FULLERTON
ENGINEERING · DESIGN

Fullerton Engineering Consultants, Inc.
1100 E. Woodfield Road, Suite 500
Schaumburg, IL 60173
Tel: 847.908.8400
www.fullertonengineering.com

March 29, 2016

RE:	**AT&T LTE 3C**
Prepared For:	Smartlink / AT&T
Site Number:	CTL01065
FA Location:	10035007
Site Name:	LEBANON
Site Address:	244 Gates Road Lebanon, CT 06249

To Whom It May Concern,

This structural assessment is in regards to the adequacy of the existing antenna mounting platform for the AT&T LTE 3C project. The purpose was to determine conformance of existing antenna mounting structure under 2003 International Building Code and the industry standard ANSI/TIA-222-F (Structural Standards for Steel Antenna Towers and Antenna Supporting Structures).

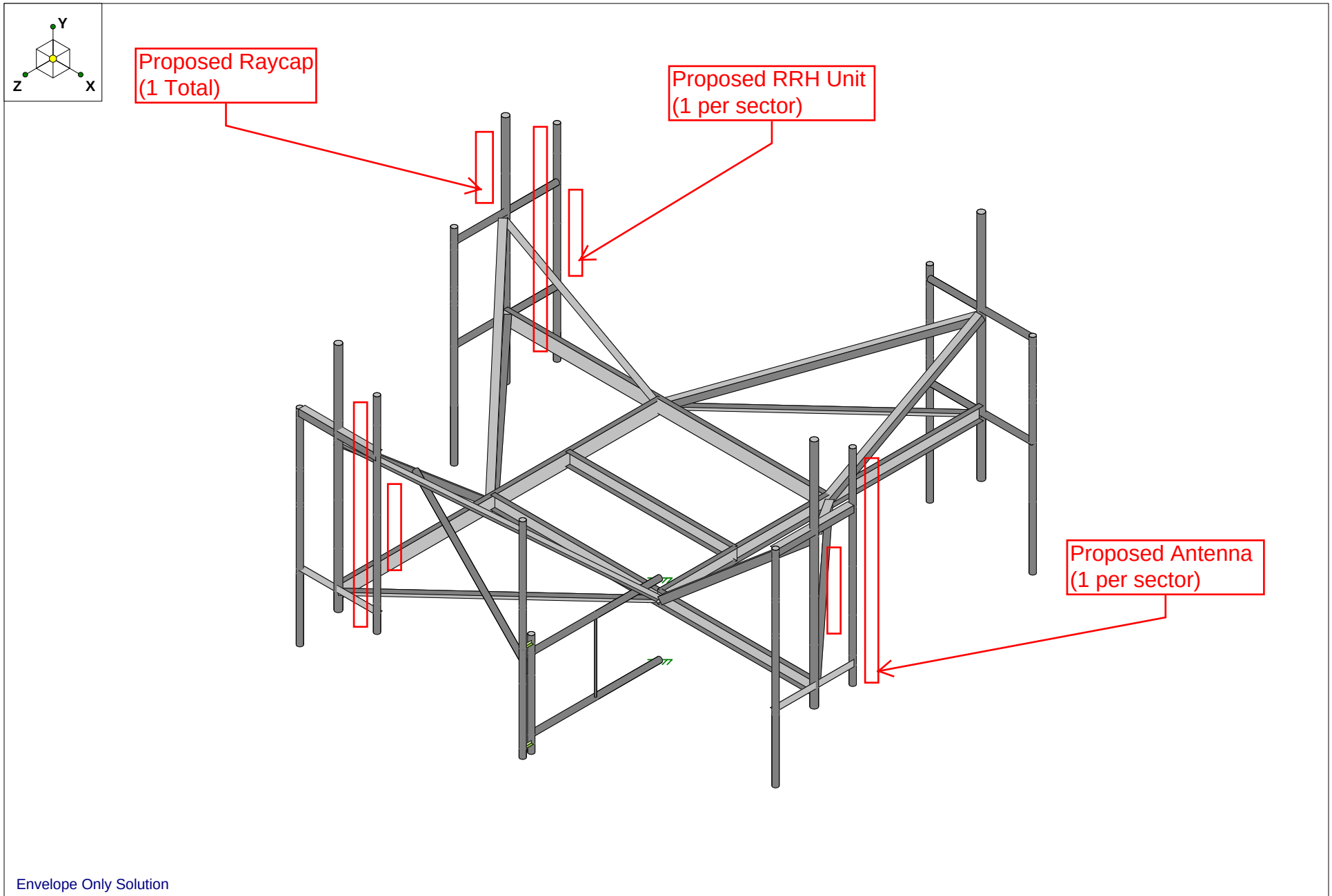
Based on collected information via a site visit dated 03/11/2016, technical data of the proposed equipment, structural calculations and engineering judgment, the existing antenna mounting platform is **adequate** to support the proposed installation for the above-referenced program. For installation details, see latest construction drawings prepared by Fullerton Engineering.

This PE certification completed by Fullerton Engineering Consultants is inclusive of the existing antenna mounting structure that will support the existing and proposed loading provided by the client.

This certification assumes that all the existing structural members of the existing antenna mounting structure are in good condition and have not been altered from the manufacturer's original design. Prior to installation of new equipment, contractor shall inspect the condition of all relevant members and connectors. The contractor shall be responsible for the means and methods of construction.

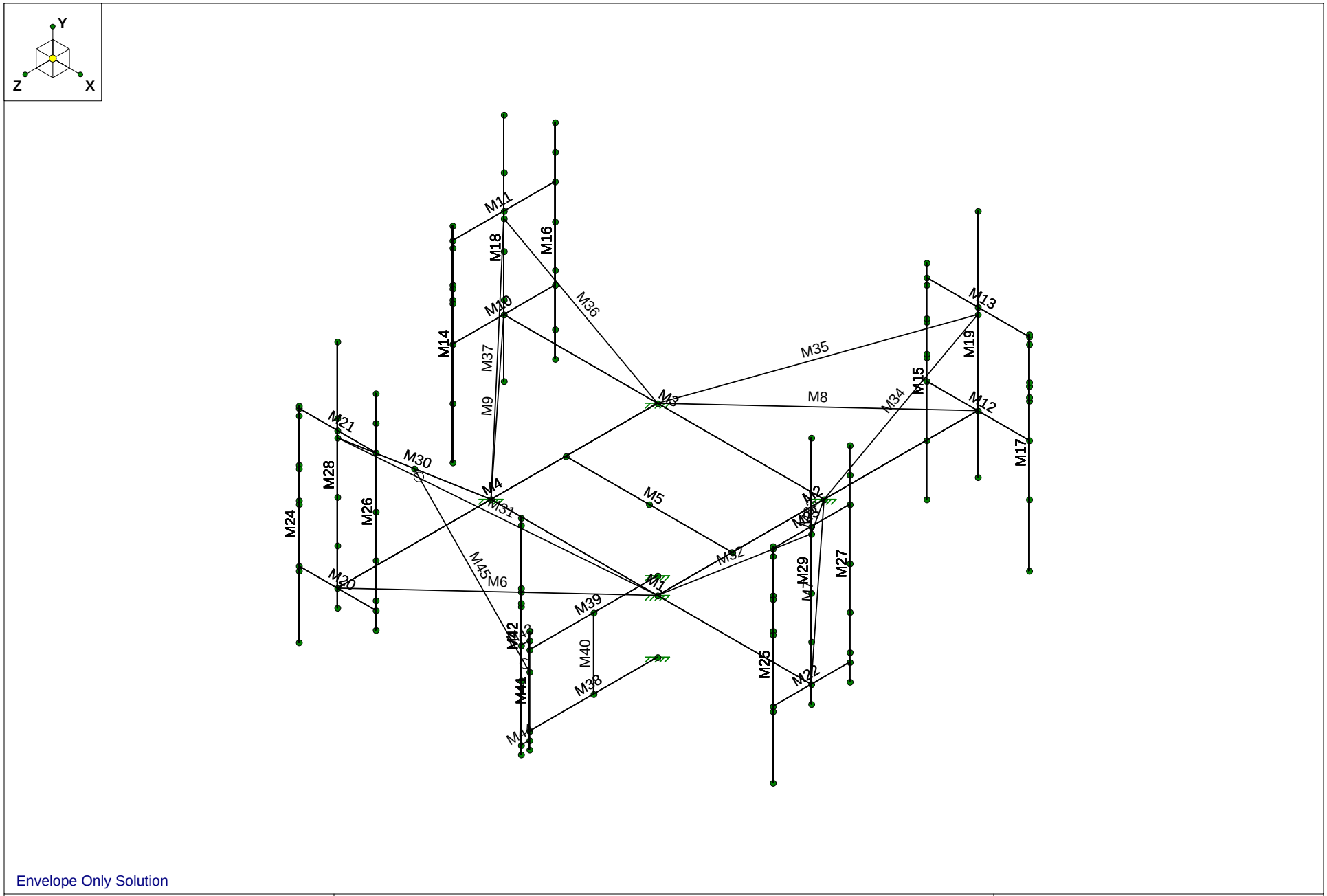
Respectfully,

Henry M. Bellagamba, P.E.



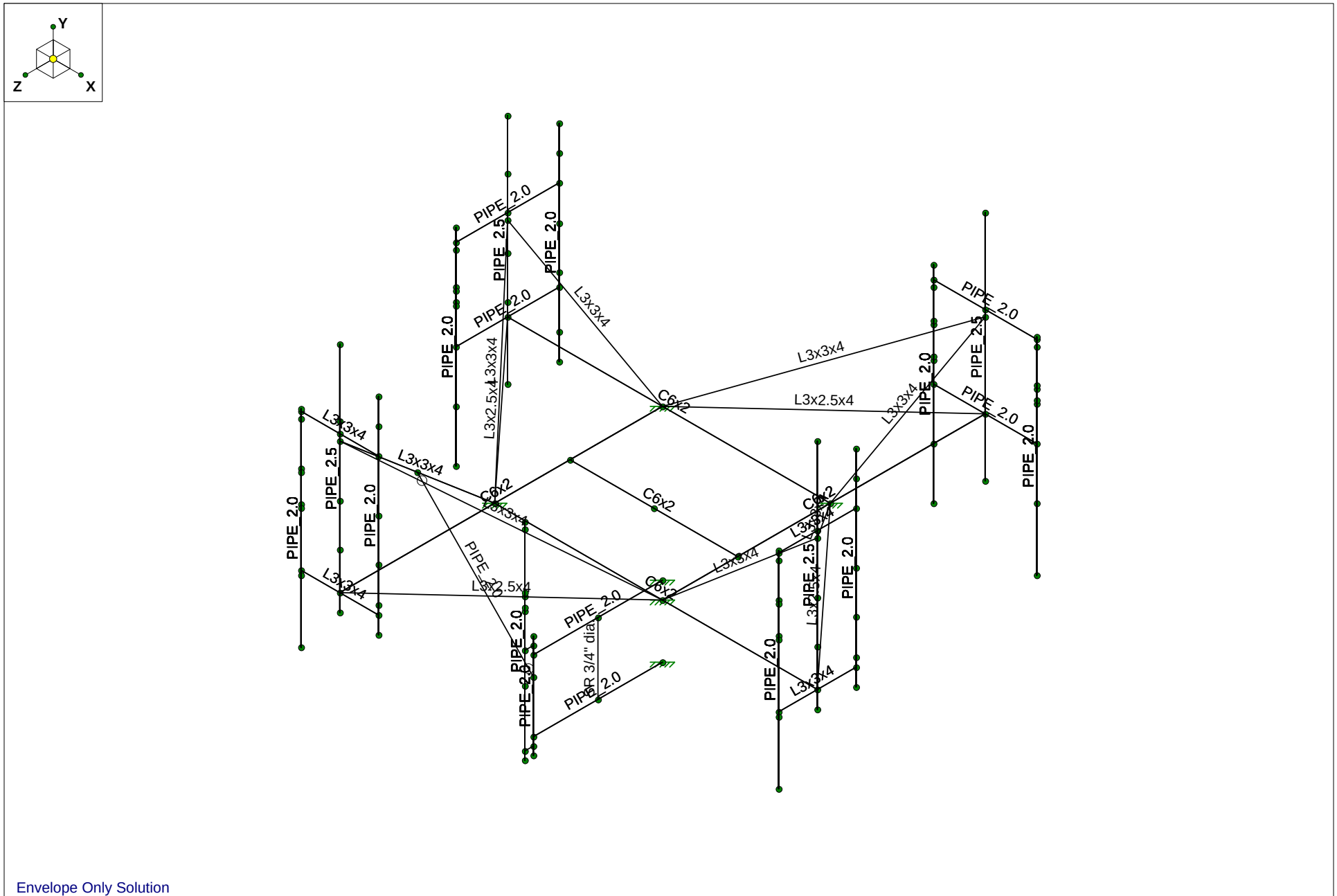
Envelope Only Solution

Fullerton Engineering Consultants, ...		SK - 1
GO	Mount Analysis	Mar 29, 2016 at 2:22 PM
CTL01065	3D Render	CTL01065 - Mount Analysis.r3d



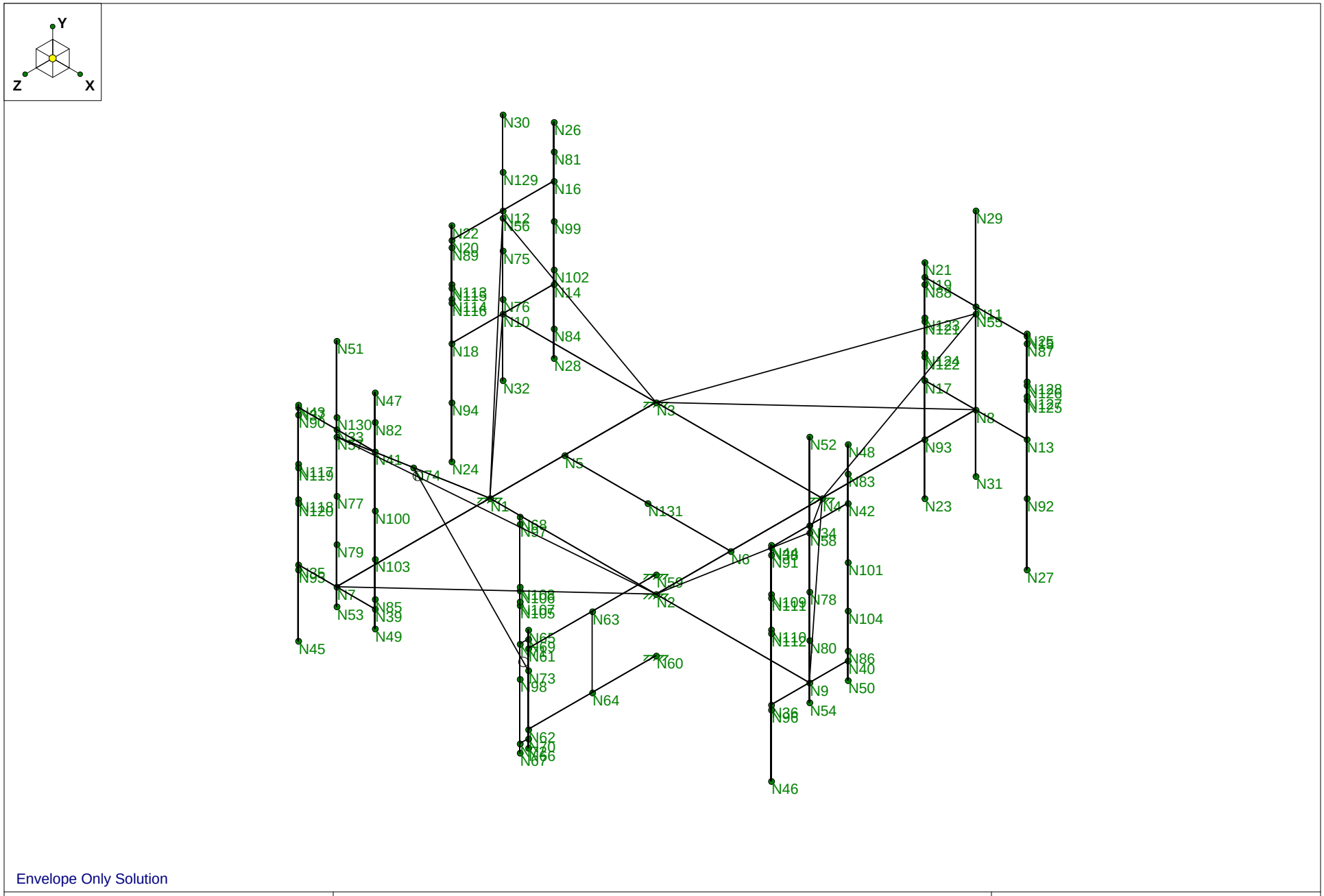
Envelope Only Solution

Fullerton Engineering Consultants, ...		SK - 2
GO	Mount Analysis	Mar 29, 2016 at 2:27 PM
CTL01065	Member Label	CTL01065 - Mount Analysis.r3d



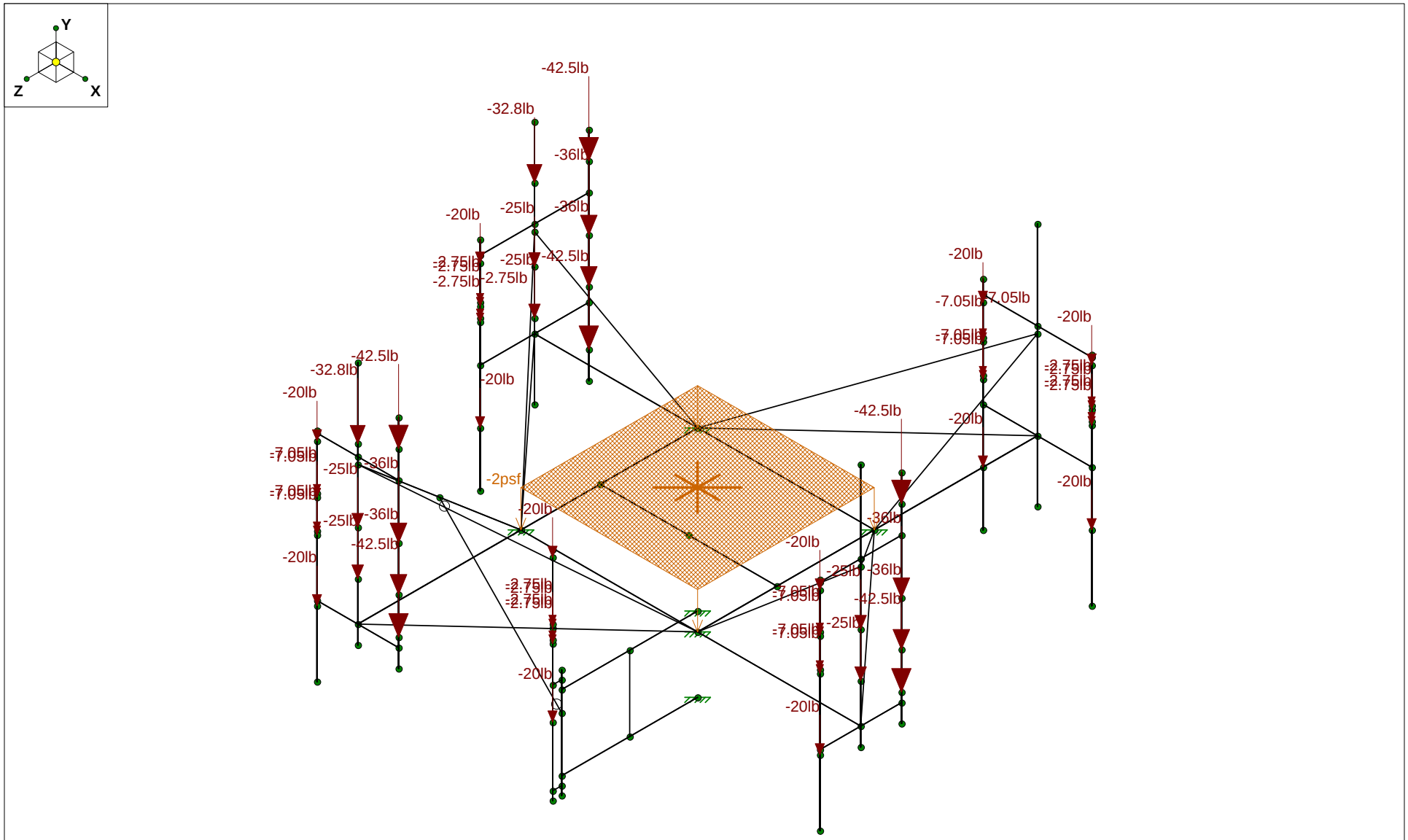
Envelope Only Solution

Fullerton Engineering Consultants, ...		SK - 3
GO	Mount Analysis	Mar 29, 2016 at 2:27 PM
CTL01065	Shape	CTL01065 - Mount Analysis.r3d



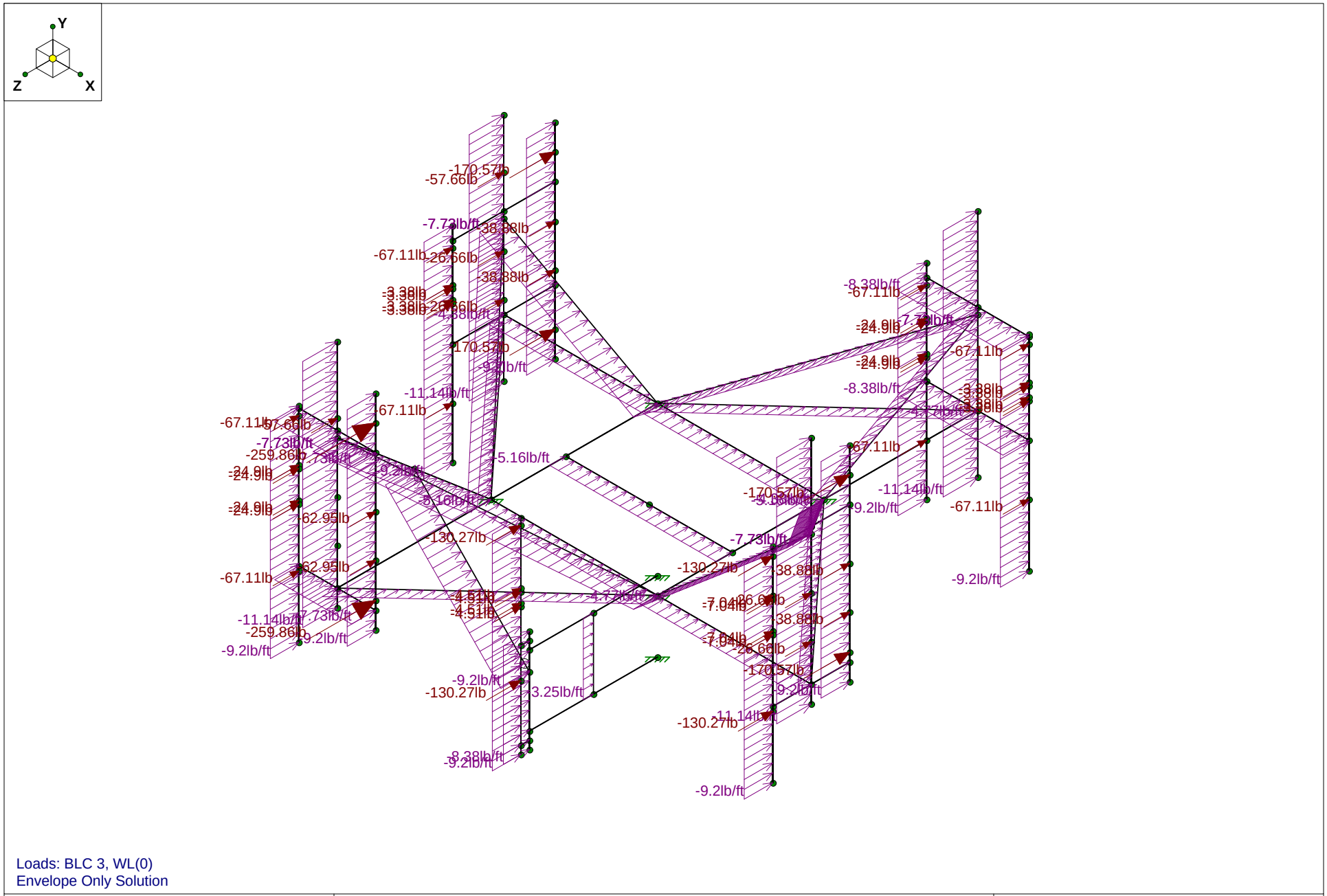
Envelope Only Solution

Fullerton Engineering Consultants, ...		SK - 4
GO	Mount Analysis	Mar 29, 2016 at 2:27 PM
CTL01065	Nodes	CTL01065 - Mount Analysis.r3d



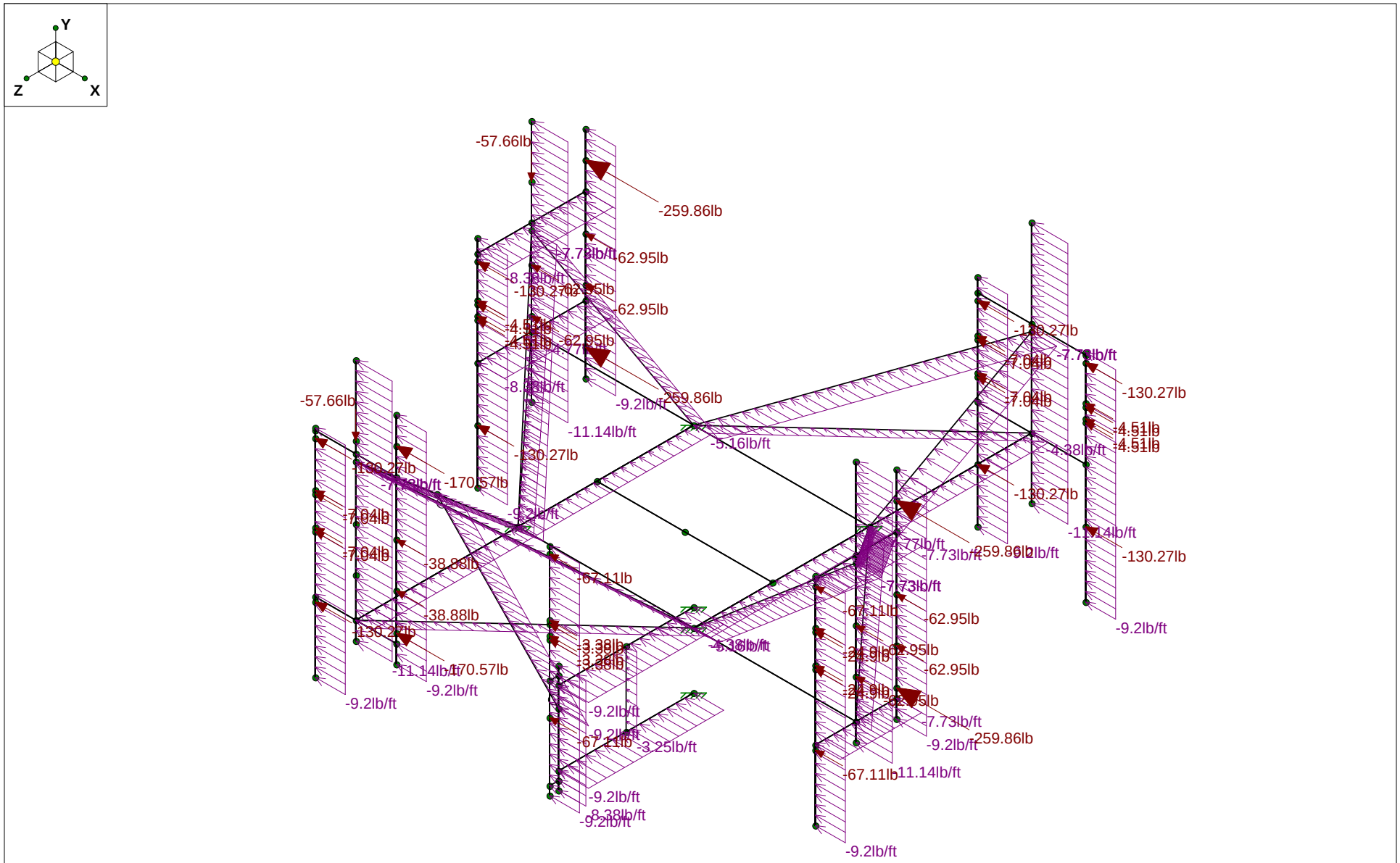
Loads: BLC 1, DL
Envelope Only Solution

Fullerton Engineering Consultants, ...		SK - 5
GO	Mount Analysis	Mar 29, 2016 at 2:28 PM
CTL01065	Dead Load	CTL01065 - Mount Analysis.r3d



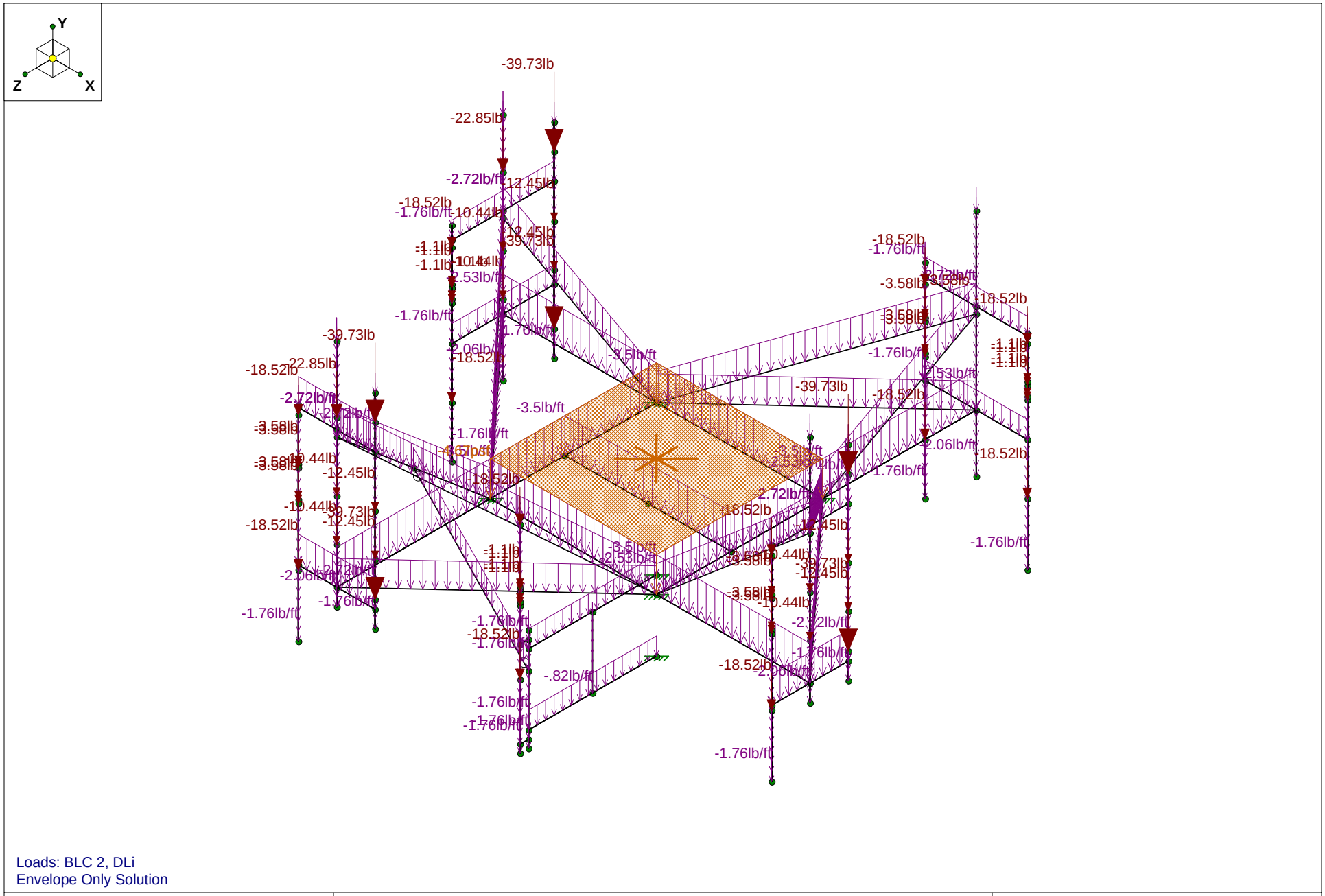
Loads: BLC 3, WL(0)
Envelope Only Solution

Fullerton Engineering Consultants, ...		SK - 6
GO	Mount Analysis	Mar 29, 2016 at 2:28 PM
CTL01065	Wind Load (Z-Direction)	CTL01065 - Mount Analysis.r3d



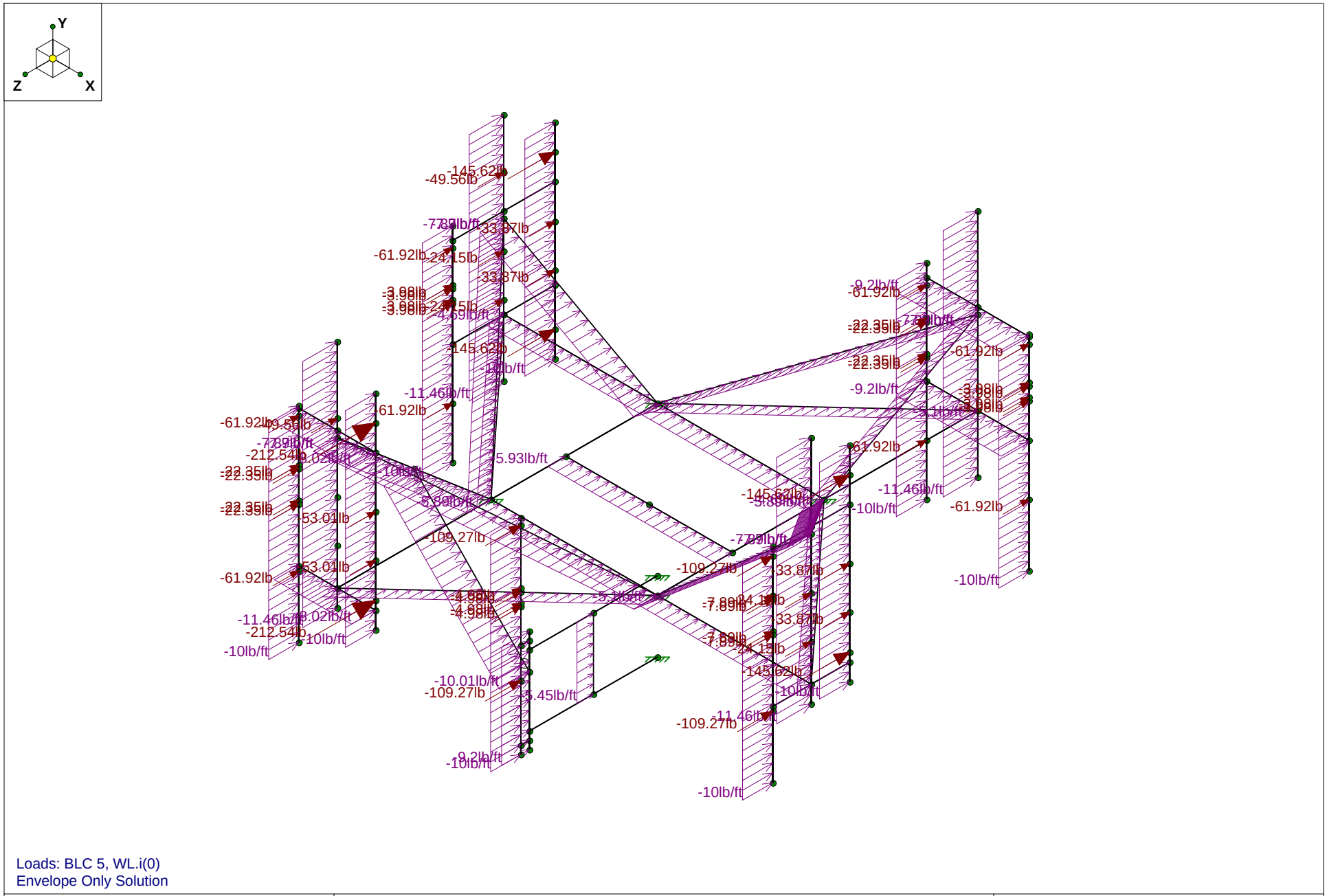
Loads: BLC 4, WL(90)
Envelope Only Solution

Fullerton Engineering Consultants, ...		SK - 7
GO	Mount Analysis	Mar 29, 2016 at 2:28 PM
CTL01065	Wind Load (X-Direction)	CTL01065 - Mount Analysis.r3d



Loads: BLC 2, DLi
Envelope Only Solution

Fullerton Engineering Consultants, ...		SK - 8
GO	Mount Analysis	Mar 29, 2016 at 2:29 PM
CTL01065	Ice Load	CTL01065 - Mount Analysis.r3d



Loads: BLC 5, WL.i(0)
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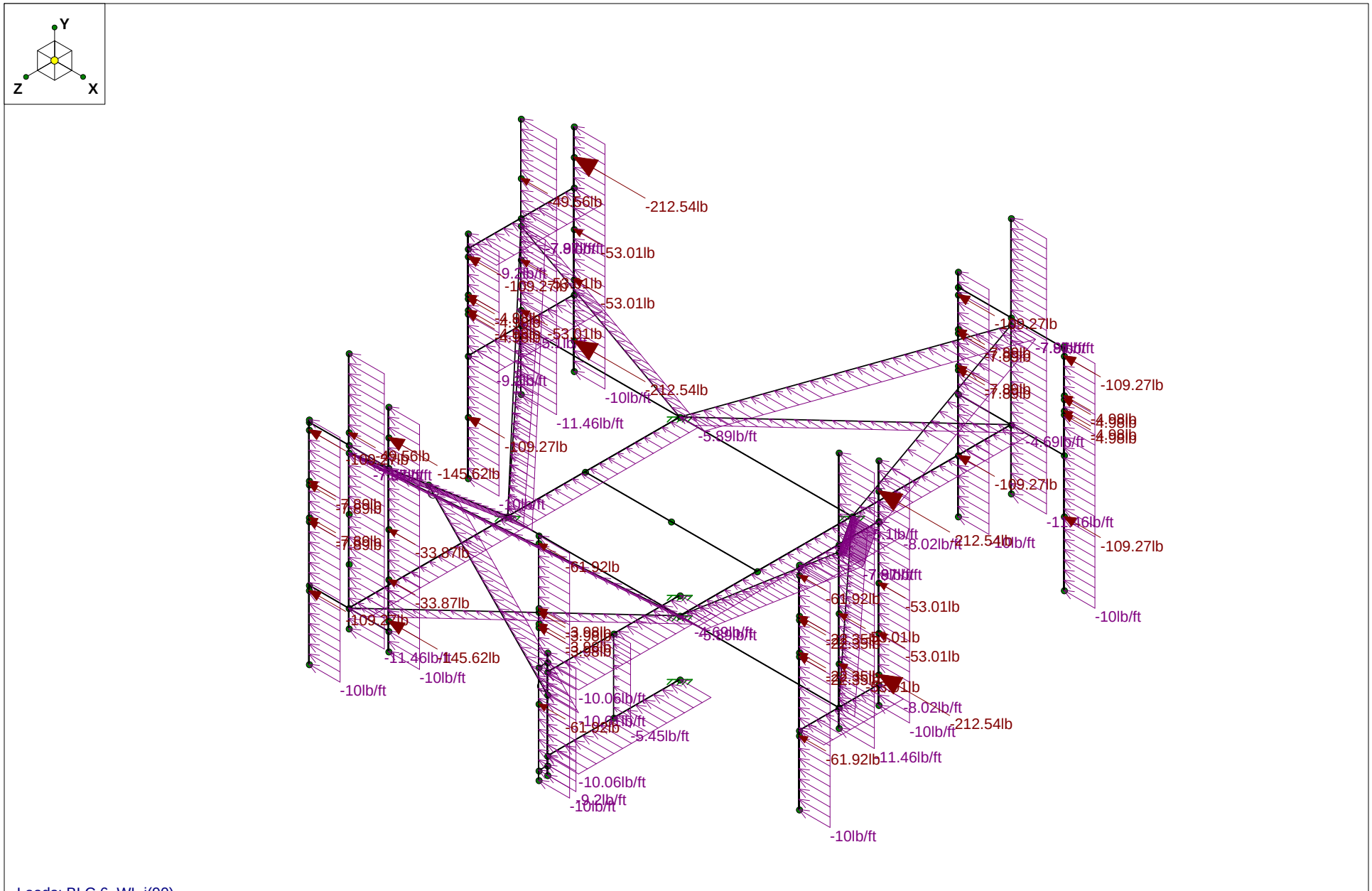
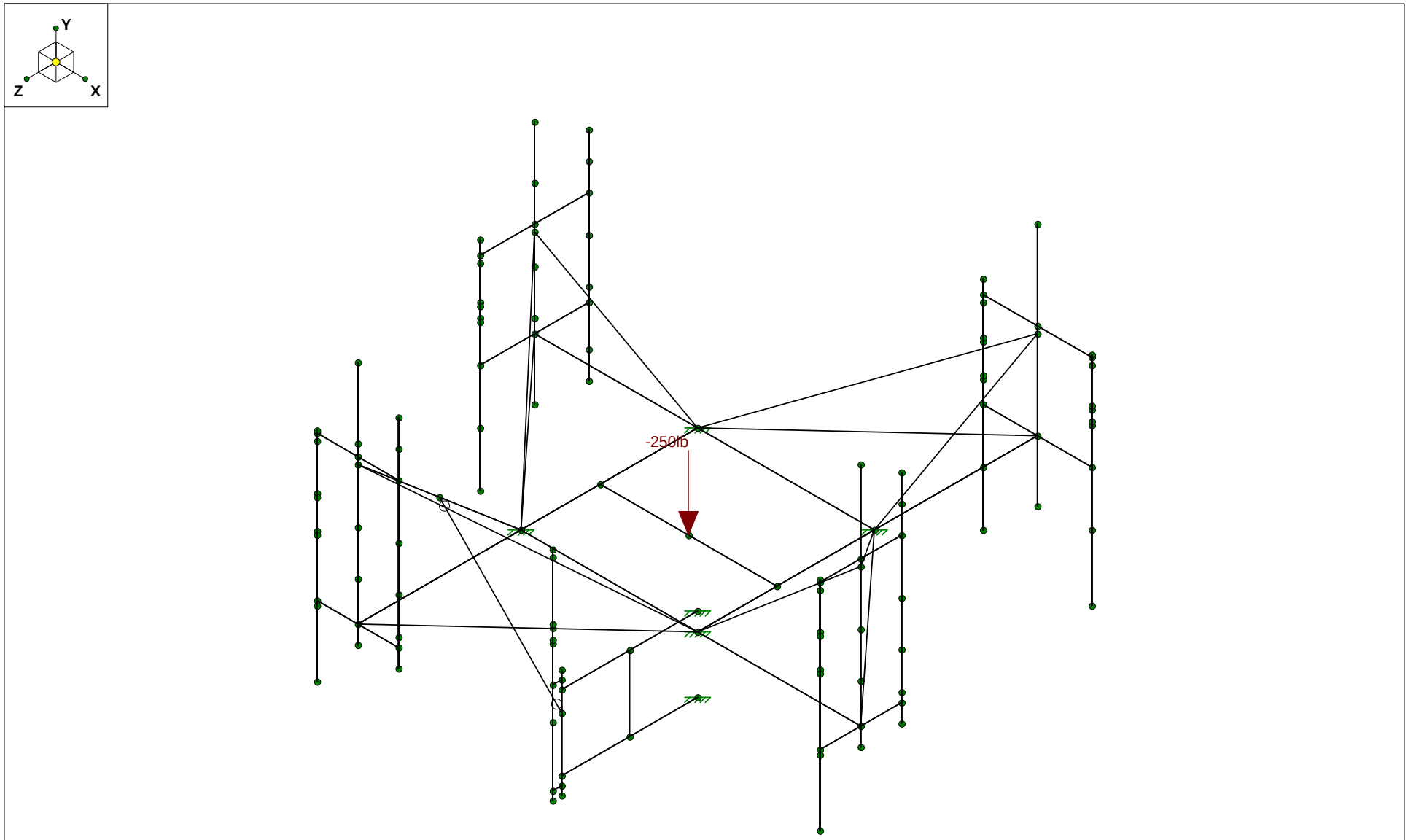
Fullerton Engineering Consultants, ...		SK - 9
GO	Mount Analysis	Mar 29, 2016 at 2:29 PM
CTL01065	Wind Load with Ice (Z-Direction)	CTL01065 - Mount Analysis.r3d



Loads: BLC 6, WL.i(90)
Envelope Only Solution

Fullerton Engineering Consultants, ...		SK - 10
GO	Mount Analysis	Mar 29, 2016 at 2:30 PM
CTL01065	Wind Load with Ice (X-Direction)	CTL01065 - Mount Analysis.r3d



Loads: BLC 8, Live Load
Envelope Only Solution

Fullerton Engineering Consultants, ...		SK - 11
GO	Mount Analysis	Mar 29, 2016 at 2:30 PM
CTL01065	Live Load	CTL01065 - Mount Analysis.r3d

Global

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 13th(360-05): ASD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 13th(360-05): ASD
Cold Formed Steel Code	None
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

Global, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Om Z	1
Om X	1
Rho Z	1
Rho X	1

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	DL	None		-1		56			1	
2	DLi	None				56		43	1	
3	WL(0)	None				54		35		
4	WL(90)	None				54		36		
5	WL.i(0)	None				54		35		
6	WL.i(90)	None				54		38		
7	T	None								
8	Live Load	None				1				
9	BLC 1 Transient Area...	None						46		
10	BLC 2 Transient Area...	None						46		

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	DL+WL(0)	Yes	Y		1	1	3	1																
2	DL + WL(90)	Yes	Y		1	1	4	1																
3	DL+WL(180)	Yes	Y		1	1	3	-1																
4	DL + DLi + 0.75*WLi(0)	Yes	Y		1	1	2	1	5	.75														
5	DL + DLi + 0.75*WLi(90)	Yes	Y		1	1	2	1	6	.75														
6	DL + DLi + 0.75*WLi(180)	Yes	Y		1	1	2	1	5	-.75														
7	DL+LL	Yes	Y		1	1	8	1																

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	974.975	1	1416.938	5	2286.281	1	1.299	1	.474	2	-.168	1
2		min	-940.888	3	453.341	1	-2378.002	3	-6.903	6	-.003	3	-.646	5

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
3	N2	max	2503.533	2	1435.086	6	285.091	1	.033	1	.344	5	4.108	4
4		min	-1118.713	1	154.27	2	-1105.958	2	-.477	6	.079	3	-1.522	2
5	N3	max	2639.238	2	1300.762	4	207.211	1	.282	4	.318	2	-2.631	1
6		min	-914.274	1	459.197	3	-688.102	2	.059	3	.039	1	-5.616	5
7	N4	max	1033.172	1	1199.279	4	1962.664	1	3.144	4	.285	6	.294	4
8		min	-1023.143	3	53.9	3	-1906.517	3	.792	3	.032	1	-.037	2
9	N59	max	117.659	2	163.244	5	488.339	1	-.137	1	.351	2	-.002	7
10		min	-26.492	3	61.074	1	-753.09	3	-.391	5	-.104	3	-.168	2
11	N60	max	10.895	1	161.593	5	324.091	6	-.145	1	.056	1	.002	3
12		min	-22.3	3	72.989	1	-52.508	1	-.392	5	-.101	3	-.11	2
13	Totals:	max	5677.817	2	4392.478	5	5177.078	1						
14		min	0	1	2720.005	1	-5177.078	3						

<1.0, members are adequate

Envelope AISC 13th(360-05): ASD Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	Pnc/om [l...	Pnt/om [lb]	Mnyy/...	Mnzz/...	...	Eqn
1	M10	PIPE_2.0	.620	24	2	.238	24		2	18050.611	21988.024	1.281	1.281	1...	H1-1b
2	M4	C6x2	.596	78.125	6	.047	78.125	y	6	22724.492	71107.784	2.077	11.89	1...	H1-1b
3	M30	L3x3x4	.568	94.366	2	.027	94.366	y	2	8318.043	31041.916	1.123	2.41	2...	H2-1
4	M11	PIPE_2.0	.550	24	2	.126	24		2	18050.611	21988.024	1.281	1.281	1...	H1-1b
5	M21	L3x3x4	.527	18	1	.078	18	y	3	25431.152	31041.916	1.123	2.499	1...	H2-1
6	M23	L3x3x4	.524	18	2	.072	18	y	2	25431.152	31041.916	1.123	2.499	1...	H2-1
7	M42	PIPE_2.0	.498	45	3	.078	44		2	9986.402	21988.024	1.281	1.281	2...	H1-1b
8	M36	L3x3x4	.473	81.884	5	.018	81.884	z	5	11047.304	31041.916	1.123	2.414	2...	H2-1
9	M3	C6x2	.471	78.125	5	.040	78.125	y	5	22724.492	71107.784	2.077	11.89	1...	H1-1b
10	M20	L3x3x4	.405	18	3	.050	18	z	1	25431.152	31041.916	1.123	2.499	1...	H2-1
11	M39	PIPE_2.0	.375	60	2	.176	30		2	16154.327	21988.024	1.281	1.281	2...	H1-1b
12	M32	L3x3x4	.358	94.366	6	.011	94.366	z	4	8318.043	31041.916	1.123	2.375	2...	H2-1
13	M1	C6x2	.358	78.125	4	.029	78.125	y	4	22724.492	71107.784	2.077	11.89	1...	H1-1b
14	M22	L3x3x4	.340	18	2	.048	18	z	2	25431.152	31041.916	1.123	2.499	1...	H2-1
15	M16	PIPE_2.0	.338	30	2	.050	30		2	9986.402	21988.024	1.281	1.281	1...	H1-1b
16	M12	PIPE_2.0	.333	24	3	.136	24		1	18050.611	21988.024	1.281	1.281	1...	H1-1b
17	M38	PIPE_2.0	.314	60	5	.116	60		2	16154.327	21988.024	1.281	1.281	2...	H1-1b
18	M6	L3x2.5x4	.306	0	6	.018	0	y	6	26323.2	28455.09	.833	1.95	1	H2-1
19	M34	L3x3x4	.299	81.884	4	.012	81.884	z	4	11047.304	31041.916	1.123	2.403	2...	H2-1
20	M31	L3x3x4	.288	122.43	6	.017	122.43	y	3	29189.425	31041.916	1.123	2.499	1	H2-1
21	M2	C6x2	.282	78.125	4	.024	78.125	y	4	22724.492	71107.784	2.077	11.89	1...	H1-1b
22	M17	PIPE_2.0	.275	53	2	.046	53		3	9986.402	21988.024	1.281	1.281	2...	H1-1b
23	M37	L3x3x4	.266	113.088	6	.013	113.0...	z	5	5791.866	31041.916	1.123	2.145	1...	H2-1
24	M15	PIPE_2.0	.265	48	2	.048	48		3	9986.402	21988.024	1.281	1.281	1...	H1-1b
25	M14	PIPE_2.0	.262	48	2	.057	48		2	9986.402	21988.024	1.281	1.281	1...	H1-1b
26	M41	PIPE_2.0	.260	40.5	2	.123	31.5		2	18050.611	21988.024	1.281	1.281	1...	H1-1b
27	M18	PIPE_2.5	.240	27	5	.239	66.375		2	17551.302	34706.587	2.461	2.461	1...	H1-1b
28	M28	PIPE_2.5	.235	9	6	.236	69.75		1	17551.302	34706.587	2.461	2.461	2...	H1-1b
29	M7	L3x2.5x4	.228	0	4	.013	0	y	4	26323.2	28455.09	.833	1.95	1	H2-1
30	M9	L3x2.5x4	.227	106.151	5	.014	106.1...	y	5	26323.2	28455.09	.833	1.95	1	H2-1
31	M40	SR 3/4" dia.	.226	33	5	.054	33		2	2143.719	9523.541	.119	.119	3	H1-1b
32	M26	PIPE_2.0	.225	72	3	.082	8		1	9986.402	21988.024	1.281	1.281	1...	H1-1b
33	M27	PIPE_2.0	.224	72	2	.083	8		2	9986.402	21988.024	1.281	1.281	1...	H1-1b
34	M35	L3x3x4	.203	113.088	5	.010	113.0...	z	4	5791.866	31041.916	1.123	2.142	1...	H2-1
35	M33	L3x3x4	.203	122.43	4	.011	122.43	y	2	29189.425	31041.916	1.123	2.499	1	H2-1

Envelope AISC 13th(360-05): ASD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	Pnc/om [l...	Pnt/om [lb]	Mnyy/...	Mnzz/...	...	Eqn
36	M13	PIPE_2.0	.191	24	1	.040	24		3	18050.611	21988.024	1.281	1.281	1...	H1-1b
37	M8	L3x2.5x4	.158	106.151	5	.011	106.1...	y	4	26323.2	28455.09	.833	1.95	1	H2-1
38	M29	PIPE_2.5	.135	9	6	.227	69.75		2	17551.302	34706.587	2.461	2.461	2...	H1-1b
39	M19	PIPE_2.5	.125	27	4	.059	66.375		3	17551.302	34706.587	2.461	2.461	1...	H1-1b
40	M24	PIPE_2.0	.105	70	1	.056	95		3	9986.402	21988.024	1.281	1.281	2...	H1-1b
41	M25	PIPE_2.0	.103	66	2	.044	95		2	9986.402	21988.024	1.281	1.281	1...	H1-1b
42	M45	PIPE_2.0	.051	43.739	5	.091	0		6	11417.491	21988.024	1.281	1.281	1...	H1-1b
43	M5	C6x2	.048	39	7	.006	78	y	7	19362.881	71107.784	2.077	10.027	1...	H1-1b

<1.0, members are adequate