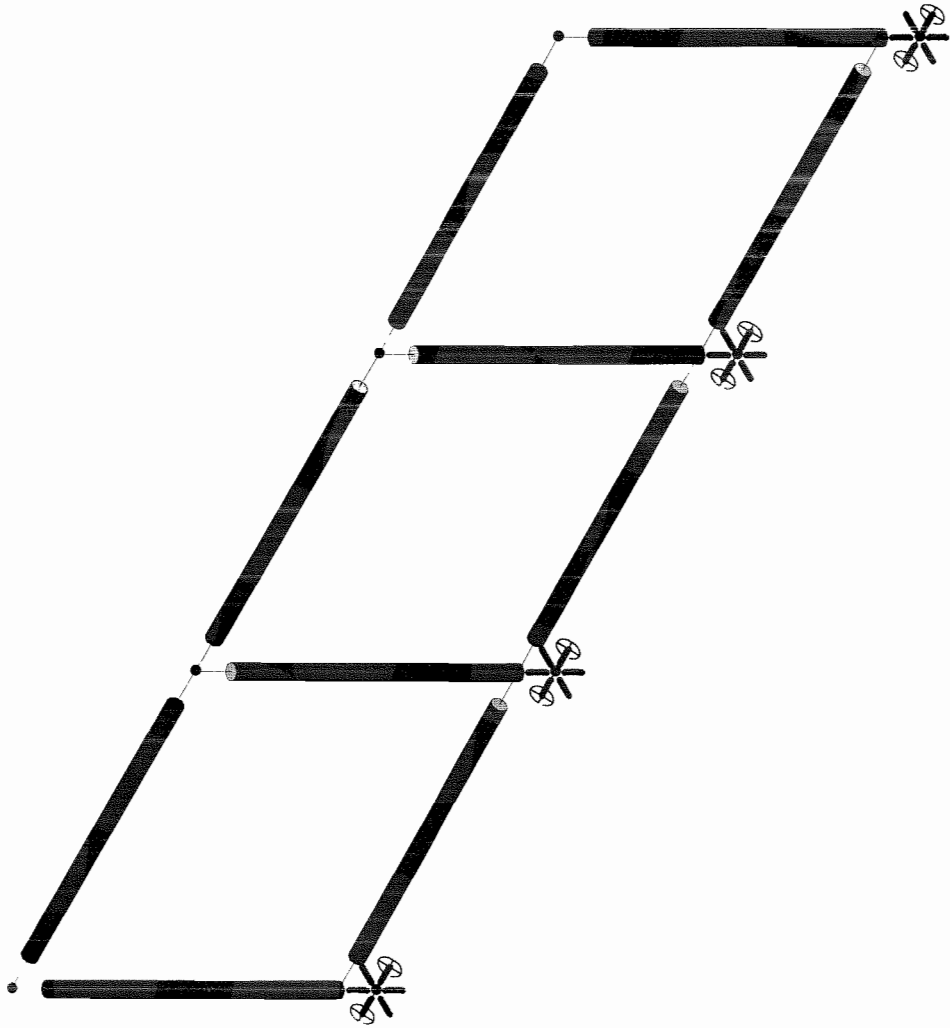


D27—1-1/4" PIPE x 42-1/2" HIGH RAIL WITH BOTTOM RAIL

Building Code:	2006 International Building Code 2007 California Building Code AISC Steel Construction Manual, 13th ed—ASD
Material:	Carbon Steel, A53, Grade B, Fy = 35 ksi Carbon Steel, A501, Grade B, Fy = 36 ksi Carbon Steel, A36, Fy = 36 ksi (Round Bar) Stainless Steel, A312, Grade TP-304 or TP-316, Fy = 30 ksi Stainless Steel, LDX 2101 (UNS S32101), Fy = 60 ksi (Anchor Post and Adjacent Rail)
Height:	42.5"
Anchor Post:	Carbon Steel: 1.66"φ Round Bar (A36) Stainless Steel: 1.66"φ Round Bar (LDX 2101)
Intermediate Posts:	Carbon Steel: 1.25" SCHD 40 (1.66" OD x 0.140") Pipe Stainless Steel: 1.25" SCHD 80 (1.66" OD x 0.191") Pipe
Top Rail at Anchor Posts:	Carbon Steel: 1.66"φ Round Bar (A36) Stainless Steel: 1.66"φ Round Bar (LDX 2101)
Top Rail Elsewhere:	Carbon Steel: 1.25" SCHD 40 (1.66" OD x 0.140") Pipe Stainless Steel: 1.25" SCHD 40 (1.66" OD x 0.140") Pipe
Bottom Rail at Anchor Posts:	Carbon Steel: 1.25" SCHD 40 (1.66" OD x 0.140") Pipe Stainless Steel: 1.25" SCHD 80 (1.66" OD x 0.191") Pipe
Bottom Rail Elsewhere:	Carbon Steel: 1.25" SCHD 40 (1.66" OD x 0.140") Pipe Stainless Steel: 1.25" SCHD 40 (1.66" OD x 0.140") Pipe
Number of Cables:	10
Cable Spacing:	3.24"



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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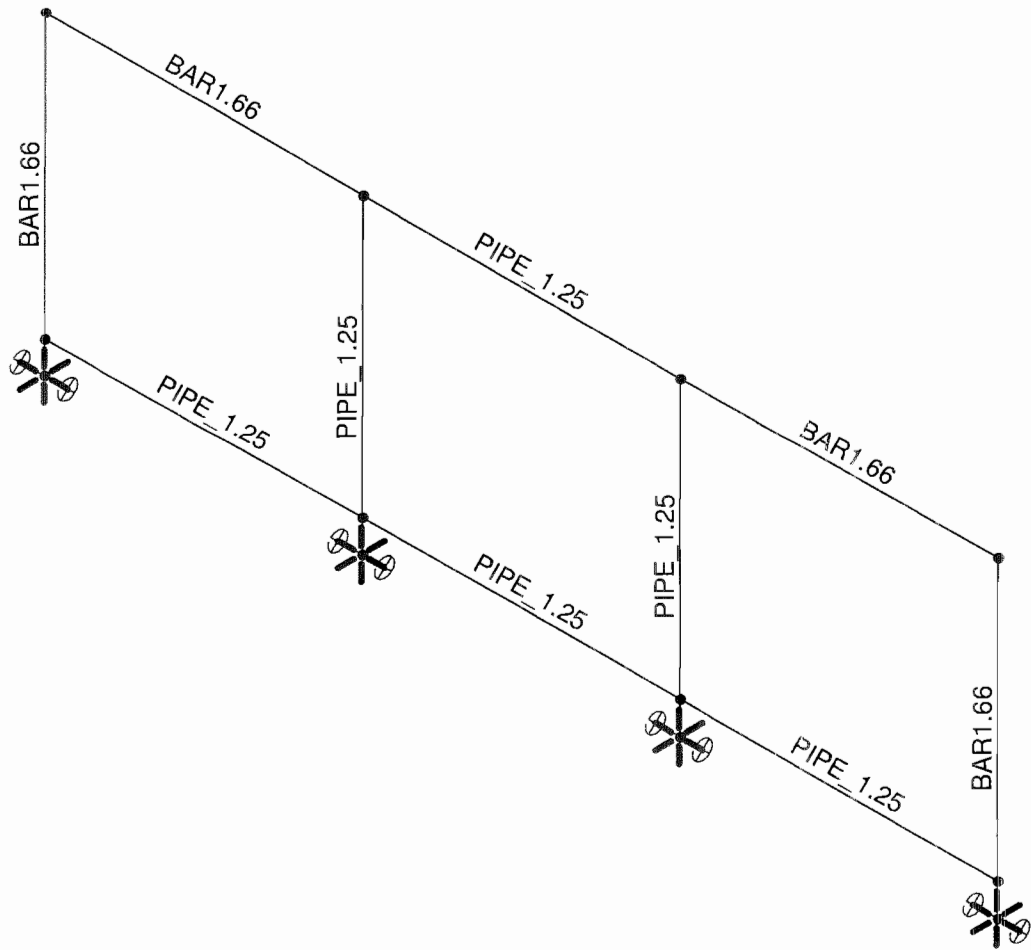
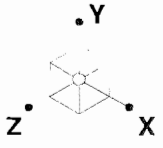
Dan O'Connor

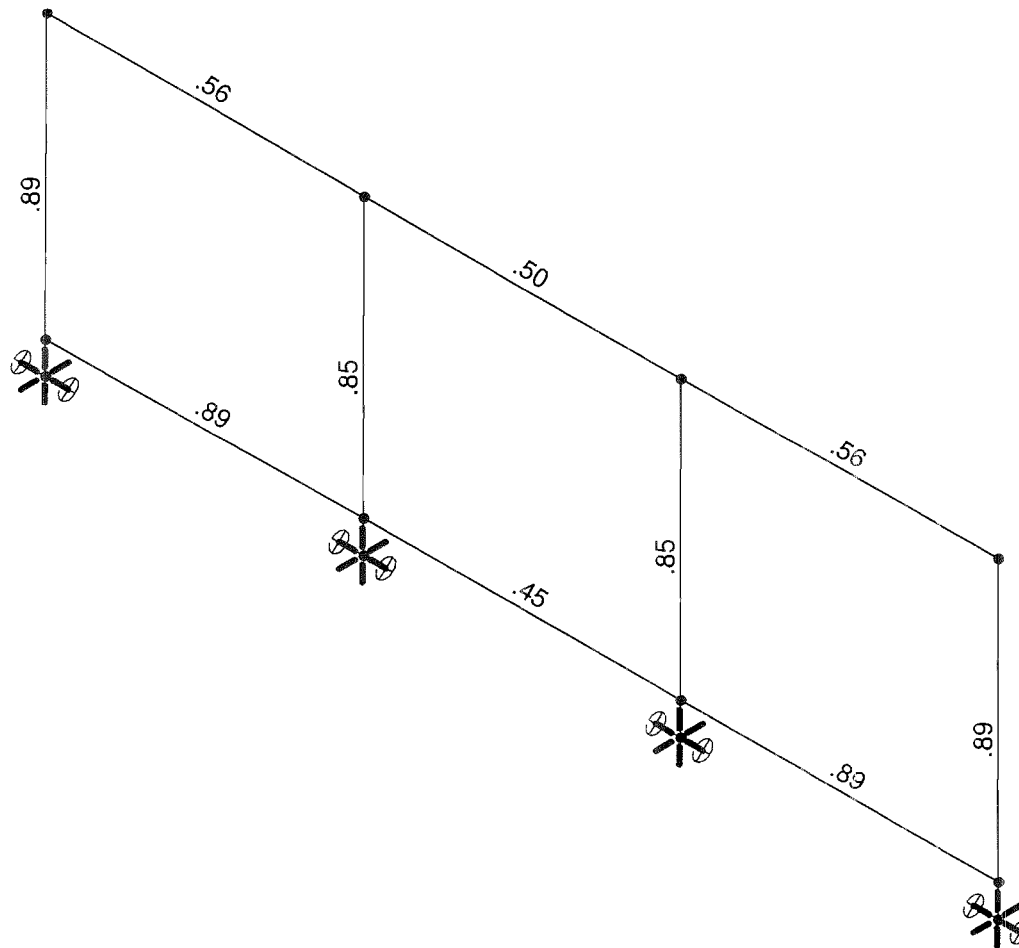
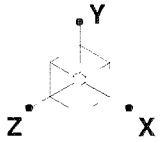
08196

D27 - 1.25" PIPE x 42.5" HIGH RAIL W/ BTM RAIL

Dec 10, 2008 at 1:30 PM

D27.R3D





Member Code Checks Displayed
Solution: Envelope

Ferrari Shields & Associates

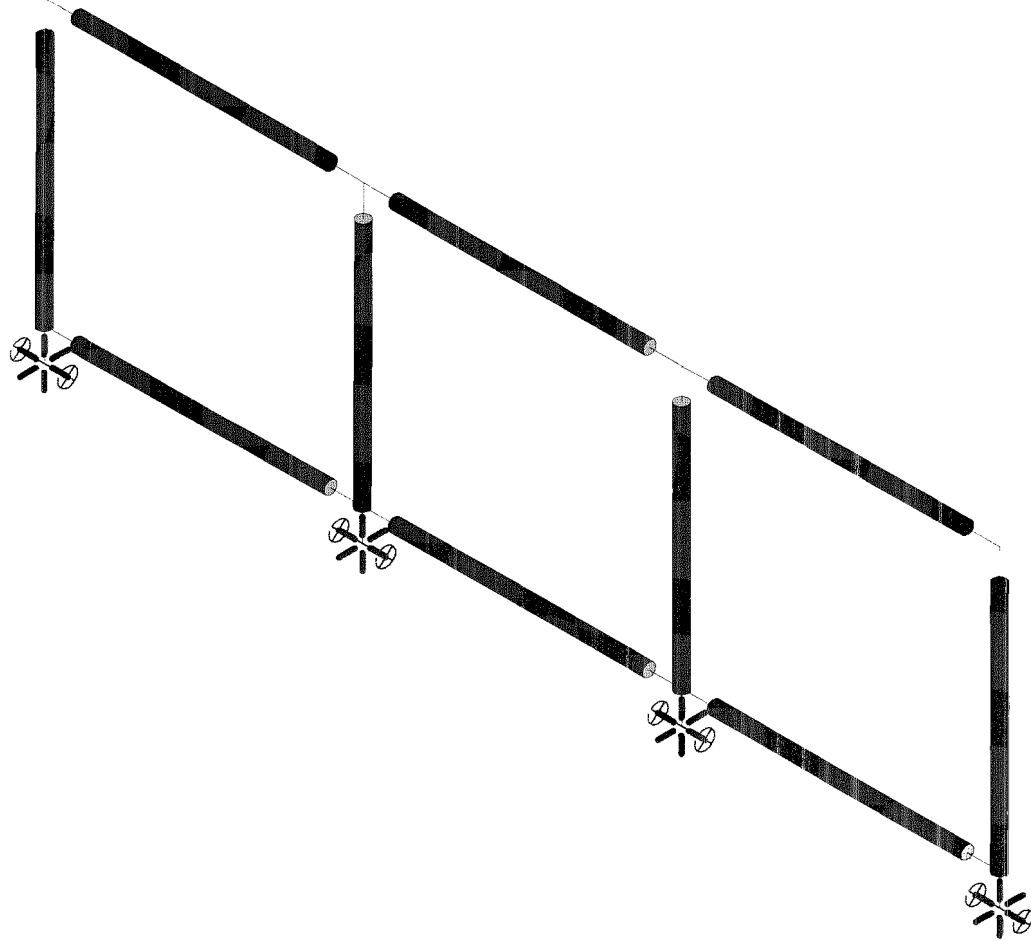
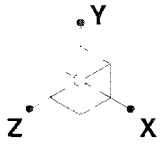
Dan O'Connor

08196

D27 - 1.25" PIPE x 42.5" HIGH RAIL W/ BTM RAIL

Dec 10, 2008 at 1:31 PM

D27.R3D



Ferrari Shields & Associates

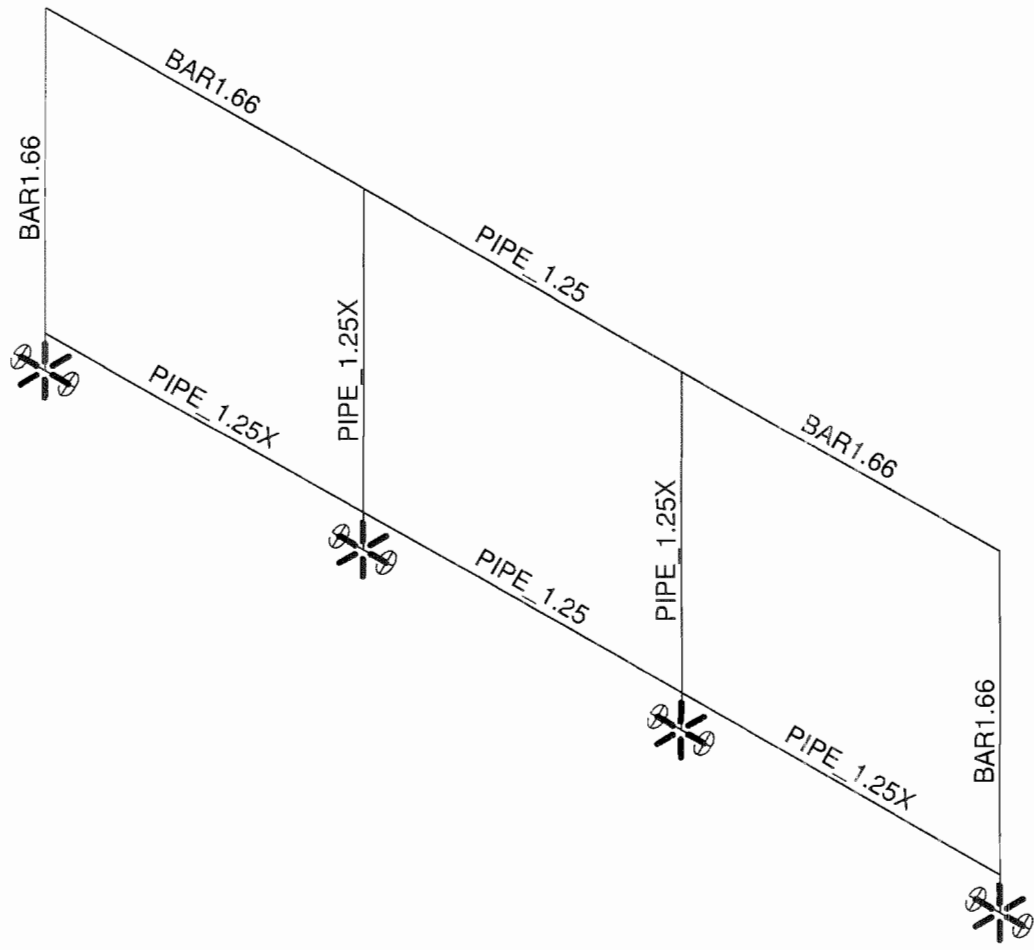
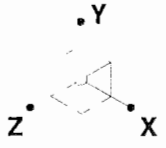
Dan O'Connor

08196

D27 (SS) - 1.25" PIPE x 42.5" HIGH RAIL W/ BTM RAIL

Dec 10, 2008 at 1:37 PM

D27ss.R3D



Ferrari Shields & Associates

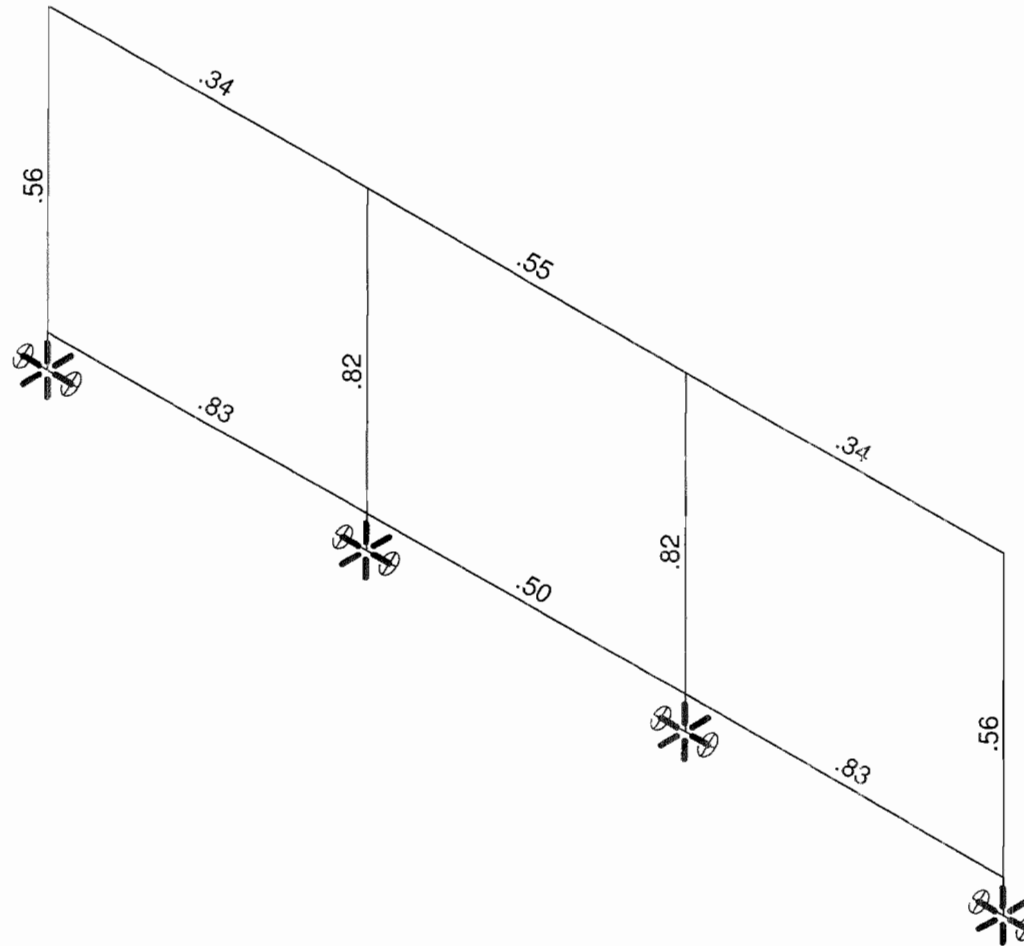
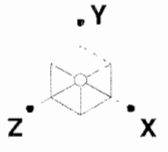
Dan O'Connor

08196

D27 (SS) - 1.25" PIPE x 42.5" HIGH RAIL W/ BTM RAIL

Dec 10, 2008 at 1:38 PM

D27ss.R3D



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

Ferrari Shields & Associates

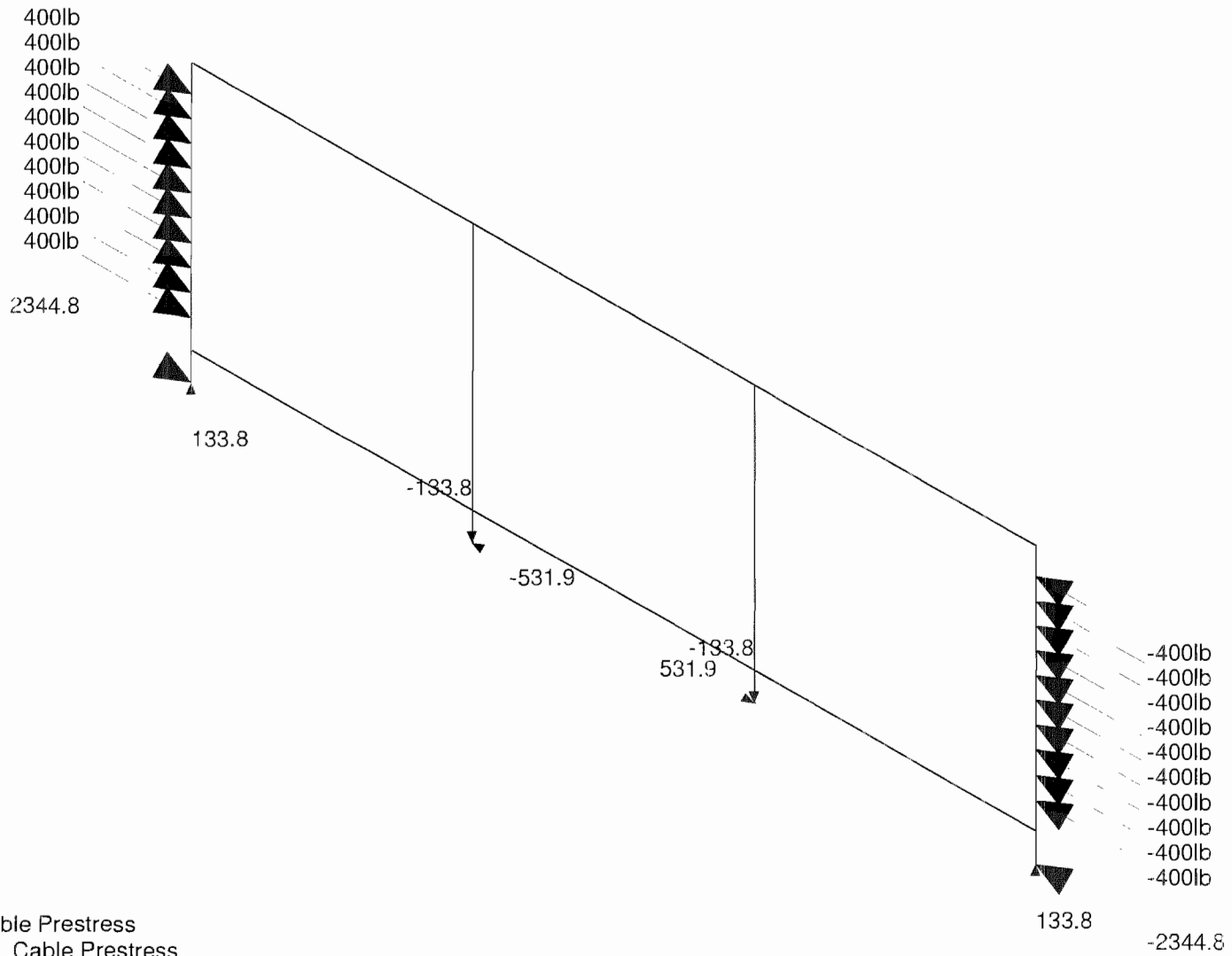
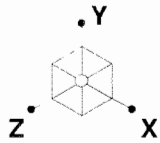
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08196

D27 (SS) - 1.25" PIPE x 42.5" HIGH RAIL W/ BTM RAIL

Dec 10, 2008 at 1:38 PM

D27ss.R3D



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

Ferrari Shields & Associates

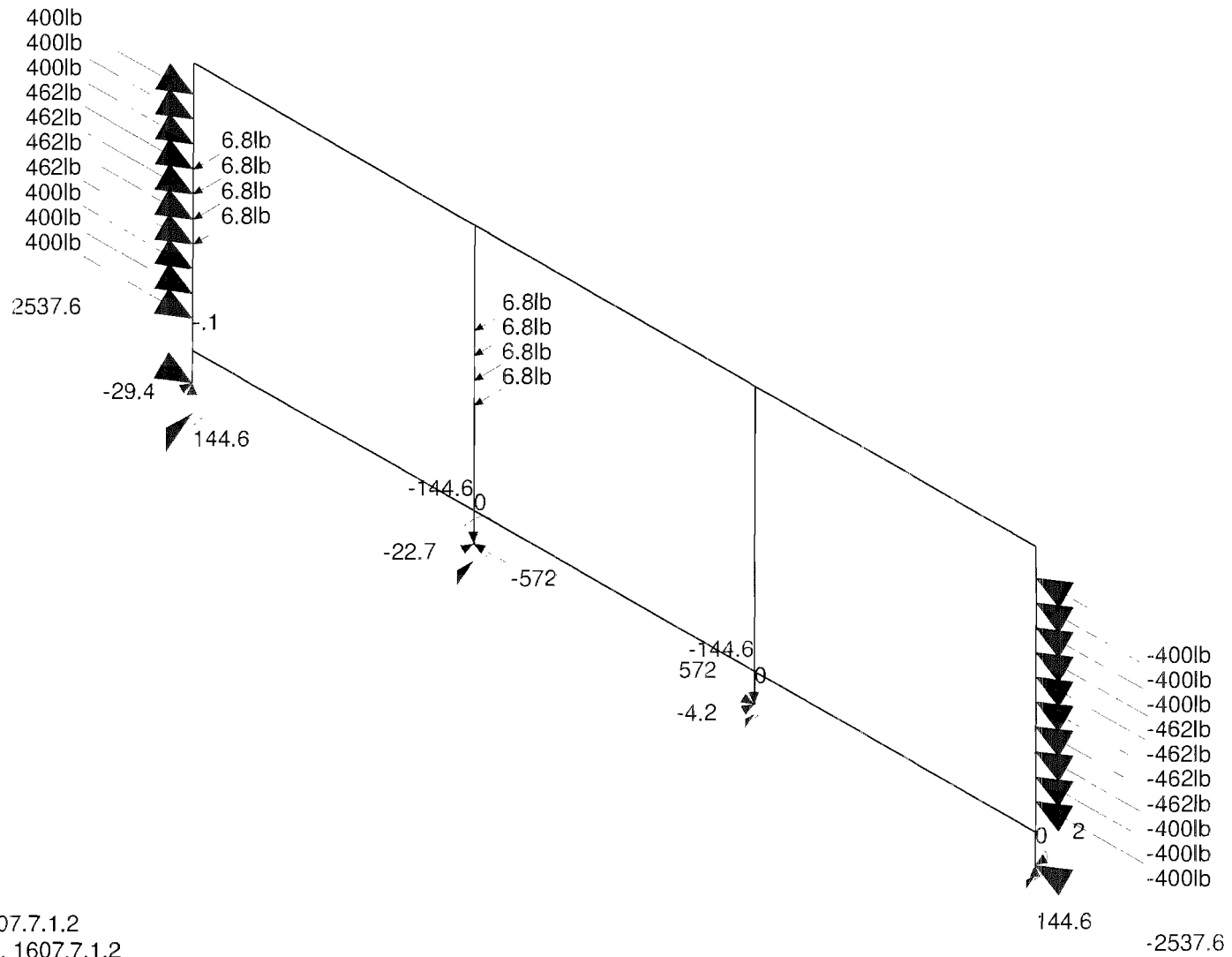
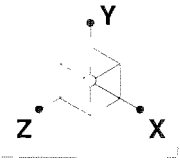
Dan O'Connor

08196

D27 - 1.25" PIPE x 42.5" HIGH RAIL W/ BTM RAIL

Dec 10, 2008 at 1:32 PM

D27.R3D



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

Ferrari Shields & Associates

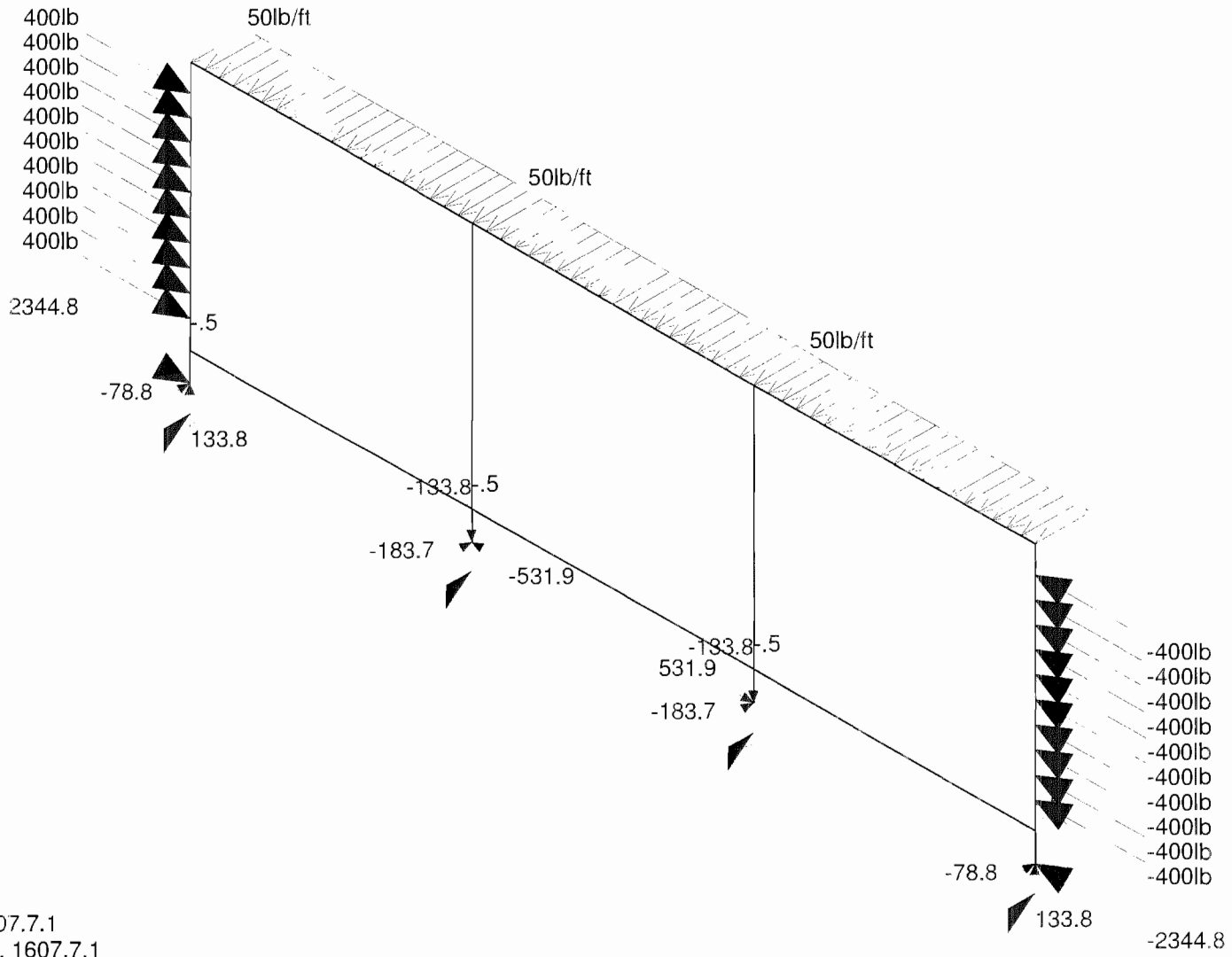
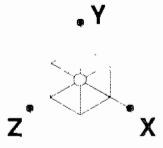
Dan O'Connor

08196

D27 - 1.25" PIPE x 42.5" HIGH RAIL W/ BTM RAIL

Dec 10, 2008 at 1:32 PM

D27.R3D

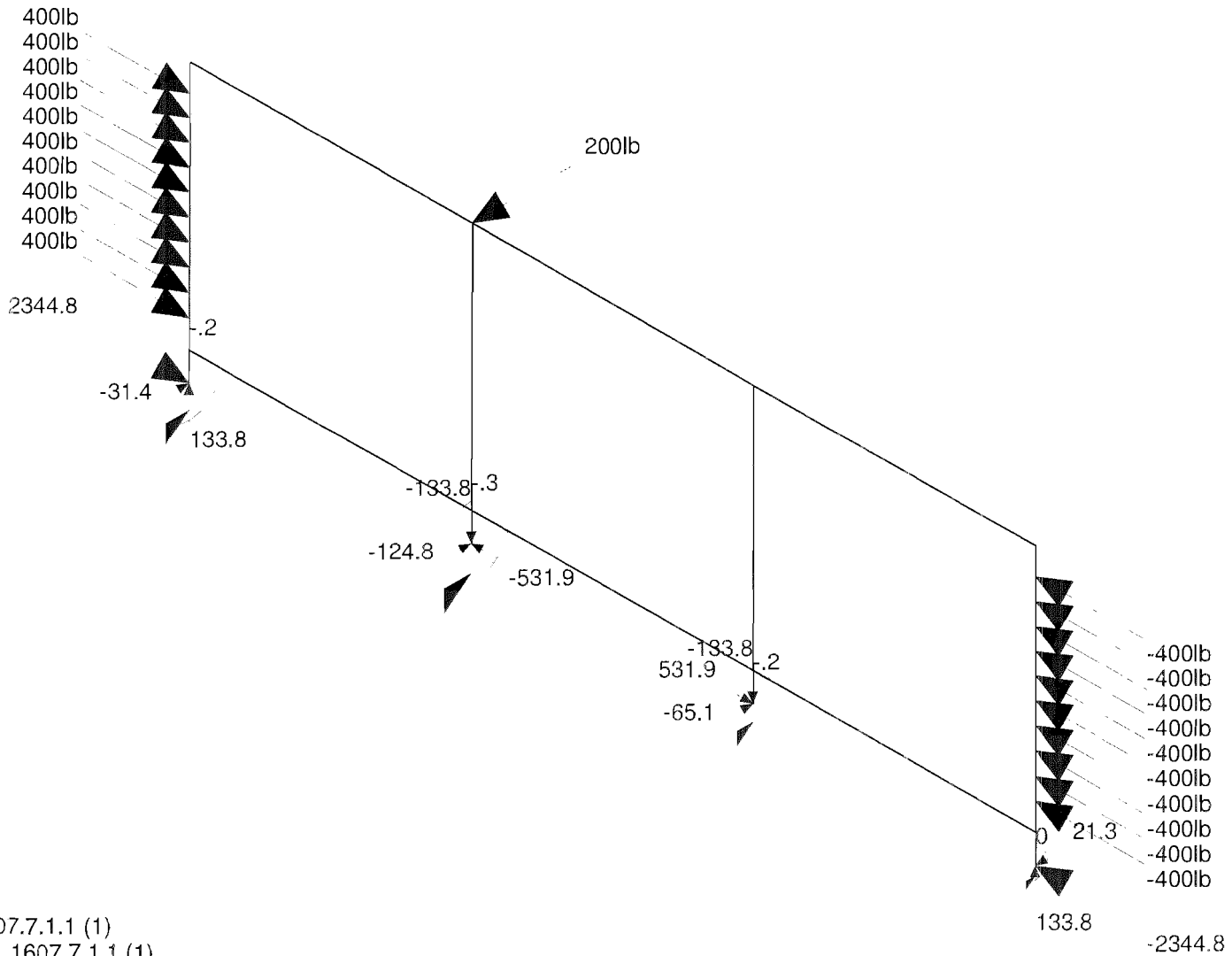
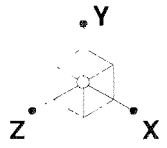


Loads: LC 3, 1607.7.1
 Results for LC 3, 1607.7.1
 Reaction units are lb and k-ft

Ferrari Shields & Associates
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D27 - 1.25" PIPE x 42.5" HIGH RAIL W/ BTM RAIL

Dec 10, 2008 at 1:32 PM
 D27.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

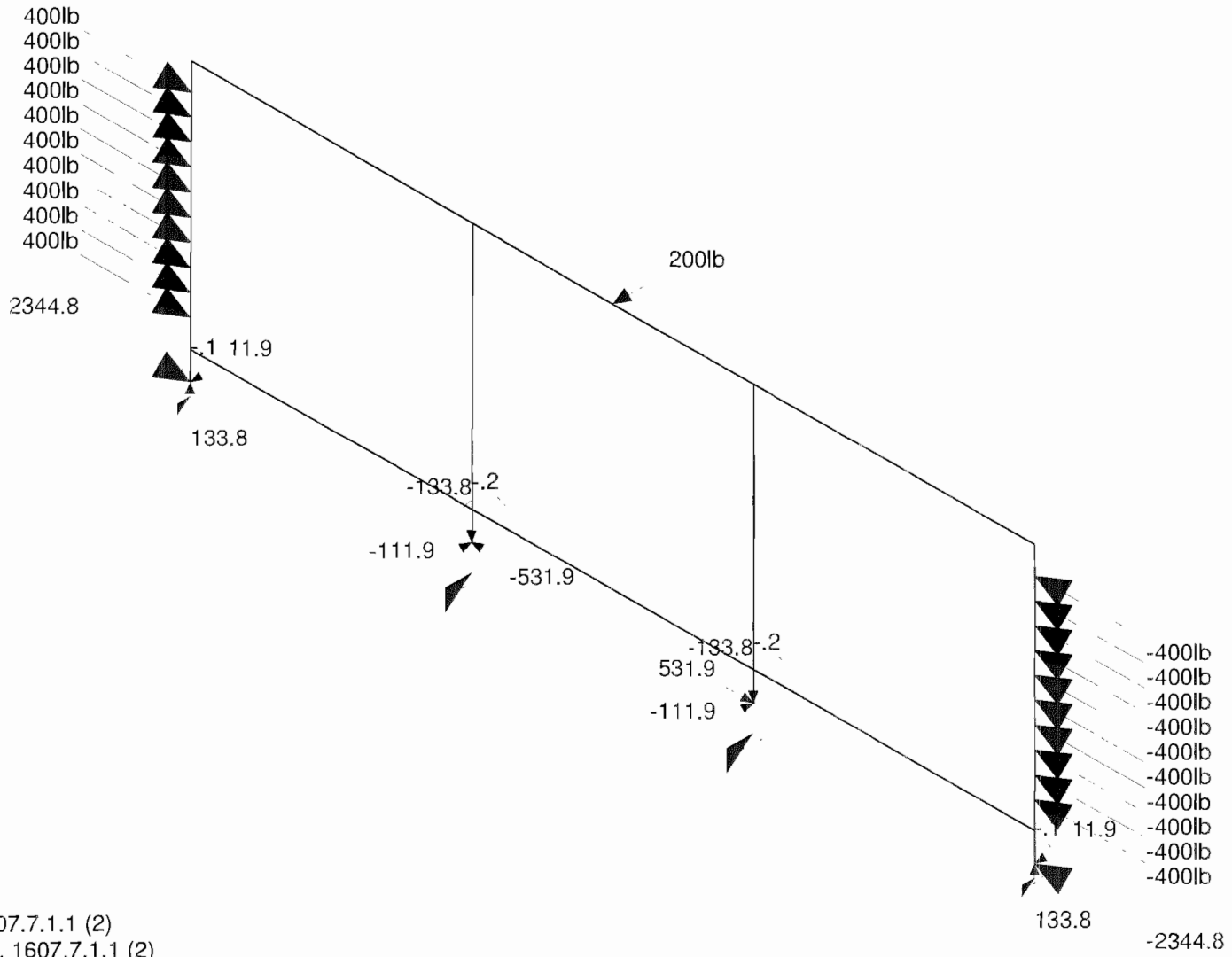
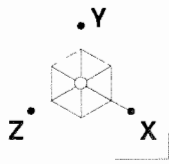
D27 - 1.25" PIPE x 42.5" HIGH RAIL W/ BTM RAIL

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Dec 10, 2008 at 1:33 PM

08196

D27.R3D

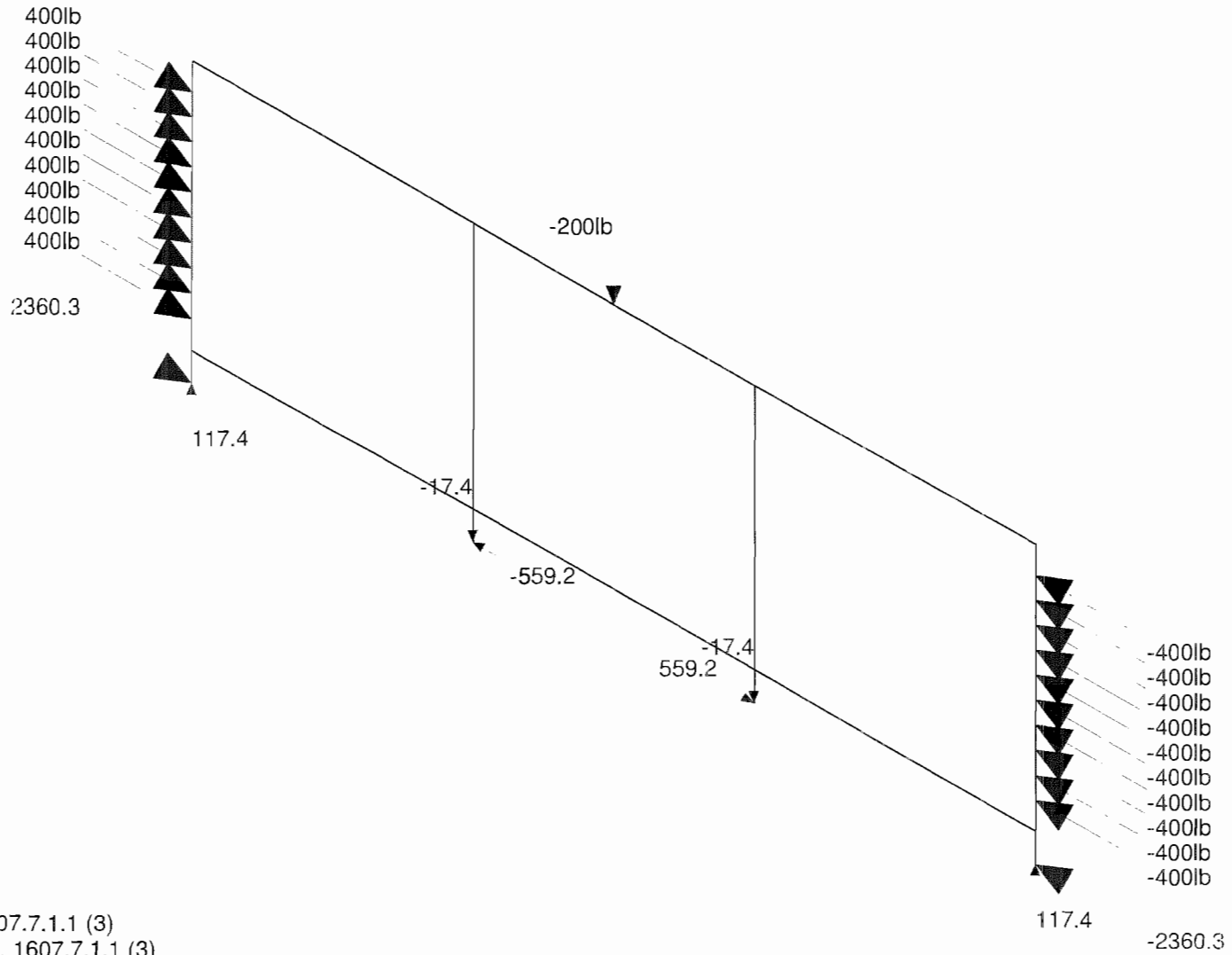
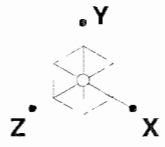


Loads: LC 5, 1607.7.1.1 (2)
 Results for LC 5, 1607.7.1.1 (2)
 Reaction units are lb and k-ft

Ferrari Shields & Associates
 Dan O'Connor
 08196

D27 - 1.25" PIPE x 42.5" HIGH RAIL W/ BTM RAIL

Dec 10, 2008 at 1:33 PM
 D27.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

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D27 - 1.25" PIPE x 42.5" HIGH RAIL W/ BTM RAIL

Dec 10, 2008 at 1:33 PM

D27.R3D

Global

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

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

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

Hot Rolled Steel Properties

	Label	E [ksj]	G [ksj]	Nu	Therm (1E5 F)	Density[k/ft^3]	Yield[ksj]
1	A53 Gr B/A501	29000	11154	.3	.65	.49	35
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	PIPE 1.25	Beam	Pipe	A53 Gr B/A501	Typical	.62	.184	.184	.368
2	ERAIL	BAR1.66	Beam	Pipe	A36	Typical	2.164	.373	.373	.745
3	EPOST	BAR1.66	Column	Pipe	A36	Typical	2.164	.373	.373	.745
4	IPOST	PIPE 1.25	Column	Pipe	A53 Gr B/A501	Typical	.62	.184	.184	.368

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			EPOST	Column	Pipe	A36	Typical
2	M2	N3	N4			IPOST	Column	Pipe	A53 Gr B/...	Typical
3	M3	N2	N4			ERAIL	Beam	Pipe	A36	Typical
4	M4	N4	N8			RAIL	Beam	Pipe	A53 Gr B/...	Typical
5	M5	N5	N6			EPOST	Column	Pipe	A36	Typical
6	M6	N7	N8			IPOST	Column	Pipe	A53 Gr B/...	Typical
7	M7	N8	N6			ERAIL	Beam	Pipe	A36	Typical
8	M8	N9	N10			RAIL	Beam	Pipe	A53 Gr B/...	Typical
9	M9	N10	N12			RAIL	Beam	Pipe	A53 Gr B/...	Typical
10	M10	N12	N11			RAIL	Beam	Pipe	A53 Gr B/...	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	2537.607	2	144.645	2	11.944	5	0	1	0	1	0	1
2		min	2344.78	1	117.428	6	-78.772	3	-0.471	3	0	1	0	1
3	N3	max	-531.886	1	-17.428	6	0	1	0	1	0	1	0	1
4		min	-571.955	2	-144.645	2	-183.728	3	-0.451	3	0	1	0	1
5	N5	max	-2344.78	1	144.645	2	21.259	4	0	1	0	1	0	1
6		min	-2537.607	2	117.428	6	-78.772	3	-0.471	3	0	1	0	1
7	N7	max	571.955	2	-17.428	6	0	1	0	1	0	1	0	1
8		min	531.886	1	-144.645	2	-183.728	3	-0.451	3	0	1	0	1
9	Totals:	max	0	2	200	6	0	1						
10		min	0	3	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	144.645	2	-2344.037	4	11.885	5	0	1	.471	3	0	1
2			min	117.428	6	-2536.745	2	-79.011	3	0	1	0	1	0	1
3		2	max	245.533	2	1875.858	2	0	1	.07	3	.37	3	.058	2
4			min	210.713	6	1740.122	4	-111.654	3	0	1	0	1	.041	4
5		3	max	245.533	2	613.858	2	0	1	.07	3	.273	3	-0.874	1
6			min	210.713	6	540.122	4	-111.654	3	0	1	0	1	-.961	2
7		4	max	245.533	2	-1053.965	6	0	1	.07	3	.176	3	-0.672	1
8			min	210.713	6	-1172.142	2	-111.654	3	0	1	0	2	-.72	2
9		5	max	245.533	2	-1853.965	6	0	1	.07	3	.08	3	.679	2
10			min	210.713	6	-1972.142	2	-111.654	3	0	1	-.002	2	.617	6
11	M2	1	max	-17.428	6	571.955	2	0	1	0	1	.451	3	0	1
12			min	-144.645	2	531.886	1	-183.728	3	0	1	0	1	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	
13		2	max	-110.713	6	-60.852	1	0	1	.035	5	.322	3	-.04	1
14			min	-245.533	2	-73.929	6	-154.005	3	-.001	2	0	1	-.046	6
15		3	max	-110.713	6	-60.852	1	0	1	.035	5	.188	3	.018	6
16			min	-245.533	2	-73.929	6	-154.005	3	-.001	2	-.002	2	.013	4
17		4	max	-110.713	6	-60.852	1	4.785	2	.035	5	.054	3	.083	6
18			min	-245.533	2	-73.929	6	-154.005	3	-.001	2	-.004	2	.066	1
19		5	max	-110.713	6	-60.852	1	4.785	2	.035	5	0	2	.147	6
20			min	-245.533	2	-73.929	6	-154.005	3	-.001	2	-.08	3	.118	1
21	M3	1	max	1972.011	2	245.467	2	0	1	.002	2	.07	3	.679	2
22			min	1853.861	6	210.681	6	-123.251	3	-.08	3	0	1	.617	6
23		2	max	1972.011	2	245.467	2	0	1	.002	2	.028	5	.465	2
24			min	1853.861	6	210.681	6	-79.501	3	-.08	3	-.019	3	.431	1
25		3	max	1972.011	2	245.467	2	0	1	.002	2	.007	5	.25	2
26			min	1853.861	6	210.681	6	-60.825	4	-.08	3	-.069	3	.232	1
27		4	max	1972.011	2	245.467	2	7.999	3	.002	2	0	1	.064	6
28			min	1853.861	6	210.681	6	-60.825	4	-.08	3	-.112	4	.033	4
29		5	max	1972.011	2	245.467	2	51.749	3	.002	2	0	1	-.121	6
30			min	1853.861	6	210.681	6	-60.825	4	-.08	3	-.165	4	-.18	2
31	M4	1	max	2037.598	2	100	6	57.628	4	.028	4	.001	5	.026	6
32			min	1920.618	4	0	1	-100	5	0	1	-.153	4	-.052	2
33		2	max	2037.598	2	100	6	57.628	4	.028	4	0	1	-.048	1
34			min	1920.618	4	0	1	-100	5	0	1	-.103	4	-.061	6
35		3	max	2037.598	2	0	1	100	5	.028	4	0	1	-.048	1
36			min	1920.618	4	-100	6	0	1	0	1	-.174	5	-.149	6
37		4	max	2037.598	2	0	1	100	5	.028	4	.002	2	-.048	1
38			min	1920.618	4	-100	6	0	1	0	1	-.086	5	-.061	6
39		5	max	2037.598	2	0	1	100	5	.028	4	.049	4	.026	6
40			min	1920.618	4	-100	6	0	1	0	1	-.023	3	-.052	2
41	M5	1	max	144.645	2	2536.745	2	21.234	4	0	1	.471	3	0	1
42			min	117.428	6	2344.037	4	-79.011	3	0	1	0	1	0	1
43		2	max	245.533	2	-1740.122	4	4.277	4	0	1	.37	3	-.041	4
44			min	210.713	6	-1875.858	2	-111.654	3	-.07	3	0	1	-.058	2
45		3	max	245.533	2	-540.122	4	4.277	4	0	1	.273	3	.961	2
46			min	210.713	6	-613.858	2	-111.654	3	-.07	3	0	1	.874	1
47		4	max	245.533	2	1172.142	2	4.277	4	0	1	.176	3	.72	2
48			min	210.713	6	1053.965	6	-111.654	3	-.07	3	0	1	.672	1
49		5	max	245.533	2	1972.142	2	4.277	4	0	1	.08	3	-.617	6
50			min	210.713	6	1853.965	6	-111.654	3	-.07	3	0	1	-.679	2
51	M6	1	max	-17.428	6	-531.886	1	0	1	0	1	.451	3	0	1
52			min	-144.645	2	-571.955	2	-183.728	3	0	1	0	1	0	1
53		2	max	-110.713	6	73.929	6	0	1	0	1	.322	3	.046	6
54			min	-245.533	2	60.852	1	-154.005	3	-.035	5	0	1	.04	1
55		3	max	-110.713	6	73.929	6	0	1	0	1	.188	3	-.013	4
56			min	-245.533	2	60.852	1	-154.005	3	-.035	5	0	1	-.018	6
57		4	max	-110.713	6	73.929	6	0	1	0	1	.054	3	-.066	1
58			min	-245.533	2	60.852	1	-154.005	3	-.035	5	0	1	-.083	6
59		5	max	-110.713	6	73.929	6	0	1	0	1	0	1	-.118	1
60			min	-245.533	2	60.852	1	-154.005	3	-.035	5	-.08	3	-.147	6
61	M7	1	max	1972.011	2	-210.681	6	23.391	5	.08	3	.017	4	-.121	6
62			min	1853.861	6	-245.467	2	-51.749	3	0	1	-.055	3	-.18	2
63		2	max	1972.011	2	-210.681	6	23.391	5	.08	3	.021	4	.064	6
64			min	1853.861	6	-245.467	2	-7.999	3	0	1	-.082	3	.033	4
65		3	max	1972.011	2	-210.681	6	35.751	3	.08	3	.025	4	.25	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	
66		min	1853.861	6	-245.467	2	-.047	2	0	1	-.069	3	.232	1	
67	4	max	1972.011	2	-210.681	6	79.501	3	.08	3	.029	4	.465	2	
68		min	1853.861	6	-245.467	2	-.047	2	0	1	-.019	3	.431	1	
69	5	max	1972.011	2	-210.681	6	123.251	3	.08	3	.07	3	.679	2	
70		min	1853.861	6	-245.467	2	-.047	2	0	1	0	1	.617	6	
71	M8	1	max	4813.595	2	-93.288	6	28.975	3	0	1	0	1	-.213	6
72		min	4485.014	1	-100.898	2	-.106	2	-.015	3	-.07	3	-.23	2	
73	2	max	4813.595	2	-93.288	6	28.975	3	0	1	0	1	-.131	1	
74		min	4485.014	1	-100.898	2	-.106	2	-.015	3	-.044	3	-.141	2	
75	3	max	4813.595	2	-93.288	6	28.975	3	0	1	0	1	-.049	1	
76		min	4485.014	1	-100.898	2	-.106	2	-.015	3	-.019	3	-.053	2	
77	4	max	4813.595	2	-93.288	6	28.975	3	0	1	.01	5	.035	2	
78		min	4485.014	1	-100.898	2	-.106	2	-.015	3	0	2	.032	6	
79	5	max	4813.595	2	-93.288	6	28.975	3	0	1	.032	3	.124	2	
80		min	4485.014	1	-100.898	2	-.106	2	-.015	3	0	2	.113	6	
81	M9	1	max	4176.053	2	0	1	0	.008	4	.006	4	-.005	6	
82		min	3873.235	6	0	1	-4.559	4	0	1	-.006	5	-.006	2	
83	2	max	4176.053	2	0	1	0	1	.008	4	.002	4	-.005	6	
84		min	3873.235	6	0	1	-4.559	4	0	1	-.006	5	-.006	2	
85	3	max	4176.053	2	0	1	0	1	.008	4	0	1	-.005	6	
86		min	3873.235	6	0	1	-4.559	4	0	1	-.006	5	-.006	2	
87	4	max	4176.053	2	0	1	0	1	.008	4	0	1	-.005	6	
88		min	3873.235	6	0	1	-4.559	4	0	1	-.006	5	-.006	2	
89	5	max	4176.053	2	0	1	0	1	.008	4	0	1	-.005	6	
90		min	3873.235	6	0	1	-4.559	4	0	1	-.01	4	-.006	2	
91	M10	1	max	4813.595	2	100.898	2	0	.015	3	.032	3	.124	2	
92		min	4485.014	1	93.288	6	-28.975	3	0	1	0	1	.113	6	
93	2	max	4813.595	2	100.898	2	0	1	.015	3	.01	5	.035	2	
94		min	4485.014	1	93.288	6	-28.975	3	0	1	0	1	.032	6	
95	3	max	4813.595	2	100.898	2	0	1	.015	3	0	1	-.049	1	
96		min	4485.014	1	93.288	6	-28.975	3	0	1	-.019	3	-.053	2	
97	4	max	4813.595	2	100.898	2	0	1	.015	3	0	1	-.131	1	
98		min	4485.014	1	93.288	6	-28.975	3	0	1	-.044	3	-.141	2	
99	5	max	4813.595	2	100.898	2	0	1	.015	3	0	1	-.213	6	
100		min	4485.014	1	93.288	6	-28.975	3	0	1	-.07	3	-.23	2	

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	BAR1.66	.891	4.341	2	.131	4.341	3	27439.946	46654.344	1.291	1.291	1...	H1-1b
2	M2	PIPE 1.25	.851	0	3	.147	0	2	9631.4	12994.012	.533	.533	2...	H1-1b
3	M3	BAR1.66	.563	0	2	.071	0	3	27209.328	46654.344	1.291	1.291	2...	H1-1b
4	M4	PIPE 1.25	.501	21	5	.074	0	4	9585.646	12994.012	.533	.533	1	H1-1a
5	M5	BAR1.66	.890	4.341	2	.131	4.341	3	27439.946	46654.344	1.291	1.291	1...	H1-1b
6	M6	PIPE 1.25	.851	0	3	.147	0	2	9631.4	12994.012	.533	.533	2...	H1-1b
7	M7	BAR1.66	.563	42	2	.071	42	3	27209.328	46654.344	1.291	1.291	2...	H1-1b
8	M8	PIPE 1.25	.885	0	2	.058	0	3	9585.646	12994.012	.533	.533	2...	H1-1a
9	M9	PIPE 1.25	.446	42	2	.018	0	4	9585.646	12994.012	.533	.533	1	H1-1a
10	M10	PIPE 1.25	.885	42	2	.058	0	3	9585.646	12994.012	.533	.533	2...	H1-1a

Global

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

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

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

Hot Rolled Steel Properties

	Label	E [ksj]	G [ksj]	Nu	Therm (1E5 F)	Density[k/ft^3]	Yield[ksj]
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	PIPE 1.25	Beam	Pipe	SS316	Typical	.62	.184	.184	.368
2	ERAIL	BAR1.66	Beam	Pipe	LDX2101	Typical	2.164	.373	.373	.745
3	ERAIL2	PIPE 1.25X	Beam	Pipe	SS316	Typical	.83	.231	.231	.462
4	EPOST	BAR1.66	Column	Pipe	LDX2101	Typical	2.164	.373	.373	.745
5	IPOST	PIPE 1.25X	Column	Pipe	SS316	Typical	.83	.231	.231	.462

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			EPOST	Column	Pipe	LDX2101	Typical
2	M2	N3	N4			IPOST	Column	Pipe	SS316	Typical
3	M3	N2	N4			ERAIL	Beam	Pipe	LDX2101	Typical
4	M4	N4	N8			RAIL	Beam	Pipe	SS316	Typical
5	M5	N5	N6			EPOST	Column	Pipe	LDX2101	Typical
6	M6	N7	N8			IPOST	Column	Pipe	SS316	Typical
7	M7	N8	N6			ERAIL	Beam	Pipe	LDX2101	Typical
8	M8	N9	N10			ERAIL2	Beam	Pipe	SS316	Typical
9	M9	N10	N12			RAIL	Beam	Pipe	SS316	Typical
10	M10	N12	N11			ERAIL2	Beam	Pipe	SS316	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	2604.861	2	130.843	2	13.238	5	0	1	0	1	0	1
2		min	2407.666	1	105.968	6	-76.854	3	-.44	3	0	1	0	1
3	N3	max	-624.821	1	-5.968	6	0	1	0	1	0	1	0	1
4		min	-671.896	2	-130.843	2	-185.646	3	-.481	3	0	1	0	1
5	N5	max	-2407.666	1	130.843	2	21.204	4	0	1	0	1	0	1
6		min	-2604.861	2	105.968	6	-76.854	3	-.44	3	0	1	0	1
7	N7	max	671.896	2	-5.968	6	0	1	0	1	0	1	0	1
8		min	624.821	1	-130.843	2	-185.646	3	-.481	3	0	1	0	1
9	Totals:	max	0	3	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	130.843	2	-2407.088	4	13.19	5	0	1	.44	3	0	1
2			min	105.968	6	-2604.19	2	-77.063	3	0	1	0	1	0	1
3		2	max	245.702	2	1896.846	2	0	1	.061	3	.344	3	.101	2
4			min	212.056	6	1759.674	4	-106.343	3	0	2	0	1	.081	4
5		3	max	245.702	2	634.846	2	0	1	.061	3	.251	3	-.851	1
6			min	212.056	6	559.674	4	-106.343	3	0	2	0	1	-.937	2
7		4	max	245.702	2	-1034.694	6	0	1	.061	3	.159	3	-.666	1
8			min	212.056	6	-1151.154	2	-106.343	3	0	2	0	2	-.714	2
9		5	max	245.702	2	-1834.694	6	0	1	.061	3	.067	3	.668	2
10			min	212.056	6	-1951.154	2	-106.343	3	0	2	-.003	2	.607	6
11	M2	1	max	-5.968	6	671.896	2	0	1	0	1	.481	3	0	1
12			min	-130.843	2	624.821	1	-185.646	3	0	1	0	1	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	
13		2	max	-112.056	6	-70.793	1	0	1	.038	5	.348	3	-.049	1
14			min	-245.702	2	-85.894	6	-159.187	3	-.002	2	0	1	-.056	6
15		3	max	-112.056	6	-70.793	1	0	1	.038	5	.21	3	.019	6
16			min	-245.702	2	-85.894	6	-159.187	3	-.002	2	0	2	.012	4
17		4	max	-112.056	6	-70.793	1	4.172	2	.038	5	.072	3	.093	6
18			min	-245.702	2	-85.894	6	-159.187	3	-.002	2	-.003	2	.074	1
19		5	max	-112.056	6	-70.793	1	4.172	2	.038	5	0	2	.168	6
20			min	-245.702	2	-85.894	6	-159.187	3	-.002	2	-.07	4	.135	1
21	M3	1	max	1951.048	2	245.648	2	0	1	.003	2	.061	3	.668	2
22			min	1834.609	6	212.028	6	-115.087	3	-.067	3	0	2	.607	6
23		2	max	1951.048	2	245.648	2	0	1	.003	2	.027	5	.453	2
24			min	1834.609	6	212.028	6	-71.337	3	-.067	3	-.021	3	.42	1
25		3	max	1951.048	2	245.648	2	0	1	.003	2	.01	5	.238	2
26			min	1834.609	6	212.028	6	-55.701	4	-.067	3	-.064	3	.221	1
27		4	max	1951.048	2	245.648	2	16.163	3	.003	2	0	1	.05	6
28			min	1834.609	6	212.028	6	-55.701	4	-.067	3	-.102	4	.021	4
29		5	max	1951.048	2	245.648	2	59.913	3	.003	2	0	1	-.135	6
30			min	1834.609	6	212.028	6	-55.701	4	-.067	3	-.151	4	-.192	2
31	M4	1	max	2027.345	2	100	6	55.742	4	.028	4	.013	5	.033	6
32			min	1911.028	4	0	1	-100	5	0	1	-.14	4	-.046	2
33		2	max	2027.345	2	100	6	55.742	4	.028	4	0	1	-.043	1
34			min	1911.028	4	0	1	-100	5	0	1	-.091	4	-.055	6
35		3	max	2027.345	2	0	1	100	5	.028	4	0	1	-.043	1
36			min	1911.028	4	-100	6	0	1	0	1	-.162	5	-.142	6
37		4	max	2027.345	2	0	1	100	5	.028	4	.006	4	-.043	1
38			min	1911.028	4	-100	6	0	1	0	1	-.074	5	-.055	6
39		5	max	2027.345	2	0	1	100	5	.028	4	.055	4	.033	6
40			min	1911.028	4	-100	6	0	1	0	1	-.005	3	-.046	2
41	M5	1	max	130.843	2	2604.19	2	21.185	4	0	1	.44	3	0	1
42			min	105.968	6	2407.088	4	-77.063	3	0	1	0	1	0	1
43		2	max	245.702	2	-1759.674	4	4.94	4	0	1	.344	3	-.081	4
44			min	212.056	6	-1896.846	2	-106.343	3	-.061	3	0	1	-.101	2
45		3	max	245.702	2	-559.674	4	4.94	4	0	1	.251	3	.937	2
46			min	212.056	6	-634.846	2	-106.343	3	-.061	3	0	1	.851	1
47		4	max	245.702	2	1151.154	2	4.94	4	0	1	.159	3	.714	2
48			min	212.056	6	1034.694	6	-106.343	3	-.061	3	0	1	.666	1
49		5	max	245.702	2	1951.154	2	4.94	4	0	1	.067	3	-.607	6
50			min	212.056	6	1834.694	6	-106.343	3	-.061	3	0	1	-.668	2
51	M6	1	max	-5.968	6	-624.821	1	0	1	0	1	.481	3	0	1
52			min	-130.843	2	-671.896	2	-185.646	3	0	1	0	1	0	1
53		2	max	-112.056	6	85.894	6	0	1	0	1	.348	3	.056	6
54			min	-245.702	2	70.793	1	-159.187	3	-.038	5	0	1	.049	1
55		3	max	-112.056	6	85.894	6	0	1	0	1	.21	3	-.012	4
56			min	-245.702	2	70.793	1	-159.187	3	-.038	5	0	1	-.019	6
57		4	max	-112.056	6	85.894	6	0	1	0	1	.072	3	-.074	1
58			min	-245.702	2	70.793	1	-159.187	3	-.038	5	0	1	-.093	6
59		5	max	-112.056	6	85.894	6	0	1	0	1	0	1	-.135	1
60			min	-245.702	2	70.793	1	-159.187	3	-.038	5	-.067	3	-.168	6
61	M7	1	max	1951.048	2	-212.028	6	19.661	5	.067	3	.02	4	-.135	6
62			min	1834.609	6	-245.648	2	-59.913	3	0	1	-.036	3	-.192	2
63		2	max	1951.048	2	-212.028	6	19.661	5	.067	3	.023	4	.05	6
64			min	1834.609	6	-245.648	2	-16.163	3	0	1	-.069	3	.021	4
65		3	max	1951.048	2	-212.028	6	27.587	3	.067	3	.025	4	.238	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	
66		min	1834.609	6	-245.648	2	-.16	2	0	1	-.064	3	.221	1	
67	4	max	1951.048	2	-212.028	6	71.337	3	.067	3	.027	4	.453	2	
68		min	1834.609	6	-245.648	2	-.16	2	0	1	-.021	3	.42	1	
69	5	max	1951.048	2	-212.028	6	115.087	3	.067	3	.061	3	.668	2	
70		min	1834.609	6	-245.648	2	-.16	2	0	1	0	1	.607	6	
71	M8	1	max	4901.813	2	-106.091	6	25.862	3	0	1	0	2	-.24	6
72		min	4567.431	1	-114.867	2	-.373	2	-.015	3	-.061	3	-.259	2	
73	2	max	4901.813	2	-106.091	6	25.862	3	0	1	0	2	-.147	1	
74		min	4567.431	1	-114.867	2	-.373	2	-.015	3	-.038	3	-.158	2	
75	3	max	4901.813	2	-106.091	6	25.862	3	0	1	0	1	-.054	1	
76		min	4567.431	1	-114.867	2	-.373	2	-.015	3	-.016	3	-.058	2	
77	4	max	4901.813	2	-106.091	6	25.862	3	0	1	.013	5	.043	2	
78		min	4567.431	1	-114.867	2	-.373	2	-.015	3	0	2	.038	6	
79	5	max	4901.813	2	-106.091	6	25.862	3	0	1	.031	5	.143	2	
80		min	4567.431	1	-114.867	2	-.373	2	-.015	3	0	2	.131	6	
81	M9	1	max	4153.62	2	0	1	0	1	.008	4	.006	4	-.006	6
82		min	3846.693	6	0	1	-4.815	4	0	1	-.007	5	-.008	2	
83	2	max	4153.62	2	0	1	0	1	.008	4	.002	4	-.006	6	
84		min	3846.693	6	0	1	-4.815	4	0	1	-.007	5	-.008	2	
85	3	max	4153.62	2	0	1	0	1	.008	4	0	1	-.006	6	
86		min	3846.693	6	0	1	-4.815	4	0	1	-.007	5	-.008	2	
87	4	max	4153.62	2	0	1	0	1	.008	4	0	1	-.006	6	
88		min	3846.693	6	0	1	-4.815	4	0	1	-.007	5	-.008	2	
89	5	max	4153.62	2	0	1	0	1	.008	4	0	1	-.006	6	
90		min	3846.693	6	0	1	-4.815	4	0	1	-.011	4	-.008	2	
91	M10	1	max	4901.813	2	114.867	2	0	1	.015	3	.031	5	.143	2
92		min	4567.431	1	106.091	6	-25.862	3	0	1	0	1	.131	6	
93	2	max	4901.813	2	114.867	2	0	1	.015	3	.013	5	.043	2	
94		min	4567.431	1	106.091	6	-25.862	3	0	1	0	1	.038	6	
95	3	max	4901.813	2	114.867	2	0	1	.015	3	0	1	-.054	1	
96		min	4567.431	1	106.091	6	-25.862	3	0	1	-.016	3	-.058	2	
97	4	max	4901.813	2	114.867	2	0	1	.015	3	0	1	-.147	1	
98		min	4567.431	1	106.091	6	-25.862	3	0	1	-.038	3	-.158	2	
99	5	max	4901.813	2	114.867	2	0	1	.015	3	0	1	-.24	6	
100		min	4567.431	1	106.091	6	-25.862	3	0	1	-.061	3	-.259	2	

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	BAR1.66	.561	4.341	2	.075	4.341	3	31105.607	77757.24	2.151	2.151	1...	H1-1b
2	M2	PIPE 1.25X	.821	0	3	.150	0	2	11229.71	14910.18	.588	.588	2...	H1-1b
3	M3	BAR1.66	.342	0	2	.036	0	3	30655.715	77757.24	2.151	2.151	2...	H1-1b
4	M4	PIPE 1.25	.551	21	5	.087	0	4	8501.677	11137.725	.457	.457	1	H1-1a
5	M5	BAR1.66	.560	4.341	2	.075	4.341	3	31105.607	77757.24	2.151	2.151	1...	H1-1b
6	M6	PIPE 1.25X	.821	0	3	.150	0	2	11229.71	14910.18	.588	.588	2...	H1-1b
7	M7	BAR1.66	.342	42	2	.036	42	3	30655.715	77757.24	2.151	2.151	2...	H1-1b
8	M8	PIPE 1.25X	.830	0	2	.055	0	3	11179.203	14910.18	.588	.588	2...	H1-1a
9	M9	PIPE 1.25	.504	42	2	.020	0	4	8501.677	11137.725	.457	.457	1	H1-1a
10	M10	PIPE 1.25X	.830	42	2	.055	0	3	11179.203	14910.18	.588	.588	2...	H1-1a

*** End of Calculations ***