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Structural Analysis Report

Antenna Screen Enclosure/Host Building

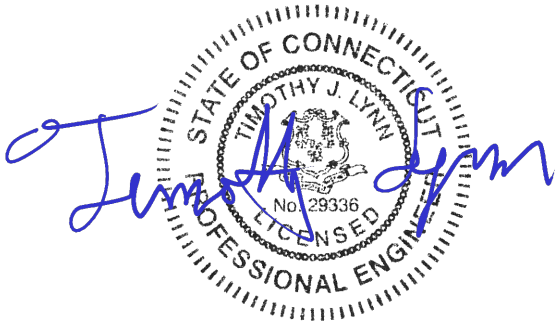
Proposed Verizon Wireless
Antenna Upgrade

Site Ref: Old Saybrook CTR CT - A

19 Main Street
Old Saybrook, CT

CENTEK Project No. 21007.41

Date: November 17, 2021



Prepared for:

Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

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Introduction

The purpose of this structural analysis report (SAR) is to summarize the results, of the impacted structural components, by the equipment upgrade proposed by Verizon Wireless on the existing host building located in Old Saybrook, CT.

The antennas are mounted within one (1) existing RF transparent screen enclosure on roof of the host building. The existing dunnage is supported on two (2) steel wide flange girders.

Primary Assumptions Used in the Analysis

- The host structure's theoretical capacity not including any assessment of the condition of the host structure.
- The existing elevated steel antenna frames carry the horizontal and vertical loads due to the weight of equipment, and wind and transfers into host structure.
- Structure is in plumb condition.
- Loading for equipment and enclosure as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as observed during roof framing mapping.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.

Antenna and Equipment Summary

Location	Appurtenance / Equipment	Rad Center Elevation (AGL)	Mount Type
Alpha Sector	~~(2) Andrew SBNHH-1D65A Antenna~~ **(1) JMA MX14FIT465-01Antenna** **(1) JMA MX06FIT465-02 Antennas** **(1) Samsung RF4439d-25A rrh** **(1) Samsung RF4440d-13A rrh** **(1) Samsung RT-8808-77A rrh** ~~(1) Nokia UHBA B13 RRH 4x30 rrh~~ ~~(1) Nokia UHIC B4 RRH 2x60-4Rrrh~~ **(1) RAYCAP OVP-12 Box** ~~(1) RAYCAP OVP-6 Box~~	29.7-ft	Screen Wall Enclosure on host building roof
Beta Sector	~~(2) Andrew SBNHH-1D65A Antenna~~ **(1) JMA MX14FIT465-01Antenna** **(1) JMA MX06FIT465-02 Antennas** **(1) Samsung RF4439d-25A rrh** **(1) Samsung RF4440d-13A rrh** **(1) Samsung RT-8808-77A rrh** ~~(1) Nokia UHBA B13 RRH 4x30 rrh~~ ~~(1) Nokia UHIC B4 RRH 2x60-4R rrh~~	29.7-ft	Screen Wall Enclosure on host building roof
Gamma Sector	~~(2) Andrew SBNHH-1D65A Antenna~~ **(1) JMA MX14FIT465-01Antenna** **(1) JMA MX06FIT465-02 Antennas** **(1) Samsung RF4439d-25A rrh** **(1) Samsung RF4440d-13A rrh** **(1) Samsung RT-8808-77A rrh** ~~(1) Nokia UHBA B13 RRH 4x30 rrh~~ ~~(1) Nokia UHIC B4 RRH 2x60-4R rrh~~	29.7-ft	Screen Wall Enclosure on host building roof

~~Equipment~~ – Indicates equipment to be removed.
Equipment – Indicates equipment to be installed.

Analysis

The antenna enclosure framing and roof framing were analyzed using a comprehensive computer program titled Risa3D. The program analyzes the equipment platform and antenna mounts considering the worst case code prescribed loading condition. The structures were considered to be loaded by concentric forces, and the model assumes that the members are subjected to bending, axial, and shear forces.

Design Loading

Loading was determined per the requirements of the 2015 International Building Code amended by the 2018 CSBC and ASCE 7-10 “Minimum Design Loads for Buildings and Other Structures”.

Wind Speed:	V_{ult} = 135 mph	*Appendix N of the 2018 CT State Building Code*
Risk Category:	II	*2015 IBC; Table 1604.05*
Exposure Category:	Surface Roughness C	*ASCE 7-10; Section 26.7.2*
Ground Snow Load	30 psf	*Appendix N of the 2018 CT State Building Code*
Dead Load	Equipment and framing self-weight	*Identified within SAR design calculations*
Live Load	20 psf	*ASCE 7-10; Table 4-1 “Roofs – All Other Construction”*

Reference Standards

2015 International Building Code:

1. ACI 318-14, *Building Code Requirements for Structural Concrete*.
2. ACI 530-13, *Building Code Requirements for Masonry Structures*.
3. AISC 360-10, *Specification for Structural Steel Buildings*

Results

Structure stresses were calculated utilizing the structural analysis software RISA 3D. The stresses were determined based on the AISC standard.

- Calculated stresses for the antenna mounts and host building were found to **be within allowable** limits.

Sector	Component	Stress Ratio (percentage of capacity)	Result
Antenna mount and Enclosure	HSS4x4 Existing Screen Wall Member	60%	**PASS**
	L3x3x1/4 Screen Wall Existing Bracing Member	88%	**PASS**
	W8x24 Existing Antenna Mount	42%	**PASS**
Host Building	W27x84 Existing Roof Framing	89%	**PASS**

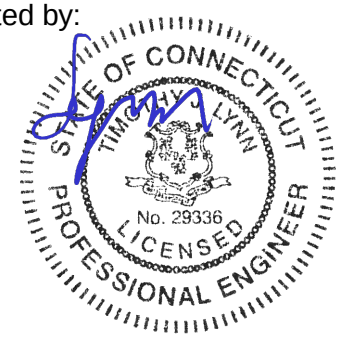
Conclusion

This analysis shows that the subject antenna enclosure frame & host roof structure **HAVE SUFFICIENT CAPACITY** to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by Verizon Wireless. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer

Fernando J. Palacios
Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

WIND LOADING ANALYSIS - Design Wind Loads - Other Structures

Per ASCE 7-10 Code

Using Method 2: Analytical Procedure (Section 6.5) for Other Structures of Any Height

Job Name:	Old Saybrook CTR	Subject:	Faux Chimney		
Job Number:	21007.41	Originator:	FJP	Checker:	TJL

Input Data:

Wind Speed, V =	135	mph
Class., Occ. Category =	II	(Table 1-1)
Exposure Category =	C	(Sect. 26.7)
Topo. Factor, Kzt =	1.00	(Sect. 26.8 & Fig. 26.8-1)
Height to Base, ho =	20.00	ft.
Structure Width, B =	6.00	ft. (normal to wind)
Structure Height, h =	13.00	ft. (parallel to wind)
Damping Ratio, β =	0.010	(0.010 to 0.070)
Period Coefficient, Ct =	0.0200	(0.020 to 0.035)
Direct. Factor, Kd =	0.9	(Table 6-4)
Hurricane Region?	Y	
Force Coefficient, Cf =	1.30	(Figure 29.5-1)

Note: Per Code Section 27.4.7, design wind force for open buildings and other structures shall not be less than 16 psf multiplied by the area, 'Af', the area normal to wind direction.

Resulting Parameters and Coefficients:

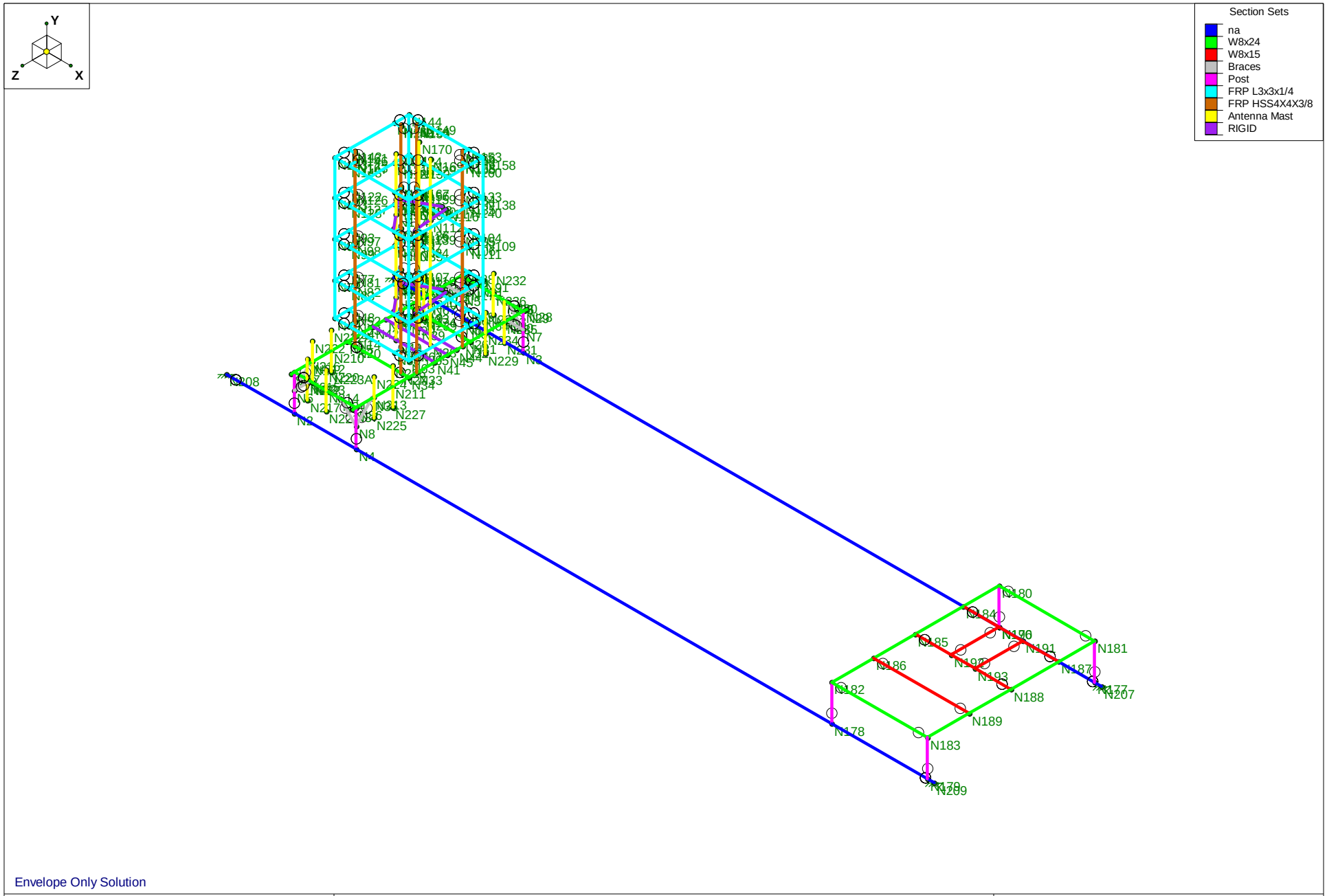
If z < 15 then: Kz = 2.01*(15/zg)^(2/α)
If z >= 15 then: Kz = 2.01*(z/zg)^(2/α)

α =	9.50	(Table 26.9-1)
zg =	900	(Table 26.9-1)
freq., f =	7.303	Hz. (f >=1)
G =	0.850	(Gust Fact Rigid

Velocity Pressure (Sect. 30.3.2, Eq. 30.3-1)
qz = 0.00256*Kz*Kzt*Kd*V^2
Net Design Wind Pressures (Sect. 29.5):
p = qz*G*Cf (psf), where 'qz' is evaluated at height 'z' of the centroid of projected area.

Other Structures - Net Design Wind Pressures, p

	z (ft.)	Kz	qz (psf)	qz*G (psf)	p=qz*G*Cf (psf)
	0	0.85	35.64	30.30	39.39
	15	0.85	35.64	30.30	39.39
	20	0.90	37.87	32.19	41.85
	25	0.95	39.69	33.74	43.86
	30	0.98	41.25	35.06	45.58
For z = h:	33	1.00	42.08	35.77	46.50



Envelope Only Solution

Centek Engineers		
FJP	Old Saybrook CTR CT - AMA	Nov 17, 2021 at 11:31 AM
21007.41	Member Framing	Old Saybrook CTR - Faux Chimney Dunnage.r3d

(Global) Model Settings

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 (ft/sec^2)	32.2
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 15th(360-16): ASD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-10: ASD
Wood Code	AWC NDS-12: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-11
Masonry Code	ACI 530-11: ASD
Aluminum Code	AA ADM1-10: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

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) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	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
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	0
Footing Concrete f'c (ksi)	4
Footing Concrete Ec (ksi)	3644
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	2
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	FRP	2800	450	.35	.44	.11	16.67	1.5	50	1.3
7	A53 Grade B	29000	11154	.3	.65	.49	35	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	W8x24	W8X24	Beam	Wide Flange	A992	Typical	7.08	18.3	82.7	.346
2	W8x15	W8X15	Beam	Wide Flange	A992	Typical	4.44	3.41	48	.137
3	Braces	L3.5X3.5X4	VBrace	Single Angle	A36 Gr.36	Typical	1.7	2	2	.039
4	Post	PIPE_3.5	Column	Tube	A53 Grade B	Typical	2.5	4.52	4.52	9.04
5	FRP L6x6x1/4	L8X6X8	Column	Single Angle	FRP	Typical	6.8	21.7	44.4	.584
6	FRP L3x3x1/4	L3X3X4	Beam	Single Angle	FRP	Typical	1.44	1.23	1.23	.031
7	FRP HSS4X4X3/8	HSS4X4X6	Column	Tube	FRP	Typical	4.78	10.3	10.3	17.5
8	HR8	HSS4X4X6	Column	Tube	FRP	Typical	4.78	10.3	10.3	17.5
9	Brace	L3.5X3.5X4	Beam	Single Angle	A36 Gr.36	Typical	1.7	2	2	.039
10	Antenna Mast	PIPE_2.0	Column	Tube	A53 Grade B	Typical	1.02	.627	.627	1.25

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[...	L-torq...	Kyy	Kzz	Cb	Functi...
1	M1	Post	3	Segment		Lbyy						Lateral
2	M2	Post	3	Segment		Lbyy						Lateral
3	M3	Post	3	Segment		Lbyy						Lateral
4	M4	Post	3	Segment		Lbyy						Lateral
5	M5	W8x24	14.542	Segment		Lbyy						Lateral
6	M6	W8x24	14.542	Segment		Lbyy						Lateral
7	M7	W8x24	5.167	Segment		Lbyy						Lateral
8	M8	W8x24	5.167	Segment		Lbyy						Lateral
9	M9	W8x24	5.167	Segment		Lbyy						Lateral
10	M10	W8x24	5.167	Segment		Lbyy						Lateral
11	M11	Braces	1.886			Lbyy						Lateral
12	M12	Braces	1.886			Lbyy						Lateral
13	M13	Braces	1.886			Lbyy						Lateral
14	M14	Braces	1.886			Lbyy						Lateral
15	M15	Braces	1.886			Lbyy						Lateral
16	M16	Braces	1.856			Lbyy						Lateral
17	M17	Braces	1.886			Lbyy						Lateral
18	M18	Braces	1.886			Lbyy						Lateral
19	M19	FRP HSS4X4X3/8	13.5	Segment	Segment	Lbyy						Lateral
20	M20	FRP HSS4X4X3/8	13.5	Segment	Segment	Lbyy						Lateral
21	M21	FRP HSS4X4X3/8	13.5	Segment	Segment	Lbyy						Lateral
22	M22	FRP HSS4X4X3/8	13.5	Segment		Lbyy						Lateral
23	M23	FRP HSS4X4X3/8	13.5	Segment	Segment	Lbyy						Lateral
24	M24	FRP HSS4X4X3/8	13.5	Segment	Segment	Lbyy						Lateral
25	M25	FRP HSS4X4X3/8	13.5	Segment	Segment	Lbyy						Lateral
26	M26	FRP HSS4X4X3/8	13.5	Segment		Lbyy						Lateral
27	M27	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
28	M28	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
29	M29	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
30	M30	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
31	M31	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
32	M32	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
33	M33	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
34	M34	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
35	M35	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
36	M36	FRP L3x3x1/4	.521	.167		Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[...	L-torq...	Kyy	Kzz	Cb	Functi...
37	M37	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
38	M38	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
39	M39	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
40	M40	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
41	M41	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
42	M42	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
43	M43	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
44	M44	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
45	M45	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
46	M46	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
47	M47	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
48	M48	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
49	M49	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
50	M50	FRP L3x3x1/4	.521	.167	.167	Lbyy						Lateral
51	M51	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
52	M52	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
53	M53	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
54	M54	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
55	M55	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
56	M56	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
57	M57	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
58	M58	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
59	M59	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
60	M60	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
61	M61	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
62	M62	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
63	M63	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
64	M64	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
65	M65	FRP L3x3x1/4	6.208	Segment		Lbyy						Lateral
66	M66	FRP L3x3x1/4	6.208	Segment		Lbyy						Lateral
67	M67	FRP L3x3x1/4	6.208	Segment		Lbyy						Lateral
68	M68	FRP L3x3x1/4	6.208	Segment		Lbyy						Lateral
69	M69	FRP L3x3x1/4	6.208	Segment	Segment	Lbyy						Lateral
70	M70	FRP L3x3x1/4	6.208	Segment		Lbyy						Lateral
71	M71	FRP L3x3x1/4	6.208	Segment		Lbyy						Lateral
72	M72	FRP L3x3x1/4	6.208	Segment		Lbyy						Lateral
73	M73	FRP L3x3x1/4	6.208	Segment	Segment	Lbyy						Lateral
74	M74	FRP L3x3x1/4	6.208	Segment		Lbyy						Lateral
75	M75	FRP L3x3x1/4	6.208	Segment		Lbyy						Lateral
76	M76	FRP L3x3x1/4	6.208	Segment		Lbyy						Lateral
77	M77	FRP L3x3x1/4	6.208	Segment		Lbyy						Lateral
78	M78	FRP L3x3x1/4	6.208	Segment	Segment	Lbyy						Lateral
79	M79	FRP L3x3x1/4	6.208	Segment		Lbyy						Lateral
80	M80	FRP L3x3x1/4	6.208	Segment		Lbyy						Lateral
81	M81	FRP L3x3x1/4	6.208	Segment		Lbyy						Lateral
82	M82	FRP L3x3x1/4	6.208	Segment	Segment	Lbyy						Lateral
83	M83	FRP L3x3x1/4	6.208	Segment	Segment	Lbyy						Lateral
84	M84	Antenna Mast	13.5	Segment	Segment	Lbyy						Lateral
85	M85	Antenna Mast	13.5	Segment	Segment	Lbyy						Lateral
86	M86	Antenna Mast	13.5	Segment	Segment	Lbyy						Lateral
87	M96	FRP L3x3x1/4	11.646									Lateral
88	M97	FRP L3x3x1/4	11.646									Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[...	L-torq...	Kyy	Kzz	Cb	Functi...
89	M98	FRP L3x3x1/4	11.646									Lateral
90	M99	FRP L3x3x1/4	11.646									Lateral
91	M100	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
92	M101	FRP L3x3x1/4	.521	.167		Lbyy						Lateral
93	M102	FRP L3x3x1/4	6.208	Segment	Segment	Lbyy						Lateral
94	M103	Post	3			Lbyy						Lateral
95	M104	Post	3			Lbyy						Lateral
96	M105	Post	3			Lbyy						Lateral
97	M106	Post	3			Lbyy						Lateral
98	M107	W8x24	14			Lbyy						Lateral
99	M108	W8x24	8			Lbyy						Lateral
100	M109	W8x24	14			Lbyy						Lateral
101	M110	W8x24	8			Lbyy						Lateral
102	M111	W8x15	8			Lbyy						Lateral
103	M112	W8x15	8			Lbyy						Lateral
104	M113	W8x15	8			Lbyy						Lateral
105	M114	W8x15	4			Lbyy						Lateral
106	M115	W8x15	4			Lbyy						Lateral
107	M124	W27X84	59.25	1		Lbyy						Lateral
108	M125	W27X84	59.25	1		Lbyy						Lateral
109	BR.1	Antenna Mast	3									Lateral
110	AR.1	Antenna Mast	3									Lateral
111	BR.2	Antenna Mast	3									Lateral
112	BR.3	Antenna Mast	3									Lateral
113	AR.2	Antenna Mast	3									Lateral
114	AR.3	Antenna Mast	3									Lateral
115	GR.3	Antenna Mast	3									Lateral
116	GR.2	Antenna Mast	3									Lateral
117	GR.1	Antenna Mast	3									Lateral
118	M135	Antenna Mast	3	Segment		Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
1	M1	N2	N17			Post	Column	Tube	A53 Grade B	Typical
2	M2	N4	N36			Post	Column	Tube	A53 Grade B	Typical
3	M3	N1	N10			Post	Column	Tube	A53 Grade B	Typical
4	M4	N3	N29			Post	Column	Tube	A53 Grade B	Typical
5	M5	N18	N9			W8x24	Beam	Wide Flange	A992	Typical
6	M6	N37	N28			W8x24	Beam	Wide Flange	A992	Typical
7	M7	N17	N36			W8x24	Beam	Wide Flange	A992	Typical
8	M8	N10	N29			W8x24	Beam	Wide Flange	A992	Typical
9	M9	N15	N34			W8x24	Beam	Wide Flange	A992	Typical
10	M10	N12	N31			W8x24	Beam	Wide Flange	A992	Typical
11	M11	N6	N22			Braces	VBrace	Single Angle	A36 Gr.36	Typical
12	M12	N6	N16			Braces	VBrace	Single Angle	A36 Gr.36	Typical
13	M13	N8	N24			Braces	VBrace	Single Angle	A36 Gr.36	Typical
14	M14	N8	N35			Braces	VBrace	Single Angle	A36 Gr.36	Typical
15	M15	N7	N30			Braces	VBrace	Single Angle	A36 Gr.36	Typical
16	M16	N7	N25			Braces	VBrace	Single Angle	A36 Gr.36	Typical
17	M17	N5	N21			Braces	VBrace	Single Angle	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
18	M18	N5	N11			Braces	VBrace	Single Angle	A36 Gr.36	Typical
19	M19	N27	N165		90	FRP HSS4X4X3/8	Column	Tube	FRP	Typical
20	M20	N20	N163		90	FRP HSS4X4X3/8	Column	Tube	FRP	Typical
21	M21	N26	N166		90	FRP HSS4X4X3/8	Column	Tube	FRP	Typical
22	M22	N19	N164		90	FRP HSS4X4X3/8	Column	Tube	FRP	Typical
23	M23	N14	N161		90	FRP HSS4X4X3/8	Column	Tube	FRP	Typical
24	M24	N13	N162		90	FRP HSS4X4X3/8	Column	Tube	FRP	Typical
25	M25	N33	N167		90	FRP HSS4X4X3/8	Column	Tube	FRP	Typical
26	M26	N32	N168		90	FRP HSS4X4X3/8	Column	Tube	FRP	Typical
27	M27	N136	N139			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
28	M28	N135	N140		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
29	M29	N107	N110			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
30	M30	N106	N111		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
31	M31	N62	N65			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
32	M32	N61	N66		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
33	M33	N156	N159		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
34	M34	N155	N160		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
35	M35	N122	N126			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
36	M36	N121	N125		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
37	M37	N93	N97			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
38	M38	N92	N96		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
39	M39	N77	N81			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
40	M40	N76	N80		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
41	M41	N48	N52			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
42	M42	N47	N51		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
43	M43	N142	N146		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
44	M44	N141	N145		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
45	M45	N127	N128			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
46	M46	N131	N132		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
47	M47	N98	N99			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
48	M48	N102	N103		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
49	M49	N82	N83			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
50	M50	N86	N87		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
51	M51	N53	N54			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
52	M52	N57	N58		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
53	M53	N147	N148		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
54	M54	N151	N152		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
55	M55	N129	N130			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
56	M56	N133	N134		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
57	M57	N100	N101			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
58	M58	N104	N105		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
59	M59	N84	N85			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
60	M60	N88	N89		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
61	M61	N55	N56			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
62	M62	N59	N60		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
63	M63	N149	N150		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
64	M64	N153	N154		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
65	M65	N144	N143		180	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
66	M66	N124	N123		180	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
67	M67	N95	N94		180	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
68	M68	N79	N78		180	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
69	M69	N50	N49		180	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
70	M70	N158	N157		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
71	M71	N138	N137		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
72	M72	N109	N108		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
73	M73	N64	N63		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
74	M74	N144	N158		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
75	M75	N124	N138		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
76	M76	N95	N109		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
77	M77	N79	N91		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
78	M78	N50	N64		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
79	M79	N143	N157		180	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
80	M80	N123	N137		180	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
81	M81	N94	N108		180	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
82	M82	N78	N90		180	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
83	M83	N49	N63		180	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
84	M84	N38	N169		90	Antenna Mast	Column	Tube	A53 Grade B	Typical
85	M85	N39	N170		90	Antenna Mast	Column	Tube	A53 Grade B	Typical
86	M86	N40	N171		90	Antenna Mast	Column	Tube	A53 Grade B	Typical
87	M87	N115	N116			RIGID	None	None	RIGID	Typical
88	M88	N70	N71			RIGID	None	None	RIGID	Typical
89	M89	N117	N118			RIGID	None	None	RIGID	Typical
90	M90	N72	N73			RIGID	None	None	RIGID	Typical
91	M91	N120	N119			RIGID	None	None	RIGID	Typical
92	M92	N75	N74			RIGID	None	None	RIGID	Typical
93	M93	N43	N44			RIGID	None	None	RIGID	Typical
94	M94	N46	N45			RIGID	None	None	RIGID	Typical
95	M95	N42	N41			RIGID	None	None	RIGID	Typical
96	M96	N143	N49		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
97	M97	N157	N63			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
98	M98	N158	N64		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
99	M99	N144	N50		180	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
100	M100	N173	N174			FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
101	M101	N172	N175		270	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
102	M102	N91	N90		90	FRP L3x3x1/4	Beam	Single Angle	FRP	Typical
103	M103	N178	N182			Post	Column	Tube	A53 Grade B	Typical
104	M104	N176	N180			Post	Column	Tube	A53 Grade B	Typical
105	M105	N177	N181			Post	Column	Tube	A53 Grade B	Typical
106	M106	N179	N183			Post	Column	Tube	A53 Grade B	Typical
107	M107	N182	N180			W8x24	Beam	Wide Flange	A992	Typical
108	M108	N180	N181			W8x24	Beam	Wide Flange	A992	Typical
109	M109	N181	N183			W8x24	Beam	Wide Flange	A992	Typical
110	M110	N183	N182			W8x24	Beam	Wide Flange	A992	Typical
111	M111	N186	N189			W8x15	Beam	Wide Flange	A992	Typical
112	M112	N185	N188			W8x15	Beam	Wide Flange	A992	Typical
113	M113	N184	N187			W8x15	Beam	Wide Flange	A992	Typical
114	M114	N192	N190			W8x15	Beam	Wide Flange	A992	Typical
115	M115	N193	N191			W8x15	Beam	Wide Flange	A992	Typical
116	M124	N206	N207			W27X84	Beam	Wide Flange	A36 Gr.36	Typical
117	M125	N208	N209			W27X84	Beam	Wide Flange	A36 Gr.36	Typical
118	BR.1	N216	N217			Antenna Mast	Column	Tube	A53 Grade B	Typical
119	AR.1	N220	N221			Antenna Mast	Column	Tube	A53 Grade B	Typical
120	BR.2	N222	N223			Antenna Mast	Column	Tube	A53 Grade B	Typical
121	BR.3	N222A	N223A			Antenna Mast	Column	Tube	A53 Grade B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
122	AR.2	N224	N225			Antenna Mast	Column	Tube	A53 Grade B	Typical
123	AR.3	N226	N227			Antenna Mast	Column	Tube	A53 Grade B	Typical
124	GR.3	N228	N229			Antenna Mast	Column	Tube	A53 Grade B	Typical
125	GR.2	N230	N231			Antenna Mast	Column	Tube	A53 Grade B	Typical
126	GR.1	N232	N233			Antenna Mast	Column	Tube	A53 Grade B	Typical
127	M135	N238	N239			Antenna Mast	Column	Tube	A53 Grade B	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	0	-3	0	0	
2	N2	0	-3	14	0	
3	N3	5.166667	-3	0	0	
4	N4	5.166667	-3	14	0	
5	N5	0	-1.333333	0	0	
6	N6	0	-1.333333	14	0	
7	N7	5.166667	-1.333333	0	0	
8	N8	5.166667	-1.333333	14	0	
9	N9	0	0	-0.270833	0	
10	N10	0	0	0	0	
11	N11	0	0	1.333333	0	
12	N12	0	0	4.416667	0	
13	N13	0	0	5.083333	0	
14	N14	0	0	8.9275	0	
15	N15	0	0	9.583333	0	
16	N16	0	0	12.666667	0	
17	N17	0	0	14	0	
18	N18	0	0	14.270833	0	
19	N19	0.666667	0	4.416667	0	
20	N20	0.666667	0	9.583333	0	
21	N21	1.333333	0	0	0	
22	N22	1.333333	0	14	0	
23	N23	3.833333	0	0	0	
24	N24	3.833333	0	14	0	
25	N25	3.875	0	0	0	
26	N26	4.5	0	4.416667	0	
27	N27	4.5	0	9.583333	0	
28	N28	5.166667	0	-0.270833	0	
29	N29	5.166667	0	0	0	
30	N30	5.166667	0	1.333333	0	
31	N31	5.166667	0	4.416667	0	
32	N32	5.166667	0	5.083333	0	
33	N33	5.166667	0	8.9275	0	
34	N34	5.166667	0	9.583333	0	
35	N35	5.166667	0	12.666667	0	
36	N36	5.166667	0	14	0	
37	N37	5.166667	0	14.270833	0	
38	N38	3.75	0	6.354167	0	
39	N39	2.020833	0	5.59375	0	
40	N40	1.916667	0	7.416667	0	
41	N41	5.166667	0	7.416667	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
42	N42	0	0	7.416667	0	
43	N43	0	0	5.59375	0	
44	N44	5.166667	0	5.59375	0	
45	N45	5.166667	0	6.354167	0	
46	N46	0	0	6.354167	0	
47	N47	-0.520833	1.708333	5.083333	0	
48	N48	-0.520833	1.708333	8.9275	0	
49	N49	-0.520833	1.708333	10.104167	0	
50	N50	-0.520833	1.708333	3.895833	0	
51	N51	0	1.708333	5.083333	0	
52	N52	0	1.708333	8.9275	0	
53	N53	0.666667	1.708333	9.583333	0	
54	N54	0.666667	1.708333	10.104167	0	
55	N55	0.666667	1.708333	3.895833	0	
56	N56	0.666667	1.708333	4.416667	0	
57	N57	4.5	1.708333	9.583333	0	
58	N58	4.5	1.708333	10.104167	0	
59	N59	4.5	1.708333	3.895833	0	
60	N60	4.5	1.708333	4.416667	0	
61	N61	5.166667	1.708333	5.083333	0	
62	N62	5.166667	1.708333	8.9275	0	
63	N63	5.6875	1.708333	10.104167	0	
64	N64	5.6875	1.708333	3.895833	0	
65	N65	5.6875	1.708333	8.9275	0	
66	N66	5.6875	1.708333	5.083333	0	
67	N67	3.75	3.083333	6.354167	0	
68	N68	2.020833	3.083333	5.59375	0	
69	N69	1.916667	3.083333	7.416667	0	
70	N70	3.873471	3.083333	7.765442	0	
71	N71	3.626529	3.083333	4.942891	0	
72	N72	3.247703	3.083333	4.885417	0	
73	N73	0.793964	3.083333	6.302083	0	
74	N74	2.827282	3.083333	8.501896	0	
75	N75	1.006051	3.083333	6.331437	0	
76	N76	-0.520833	4.458333	5.083333	0	
77	N77	-0.520833	4.458333	8.9275	0	
78	N78	-0.520833	4.458333	10.104167	0	
79	N79	-0.520833	4.458333	3.895833	0	
80	N80	0	4.458333	5.083333	0	
81	N81	0	4.458333	8.9275	0	
82	N82	0.666667	4.458333	9.583333	0	
83	N83	0.666667	4.458333	10.104167	0	
84	N84	0.666667	4.458333	3.895833	0	
85	N85	0.666667	4.458333	4.416667	0	
86	N86	4.5	4.458333	9.583333	0	
87	N87	4.5	4.458333	10.104167	0	
88	N88	4.5	4.458333	3.895833	0	
89	N89	4.5	4.458333	4.416667	0	
90	N90	5.6875	4.458333	10.104167	0	
91	N91	5.6875	4.458333	3.895833	0	
92	N92	-0.520833	7.458333	5.083333	0	
93	N93	-0.520833	7.458333	8.9275	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
94	N94	-0.520833	7.458333	10.104167	0	
95	N95	-0.520833	7.458333	3.895833	0	
96	N96	0	7.458333	5.083333	0	
97	N97	0	7.458333	8.9275	0	
98	N98	0.666667	7.458333	9.583333	0	
99	N99	0.666667	7.458333	10.104167	0	
100	N100	0.666667	7.458333	3.895833	0	
101	N101	0.666667	7.458333	4.416667	0	
102	N102	4.5	7.458333	9.583333	0	
103	N103	4.5	7.458333	10.104167	0	
104	N104	4.5	7.458333	3.895833	0	
105	N105	4.5	7.458333	4.416667	0	
106	N106	5.166667	7.458333	5.083333	0	
107	N107	5.166667	7.458333	8.9275	0	
108	N108	5.6875	7.458333	10.104167	0	
109	N109	5.6875	7.458333	3.895833	0	
110	N110	5.6875	7.458333	8.9275	0	
111	N111	5.6875	7.458333	5.083333	0	
112	N112	3.75	9.083333	6.354167	0	
113	N113	2.020833	9.083333	5.59375	0	
114	N114	1.916667	9.083333	7.416667	0	
115	N115	3.873471	9.083333	7.765442	0	
116	N116	3.626529	9.083333	4.942891	0	
117	N117	3.247703	9.083333	4.885417	0	
118	N118	0.793964	9.083333	6.302083	0	
119	N119	2.827282	9.083333	8.501896	0	
120	N120	1.006051	9.083333	6.331437	0	
121	N121	-0.520833	10.458333	5.083333	0	
122	N122	-0.520833	10.458333	8.9275	0	
123	N123	-0.520833	10.458333	10.104167	0	
124	N124	-0.520833	10.458333	3.895833	0	
125	N125	0	10.458333	5.083333	0	
126	N126	0	10.458333	8.9275	0	
127	N127	0.666667	10.458333	9.583333	0	
128	N128	0.666667	10.458333	10.104167	0	
129	N129	0.666667	10.458333	3.895833	0	
130	N130	0.666667	10.458333	4.416667	0	
131	N131	4.5	10.458333	9.583333	0	
132	N132	4.5	10.458333	10.104167	0	
133	N133	4.5	10.458333	3.895833	0	
134	N134	4.5	10.458333	4.416667	0	
135	N135	5.166667	10.458333	5.083333	0	
136	N136	5.166667	10.458333	8.9275	0	
137	N137	5.6875	10.458333	10.104167	0	
138	N138	5.6875	10.458333	3.895833	0	
139	N139	5.6875	10.458333	8.9275	0	
140	N140	5.6875	10.458333	5.083333	0	
141	N141	-0.520833	13.354167	5.083333	0	
142	N142	-0.520833	13.354167	8.9275	0	
143	N143	-0.520833	13.354167	10.104167	0	
144	N144	-0.520833	13.354167	3.895833	0	
145	N145	0	13.354167	5.083333	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
146	N146	0	13.354167	8.9275	0	
147	N147	0.666667	13.354167	9.583333	0	
148	N148	0.666667	13.354167	10.104167	0	
149	N149	0.666667	13.354167	3.895833	0	
150	N150	0.666667	13.354167	4.416667	0	
151	N151	4.5	13.354167	9.583333	0	
152	N152	4.5	13.354167	10.104167	0	
153	N153	4.5	13.354167	3.895833	0	
154	N154	4.5	13.354167	4.416667	0	
155	N155	5.166667	13.354167	5.083333	0	
156	N156	5.166667	13.354167	8.9275	0	
157	N157	5.6875	13.354167	10.104167	0	
158	N158	5.6875	13.354167	3.895833	0	
159	N159	5.6875	13.354167	8.9275	0	
160	N160	5.6875	13.354167	5.083333	0	
161	N161	0	13.5	8.9275	0	
162	N162	0	13.5	5.083333	0	
163	N163	0.666667	13.5	9.583333	0	
164	N164	0.666667	13.5	4.416667	0	
165	N165	4.5	13.5	9.583333	0	
166	N166	4.5	13.5	4.416667	0	
167	N167	5.166667	13.5	8.9275	0	
168	N168	5.166667	13.5	5.083333	0	
169	N169	3.75	13.5	6.354167	0	
170	N170	2.020833	13.5	5.59375	0	
171	N171	1.916667	13.5	7.416667	0	
172	N172	5.166667	4.458333	5.083333	0	
173	N173	5.166667	4.458333	8.9275	0	
174	N174	5.6875	4.458333	8.9275	0	
175	N175	5.6875	4.458333	5.083333	0	
176	N176	45	-3	0	0	
177	N177	53	-3	0	0	
178	N178	45	-3	14	0	
179	N179	53	-3	14	0	
180	N180	45	0	0	0	
181	N181	53	0	0	0	
182	N182	45	0	14	0	
183	N183	53	0	14	0	
184	N184	45	0	3	0	
185	N185	45	0	7	0	
186	N186	45	0	10.5	0	
187	N187	53	0	3	0	
188	N188	53	0	7	0	
189	N189	53	0	10.5	0	
190	N190	48	0	3	0	
191	N191	50	0	3	0	
192	N192	48	0	7	0	
193	N193	50	0	7	0	
194	N206	-5.666667	-3	0	0	
195	N207	53.583333	-3	0	0	
196	N208	-5.666667	-3	14	0	
197	N209	53.583333	-3	14	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
198	N210	0	0	10.916667	0	
199	N211	5.166667	0	10.916667	0	
200	N212	0	0	12.5	0	
201	N213	5.166667	0	12.5	0	
202	N214	2.666667	0	14	0	
203	N215	1.083333	0	14	0	
204	N216	1.083333	1.5	14	0	
205	N217	1.083333	-1.5	14	0	
206	N220	2.666667	1.5	14	0	
207	N221	2.666667	-1.5	14	0	
208	N222	0	1.5	12.5	0	
209	N223	0	-1.5	12.5	0	
210	N222A	0	1.5	10.916667	0	
211	N223A	0	-1.5	10.916667	0	
212	N224	5.166667	1.5	12.5	0	
213	N225	5.166667	-1.5	12.5	0	
214	N226	5.166667	1.5	10.916667	0	
215	N227	5.166667	-1.5	10.916667	0	
216	N228	5.166667	1.5	3.166667	0	
217	N229	5.166667	-1.5	3.166667	0	
218	N230	5.166667	1.5	1.583333	0	
219	N231	5.166667	-1.5	1.583333	0	
220	N232	2.666667	1.5	0	0	
221	N233	2.666667	-1.5	0	0	
222	N234	5.166667	0	3.166667	0	
223	N235	5.166667	0	1.583333	0	
224	N236	2.666667	0	0	0	
225	N237	1.083333	-.25	14	0	
226	N238	0	1.5	3.166667	0	
227	N239	0	-1.5	3.166667	0	
228	N240	0	0	3.166667	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N2						
2	N4						
3	N1						
4	N3						
5	N178						
6	N179						
7	N177						
8	N176						
9	N206	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
10	N207	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
11	N208	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
12	N209	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Point Loads (BLC 2 : Dead: Equip.)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M87	Y	-.016	2.125
2	M88	Y	-.016	2.125
3	M89	Y	-.016	2.125
4	M90	Y	-.016	2.125
5	M91	Y	-.016	2.125
6	M92	Y	-.016	2.125
7	M87	Y	-.032	.708
8	M88	Y	-.032	.708
9	M89	Y	-.032	.708
10	M90	Y	-.032	.708
11	M91	Y	-.032	.708
12	M92	Y	-.032	.708
13	M111	Y	-.1	3
14	M111	Y	-.1	5
15	M112	Y	-.15	3
16	M113	Y	-.15	3
17	M112	Y	-.15	5
18	M113	Y	-.15	5
19	M124	Y	-.002	11.333
20	M124	Y	-.002	13.367
21	M125	Y	-.002	11.333
22	M125	Y	-.002	13.367
23	BR.1	Y	-.06	1.667
24	AR.1	Y	-.06	1.667
25	GR.1	Y	-.06	1.667
26	BR.2	Y	-.07	1.667
27	AR.2	Y	-.07	1.667
28	GR.2	Y	-.07	1.667
29	BR.3	Y	-.075	1.667
30	AR.3	Y	-.075	1.667
31	GR.3	Y	-.075	1.667
32	M135	Y	-.032	1.667

Member Point Loads (BLC 7 : Wind X-Dir (48.8 psf))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M112	X	.062	3
2	M113	X	.062	3
3	M112	X	.062	5
4	M113	X	.062	5
5	M112	Y	.037	3
6	M113	Y	.037	3
7	M112	Y	-.037	5
8	M113	Y	-.037	5
9	BR.1	X	.035	1.667
10	AR.1	X	.035	1.667
11	GR.1	X	.035	1.667
12	BR.2	X	.076	1.667
13	AR.2	X	.076	1.667
14	GR.2	X	.076	1.667
15	BR.3	X	.076	1.667

Member Point Loads (BLC 7 : Wind X-Dir (48.8 psf)) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
16	AR.3	X	.076	1.667
17	GR.3	X	.076	1.667
18	M135	X	.165	1.667

Member Point Loads (BLC 8 : Wind Z-Dir (48.88 psf))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M112	Z	.118	3
2	M113	Z	.118	3
3	M112	Z	.118	5
4	M113	Z	.118	5
5	M112	Y	-.134	3
6	M113	Y	.134	3
7	M112	Y	-.134	5
8	M113	Y	.134	5
9	BR.1	Z	.076	1.667
10	AR.1	Z	.076	1.667
11	GR.1	Z	.076	1.667
12	BR.2	Z	.046	1.667
13	AR.2	Z	.046	1.667
14	GR.2	Z	.046	1.667
15	BR.3	Z	.051	1.667
16	AR.3	Z	.051	1.667
17	GR.3	Z	.051	1.667
18	M135	Z	.126	1.667

Member Distributed Loads (BLC 5 : Dead Roof (13psf))

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M124	Y	-.182	-.182	0	0
2	M125	Y	-.182	-.182	0	0

Member Distributed Loads (BLC 6 : Snow Load (30 psf))

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M124	Y	-.42	-.42	0	0
2	M125	Y	-.42	-.42	0	0

Member Distributed Loads (BLC 8 : Wind Z-Dir (48.88 psf))

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M7	Z	.033	.033	0	0
2	M8	Z	.033	.033	0	0
3	M108	Z	.033	.033	0	0
4	M110	Z	.033	.033	0	0
5	M1	Z	.016	.016	0	0
6	M2	Z	.016	.016	0	0
7	M3	Z	.016	.016	0	0
8	M4	Z	.016	.016	0	0
9	M103	Z	.016	.016	0	0
10	M104	Z	.016	.016	0	0
11	M105	Z	.016	.016	0	0
12	M106	Z	.016	.016	0	0

Member Distributed Loads (BLC 9 : Live Load)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M124	Y	-.28	-.28	0	0
2	M125	Y	-.28	-.28	0	0

Member Distributed Loads (BLC 10 : BLC 3 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M70	Y	-.013	-.013	1.665e-15	6.208
2	M71	Y	-.027	-.027	1.887e-15	6.208
3	M72	Y	-.027	-.027	1.887e-15	6.208
4	M73	Y	-.012	-.012	5.551e-16	6.208
5	M102	Y	-.026	-.026	1.221e-15	6.208
6	M79	Y	-.013	-.013	2.22e-16	6.208
7	M80	Y	-.027	-.027	3.331e-16	6.208
8	M81	Y	-.027	-.027	5.551e-16	6.208
9	M82	Y	-.026	-.026	1.11e-16	6.208
10	M83	Y	-.012	-.012	1.221e-15	6.208
11	M65	Y	-.013	-.013	1.221e-15	6.208
12	M66	Y	-.027	-.027	1.332e-15	6.208
13	M67	Y	-.027	-.027	5.551e-16	6.208
14	M68	Y	-.026	-.026	1.11e-16	6.208
15	M69	Y	-.012	-.012	7.772e-16	6.208
16	M74	Y	-.013	-.013	2.22e-16	6.208
17	M75	Y	-.027	-.027	3.331e-16	6.208
18	M76	Y	-.027	-.027	5.551e-16	6.208
19	M77	Y	-.026	-.026	1.11e-16	6.208
20	M78	Y	-.012	-.012	1.221e-15	6.208

Member Distributed Loads (BLC 11 : BLC 4 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M108	Y	-.009	-.014	0	1.6
2	M108	Y	-.014	-.015	1.6	3.2
3	M108	Y	-.015	-.014	3.2	4.8
4	M108	Y	-.014	-.015	4.8	6.4
5	M108	Y	-.015	-.014	6.4	8
6	M110	Y	-.016	-.016	2.22e-16	8
7	M111	Y	-.045	-.026	0	1.6
8	M111	Y	-.026	-.027	1.6	3.2
9	M111	Y	-.027	-.03	3.2	4.8
10	M111	Y	-.03	-.029	4.8	6.4
11	M111	Y	-.029	-.039	6.4	8
12	M112	Y	-.03	-.035	0	1.6
13	M112	Y	-.035	-.038	1.6	3.2
14	M112	Y	-.038	-.037	3.2	4.8
15	M112	Y	-.037	-.033	4.8	6.4
16	M112	Y	-.033	-.028	6.4	8
17	M113	Y	-.032	-.029	0	1.6
18	M113	Y	-.029	-.033	1.6	3.2
19	M113	Y	-.033	-.035	3.2	4.8
20	M113	Y	-.035	-.03	4.8	6.4
21	M113	Y	-.03	-.026	6.4	8
22	M5	Y	-.006	-.022	4.362	5.526
23	M5	Y	-.022	-.028	5.526	6.689

Member Distributed Loads (BLC 11 : BLC 4 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
24	M5	Y	-.028	-.026	6.689	7.852
25	M5	Y	-.026	-.021	7.852	9.016
26	M5	Y	-.021	-.008	9.016	10.179
27	M6	Y	-.006	-.022	4.362	5.526
28	M6	Y	-.022	-.027	5.526	6.689
29	M6	Y	-.027	-.025	6.689	7.852
30	M6	Y	-.025	-.021	7.852	9.016
31	M6	Y	-.021	-.012	9.016	10.179

Member Distributed Loads (BLC 12 : BLC 9 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M110	Y	-.035	-.035	2.22e-16	8
2	M111	Y	-.07	-.07	0	8
3	M112	Y	-.035	-.035	2.22e-16	8
4	M112	Y	-.04	-.04	5.551e-16	3
5	M113	Y	-.04	-.04	0	3
6	M112	Y	-.04	-.04	5	8
7	M113	Y	-.04	-.04	5	8
8	M108	Y	-.03	-.03	5.551e-16	8
9	M113	Y	-.03	-.03	5.551e-16	8

Member Distributed Loads (BLC 13 : BLC 6 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M108	Y	-.029	-.048	0	1.6
2	M108	Y	-.048	-.049	1.6	3.2
3	M108	Y	-.049	-.047	3.2	4.8
4	M108	Y	-.047	-.051	4.8	6.4
5	M108	Y	-.051	-.046	6.4	8
6	M110	Y	-.052	-.052	2.22e-16	8
7	M111	Y	-.152	-.088	0	1.6
8	M111	Y	-.088	-.089	1.6	3.2
9	M111	Y	-.089	-.101	3.2	4.8
10	M111	Y	-.101	-.096	4.8	6.4
11	M111	Y	-.096	-.13	6.4	8
12	M112	Y	-.099	-.115	0	1.6
13	M112	Y	-.115	-.127	1.6	3.2
14	M112	Y	-.127	-.124	3.2	4.8
15	M112	Y	-.124	-.11	4.8	6.4
16	M112	Y	-.11	-.093	6.4	8
17	M113	Y	-.107	-.098	0	1.6
18	M113	Y	-.098	-.11	1.6	3.2
19	M113	Y	-.11	-.116	3.2	4.8
20	M113	Y	-.116	-.098	4.8	6.4
21	M113	Y	-.098	-.086	6.4	8

Member Distributed Loads (BLC 14 : BLC 7 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M96	X	.134	.139	0	2.911
2	M96	X	.139	.142	2.911	5.823
3	M96	X	.142	.136	5.823	8.734

Member Distributed Loads (BLC 14 : BLC 7 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
4	M96	X	.136	.124	8.734	11.646
5	M99	X	.134	.139	0	2.911
6	M99	X	.139	.142	2.911	5.823
7	M99	X	.142	.136	5.823	8.734
8	M99	X	.136	.124	8.734	11.646

Member Distributed Loads (BLC 15 : BLC 8 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M98	Z	.134	.139	0	2.911
2	M98	Z	.139	.142	2.911	5.823
3	M98	Z	.142	.136	5.823	8.734
4	M98	Z	.136	.124	8.734	11.646
5	M99	Z	.134	.139	0	2.911
6	M99	Z	.139	.142	2.911	5.823
7	M99	Z	.142	.136	5.823	8.734
8	M99	Z	.136	.124	8.734	11.646

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib...	Area(...	Surfa...
1	Dead: Self	DL		-1						
2	Dead: Equip.	DL					32			
3	Dead: Enclosure	DL							4	
4	Dead:Grating (9psf)	DL							2	
5	Dead Roof (13psf)	DL						2		
6	Snow Load (30 psf)	SL						2	1	
7	Wind X-Dir (48.8 psf)	WLX					18		1	
8	Wind Z-Dir (48.88 psf)	WLZ					18	12	1	
9	Live Load	LL						2	4	
10	BLC 3 Transient Area Loads	None						20		
11	BLC 4 Transient Area Loads	None						31		
12	BLC 9 Transient Area Loads	None						9		
13	BLC 6 Transient Area Loads	None						21		
14	BLC 7 Transient Area Loads	None						8		
15	BLC 8 Transient Area Loads	None						8		

Load Combinations

	Description	Solve	P...	S...	B...	Fa...	BLC	Fact...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	IBC 16-8	Yes	Y		DL	1																		
2	IBC 16-9	Yes	Y		DL	1	LL	1	LLS	1														
3	IBC 16-10 (a)	Yes	Y		DL	1	RLL	1																
4	IBC 16-10 (b)	Yes	Y		DL	1	SL	1	SLN	1														
5	IBC 16-10 (c)	Yes	Y		DL	1	RL	1																
6	IBC 16-11 (a)	Yes	Y		DL	1	LL	.75	LLS	.75	RLL	.75												
7	IBC 16-11 (b)	Yes	Y		DL	1	LL	.75	LLS	.75	SL	.75	SLN	.75										
8	IBC 16-11 (c)	Yes	Y		DL	1	LL	.75	LLS	.75	RL	.75												
9	IBC 16-12 (a) (a)	Yes	Y		DL	1	WLX	.6																
10	IBC 16-12 (a) (b)	Yes	Y		DL	1	WLZ	.6																
11	IBC 16-13 (a) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75	RLL	.75										

Load Combinations (Continued)

	Description	Solve	P...	S...	B...	Fa...	BLC	Fact...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
12	IBC 16-13 (a) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75	RLL	.75										
13	IBC 16-13 (b) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75	SL	.75	S...	.75								
14	IBC 16-13 (b) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75	SL	.75	S...	.75								
15	IBC 16-13 (c) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75	RL	.75										
16	IBC 16-13 (c) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75	RL	.75										
17	IBC 16-15 (a)	Yes	Y		DL	.6	WLX	.6																
18	IBC 16-15 (b)	Yes	Y		DL	.6	WLZ	.6																

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N206	max	0	5	26.251	7	.18	5	0	18	0	18	0	18
2		min	-1.043	9	4.773	18	-1.156	18	0	1	0	1	0	1
3	N207	max	-.002	7	27.541	13	.397	7	0	18	0	18	0	18
4		min	-.157	17	5.689	18	-.288	18	0	1	0	1	0	1
5	N208	max	.889	10	27.564	14	.217	17	0	18	0	18	0	18
6		min	-.978	17	6.224	17	-1.463	10	0	1	0	1	0	1
7	N209	max	.172	14	27.516	14	-.065	17	0	18	0	18	0	18
8		min	-.162	17	6.079	17	-.681	14	0	1	0	1	0	1
9	N180	max	LOCKED		NC		NC		NC		NC		NC	
10		min	LOCKED		NC		NC		NC		NC		NC	
11	N50	max	NC		NC		NC		NC		LOCKED		NC	
12		min	NC		NC		NC		NC		LOCKED		NC	
13	N49	max	NC		NC		NC		NC		LOCKED		NC	
14		min	NC		NC		NC		NC		LOCKED		NC	
15	N64	max	NC		NC		NC		NC		LOCKED		NC	
16		min	NC		NC		NC		NC		LOCKED		NC	
17	N63	max	NC		NC		NC		NC		LOCKED		NC	
18		min	NC		NC		NC		NC		LOCKED		NC	
19	Totals:	max	.118	14	107.294	13	0	13						
20		min	-2.337	17	24.601	18	-3.329	18						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
1	N1	max	0	9	-.225	18	.321	18	0	18	9.889e-04	9	-3.173e-03	18
2		min	0	1	-1.108	13	-.059	9	0	1	-3.996e-03	18	-1.553e-02	13
3	N2	max	0	17	-.263	17	.402	10	0	18	-5.842e-04	17	-3.641e-03	18
4		min	0	10	-1.106	14	.03	17	0	1	-4.976e-03	10	-1.549e-02	13
5	N3	max	0	9	-.413	18	.523	18	0	18	9.016e-04	9	-2.753e-03	18
6		min	0	7	-2.021	13	-.121	9	0	1	-2.609e-03	18	-1.341e-02	13
7	N4	max	0	17	-.474	18	.651	10	0	18	-3.77e-04	5	-3.057e-03	18
8		min	0	10	-2.015	13	.07	17	0	1	-3.198e-03	10	-1.337e-02	13
9	N5	max	.321	13	-.225	18	.433	18	4.133e-03	10	1.775e-03	9	-3.764e-03	18
10		min	.089	18	-1.108	13	-.028	7	8.114e-04	17	-1.883e-03	18	-1.542e-02	13
11	N6	max	.318	13	-.262	17	.479	10	1.783e-03	18	-3.692e-04	5	-2.67e-03	18
12		min	.04	18	-1.107	14	.002	17	-1.492e-03	7	-2.188e-03	10	-1.531e-02	13
13	N7	max	.322	13	-.413	18	.531	18	3.178e-03	9	1.738e-03	9	-3.755e-03	18
14		min	.089	18	-2.022	13	-.069	9	9.039e-04	18	-1.192e-03	18	-1.541e-02	13
15	N8	max	.319	13	-.474	18	.587	10	-1.679e-03	18	-2.52e-04	5	-2.665e-03	18
16		min	.04	18	-2.016	13	.03	17	-3.327e-03	9	-1.678e-03	9	-1.53e-02	13

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
17	N9	max	.554	13	-.221	18	.466	10	2.164e-03	10	2.41e-03	9	-3.024e-03	18
18		min	.141	18	-1.105	13	-.003	17	5.579e-06	17	-1.931e-04	18	-1.48e-02	13
19	N10	max	.56	13	-.226	18	.466	10	2.164e-03	10	2.41e-03	9	-3.024e-03	18
20		min	.14	18	-1.108	13	-.003	17	5.583e-06	17	-1.931e-04	18	-1.48e-02	13
21	N11	max	.59	13	-.251	18	.466	10	1.991e-03	10	2.387e-03	9	-3.282e-03	18
22		min	.14	18	-1.122	13	-.003	17	-2.1e-05	17	4.566e-05	18	-1.77e-02	13
23	N12	max	.643	13	-.265	17	.466	10	1.311e-03	10	1.007e-03	9	-3.768e-03	18
24		min	.134	18	-1.172	7	-.003	17	1.611e-04	17	-6.761e-04	18	-2.482e-02	13
25	N13	max	.647	13	-.267	17	.466	10	1.189e-03	10	5.167e-04	9	-3.874e-03	18
26		min	.127	18	-1.179	7	-.003	17	2.74e-04	17	-1.048e-03	18	-2.646e-02	13
27	N14	max	.646	13	-.268	17	.466	10	-1.17e-04	17	-2.965e-05	5	-2.878e-03	18
28		min	.074	18	-1.187	14	-.003	17	-7.443e-04	1	-7.918e-04	9	-3.155e-02	13
29	N15	max	.64	13	-.267	17	.466	10	-9.295e-05	17	-3.337e-05	18	-2.942e-03	18
30		min	.072	18	-1.18	14	-.003	17	-9.812e-04	1	-1.2e-03	9	-2.928e-02	13
31	N16	max	.585	13	-.266	17	.465	10	-1.204e-04	17	4.556e-04	18	-3.245e-03	18
32		min	.086	18	-1.128	14	-.003	17	-1.655e-03	1	-2.38e-03	9	-1.894e-02	13
33	N17	max	.556	13	-.263	17	.466	10	-1.604e-04	17	1.106e-04	18	-3.444e-03	18
34		min	.091	18	-1.107	14	-.003	17	-1.716e-03	1	-2.379e-03	9	-1.479e-02	13
35	N18	max	.55	13	-.262	18	.466	10	-1.604e-04	17	1.106e-04	18	-3.444e-03	18
36		min	.092	18	-1.102	14	-.003	17	-1.716e-03	1	-2.379e-03	9	-1.479e-02	13
37	N19	max	.643	13	-.31	17	.477	10	2.265e-02	10	1.06e-04	17	-3.225e-03	18
38		min	.134	18	-1.291	7	-.004	17	5.668e-04	1	-1.382e-03	18	-1.668e-02	13
39	N20	max	.64	13	-.311	17	.477	10	2.137e-02	10	1.856e-04	17	-3.378e-03	18
40		min	.072	18	-1.299	14	-.005	17	-1.305e-03	9	-1.395e-03	18	-1.657e-02	13
41	N21	max	.56	13	-.275	18	.489	10	2.049e-03	10	1.367e-04	17	-3.025e-03	18
42		min	.14	18	-1.345	13	-.006	17	7.258e-04	17	-1.456e-03	10	-1.475e-02	13
43	N22	max	.556	13	-.318	18	.489	10	-3.863e-04	18	1.445e-04	17	-3.407e-03	18
44		min	.091	18	-1.342	13	-.006	17	-1.722e-03	1	-1.472e-03	10	-1.47e-02	13
45	N23	max	.56	13	-.364	18	.532	10	2.812e-03	9	1.4e-04	17	-3.016e-03	18
46		min	.14	18	-1.786	13	-.01	17	1.221e-03	18	-1.368e-03	10	-1.474e-02	13
47	N24	max	.556	13	-.421	18	.532	10	-9.551e-04	18	1.418e-04	17	-3.392e-03	18
48		min	.091	18	-1.781	13	-.01	17	-2.679e-03	9	-1.362e-03	10	-1.468e-02	13
49	N25	max	.56	13	-.365	18	.532	10	2.836e-03	9	1.401e-04	17	-3.018e-03	18
50		min	.14	18	-1.793	13	-.01	17	1.225e-03	18	-1.367e-03	10	-1.474e-02	13
51	N26	max	.643	13	-.46	18	.542	10	2.27e-02	10	1.168e-04	17	-3.112e-03	18
52		min	.134	18	-2.043	13	-.011	17	-1.664e-05	17	-1.439e-03	10	-1.659e-02	13
53	N27	max	.64	13	-.486	18	.542	10	2.145e-02	10	1.724e-04	17	-3.379e-03	18
54		min	.072	18	-2.038	13	-.011	17	-5.753e-04	1	-1.433e-03	10	-1.648e-02	13
55	N28	max	.554	13	-.408	18	.553	10	3.603e-03	9	2.413e-03	9	-2.951e-03	18
56		min	.14	18	-2.011	13	-.012	17	1.387e-03	18	-6.072e-05	18	-1.472e-02	13
57	N29	max	.56	13	-.413	18	.553	10	3.603e-03	9	2.413e-03	9	-2.951e-03	18
58		min	.14	18	-2.022	13	-.012	17	1.387e-03	18	-6.072e-05	18	-1.472e-02	13
59	N30	max	.59	13	-.435	18	.553	10	3.447e-03	9	2.389e-03	9	-2.896e-03	18
60		min	.141	18	-2.076	13	-.012	17	1.385e-03	18	6.796e-05	18	-1.747e-02	13
61	N31	max	.643	13	-.485	18	.553	10	1.709e-03	9	1.008e-03	9	-2.68e-03	18
62		min	.134	18	-2.175	13	-.012	17	1.126e-03	1	-6.972e-04	18	-2.449e-02	13
63	N32	max	.647	13	-.493	18	.553	10	1.339e-03	10	5.202e-04	9	-2.635e-03	18
64		min	.127	18	-2.186	13	-.012	17	7.493e-04	17	-1.079e-03	18	-2.607e-02	13
65	N33	max	.646	13	-.513	18	.553	10	1.188e-04	18	-3.389e-05	5	-4.077e-03	18
66		min	.074	18	-2.182	13	-.012	17	-1.41e-03	9	-7.96e-04	9	-3.092e-02	13
67	N34	max	.64	13	-.513	18	.553	10	-7.847e-05	18	-5.01e-05	5	-3.983e-03	18
68		min	.072	18	-2.17	13	-.012	17	-1.917e-03	9	-1.201e-03	9	-2.873e-02	13

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
69	N35	max	.586	13	-.492	18	.553	10	-9.02e-04	18	4.871e-04	18	-3.55e-03	18
70		min	.085	18	-2.07	13	-.012	17	-3.426e-03	9	-2.38e-03	9	-1.871e-02	13
71	N36	max	.556	13	-.475	18	.553	10	-1.023e-03	18	2.773e-04	18	-3.421e-03	18
72		min	.091	18	-2.017	13	-.012	17	-3.568e-03	9	-2.379e-03	9	-1.47e-02	13
73	N37	max	.55	13	-.471	17	.553	10	-1.023e-03	18	2.773e-04	18	-3.421e-03	18
74		min	.092	18	-2.007	14	-.012	17	-3.568e-03	9	-2.379e-03	9	-1.47e-02	13
75	N38	max	.649	13	-.449	18	.529	10	6.65e-04	10	1.408e-04	17	-3.232e-03	18
76		min	.107	18	-1.912	13	-.01	17	1.509e-04	17	-1.407e-03	10	-1.667e-02	13
77	N39	max	.649	13	-.377	18	.5	10	1.017e-03	10	1.413e-04	17	-3.218e-03	18
78		min	.12	18	-1.562	13	-.007	17	3.68e-04	17	-1.407e-03	10	-1.667e-02	13
79	N40	max	.651	13	-.383	18	.498	10	2.588e-04	18	1.403e-04	17	-3.251e-03	18
80		min	.089	18	-1.545	13	-.007	17	-2.265e-04	9	-1.407e-03	10	-1.667e-02	13
81	N41	max	.651	13	-.51	18	.553	10	2.588e-04	18	1.403e-04	17	-3.251e-03	18
82		min	.089	18	-2.196	13	-.012	17	-2.265e-04	9	-1.407e-03	10	-1.667e-02	13
83	N42	max	.651	13	-.271	17	.466	10	2.588e-04	18	1.403e-04	17	-3.251e-03	18
84		min	.089	18	-1.192	14	-.003	17	-2.265e-04	9	-1.407e-03	10	-1.667e-02	13
85	N43	max	.649	13	-.269	17	.466	10	1.017e-03	10	1.413e-04	17	-3.218e-03	18
86		min	.12	18	-1.183	7	-.003	17	3.68e-04	17	-1.407e-03	10	-1.667e-02	13
87	N44	max	.649	13	-.498	18	.553	10	1.017e-03	10	1.413e-04	17	-3.218e-03	18
88		min	.12	18	-2.191	13	-.012	17	3.68e-04	17	-1.407e-03	10	-1.667e-02	13
89	N45	max	.649	13	-.504	18	.553	10	6.65e-04	10	1.408e-04	17	-3.232e-03	18
90		min	.107	18	-2.195	13	-.012	17	1.509e-04	17	-1.407e-03	10	-1.667e-02	13
91	N46	max	.649	13	-.271	17	.466	10	6.65e-04	10	1.408e-04	17	-3.232e-03	18
92		min	.107	18	-1.188	14	-.003	17	1.509e-04	17	-1.407e-03	10	-1.667e-02	13
93	N47	max	1.308	13	-.079	17	.826	10	6.38e-03	10	7.445e-03	9	-4.705e-03	18
94		min	.213	18	-1.082	7	-.004	17	-2.635e-03	17	-2.766e-04	18	-4.827e-02	9
95	N48	max	1.37	13	-.071	17	.824	10	4.238e-03	18	6.391e-04	18	-3.936e-03	18
96		min	.131	18	-1.099	14	-.005	9	-8.282e-04	1	-7.643e-03	9	-5.01e-02	9
97	N49	max	1.253	13	-.112	17	.825	10	4.095e-02	10	0	18	-3.7e-03	18
98		min	.133	18	-1.174	14	-.005	9	-1.703e-03	17	0	1	-5.066e-02	9
99	N50	max	1.219	13	-.131	17	.826	10	4.404e-02	10	0	18	-4.943e-03	18
100		min	.209	18	-1.075	7	-.004	17	-1.63e-06	4	0	1	-4.771e-02	9
101	N51	max	1.308	13	-.268	17	.78	10	2.706e-02	10	7.145e-03	18	-4.356e-03	18
102		min	.213	18	-1.18	7	-.004	17	-1.547e-04	17	-7.517e-04	1	-3.74e-02	13
103	N52	max	1.37	13	-.27	17	.766	10	2.693e-02	10	8.627e-03	10	-2.747e-03	18
104		min	.131	18	-1.188	14	-.007	7	-6.965e-05	1	-2.219e-04	17	-3.922e-02	13
105	N53	max	1.206	13	-.311	17	1.014	10	3.12e-02	10	8.878e-03	9	-3.486e-03	18
106		min	.143	18	-1.299	14	-.034	9	-1.432e-03	9	-1.332e-03	18	-3.67e-02	13
107	N54	max	1.252	13	-.299	17	1.014	10	4.098e-02	10	1.509e-03	9	-6.214e-03	5
108		min	.133	18	-1.444	14	-.035	9	-1.395e-03	17	-1.076e-02	10	-2.126e-02	13
109	N55	max	1.219	13	-.133	18	1.036	10	4.408e-02	10	-7.189e-04	5	-3.208e-04	18
110		min	.209	18	-1.292	7	.008	1	-3.201e-06	4	-1.237e-02	10	-2.061e-02	13
111	N56	max	1.188	13	-.31	17	1.036	10	3.198e-02	10	8.499e-05	5	-3.248e-03	18
112		min	.2	18	-1.292	7	.008	1	3.028e-04	1	-6.54e-03	9	-3.503e-02	13
113	N57	max	1.209	13	-.486	18	1.08	10	3.125e-02	10	8.446e-03	9	-3.451e-03	18
114		min	.142	18	-2.04	13	-.01	1	-2.799e-04	1	-1.493e-03	18	-3.694e-02	13
115	N58	max	1.251	13	-.574	17	1.08	10	4.111e-02	10	8.118e-03	10	5.627e-04	18
116		min	.134	18	-2.127	14	-.01	1	-4.004e-04	17	-7.143e-04	1	-1.957e-02	13
117	N59	max	1.218	13	-.278	18	1.101	10	4.421e-02	10	9.688e-03	10	-5.224e-03	5
118		min	.209	18	-2.054	13	-.017	17	-9.694e-06	1	2.116e-04	17	-1.907e-02	13
119	N60	max	1.19	13	-.461	18	1.101	10	3.199e-02	10	-1.367e-04	5	-3.366e-03	18
120		min	.201	18	-2.044	13	-.017	17	-4.655e-04	17	-6.226e-03	9	-3.524e-02	13

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
121	N61	max	1.297	13	-.492	18	.87	10	2.72e-02	10	1.413e-03	9	-2.301e-03	18
122		min	.176	18	-2.186	13	-.004	17	9.423e-05	1	-9.175e-03	18	-3.685e-02	13
123	N62	max	1.355	13	-.515	18	.86	10	2.724e-02	10	-8.539e-04	5	-4.339e-03	18
124		min	.161	18	-2.182	13	-.026	9	-2.883e-04	9	-9.65e-03	10	-3.861e-02	13
125	N63	max	1.252	13	-.65	18	.926	10	4.115e-02	10	0	18	-3.365e-03	18
126		min	.134	18	-2.366	13	-.012	17	-9.24e-05	17	0	1	-4.756e-02	9
127	N64	max	1.218	13	-.381	18	.928	10	4.425e-02	10	0	18	-1.783e-03	18
128		min	.209	18	-2.356	13	-.012	17	-1.275e-05	1	0	1	-4.5e-02	13
129	N65	max	1.355	13	-.549	18	.926	10	4.44e-03	18	3.66e-04	5	-3.065e-03	18
130		min	.161	18	-2.42	13	-.012	17	-4.193e-03	9	-6.482e-03	9	-4.7e-02	9
131	N66	max	1.297	13	-.501	18	.927	10	6.705e-03	10	6.369e-03	9	-2.086e-03	18
132		min	.176	18	-2.417	13	-.012	17	8.889e-04	1	-1.986e-03	10	-4.544e-02	13
133	N67	max	1.279	13	-.45	18	.568	10	1.408e-03	10	1.404e-04	17	-3.337e-03	18
134		min	.229	18	-1.912	13	.004	17	5.812e-04	17	-1.407e-03	10	-1.731e-02	13
135	N68	max	1.287	13	-.377	18	.532	10	6.866e-04	10	1.377e-04	17	-3.631e-03	18
136		min	.246	18	-1.562	13	.003	17	1.553e-04	17	-1.41e-03	10	-1.778e-02	13
137	N69	max	1.271	13	-.383	18	.5	18	-6.245e-05	18	1.402e-04	17	-3.043e-03	18
138		min	.206	18	-1.546	13	-.025	9	-7.864e-04	9	-1.407e-03	10	-1.678e-02	13
139	N70	max	1.281	13	-.471	18	.57	10	1.408e-03	10	1.404e-04	17	-3.337e-03	18
140		min	.205	18	-1.955	13	.004	17	5.812e-04	17	-1.407e-03	10	-1.731e-02	13
141	N71	max	1.278	13	-.428	18	.566	10	1.408e-03	10	1.404e-04	17	-3.337e-03	18
142		min	.252	18	-1.869	13	.004	17	5.812e-04	17	-1.407e-03	10	-1.731e-02	13
143	N72	max	1.286	13	-.426	18	.552	10	6.866e-04	10	1.377e-04	17	-3.631e-03	18
144		min	.258	18	-1.822	13	0	17	1.553e-04	17	-1.41e-03	10	-1.778e-02	13
145	N73	max	1.288	13	-.318	17	.511	10	6.866e-04	10	1.377e-04	17	-3.631e-03	18
146		min	.234	18	-1.312	14	.005	17	1.553e-04	17	-1.41e-03	10	-1.778e-02	13
147	N74	max	1.272	13	-.415	18	.515	18	-6.245e-05	18	1.402e-04	17	-3.043e-03	18
148		min	.188	18	-1.719	13	-.027	9	-7.864e-04	9	-1.407e-03	10	-1.678e-02	13
149	N75	max	1.269	13	-.348	17	.485	18	-6.245e-05	18	1.402e-04	17	-3.043e-03	18
150		min	.224	18	-1.376	7	-.024	9	-7.864e-04	9	-1.407e-03	10	-1.678e-02	13
151	N76	max	2.782	13	.017	17	2.275	10	7.35e-03	10	1.414e-03	14	-3.267e-03	18
152		min	.348	18	-1.084	7	-.01	9	-7.769e-03	17	-3.851e-05	17	-5.413e-02	9
153	N77	max	2.875	13	.018	17	2.273	10	7.031e-03	17	2.789e-03	17	-3.505e-03	18
154		min	.235	18	-1.095	14	-.01	9	-1.5e-03	1	-1.187e-03	7	-5.595e-02	9
155	N78	max	2.89	13	-.112	17	2.274	10	5.034e-02	10	0	18	-3.578e-03	18
156		min	.251	18	-1.174	14	-.009	9	-6.342e-06	9	0	1	-5.65e-02	9
157	N79	max	2.781	13	-.131	17	2.277	10	5.001e-02	10	0	18	-3.194e-03	18
158		min	.32	18	-1.075	7	-.01	9	-4.612e-04	9	0	1	-5.357e-02	9
159	N80	max	2.782	13	-.269	17	2.142	10	5.119e-02	10	1.869e-02	10	-3.904e-03	18
160		min	.348	18	-1.181	7	-.012	17	-3.378e-04	9	-1.023e-03	1	-5.17e-02	9
161	N81	max	2.875	13	-.271	17	2.138	10	5.163e-02	10	1.954e-02	10	-3.207e-03	18
162		min	.235	18	-1.19	14	-.006	9	-1.8e-04	17	-2.25e-04	17	-5.252e-02	9
163	N82	max	2.778	13	-.31	17	2.304	10	4.635e-02	10	2.04e-02	9	-3.575e-03	18
164		min	.26	18	-1.3	14	-.065	9	-5.452e-04	9	-1.302e-03	18	-5.774e-02	9
165	N83	max	2.889	13	-.31	17	2.303	10	5.038e-02	10	2.614e-03	9	-6.995e-03	5
166		min	.251	18	-1.519	14	-.065	9	8.548e-06	4	-1.579e-03	18	-2.313e-02	14
167	N84	max	2.78	13	-.05	18	2.343	10	5.005e-02	10	-1.226e-03	5	4.219e-03	18
168		min	.32	18	-1.299	7	.014	1	-3.412e-04	9	-4.377e-03	10	-2.167e-02	13
169	N85	max	2.688	13	-.31	17	2.343	10	4.638e-02	10	7.258e-05	5	-3.409e-03	18
170		min	.31	18	-1.293	7	.014	1	-8.885e-05	1	-1.682e-02	9	-5.473e-02	9
171	N86	max	2.791	13	-.486	18	2.372	10	4.644e-02	10	1.852e-02	9	-3.587e-03	18
172		min	.259	18	-2.042	13	-.015	1	1.038e-04	1	-1.421e-03	18	-5.814e-02	9

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
173	N87	max	2.887	13	-.572	17	2.372	10	5.05e-02	10	9.762e-05	17	6.048e-03	18
174		min	.25	18	-2.202	14	-.015	1	-7.148e-07	1	-1.447e-03	10	-1.896e-02	13
175	N88	max	2.779	13	-.195	18	2.409	10	5.017e-02	10	1.447e-03	10	-4.45e-03	5
176		min	.321	18	-2.056	13	-.026	17	-1.052e-05	1	3.923e-05	17	-1.996e-02	14
177	N89	max	2.699	13	-.462	18	2.41	10	4.645e-02	10	-2.227e-04	5	-3.454e-03	18
178		min	.314	18	-2.046	13	-.026	17	-3.68e-04	9	-1.534e-02	9	-5.506e-02	9
179	N90	max	2.888	13	-.65	18	2.382	10	5.054e-02	10	0	18	-3.582e-03	18
180		min	.25	18	-2.366	13	-.01	17	-4.27e-06	1	0	1	-5.682e-02	9
181	N91	max	2.779	13	-.381	18	2.385	10	5.021e-02	10	0	18	-3.636e-03	18
182		min	.321	18	-2.356	13	-.008	17	-1.412e-05	1	0	1	-5.389e-02	9
183	N92	max	4.783	13	.081	17	4.359	10	7.448e-03	10	1.49e-03	10	-3.53e-03	18
184		min	.478	18	-1.084	7	-.021	9	-1.155e-02	17	-6.653e-03	17	-6.648e-02	9
185	N93	max	4.906	13	.086	17	4.358	10	1.1e-02	17	1.263e-02	17	-3.552e-03	18
186		min	.362	18	-1.098	14	-.021	9	-1.615e-03	1	-9.496e-04	1	-6.821e-02	9
187	N94	max	5.062	13	-.112	17	4.357	10	6.234e-02	10	0	18	-3.559e-03	18
188		min	.381	18	-1.174	14	-.022	9	-4.156e-04	9	0	1	-6.874e-02	9
189	N95	max	4.873	13	-.131	17	4.36	10	6.226e-02	10	0	18	-3.523e-03	18
190		min	.445	18	-1.076	7	-.021	9	-3.563e-04	9	0	1	-6.594e-02	9
191	N96	max	4.783	13	-.27	17	4.203	10	6.123e-02	10	2.412e-02	10	-3.483e-03	18
192		min	.478	18	-1.182	7	-.023	9	-3.767e-04	9	-9.951e-04	1	-6.282e-02	9
193	N97	max	4.906	13	-.272	17	4.212	10	6.151e-02	10	2.342e-02	10	-3.458e-03	18
194		min	.362	18	-1.192	14	-.017	9	-3.814e-04	9	-3.36e-04	17	-6.413e-02	9
195	N98	max	4.935	13	-.31	17	4.203	10	5.786e-02	10	2.564e-02	9	-3.632e-03	18
196		min	.389	18	-1.3	14	-.072	9	-8.21e-05	17	-1.309e-03	18	-6.774e-02	9
197	N99	max	5.062	13	-.308	17	4.203	10	6.238e-02	10	9.102e-03	10	-7.154e-03	5
198		min	.381	18	-1.574	14	-.072	9	-2.614e-04	9	1.055e-03	1	-2.641e-02	14
199	N100	max	4.872	13	.016	18	4.241	10	6.229e-02	10	6.562e-03	18	8.081e-03	18
200		min	.445	18	-1.301	7	.009	1	-2.47e-04	9	-2.576e-03	9	-2.184e-02	13
201	N101	max	4.764	13	-.309	17	4.241	10	5.744e-02	10	6.051e-05	5	-3.503e-03	18
202		min	.435	18	-1.293	7	.009	1	-4.769e-04	9	-2.189e-02	9	-6.492e-02	9
203	N102	max	4.957	13	-.486	18	4.275	10	5.797e-02	10	2.204e-02	9	-3.641e-03	18
204		min	.389	18	-2.044	13	-.011	1	3.205e-04	1	-1.347e-03	18	-6.801e-02	9
205	N103	max	5.06	13	-.577	17	4.275	10	6.249e-02	10	1.96e-05	17	1.008e-02	18
206		min	.381	18	-2.258	14	-.011	1	-8.226e-06	1	-1.217e-02	10	-1.878e-02	13
207	N104	max	4.871	13	-.129	18	4.311	10	6.24e-02	10	1.004e-03	5	-4.292e-03	5
208		min	.445	18	-2.06	13	-.027	17	-1.39e-05	1	-9.645e-03	18	-2.295e-02	14
209	N105	max	4.783	13	-.463	18	4.311	10	5.755e-02	10	-2.066e-04	5	-3.478e-03	18
210		min	.439	18	-2.048	13	-.027	17	-3.333e-04	4	-1.899e-02	9	-6.515e-02	9
211	N106	max	4.747	13	-.491	18	4.305	10	6.142e-02	10	1.781e-03	9	-3.538e-03	18
212		min	.386	18	-2.187	13	.002	1	-2.062e-05	1	-2.619e-02	10	-6.295e-02	9
213	N107	max	4.868	13	-.518	18	4.321	10	6.169e-02	10	-1.127e-03	5	-3.757e-03	18
214		min	.424	18	-2.183	13	-.013	9	-2.403e-06	1	-2.441e-02	10	-6.43e-02	9
215	N108	max	5.06	13	-.65	18	4.473	10	6.252e-02	10	0	18	-3.722e-03	18
216		min	.381	18	-2.366	13	-.002	4	-1.063e-05	1	0	1	-6.882e-02	9
217	N109	max	4.871	13	-.381	18	4.475	10	6.243e-02	10	0	18	-3.468e-03	18
218		min	.445	18	-2.357	13	-.002	4	-1.737e-05	1	0	1	-6.603e-02	9
219	N110	max	4.868	13	-.55	18	4.473	10	4.086e-03	18	1.561e-02	9	-3.674e-03	18
220		min	.424	18	-2.563	13	-.002	4	-1.527e-02	9	-1.274e-03	18	-6.829e-02	9
221	N111	max	4.747	13	-.512	18	4.475	10	1.561e-02	9	-1.022e-03	7	-3.517e-03	18
222		min	.386	18	-2.561	13	-.002	4	1.954e-03	1	-9.094e-03	9	-6.656e-02	9
223	N112	max	2.547	13	-.45	18	.695	10	2.122e-03	10	1.399e-04	17	-3.423e-03	18
224		min	.472	18	-1.912	13	.061	17	9.974e-04	17	-1.408e-03	10	-1.779e-02	13

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
225	N113	max	2.606	13	-.377	18	.569	10	3.587e-04	10	1.332e-04	17	-4.021e-03	18
226		min	.522	18	-1.562	13	.007	17	-1.068e-04	7	-1.415e-03	10	-1.874e-02	13
227	N114	max	2.482	13	-.383	18	.484	18	-3.77e-04	18	1.402e-04	17	-2.825e-03	18
228		min	.418	18	-1.546	13	-.102	9	-1.328e-03	9	-1.407e-03	10	-1.675e-02	13
229	N115	max	2.549	13	-.478	18	.697	10	2.122e-03	10	1.399e-04	17	-3.423e-03	18
230		min	.449	18	-1.968	13	.061	17	9.974e-04	17	-1.408e-03	10	-1.779e-02	13
231	N116	max	2.546	13	-.421	18	.693	10	2.122e-03	10	1.399e-04	17	-3.423e-03	18
232		min	.496	18	-1.857	13	.061	17	9.974e-04	17	-1.408e-03	10	-1.779e-02	13
233	N117	max	2.605	13	-.433	18	.59	10	3.587e-04	10	1.332e-04	17	-4.021e-03	18
234		min	.534	18	-1.839	13	.005	17	-1.068e-04	7	-1.415e-03	10	-1.874e-02	13
235	N118	max	2.606	13	-.31	17	.549	10	3.587e-04	10	1.332e-04	17	-4.021e-03	18
236		min	.51	18	-1.296	14	.009	17	-1.068e-04	7	-1.415e-03	10	-1.874e-02	13
237	N119	max	2.483	13	-.409	18	.499	18	-3.77e-04	18	1.402e-04	17	-2.825e-03	18
238		min	.399	18	-1.712	13	-.103	9	-1.328e-03	9	-1.407e-03	10	-1.675e-02	13
239	N120	max	2.481	13	-.354	17	.469	18	-3.77e-04	18	1.402e-04	17	-2.825e-03	18
240		min	.436	18	-1.385	7	-.1	9	-1.328e-03	9	-1.407e-03	10	-1.675e-02	13
241	N121	max	6.996	13	.108	17	6.644	10	7.459e-03	10	1.091e-03	10	-3.914e-03	18
242		min	.599	18	-1.084	7	-.036	9	-1.317e-02	17	-9.388e-03	17	-6.911e-02	9
243	N122	max	7.16	13	.116	17	6.642	10	1.271e-02	17	1.838e-02	9	-3.732e-03	18
244		min	.49	18	-1.099	14	-.036	9	-1.634e-03	1	-3.741e-04	1	-7.076e-02	9
245	N123	max	7.396	13	-.112	17	6.642	10	6.384e-02	10	0	18	-3.677e-03	18
246		min	.512	18	-1.174	14	-.036	9	-8.952e-04	9	0	1	-7.127e-02	9
247	N124	max	7.132	13	-.131	17	6.645	10	6.461e-02	10	0	18	-3.971e-03	18
248		min	.571	18	-1.076	7	-.036	9	3.82e-06	4	0	1	-6.86e-02	9
249	N125	max	6.996	13	-.271	17	6.471	10	6.373e-02	10	2.69e-02	10	-3.419e-03	18
250		min	.599	18	-1.182	7	-.037	9	-3.967e-04	9	-1.009e-03	1	-6.735e-02	9
251	N126	max	7.16	13	-.272	17	6.485	10	6.374e-02	10	2.516e-02	10	-3.271e-03	18
252		min	.49	18	-1.193	14	-.033	9	-4.954e-04	9	-3.428e-04	17	-6.899e-02	9
253	N127	max	7.256	13	-.31	17	6.4	10	6.312e-02	10	2.848e-02	9	-3.661e-03	18
254		min	.52	18	-1.3	14	-.068	9	-5.578e-05	17	-1.304e-03	18	-7.032e-02	9
255	N128	max	7.396	13	-.308	17	6.4	10	6.387e-02	10	1.403e-02	10	-7.183e-03	5
256		min	.512	18	-1.6	14	-.068	9	-6.59e-04	9	3.894e-04	1	-2.787e-02	14
257	N129	max	7.131	13	.046	18	6.423	10	6.464e-02	10	1.198e-02	10	9.864e-03	18
258		min	.571	18	-1.303	7	-.002	1	3.012e-06	4	-2.278e-03	9	-2.188e-02	13
259	N130	max	7.009	13	-.309	17	6.423	10	6.234e-02	10	9.237e-05	5	-3.554e-03	18
260		min	.562	18	-1.294	7	-.002	1	-6.522e-04	9	-2.472e-02	9	-6.766e-02	9
261	N131	max	7.284	13	-.486	18	6.476	10	6.324e-02	10	2.363e-02	9	-3.644e-03	18
262		min	.521	18	-2.045	13	0	1	4.973e-04	1	-1.303e-03	18	-7.049e-02	9
263	N132	max	7.394	13	-.579	17	6.476	10	6.398e-02	10	7.285e-05	17	1.189e-02	18
264		min	.512	18	-2.283	14	0	1	1.671e-06	1	-1.726e-02	10	-1.872e-02	13
265	N133	max	7.13	13	-.099	18	6.498	10	6.475e-02	10	3.591e-04	5	-4.263e-03	5
266		min	.571	18	-2.061	13	-.029	9	-1.716e-06	1	-1.527e-02	10	-2.435e-02	14
267	N134	max	7.032	13	-.464	18	6.497	10	6.245e-02	10	-2.237e-04	5	-3.482e-03	18
268		min	.564	18	-2.049	13	-.029	9	-5.041e-04	4	-2.079e-02	9	-6.779e-02	9
269	N135	max	6.969	13	-.491	18	6.579	10	6.391e-02	10	1.77e-03	9	-3.63e-03	18
270		min	.518	18	-2.187	13	.002	1	2.05e-05	1	-2.897e-02	10	-6.793e-02	9
271	N136	max	7.133	13	-.519	18	6.601	10	6.392e-02	10	-1.146e-03	5	-3.984e-03	18
272		min	.557	18	-2.183	13	-.008	4	-5.368e-05	1	-2.616e-02	10	-6.957e-02	9
273	N137	max	7.394	13	-.65	18	6.764	10	6.402e-02	10	0	18	-3.657e-03	18
274		min	.512	18	-2.366	13	-.003	4	-1.133e-06	1	0	1	-7.05e-02	9
275	N138	max	7.129	13	-.381	18	6.767	10	6.479e-02	10	0	18	-3.008e-03	18
276		min	.571	18	-2.357	13	-.003	4	-4.494e-06	1	0	1	-6.783e-02	9

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
277	N139	max	7.133	13	-.552	18	6.764	10	4.018e-03	18	2.102e-02	9	-3.534e-03	18
278		min	.556	18	-2.589	13	-.003	4	-1.716e-02	9	-1.387e-03	18	-6.999e-02	9
279	N140	max	6.969	13	-.512	18	6.766	10	1.742e-02	9	-6.26e-04	5	-3.132e-03	18
280		min	.518	18	-2.585	13	-.003	4	2.023e-03	1	-1.172e-02	9	-6.834e-02	9
281	N141	max	9.209	9	.113	17	8.855	10	6.799e-03	10	4.055e-04	18	-1.666e-03	18
282		min	.719	18	-1.081	7	-.05	9	-1.397e-02	9	-8.288e-03	9	-6.415e-02	9
283	N142	max	9.48	9	.122	17	8.854	10	1.349e-02	9	2.003e-02	9	-3.205e-03	18
284		min	.603	18	-1.098	14	-.05	9	-1.053e-03	1	6.739e-04	1	-6.579e-02	9
285	N143	max	9.811	9	-.112	17	8.854	10	6.359e-02	10	0	18	-3.676e-03	18
286		min	.64	18	-1.174	14	-.05	9	2.471e-05	4	0	1	-6.63e-02	9
287	N144	max	9.376	9	-.13	17	8.855	10	5.959e-02	10	0	18	-1.191e-03	18
288		min	.692	18	-1.076	7	-.05	9	-2.664e-03	9	0	1	-6.364e-02	9
289	N145	max	9.208	9	-.271	17	8.686	10	6.37e-02	10	2.719e-02	10	-3.644e-03	18
290		min	.719	18	-1.182	7	-.05	9	-3.946e-04	9	-9.876e-04	1	-6.806e-02	9
291	N146	max	9.48	9	-.273	17	8.697	10	6.354e-02	10	2.481e-02	10	-2.949e-03	18
292		min	.603	18	-1.193	14	-.052	9	-5.477e-04	9	-4.297e-04	17	-6.977e-02	9
293	N147	max	9.628	9	-.309	17	8.619	10	6.411e-02	10	2.88e-02	9	-3.676e-03	18
294		min	.648	18	-1.3	14	-.067	17	-2.926e-04	17	-1.336e-03	18	-7.03e-02	9
295	N148	max	9.811	9	-.303	17	8.619	10	6.363e-02	10	1.342e-02	10	-6.605e-03	5
296		min	.64	18	-1.601	14	-.067	17	2.381e-05	4	-7.3e-04	1	-2.753e-02	14
297	N149	max	9.375	9	.052	18	8.616	10	5.963e-02	10	1.316e-02	10	1.05e-02	18
298		min	.692	18	-1.3	7	-.018	1	-2.088e-03	9	-1.644e-03	17	-2.123e-02	13
299	N150	max	9.217	9	-.309	17	8.616	10	6.32e-02	10	6.551e-05	5	-3.578e-03	18
300		min	.686	18	-1.294	7	-.018	1	-5.509e-04	1	-2.503e-02	9	-6.767e-02	9
301	N151	max	9.668	9	-.486	18	8.7	10	6.424e-02	10	2.339e-02	9	-3.628e-03	18
302		min	.647	18	-2.045	13	.017	1	5.73e-04	1	-1.259e-03	18	-7.043e-02	9
303	N152	max	9.81	9	-.58	17	8.7	10	6.374e-02	10	8.915e-04	15	1.184e-02	18
304		min	.64	18	-2.285	14	.017	1	1.877e-05	1	-1.682e-02	10	-1.927e-02	13
305	N153	max	9.375	9	-.093	18	8.694	10	5.974e-02	10	-8.122e-04	5	-4.843e-03	5
306		min	.692	18	-2.061	13	-.043	9	-2.553e-04	17	-1.663e-02	10	-2.516e-02	14
307	N154	max	9.25	9	-.464	18	8.694	10	6.33e-02	10	-1.963e-04	5	-3.477e-03	18
308		min	.685	18	-2.049	13	-.043	9	-7.291e-04	9	-2.068e-02	17	-6.777e-02	9
309	N155	max	9.196	9	-.491	18	8.801	10	6.388e-02	10	1.78e-03	9	-3.393e-03	18
310		min	.643	18	-2.187	13	.003	1	4.506e-05	1	-2.927e-02	10	-6.88e-02	9
311	N156	max	9.467	9	-.519	18	8.818	10	6.372e-02	10	-1.118e-03	5	-4.324e-03	18
312		min	.696	18	-2.183	13	-.01	4	-8.597e-05	1	-2.582e-02	10	-7.049e-02	9
313	N157	max	9.81	9	-.65	18	8.982	10	6.377e-02	10	0	18	-3.688e-03	18
314		min	.64	18	-2.366	13	-.002	1	1.589e-05	1	0	1	-7.029e-02	9
315	N158	max	9.375	9	-.381	18	8.983	10	5.978e-02	10	0	18	-5.731e-03	18
316		min	.692	18	-2.357	13	-.003	1	9.64e-06	1	0	1	-6.763e-02	9
317	N159	max	9.467	9	-.554	18	8.983	10	4.304e-03	18	2.123e-02	9	-4.075e-03	18
318		min	.696	18	-2.59	13	-.002	1	-1.686e-02	9	-2.003e-03	18	-6.979e-02	9
319	N160	max	9.196	9	-.508	18	8.983	10	1.711e-02	9	3.782e-04	5	-5.341e-03	18
320		min	.643	18	-2.586	13	-.002	1	1.45e-03	1	-9.467e-03	9	-6.814e-02	9
321	N161	max	9.602	9	-.273	17	8.808	10	6.354e-02	10	2.481e-02	10	-2.949e-03	18
322		min	.608	18	-1.193	14	-.053	9	-5.477e-04	9	-4.297e-04	17	-6.977e-02	9
323	N162	max	9.328	9	-.271	17	8.797	10	6.37e-02	10	2.719e-02	10	-3.644e-03	18
324		min	.726	18	-1.182	7	-.051	9	-3.946e-04	9	-9.876e-04	1	-6.806e-02	9
325	N163	max	9.751	9	-.309	17	8.731	10	6.411e-02	10	2.88e-02	9	-3.676e-03	18
326		min	.654	18	-1.3	14	-.067	17	-2.926e-04	17	-1.336e-03	18	-7.03e-02	9
327	N164	max	9.335	9	-.309	17	8.727	10	6.32e-02	10	6.551e-05	5	-3.578e-03	18
328		min	.692	18	-1.294	7	-.019	1	-5.509e-04	1	-2.503e-02	9	-6.767e-02	9

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
329	N165	max	9.791	9	-.486	18	8.812	10	6.424e-02	10	2.339e-02	9	-3.628e-03	18
330		min	.654	18	-2.045	13	.018	1	5.73e-04	1	-1.259e-03	18	-7.043e-02	9
331	N166	max	9.368	9	-.464	18	8.805	10	6.33e-02	10	-1.963e-04	5	-3.477e-03	18
332		min	.691	18	-2.049	13	-.044	9	-7.291e-04	9	-2.068e-02	17	-6.777e-02	9
333	N167	max	9.59	9	-.519	18	8.93	10	6.372e-02	10	-1.118e-03	5	-4.324e-03	18
334		min	.704	18	-2.183	13	-.01	1	-8.597e-05	1	-2.582e-02	10	-7.049e-02	9
335	N168	max	9.316	9	-.491	18	8.913	10	6.388e-02	10	1.78e-03	9	-3.393e-03	18
336		min	.649	18	-2.187	13	.003	1	4.506e-05	1	-2.927e-02	10	-6.88e-02	9
337	N169	max	3.491	13	-.45	18	.808	10	2.125e-03	10	1.399e-04	17	-3.425e-03	18
338		min	.654	18	-1.912	13	.114	17	9.981e-04	17	-1.408e-03	10	-1.781e-02	13
339	N170	max	3.6	13	-.377	18	.588	10	3.591e-04	10	1.332e-04	17	-4.023e-03	18
340		min	.735	18	-1.562	13	.004	17	-1.069e-04	7	-1.415e-03	10	-1.877e-02	13
341	N171	max	3.37	13	-.383	18	.464	18	-3.773e-04	18	1.402e-04	17	-2.827e-03	18
342		min	.567	18	-1.546	13	-.172	9	-1.33e-03	9	-1.407e-03	10	-1.677e-02	13
343	N172	max	2.752	13	-.492	18	2.238	10	5.138e-02	10	1.802e-03	9	-2.985e-03	18
344		min	.265	18	-2.187	13	0	17	-8.432e-05	1	-2.075e-02	10	-5.143e-02	9
345	N173	max	2.843	13	-.517	18	2.24	10	5.184e-02	10	-1.154e-03	5	-3.952e-03	18
346		min	.293	18	-2.182	13	-.024	9	6.462e-05	1	-2.054e-02	10	-5.231e-02	9
347	N174	max	2.842	13	-.545	18	2.382	10	4.25e-03	18	4.753e-03	9	-3.592e-03	18
348		min	.293	18	-2.503	13	-.01	17	-1.079e-02	9	-1.367e-03	18	-5.627e-02	9
349	N175	max	2.752	13	-.513	18	2.384	10	1.131e-02	9	-8.269e-04	7	-3.626e-03	18
350		min	.265	18	-2.504	13	-.009	17	1.722e-03	1	-3.127e-03	10	-5.445e-02	9
351	N176	max	0	17	-.333	18	.336	18	0	18	2.958e-03	18	1.436e-02	13
352		min	0	4	-1.625	13	-.069	7	0	1	-5.677e-04	7	2.937e-03	18
353	N177	max	0	17	-.024	18	.024	18	0	18	3.403e-03	18	1.625e-02	13
354		min	0	1	-.115	13	-.005	7	0	1	-7.221e-04	7	3.324e-03	18
355	N178	max	0	17	-.366	18	.401	10	0	18	3.553e-03	10	1.433e-02	13
356		min	0	10	-1.621	13	.036	1	0	1	3.382e-04	1	3.241e-03	18
357	N179	max	0	17	-.026	18	.029	10	0	18	4.073e-03	10	1.621e-02	13
358		min	0	14	-.115	13	.003	1	0	1	3.646e-04	1	3.657e-03	18
359	N180	max	0	18	-.333	18	.4	10	2.306e-03	14	3.687e-03	14	4.472e-07	7
360		min	0	1	-1.627	13	-.001	7	6.362e-04	17	-2.372e-04	7	-1.017e-04	14
361	N181	max	0	9	-.024	18	.055	10	1.677e-03	14	3.706e-03	14	3.316e-07	7
362		min	0	18	-.116	13	0	2	4.512e-04	17	-2.479e-04	7	-1.029e-04	14
363	N182	max	.693	14	-.366	18	.4	10	-3.263e-04	18	4.126e-03	14	8.194e-05	7
364		min	-.003	7	-1.622	13	-.001	7	-2.135e-03	13	1.18e-04	1	-1.914e-02	14
365	N183	max	.693	14	-.026	18	.055	10	-3.532e-04	18	4.173e-03	14	8.183e-05	7
366		min	-.003	7	-.116	13	0	2	-1.584e-03	13	1.201e-04	1	-1.914e-02	14
367	N184	max	.139	14	-.362	18	.4	10	1.779e-03	14	3.997e-03	14	1.791e-05	7
368		min	-.007	7	-1.699	13	-.001	7	4.631e-04	17	-1.481e-04	7	-4.181e-03	14
369	N185	max	.337	14	-.384	18	.4	10	1.708e-04	10	4.219e-03	14	4.119e-05	7
370		min	-.011	7	-1.741	13	-.001	7	-3.872e-05	9	-1.808e-05	7	-9.619e-03	14
371	N186	max	.515	14	-.381	18	.4	10	-2.402e-04	18	4.266e-03	14	6.156e-05	7
372		min	-.009	7	-1.706	13	-.001	7	-1.506e-03	13	5.492e-05	1	-1.438e-02	14
373	N187	max	.139	14	-.042	18	.055	10	1.355e-03	14	3.99e-03	14	1.78e-05	7
374		min	-.007	7	-.175	13	0	2	3.717e-04	17	-1.453e-04	7	-4.181e-03	14
375	N188	max	.337	14	-.052	18	.055	10	6.535e-07	7	4.223e-03	14	4.108e-05	7
376		min	-.011	7	-.211	13	0	2	-2.24e-05	10	-1.801e-05	7	-9.619e-03	14
377	N189	max	.515	14	-.043	18	.055	10	-3.425e-04	17	4.254e-03	14	6.146e-05	7
378		min	-.009	7	-.182	13	0	2	-1.221e-03	14	5.442e-05	1	-1.438e-02	14
379	N190	max	.139	14	-.246	18	.299	10	1.62e-03	14	3.207e-03	10	1.564e-02	13
380		min	-.007	7	-1.147	13	0	7	4.288e-04	17	-1.296e-05	7	3.295e-03	18

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
381	N191	max	.139	14	-.166	18	.212	10	1.514e-03	14	3.98e-03	10	1.612e-02	13
382		min	-.007	7	-.766	13	0	2	4.06e-04	17	-1.376e-05	7	3.374e-03	18
383	N192	max	.337	14	-.268	18	.299	10	9.833e-05	10	3.207e-03	10	1.569e-02	13
384		min	-.011	7	-1.188	13	0	7	-2.777e-05	9	-1.345e-05	7	3.346e-03	18
385	N193	max	.337	14	-.185	18	.212	10	5.004e-05	10	3.98e-03	10	1.62e-02	13
386		min	-.011	7	-.805	13	0	2	-2.047e-05	9	-1.265e-05	7	3.555e-03	18
387	N206	max	0	18	0	18	0	18	0	18	0	18	0	18
388		min	0	1	0	1	0	1	0	1	0	1	0	1
389	N207	max	0	18	0	18	0	18	0	18	0	18	0	18
390		min	0	1	0	1	0	1	0	1	0	1	0	1
391	N208	max	0	18	0	18	0	18	0	18	0	18	0	18
392		min	0	1	0	1	0	1	0	1	0	1	0	1
393	N209	max	0	18	0	18	0	18	0	18	0	18	0	18
394		min	0	1	0	1	0	1	0	1	0	1	0	1
395	N210	max	.621	13	-.267	17	.466	10	-5.886e-05	17	4.017e-04	18	-3.07e-03	18
396		min	.076	18	-1.161	14	-.003	17	-1.373e-03	1	-1.901e-03	9	-2.469e-02	13
397	N211	max	.621	13	-.508	18	.553	10	-4.966e-04	18	3.471e-04	18	-3.793e-03	18
398		min	.075	18	-2.133	13	-.012	17	-2.784e-03	9	-1.899e-03	9	-2.427e-02	13
399	N212	max	.589	13	-.266	17	.465	10	-1.097e-04	17	4.757e-04	18	-3.228e-03	18
400		min	.085	18	-1.132	14	-.003	17	-1.64e-03	1	-2.357e-03	9	-1.946e-02	13
401	N213	max	.589	13	-.494	18	.553	10	-8.708e-04	18	4.94e-04	18	-3.572e-03	18
402		min	.084	18	-2.076	13	-.012	17	-3.389e-03	9	-2.357e-03	9	-1.922e-02	13
403	N214	max	.556	13	-.373	18	.513	10	-8.652e-04	18	1.437e-04	17	-3.433e-03	18
404		min	.091	18	-1.576	13	-.008	17	-1.942e-03	13	-1.411e-03	10	-1.466e-02	13
405	N215	max	.556	13	-.308	18	.485	10	-3.003e-04	18	1.449e-04	17	-3.396e-03	18
406		min	.091	18	-1.298	13	-.005	17	-1.699e-03	1	-1.481e-03	10	-1.472e-02	13
407	N216	max	.821	13	-.308	18	.478	18	-3.003e-04	18	1.449e-04	17	-3.396e-03	18
408		min	.152	18	-1.298	13	-.032	7	-1.699e-03	1	-1.481e-03	10	-1.472e-02	13
409	N217	max	.29	13	-.308	18	.502	10	-2.648e-04	18	1.363e-04	17	-3.332e-03	18
410		min	.031	18	-1.298	13	0	17	-1.695e-03	1	-1.498e-03	10	-1.478e-02	13
411	N220	max	.82	13	-.373	18	.495	18	-8.653e-04	18	1.437e-04	17	-3.433e-03	18
412		min	.153	18	-1.576	13	-.043	9	-1.942e-03	13	-1.411e-03	10	-1.466e-02	13
413	N221	max	.292	13	-.373	18	.541	10	-8.712e-04	18	1.437e-04	17	-3.432e-03	18
414		min	.03	18	-1.576	13	.014	17	-1.941e-03	13	-1.411e-03	10	-1.465e-02	13
415	N222	max	.94	13	-.266	17	.45	18	-1.097e-04	17	4.757e-04	18	-3.228e-03	18
416		min	.143	18	-1.132	14	-.031	1	-1.641e-03	1	-2.357e-03	9	-1.947e-02	13
417	N223	max	.259	7	-.266	17	.491	10	-1.097e-04	17	4.757e-04	18	-3.226e-03	18
418		min	.027	18	-1.132	14	-.001	17	-1.639e-03	1	-2.357e-03	9	-1.945e-02	13
419	N222A	max	1.065	13	-.267	17	.45	18	-5.886e-05	17	4.017e-04	18	-3.07e-03	18
420		min	.131	18	-1.161	14	-.026	1	-1.373e-03	1	-1.901e-03	9	-2.469e-02	13
421	N223A	max	.254	7	-.267	17	.489	10	-5.884e-05	17	4.017e-04	18	-3.069e-03	18
422		min	-.035	17	-1.161	14	-.002	17	-1.372e-03	1	-1.901e-03	9	-2.466e-02	13
423	N224	max	.935	13	-.494	18	.536	18	-8.709e-04	18	4.94e-04	18	-3.572e-03	18
424		min	.148	18	-2.076	13	-.073	9	-3.39e-03	9	-2.357e-03	9	-1.922e-02	13
425	N225	max	.262	7	-.494	18	.583	10	-8.743e-04	18	4.94e-04	18	-3.571e-03	18
426		min	.019	18	-2.076	13	.033	17	-3.387e-03	9	-2.357e-03	9	-1.92e-02	13
427	N226	max	1.058	13	-.508	18	.542	18	-4.966e-04	18	3.471e-04	18	-3.793e-03	18
428		min	.143	18	-2.133	13	-.062	9	-2.784e-03	9	-1.899e-03	9	-2.427e-02	13
429	N227	max	.26	7	-.508	18	.574	10	-5.006e-04	18	3.471e-04	18	-3.791e-03	18
430		min	-.031	17	-2.133	13	.025	17	-2.782e-03	9	-1.899e-03	9	-2.425e-02	13
431	N228	max	1.014	13	-.466	18	.589	10	2.668e-03	9	1.777e-03	9	-2.765e-03	18
432		min	.19	18	-2.142	13	.024	17	1.296e-03	18	-2.085e-04	18	-2.152e-02	13

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
433	N229	max	.286	14	-.466	18	.528	18	2.666e-03	9	1.777e-03	9	-2.764e-03	18
434		min	.037	17	-2.142	13	-.06	9	1.291e-03	18	-2.085e-04	18	-2.15e-02	13
435	N230	max	.92	13	-.439	18	.593	10	3.386e-03	9	2.343e-03	9	-2.878e-03	18
436		min	.193	18	-2.086	13	.033	17	1.384e-03	18	6.111e-05	18	-1.799e-02	13
437	N231	max	.286	14	-.439	18	.526	18	3.383e-03	9	2.343e-03	9	-2.876e-03	18
438		min	.074	17	-2.086	13	-.073	9	1.379e-03	18	6.111e-05	18	-1.798e-02	13
439	N232	max	.825	13	-.322	18	.546	10	2.164e-03	9	1.379e-04	17	-2.986e-03	18
440		min	.194	18	-1.58	13	.017	17	1.091e-03	18	-1.41e-03	10	-1.471e-02	13
441	N233	max	.295	13	-.322	18	.491	18	2.162e-03	9	1.379e-04	17	-2.984e-03	18
442		min	.086	18	-1.58	13	-.047	9	1.085e-03	18	-1.41e-03	10	-1.47e-02	13
443	N234	max	.626	13	-.466	18	.553	10	2.668e-03	9	1.777e-03	9	-2.765e-03	18
444		min	.14	18	-2.142	13	-.012	17	1.296e-03	18	-2.085e-04	18	-2.152e-02	13
445	N235	max	.596	13	-.439	18	.553	10	3.385e-03	9	2.343e-03	9	-2.878e-03	18
446		min	.141	18	-2.086	13	-.012	17	1.384e-03	18	6.111e-05	18	-1.799e-02	13
447	N236	max	.56	13	-.322	18	.512	10	2.164e-03	9	1.379e-04	17	-2.985e-03	18
448		min	.14	18	-1.58	13	-.008	17	1.091e-03	18	-1.41e-03	10	-1.471e-02	13
449	N237	max	.511	13	-.308	18	.488	10	-2.648e-04	18	1.363e-04	17	-3.332e-03	18
450		min	.081	18	-1.298	13	-.004	17	-1.695e-03	1	-1.498e-03	10	-1.479e-02	13
451	N238	max	1.018	13	-.265	17	.493	10	1.539e-03	10	1.78e-03	9	-3.57e-03	18
452		min	.204	18	-1.153	7	-.003	17	4.93e-06	17	-1.665e-04	18	-2.175e-02	13
453	N239	max	.271	14	-.265	17	.446	18	1.528e-03	10	1.78e-03	9	-3.569e-03	18
454		min	.036	17	-1.153	7	-.026	2	4.929e-06	17	-1.665e-04	18	-2.173e-02	13
455	N240	max	.626	13	-.265	17	.466	10	1.539e-03	10	1.78e-03	9	-3.57e-03	18
456		min	.14	18	-1.153	7	-.003	17	4.93e-06	17	-1.665e-04	18	-2.175e-02	13

Envelope AISC 15th(360-16): ASD Steel Code Checks

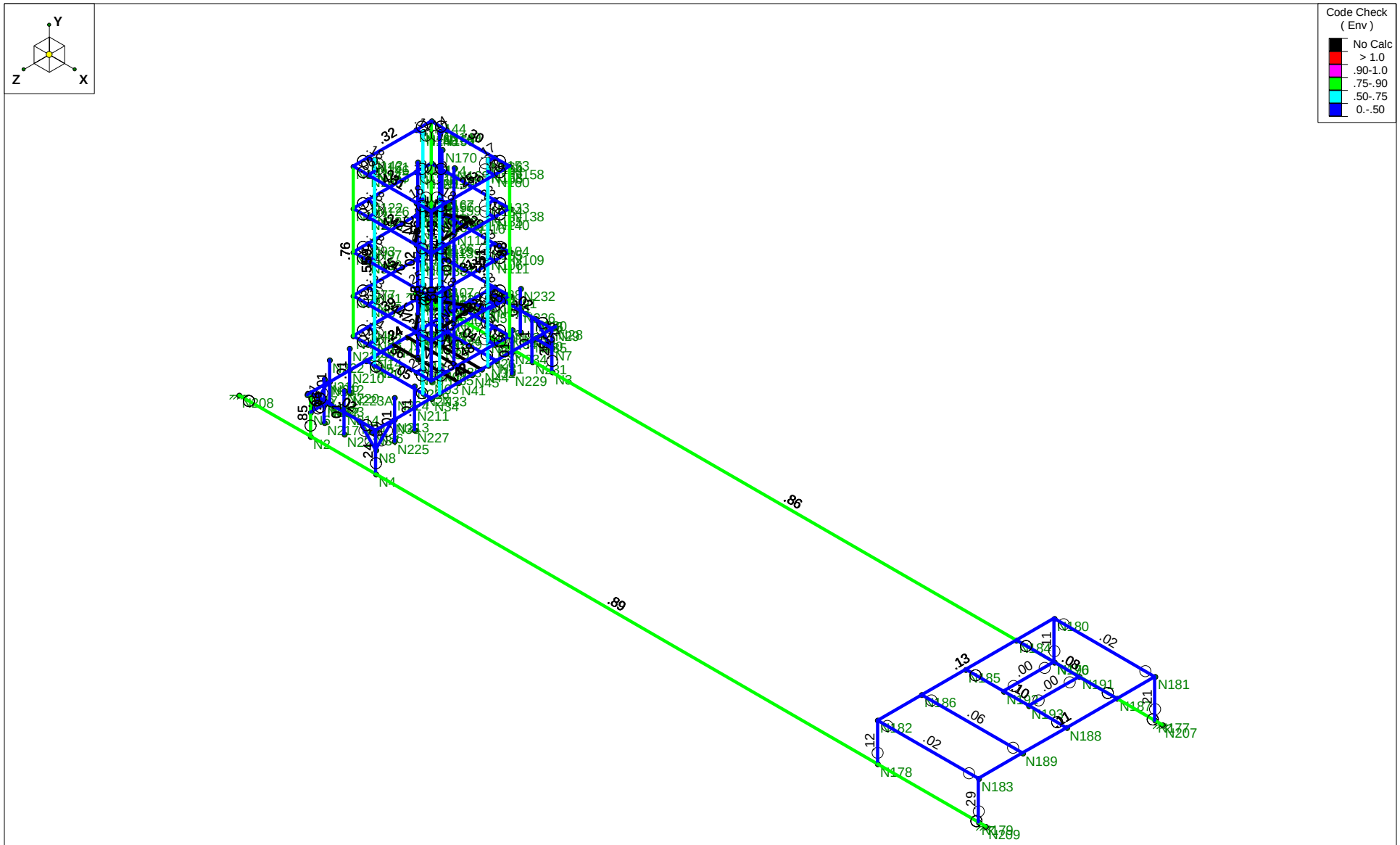
	Memb...	Shape	Code Check	L...	LC	Sh...	L...	Dir	...	Pnc/o...	Pnt/o...	Mnyy/om [k-ft]	Mn...	Cb	Eqn
1	M125	W27X84	.890	2...	14	.156	0	y	...	401.9...	532.455	59.641	438...	1	H1...
2	M98	L3X3X4	.884	8....	10	.039	8....	y	...	.366	14.374	.304	.341	1....	H2...
3	M124	W27X84	.863	2...	13	.156	5...	y	...	401.9...	532.455	59.641	438...	1	H1...
4	M1	PIPE 3.5	.853	1....	10	.436	3		...	50.508	52.395	5.292	5.292	1....	H3...
5	M99	L3X3X4	.822	8....	9	.039	8....	y	9	.366	14.374	.304	.336	1....	H2...
6	M96	L3X3X4	.758	8....	9	.038	8....	z	9	.366	14.374	.52	.337	1....	H2...
7	M25	HSS4X4X6	.597	0	10	.111	0	y	...	45.422	47.714	5.315	5.315	1....	H1...
8	M23	HSS4X4X6	.587	0	10	.109	0	y	...	45.422	47.714	5.315	5.315	1....	H1...
9	M19	HSS4X4X6	.577	0	9	.101	0	z	9	45.422	47.714	5.315	5.315	1....	H1...
10	M24	HSS4X4X6	.556	0	10	.097	0	y	...	45.422	47.714	5.315	5.315	1....	H1...
11	M20	HSS4X4X6	.552	0	9	.103	0	z	9	45.422	47.714	5.315	5.315	2....	H1...
12	M26	HSS4X4X6	.548	0	10	.096	0	y	...	5.696	47.714	5.315	5.315	1....	H1...
13	M3	PIPE 3.5	.533	1....	18	.331	3		...	50.508	52.395	5.292	5.292	1....	H1...
14	M21	HSS4X4X6	.513	0	9	.078	0	z	9	45.422	47.714	5.315	5.315	1....	H1...
15	M22	HSS4X4X6	.489	0	9	.079	0	z	9	5.696	47.714	5.315	5.315	2....	H1...
16	M73	L3X3X4	.481	4....	9	.026	5....	y	9	2.504	14.374	.304	.44	1....	H2...
17	M97	L3X3X4	.452	8....	9	.010	8....	z	...	.366	14.374	.52	.393	1....	H2...
18	M68	L3X3X4	.450	4....	10	.025	5....	y	9	2.146	14.374	.304	.639	2....	H2...
19	M82	L3X3X4	.443	4....	9	.024	5....	y	9	2.505	14.374	.304	.639	2....	H2...
20	M81	L3X3X4	.425	4....	9	.023	5....	y	9	2.146	14.374	.304	.639	2....	H2...
21	M66	L3X3X4	.423	4....	10	.022	4....	y	...	2.146	14.374	.304	.607	1....	H2...
22	M80	L3X3X4	.422	4....	9	.022	4....	y	9	2.146	14.374	.304	.612	1....	H2...
23	M67	L3X3X4	.421	4....	10	.023	5....	y	...	2.146	14.374	.304	.639	2....	H2...

Envelope AISC 15th(360-16): ASD Steel Code Checks (Continued)

	Memb...	Shape	Code Check	L...	LC	Sh...	L...	Dir	...	Pnc/o...	Pnt/o...	Mnyy/om [k-ft]	Mn...	Cb	Eqn
24	M6	W8X24	.419	9....	9	.696	8....	z	9	175.1...	211.976	21.382	57....	1....	H1...
25	M69	L3X3X4	.386	4....	9	.026	5....	z	9	2.504	14.374	.52	.513	1....	H2...
26	M102	L3X3X4	.382	3....	9	.024	5....	z	...	2.504	14.374	.52	.396	1....	H2...
27	M83	L3X3X4	.364	4....	9	.023	5....	y	9	2.505	14.374	.304	.639	2....	H2...
28	M50	L3X3X4	.340	0	17	.175	0	y	9	2.061	14.374	.304	.639	1	H2...
29	M39	L3X3X4	.333	.5...	10	.182	0	z	...	2.056	14.374	.52	.639	1....	H2...
30	M100	L3X3X4	.332	0	10	.183	0	z	...	2.056	14.374	.52	.639	1....	H2...
31	M49	L3X3X4	.328	0	9	.165	0	z	9	2.056	14.374	.52	.639	1	H2...
32	M65	L3X3X4	.316	1....	9	.016	1....	y	9	2.146	14.374	.304	.639	2....	H2...
33	M77	L3X3X4	.315	4....	9	.027	5....	z	...	2.146	14.374	.52	.639	1....	H2...
34	M78	L3X3X4	.314	4....	10	.024	5....	y	...	2.505	14.374	.52	.594	1....	H2...
35	M72	L3X3X4	.310	4....	10	.022	5....	z	...	2.146	14.374	.52	.639	1....	H2...
36	M71	L3X3X4	.308	4....	10	.022	4....	z	...	2.146	14.374	.52	.639	1....	H2...
37	M79	L3X3X4	.307	4....	9	.015	4....	y	9	2.146	14.374	.304	.582	1....	H2...
38	M74	L3X3X4	.302	4....	10	.015	5....	z	...	2.146	14.374	.304	.42	1....	H2...
39	M76	L3X3X4	.293	4....	9	.023	5....	z	...	2.146	14.374	.52	.639	1....	H2...
40	M75	L3X3X4	.287	4....	9	.020	4....	z	9	2.146	14.374	.52	.639	1....	H2...
41	M106	PIPE_3.5	.287	3	14	.050	0		...	50.508	52.395	5.292	5.292	1....	H1...
42	M4	PIPE_3.5	.283	1....	9	.180	1....		...	50.508	52.395	5.292	5.292	1....	H1...
43	M60	L3X3X4	.281	.5...	17	.160	0	y	9	2.056	14.374	.304	.639	1	H2...
44	M59	L3X3X4	.277	.5...	9	.150	0	z	9	2.056	14.374	.52	.639	1	H2...
45	M101	L3X3X4	.253	0	10	.166	0	y	...	2.056	14.374	.52	1.157	1....	H2...
46	M40	L3X3X4	.253	.5...	10	.166	0	y	...	2.056	14.374	.52	1.157	1....	H2...
47	M48	L3X3X4	.252	0	9	.187	0	z	9	2.056	14.374	.52	.639	1	H2...
48	M70	L3X3X4	.250	3....	9	.015	4....	z	...	2.146	14.374	.52	.402	1....	H2...
49	M46	L3X3X4	.246	0	9	.192	0	z	9	2.056	14.374	.52	.639	1	H2...
50	M2	PIPE_3.5	.244	1....	9	.221	1....		...	50.508	52.395	5.292	5.292	1....	H1...
51	M5	W8X24	.236	9....	17	.717	8....	z	9	175.1...	211.976	21.382	57....	1....	H1...
52	M58	L3X3X4	.232	.5...	9	.178	.5...	z	9	2.056	14.374	.52	.639	1	H2...
53	M56	L3X3X4	.227	.5...	9	.184	.5...	z	9	2.056	14.374	.52	.639	1	H2...
54	M52	L3X3X4	.224	0	9	.097	0	z	9	2.056	14.374	.52	.639	1	H2...
55	M105	PIPE_3.5	.214	3	7	.095	0		...	50.508	52.395	5.292	5.292	1....	H1...
56	M12	L3.5X3.5X4	.208	.9...	10	.023	0	y	9	32.833	36.647	1.607	3.479	1....	H2...
57	M38	L3X3X4	.202	.5...	9	.155	0	y	...	2.056	14.374	.52	.639	1	H2...
58	M36	L3X3X4	.199	.5...	9	.160	0	y	...	2.056	14.374	.52	.639	1	H2...
59	M62	L3X3X4	.199	.5...	9	.087	.5...	z	9	2.056	14.374	.52	.639	1	H2...
60	M31	L3X3X4	.184	0	17	.097	0	y	...	2.056	14.374	.304	.639	1	H2...
61	M54	L3X3X4	.183	0	9	.176	0	z	9	2.056	14.374	.52	.639	1....	H2...
62	M43	L3X3X4	.182	.5...	10	.178	.5...	z	...	2.056	14.374	.52	.639	1....	H2...
63	M33	L3X3X4	.182	0	10	.179	0	z	...	2.056	14.374	.52	.639	1....	H2...
64	M37	L3X3X4	.179	.5...	10	.190	.5...	y	...	2.056	14.374	.52	1.157	1....	H2...
65	M29	L3X3X4	.179	0	10	.190	0	y	...	2.056	14.374	.52	1.157	1....	H2...
66	M35	L3X3X4	.175	.5...	10	.194	.5...	y	...	2.056	14.374	.52	1.157	1....	H2...
67	M27	L3X3X4	.175	0	10	.195	0	y	...	2.056	14.374	.52	1.157	1....	H2...
68	M64	L3X3X4	.166	.5...	9	.168	.5...	z	9	2.056	14.374	.52	.639	1....	H2...
69	M57	L3X3X4	.164	.5...	10	.145	0	z	9	2.056	14.374	.52	1.157	1....	H2...
70	M55	L3X3X4	.161	.5...	10	.153	0	z	9	2.056	14.374	.52	1.157	1....	H2...
71	M32	L3X3X4	.147	0	18	.073	.5...	z	...	2.056	14.374	.52	.639	1....	H2...
72	M18	L3.5X3.5X4	.143	.9...	18	.014	0	y	...	32.833	36.647	1.607	3.479	1....	H2...
73	M44	L3X3X4	.143	.5...	9	.155	0	z	...	2.056	14.374	.52	.639	1....	H2...
74	M42	L3X3X4	.142	.5...	18	.073	0	z	...	2.056	14.374	.52	.639	1....	H2...
75	M63	L3X3X4	.140	.5...	10	.145	0	z	9	2.056	14.374	.52	.639	1....	H2...

Envelope AISC 15th(360-16): ASD Steel Code Checks (Continued)

	Memb...	Shape	Code Check	L...	LC	Sh...	L...	Dir	...	Pnc/o...	Pnt/o...	Mnyy/om [k-ft]	Mn...	Cb	Eqn
76	M41	L3X3X4	.139	.5...	9	.096	.5...	y	...	2.056	14.374	.52	1.157	1....	H2..
77	M61	L3X3X4	.138	.5...	17	.062	0	y	...	2.056	14.374	.304	.639	1	H2..
78	M51	L3X3X4	.137	0	17	.072	.0...	z	9	2.056	14.374	.304	.639	1	H2..
79	M107	W8X24	.131	7	14	.065	3.5	y	...	95.399	211.976	21.382	51....	1....	H1..
80	M103	PIPE_3.5	.119	3	14	.059	0		...	50.508	52.395	5.292	5.292	1....	H1..
81	M30	L3X3X4	.115	0	5	.154	0	y	...	2.056	14.374	.52	.639	1	H2..
82	M109	W8X24	.112	7	14	.065	1...	y	...	95.399	211.976	21.382	52....	1....	H1..
83	M45	L3X3X4	.111	0	9	.158	0	z	9	2.056	14.374	.52	.639	1	H2..
84	M28	L3X3X4	.111	0	5	.159	0	y	...	2.056	14.374	.52	.639	1	H2..
85	M47	L3X3X4	.106	0	9	.151	0	z	9	2.056	14.374	.52	.639	1	H2..
86	M104	PIPE_3.5	.105	3	10	.085	0		...	50.508	52.395	5.292	5.292	1....	H1..
87	M112	W8X15	.101	4	14	.025	0	y	...	55.283	132.934	6.662	28....	1....	H1..
88	M34	L3X3X4	.087	0	18	.155	.5...	z	...	2.056	14.374	.52	.639	1	H2..
89	M113	W8X15	.084	4	14	.022	0	y	7	55.283	132.934	6.662	28.11	1....	H1..
90	M53	L3X3X4	.084	0	17	.153	.5...	z	9	2.056	14.374	.52	.639	1	H2..
91	M11	L3.5X3.5X4	.075	1....	9	.025	1....	y	9	32.833	36.647	1.607	3.479	1....	H2..
92	M16	L3.5X3.5X4	.069	.87	9	.008	0	y	9	32.865	36.647	1.607	3.479	1....	H2..
93	M13	L3.5X3.5X4	.067	.9...	9	.007	0	y	9	32.833	36.647	1.607	3.479	1....	H2..
94	BR.1	PIPE_2.0	.061	1.5	9	.052	1....		9	19.191	21.377	1.245	1.245	1....	H1..
95	M111	W8X15	.059	4....	14	.021	0	y	...	55.283	132.934	6.662	28....	1....	H1..
96	M17	L3.5X3.5X4	.057	.9...	9	.010	0	y	...	32.833	36.647	1.607	3.479	1....	H2..
97	M15	L3.5X3.5X4	.050	.9...	9	.012	0	y	...	32.833	36.647	1.607	3.479	1....	H2..
98	M9	W8X24	.047	.7	9	.688	0	z	...	199.66	211.976	21.382	57....	2....	H1..
99	M14	L3.5X3.5X4	.042	.9...	10	.021	0	y	9	32.833	36.647	1.607	3.479	1....	H2..
100	M10	W8X24	.042	.7	9	.663	0	z	...	199.66	211.976	21.382	57....	2....	H1..
101	M85	PIPE_2.0	.039	0	13	.001	0		...	19.074	21.377	1.245	1.245	2....	H1..
102	M84	PIPE_2.0	.033	0	13	.001	0		...	19.074	21.377	1.245	1.245	1....	H1..
103	M8	W8X24	.021	1....	9	.033	3....	y	9	206.9...	211.976	21.382	57....	1....	H1..
104	M7	W8X24	.020	1....	9	.033	3....	y	9	206.9...	211.976	21.382	57....	1....	H1..
105	M86	PIPE_2.0	.020	0	13	.001	0		...	19.074	21.377	1.245	1.245	2....	H1..
106	M110	W8X24	.020	4	14	.012	8	y	...	163.33	211.976	21.382	57....	1....	H1..
107	M108	W8X24	.019	4	14	.011	8	y	...	163.33	211.976	21.382	57....	1....	H1..
108	M135	PIPE_2.0	.015	1.5	9	.016	1.5		9	19.191	21.377	1.245	1.245	1....	H1..
109	BR.3	PIPE_2.0	.009	1.5	9	.007	1.5		9	19.191	21.377	1.245	1.245	1....	H1..
110	AR.3	PIPE_2.0	.009	1.5	9	.007	1.5		9	19.191	21.377	1.245	1.245	1....	H1..
111	GR.3	PIPE_2.0	.009	1.5	9	.007	1.5		9	19.191	21.377	1.245	1.245	1....	H1..
112	BR.2	PIPE_2.0	.009	1.5	9	.007	1.5		9	19.191	21.377	1.245	1.245	1....	H1..
113	AR.2	PIPE_2.0	.009	1.5	9	.007	1.5		9	19.191	21.377	1.245	1.245	1....	H1..
114	GR.2	PIPE_2.0	.009	1.5	9	.007	1.5		9	19.191	21.377	1.245	1.245	1....	H1..
115	GR.1	PIPE_2.0	.008	1.5	10	.007	1.5		...	19.191	21.377	1.245	1.245	1....	H1..
116	AR.1	PIPE_2.0	.008	1.5	10	.007	1.5		...	19.191	21.377	1.245	1.245	1....	H1..
117	M115	W8X15	.001	2	13	.002	4	y	...	106.7...	132.934	6.662	33....	1....	H1..
118	M114	W8X15	.001	2	13	.001	4	y	...	106.7...	132.934	6.662	33....	1....	H1..



Centek Engineers		
FJP	Old Saybrook CTR CT - AMA	Nov 17, 2021 at 11:30 AM
21007.41	Unity Check	Old Saybrook CTR - Faux Chimney Dunnage.r3d