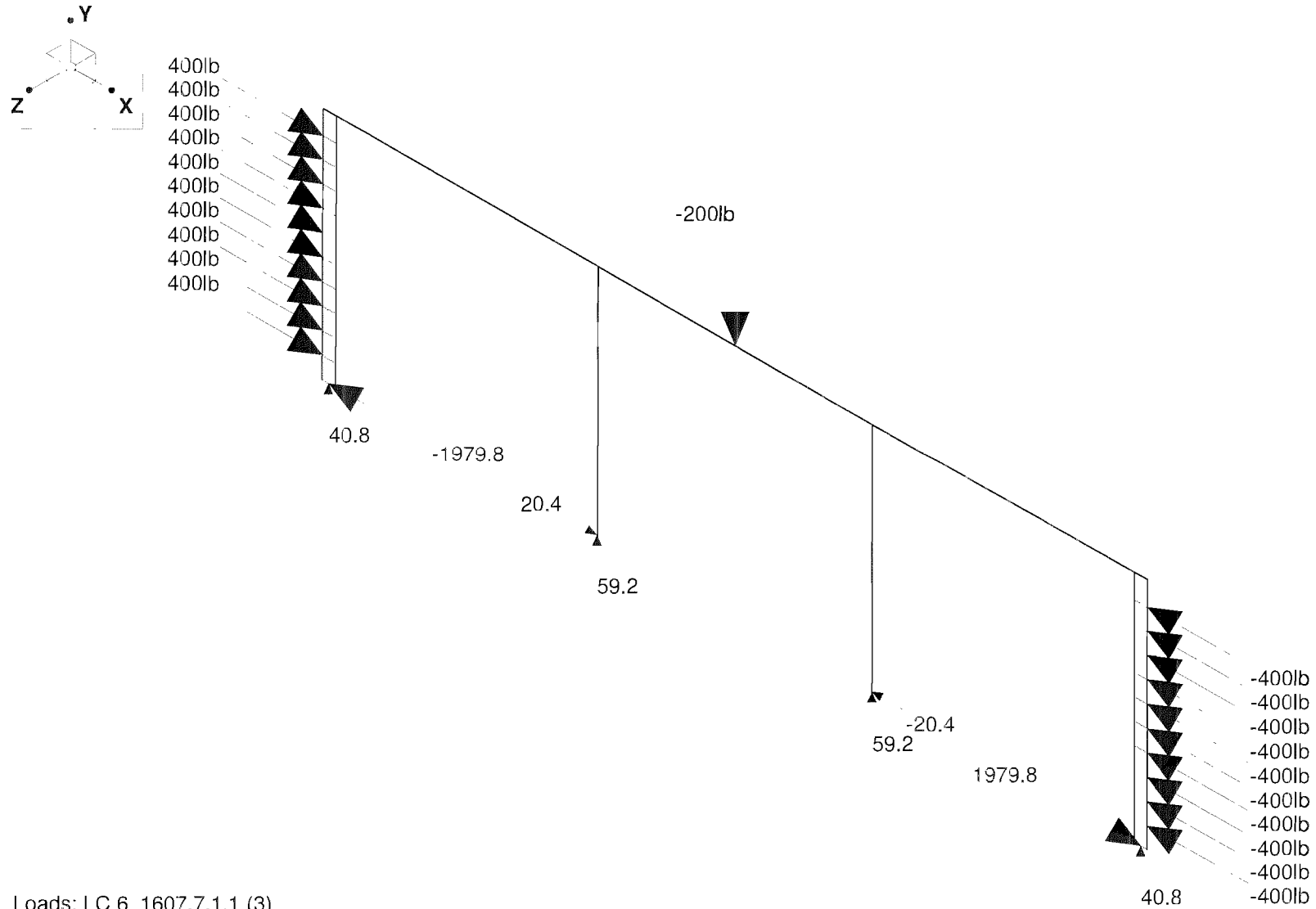
o/c

08196

D2b - 3"x1" RECT TUBE x 36.5" HIGH RAIL W/O BOTTOM RAIL

Oct 29, 2008 at 1:49 PM

D2-3x1.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

o'c

08196

D2b - 3"x1" RECT TUBE x 36.5" HIGH RAIL W/O BOTTOM RAIL

Oct 29, 2008 at 1:50 PM

D2-3x1.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 99: ASD
Wood Code	NDS 91/97: ASD
Wood Temperature	< 100F
Concrete Code	ACI 2005

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	PCA Load Contour
Parme 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	SS316	28000	11154	.3	.65	.49	30
2	A500Gr42	29000	11154	.3	.65	.49	42

### 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	IPOST	HSS3X1X2	Column	Tube	A500Gr42	Typical	.841	.138	.818	.409
3	EPOST	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				20				
2	1607.7.1.2	None				16				
3	1607.7.1	None						3		
4	1607.7.1.1 (1)	None				1				
5	1607.7.1.1 (2)	None					1			
6	1607.7.1.1 (3)	None					1			

**Load Combinations**

	Description	Solve	PDelta	SR...	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor
1	Cable Prestress	Yes	C		1	1						
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	N29	N30		90	EPOST	Column	Tube	A500Gr42	Typical
9	M9	N41	N42		90	EPOST	Column	Tube	A500Gr42	Typical
10	M10	N1	N53			LINK	Beam	None	GEN_RIGID	Default
11	M11	N41	N54			LINK	Beam	None	GEN_RIGID	Default
12	M12	N53	N29			LINK	Beam	None	GEN_RIGID	Default
13	M13	N54	N5			LINK	Beam	None	GEN_RIGID	Default
14	M14	N9	N31			LINK	Beam	None	GEN_RIGID	Default
15	M15	N11	N32			LINK	Beam	None	GEN_RIGID	Default
16	M16	N13	N33			LINK	Beam	None	GEN_RIGID	Default
17	M17	N15	N34			LINK	Beam	None	GEN_RIGID	Default
18	M18	N17	N35			LINK	Beam	None	GEN_RIGID	Default
19	M19	N19	N36			LINK	Beam	None	GEN_RIGID	Default
20	M20	N21	N37			LINK	Beam	None	GEN_RIGID	Default
21	M21	N23	N38			LINK	Beam	None	GEN_RIGID	Default
22	M22	N25	N39			LINK	Beam	None	GEN_RIGID	Default
23	M23	N27	N40			LINK	Beam	None	GEN_RIGID	Default
24	M24	N43	N10			LINK	Beam	None	GEN_RIGID	Default
25	M25	N44	N12			LINK	Beam	None	GEN_RIGID	Default
26	M26	N45	N14			LINK	Beam	None	GEN_RIGID	Default
27	M27	N46	N16			LINK	Beam	None	GEN_RIGID	Default
28	M28	N47	N18			LINK	Beam	None	GEN_RIGID	Default
29	M29	N48	N20			LINK	Beam	None	GEN_RIGID	Default
30	M30	N49	N22			LINK	Beam	None	GEN_RIGID	Default
31	M31	N50	N24			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	N51	N26			LINK	Beam	None	GEN_RIGID	Default
33	M33	N52	N28			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	20.358	6	59.201	6	0	1	0	1	0	1	0	1
2		min	9.591	1	-60.97	2	-173.766	3	-5	3	0	1	0	1
3	N7	max	-9.591	1	59.246	6	0	1	0	1	0	1	0	1
4		min	-20.362	6	-60.97	2	-173.766	3	-5	3	0	1	0	1
5	N53	max	-1974.152	4	60.97	2	0	1	0	1	0	1	0	1
6		min	-2095.357	2	40.79	6	-88.734	3	-327	3	0	1	0	1
7	N54	max	2095.357	2	60.97	2	10.687	4	.02	4	0	1	0	1
8		min	1974.152	4	40.763	6	-88.734	3	-327	3	0	1	0	1
9	Totals:	max	0	4	200	6	0	1						
10		min	0	2	0	2	-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	1526.361	2	0	1	-995.163	1	0	3	.125	2	0	1
2			min	1431.475	6	-45.128	3	-1056.852	2	0	5	.117	1	-.164	3
3		2	max	6046.907	2	0	1	-606.98	1	0	1	-.146	1	0	1
4			min	5623.767	1	-50.751	3	-671.007	2	0	3	-.159	2	-.128	3
5		3	max	8794.364	2	0	1	12.721	2	0	1	-.141	1	0	1
6			min	8036.743	1	-58.044	3	8.655	6	-.001	3	-.154	2	-.089	3
7		4	max	5840.338	2	0	1	696.533	2	0	1	-.121	1	0	1
8			min	5436.168	1	-57.192	3	627.592	6	0	2	-.13	2	-.047	3
9		5	max	687.947	6	0	1	987.482	2	0	5	.105	2	0	2
10			min	643.433	4	-58.027	3	930.443	1	0	2	.098	6	-.004	3
11	M2	1	max	59.201	6	0	1	20.445	6	0	1	0	1	0	1
12			min	-60.97	2	-173.766	3	9.591	1	0	1	0	1	-.5	3
13		2	max	59.201	6	0	1	20.445	6	0	1	.015	6	0	1
14			min	-60.97	2	-173.766	3	9.591	1	0	1	.007	1	-.37	3
15		3	max	59.201	6	0	1	20.382	6	0	1	.031	6	0	1
16			min	-60.97	2	-173.766	3	9.591	1	0	1	.014	1	-.239	3
17		4	max	59.201	6	1.559	2	20.247	6	0	1	.046	6	.001	2
18			min	-60.97	2	-173.766	3	9.591	1	0	1	.022	1	-.109	3
19		5	max	59.201	6	1.559	2	20.247	6	0	1	.061	6	.028	4
20			min	-60.97	2	-173.766	3	9.591	1	0	1	.029	1	0	1
21	M3	1	max	980.911	2	0	1	-636.893	4	0	2	.105	2	0	2
22			min	924.659	4	-58.572	3	-681.296	6	-.004	3	.098	6	0	5
23		2	max	2152.643	2	0	1	-41.157	6	0	2	.111	2	.056	3
24			min	2020.169	6	-49.036	3	-61.368	2	-.021	3	.099	6	0	1
25		3	max	2152.643	2	0	1	-41.157	6	0	2	.063	6	.079	3
26			min	2020.169	6	-40.349	4	-61.368	2	-.021	3	.053	1	0	1
27		4	max	2152.643	2	38.464	3	-41.157	6	0	2	.027	6	.104	4
28			min	2020.169	6	-40.349	4	-61.368	2	-.021	3	.004	1	0	1
29		5	max	2152.643	2	82.214	3	-41.157	6	0	2	-.009	6	.139	4
30			min	2020.169	6	-40.349	4	-61.368	2	-.021	3	-.05	2	0	1
31	M4	1	max	2163.015	2	47.064	4	0	1	.012	4	.052	6	.139	4
32			min	2035.436	1	-100	5	-99.991	6	0	1	-.019	2	0	1



**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	
33		2	max	2163.015	2	47.064	4	0	1	.012	4	-.017	1	.108	5
34			min	2035.436	1	-100	5	-99.991	6	0	1	-.036	6	0	1
35		3	max	2163.015	2	100	5	100.009	6	.012	4	-.017	1	.195	5
36			min	2035.436	1	0	1	0	1	0	1	-.123	6	0	1
37		4	max	2163.015	2	100	5	100.009	6	.012	4	-.017	1	.108	5
38			min	2035.436	1	0	1	0	1	0	1	-.036	6	-.001	2
39		5	max	2163.015	2	100	5	100.009	6	.012	4	.052	6	.02	5
40			min	2035.436	1	0	1	0	1	0	1	-.019	2	-.026	4
41	M5	1	max	1526.361	2	5.267	4	1056.852	2	0	4	-.117	1	.01	4
42			min	1431.47	6	-45.128	3	995.163	1	0	3	-.125	2	-.164	3
43		2	max	6046.907	2	5.478	4	671.007	2	0	3	.159	2	.006	4
44			min	5623.767	1	-50.751	3	606.98	1	0	1	.146	1	-.128	3
45		3	max	8794.364	2	5.617	4	-8.637	6	.001	3	.154	2	.001	4
46			min	8036.743	1	-58.044	3	-12.721	2	0	1	.141	1	-.089	3
47		4	max	5840.338	2	4.624	4	-627.58	6	0	3	.13	2	0	2
48			min	5436.168	1	-57.192	3	-696.533	2	0	1	.121	1	-.047	3
49		5	max	688.165	6	0	1	-930.443	1	0	1	-.098	6	0	1
50			min	643.433	4	-58.027	3	-987.482	2	0	5	-.105	2	-.004	3
51	M6	1	max	59.246	6	0	1	-9.591	1	0	1	0	1	0	1
52			min	-60.97	2	-173.766	3	-20.357	6	0	1	0	1	-.5	3
53		2	max	59.246	6	0	1	-9.591	1	0	1	-.007	1	0	1
54			min	-60.97	2	-173.766	3	-20.357	6	0	1	-.015	6	-.37	3
55		3	max	59.246	6	0	1	-9.591	1	0	1	-.014	1	0	1
56			min	-60.97	2	-173.766	3	-20.357	6	0	1	-.031	6	-.239	3
57		4	max	59.246	6	0	1	-9.591	1	0	1	-.022	1	0	1
58			min	-60.97	2	-173.766	3	-20.357	6	0	1	-.046	6	-.109	3
59		5	max	59.246	6	0	1	-9.591	1	0	1	-.029	1	.021	3
60			min	-60.97	2	-173.766	3	-20.357	6	0	1	-.061	6	0	2
61	M7	1	max	2152.643	2	5.672	5	61.368	2	.021	3	-.009	6	.02	5
62			min	2020.166	6	-82.214	3	41.129	6	0	1	-.05	2	-.026	4
63		2	max	2152.643	2	5.672	5	61.368	2	.021	3	.027	6	.065	3
64			min	2020.166	6	-38.464	3	41.129	6	0	1	.004	1	-.019	4
65		3	max	2152.643	2	5.672	5	61.368	2	.021	3	.063	6	.079	3
66			min	2020.166	6	-7.675	4	41.129	6	0	1	.053	1	-.012	4
67		4	max	2152.643	2	49.036	3	61.368	2	.021	3	.111	2	.056	3
68			min	2020.166	6	-7.675	4	41.129	6	0	1	.099	6	-.006	4
69		5	max	980.911	2	58.572	3	681.517	6	.004	3	.105	2	0	1
70			min	924.659	4	0	1	636.893	4	0	1	.098	6	0	5
71	M8	1	max	-1378.741	1	0	1	-992.688	1	0	1	.124	2	0	1
72			min	-1465.391	2	-45.092	3	-1054.237	2	0	3	-.117	1	-.163	3
73		2	max	-5567.338	1	0	1	-606.97	1	0	1	-.146	1	0	1
74			min	-5985.937	2	-48.077	3	-671.005	2	0	3	-.159	2	-.128	3
75		3	max	-7980.314	1	0	1	12.721	2	0	1	-.141	1	0	1
76			min	-8733.394	2	-52.144	3	8.655	6	-.001	3	-.154	2	-.088	3
77		4	max	-5379.739	1	1.747	2	696.458	2	0	1	-.121	1	0	1
78			min	-5779.368	2	-48.915	3	627.51	6	0	2	-.13	2	-.048	3
79		5	max	-587.003	4	12.887	5	1171.732	2	0	5	.161	2	0	1
80			min	-647.157	6	-32.864	3	1090.264	6	0	2	.144	6	-.017	3
81	M9	1	max	-1378.741	1	5.509	4	1054.237	2	0	3	-.117	1	.01	4
82			min	-1465.391	2	-45.092	3	992.688	1	0	4	-.124	2	-.163	3
83		2	max	-5567.338	1	5.783	4	671.005	2	0	3	.159	2	.006	4
84			min	-5985.937	2	-48.077	3	606.97	1	0	1	.146	1	-.128	3
85		3	max	-7980.314	1	6.13	4	-8.637	6	.001	3	.154	2	.001	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
86		min	-8733.394	2	-52.144	3	-12.721	2	0	1	.141	1	-.088	3
87	4	max	-5379.739	1	6.74	4	-627.498	6	0	3	.13	2	0	2
88		min	-5779.368	2	-48.915	3	-696.458	2	0	1	.121	1	-.048	3
89	5	max	-587.003	4	15.683	4	-1090.223	6	0	1	-.144	6	0	1
90		min	-647.403	6	-32.864	3	-1171.732	2	0	5	-.161	2	-.017	3

**Envelope AISC 13th ASD Steel Code Checks**

Member	Shape	Code Check	Loc[in]	lc	Shear...	Loc[in]	Dia	lc	Pnc/om [lb]	Pnt/om [lb]	Mnyy/om [k-ft]	Mnzz/om ...	Cb	LRFDE...
1	M1	HSS3X1X2	.890	16.125	2	.463	0	z	2	13014.147	21154.469	.683	1.528	2.... H1-1a
2	M2	HSS3X1X2	.329	0	3	.019	19.5	y	3	13014.147	21154.469	.683	1.528	1.... H1-1b
3	M3	HSS3X1X2	.325	2.188	2	.298	0	z	6	10920.289	21154.469	.683	1.528	1.... H1-1b
4	M4	HSS3X1X2	.274	21	6	.044	21	z	6	10920.289	21154.469	.683	1.528	1 H1-1b
5	M5	HSS3X1X2	.888	16.125	2	.463	0	z	2	13014.147	21154.469	.683	1.528	2.... H1-1a
6	M6	HSS3X1X2	.329	0	3	.019	0	y	3	13014.147	21154.469	.683	1.528	1.... H1-1b
7	M7	HSS3X1X2	.324	39.813	2	.298	40.25	z	6	10920.289	21154.469	.683	1.528	1.... H1-1b
8	M8	HSS3X1X2	.636	16.125	2	.515	32.625	z	2	13014.147	21154.469	.683	1.528	2.... H1-1a
9	M9	HSS3X1X2	.634	16.125	3	.513	32.625	z	2	13014.147	21154.469	.683	1.528	1.... 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 99: ASD
Wood Code	NDS 91/97: ASD
Wood Temperature	< 100F
Concrete Code	ACI 2005

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	PCA Load Contour
Parme 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	SS316	28000	11154	.3	.65	.49	30
2	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	IPOST	TU3x1x2	Column	Tube	SS316	Typical	.902	.149	.918	.41
3	EPOST	TU3x1x2	Column	Tube	LDX2101	Typical	.902	.149	.918	.41

**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		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				20				
2	1607.7.1.2	None				16				
3	1607.7.1	None						3		
4	1607.7.1.1 (1)	None				1				
5	1607.7.1.1 (2)	None					1			
6	1607.7.1.1 (3)	None					1			

**Load Combinations**

	Description	Solve	PDelta	SR...	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor
1	Cable Prestress	Yes	C		1	1						
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	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	LDX2101	Typical
6	M6	N7	N8		90	IPOST	Column	Tube	SS316	Typical
7	M7	N8	N6		90	RAIL	Beam	Tube	SS316	Typical
8	M8	N29	N30		90	EPOST	Column	Tube	LDX2101	Typical
9	M9	N41	N42		90	EPOST	Column	Tube	LDX2101	Typical
10	M10	N1	N53			LINK	Beam	None	GEN_RIGID	Default
11	M11	N41	N54			LINK	Beam	None	GEN_RIGID	Default
12	M12	N53	N29			LINK	Beam	None	GEN_RIGID	Default
13	M13	N54	N5			LINK	Beam	None	GEN_RIGID	Default
14	M14	N9	N31			LINK	Beam	None	GEN_RIGID	Default
15	M15	N11	N32			LINK	Beam	None	GEN_RIGID	Default
16	M16	N13	N33			LINK	Beam	None	GEN_RIGID	Default
17	M17	N15	N34			LINK	Beam	None	GEN_RIGID	Default
18	M18	N17	N35			LINK	Beam	None	GEN_RIGID	Default
19	M19	N19	N36			LINK	Beam	None	GEN_RIGID	Default
20	M20	N21	N37			LINK	Beam	None	GEN_RIGID	Default
21	M21	N23	N38			LINK	Beam	None	GEN_RIGID	Default
22	M22	N25	N39			LINK	Beam	None	GEN_RIGID	Default
23	M23	N27	N40			LINK	Beam	None	GEN_RIGID	Default
24	M24	N43	N10			LINK	Beam	None	GEN_RIGID	Default
25	M25	N44	N12			LINK	Beam	None	GEN_RIGID	Default
26	M26	N45	N14			LINK	Beam	None	GEN_RIGID	Default
27	M27	N46	N16			LINK	Beam	None	GEN_RIGID	Default
28	M28	N47	N18			LINK	Beam	None	GEN_RIGID	Default
29	M29	N48	N20			LINK	Beam	None	GEN_RIGID	Default
30	M30	N49	N22			LINK	Beam	None	GEN_RIGID	Default
31	M31	N50	N24			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	N51	N26			LINK	Beam	None	GEN_RIGID	Default
33	M33	N52	N28			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	20.404	6	58.938	6	0	1	0	1	0	1	0	1
2		min	9.637	1	-61.261	2	-173.562	3	-.501	3	0	1	0	1
3	N7	max	-9.637	1	58.981	6	0	1	0	1	0	1	0	1
4		min	-20.408	6	-61.261	2	-173.562	3	-.501	3	0	1	0	1
5	N53	max	-1974.05	4	61.261	2	0	1	0	1	0	1	0	1
6		min	-2095.256	2	41.054	6	-88.938	3	-.323	3	0	1	0	1
7	N54	max	2095.256	2	61.261	2	10.445	4	.02	4	0	1	0	1
8		min	1974.05	4	41.028	6	-88.938	3	-.323	3	0	1	0	1
9	Totals:	max	0	2	200	6	0	1						
10		min	0	1	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	1526.512	2	0	1	-994.912	1	0	3	.125	2	0	1
2			min	1431.602	6	-45.178	3	-1056.566	2	0	5	.117	1	-.162	3
3		2	max	6032.343	2	0	1	-606.098	1	0	1	-.147	1	0	1
4			min	5610.392	1	-50.499	3	-669.978	2	0	3	-.159	2	-.127	3
5		3	max	8770.026	2	0	1	12.84	2	0	1	-.142	1	0	1
6			min	8015.177	1	-57.249	3	8.766	6	0	3	-.155	2	-.087	3
7		4	max	5824.034	2	0	1	695.736	2	0	1	-.121	1	0	1
8			min	5421.171	1	-56.499	3	626.912	6	0	2	-.131	2	-.046	3
9		5	max	696.794	6	0	1	985.65	2	0	5	.106	2	0	2
10			min	651.815	4	-57.169	3	928.754	1	0	2	.098	6	-.003	3
11	M2	1	max	58.938	6	0	1	20.487	6	0	1	0	1	0	1
12			min	-61.261	2	-173.562	3	9.637	1	0	1	0	1	-.501	3
13		2	max	58.938	6	0	1	20.487	6	0	1	.015	6	0	1
14			min	-61.261	2	-173.562	3	9.637	1	0	1	.007	1	-.371	3
15		3	max	58.938	6	0	1	20.427	6	0	1	.031	6	0	1
16			min	-61.261	2	-173.562	3	9.637	1	0	1	-.014	1	-.241	3
17		4	max	58.938	6	1.515	2	20.298	6	0	1	.046	6	.001	2
18			min	-61.261	2	-173.562	3	9.637	1	0	1	.022	1	-.11	3
19		5	max	58.938	6	1.515	2	20.298	6	0	1	.061	6	.026	4
20			min	-61.261	2	-173.562	3	9.637	1	0	1	.029	1	0	1
21	M3	1	max	979.268	2	0	1	-645.526	4	0	2	.106	2	0	2
22			min	923.136	4	-57.61	3	-690.396	6	-.003	3	.098	6	0	5
23		2	max	2152.744	2	0	1	-41.407	6	0	2	.112	2	.055	3
24			min	2020.27	6	-48.894	3	-61.644	2	-.02	3	.099	6	0	1
25		3	max	2152.744	2	0	1	-41.407	6	0	2	.063	6	.079	3
26			min	2020.27	6	-40.409	4	-61.644	2	-.02	3	.053	1	0	1
27		4	max	2152.744	2	38.606	3	-41.407	6	0	2	.027	6	.104	4
28			min	2020.27	6	-40.409	4	-61.644	2	-.02	3	.004	1	0	1
29		5	max	2152.744	2	82.356	3	-41.407	6	0	2	-.01	6	.139	4
30			min	2020.27	6	-40.409	4	-61.644	2	-.02	3	-.05	2	0	1
31	M4	1	max	2163.166	2	47.082	4	0	1	.011	4	.052	6	.139	4
32			min	2035.585	1	-100	5	-99.992	6	0	1	-.019	2	0	1

**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	
33	2	max	2163.166	2	47.082	4	0	1	.011	4	-.017	1	.108	5	
34		min	2035.585	1	-100	5	-99.992	6	0	1	-.036	6	0	1	
35	3	max	2163.166	2	100	5	100.008	6	.011	4	-.017	1	.196	5	
36		min	2035.585	1	0	1	0	1	0	1	-.123	6	0	1	
37	4	max	2163.166	2	100	5	100.008	6	.011	4	-.017	1	.108	5	
38		min	2035.585	1	0	1	0	1	0	1	-.036	6	-.001	2	
39	5	max	2163.166	2	100	5	100.008	6	.011	4	.052	6	.021	5	
40		min	2035.585	1	0	1	0	1	0	1	-.019	2	-.026	4	
41	M5	1	max	1526.512	2	5.155	4	1056.566	2	0	4	-.117	1	.01	4
42		min	1431.598	6	-45.178	3	994.912	1	0	3	-.125	2	-.162	3	
43	2	max	6032.343	2	5.361	4	669.978	2	0	3	.159	2	.006	4	
44		min	5610.392	1	-50.499	3	606.098	1	0	1	.147	1	-.127	3	
45	3	max	8770.026	2	5.501	4	-8.749	6	0	3	.155	2	.002	4	
46		min	8015.177	1	-57.249	3	-12.84	2	0	1	.142	1	-.087	3	
47	4	max	5824.034	2	4.519	4	-626.901	6	0	3	.131	2	0	2	
48		min	5421.171	1	-56.499	3	-695.736	2	0	1	.121	1	-.046	3	
49	5	max	696.998	6	0	1	-928.754	1	0	1	-.098	6	0	1	
50		min	651.815	4	-57.169	3	-985.65	2	0	5	-.106	2	-.003	3	
51	M6	1	max	58.981	6	0	1	-9.637	1	0	1	0	1	0	1
52		min	-61.261	2	-173.562	3	-20.404	6	0	1	0	1	-.501	3	
53	2	max	58.981	6	0	1	-9.637	1	0	1	-.007	1	0	1	
54		min	-61.261	2	-173.562	3	-20.404	6	0	1	-.015	6	-.371	3	
55	3	max	58.981	6	0	1	-9.637	1	0	1	-.014	1	0	1	
56		min	-61.261	2	-173.562	3	-20.404	6	0	1	-.031	6	-.241	3	
57	4	max	58.981	6	0	1	-9.637	1	0	1	-.022	1	0	1	
58		min	-61.261	2	-173.562	3	-20.404	6	0	1	-.046	6	-.11	3	
59	5	max	58.981	6	0	1	-9.637	1	0	1	-.029	1	.02	3	
60		min	-61.261	2	-173.562	3	-20.404	6	0	1	-.061	6	0	2	
61	M7	1	max	2152.744	2	5.769	5	61.644	2	.02	3	-.01	6	.021	5
62		min	2020.266	6	-82.356	3	41.381	6	0	1	-.05	2	-.026	4	
63	2	max	2152.744	2	5.769	5	61.644	2	.02	3	.027	6	.064	3	
64		min	2020.266	6	-38.606	3	41.381	6	0	1	.004	1	-.019	4	
65	3	max	2152.744	2	5.769	5	61.644	2	.02	3	.063	6	.079	3	
66		min	2020.266	6	-7.648	4	41.381	6	0	1	.053	1	-.012	4	
67	4	max	2152.744	2	48.894	3	61.644	2	.02	3	.112	2	.055	3	
68		min	2020.266	6	-7.648	4	41.381	6	0	1	.099	6	-.006	4	
69	5	max	979.268	2	57.61	3	690.603	6	.003	3	.106	2	0	1	
70		min	923.136	4	0	1	645.526	4	0	1	.098	6	0	5	
71	M8	1	max	-1378.599	1	0	1	-992.29	1	0	1	.124	2	0	1
72		min	-1465.252	2	-45.206	3	-1053.794	2	0	3	.117	1	-.162	3	
73	2	max	-5553.694	1	0	1	-606.088	1	0	1	-.147	1	0	1	
74		min	-5971.083	2	-47.975	3	-669.977	2	0	3	-.159	2	-.126	3	
75	3	max	-7958.479	1	0	1	12.84	2	0	1	-.142	1	0	1	
76		min	-8708.765	2	-51.689	3	8.766	6	0	3	-.155	2	-.087	3	
77	4	max	-5364.473	1	1.846	2	695.644	2	0	1	-.121	1	0	1	
78		min	-5762.773	2	-48.555	3	626.815	6	0	2	-.131	2	-.047	3	
79	5	max	-595.117	4	11.868	5	1173.476	2	0	5	.162	2	0	1	
80		min	-655.74	6	-33.798	3	1091.749	6	0	2	.145	6	-.016	3	
81	M9	1	max	-1378.599	1	5.379	4	1053.794	2	0	3	-.117	1	.01	4
82		min	-1465.252	2	-45.206	3	992.29	1	0	4	-.124	2	-.162	3	
83	2	max	-5553.694	1	5.641	4	669.977	2	0	3	.159	2	.006	4	
84		min	-5971.083	2	-47.975	3	606.088	1	0	1	.147	1	-.126	3	
85	3	max	-7958.479	1	5.974	4	-8.75	6	0	3	.155	2	.002	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	
86		min	-8708.765	2	-51.689	3	-12.84	2	0	1	.142	1	-.087	3
87	4	max	-5364.473	1	6.601	4	-626.804	6	0	3	.131	2	0	2
88		min	-5762.773	2	-48.555	3	-695.644	2	0	1	.121	1	-.047	3
89	5	max	-595.117	4	14.95	4	-1091.71	6	0	1	-.145	6	0	1
90		min	-655.97	6	-33.798	3	-1173.476	2	0	5	-.162	2	-.016	3

**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	LRFD E...
1	M1	TU3x1x2	.688	16.125	2	.319	0	z	2	15890.123	32421.557	1.052	2.403	2... H1-1a
2	M2	TU3x1x2	.419	0	3	.025	13.125	y	3	11348.816	16210.778	.526	1.202	1... H1-1b
3	M3	TU3x1x2	.478	2.188	2	.417	0	z	6	9977.855	16210.778	.526	1.202	1... H1-1a
4	M4	TU3x1x2	.413	21	6	.060	21	z	6	9977.855	16210.778	.526	1.202	1... H1-1a
5	M5	TU3x1x2	.687	16.125	2	.319	0	z	2	15890.123	32421.557	1.052	2.403	2... H1-1a
6	M6	TU3x1x2	.419	0	3	.025	0	y	3	11348.816	16210.778	.526	1.202	1... H1-1b
7	M7	TU3x1x2	.477	39.813	2	.417	40.25	z	6	9977.855	16210.778	.526	1.202	1... H1-1a
8	M8	TU3x1x2	.414	16.125	2	.356	32.625	z	2	15890.123	32421.557	1.052	2.403	2... H1-1a
9	M9	TU3x1x2	.413	16.125	2	.354	32.625	z	2	15890.123	32421.557	1.052	2.403	2... H1-1a

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