



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

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VIA ELECTRONIC MAIL

August 12, 2021

Richard Zajac
Site Acquisition Specialist
Crown Castle USA
4545 East River Road, Suite 320
West Henrietta, NY 14586

RE: **TS-DISH-033-210621** - DISH Wireless LLC request for an order to approve tower sharing at an existing telecommunications facility located at 201 Main Street, Cromwell, Connecticut.

Dear Mr. Zajac:

The Connecticut Siting Council (Council) is in receipt of your correspondence of August 3, 2021 submitted in response to the Council's July 2, 2021 notification of an incomplete request for tower sharing with regard to the above-referenced matter.

The submission renders the request for tower sharing complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

A handwritten signature in black ink, appearing to read 'Melanie A. Bachman'.

Melanie A. Bachman
Executive Director

MAB/IN/laf

From: Zajac, Richard <Richard.Zajac@crowncastle.com>
Sent: Tuesday, August 3, 2021 3:16 PM
To: Robidoux, Evan <Evan.Robidoux@ct.gov>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: RE: Council Incomplete Letter for TS-DISH-033-210621 (201 Main Street, Cromwell)

EXTERNAL EMAIL: This email originated from outside of the organization. Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Good afternoon,

Pursuant to the incomplete letter issued for TS-DISH-033-210621, please see the attached mount analysis report. A hard copy of this report will be sent via FedEx to arrive to you tomorrow, 8/4.

If you have any questions/comments/concerns or require additional information in order to resume the review process/issue an approval, please do not hesitate to contact me.

Thank you,

RICH ZAJAC

Site Acquisition Specialist

T: (585) 445-5896 M: (607) 346-7212

F: (724) 416-4461

CROWN CASTLE

4545 East River Road, Suite 320

West Henrietta, NY 14586

Date: **July 21, 2021**

Darcy Tarr
Crown Castle
3530 Tornigdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6589



Trylon
1825 W. Walnut Hill Lane,
Suite 302
Irving, TX 75038
214-930-1730

Subject: Mount Replacement Analysis Report

Carrier Designation: DISH Network Equipment Change Out
Carrier Site Number: BOBDL00094A
Carrier Site Name: CT-CCI-T-876364

Crown Castle Designation: **Crown Castle BU Number:** 876364
Crown Castle Site Name: CROMWELL / FIRST LINE EMERGENC
Crown Castle JDE Job Number: 645188
Crown Castle Order Number: 553293 Rev. 1

Engineering Firm Designation: **Trylon Report Designation:** 188208

Site Data: 201 Main St., Cromwell, Middlesex County, CT, 06416
Latitude 41°35'0.11" Longitude -72°38'59.14"

Structure Information: **Tower Height & Type:** 125.0 ft Monopole
Mount Elevation: 85.0 ft
Mount Type: 7.0 ft T-Arms

Dear Darcy Tarr,

Trylon is pleased to submit this "**Mount Replacement Analysis Report**" to determine the structural integrity of DISH Network's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

T-Arms **Sufficient**
***Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Jordan Everson, E.I.T.

Respectfully Submitted by:
Cliff Abernathy, P.E.



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1) INTRODUCTION

This is a proposed 3 sector 7.0 ft T-Arms, designed by Commscope.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.181
Seismic S_1:	0.065
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
85.0	85.0	3	JMA WIRELESS	MX08FRO665-20	7.0 ft T-Arms [Commscope MC-K6MHDX-9-96]
		3	FUJITSU	TA08025-B604	
		3	FUJITSU	TA08025-B605	
		1	RAYCAP	RDIDC-9181-PF-48	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	DISH Network Application	553293 Rev. 1	CCI Sites
Construction Drawings	Infinigy	BOBDL00094A	TSA
Mount Manufacturer Drawings	Commscope	MC-K6MHDX-9-96	TSA

3.1) Analysis Method

RISA-3D (Version 17.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A tool internally developed, using Microsoft Excel, by Trylon was used to calculate wind loading on all appurtenances, dishes, and mount members for various load cases. Selected output from the analysis is included in Appendix B.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision B).

3.2) Assumptions

- 1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
- 2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
- 3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
- 4) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
- 5) Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
- 6) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

This analysis may be affected if any assumptions are not valid or have been made in error. Tylon should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (T-Arms, Worst Case Sector)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2	Mount Pipe(s)	MP1	85.0	18.8	Pass
	Horizontal(s)	H1		55.3	Pass
	Standoff(s)	M96		34.2	Pass
	Mount Connection(s)	--		32.4	Pass

Structure Rating (max from all components) =	55.3%
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Notes:

- 1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
- 2) Rating per TIA-222-H, Section 15.5

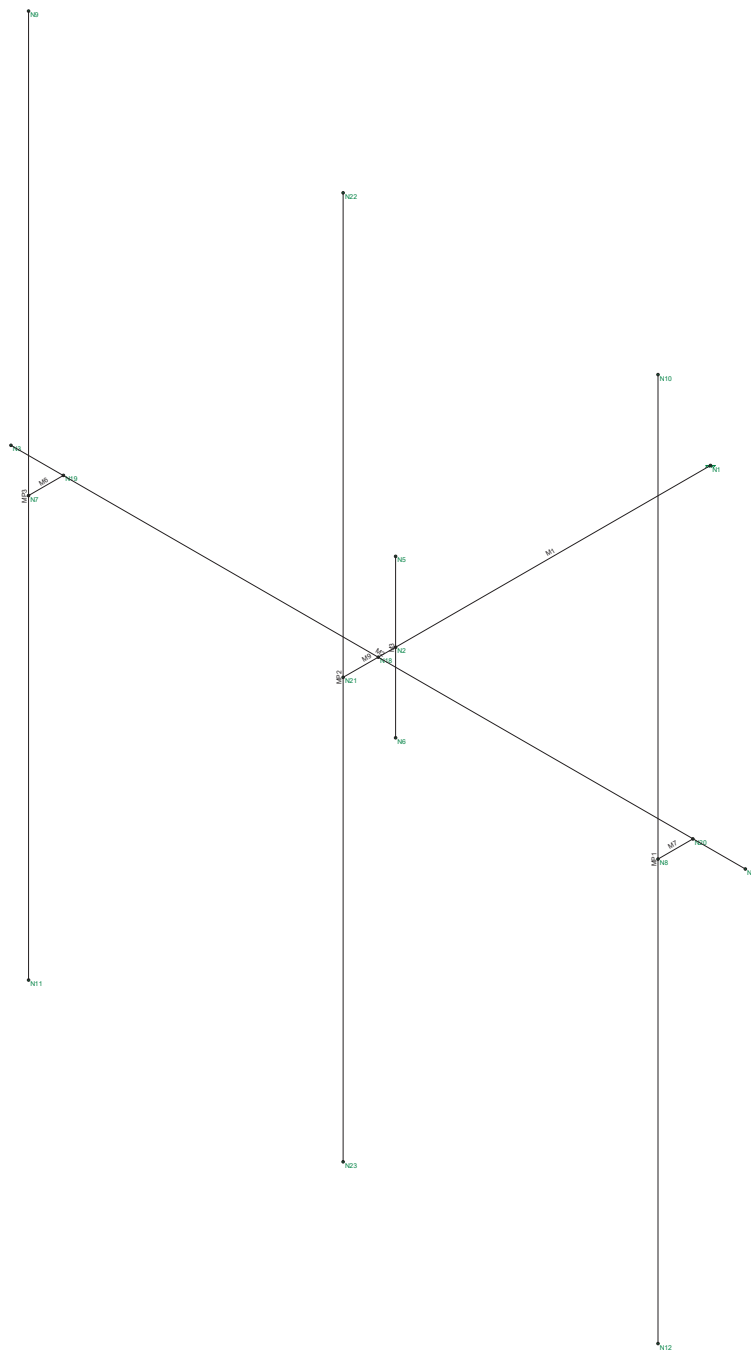
4.1) Recommendations

The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope MC-K6MHDX-9-96.

No structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A
WIRE FRAME AND RENDERED MODELS

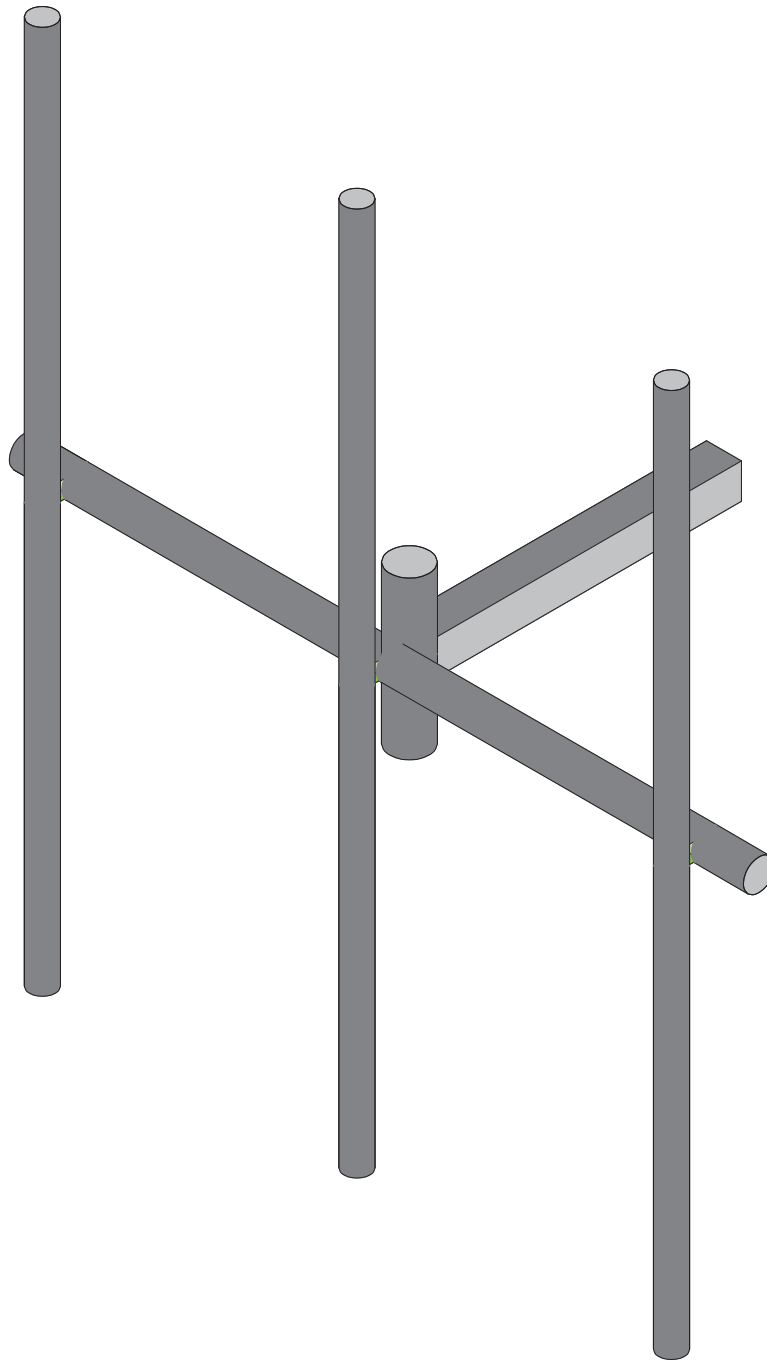


Envelope Only Solution

Trylon
JE

876364

Wireframe
July 21, 2021 at 6:12 PM
876364_loaded.r3d



Envelope Only Solution

Trylon
JE

876364

Render
July 21, 2021 at 6:12 PM
876364_loaded.r3d

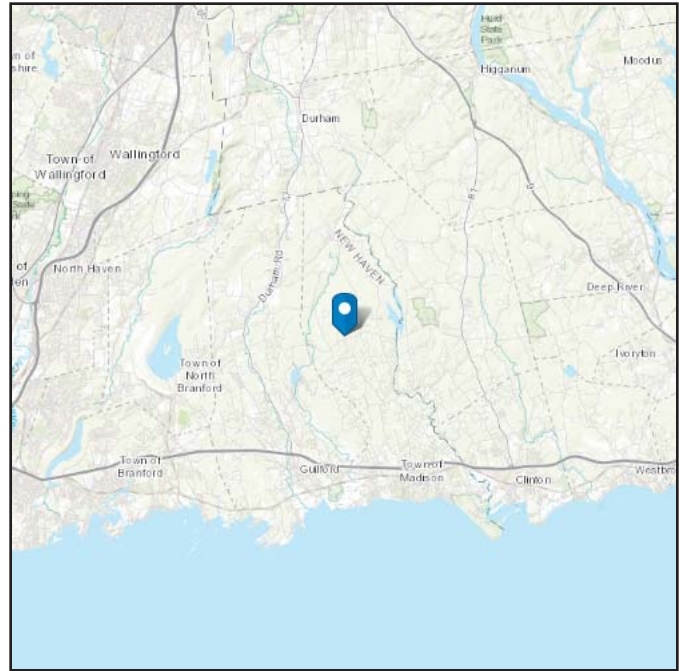
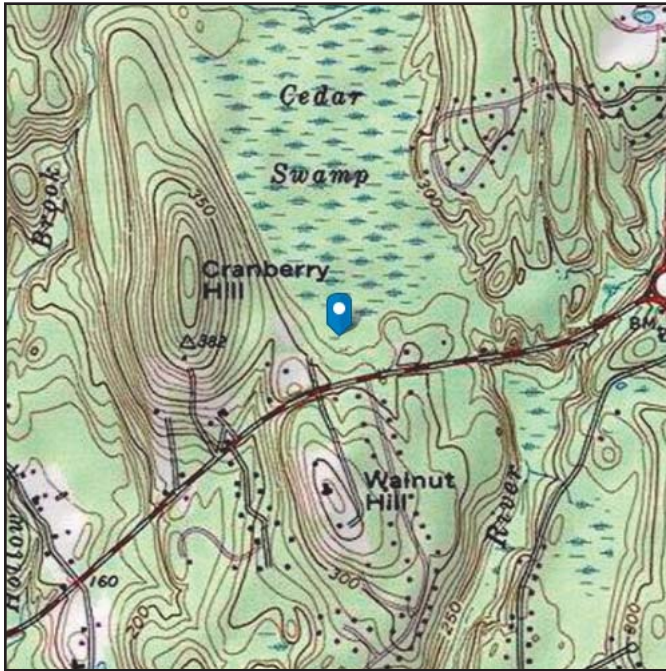
APPENDIX B
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 276.55 ft (NAVD 88)
Latitude: 41.358336
Longitude: -72.64976



Ice

Results:

Ice Thickness: 0.75 in.
Concurrent Temperature: 15 F
Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Wed Jul 21 2021

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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TIA LOAD CALCULATOR 2.0

PROJECT DATA	
Job Code:	188208
Carrier Site ID:	876364
Carrier Site Name:	WELL / FIRST LINE EMER

CODES AND STANDARDS	
Building Code:	2015 IBC
Local Building Code:	2018 CBC
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	T-Arm	--
Mount Elevation:	85.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	125.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Stiff Soil	--
Ground Elevation:	276	ft.

TOPOGRAPHIC DATA		
Topographic Category:	1.00	--
Topographic Feature:	N/A	--
Crest Point Elevation:	0.00	ft.
Base Point Elevation:	0.00	ft.
Crest to Mid-Height (L/2):	0.00	ft.
Distance from Crest (x):	0.00	ft.
Base Topo Factor (K_{zt}):	1.00	--
Mount Topo Factor (K_{zt}):	1.00	--

WIND PARAMETERS		
Design Wind Speed:	125	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.22	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (G_h):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	46.01	psf

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	1.50	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	46.01	psf
Mount Ice Thickness (t_{iz}):	1.65	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	82.82	psf
Round Member Pressure:	49.69	psf
Ice Wind Pressure:	7.15	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel. (S_s):	0.18	g
1 Second Accel. (S_1):	0.06	g
Short Period Des. (S_{DS}):	0.19	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (C_s):	0.10	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

#	Description
1	1.4DL
2	1.2DL + 1WL 0 AZI
3	1.2DL + 1WL 30 AZI
4	1.2DL + 1WL 45 AZI
5	1.2DL + 1WL 60 AZI
6	1.2DL + 1WL 90 AZI
7	1.2DL + 1WL 120 AZI
8	1.2DL + 1WL 135 AZI
9	1.2DL + 1WL 150 AZI
10	1.2DL + 1WL 180 AZI
11	1.2DL + 1WL 210 AZI
12	1.2DL + 1WL 225 AZI
13	1.2DL + 1WL 240 AZI
14	1.2DL + 1WL 270 AZI
15	1.2DL + 1WL 300 AZI
16	1.2DL + 1WL 315 AZI
17	1.2DL + 1WL 330 AZI
18	0.9DL + 1WL 0 AZI
19	0.9DL + 1WL 30 AZI
20	0.9DL + 1WL 45 AZI
21	0.9DL + 1WL 60 AZI
22	0.9DL + 1WL 90 AZI
23	0.9DL + 1WL 120 AZI
24	0.9DL + 1WL 135 AZI
25	0.9DL + 1WL 150 AZI
26	0.9DL + 1WL 180 AZI
27	0.9DL + 1WL 210 AZI
28	0.9DL + 1WL 225 AZI
29	0.9DL + 1WL 240 AZI
30	0.9DL + 1WL 270 AZI
31	0.9DL + 1WL 300 AZI
32	0.9DL + 1WL 315 AZI
33	0.9DL + 1WL 330 AZI
34	1.2DL + 1DLi + 1WLi 0 AZI
35	1.2DL + 1DLi + 1WLi 30 AZI
36	1.2DL + 1DLi + 1WLi 45 AZI
37	1.2DL + 1DLi + 1WLi 60 AZI
38	1.2DL + 1DLi + 1WLi 90 AZI
39	1.2DL + 1DLi + 1WLi 120 AZI
40	1.2DL + 1DLi + 1WLi 135 AZI
41	1.2DL + 1DLi + 1WLi 150 AZI

#	Description
42	1.2DL + 1DLi + 1WLi 180 AZI
43	1.2DL + 1DLi + 1WLi 210 AZI
44	1.2DL + 1DLi + 1WLi 225 AZI
45	1.2DL + 1DLi + 1WLi 240 AZI
46	1.2DL + 1DLi + 1WLi 270 AZI
47	1.2DL + 1DLi + 1WLi 300 AZI
48	1.2DL + 1DLi + 1WLi 315 AZI
49	1.2DL + 1DLi + 1WLi 330 AZI
50	(1.2+0.2Sds) + 1.0E 0 AZI
51	(1.2+0.2Sds) + 1.0E 30 AZI
52	(1.2+0.2Sds) + 1.0E 45 AZI
53	(1.2+0.2Sds) + 1.0E 60 AZI
54	(1.2+0.2Sds) + 1.0E 90 AZI
55	(1.2+0.2Sds) + 1.0E 120 AZI
56	(1.2+0.2Sds) + 1.0E 135 AZI
57	(1.2+0.2Sds) + 1.0E 150 AZI
58	(1.2+0.2Sds) + 1.0E 180 AZI
59	(1.2+0.2Sds) + 1.0E 210 AZI
60	(1.2+0.2Sds) + 1.0E 225 AZI
61	(1.2+0.2Sds) + 1.0E 240 AZI
62	(1.2+0.2Sds) + 1.0E 270 AZI
63	(1.2+0.2Sds) + 1.0E 300 AZI
64	(1.2+0.2Sds) + 1.0E 315 AZI
65	(1.2+0.2Sds) + 1.0E 330 AZI
66	(0.9-0.2Sds) + 1.0E 0 AZI
67	(0.9-0.2Sds) + 1.0E 30 AZI
68	(0.9-0.2Sds) + 1.0E 45 AZI
69	(0.9-0.2Sds) + 1.0E 60 AZI
70	(0.9-0.2Sds) + 1.0E 90 AZI
71	(0.9-0.2Sds) + 1.0E 120 AZI
72	(0.9-0.2Sds) + 1.0E 135 AZI
73	(0.9-0.2Sds) + 1.0E 150 AZI
74	(0.9-0.2Sds) + 1.0E 180 AZI
75	(0.9-0.2Sds) + 1.0E 210 AZI
76	(0.9-0.2Sds) + 1.0E 225 AZI
77	(0.9-0.2Sds) + 1.0E 240 AZI
78	(0.9-0.2Sds) + 1.0E 270 AZI
79	(0.9-0.2Sds) + 1.0E 300 AZI
80	(0.9-0.2Sds) + 1.0E 315 AZI
81	(0.9-0.2Sds) + 1.0E 330 AZI
82-88	1.2D + 1.5 Lv1

#	Description
89	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP1
90	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP1
91	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP1
92	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP1
93	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP1
94	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP1
95	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP1
96	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP1
97	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP1
98	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP1
99	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP1
100	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP1
101	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP1
102	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP1
103	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP1
104	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP1
105	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP2
106	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP2
107	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP2
108	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP2
109	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP2
110	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP2
111	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP2
112	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP2
113	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP2
114	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP2
115	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP2
116	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP2
117	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP2
118	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP2
119	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP2
120	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP2

#	Description
121	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP3
122	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP3
123	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP3
124	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP3
125	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP3
126	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP3
127	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP3
128	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP3
129	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP3
130	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP3
131	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP3
132	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP3
133	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP3
134	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP3
135	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP3
136	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP3
137	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP4
138	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP4
139	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP4
140	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP4
141	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP4
142	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP4
143	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP4
144	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP4
145	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP4
146	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP4
147	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP4
148	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP4
149	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP4
150	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP4
151	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP4
152	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP4

*This page shows an example of maintenance loads for (4) pipes, the number of mount pipe LCs may vary per site

APPENDIX C
SOFTWARE ANALYSIS OUTPUT

(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 (in/sec^2)	386.4
Wall Mesh Size (in)	24
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): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): LRFD
Cold Formed Steel Code	AISI S100-12: LRFD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: Strength
Aluminum Code	AA ADM1-10: LRFD - 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 (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
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...Density[k/ft...	Yield[psi]	Ry	Fu[psi]	Rt	
1	A992	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36000	1.5	58000	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42000	1.4	58000	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46000	1.4	58000	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35000	1.6	60000	1.2
7	A1085	29000	11154	.3	.65	.49	50000	1.4	65000	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Standoffs	HSS4X4X4	Beam	Tube	A500 Gr.B...	Typical	3.37	7.8	7.8	12.8
2	Horizontals	PIPE 3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
3	Vertical Standoff	PIPE 4.0	Beam	Pipe	A53 Gr.B	Typical	2.96	6.82	6.82	13.6
4	Pipe Mounts	PIPE 2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89

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	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction



Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2			Standoffs	Beam	Tube	A500 Gr.B...	Typical
2	M2	N3	N4			Horizontals	Beam	Pipe	A53 Gr.B	Typical
3	M3	N6	N5			Vertical Standoff	Beam	Pipe	A53 Gr.B	Typical
4	MP1	N12	N10			Pipe Mounts	Beam	Pipe	A53 Gr.B	Typical
5	MP3	N11	N9			Pipe Mounts	Beam	Pipe	A53 Gr.B	Typical
6	M6	N7	N19			RIGID	None	None	RIGID	Typical
7	M7	N8	N20			RIGID	None	None	RIGID	Typical
8	MP2	N23	N22			Pipe Mounts	Beam	Pipe	A53 Gr.B	Typical
9	M9	N21	N2			RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes				None
2	M2						Yes				None
3	M3						Yes				None
4	MP1						Yes				None
5	MP3						Yes				None
6	M6						Yes	** NA **			None
7	M7						Yes	** NA **			None
8	MP2						Yes				None
9	M9						Yes	** NA **			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Standoffs	36			Lbyy						Lateral
2	M2	Horizontals	84	81.9	81.9	81.9	81.9	81.9	2.1	2.1		Lateral
3	M3	Vertical Sta...	18	18.9	18.9	18.9	18.9	18.9	2.1	2.1		Lateral
4	MP1	Pipe Mounts	96	100.8	100.8	100.8	100.8	100.8	2.1	2.1		Lateral
5	MP3	Pipe Mounts	96	100.8	100.8	100.8	100.8	100.8	2.1	2.1		Lateral
6	MP2	Pipe Mounts	96	100.8	100.8	100.8	100.8	100.8	2.1	2.1		Lateral

Joint Loads and Enforced Displacements

Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
No Data to Print ...			

Member Point Loads (BLC 1 : Self Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Y	-41.25	12
2	MP1	Y	-41.25	84
3	MP1	Y	-63.9	%50
4	MP1	Y	-75	%50
5	MP1	Y	-21.85	%33

Member Point Loads (BLC 4 : Wind Load 0 AZI)

Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
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Member Point Loads (BLC 4 : Wind Load 0 AZI) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-165.857	12
2	MP1	Z	-165.857	84
3	MP1	Z	-81.313	%50
4	MP1	Z	-81.313	%50
5	MP1	Z	-83.317	%33
6	MP1	X	0	12
7	MP1	X	0	84
8	MP1	X	0	%50
9	MP1	X	0	%50
10	MP1	X	0	%33

Member Point Loads (BLC 5 : Wind Load 30 AZI)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-122.118	12
2	MP1	Z	-122.118	84
3	MP1	Z	-61.611	%50
4	MP1	Z	-62.942	%50
5	MP1	Z	-64.59	%33
6	MP1	X	-70.505	12
7	MP1	X	-70.505	84
8	MP1	X	-35.571	%50
9	MP1	X	-36.339	%50
10	MP1	X	-37.291	%33

Member Point Loads (BLC 6 : Wind Load 45 AZI)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-82.139	12
2	MP1	Z	-82.139	84
3	MP1	Z	-43.114	%50
4	MP1	Z	-45.286	%50
5	MP1	Z	-46.561	%33
6	MP1	X	-82.139	12
7	MP1	X	-82.139	84
8	MP1	X	-43.114	%50
9	MP1	X	-45.286	%50
10	MP1	X	-46.561	%33

Member Point Loads (BLC 7 : Wind Load 60 AZI)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-45.657	12
2	MP1	Z	-45.657	84
3	MP1	Z	-25.401	%50
4	MP1	Z	-27.705	%50
5	MP1	Z	-28.556	%33
6	MP1	X	-79.081	12
7	MP1	X	-79.081	84
8	MP1	X	-43.995	%50
9	MP1	X	-47.986	%50
10	MP1	X	-49.461	%33



Member Point Loads (BLC 8 : Wind Load 90 AZI)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-4.07e-15	12
2	MP1	Z	-4.07e-15	84
3	MP1	Z	-2.488e-15	%50
4	MP1	Z	-2.864e-15	%50
5	MP1	Z	-2.962e-15	%33
6	MP1	X	-66.467	12
7	MP1	X	-66.467	84
8	MP1	X	-40.631	%50
9	MP1	X	-46.775	%50
10	MP1	X	-48.377	%33

Member Point Loads (BLC 9 : Wind Load 120 AZI)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	45.657	12
2	MP1	Z	45.657	84
3	MP1	Z	25.401	%50
4	MP1	Z	27.705	%50
5	MP1	Z	28.556	%33
6	MP1	X	-79.081	12
7	MP1	X	-79.081	84
8	MP1	X	-43.995	%50
9	MP1	X	-47.986	%50
10	MP1	X	-49.461	%33

Member Point Loads (BLC 10 : Wind Load 135 AZI)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	82.139	12
2	MP1	Z	82.139	84
3	MP1	Z	43.114	%50
4	MP1	Z	45.286	%50
5	MP1	Z	46.561	%33
6	MP1	X	-82.139	12
7	MP1	X	-82.139	84
8	MP1	X	-43.114	%50
9	MP1	X	-45.286	%50
10	MP1	X	-46.561	%33

Member Point Loads (BLC 11 : Wind Load 150 AZI)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	122.118	12
2	MP1	Z	122.118	84
3	MP1	Z	61.611	%50
4	MP1	Z	62.942	%50
5	MP1	Z	64.59	%33
6	MP1	X	-70.505	12
7	MP1	X	-70.505	84
8	MP1	X	-35.571	%50
9	MP1	X	-36.339	%50
10	MP1	X	-37.291	%33



Member Point Loads (BLC 12 : Ice Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Y	-135.815	12
2	MP1	Y	-135.815	84
3	MP1	Y	-65.769	%50
4	MP1	Y	-70.094	%50
5	MP1	Y	-69.074	%33

Member Point Loads (BLC 15 : Ice Wind Load 0 AZI)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-31.915	12
2	MP1	Z	-31.915	84
3	MP1	Z	-15.675	%50
4	MP1	Z	-15.675	%50
5	MP1	Z	-16.035	%33
6	MP1	X	0	12
7	MP1	X	0	84
8	MP1	X	0	%50
9	MP1	X	0	%50
10	MP1	X	0	%33

Member Point Loads (BLC 16 : Ice Wind Load 30 AZI)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-24.052	12
2	MP1	Z	-24.052	84
3	MP1	Z	-12.036	%50
4	MP1	Z	-12.268	%50
5	MP1	Z	-12.577	%33
6	MP1	X	-13.886	12
7	MP1	X	-13.886	84
8	MP1	X	-6.949	%50
9	MP1	X	-7.083	%50
10	MP1	X	-7.261	%33

Member Point Loads (BLC 17 : Ice Wind Load 45 AZI)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-16.71	12
2	MP1	Z	-16.71	84
3	MP1	Z	-8.572	%50
4	MP1	Z	-8.951	%50
5	MP1	Z	-9.199	%33
6	MP1	X	-16.71	12
7	MP1	X	-16.71	84
8	MP1	X	-8.572	%50
9	MP1	X	-8.951	%50
10	MP1	X	-9.199	%33

Member Point Loads (BLC 18 : Ice Wind Load 60 AZI)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-9.745	12
2	MP1	Z	-9.745	84
3	MP1	Z	-5.173	%50



Member Point Loads (BLC 18 : Ice Wind Load 60 AZI) (Continued)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in,%]
4	MP1	Z	-5.575	%50
5	MP1	Z	-5.749	%33
6	MP1	X	-16.879	12
7	MP1	X	-16.879	84
8	MP1	X	-8.96	%50
9	MP1	X	-9.656	%50
10	MP1	X	-9.957	%33

Member Point Loads (BLC 19 : Ice Wind Load 90 AZI)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in,%]
1	MP1	Z	-9.398e-16	12
2	MP1	Z	-9.398e-16	84
3	MP1	Z	-5.247e-16	%50
4	MP1	Z	-5.904e-16	%50
5	MP1	Z	-6.114e-16	%33
6	MP1	X	-15.348	12
7	MP1	X	-15.348	84
8	MP1	X	-8.569	%50
9	MP1	X	-9.641	%50
10	MP1	X	-9.985	%33

Member Point Loads (BLC 20 : Ice Wind Load 120 AZI)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in,%]
1	MP1	Z	9.745	12
2	MP1	Z	9.745	84
3	MP1	Z	5.173	%50
4	MP1	Z	5.575	%50
5	MP1	Z	5.749	%33
6	MP1	X	-16.879	12
7	MP1	X	-16.879	84
8	MP1	X	-8.96	%50
9	MP1	X	-9.656	%50
10	MP1	X	-9.957	%33

Member Point Loads (BLC 21 : Ice Wind Load 135 AZI)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in,%]
1	MP1	Z	16.71	12
2	MP1	Z	16.71	84
3	MP1	Z	8.572	%50
4	MP1	Z	8.951	%50
5	MP1	Z	9.199	%33
6	MP1	X	-16.71	12
7	MP1	X	-16.71	84
8	MP1	X	-8.572	%50
9	MP1	X	-8.951	%50
10	MP1	X	-9.199	%33

Member Point Loads (BLC 22 : Ice Wind Load 150 AZI)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in,%]
1	MP1	Z	24.052	12

Member Point Loads (BLC 22 : Ice Wind Load 150 AZI) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
2	MP1	Z	24.052	84
3	MP1	Z	12.036	%50
4	MP1	Z	12.268	%50
5	MP1	Z	12.577	%33
6	MP1	X	-13.886	12
7	MP1	X	-13.886	84
8	MP1	X	-6.949	%50
9	MP1	X	-7.083	%50
10	MP1	X	-7.261	%33

Member Point Loads (BLC 23 : Seismic Load Z)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-4.778	12
2	MP1	Z	-4.778	84
3	MP1	Z	-7.402	%50
4	MP1	Z	-8.688	%50
5	MP1	Z	-2.531	%33

Member Point Loads (BLC 24 : Seismic Load X)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-4.778	12
2	MP1	X	-4.778	84
3	MP1	X	-7.402	%50
4	MP1	X	-8.688	%50
5	MP1	X	-2.531	%33

Member Point Loads (BLC 25 : Maintenance Load 1 (Lm))

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Y	-500	%50

Member Point Loads (BLC 26 : Maintenance Load 2 (Lm))

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP3	Y	-500	%50

Member Point Loads (BLC 27 : Maintenance Load 3 (Lm))

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	Y	-500	%50

Member Distributed Loads (BLC 2 : Structure Wind Z)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	SZ	-82.825	-82.825	0	%100
2	M2	SZ	-49.695	-49.695	0	%100
3	M3	SZ	-49.695	-49.695	0	%100
4	MP1	SZ	-49.695	-49.695	0	%100
5	MP3	SZ	-49.695	-49.695	0	%100
6	M6	SZ	-82.825	-82.825	0	%100
7	M7	SZ	-82.825	-82.825	0	%100
8	MP2	SZ	-49.695	-49.695	0	%100



Member Distributed Loads (BLC 2 : Structure Wind Z) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
9	M9	SZ	-82.825	-82.825	0	% 100

Member Distributed Loads (BLC 3 : Structure Wind X)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
1	M1	SX	-82.825	-82.825	0	% 100
2	M2	SX	-49.695	-49.695	0	% 100
3	M3	SX	-49.695	-49.695	0	% 100
4	MP1	SX	-49.695	-49.695	0	% 100
5	MP3	SX	-49.695	-49.695	0	% 100
6	M6	SX	-82.825	-82.825	0	% 100
7	M7	SX	-82.825	-82.825	0	% 100
8	MP2	SX	-49.695	-49.695	0	% 100
9	M9	SX	-82.825	-82.825	0	% 100

Member Distributed Loads (BLC 12 : Ice Weight)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
1	M1	Y	-14.717	-14.717	0	% 100
2	M2	Y	-10.372	-10.372	0	% 100
3	M3	Y	-12.387	-12.387	0	% 100
4	MP1	Y	-9.113	-9.113	0	% 100
5	MP3	Y	-9.113	-9.113	0	% 100
6	M6	Y	0	0	0	% 100
7	M7	Y	0	0	0	% 100
8	MP2	Y	-9.113	-9.113	0	% 100
9	M9	Y	0	0	0	% 100

Member Distributed Loads (BLC 13 : Ice Structure Wind Z)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
1	M1	SZ	-11.312	-11.312	0	% 100
2	M2	SZ	-13.879	-13.879	0	% 100
3	M3	SZ	-12.383	-12.383	0	% 100
4	MP1	SZ	-15.343	-15.343	0	% 100
5	MP3	SZ	-15.343	-15.343	0	% 100
6	M6	SZ	0	0	0	% 100
7	M7	SZ	0	0	0	% 100
8	MP2	SZ	-15.343	-15.343	0	% 100
9	M9	SZ	0	0	0	% 100

Member Distributed Loads (BLC 14 : Ice Structure Wind X)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
1	M1	SX	-11.312	-11.312	0	% 100
2	M2	SX	-13.879	-13.879	0	% 100
3	M3	SX	-12.383	-12.383	0	% 100
4	MP1	SX	-15.343	-15.343	0	% 100
5	MP3	SX	-15.343	-15.343	0	% 100
6	M6	SX	0	0	0	% 100
7	M7	SX	0	0	0	% 100
8	MP2	SX	-15.343	-15.343	0	% 100
9	M9	SX	0	0	0	% 100



Company : Trylon
 Designer : JE
 Job Number :
 Model Name : 876364

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Member Area Loads

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
No Data to Print ...						

Basic Load Cases

BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...)	Surface(P...
1 Self Weight	DL		-1			5		
2 Structure Wind Z	WLZ						9	
3 Structure Wind X	WLX						9	
4 Wind Load 0 AZI	WLZ					10		
5 Wind Load 30 AZI	None					10		
6 Wind Load 45 AZI	None					10		
7 Wind Load 60 AZI	None					10		
8 Wind Load 90 AZI	WLX					10		
9 Wind Load 120 AZI	None					10		
10 Wind Load 135 AZI	None					10		
11 Wind Load 150 AZI	None					10		
12 Ice Weight	OL1					5	9	
13 Ice Structure Wind Z	OL2						9	
14 Ice Structure Wind X	OL3						9	
15 Ice Wind Load 0 AZI	OL2					10		
16 Ice Wind Load 30 AZI	None					10		
17 Ice Wind Load 45 AZI	None					10		
18 Ice Wind Load 60 AZI	None					10		
19 Ice Wind Load 90 AZI	OL3					10		
20 Ice Wind Load 120 AZI	None					10		
21 Ice Wind Load 135 AZI	None					10		
22 Ice Wind Load 150 AZI	None					10		
23 Seismic Load Z	ELZ			-.116		5		
24 Seismic Load X	ELX	-.116				5		
25 Maintenance Load 1 (...)	None					1		
26 Maintenance Load 2 (...)	None					1		
27 Maintenance Load 3 (...)	None					1		

Load Combinations

Description	So...P...	S...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...
1 1.4DL	Yes	Y	DL	1.4								
2 1.2DL + 1WL 0 AZI	Yes	Y	DL	1.2	2	1	3	4	1			
3 1.2DL + 1WL 30 AZI	Yes	Y	DL	1.2	2	.866	3	.5	5	1		
4 1.2DL + 1WL 45 AZI	Yes	Y	DL	1.2	2	.707	3	.707	6	1		
5 1.2DL + 1WL 60 AZI	Yes	Y	DL	1.2	2	.5	3	.866	7	1		
6 1.2DL + 1WL 90 AZI	Yes	Y	DL	1.2	2		3	1	8	1		
7 1.2DL + 1WL 120 AZI	Yes	Y	DL	1.2	2	-.5	3	.866	9	1		
8 1.2DL + 1WL 135 AZI	Yes	Y	DL	1.2	2	-.707	3	.707	10	1		
9 1.2DL + 1WL 150 AZI	Yes	Y	DL	1.2	2	-.866	3	.5	11	1		
10 1.2DL + 1WL 180 AZI	Yes	Y	DL	1.2	2	-1	3		4	-1		
11 1.2DL + 1WL 210 AZI	Yes	Y	DL	1.2	2	-.866	3	-.5	5	-1		
12 1.2DL + 1WL 225 AZI	Yes	Y	DL	1.2	2	-.707	3	-.707	6	-1		
13 1.2DL + 1WL 240 AZI	Yes	Y	DL	1.2	2	-.5	3	-.866	7	-1		
14 1.2DL + 1WL 270 AZI	Yes	Y	DL	1.2	2		3	-1	8	-1		



Company : Trylon
 Designer : JE
 Job Number :
 Model Name : 876364

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Load Combinations (Continued)

	Description	So..P...	S...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...
15	1.2DL + 1WL 300 AZI	Yes	Y	DL	1.2	2	.5	3	-.866	9	-1									
16	1.2DL + 1WL 315 AZI	Yes	Y	DL	1.2	2	.707	3	-.707	10	-1									
17	1.2DL + 1WL 330 AZI	Yes	Y	DL	1.2	2	.866	3	-.5	11	-1									
18	0.9DL + 1WL 0 AZI	Yes	Y	DL	.9	2	1	3		4	1									
19	0.9DL + 1WL 30 AZI	Yes	Y	DL	.9	2	.866	3	.5	5	1									
20	0.9DL + 1WL 45 AZI	Yes	Y	DL	.9	2	.707	3	.707	6	1									
21	0.9DL + 1WL 60 AZI	Yes	Y	DL	.9	2	.5	3	.866	7	1									
22	0.9DL + 1WL 90 AZI	Yes	Y	DL	.9	2		3	1	8	1									
23	0.9DL + 1WL 120 AZI	Yes	Y	DL	.9	2	-.5	3	.866	9	1									
24	0.9DL + 1WL 135 AZI	Yes	Y	DL	.9	2	-.707	3	.707	10	1									
25	0.9DL + 1WL 150 AZI	Yes	Y	DL	.9	2	-.866	3	.5	11	1									
26	0.9DL + 1WL 180 AZI	Yes	Y	DL	.9	2	-1	3		4	-1									
27	0.9DL + 1WL 210 AZI	Yes	Y	DL	.9	2	-.866	3	-.5	5	-1									
28	0.9DL + 1WL 225 AZI	Yes	Y	DL	.9	2	-.707	3	-.707	6	-1									
29	0.9DL + 1WL 240 AZI	Yes	Y	DL	.9	2	-.5	3	-.866	7	-1									
30	0.9DL + 1WL 270 AZI	Yes	Y	DL	.9	2		3	-1	8	-1									
31	0.9DL + 1WL 300 AZI	Yes	Y	DL	.9	2	.5	3	-.866	9	-1									
32	0.9DL + 1WL 315 AZI	Yes	Y	DL	.9	2	.707	3	-.707	10	-1									
33	0.9DL + 1WL 330 AZI	Yes	Y	DL	.9	2	.866	3	-.5	11	-1									
34	1.2DL + 1DLi + 1W Li ...	Yes	Y	DL	1.2	OL1	1	13	1	14	15	1								
35	1.2DL + 1DLi + 1W Li ...	Yes	Y	DL	1.2	OL1	1	13	.866	14	.5	16	1							
36	1.2DL + 1DLi + 1W Li ...	Yes	Y	DL	1.2	OL1	1	13	.707	14	.707	17	1							
37	1.2DL + 1DLi + 1W Li ...	Yes	Y	DL	1.2	OL1	1	13	.5	14	.866	18	1							
38	1.2DL + 1DLi + 1W Li ...	Yes	Y	DL	1.2	OL1	1	13		14	1	19	1							
39	1.2DL + 1DLi + 1W Li ...	Yes	Y	DL	1.2	OL1	1	13	-.5	14	.866	20	1							
40	1.2DL + 1DLi + 1W Li ...	Yes	Y	DL	1.2	OL1	1	13	-.707	14	.707	21	1							
41	1.2DL + 1DLi + 1W Li ...	Yes	Y	DL	1.2	OL1	1	13	-.866	14	.5	22	1							
42	1.2DL + 1DLi + 1W Li ...	Yes	Y	DL	1.2	OL1	1	13	-1	14		15	-1							
43	1.2DL + 1DLi + 1W Li ...	Yes	Y	DL	1.2	OL1	1	13	-.866	14	-.5	16	-1							
44	1.2DL + 1DLi + 1W Li ...	Yes	Y	DL	1.2	OL1	1	13	-.707	14	-.707	17	-1							
45	1.2DL + 1DLi + 1W Li ...	Yes	Y	DL	1.2	OL1	1	13	-.5	14	-.866	18	-1							
46	1.2DL + 1DLi + 1W Li ...	Yes	Y	DL	1.2	OL1	1	13		14	-1	19	-1							
47	1.2DL + 1DLi + 1W Li ...	Yes	Y	DL	1.2	OL1	1	13	.5	14	-.866	20	-1							
48	1.2DL + 1DLi + 1W Li ...	Yes	Y	DL	1.2	OL1	1	13	.707	14	-.707	21	-1							
49	1.2DL + 1DLi + 1W Li ...	Yes	Y	DL	1.2	OL1	1	13	.866	14	-.5	22	-1							
50	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	1	24												
51	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	.866	24	.5											
52	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	.707	24	.707											
53	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	.5	24	.866											
54	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23		24	1											
55	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	-.5	24	.866											
56	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	-.707	24	.707											
57	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	-.866	24	.5											
58	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	-1	24												
59	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	-.866	24	-.5											
60	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	-.707	24	-.707											
61	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	-.5	24	-.866											
62	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23		24	-1											
63	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	.5	24	-.866											
64	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	.707	24	-.707											
65	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	.866	24	-.5											
66	(0.9-0.2Sds)DL + 1E 0...	Yes	Y	DL	.861	23	1	24												



Company : Trylon
 Designer : JE
 Job Number :
 Model Name : 876364

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 Checked By: _____

Load Combinations (Continued)

	Description	So..P...	S...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...
67	(0.9-0.2Sds)DL + 1E 3...	Yes	Y	DL	.861	23	.866	24	.5											
68	(0.9-0.2Sds)DL + 1E 4...	Yes	Y	DL	.861	23	.707	24	.707											
69	(0.9-0.2Sds)DL + 1E 6...	Yes	Y	DL	.861	23	.5	24	.866											
70	(0.9-0.2Sds)DL + 1E 9...	Yes	Y	DL	.861	23		24	1											
71	(0.9-0.2Sds)DL + 1E 1...	Yes	Y	DL	.861	23	-.5	24	.866											
72	(0.9-0.2Sds)DL + 1E 1...	Yes	Y	DL	.861	23	-.707	24	.707											
73	(0.9-0.2Sds)DL + 1E 1...	Yes	Y	DL	.861	23	-.866	24	.5											
74	(0.9-0.2Sds)DL + 1E 1...	Yes	Y	DL	.861	23	-.1	24												
75	(0.9-0.2Sds)DL + 1E 2...	Yes	Y	DL	.861	23	-.866	24	-.5											
76	(0.9-0.2Sds)DL + 1E 2...	Yes	Y	DL	.861	23	-.707	24	-.707											
77	(0.9-0.2Sds)DL + 1E 2...	Yes	Y	DL	.861	23	-.5	24	-.866											
78	(0.9-0.2Sds)DL + 1E 2...	Yes	Y	DL	.861	23		24	-.1											
79	(0.9-0.2Sds)DL + 1E 3...	Yes	Y	DL	.861	23	.5	24	-.866											
80	(0.9-0.2Sds)DL + 1E 3...	Yes	Y	DL	.861	23	.707	24	-.707											
81	(0.9-0.2Sds)DL + 1E 3...	Yes	Y	DL	.861	23	.866	24	-.5											
82	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	25	1.5	2	.058	3		4	.058							
83	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	25	1.5	2	.05	3	.029	5	.058							
84	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	25	1.5	2	.041	3	.041	6	.058							
85	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	25	1.5	2	.029	3	.05	7	.058							
86	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	25	1.5	2		3	.058	8	.058							
87	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	25	1.5	2	-.029	3	.05	9	.058							
88	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	25	1.5	2	-.041	3	.041	10	.058							
89	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	25	1.5	2	-.05	3	.029	11	.058							
90	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	25	1.5	2	-.058	3		4	-.058							
91	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	25	1.5	2	-.05	3	-.029	5	-.058							
92	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	25	1.5	2	-.041	3	-.041	6	-.058							
93	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	25	1.5	2	-.029	3	-.05	7	-.058							
94	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	25	1.5	2		3	-.058	8	-.058							
95	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	25	1.5	2	.029	3	-.05	9	-.058							
96	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	25	1.5	2	.041	3	-.041	10	-.058							
97	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	25	1.5	2	.05	3	-.029	11	-.058							
98	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	26	1.5	2	.058	3		4	.058							
99	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	26	1.5	2	.05	3	.029	5	.058							
100	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	26	1.5	2	.041	3	.041	6	.058							
101	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	26	1.5	2	.029	3	.05	7	.058							
102	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	26	1.5	2		3	.058	8	.058							
103	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	26	1.5	2	-.029	3	.05	9	.058							
104	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	26	1.5	2	-.041	3	.041	10	.058							
105	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	26	1.5	2	-.05	3	.029	11	.058							
106	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	26	1.5	2	-.058	3		4	-.058							
107	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	26	1.5	2	-.05	3	-.029	5	-.058							
108	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	26	1.5	2	-.041	3	-.041	6	-.058							
109	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	26	1.5	2	-.029	3	-.05	7	-.058							
110	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	26	1.5	2		3	-.058	8	-.058							
111	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	26	1.5	2	.029	3	-.05	9	-.058							
112	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	26	1.5	2	.041	3	-.041	10	-.058							
113	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	26	1.5	2	.05	3	-.029	11	-.058							
114	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	27	1.5	2	.058	3		4	.058							
115	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	27	1.5	2	.05	3	.029	5	.058							
116	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	27	1.5	2	.041	3	.041	6	.058							
117	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	27	1.5	2	.029	3	.05	7	.058							
118	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	27	1.5	2		3	.058	8	.058							



Company : Trylon
 Designer : JE
 Job Number :
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Load Combinations (Continued)

	Description	So...	P...	S...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...
119	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	27	1.5	2	-.029	3	.05	9	.058					
120	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	27	1.5	2	-.041	3	.041	10	.058					
121	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	27	1.5	2	-.05	3	.029	11	.058					
122	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	27	1.5	2	-.058	3		4	-.058					
123	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	27	1.5	2	-.05	3	-.029	5	-.058					
124	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	27	1.5	2	-.041	3	-.041	6	-.058					
125	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	27	1.5	2	-.029	3	-.05	7	-.058					
126	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	27	1.5	2		3	-.058	8	-.058					
127	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	27	1.5	2	.029	3	-.05	9	-.058					
128	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	27	1.5	2	.041	3	-.041	10	-.058					
129	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	27	1.5	2	.05	3	-.029	11	-.058					

Envelope Joint Reactions

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC	
1	N1	max	665.243	22	1401.983	42	992.814	18	-1295.298	26	2800.339	24	3129.435	87
2		min	-665.243	14	410.144	66	-992.814	10	-4690.592	34	-2798.415	16	-1378.111	111
3	Totals:	max	665.243	22	1401.983	42	992.814	18						
4		min	-665.243	14	410.144	66	-992.814	10						

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

Member	Shape	Code Check	Loc[in]	LC	Shear	...	Loc[in]	Dir	LC	phi*Pnc	...	phi*Pnt	[...phi*Mn	y...phi*Mn	z...Cb	Eqn
1	M2	PIPE 3.0	.581	42	88	.130	42		82	21765.9...		65205	5748.75	5748.75	1	H1-1b
2	M1	HSS4X4X4	.359	0	97	.263	0	y	85	134360...		139518	16180.5	16180.5	1...	H3-6
3	MP1	PIPE 2.5	.197	48	10	.020	48		10	7310.519		50715	3596.25	3596.25	1	H1-1b
4	MP2	PIPE 2.5	.027	49	12	.003	48		12	7310.519		50715	3596.25	3596.25	1	H1-1b
5	MP3	PIPE 2.5	.027	49	12	.003	48		12	7310.519		50715	3596.25	3596.25	1	H1-1b
6	M3	PIPE 4.0	.001	9	12	.001	9		12	90033.6...		93240	10631.25	10631.25	1	H1-1b

APPENDIX D
ADDITIONAL CALCUATIONS

BOLT TOOL 1.5.2

Project Data	
Job Code:	188208
Carrier Site ID:	876364
Carrier Site Name:	WELL / FIRST LINE EMER

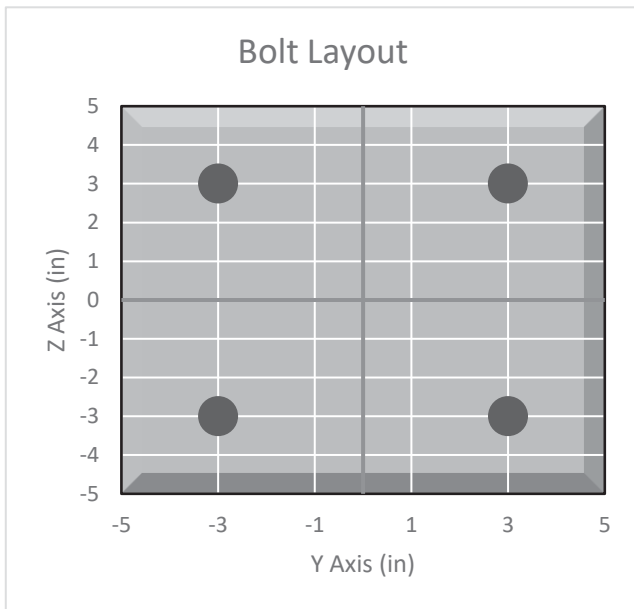
Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	-

Bolt Properties		
Connection Type:	Bolt	
Diameter:	0.625	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in

Connection Description
Standoff to Collar

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	5324.7	lbs
Shear Force (V_u):	1923.3	lbs
Tension Usage:	24.9%	--
Shear Usage:	13.3%	--
Interaction:	24.9%	Pass
Controlling Member:	M1	--
Controlling LC:	40	--

*Rating per TIA-222-H Section 15.5

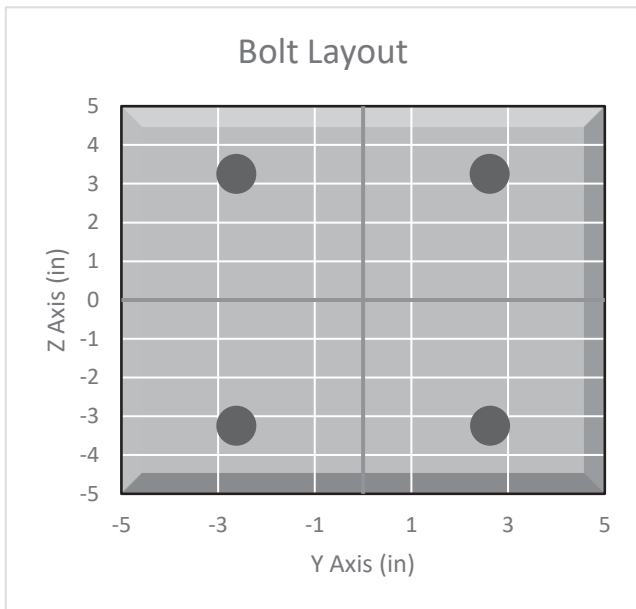


BOLT TOOL 1.5.2

Project Data	
Job Code:	188208
Carrier Site ID:	876364
Carrier Site Name:	WELL / FIRST LINE EMER

Code	
Design Standard:	TIA-222-H
Slip Check:	Yes
Pretension Standard:	TIA-222-H

Bolt Properties		
Connection Type:	U-Bolt	
Diameter:	0.625	in
Grade:	A307	--
Yield Strength (Fy):	36	ksi
Ultimate Strength (Fu):	60	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	4.5	in



Connection Description
Standoff to Horizontal

Bolt Check*		
Tensile Capacity (ϕT_n):	10170.1	lbs
Shear Capacity (ϕV_n):	6902.9	lbs
Tension Force (T_u):	604.3	lbs
Shear Force (V_u):	2346.5	lbs
Tension Usage:	5.7%	--
Shear Usage:	32.4%	--
Interaction:	32.4%	Pass
Controlling Member:	M10	--
Controlling LC:	84	--

*Rating per TIA-222-H Section 15.5

Slip Check*		
Sliding Capacity (ϕR_{ns}):	28873.5	lbs
Torsion Capacity (ϕR_{nr}):	5413.8	lb-ft
Sliding Force (V_{us}):	506.7	lbs
Torsional Force (T_{ur}):	1729.6	lb-ft
Sliding Usage:	1.7%	--
Torsion Usage:	32.4%	--
Interaction:	32.4%	Pass
Controlling Member:	M10	--
Controlling LC:	10	--

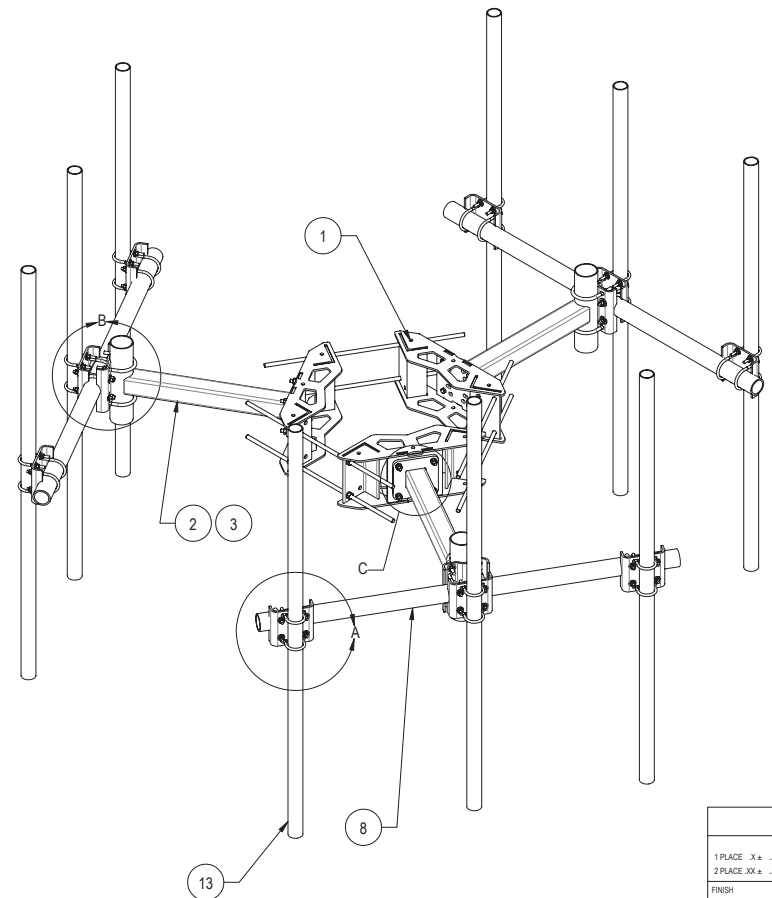
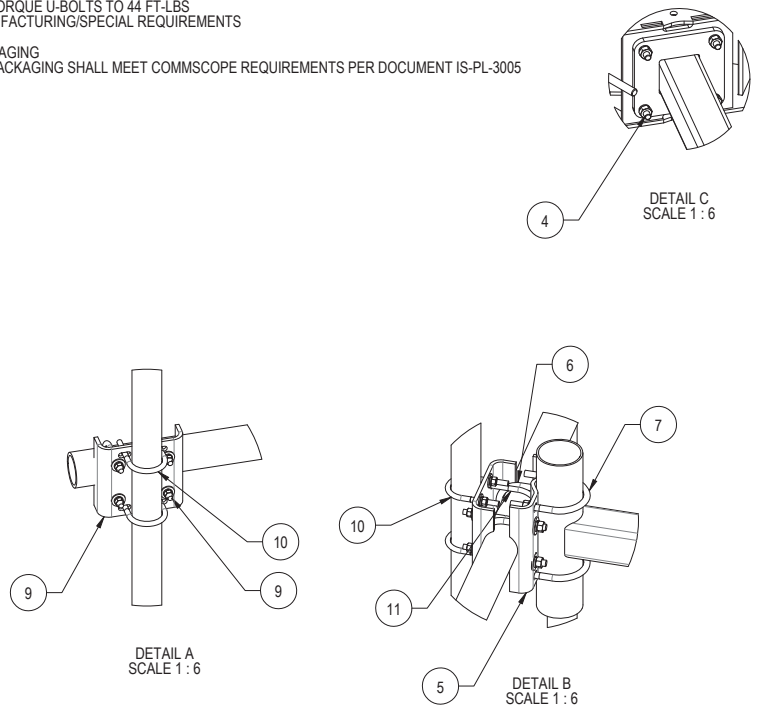
*Rating per TIA-222-H Section 15.5

APPENDIX E
SUPPLEMENTAL DRAWINGS

NOTES:

- 1.0 GENERAL NOTES
 - 1.1 ALL METRIC DIMENSIONS ARE IN BRACKETS.
- 2.0 DESIGN NOTES
 - 2.1 FOR PATENT INFORMATION: [HTTPS://WWW.CS-PAT.COM](https://www.cs-pat.com)
 - 2.2 USE STANDARD TORQUE VALUES FOR 5/8" BOLTS
 - 2.3 TORQUE U-BOLTS TO 44 FT-LBS
- 3.0 MANUFACTURING/SPECIAL REQUIREMENTS
- 4.0 TEST
- 5.0 PACKAGING
 - 5.1 PACKAGING SHALL MEET COMMSCOPE REQUIREMENTS PER DOCUMENT IS-PL-3005

REVISIONS				
REV.	IPS	DESCRIPTION	BY	DATE
A	10539PC	NEW RELEASED	XZ1054	3/11/2021



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	MC-RM1550-3	12" - 50" OD RINGMOUNT	1
2	MT197.01	36" SINGLE SUPPORT ARM	3
3	MT197H	HARDWARE KIT (NEXT ITEM)	3
4	GB-0524A	5/8" X 2-1/2" GALV BOLT KIT (A325)	12
5	MT216.13	CENTER BRACKET	3
6	GUB-53560	5/8" X 3-5/8" X 6" GALV U-BOLT	6
7	GUB-5456	5/8" X 4-5/8" X 6 1/2" GALV U-BOLT	6
8	MTC333912	84" X 3-1/2" OD PIPE	3
9	MT219H3501	3.5"OD Clamp Bracket	9
10	GUB-4352	1/2" X 3" X 5-1/4" GALV U-BOLT	18
11	GUB-4356	1/2" X 3-5/8" X 6" GALV U-BOLT	18
13	MT54696	Ø2.875" O.D. X 96 PIPE	9

COMMSCOPE, INC. OF NORTH CAROLINA

TOLERANCES
 1 PLACE .XX ± .12 3 PLACE .XXX ± .03
 2 PLACE .XX ± .06 ANGLES ± 2° FRACTIONS ± 1/32

SAP MATERIAL MASTER
MC-K6MHDX-9-96

FINISH: N/A MATERIAL: A36, A53

REV	NAME	DATE	TITLE
CE	K27064	03/06/2021	T-ARM, MCK6, 3, 4" x 84", 9, 2-7/8"x96
RW	RODRIGANSON	03/10/2021	
AD	ECAMPBELL/CON	10/19/2021	
RE			
ECN	10539PC		

SCALE: 1:32 DOCUMENT NO: MC-K6MHDX-9-96

SIZE	Auth Group	INSL	MODEL	VERSION	STATUS	REVISION	VERSION	STATUS	REVISION	SHEET
D				00	AD	A	00	AD	A	1 OF 2

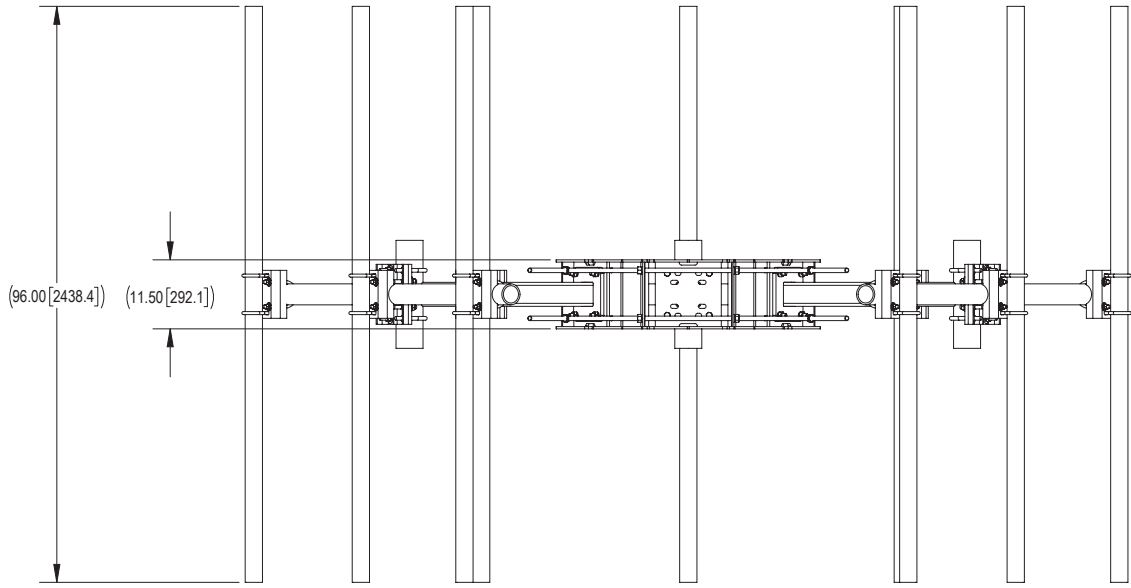
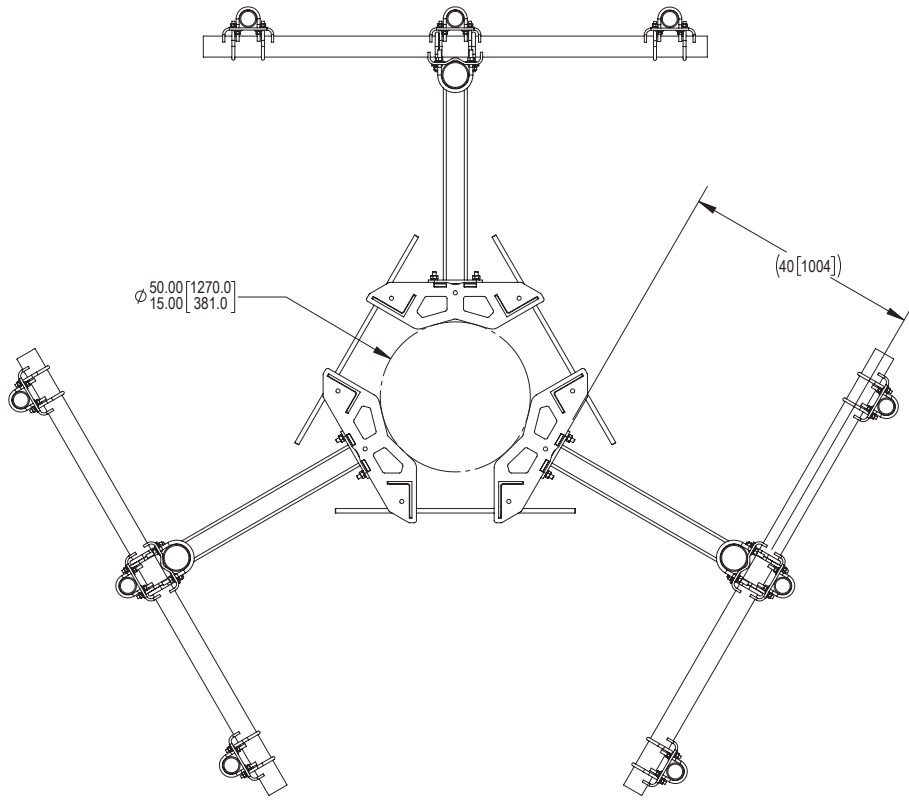
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TITLE				
T-ARM, MCK6, 3, 4" x 84" , 9, 2-7/8"x96				
SIZE	SCALE	DOCUMENT NO.		
C	1:32	MC-K6MHDX-9-96		
DRAWING				SHEET
VERSION	STATUS	REVISION	2 OF 2	
00	AD	A		

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