STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

VIA ELECTRONIC MAIL

August 22, 2019

Michelle Scharath
Site Acquisition Specialist
Empire Telecom USA, LLC
16 Esquire Road
Billerica, MA 01862

RE: **EM-AT&T-059T-190723** – AT&T Mobility notice of intent to modify an existing telecommunications facility located at 75 Roberts Road, Groton, Connecticut.

Dear Ms. Scharath:

The Connecticut Siting Council (Council) is in receipt of your correspondence of August 20, 2019 submitted in response to the Council's July 24, 2019 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification 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,

Melanie A. Bachman
Executive Director

MAB/IN/emr

August 20, 2019

Melanie A. Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051 Also delivered via email to Siting.Council@ct.gov

Regarding:	EM-AT&T-059T-190723 - Notice of Exempt Modification – Equipment Modification
Property Address:	75 Roberts Road, Groton, CT 06340
Applicant:	AT&T Mobility ("AT&T", Site # CT2182)

Dear Ms. Bachman:

I am in receipt of the Council's letter dated July 24, 2019, noting a deficiency in the Structural Analysis submitted to support the above-referenced application for Exempt Modification for AT&T at 75 Roberts Road, Groton, CT 06340.

We have received the corrected version of the SA, stamped, signed, and revised to reference the Site Pro 1 Part # HRK 12; stamped by B + T Grp, and dated August 13, 2019. I have also enclosed proof of delivery to the notice party that was missed, Mount Analysis and larger printouts of the CDs.

Please accept this letter and attachments as an addendum to the notification dated July 19, 2019 and received by your office on July 23, 2019 pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72 (b)(2).

Should you have any further requests or concerns, please don't hesitate to let me know.

Sincerely,

Michelle Scharath

Michelle Scharath
Site Acquisition Specialist
Empire Telecom USA, LLC
mscharath@empiretelecomm.com

Enclosures:

Revised Structural Analysis dated August 13, 2019
Construction Drawings dated July 18, 2019
Mount Analysis dated July 19, 2019
POD - Perrotta

Date: **August 13, 2019**

Charles Trask
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

B+T Group
1717 S, Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT2182
	Carrier Site Name:	Groton Roberts RD
Crown Castle Designation:	**Crown Castle BU Number:**	881533
	Crown Castle Site Name:	Groton Tower
	Crown Castle JDE Job Number:	550021
	Crown Castle Work Order Number:	1779587
	Crown Castle Order Number:	472775 Rev. 2
Engineering Firm Designation:	**B+T Group Project Number:**	92739.015.01
Site Data:	**75 Roberts Road, Groton, New London County, CT** **Latitude *41° 21' 36.8"*, Longitude *-72° 2' 55.1"*** **144.5 Foot - Monopole Tower**	

Dear Charles Trask,

B+T Group is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration **Sufficient Capacity - 98.9%**

This analysis utilizes an ultimate 3-second gust wind speed of 135 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Xavier Jones

Respectfully submitted by: B+T Engineering, Inc.
COA: PEC.0001564; Expires: 02/10/2020

STATE OF CONNECTICUT
SCOTT VANCE
31627
LICENSED
PROFESSIONAL ENGINEER

8/13/19

Scott S. Vance, P.E.

tnxTower Report - version 8.0.5.0

TABLE OF CONTENTS

1) INTRODUCTION

This is a 144.5 ft. monopole designed by Engineered Endeavors, Inc. in January of 2001. The monopole was originally designed for a wind speed of 85 mph per TIA/EIA-222-F. This monopole has been modified multiple times and those modifications have been incorporated in this analysis.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	135 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
145.0	145.0	1	Andrew	SBNH-1D6565C	6 6 2	1-5/8 3/4 3/8
		6	Ericsson	RRUS 11		
		3	Ericsson	RRUS 32		
		3	Ericsson	RRUS 32 B2		
		3	Ericsson	RRUS 4478 B14		
		3	Ericsson	RRUS 4478 B5		
		6	Kaelus	DBCT108F1V92-1		
		3	Kathrein	840370799		
		2	KMW Comm.	AM-X-CD-17-65-00T-RET		
		6	Powerwave Tech.	7020.00		
		3	Powerwave Tech.	7770.00		
		6	Powerwave Tech.	LGP21401		
		1	Raycap	DC6-48-60-0-8F		
		2	Raycap	DC6-48-60-18-8F		
		1	Site Pro 1	HRK-12		
		1	--	Platform Mount [LP 601-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
135.0	137.0	3	Alcatel Lucent	B66A RRH4X45	8	1-5/8
		3	Alcatel Lucent	RRH2X60-PCS		
		3	Alcatel Lucent	RRH2x60-700		
		3	Amphenol	QUAD656C0000X		
		3	Andrew	LNX-6512DS-VTM		
		6	Commscope	HBXX-6517DS-A2M		
		2	RFS Celwave	DB-T1-6Z-8AB-0Z		
	135.0	1	--	Platform Mount [LP 601-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
128.0	128.0	3	Ericsson	Ericsson AIR 21 B2A B4P	8	1-5/8
		3	Ericsson	Ericsson AIR 21 B4A B2P		
		3	Ericsson	RADIO 4449 B12/B71		
		3	RFS Celwave	APXVAARR24_43-U-NA20		
		1	Site Pro 1	HRK-12		
		1	--	Platform Mount [LP 601-1]		
	126.0	3	Ericsson	KRY 112 144/1		
118.0	118.0	3	Alcatel Lucent	TD-RRH8X20-25	3 1	1-1/4 5/8
		3	RFS Celwave	APXVSPP18-C-A20		
		3	RFS Celwave	APXVTM14-C-120		
		1	--	Platform Mount [LP 601-1]		
108.0	108.0	3	Alcatel Lucent	TME-PCS 1900MHz 4x45W-65MHz	--	--
		1	--	Side Arm Mount [SO 102-3]		
	106.0	3	Alcatel Lucent	TME-800MHz 2X50W RRH W/Filter		
103.0	103.0	1	--	Platform Mount [LP 601-1]	--	--

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Online Order Information	AT&T Mobility Co-Locate, Rev# 2	472775	CCI Sites
Tower Manufacturer Drawing	EEI, Job No. 8409	1405782	CCI Sites
Mount Modification Report	Maser Consulting, Project No. 18963013A	Date: 07/19/2019	On File
Tower Modification Drawing	Vertical Structures, Project No. 2007-004-164	2048224	CCI Sites
Post Modification Inspection	Vertical Structures, Project No. 2007-004-164	2304223	CCI Sites
Tower Modification Drawing	Vertical Structures, Project No. 2009-004-059	2353860	CCI Sites
Post Modification Inspection	Vertical Structures, Project No. 2009-004-059	2435103	CCI Sites
Tower Modification Drawing	Crown Castle, Date: 02/25/2014	4491288	CCI Sites
Post Modification Inspection	SGS, Project No. 145071	5246681	CCI Sites
Tower Modification Drawing	B+T Group, Project No. 92739.004.01	5795331	CCI Sites
Post Modification Inspection	ETS, Project No. 151208	6017666	CCI Sites
Tower Modification Drawing	B+T Group, Project No. 92739.005.01	5944786	CCI Sites
Post Modification Inspection	ETS, Project No. 151208	6089847	CCI Sites
Tower Modification Drawing	B+T Group, Project No. 92739.007.01	6708152	CCI Sites
Post Modification Inspection	TEP, Project No. 76625.68409	7137178	CCI Sites
Tower Modification Drawing	B+T Group, Project No. 92739.008.01	7042669	CCI Sites
Post Modification Inspection	ETS, Project No. 173016	7262385	CCI Sites
Foundation Drawing	URS, Project No. F301877.01/F04	1405796	CCI Sites
Geotech Report	Clarence Welti, Date: 03/13/2000	1406209	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 05/31/2019	CCI Sites

3.1) Analysis Method

tnxTower (version 8.0.5.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) The tower and structures were built and have been maintained in accordance with the manufacturer's specification.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
3) Mount areas and weights are assumed based on photographs provided.
4) The existing base plate grout was not considered in this analysis.

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	144.5 - 139.5	Pole	TP22.092x21x0.1875	1	-3.163	--	15.4	Pass
L2	139.5 - 134.5	Pole	TP23.184x22.092x0.1875	2	-5.601	--	29.9	Pass
L3	134.5 - 129.5	Pole	TP24.276x23.184x0.1875	3	-6.033	--	47.4	Pass
L4	129.5 - 124.5	Pole	TP25.368x24.276x0.1875	4	-9.246	--	67.2	Pass
L5	124.5 - 121.41	Pole	TP26.882x25.368x0.1875	5	-9.627	--	79.3	Pass
L6	121.41 - 116.41	Pole	TP26.737x25.668x0.25	6	-12.343	--	68.8	Pass
L7	116.41 - 112.58	Pole	TP27.555x26.737x0.25	7	-12.961	--	78.8	Pass
L8	112.58 - 112.33	Pole	TP27.608x27.555x0.25	8	-13.028	--	79.4	Pass
L9	112.33 - 107.33	Pole	TP28.677x27.608x0.25	9	-14.295	--	91.1	Pass
L10	107.33 - 106.92	Pole	TP28.765x28.677x0.25	10	-14.385	--	92.0	Pass
L11	106.92 - 106.67	Pole + Reinf.	TP28.818x28.765x0.5375	11	-14.452	--	77.2	Pass
L12	106.67 - 103.5	Pole + Reinf.	TP29.496x28.818x0.525	12	-15.179	--	83.5	Pass
L13	103.5 - 103.25	Pole + Reinf.	TP29.549x29.496x0.525	13	-15.252	--	84.0	Pass
L14	103.25 - 98.5	Pole + Reinf.	TP30.564x29.549x0.5125	14	-17.724	--	93.8	Pass
L15	98.5 - 98.25	Pole + Reinf.	TP30.618x30.564x0.675	15	-17.817	--	72.4	Pass
L16	98.25 - 97.58	Pole + Reinf.	TP30.761x30.618x0.675	16	-18.008	--	73.5	Pass
L17	97.58 - 97.33	Pole + Reinf.	TP30.815x30.761x0.5625	17	-18.079	--	83.6	Pass
L18	97.33 - 92.33	Pole + Reinf.	TP31.883x30.815x0.55	18	-19.399	--	91.9	Pass
L19	92.33 - 91.74	Pole + Reinf.	TP32.997x31.883x0.55	19	-19.572	--	92.9	Pass
L20	91.74 - 86.12	Pole	TP32.72x31.509x0.375	20	-21.748	--	85.6	Pass
L21	86.12 - 83	Pole	TP33.392x32.72x0.375	21	-22.513	--	88.2	Pass
L22	83 - 82.75	Pole	TP33.446x33.392x0.375	22	-22.602	--	88.5	Pass
L23	82.75 - 77.75	Pole	TP34.523x33.446x0.375	23	-23.840	--	92.3	Pass
L24	77.75 - 77.25	Pole	TP34.631x34.523x0.375	24	-23.986	--	92.7	Pass
L25	77.25 - 77	Pole + Reinf.	TP34.685x34.631x0.825	25	-24.098	--	68.9	Pass
L26	77 - 76.75	Pole + Reinf.	TP34.738x34.685x0.6375	26	-24.179	--	87.8	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L27	76.75 - 71.75	Pole + Reinf.	TP35.816x34.738x0.625	27	-25.834	--	92.1	Pass
L28	71.75 - 69	Pole + Reinf.	TP36.408x35.816x0.625	28	-26.762	--	94.3	Pass
L29	69 - 68.75	Pole + Reinf.	TP36.462x36.408x0.8	29	-26.890	--	74.9	Pass
L30	68.75 - 63.75	Pole + Reinf.	TP37.539x36.462x0.7875	30	-28.923	--	78.3	Pass
L31	63.75 - 60	Pole + Reinf.	TP38.347x37.539x0.775	31	-30.478	--	80.7	Pass
L32	60 - 59.75	Pole + Reinf.	TP38.401x38.347x0.775	32	-30.602	--	80.8	Pass
L33	59.75 - 58.5	Pole + Reinf.	TP38.67x38.401x0.775	33	-31.109	--	81.6	Pass
L34	58.5 - 58.25	Pole + Reinf.	TP38.724x38.67x0.775	34	-31.234	--	81.8	Pass
L35	58.25 - 58	Pole + Reinf.	TP38.778x38.724x0.775	35	-31.339	--	81.9	Pass
L36	58 - 57.75	Pole + Reinf.	TP38.832x38.778x0.6125	36	-31.439	--	93.4	Pass
L37	57.75 - 56.75	Pole + Reinf.	TP39.047x38.832x0.6125	37	-31.824	--	94.0	Pass
L38	56.75 - 56.5	Pole + Reinf.	TP39.101x39.047x0.7375	38	-31.950	--	85.4	Pass
L39	56.5 - 51.5	Pole + Reinf.	TP40.178x39.101x0.725	39	-34.095	--	88.3	Pass
L40	51.5 - 47.82	Pole + Reinf.	TP42.216x40.178x0.7125	40	-35.708	--	90.3	Pass
L41	47.82 - 41.04	Pole + Reinf.	TP41.678x40.221x0.7875	41	-40.984	--	88.3	Pass
L42	41.04 - 36.04	Pole + Reinf.	TP42.753x41.678x0.7875	42	-43.392	--	90.5	Pass
L43	36.04 - 31.25	Pole + Reinf.	TP43.783x42.753x0.7625	43	-45.735	--	92.4	Pass
L44	31.25 - 31	Pole + Reinf.	TP43.836x43.783x0.65	44	-45.877	--	91.0	Pass
L45	31 - 27.75	Pole + Reinf.	TP44.535x43.836x0.65	45	-47.453	--	88.7	Pass
L46	27.75 - 27.5	Pole + Reinf.	TP44.589x44.535x0.65	46	-47.585	--	88.7	Pass
L47	27.5 - 27.25	Pole + Reinf.	TP44.642x44.589x0.65	47	-47.709	--	88.8	Pass
L48	27.25 - 27	Pole + Reinf.	TP44.696x44.642x0.725	48	-47.832	--	90.6	Pass
L49	27 - 22	Pole + Reinf.	TP45.771x44.696x0.7125	49	-50.286	--	92.3	Pass
L50	22 - 17	Pole + Reinf.	TP46.846x45.771x0.7125	50	-52.795	--	94.0	Pass
L51	17 - 12	Pole + Reinf.	TP47.921x46.846x0.7125	51	-55.340	--	95.6	Pass
L52	12 - 7	Pole + Reinf.	TP48.995x47.921x0.7125	52	-57.919	--	97.0	Pass
L53	7 - 2	Pole + Reinf.	TP50.07x48.995x0.7	53	-60.536	--	98.4	Pass
L54	2 - 0	Pole + Reinf.	TP50.5x50.07x0.7	54	-61.594	--	98.9	Pass
							Summary	
						Pole (L24)	92.7	Pass
						Reinforcement	98.9	Pass
						Rating =	98.9	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	95.6	Pass
1	Base Plate	Base	90.0	Pass
1	Base Foundation (Structure)	Base	33.8	Pass
1	Base Foundation (Soil Interaction)	Base	66.5	Pass

Structure Rating (max from all components) =	98.9%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
2) Rating per TIA-222-H Section 15.5.

4.1) Recommendations

The tower and its foundations have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.000	18	0.188		21.000	22.092	A572-65	0.2
2	5.000	18	0.188		22.092	23.184		0.2
3	5.000	18	0.188		23.184	24.276		0.2
4	5.000	18	0.188		24.276	25.368		0.2
5	[illegible]	18	0.188	3.841	25.368	26.882		0.4
6	[illegible]	18	[illegible]		[illegible]	[illegible]		0.4
7	[illegible]	18	[illegible]		[illegible]	[illegible]		0.3
8	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
9	[illegible]	18	[illegible]		[illegible]	[illegible]		0.4
10	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
11	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
12	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
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14	[illegible]	18	[illegible]		[illegible]	[illegible]		0.7
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18	[illegible]	18	[illegible]		[illegible]	[illegible]		0.9
19	[illegible]	18	0.550	4.625	[illegible]	[illegible]		0.9
20	[illegible]	18	[illegible]		[illegible]	[illegible]		0.7
21	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
22	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
23	[illegible]	18	[illegible]		[illegible]	[illegible]		0.7
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26	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
27	[illegible]	18	[illegible]		[illegible]	[illegible]		1.1
28	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
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31	[illegible]	18	[illegible]		[illegible]	[illegible]		1.1
32	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
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39	[illegible]	18	[illegible]		[illegible]	40.178		1.5
40	[illegible]	18	0.713	5.776	40.178	42.215		3.0
41	[illegible]	18	[illegible]		[illegible]	[illegible]		2.3
42	5.000	18	[illegible]		[illegible]	[illegible]		1.7
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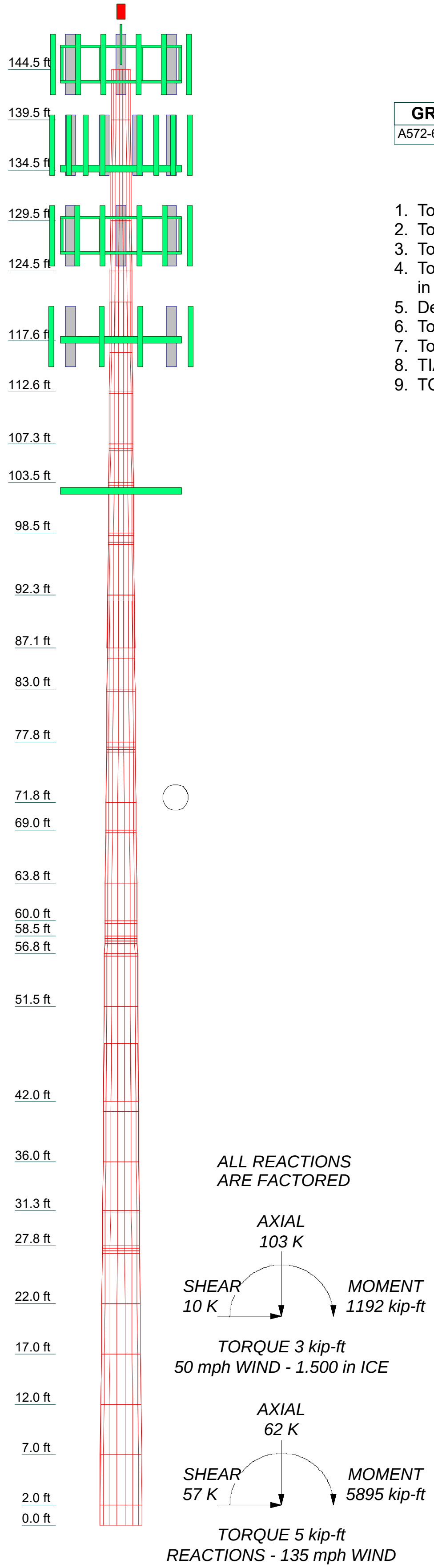
44	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
45	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
46	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
47	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
48	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
49	5.000	18	[illegible]		[illegible]	[illegible]		1.7
50	5.000	18	0.713		45.771	46.846		1.8
51	5.000	18	0.713		46.846	47.921		1.8
52	5.000	18	0.713		47.921	48.995		1.8
53	[illegible]	18	[illegible]		[illegible]	[illegible]		1.8
54	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
								34.4



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 135 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TIA-222-H Annex S
9. TOWER RATING: 98.9%

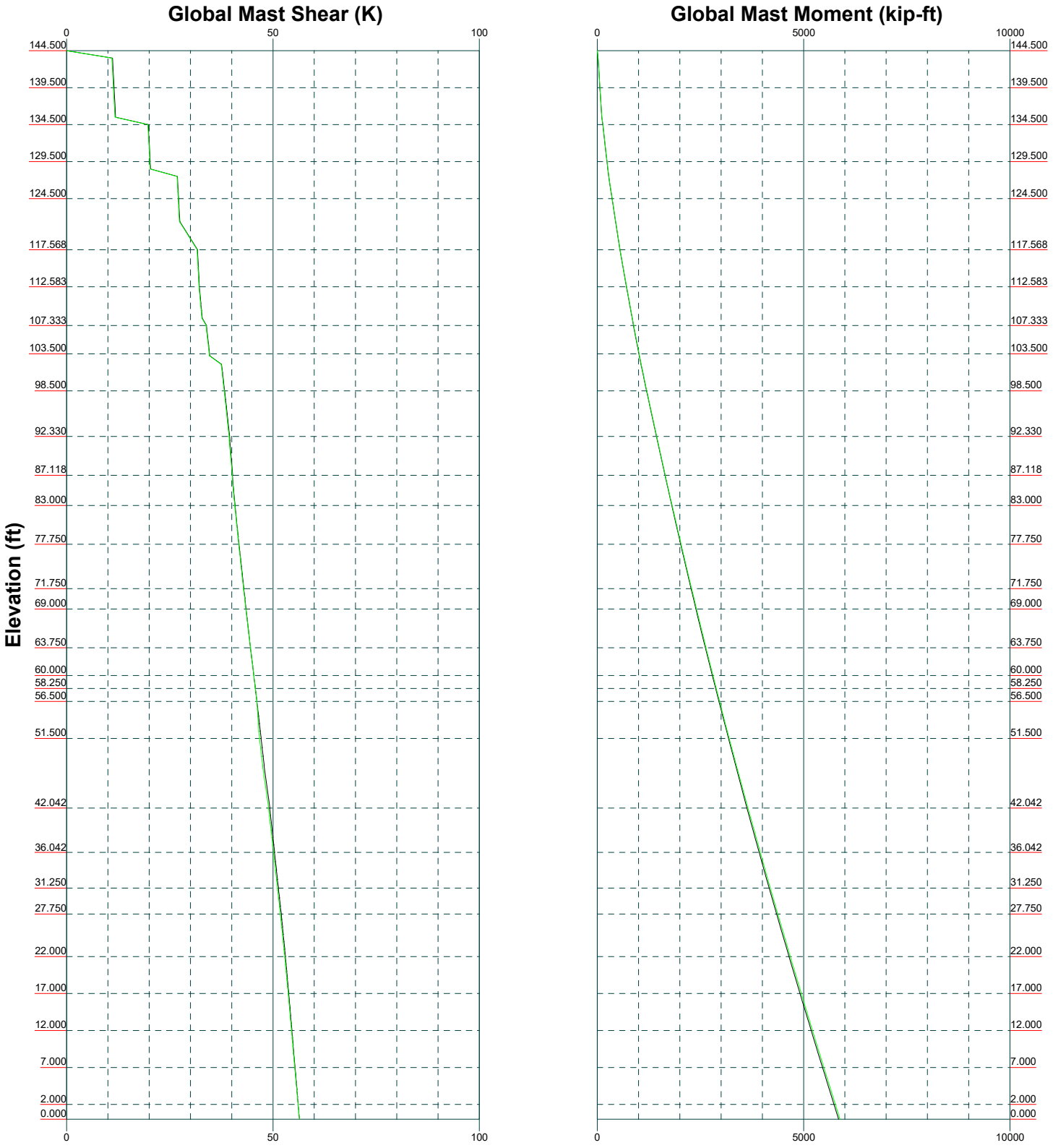
B+T Group
1717 S, Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: **92739.015.01 - GROTON TOWER, CT (BU# 88153**		
Project:		
Client: Crown Castle	Drawn by: JD Prabhu	App'd:
Code: TIA-222-H	Date: 08/10/19	Scale: NTS
Path:		Dwg No. E-1

TIA-222-H - 135 mph/50 mph 1.500 in Ice Exposure C

Maximum Values

Vx Vz Mx Mz



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1717 S, Boulder, Suite 300
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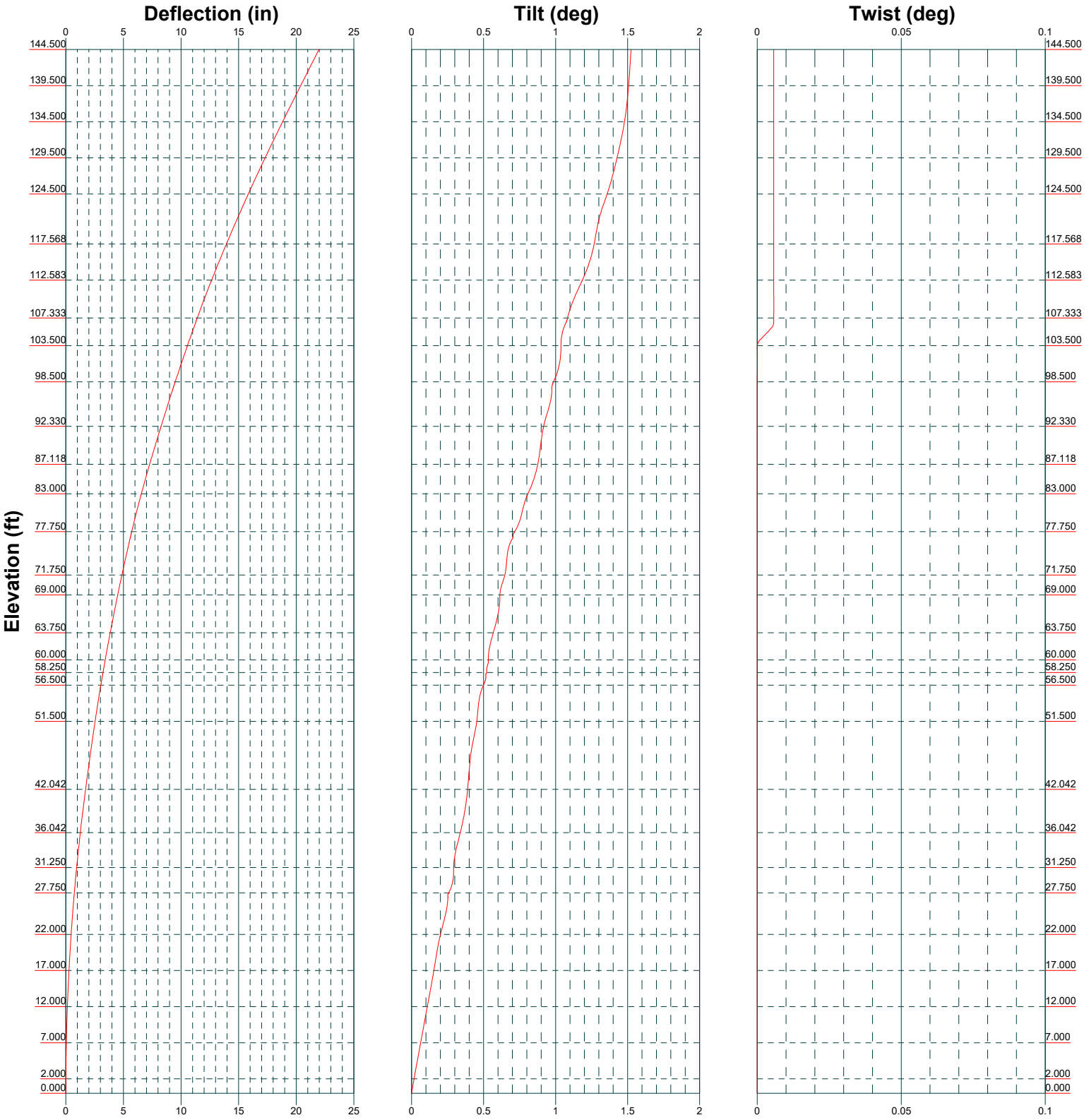
FAX: (918) 295-0265

Job: 92739.015.01 - GROTON TOWER, CT (BU# 881533			
Project:			
Client: Crown Castle	Drawn by: JD Prabhu	App'd:	
Code: TIA-222-H	Date: 08/10/19	Scale: NTS	
Path:		Dwg No. E-4	

TIA-222-H - Service - 60 mph

Maximum Values



B+T Group
1717 S, Boulder, Suite 300
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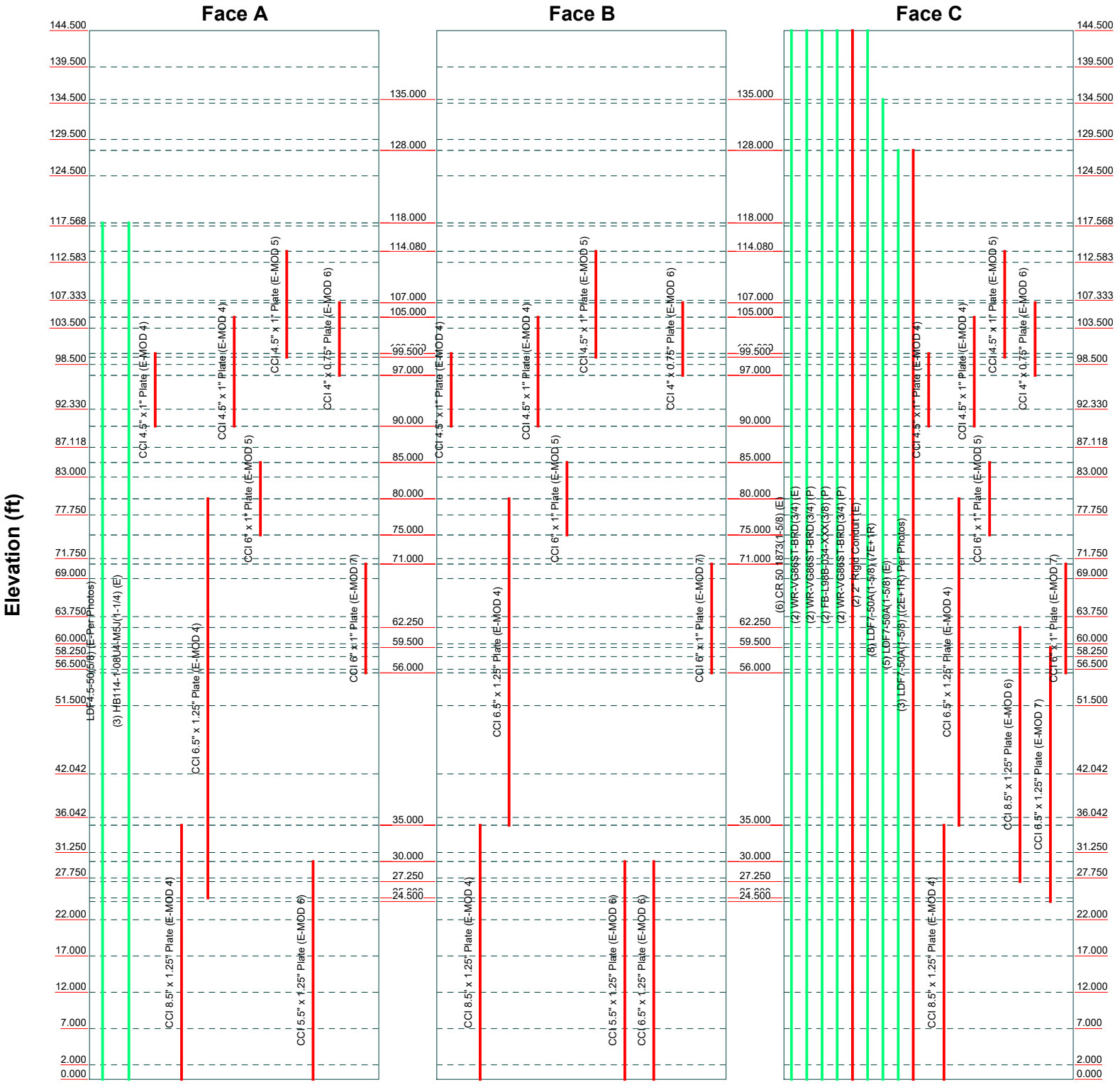
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: *92739.015.01 - GROTON TOWER, CT (BU# 881533*			
Project:			
Client: Crown Castle	Drawn by: JD Prabhu	App'd:	
Code: TIA-222-H	Date: 08/10/19	Scale: NTS	
Path:		Dwg No. E-5	

Feed Line Distribution Chart
0' - 144'6"

Round | Flat | App In Face | App Out Face | Truss Leg



B+T Group
1717 S, Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 92739.015.01 - GROTON TOWER, CT (BU# 881533		
Project:		
Client: Crown Castle	Drawn by: JD Prabhu	App'd:
Code: TIA-222-H	Date: 08/10/19	Scale: NTS
Path:		Dwg No. E-7

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in New London County, Connecticut.
Tower base elevation above sea level: 128.000 ft.
Basic wind speed of 135 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.000 ft.
Nominal ice thickness of 1.500 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
TIA-222-H Annex S.
TOWER RATING: 98.9%.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.05.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-H Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-H Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	144.500-139.500	5.000	0.000	18	21.000	22.092	0.188	0.750	A572-65 (65 ksi)
L2	139.500-134.500	5.000	0.000	18	22.092	23.184	0.188	0.750	A572-65 (65 ksi)
L3	134.500-129.500	5.000	0.000	18	23.184	24.276	0.188	0.750	A572-65 (65 ksi)
L4	129.500-124.500	5.000	0.000	18	24.276	25.368	0.188	0.750	A572-65 (65 ksi)
L5	124.500-117.568	6.932	3.841	18	25.368	26.882	0.188	0.750	A572-65 (65 ksi)
L6	117.568-116.409	5.000	0.000	18	25.668	26.737	0.250	1.000	A572-65 (65 ksi)
L7	116.409-112.583	3.826	0.000	18	26.737	27.555	0.250	1.000	A572-65 (65 ksi)
L8	112.583-112.333	0.250	0.000	18	27.555	27.608	0.250	1.000	A572-65 (65 ksi)
L9	112.333-107.333	5.000	0.000	18	27.608	28.677	0.250	1.000	A572-65 (65 ksi)
L10	107.333-106.920	0.413	0.000	18	28.677	28.765	0.250	1.000	A572-65 (65 ksi)
L11	106.920-106.670	0.250	0.000	18	28.765	28.818	0.537	2.150	A572-65 (65 ksi)
L12	106.670-103.500	3.170	0.000	18	28.818	29.496	0.525	2.100	A572-65 (65 ksi)
L13	103.500-103.250	0.250	0.000	18	29.496	29.549	0.525	2.100	A572-65 (65 ksi)
L14	103.250-98.500	4.750	0.000	18	29.549	30.564	0.512	2.050	A572-65 (65 ksi)
L15	98.500-98.250	0.250	0.000	18	30.564	30.618	0.675	2.700	A572-65 (65 ksi)
L16	98.250-97.580	0.670	0.000	18	30.618	30.761	0.675	2.700	A572-65 (65 ksi)
L17	97.580-97.330	0.250	0.000	18	30.761	30.815	0.563	2.250	A572-65 (65 ksi)
L18	97.330-92.330	5.000	0.000	18	30.815	31.883	0.550	2.200	A572-65 (65 ksi)
L19	92.330-87.118	5.212	4.625	18	31.883	32.997	0.550	2.200	A572-65 (65 ksi)
L20	87.118-86.118	5.625	0.000	18	31.509	32.720	0.375	1.500	A572-65 (65 ksi)
L21	86.118-83.000	3.118	0.000	18	32.720	33.392	0.375	1.500	A572-65 (65 ksi)
L22	83.000-82.750	0.250	0.000	18	33.392	33.446	0.375	1.500	A572-65 (65 ksi)
L23	82.750-77.750	5.000	0.000	18	33.446	34.523	0.375	1.500	A572-65 (65 ksi)
L24	77.750-77.250	0.500	0.000	18	34.523	34.631	0.375	1.500	A572-65 (65 ksi)
L25	77.250-77.000	0.250	0.000	18	34.631	34.685	0.825	3.300	A572-65 (65 ksi)
L26	77.000-76.750	0.250	0.000	18	34.685	34.738	0.637	2.550	A572-65 (65 ksi)
L27	76.750-71.750	5.000	0.000	18	34.738	35.816	0.625	2.500	A572-65 (65 ksi)
L28	71.750-69.000	2.750	0.000	18	35.816	36.408	0.625	2.500	A572-65 (65 ksi)
L29	69.000-68.750	0.250	0.000	18	36.408	36.462	0.800	3.200	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L30	68.750-63.750	5.000	0.000	18	36.462	37.539	0.787	3.150	A572-65 (65 ksi)
L31	63.750-60.000	3.750	0.000	18	37.539	38.347	0.775	3.100	A572-65 (65 ksi)
L32	60.000-59.750	0.250	0.000	18	38.347	38.401	0.775	3.100	A572-65 (65 ksi)
L33	59.750-58.500	1.250	0.000	18	38.401	38.670	0.775	3.100	A572-65 (65 ksi)
L34	58.500-58.250	0.250	0.000	18	38.670	38.724	0.775	3.100	A572-65 (65 ksi)
L35	58.250-58.000	0.250	0.000	18	38.724	38.778	0.775	3.100	A572-65 (65 ksi)
L36	58.000-57.750	0.250	0.000	18	38.778	38.832	0.613	2.450	A572-65 (65 ksi)
L37	57.750-56.750	1.000	0.000	18	38.832	39.047	0.613	2.450	A572-65 (65 ksi)
L38	56.750-56.500	0.250	0.000	18	39.047	39.101	0.738	2.950	A572-65 (65 ksi)
L39	56.500-51.500	5.000	0.000	18	39.101	40.178	0.725	2.900	A572-65 (65 ksi)
L40	51.500-42.042	9.458	5.776	18	40.178	42.215	0.713	2.850	A572-65 (65 ksi)
L41	42.042-41.042	6.776	0.000	18	40.221	41.678	0.787	3.150	A572-65 (65 ksi)
L42	41.042-36.042	5.000	0.000	18	41.678	42.753	0.787	3.150	A572-65 (65 ksi)
L43	36.042-31.250	4.792	0.000	18	42.753	43.783	0.762	3.050	A572-65 (65 ksi)
L44	31.250-31.000	0.250	0.000	18	43.783	43.836	0.650	2.600	A572-65 (65 ksi)
L45	31.000-27.750	3.250	0.000	18	43.836	44.535	0.650	2.600	A572-65 (65 ksi)
L46	27.750-27.500	0.250	0.000	18	44.535	44.589	0.650	2.600	A572-65 (65 ksi)
L47	27.500-27.250	0.250	0.000	18	44.589	44.642	0.650	2.600	A572-65 (65 ksi)
L48	27.250-27.000	0.250	0.000	18	44.642	44.696	0.725	2.900	A572-65 (65 ksi)
L49	27.000-22.000	5.000	0.000	18	44.696	45.771	0.713	2.850	A572-65 (65 ksi)
L50	22.000-17.000	5.000	0.000	18	45.771	46.846	0.713	2.850	A572-65 (65 ksi)
L51	17.000-12.000	5.000	0.000	18	46.846	47.921	0.713	2.850	A572-65 (65 ksi)
L52	12.000-7.000	5.000	0.000	18	47.921	48.995	0.713	2.850	A572-65 (65 ksi)
L53	7.000-2.000	5.000	0.000	18	48.995	50.070	0.700	2.800	A572-65 (65 ksi)
L54	2.000-0.000	2.000		18	50.070	50.500	0.700	2.800	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	21.295	12.386	677.826	7.388	10.668	63.538	1356.544	6.194	3.366	17.952

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	22.404	13.036	790.221	7.776	11.223	70.412	1581.483	6.519	3.558	18.977
L2	22.404	13.036	790.221	7.776	11.223	70.412	1581.483	6.519	3.558	18.977
	23.513	13.686	914.401	8.164	11.778	77.640	1830.006	6.844	3.750	20.002
L3	23.513	13.686	914.401	8.164	11.778	77.640	1830.006	6.844	3.750	20.002
	24.622	14.336	1050.954	8.551	12.332	85.220	2103.290	7.169	3.943	21.027
L4	24.622	14.336	1050.954	8.551	12.332	85.220	2103.290	7.169	3.943	21.027
	25.731	14.986	1200.465	8.939	12.887	93.153	2402.511	7.494	4.135	22.052
L5	25.731	14.986	1200.465	8.939	12.887	93.153	2402.511	7.494	4.135	22.052
	27.268	15.887	1430.295	9.477	13.656	104.736	2862.472	7.945	4.401	23.474
L6	26.859	20.169	1646.369	9.024	13.040	126.260	3294.904	10.087	4.078	16.311
	27.111	21.017	1862.865	9.403	13.582	137.153	3728.181	10.511	4.266	17.063
L7	27.111	21.017	1862.865	9.403	13.582	137.153	3728.181	10.511	4.266	17.063
	27.941	21.666	2040.766	9.693	13.998	145.792	4084.218	10.835	4.410	17.638
L8	27.941	21.666	2040.766	9.693	13.998	145.792	4084.218	10.835	4.410	17.638
	27.995	21.709	2052.770	9.712	14.025	146.366	4108.241	10.856	4.419	17.676
L9	27.995	21.709	2052.770	9.712	14.025	146.366	4108.241	10.856	4.419	17.676
	29.080	22.557	2302.832	10.091	14.568	158.077	4608.695	11.280	4.607	18.428
L10	29.080	22.557	2302.832	10.091	14.568	158.077	4608.695	11.280	4.607	18.428
	29.170	22.627	2324.350	10.123	14.613	159.065	4651.759	11.315	4.623	18.491
L11	29.126	48.157	4847.716	10.021	14.613	331.749	9701.811	24.083	4.117	7.659
	29.180	48.248	4875.296	10.040	14.640	333.018	9757.007	24.129	4.126	7.676
L12	29.182	47.147	4768.234	10.044	14.640	325.705	9542.743	23.578	4.148	7.901
	29.870	48.276	5119.035	10.285	14.984	341.636	10244.805	24.142	4.267	8.128
L13	29.870	48.276	5119.035	10.285	14.984	341.636	10244.805	24.142	4.267	8.128
	29.924	48.365	5147.410	10.304	15.011	342.908	10301.593	24.187	4.277	8.146
L14	29.926	47.233	5031.348	10.308	15.011	335.176	10069.315	23.621	4.299	8.388
	30.957	48.885	5577.727	10.668	15.527	359.233	11162.794	24.447	4.477	8.736
L15	30.932	64.037	7227.748	10.611	15.527	465.503	14465.006	32.024	4.191	6.209
	30.986	64.151	7266.578	10.630	15.554	467.187	14542.718	32.082	4.201	6.223
L16	30.986	64.151	7266.578	10.630	15.554	467.187	14542.718	32.082	4.201	6.223
	31.132	64.458	7371.329	10.681	15.627	471.716	14752.357	32.235	4.226	6.261
L17	31.149	53.916	6211.940	10.721	15.627	397.523	12432.055	26.963	4.424	7.865
	31.203	54.011	6244.971	10.739	15.654	398.943	12498.160	27.011	4.433	7.882
L18	31.205	52.833	6113.766	10.744	15.654	390.562	12235.577	26.421	4.455	8.101
	32.290	54.698	6784.514	11.123	16.197	418.884	13577.956	27.354	4.643	8.443
L19	32.290	54.698	6784.514	11.123	16.197	418.884	13577.956	27.354	4.643	8.443
	33.421	56.643	7534.158	11.519	16.763	449.464	15078.230	28.327	4.839	8.799
L20	32.949	37.057	4538.007	11.052	16.006	283.512	9081.986	18.532	4.886	13.028
	33.167	38.499	5088.777	11.483	16.622	306.148	10184.250	19.253	5.099	13.597
L21	33.167	38.499	5088.777	11.483	16.622	306.148	10184.250	19.253	5.099	13.597
	33.849	39.299	5412.411	11.721	16.963	319.068	10831.944	19.653	5.217	13.912
L22	33.849	39.299	5412.411	11.721	16.963	319.068	10831.944	19.653	5.217	13.912
	33.904	39.363	5438.940	11.740	16.991	320.116	10885.037	19.685	5.226	13.937
L23	33.904	39.363	5438.940	11.740	16.991	320.116	10885.037	19.685	5.226	13.937
	34.998	40.645	5987.880	12.123	17.538	341.429	11983.639	20.326	5.416	14.443
L24	34.998	40.645	5987.880	12.123	17.538	341.429	11983.639	20.326	5.416	14.443
	35.107	40.773	6044.721	12.161	17.592	343.598	12097.396	20.390	5.435	14.493
L25	35.038	88.522	12781.159	12.001	17.592	726.515	25579.137	44.269	4.643	5.628
	35.092	88.663	12842.342	12.020	17.620	728.859	25701.583	44.340	4.652	5.639
L26	35.121	68.892	10089.401	12.087	17.620	572.618	20192.078	34.452	4.982	7.816
	35.176	69.001	10137.356	12.106	17.647	574.447	20288.050	34.507	4.992	7.831
L27	35.178	67.673	9949.517	12.110	17.647	563.803	19912.126	33.843	5.014	8.022
	36.272	69.809	10922.052	12.493	18.194	600.300	21858.476	34.911	5.204	8.326
L28	36.272	69.809	10922.052	12.493	18.194	600.300	21858.476	34.911	5.204	8.326
	36.873	70.985	11482.996	12.703	18.495	620.861	22981.101	35.499	5.308	8.492
L29	36.846	90.416	14483.639	12.641	18.495	783.100	28986.335	45.217	5.000	6.25
	36.901	90.553	14549.457	12.660	18.523	785.496	29118.058	45.285	5.009	6.262
L30	36.903	89.169	14337.187	12.664	18.523	774.036	28693.239	44.593	5.031	6.389
	37.997	91.861	15675.454	13.047	19.070	822.004	31371.535	45.939	5.221	6.63
L31	37.999	90.434	15442.384	13.051	19.070	809.782	30905.087	45.226	5.243	6.765
	38.819	92.421	16482.901	13.338	19.480	846.136	32987.491	46.219	5.385	6.948
L32	38.819	92.421	16482.901	13.338	19.480	846.136	32987.491	46.219	5.385	6.948

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	38.874	92.554	16553.884	13.357	19.508	848.588	33129.550	46.286	5.395	6.961
L33	38.874	92.554	16553.884	13.357	19.508	848.588	33129.550	46.286	5.395	6.961
	39.147	93.216	16911.855	13.453	19.644	860.902	33845.963	46.617	5.442	7.022
L34	39.147	93.216	16911.855	13.453	19.644	860.902	33845.963	46.617	5.442	7.022
	39.202	93.348	16984.063	13.472	19.672	863.375	33990.474	46.683	5.451	7.034
L35	39.202	93.348	16984.063	13.472	19.672	863.375	33990.474	46.683	5.451	7.034
	39.256	93.481	17056.476	13.491	19.699	865.852	34135.396	46.749	5.461	7.046
L36	39.281	74.196	13653.782	13.549	19.699	693.118	27325.531	37.105	5.747	9.383
	39.336	74.301	13711.666	13.568	19.726	695.091	27441.374	37.157	5.756	9.398
L37	39.336	74.301	13711.666	13.568	19.726	695.091	27441.374	37.157	5.756	9.398
	39.555	74.720	13944.837	13.644	19.836	703.011	27908.023	37.367	5.794	9.46
L38	39.536	89.676	16627.429	13.600	19.836	838.251	33276.738	44.846	5.574	7.558
	39.590	89.802	16697.654	13.619	19.863	840.632	33417.279	44.909	5.584	7.571
L39	39.592	88.309	16430.693	13.623	19.863	827.192	32883.006	44.163	5.606	7.732
	40.686	90.787	17853.412	14.006	20.410	874.721	35730.317	45.402	5.795	7.994
L40	40.688	89.250	17562.277	14.010	20.410	860.457	35147.663	44.634	5.817	8.165
	42.757	93.858	20425.266	14.734	21.445	952.428	40877.407	46.938	6.176	8.668
L41	41.981	98.566	19364.112	13.999	20.432	947.717	38753.704	49.292	5.693	7.229
	42.199	102.206	21590.086	14.516	21.172	1019.733	43208.582	51.113	5.949	7.555
L42	42.199	102.206	21590.086	14.516	21.172	1019.733	43208.582	51.113	5.949	7.555
	43.291	104.893	23337.694	14.898	21.718	1074.564	46706.096	52.456	6.138	7.795
L43	43.294	101.623	22637.224	14.906	21.718	1042.311	45304.234	50.821	6.182	8.108
	44.340	104.116	24344.325	15.272	22.242	1094.543	48720.684	52.068	6.364	8.346
L44	44.358	88.987	20915.773	15.312	22.242	940.392	41859.068	44.502	6.562	10.095
	44.412	89.098	20994.048	15.331	22.269	942.754	42015.721	44.557	6.571	10.11
L45	44.412	89.098	20994.048	15.331	22.269	942.754	42015.721	44.557	6.571	10.11
	45.122	90.539	22029.462	15.579	22.624	973.732	44087.911	45.278	6.694	10.299
L46	45.122	90.539	22029.462	15.579	22.624	973.732	44087.911	45.278	6.694	10.299
	45.176	90.650	22110.490	15.598	22.651	976.136	44250.073	45.334	6.704	10.313
L47	45.176	90.650	22110.490	15.598	22.651	976.136	44250.073	45.334	6.704	10.313
	45.231	90.761	22191.716	15.617	22.678	978.542	44412.632	45.389	6.713	10.328
L48	45.219	101.061	24625.918	15.591	22.678	1085.878	49284.240	50.540	6.581	9.077
	45.274	101.184	24716.429	15.610	22.706	1088.559	49465.381	50.602	6.591	9.09
L49	45.276	99.468	24311.005	15.614	22.706	1070.703	48653.999	49.743	6.613	9.281
	46.367	101.899	26137.107	15.996	23.252	1124.098	52308.605	50.959	6.802	9.546
L50	46.367	101.899	26137.107	15.996	23.252	1124.098	52308.605	50.959	6.802	9.546
	47.458	104.329	28052.436	16.377	23.798	1178.791	56141.785	52.174	6.991	9.812
L51	47.458	104.329	28052.436	16.377	23.798	1178.791	56141.785	52.174	6.991	9.812
	48.550	106.760	30059.123	16.759	24.344	1234.784	60157.798	53.390	7.180	10.077
L52	48.550	106.760	30059.123	16.759	24.344	1234.784	60157.798	53.390	7.180	10.077
	49.641	109.190	32159.294	17.140	24.890	1292.077	64360.904	54.606	7.369	10.343
L53	49.643	107.302	31619.641	17.145	24.890	1270.395	63280.888	53.661	7.391	10.559
	50.735	109.690	33778.008	17.526	25.436	1327.981	67600.462	54.856	7.580	10.829
L54	50.735	109.690	33778.008	17.526	25.436	1327.981	67600.462	54.856	7.580	10.829
	51.171	110.646	34668.132	17.679	25.654	1351.373	69381.881	55.333	7.656	10.937

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 144.500-139.500				1	1	1			
L2 139.500-134.500				1	1	1			
L3 134.500-129.500				1	1	1			
L4				1	1	1			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
129.500-124.500									
L5				1	1	1			
124.500-117.568									
L6				1	1	1			
117.568-116.409									
L7				1	1	1			
116.409-112.583									
L8				1	1	1			
112.583-112.333									
L9				1	1	1			
112.333-107.333									
L10				1	1	1			
107.333-106.920									
L11				1	1	0.936203			
106.920-106.670									
L12				1	1	0.946801			
106.670-103.500									
L13				1	1	0.945935			
103.500-103.250									
L14				1	1	0.952348			
103.250-98.500									
L15				1	1	0.936822			
98.500-98.250									
L16				1	1	0.934126			
98.250-97.580									
L17				1	1	0.94895			
97.580-97.330									
L18				1	1	0.952532			
97.330-92.330									
L19				1	1	0.950546			
92.330-87.118									
L20				1	1	1			
87.118-86.118									
L21				1	1	1			
86.118-83.000									
L22				1	1	1			
83.000-82.750									
L23				1	1	1			
82.750-77.750									
L24				1	1	1			
77.750-77.250									
L25				1	1	0.938536			
77.250-77.000									
L26				1	1	0.946033			
77.000-76.750									
L27				1	1	0.95344			
76.750-71.750									
L28				1	1	0.947589			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
71.750-69.000									
L29				1	1	0.942313			
69.000-68.750									
L30				1	1	0.942845			
68.750-63.750									
L31				1	1	0.947538			
63.750-60.000									
L32				1	1	0.946874			
60.000-59.750									
L33				1	1	0.943584			
59.750-58.500									
L34				1	1	0.942932			
58.500-58.250									
L35				1	1	0.942281			
58.250-58.000									
L36				1	1	1.08713			
58.000-57.750									
L37				1	1	1.08446			
57.750-56.750									
L38				1	1	0.99352			
56.750-56.500									
L39				1	1	0.996859			
56.500-51.500									
L40				1	1	1.00442			
51.500-42.042									
L41				1	1	0.982267			
42.042-41.042									
L42				1	1	0.971338			
41.042-36.042									
L43				1	1	0.992321			
36.042-31.250									
L44				1	1	1.12535			
31.250-31.000									
L45				1	1	1.11815			
31.000-27.750									
L46				1	1	1.11761			
27.750-27.500									
L47				1	1	1.11706			
27.500-27.250									
L48				1	1	1.00273			
27.250-27.000									
L49				1	1	1.01034			
27.000-22.000									
L50				1	1	1.00111			
22.000-17.000									
L51				1	1	0.992299			
17.000-12.000									
L52				1	1	0.983878			
12.000-7.000									
L53				1	1	0.992999			
7.000-2.000									
L54				1	1	0.989822			
2.000-0.000									

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
WR-VG86ST-BRD(3/4) (P)	C	No	Surface Ar (CaAa)	144.500 - 0.000	2	2	-0.210 -0.180	0.795		0.001
LDF7-50A(1-5/8) ((2E+1R) Per Photos) **-**	C	No	Surface Ar (CaAa)	128.000 - 0.000	3	3	-0.150 -0.050	1.980		0.001
CCI 4.5" x 1" Plate (E-MOD 4)	A	No	Surface Af (CaAa)	100.000 - 90.000	1	1	0.100 0.100	4.500	11.000	0.000
CCI 4.5" x 1" Plate (E-MOD 4)	B	No	Surface Af (CaAa)	100.000 - 90.000	1	1	0.100 0.100	4.500	11.000	0.000
CCI 4.5" x 1" Plate (E-MOD 4) **-**	C	No	Surface Af (CaAa)	100.000 - 90.000	1	1	0.100 0.100	4.500	11.000	0.000
CCI 8.5" x 1.25" Plate (E-MOD 4)	A	No	Surface Af (CaAa)	35.000 - 0.000	1	1	0.100 0.100	8.500	19.500	0.000
CCI 8.5" x 1.25" Plate (E-MOD 4)	B	No	Surface Af (CaAa)	35.000 - 0.000	1	1	-0.250 -0.250	8.500	19.500	0.000
CCI 8.5" x 1.25" Plate (E-MOD 4) **-**	C	No	Surface Af (CaAa)	35.000 - 0.000	1	1	-0.250 -0.250	8.500	19.500	0.000
CCI 6.5" x 1.25" Plate (E-MOD 4)	A	No	Surface Af (CaAa)	80.000 - 25.000	1	1	-0.250 -0.250	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate (E-MOD 4)	B	No	Surface Af (CaAa)	80.000 - 35.000	1	1	-0.250 -0.250	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate (E-MOD 4) **-**	C	No	Surface Af (CaAa)	80.000 - 35.000	1	1	-0.250 -0.250	6.500	15.500	0.000
CCI 4.5" x 1" Plate (E-MOD 4)	A	No	Surface Af (CaAa)	105.000 - 90.000	1	1	-0.100 -0.100	4.500	11.000	0.000
CCI 4.5" x 1" Plate (E-MOD 4)	B	No	Surface Af (CaAa)	105.000 - 90.000	1	1	-0.100 -0.100	4.500	11.000	0.000
CCI 4.5" x 1" Plate (E-MOD 4) **-**	C	No	Surface Af (CaAa)	105.000 - 90.000	1	1	-0.100 -0.100	4.500	11.000	0.000
CCI 6" x 1" Plate (E-MOD 5)	A	No	Surface Af (CaAa)	85.000 - 75.000	1	1	0.100 0.100	6.000	14.000	0.000
CCI 6" x 1" Plate (E-MOD 5)	B	No	Surface Af (CaAa)	85.000 - 75.000	1	1	0.100 0.100	6.000	14.000	0.000
CCI 6" x 1" Plate (E-MOD 5) **-**	C	No	Surface Af (CaAa)	85.000 - 75.000	1	1	0.100 0.100	6.000	14.000	0.000
CCI 4.5" x 1" Plate (E-MOD 5)	A	No	Surface Af (CaAa)	114.080 - 99.500	1	1	0.450 0.450	4.500	11.000	0.000
CCI 4.5" x 1" Plate (E-MOD 5)	B	No	Surface Af (CaAa)	114.080 - 99.500	1	1	0.450 0.450	4.500	11.000	0.000
CCI 4.5" x 1" Plate (E-MOD 5) **-**	C	No	Surface Af (CaAa)	114.080 - 99.500	1	1	0.450 0.450	4.500	11.000	0.000
CCI 5.5" x 1.25" Plate (E-MOD 6)	A	No	Surface Af (CaAa)	30.000 - 0.000	1	1	-0.450 -0.450	5.500	13.500	0.000
CCI 5.5" x 1.25" Plate (E-MOD 6)	B	No	Surface Af (CaAa)	30.000 - 0.000	1	1	0.450 0.450	5.500	13.500	0.000
CCI 6.5" x 1.25" Plate (E-MOD 6) **-**	B	No	Surface Af (CaAa)	30.000 - 0.000	1	1	-0.150 -0.150	6.500	15.500	0.000
CCI 8.5" x 1.25" Plate (E-MOD 6) **-**	C	No	Surface Af (CaAa)	62.250 - 27.250	1	1	0.250 0.250	8.500	19.500	0.000
CCI 4" x 0.75" Plate (E-MOD 6)	A	No	Surface Af (CaAa)	107.000 - 97.000	1	1	-0.250 -0.250	4.000	9.500	0.000

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
CCI 4" x 0.75" Plate (E-MOD 6)	B	No	Surface Af (CaAa)	107.000 - 97.000	1	1	-0.250 -0.250	4.000	9.500	0.000
CCI 4" x 0.75" Plate (E-MOD 6) **_**	C	No	Surface Af (CaAa)	107.000 - 97.000	1	1	-0.250 -0.250	4.000	9.500	0.000
CCI 6.5" x 1.25" Plate (E-MOD 7) **_**	C	No	Surface Af (CaAa)	59.500 - 24.500	1	1	0.000 0.000	6.500	15.500	0.000
CCI 6" x 1" Plate (E-MOD 7)	A	No	Surface Af (CaAa)	71.000 - 56.000	1	1	0.000 0.000	6.000	14.000	0.000
CCI 6" x 1" Plate (E-MOD 7)	B	No	Surface Af (CaAa)	71.000 - 56.000	1	1	0.000 0.000	6.000	14.000	0.000
CCI 6" x 1" Plate (E-MOD 7) **_**	C	No	Surface Af (CaAa)	71.000 - 56.000	1	1	0.000 0.000	6.000	14.000	0.000

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
CR 50 1873(1-5/8) (E)	C	No	No	Inside Pole	144.500 - 0.000	6	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001
WR-VG86ST-BRD(3/4) (E)	C	No	No	Inside Pole	144.500 - 0.000	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001
WR-VG86ST-BRD(3/4) (P)	C	No	No	Inside Pole	144.500 - 0.000	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001
FB-L98B-034-XXX(3/8) (P)	C	No	No	Inside Pole	144.500 - 0.000	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000
2" Rigid Conduit (E) **_**	C	No	No	Inside Pole	144.500 - 0.000	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.003 0.003 0.003 0.003
LDF7-50A(1-5/8) (7E+1R) **_**	C	No	No	Inside Pole	135.000 - 0.000	8	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001
LDF7-50A(1-5/8) (E) **_**	C	No	No	Inside Pole	128.000 - 0.000	5	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001
LDF4.5-50(5/8) (E-Per Photos)	A	No	No	Inside Pole	118.000 - 0.000	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
HB114-1-08U4-M5J (1-1/4) (E) **_**	A	No	No	Inside Pole	118.000 - 0.000	3	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	144.500-139.500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.795	0.000	0.071
L2	139.500-134.500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.795	0.000	0.074
L3	134.500-129.500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.795	0.000	0.104
L4	129.500-124.500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	2.874	0.000	0.127
L5	124.500-117.568	A	0.000	0.000	0.000	0.000	0.001
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	5.220	0.000	0.189
L6	117.568-116.409	A	0.000	0.000	0.000	0.000	0.004
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.873	0.000	0.032
L7	116.409-112.583	A	0.000	0.000	1.123	0.000	0.013
		B	0.000	0.000	1.123	0.000	0.000
		C	0.000	0.000	4.004	0.000	0.105
L8	112.583-112.333	A	0.000	0.000	0.188	0.000	0.001
		B	0.000	0.000	0.188	0.000	0.000
		C	0.000	0.000	0.376	0.000	0.007
L9	112.333-107.333	A	0.000	0.000	3.750	0.000	0.017
		B	0.000	0.000	3.750	0.000	0.000
		C	0.000	0.000	7.515	0.000	0.137
L10	107.333-106.920	A	0.000	0.000	0.363	0.000	0.001
		B	0.000	0.000	0.363	0.000	0.000
		C	0.000	0.000	0.674	0.000	0.011
L11	106.920-106.670	A	0.000	0.000	0.354	0.000	0.001
		B	0.000	0.000	0.354	0.000	0.000
		C	0.000	0.000	0.542	0.000	0.007
L12	106.670-103.500	A	0.000	0.000	5.616	0.000	0.011
		B	0.000	0.000	5.616	0.000	0.000
		C	0.000	0.000	8.003	0.000	0.087
L13	103.500-103.250	A	0.000	0.000	0.542	0.000	0.001
		B	0.000	0.000	0.542	0.000	0.000
		C	0.000	0.000	0.730	0.000	0.007
L14	103.250-98.500	A	0.000	0.000	10.667	0.000	0.016
		B	0.000	0.000	10.667	0.000	0.000
		C	0.000	0.000	14.243	0.000	0.130
L15	98.500-98.250	A	0.000	0.000	0.542	0.000	0.001

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	0.542	0.000	0.000
		C	0.000	0.000	0.730	0.000	0.007
L16	98.250-97.580	A	0.000	0.000	1.452	0.000	0.002
		B	0.000	0.000	1.452	0.000	0.000
		C	0.000	0.000	1.956	0.000	0.018
L17	97.580-97.330	A	0.000	0.000	0.542	0.000	0.001
		B	0.000	0.000	0.542	0.000	0.000
		C	0.000	0.000	0.730	0.000	0.007
L18	97.330-92.330	A	0.000	0.000	7.720	0.000	0.017
		B	0.000	0.000	7.720	0.000	0.000
		C	0.000	0.000	11.485	0.000	0.137
L19	92.330-87.118	A	0.000	0.000	3.495	0.000	0.018
		B	0.000	0.000	3.495	0.000	0.000
		C	0.000	0.000	7.420	0.000	0.142
L20	87.118-86.118	A	0.000	0.000	0.000	0.000	0.003
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.753	0.000	0.027
L21	86.118-83.000	A	0.000	0.000	1.824	0.000	0.011
		B	0.000	0.000	1.824	0.000	0.000
		C	0.000	0.000	4.172	0.000	0.085
L22	83.000-82.750	A	0.000	0.000	0.228	0.000	0.001
		B	0.000	0.000	0.228	0.000	0.000
		C	0.000	0.000	0.416	0.000	0.007
L23	82.750-77.750	A	0.000	0.000	6.998	0.000	0.017
		B	0.000	0.000	6.998	0.000	0.000
		C	0.000	0.000	10.763	0.000	0.137
L24	77.750-77.250	A	0.000	0.000	0.998	0.000	0.002
		B	0.000	0.000	0.998	0.000	0.000
		C	0.000	0.000	1.374	0.000	0.014
L25	77.250-77.000	A	0.000	0.000	0.499	0.000	0.001
		B	0.000	0.000	0.499	0.000	0.000
		C	0.000	0.000	0.687	0.000	0.007
L26	77.000-76.750	A	0.000	0.000	0.499	0.000	0.001
		B	0.000	0.000	0.499	0.000	0.000
		C	0.000	0.000	0.687	0.000	0.007
L27	76.750-71.750	A	0.000	0.000	7.013	0.000	0.017
		B	0.000	0.000	7.013	0.000	0.000
		C	0.000	0.000	10.778	0.000	0.137
L28	71.750-69.000	A	0.000	0.000	4.979	0.000	0.009
		B	0.000	0.000	4.979	0.000	0.000
		C	0.000	0.000	7.050	0.000	0.075
L29	69.000-68.750	A	0.000	0.000	0.521	0.000	0.001
		B	0.000	0.000	0.521	0.000	0.000
		C	0.000	0.000	0.709	0.000	0.007
L30	68.750-63.750	A	0.000	0.000	10.417	0.000	0.017
		B	0.000	0.000	10.417	0.000	0.000
		C	0.000	0.000	14.182	0.000	0.137
L31	63.750-60.000	A	0.000	0.000	7.813	0.000	0.013
		B	0.000	0.000	7.813	0.000	0.000
		C	0.000	0.000	13.824	0.000	0.102
L32	60.000-59.750	A	0.000	0.000	0.521	0.000	0.001
		B	0.000	0.000	0.521	0.000	0.000
		C	0.000	0.000	1.063	0.000	0.007
L33	59.750-58.500	A	0.000	0.000	2.604	0.000	0.004
		B	0.000	0.000	2.604	0.000	0.000
		C	0.000	0.000	6.400	0.000	0.034
L34	58.500-58.250	A	0.000	0.000	0.521	0.000	0.001
		B	0.000	0.000	0.521	0.000	0.000
		C	0.000	0.000	1.334	0.000	0.007
L35	58.250-58.000	A	0.000	0.000	0.521	0.000	0.001
		B	0.000	0.000	0.521	0.000	0.000

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	1.334	0.000	0.007
L36	58.000-57.750	A	0.000	0.000	0.521	0.000	0.001
		B	0.000	0.000	0.521	0.000	0.000
		C	0.000	0.000	1.334	0.000	0.007
L37	57.750-56.750	A	0.000	0.000	2.083	0.000	0.003
		B	0.000	0.000	2.083	0.000	0.000
		C	0.000	0.000	5.336	0.000	0.027
L38	56.750-56.500	A	0.000	0.000	0.521	0.000	0.001
		B	0.000	0.000	0.521	0.000	0.000
		C	0.000	0.000	1.334	0.000	0.007
L39	56.500-51.500	A	0.000	0.000	5.917	0.000	0.017
		B	0.000	0.000	5.917	0.000	0.000
		C	0.000	0.000	22.182	0.000	0.137
L40	51.500-42.042	A	0.000	0.000	10.246	0.000	0.032
		B	0.000	0.000	10.246	0.000	0.000
		C	0.000	0.000	41.014	0.000	0.258
L41	42.042-41.042	A	0.000	0.000	1.083	0.000	0.003
		B	0.000	0.000	1.083	0.000	0.000
		C	0.000	0.000	4.336	0.000	0.027
L42	41.042-36.042	A	0.000	0.000	5.417	0.000	0.017
		B	0.000	0.000	5.417	0.000	0.000
		C	0.000	0.000	21.682	0.000	0.137
L43	36.042-31.250	A	0.000	0.000	10.504	0.000	0.016
		B	0.000	0.000	6.441	0.000	0.000
		C	0.000	0.000	22.029	0.000	0.131
L44	31.250-31.000	A	0.000	0.000	0.625	0.000	0.001
		B	0.000	0.000	0.354	0.000	0.000
		C	0.000	0.000	1.167	0.000	0.007
L45	31.000-27.750	A	0.000	0.000	10.188	0.000	0.011
		B	0.000	0.000	9.104	0.000	0.000
		C	0.000	0.000	15.176	0.000	0.089
L46	27.750-27.500	A	0.000	0.000	0.854	0.000	0.001
		B	0.000	0.000	0.854	0.000	0.000
		C	0.000	0.000	1.167	0.000	0.007
L47	27.500-27.250	A	0.000	0.000	0.854	0.000	0.001
		B	0.000	0.000	0.854	0.000	0.000
		C	0.000	0.000	1.167	0.000	0.007
L48	27.250-27.000	A	0.000	0.000	0.854	0.000	0.001
		B	0.000	0.000	0.854	0.000	0.000
		C	0.000	0.000	0.813	0.000	0.007
L49	27.000-22.000	A	0.000	0.000	13.833	0.000	0.017
		B	0.000	0.000	17.083	0.000	0.000
		C	0.000	0.000	13.557	0.000	0.137
L50	22.000-17.000	A	0.000	0.000	11.667	0.000	0.017
		B	0.000	0.000	17.083	0.000	0.000
		C	0.000	0.000	10.848	0.000	0.137
L51	17.000-12.000	A	0.000	0.000	11.667	0.000	0.017
		B	0.000	0.000	17.083	0.000	0.000
		C	0.000	0.000	10.848	0.000	0.137
L52	12.000-7.000	A	0.000	0.000	11.667	0.000	0.017
		B	0.000	0.000	17.083	0.000	0.000
		C	0.000	0.000	10.848	0.000	0.137
L53	7.000-2.000	A	0.000	0.000	11.667	0.000	0.017
		B	0.000	0.000	17.083	0.000	0.000
		C	0.000	0.000	10.848	0.000	0.137
L54	2.000-0.000	A	0.000	0.000	4.667	0.000	0.007
		B	0.000	0.000	6.833	0.000	0.000
		C	0.000	0.000	4.339	0.000	0.055

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	144.500-139.500	A	1.475	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	2.838	0.000	0.096
L2	139.500-134.500	A	1.470	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	2.831	0.000	0.099
L3	134.500-129.500	A	1.465	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	2.824	0.000	0.129
L4	129.500-124.500	A	1.459	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	6.693	0.000	0.191
L5	124.500-117.568	A	1.452	0.000	0.000	0.000	0.000	0.001
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	11.558	0.000	0.301
L6	117.568-116.409	A	1.447	0.000	0.000	0.000	0.000	0.004
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	1.932	0.000	0.050
L7	116.409-112.583	A	1.444	0.000	0.000	1.545	0.000	0.027
		B		0.000	0.000	1.545	0.000	0.014
		C		0.000	0.000	7.908	0.000	0.180
L8	112.583-112.333	A	1.441	0.000	0.000	0.258	0.000	0.003
		B		0.000	0.000	0.258	0.000	0.002
		C		0.000	0.000	0.673	0.000	0.013
L9	112.333-107.333	A	1.438	0.000	0.000	5.155	0.000	0.063
		B		0.000	0.000	5.155	0.000	0.046
		C		0.000	0.000	13.456	0.000	0.262
L10	107.333-106.920	A	1.434	0.000	0.000	0.495	0.000	0.006
		B		0.000	0.000	0.495	0.000	0.004
		C		0.000	0.000	1.180	0.000	0.022
L11	106.920-106.670	A	1.434	0.000	0.000	0.473	0.000	0.005
		B		0.000	0.000	0.473	0.000	0.004
		C		0.000	0.000	0.888	0.000	0.015
L12	106.670-103.500	A	1.432	0.000	0.000	7.551	0.000	0.080
		B		0.000	0.000	7.551	0.000	0.069
		C		0.000	0.000	12.804	0.000	0.206
L13	103.500-103.250	A	1.429	0.000	0.000	0.731	0.000	0.007
		B		0.000	0.000	0.731	0.000	0.007
		C		0.000	0.000	1.145	0.000	0.017
L14	103.250-98.500	A	1.426	0.000	0.000	14.228	0.000	0.146
		B		0.000	0.000	14.228	0.000	0.130
		C		0.000	0.000	22.085	0.000	0.335
L15	98.500-98.250	A	1.422	0.000	0.000	0.701	0.000	0.007
		B		0.000	0.000	0.701	0.000	0.007
		C		0.000	0.000	1.114	0.000	0.017
L16	98.250-97.580	A	1.421	0.000	0.000	1.879	0.000	0.020
		B		0.000	0.000	1.879	0.000	0.018
		C		0.000	0.000	2.986	0.000	0.046
L17	97.580-97.330	A	1.421	0.000	0.000	0.701	0.000	0.007
		B		0.000	0.000	0.701	0.000	0.007
		C		0.000	0.000	1.114	0.000	0.017
L18	97.330-92.330	A	1.417	0.000	0.000	9.993	0.000	0.110
		B		0.000	0.000	9.993	0.000	0.093
		C		0.000	0.000	18.242	0.000	0.308
L19	92.330-87.118	A	1.409	0.000	0.000	4.520	0.000	0.059
		B		0.000	0.000	4.520	0.000	0.042
		C		0.000	0.000	13.098	0.000	0.265
L20	87.118-86.118	A	1.404	0.000	0.000	0.000	0.000	0.003

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	1.646	0.000	0.043
L21	86.118-83.000	A	1.401	0.000	0.000	2.122	0.000	0.032
		B		0.000	0.000	2.122	0.000	0.021
		C		0.000	0.000	7.240	0.000	0.154
L22	83.000-82.750	A	1.398	0.000	0.000	0.265	0.000	0.003
		B		0.000	0.000	0.265	0.000	0.003
		C		0.000	0.000	0.675	0.000	0.013
L23	82.750-77.750	A	1.393	0.000	0.000	8.366	0.000	0.095
		B		0.000	0.000	8.366	0.000	0.078
		C		0.000	0.000	16.556	0.000	0.291
L24	77.750-77.250	A	1.389	0.000	0.000	1.210	0.000	0.012
		B		0.000	0.000	1.210	0.000	0.011
		C		0.000	0.000	2.028	0.000	0.032
L25	77.250-77.000	A	1.388	0.000	0.000	0.605	0.000	0.006
		B		0.000	0.000	0.605	0.000	0.005
		C		0.000	0.000	1.014	0.000	0.016
L26	77.000-76.750	A	1.388	0.000	0.000	0.605	0.000	0.006
		B		0.000	0.000	0.605	0.000	0.005
		C		0.000	0.000	1.014	0.000	0.016
L27	76.750-71.750	A	1.383	0.000	0.000	8.653	0.000	0.091
		B		0.000	0.000	8.653	0.000	0.074
		C		0.000	0.000	16.816	0.000	0.286
L28	71.750-69.000	A	1.375	0.000	0.000	6.174	0.000	0.060
		B		0.000	0.000	6.174	0.000	0.051
		C		0.000	0.000	10.654	0.000	0.168
L29	69.000-68.750	A	1.372	0.000	0.000	0.644	0.000	0.006
		B		0.000	0.000	0.644	0.000	0.005
		C		0.000	0.000	1.051	0.000	0.016
L30	68.750-63.750	A	1.367	0.000	0.000	12.876	0.000	0.123
		B		0.000	0.000	12.876	0.000	0.106
		C		0.000	0.000	21.000	0.000	0.317
L31	63.750-60.000	A	1.358	0.000	0.000	9.646	0.000	0.091
		B		0.000	0.000	9.646	0.000	0.079
		C		0.000	0.000	19.520	0.000	0.266
L32	60.000-59.750	A	1.353	0.000	0.000	0.643	0.000	0.006
		B		0.000	0.000	0.643	0.000	0.005
		C		0.000	0.000	1.469	0.000	0.019
L33	59.750-58.500	A	1.352	0.000	0.000	3.213	0.000	0.030
		B		0.000	0.000	3.213	0.000	0.026
		C		0.000	0.000	8.697	0.000	0.106
L34	58.500-58.250	A	1.350	0.000	0.000	0.643	0.000	0.006
		B		0.000	0.000	0.643	0.000	0.005
		C		0.000	0.000	1.807	0.000	0.022
L35	58.250-58.000	A	1.349	0.000	0.000	0.642	0.000	0.006
		B		0.000	0.000	0.642	0.000	0.005
		C		0.000	0.000	1.806	0.000	0.022
L36	58.000-57.750	A	1.349	0.000	0.000	0.642	0.000	0.006
		B		0.000	0.000	0.642	0.000	0.005
		C		0.000	0.000	1.806	0.000	0.022
L37	57.750-56.750	A	1.347	0.000	0.000	2.569	0.000	0.024
		B		0.000	0.000	2.569	0.000	0.021
		C		0.000	0.000	7.223	0.000	0.086
L38	56.750-56.500	A	1.346	0.000	0.000	0.642	0.000	0.006
		B		0.000	0.000	0.642	0.000	0.005
		C		0.000	0.000	1.805	0.000	0.022
L39	56.500-51.500	A	1.339	0.000	0.000	7.364	0.000	0.075
		B		0.000	0.000	7.364	0.000	0.059
		C		0.000	0.000	30.597	0.000	0.386
L40	51.500-42.042	A	1.320	0.000	0.000	12.744	0.000	0.132
		B		0.000	0.000	12.744	0.000	0.100

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	56.529	0.000	0.712
L41	42.042-41.042	A	1.305	0.000	0.000	1.347	0.000	0.014
		B		0.000	0.000	1.347	0.000	0.011
		C		0.000	0.000	5.977	0.000	0.075
L42	41.042-36.042	A	1.295	0.000	0.000	6.712	0.000	0.068
		B		0.000	0.000	6.712	0.000	0.051
		C		0.000	0.000	29.745	0.000	0.371
L43	36.042-31.250	A	1.277	0.000	0.000	12.686	0.000	0.110
		B		0.000	0.000	7.665	0.000	0.056
		C		0.000	0.000	29.664	0.000	0.359
L44	31.250-31.000	A	1.268	0.000	0.000	0.752	0.000	0.006
		B		0.000	0.000	0.418	0.000	0.003
		C		0.000	0.000	1.563	0.000	0.019
L45	31.000-27.750	A	1.260	0.000	0.000	12.393	0.000	0.102
		B		0.000	0.000	11.058	0.000	0.081
		C		0.000	0.000	20.294	0.000	0.242
L46	27.750-27.500	A	1.253	0.000	0.000	1.042	0.000	0.008
		B		0.000	0.000	1.042	0.000	0.008
		C		0.000	0.000	1.559	0.000	0.019
L47	27.500-27.250	A	1.251	0.000	0.000	1.042	0.000	0.008
		B		0.000	0.000	1.042	0.000	0.008
		C		0.000	0.000	1.559	0.000	0.019
L48	27.250-27.000	A	1.250	0.000	0.000	1.042	0.000	0.008
		B		0.000	0.000	1.042	0.000	0.008
		C		0.000	0.000	1.142	0.000	0.016
L49	27.000-22.000	A	1.238	0.000	0.000	16.803	0.000	0.138
		B		0.000	0.000	20.796	0.000	0.151
		C		0.000	0.000	19.448	0.000	0.285
L50	22.000-17.000	A	1.210	0.000	0.000	14.086	0.000	0.116
		B		0.000	0.000	20.712	0.000	0.146
		C		0.000	0.000	16.023	0.000	0.258
L51	17.000-12.000	A	1.174	0.000	0.000	14.015	0.000	0.113
		B		0.000	0.000	20.606	0.000	0.141
		C		0.000	0.000	15.900	0.000	0.253
L52	12.000-7.000	A	1.126	0.000	0.000	13.918	0.000	0.108
		B		0.000	0.000	20.460	0.000	0.134
		C		0.000	0.000	15.729	0.000	0.248
L53	7.000-2.000	A	1.044	0.000	0.000	13.756	0.000	0.100
		B		0.000	0.000	20.217	0.000	0.123
		C		0.000	0.000	15.445	0.000	0.238
L54	2.000-0.000	A	0.899	0.000	0.000	5.386	0.000	0.035
		B		0.000	0.000	7.912	0.000	0.041
		C		0.000	0.000	5.974	0.000	0.089

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	144.500-139.500	0.474	1.095	0.716	1.655
L2	139.500-134.500	0.476	1.099	0.727	1.681
L3	134.500-129.500	0.477	1.102	0.738	1.704
L4	129.500-124.500	0.937	3.491	1.000	3.342
L5	124.500-117.568	1.093	4.283	1.097	3.897
L6	117.568-116.409	1.099	4.304	1.107	3.932
L7	116.409-112.583	0.810	3.174	0.923	3.278
L8	112.583-112.333	0.461	1.805	0.724	2.573

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L9	112.333-107.333	0.465	1.823	0.734	2.606
L10	107.333-106.920	0.440	1.723	0.703	2.495
L11	106.920-106.670	0.348	1.363	0.573	2.036
L12	106.670-103.500	0.308	1.207	0.512	1.819
L13	103.500-103.250	0.274	1.072	0.458	1.628
L14	103.250-98.500	0.271	1.063	0.458	1.628
L15	98.500-98.250	0.284	1.113	0.487	1.728
L16	98.250-97.580	0.285	1.115	0.488	1.732
L17	97.580-97.330	0.285	1.117	0.489	1.736
L18	97.330-92.330	0.355	1.390	0.598	2.124
L19	92.330-87.118	0.667	2.608	0.852	3.027
L20	87.118-86.118	1.154	4.518	1.208	4.291
L21	86.118-83.000	0.711	2.782	0.917	3.259
L22	83.000-82.750	0.588	2.303	0.812	2.885
L23	82.750-77.750	0.392	1.535	0.684	2.429
L24	77.750-77.250	0.324	1.267	0.573	2.038
L25	77.250-77.000	0.325	1.270	0.575	2.042
L26	77.000-76.750	0.325	1.271	0.575	2.044
L27	76.750-71.750	0.401	1.568	0.690	2.452
L28	71.750-69.000	0.353	1.382	0.615	2.188
L29	69.000-68.750	0.327	1.279	0.574	2.042
L30	68.750-63.750	0.330	1.291	0.580	2.063
L31	63.750-60.000	-0.974	2.071	-0.613	2.726
L32	60.000-59.750	-1.736	2.523	-1.323	3.116
L33	59.750-58.500	-1.611	3.595	-1.235	4.109
L34	58.500-58.250	-1.586	3.847	-1.218	4.347
L35	58.250-58.000	-1.588	3.850	-1.219	4.351
L36	58.000-57.750	-1.589	3.854	-1.220	4.355
L37	57.750-56.750	-1.593	3.863	-1.224	4.366
L38	56.750-56.500	-1.597	3.873	-1.228	4.378
L39	56.500-51.500	-2.025	4.908	-1.533	5.457
L40	51.500-42.042	-2.136	5.172	-1.622	5.750
L41	42.042-41.042	-2.148	5.201	-1.633	5.786
L42	41.042-36.042	-2.169	5.250	-1.656	5.841
L43	36.042-31.250	-2.638	2.867	-2.227	3.652
L44	31.250-31.000	-2.760	2.316	-2.377	3.136
L45	31.000-27.750	-1.889	3.190	-1.578	3.951
L46	27.750-27.500	-1.583	3.516	-1.296	4.259
L47	27.500-27.250	-1.585	3.519	-1.298	4.262
L48	27.250-27.000	0.217	2.576	0.405	3.457
L49	27.000-22.000	1.331	1.398	1.500	2.400
L50	22.000-17.000	2.255	0.163	2.408	1.291
L51	17.000-12.000	2.288	0.165	2.443	1.293
L52	12.000-7.000	2.320	0.167	2.476	1.285
L53	7.000-2.000	2.352	0.170	2.504	1.256
L54	2.000-0.000	2.374	0.171	2.510	1.177

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	8	WR-VG86ST-BRD(3/4)	139.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			144.50		
L2	8	WR-VG86ST-BRD(3/4)	134.50 - 139.50	1.0000	1.0000
L3	8	WR-VG86ST-BRD(3/4)	129.50 - 134.50	1.0000	1.0000
L4	8	WR-VG86ST-BRD(3/4)	124.50 - 129.50	1.0000	1.0000
L4	18	LDF7-50A(1-5/8)	124.50 - 128.00	1.0000	1.0000
L5	8	WR-VG86ST-BRD(3/4)	117.57 - 124.50	1.0000	1.0000
L5	18	LDF7-50A(1-5/8)	117.57 - 124.50	1.0000	1.0000
L7	8	WR-VG86ST-BRD(3/4)	112.58 - 116.41	1.0000	1.0000
L7	18	LDF7-50A(1-5/8)	112.58 - 116.41	1.0000	1.0000
L7	44	CCI 4.5" x 1" Plate	112.58 - 114.08	1.0000	1.0000
L7	45	CCI 4.5" x 1" Plate	112.58 - 114.08	1.0000	1.0000
L7	46	CCI 4.5" x 1" Plate	112.58 - 114.08	1.0000	1.0000
L8	8	WR-VG86ST-BRD(3/4)	112.33 - 112.58	1.0000	1.0000
L8	18	LDF7-50A(1-5/8)	112.33 - 112.58	1.0000	1.0000
L8	44	CCI 4.5" x 1" Plate	112.33 - 112.58	1.0000	1.0000
L8	45	CCI 4.5" x 1" Plate	112.33 - 112.58	1.0000	1.0000
L8	46	CCI 4.5" x 1" Plate	112.33 - 112.58	1.0000	1.0000
L9	8	WR-VG86ST-BRD(3/4)	107.33 - 112.33	1.0000	1.0000
L9	18	LDF7-50A(1-5/8)	107.33 - 112.33	1.0000	1.0000
L9	44	CCI 4.5" x 1" Plate	107.33 - 112.33	1.0000	1.0000
L9	45	CCI 4.5" x 1" Plate	107.33 - 112.33	1.0000	1.0000
L9	46	CCI 4.5" x 1" Plate	107.33 - 112.33	1.0000	1.0000
L10	8	WR-VG86ST-BRD(3/4)	106.92 - 107.33	1.0000	1.0000
L10	18	LDF7-50A(1-5/8)	106.92 - 107.33	1.0000	1.0000
L10	44	CCI 4.5" x 1" Plate	106.92 - 107.33	1.0000	1.0000
L10	45	CCI 4.5" x 1" Plate	106.92 - 107.33	1.0000	1.0000
L10	46	CCI 4.5" x 1" Plate	106.92 - 107.33	1.0000	1.0000
L10	54	CCI 4" x 0.75" Plate	106.92 - 107.00	1.0000	1.0000
L10	55	CCI 4" x 0.75" Plate	106.92 - 107.00	1.0000	1.0000
L10	56	CCI 4" x 0.75" Plate	106.92 - 107.00	1.0000	1.0000
L11	8	WR-VG86ST-BRD(3/4)	106.67 - 106.92	1.0000	1.0000
L11	18	LDF7-50A(1-5/8)	106.67 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			106.92		
L11	44	CCI 4.5" x 1" Plate	106.67 - 106.92	1.0000	1.0000
L11	45	CCI 4.5" x 1" Plate	106.67 - 106.92	1.0000	1.0000
L11	46	CCI 4.5" x 1" Plate	106.67 - 106.92	1.0000	1.0000
L11	54	CCI 4" x 0.75" Plate	106.67 - 106.92	1.0000	1.0000
L11	55	CCI 4" x 0.75" Plate	106.67 - 106.92	1.0000	1.0000
L11	56	CCI 4" x 0.75" Plate	106.67 - 106.92	1.0000	1.0000
L12	8	WR-VG86ST-BRD(3/4)	103.50 - 106.67	1.0000	1.0000
L12	18	LDF7-50A(1-5/8)	103.50 - 106.67	1.0000	1.0000
L12	36	CCI 4.5" x 1" Plate	103.50 - 105.00	1.0000	1.0000
L12	37	CCI 4.5" x 1" Plate	103.50 - 105.00	1.0000	1.0000
L12	38	CCI 4.5" x 1" Plate	103.50 - 105.00	1.0000	1.0000
L12	44	CCI 4.5" x 1" Plate	103.50 - 106.67	1.0000	1.0000
L12	45	CCI 4.5" x 1" Plate	103.50 - 106.67	1.0000	1.0000
L12	46	CCI 4.5" x 1" Plate	103.50 - 106.67	1.0000	1.0000
L12	54	CCI 4" x 0.75" Plate	103.50 - 106.67	1.0000	1.0000
L12	55	CCI 4" x 0.75" Plate	103.50 - 106.67	1.0000	1.0000
L12	56	CCI 4" x 0.75" Plate	103.50 - 106.67	1.0000	1.0000
L13	8	WR-VG86ST-BRD(3/4)	103.25 - 103.50	1.0000	1.0000
L13	18	LDF7-50A(1-5/8)	103.25 - 103.50	1.0000	1.0000
L13	36	CCI 4.5" x 1" Plate	103.25 - 103.50	1.0000	1.0000
L13	37	CCI 4.5" x 1" Plate	103.25 - 103.50	1.0000	1.0000
L13	38	CCI 4.5" x 1" Plate	103.25 - 103.50	1.0000	1.0000
L13	44	CCI 4.5" x 1" Plate	103.25 - 103.50	1.0000	1.0000
L13	45	CCI 4.5" x 1" Plate	103.25 - 103.50	1.0000	1.0000
L13	46	CCI 4.5" x 1" Plate	103.25 - 103.50	1.0000	1.0000
L13	54	CCI 4" x 0.75" Plate	103.25 - 103.50	1.0000	1.0000
L13	55	CCI 4" x 0.75" Plate	103.25 - 103.50	1.0000	1.0000
L13	56	CCI 4" x 0.75" Plate	103.25 - 103.50	1.0000	1.0000
L14	8	WR-VG86ST-BRD(3/4)	98.50 - 103.25	1.0000	1.0000
L14	18	LDF7-50A(1-5/8)	98.50 - 103.25	1.0000	1.0000
L14	24	CCI 4.5" x 1" Plate	98.50 - 100.00	1.0000	1.0000
L14	25	CCI 4.5" x 1" Plate	98.50 - 100.00	1.0000	1.0000
L14	26	CCI 4.5" x 1" Plate	98.50 - 100.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L14	36	CCI 4.5" x 1" Plate	98.50 - 103.25	1.0000	1.0000
L14	37	CCI 4.5" x 1" Plate	98.50 - 103.25	1.0000	1.0000
L14	38	CCI 4.5" x 1" Plate	98.50 - 103.25	1.0000	1.0000
L14	44	CCI 4.5" x 1" Plate	99.50 - 103.25	1.0000	1.0000
L14	45	CCI 4.5" x 1" Plate	99.50 - 103.25	1.0000	1.0000
L14	46	CCI 4.5" x 1" Plate	99.50 - 103.25	1.0000	1.0000
L14	54	CCI 4" x 0.75" Plate	98.50 - 103.25	1.0000	1.0000
L14	55	CCI 4" x 0.75" Plate	98.50 - 103.25	1.0000	1.0000
L14	56	CCI 4" x 0.75" Plate	98.50 - 103.25	1.0000	1.0000
L15	8	WR-VG86ST-BRD(3/4)	98.25 - 98.50	1.0000	1.0000
L15	18	LDF7-50A(1-5/8)	98.25 - 98.50	1.0000	1.0000
L15	24	CCI 4.5" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L15	25	CCI 4.5" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L15	26	CCI 4.5" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L15	36	CCI 4.5" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L15	37	CCI 4.5" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L15	38	CCI 4.5" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L15	54	CCI 4" x 0.75" Plate	98.25 - 98.50	1.0000	1.0000
L15	55	CCI 4" x 0.75" Plate	98.25 - 98.50	1.0000	1.0000
L15	56	CCI 4" x 0.75" Plate	98.25 - 98.50	1.0000	1.0000
L16	8	WR-VG86ST-BRD(3/4)	97.58 - 98.25	1.0000	1.0000
L16	18	LDF7-50A(1-5/8)	97.58 - 98.25	1.0000	1.0000
L16	24	CCI 4.5" x 1" Plate	97.58 - 98.25	1.0000	1.0000
L16	25	CCI 4.5" x 1" Plate	97.58 - 98.25	1.0000	1.0000
L16	26	CCI 4.5" x 1" Plate	97.58 - 98.25	1.0000	1.0000
L16	36	CCI 4.5" x 1" Plate	97.58 - 98.25	1.0000	1.0000
L16	37	CCI 4.5" x 1" Plate	97.58 - 98.25	1.0000	1.0000
L16	38	CCI 4.5" x 1" Plate	97.58 - 98.25	1.0000	1.0000
L16	54	CCI 4" x 0.75" Plate	97.58 - 98.25	1.0000	1.0000
L16	55	CCI 4" x 0.75" Plate	97.58 - 98.25	1.0000	1.0000
L16	56	CCI 4" x 0.75" Plate	97.58 - 98.25	1.0000	1.0000
L17	8	WR-VG86ST-BRD(3/4)	97.33 - 97.58	1.0000	1.0000
L17	18	LDF7-50A(1-5/8)	97.33 - 97.58	1.0000	1.0000
L17	24	CCI 4.5" x 1" Plate	97.33 - 97.58	1.0000	1.0000
L17	25	CCI 4.5" x 1" Plate	97.33 - 97.58	1.0000	1.0000
L17	26	CCI 4.5" x 1" Plate	97.33 - 97.58	1.0000	1.0000
L17	36	CCI 4.5" x 1" Plate	97.33 - 97.58	1.0000	1.0000
L17	37	CCI 4.5" x 1" Plate	97.33 - 97.58	1.0000	1.0000
L17	38	CCI 4.5" x 1" Plate	97.33 - 97.58	1.0000	1.0000
L17	54	CCI 4" x 0.75" Plate	97.33 - 97.58	1.0000	1.0000
L17	55	CCI 4" x 0.75" Plate	97.33 - 97.58	1.0000	1.0000
L17	56	CCI 4" x 0.75" Plate	97.33 - 97.58	1.0000	1.0000
L18	8	WR-VG86ST-BRD(3/4)	92.33 - 97.33	1.0000	1.0000
L18	18	LDF7-50A(1-5/8)	92.33 - 97.33	1.0000	1.0000
L18	24	CCI 4.5" x 1" Plate	92.33 - 97.33	1.0000	1.0000
L18	25	CCI 4.5" x 1" Plate	92.33 - 97.33	1.0000	1.0000
L18	26	CCI 4.5" x 1" Plate	92.33 - 97.33	1.0000	1.0000
L18	36	CCI 4.5" x 1" Plate	92.33 - 97.33	1.0000	1.0000
L18	37	CCI 4.5" x 1" Plate	92.33 - 97.33	1.0000	1.0000
L18	38	CCI 4.5" x 1" Plate	92.33 - 97.33	1.0000	1.0000
L18	54	CCI 4" x 0.75" Plate	97.00 - 97.33	1.0000	1.0000
L18	55	CCI 4" x 0.75" Plate	97.00 - 97.33	1.0000	1.0000
L18	56	CCI 4" x 0.75" Plate	97.00 - 97.33	1.0000	1.0000
L19	8	WR-VG86ST-BRD(3/4)	87.12 - 92.33	1.0000	1.0000
L19	18	LDF7-50A(1-5/8)	87.12 - 92.33	1.0000	1.0000
L19	24	CCI 4.5" x 1" Plate	90.00 - 92.33	1.0000	1.0000
L19	25	CCI 4.5" x 1" Plate	90.00 - 92.33	1.0000	1.0000
L19	26	CCI 4.5" x 1" Plate	90.00 - 92.33	1.0000	1.0000
L19	36	CCI 4.5" x 1" Plate	90.00 - 92.33	1.0000	1.0000
L19	37	CCI 4.5" x 1" Plate	90.00 - 92.33	1.0000	1.0000
L19	38	CCI 4.5" x 1" Plate	90.00 - 92.33	1.0000	1.0000
L21	8	WR-VG86ST-BRD(3/4)	83.00 - 86.12	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L21	18	LDF7-50A(1-5/8)	83.00 - 86.12	1.0000	1.0000
L21	40	CCI 6" x 1" Plate	83.00 - 85.00	1.0000	1.0000
L21	41	CCI 6" x 1" Plate	83.00 - 85.00	1.0000	1.0000
L21	42	CCI 6" x 1" Plate	83.00 - 85.00	1.0000	1.0000
L22	8	WR-VG86ST-BRD(3/4)	82.75 - 83.00	1.0000	1.0000
L22	18	LDF7-50A(1-5/8)	82.75 - 83.00	1.0000	1.0000
L22	40	CCI 6" x 1" Plate	82.75 - 83.00	1.0000	1.0000
L22	41	CCI 6" x 1" Plate	82.75 - 83.00	1.0000	1.0000
L22	42	CCI 6" x 1" Plate	82.75 - 83.00	1.0000	1.0000
L23	8	WR-VG86ST-BRD(3/4)	77.75 - 82.75	1.0000	1.0000
L23	18	LDF7-50A(1-5/8)	77.75 - 82.75	1.0000	1.0000
L23	32	CCI 6.5" x 1.25" Plate	77.75 - 80.00	1.0000	1.0000
L23	33	CCI 6.5" x 1.25" Plate	77.75 - 80.00	1.0000	1.0000
L23	34	CCI 6.5" x 1.25" Plate	77.75 - 80.00	1.0000	1.0000
L23	40	CCI 6" x 1" Plate	77.75 - 82.75	1.0000	1.0000
L23	41	CCI 6" x 1" Plate	77.75 - 82.75	1.0000	1.0000
L23	42	CCI 6" x 1" Plate	77.75 - 82.75	1.0000	1.0000
L24	8	WR-VG86ST-BRD(3/4)	77.25 - 77.75	1.0000	1.0000
L24	18	LDF7-50A(1-5/8)	77.25 - 77.75	1.0000	1.0000
L24	32	CCI 6.5" x 1.25" Plate	77.25 - 77.75	1.0000	1.0000
L24	33	CCI 6.5" x 1.25" Plate	77.25 - 77.75	1.0000	1.0000
L24	34	CCI 6.5" x 1.25" Plate	77.25 - 77.75	1.0000	1.0000
L24	40	CCI 6" x 1" Plate	77.25 - 77.75	1.0000	1.0000
L24	41	CCI 6" x 1" Plate	77.25 - 77.75	1.0000	1.0000
L24	42	CCI 6" x 1" Plate	77.25 - 77.75	1.0000	1.0000
L25	8	WR-VG86ST-BRD(3/4)	77.00 - 77.25	1.0000	1.0000
L25	18	LDF7-50A(1-5/8)	77.00 - 77.25	1.0000	1.0000
L25	32	CCI 6.5" x 1.25" Plate	77.00 - 77.25	1.0000	1.0000
L25	33	CCI 6.5" x 1.25" Plate	77.00 - 77.25	1.0000	1.0000
L25	34	CCI 6.5" x 1.25" Plate	77.00 - 77.25	1.0000	1.0000
L25	40	CCI 6" x 1" Plate	77.00 - 77.25	1.0000	1.0000
L25	41	CCI 6" x 1" Plate	77.00 - 77.25	1.0000	1.0000
L25	42	CCI 6" x 1" Plate	77.00 - 77.25	1.0000	1.0000
L26	8	WR-VG86ST-BRD(3/4)	76.75 - 77.00	1.0000	1.0000
L26	18	LDF7-50A(1-5/8)	76.75 - 77.00	1.0000	1.0000
L26	32	CCI 6.5" x 1.25" Plate	76.75 - 77.00	1.0000	1.0000
L26	33	CCI 6.5" x 1.25" Plate	76.75 - 77.00	1.0000	1.0000
L26	34	CCI 6.5" x 1.25" Plate	76.75 - 77.00	1.0000	1.0000
L26	40	CCI 6" x 1" Plate	76.75 - 77.00	1.0000	1.0000
L26	41	CCI 6" x 1" Plate	76.75 - 77.00	1.0000	1.0000
L26	42	CCI 6" x 1" Plate	76.75 - 77.00	1.0000	1.0000
L27	8	WR-VG86ST-BRD(3/4)	71.75 - 76.75	1.0000	1.0000
L27	18	LDF7-50A(1-5/8)	71.75 - 76.75	1.0000	1.0000
L27	32	CCI 6.5" x 1.25" Plate	71.75 - 76.75	1.0000	1.0000
L27	33	CCI 6.5" x 1.25" Plate	71.75 - 76.75	1.0000	1.0000
L27	34	CCI 6.5" x 1.25" Plate	71.75 - 76.75	1.0000	1.0000
L27	40	CCI 6" x 1" Plate	75.00 - 76.75	1.0000	1.0000
L27	41	CCI 6" x 1" Plate	75.00 - 76.75	1.0000	1.0000
L27	42	CCI 6" x 1" Plate	75.00 - 76.75	1.0000	1.0000
L28	8	WR-VG86ST-BRD(3/4)	69.00 - 71.75	1.0000	1.0000
L28	18	LDF7-50A(1-5/8)	69.00 - 71.75	1.0000	1.0000
L28	32	CCI 6.5" x 1.25" Plate	69.00 - 71.75	1.0000	1.0000
L28	33	CCI 6.5" x 1.25" Plate	69.00 - 71.75	1.0000	1.0000
L28	34	CCI 6.5" x 1.25" Plate	69.00 - 71.75	1.0000	1.0000
L28	60	CCI 6" x 1" Plate	69.00 - 71.00	1.0000	1.0000
L28	61	CCI 6" x 1" Plate	69.00 - 71.00	1.0000	1.0000
L28	62	CCI 6" x 1" Plate	69.00 - 71.00	1.0000	1.0000
L29	8	WR-VG86ST-BRD(3/4)	68.75 - 69.00	1.0000	1.0000
L29	18	LDF7-50A(1-5/8)	68.75 - 69.00	1.0000	1.0000
L29	32	CCI 6.5" x 1.25" Plate	68.75 - 69.00	1.0000	1.0000
L29	33	CCI 6.5" x 1.25" Plate	68.75 - 69.00	1.0000	1.0000
L29	34	CCI 6.5" x 1.25" Plate	68.75 - 69.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L29	60	CCI 6" x 1" Plate	68.75 - 69.00	1.0000	1.0000
L29	61	CCI 6" x 1" Plate	68.75 - 69.00	1.0000	1.0000
L29	62	CCI 6" x 1" Plate	68.75 - 69.00	1.0000	1.0000
L30	8	WR-VG86ST-BRD(3/4)	63.75 - 68.75	1.0000	1.0000
L30	18	LDF7-50A(1-5/8)	63.75 - 68.75	1.0000	1.0000
L30	32	CCI 6.5" x 1.25" Plate	63.75 - 68.75	1.0000	1.0000
L30	33	CCI 6.5" x 1.25" Plate	63.75 - 68.75	1.0000	1.0000
L30	34	CCI 6.5" x 1.25" Plate	63.75 - 68.75	1.0000	1.0000
L30	60	CCI 6" x 1" Plate	63.75 - 68.75	1.0000	1.0000
L30	61	CCI 6" x 1" Plate	63.75 - 68.75	1.0000	1.0000
L30	62	CCI 6" x 1" Plate	63.75 - 68.75	1.0000	1.0000
L31	8	WR-VG86ST-BRD(3/4)	60.00 - 63.75	1.0000	1.0000
L31	18	LDF7-50A(1-5/8)	60.00 - 63.75	1.0000	1.0000
L31	32	CCI 6.5" x 1.25" Plate	60.00 - 63.75	1.0000	1.0000
L31	33	CCI 6.5" x 1.25" Plate	60.00 - 63.75	1.0000	1.0000
L31	34	CCI 6.5" x 1.25" Plate	60.00 - 63.75	1.0000	1.0000
L31	52	CCI 8.5" x 1.25" Plate	60.00 - 62.25	1.0000	1.0000
L31	60	CCI 6" x 1" Plate	60.00 - 63.75	1.0000	1.0000
L31	61	CCI 6" x 1" Plate	60.00 - 63.75	1.0000	1.0000
L31	62	CCI 6" x 1" Plate	60.00 - 63.75	1.0000	1.0000
L32	8	WR-VG86ST-BRD(3/4)	59.75 - 60.00	1.0000	1.0000
L32	18	LDF7-50A(1-5/8)	59.75 - 60.00	1.0000	1.0000
L32	32	CCI 6.5" x 1.25" Plate	59.75 - 60.00	1.0000	1.0000
L32	33	CCI 6.5" x 1.25" Plate	59.75 - 60.00	1.0000	1.0000
L32	34	CCI 6.5" x 1.25" Plate	59.75 - 60.00	1.0000	1.0000
L32	52	CCI 8.5" x 1.25" Plate	59.75 - 60.00	1.0000	1.0000
L32	60	CCI 6" x 1" Plate	59.75 - 60.00	1.0000	1.0000
L32	61	CCI 6" x 1" Plate	59.75 - 60.00	1.0000	1.0000
L32	62	CCI 6" x 1" Plate	59.75 - 60.00	1.0000	1.0000
L33	8	WR-VG86ST-BRD(3/4)	58.50 - 59.75	1.0000	1.0000
L33	18	LDF7-50A(1-5/8)	58.50 - 59.75	1.0000	1.0000
L33	32	CCI 6.5" x 1.25" Plate	58.50 - 59.75	1.0000	1.0000
L33	33	CCI 6.5" x 1.25" Plate	58.50 - 59.75	1.0000	1.0000
L33	34	CCI 6.5" x 1.25" Plate	58.50 - 59.75	1.0000	1.0000
L33	52	CCI 8.5" x 1.25" Plate	58.50 - 59.75	1.0000	1.0000
L33	58	CCI 6.5" x 1.25" Plate	58.50 - 59.50	1.0000	1.0000
L33	60	CCI 6" x 1" Plate	58.50 - 59.75	1.0000	1.0000
L33	61	CCI 6" x 1" Plate	58.50 - 59.75	1.0000	1.0000
L33	62	CCI 6" x 1" Plate	58.50 - 59.75	1.0000	1.0000
L34	8	WR-VG86ST-BRD(3/4)	58.25 - 58.50	1.0000	1.0000
L34	18	LDF7-50A(1-5/8)	58.25 - 58.50	1.0000	1.0000
L34	32	CCI 6.5" x 1.25" Plate	58.25 - 58.50	1.0000	1.0000
L34	33	CCI 6.5" x 1.25" Plate	58.25 - 58.50	1.0000	1.0000
L34	34	CCI 6.5" x 1.25" Plate	58.25 - 58.50	1.0000	1.0000
L34	52	CCI 8.5" x 1.25" Plate	58.25 - 58.50	1.0000	1.0000
L34	58	CCI 6.5" x 1.25" Plate	58.25 - 58.50	1.0000	1.0000
L34	60	CCI 6" x 1" Plate	58.25 - 58.50	1.0000	1.0000
L34	61	CCI 6" x 1" Plate	58.25 - 58.50	1.0000	1.0000
L34	62	CCI 6" x 1" Plate	58.25 - 58.50	1.0000	1.0000
L35	8	WR-VG86ST-BRD(3/4)	58.00 - 58.25	1.0000	1.0000
L35	18	LDF7-50A(1-5/8)	58.00 - 58.25	1.0000	1.0000
L35	32	CCI 6.5" x 1.25" Plate	58.00 - 58.25	1.0000	1.0000
L35	33	CCI 6.5" x 1.25" Plate	58.00 - 58.25	1.0000	1.0000
L35	34	CCI 6.5" x 1.25" Plate	58.00 - 58.25	1.0000	1.0000
L35	52	CCI 8.5" x 1.25" Plate	58.00 - 58.25	1.0000	1.0000
L35	58	CCI 6.5" x 1.25" Plate	58.00 - 58.25	1.0000	1.0000
L35	60	CCI 6" x 1" Plate	58.00 - 58.25	1.0000	1.0000
L35	61	CCI 6" x 1" Plate	58.00 - 58.25	1.0000	1.0000
L35	62	CCI 6" x 1" Plate	58.00 - 58.25	1.0000	1.0000
L36	8	WR-VG86ST-BRD(3/4)	57.75 - 58.00	1.0000	1.0000
L36	18	LDF7-50A(1-5/8)	57.75 - 58.00	1.0000	1.0000
L36	32	CCI 6.5" x 1.25" Plate	57.75 - 58.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L36	33	CCI 6.5" x 1.25" Plate	57.75 - 58.00	1.0000	1.0000
L36	34	CCI 6.5" x 1.25" Plate	57.75 - 58.00	1.0000	1.0000
L36	52	CCI 8.5" x 1.25" Plate	57.75 - 58.00	1.0000	1.0000
L36	58	CCI 6.5" x 1.25" Plate	57.75 - 58.00	1.0000	1.0000
L36	60	CCI 6" x 1" Plate	57.75 - 58.00	1.0000	1.0000
L36	61	CCI 6" x 1" Plate	57.75 - 58.00	1.0000	1.0000
L36	62	CCI 6" x 1" Plate	57.75 - 58.00	1.0000	1.0000
L37	8	WR-VG86ST-BRD(3/4)	56.75 - 57.75	1.0000	1.0000
L37	18	LDF7-50A(1-5/8)	56.75 - 57.75	1.0000	1.0000
L37	32	CCI 6.5" x 1.25" Plate	56.75 - 57.75	1.0000	1.0000
L37	33	CCI 6.5" x 1.25" Plate	56.75 - 57.75	1.0000	1.0000
L37	34	CCI 6.5" x 1.25" Plate	56.75 - 57.75	1.0000	1.0000
L37	52	CCI 8.5" x 1.25" Plate	56.75 - 57.75	1.0000	1.0000
L37	58	CCI 6.5" x 1.25" Plate	56.75 - 57.75	1.0000	1.0000
L37	60	CCI 6" x 1" Plate	56.75 - 57.75	1.0000	1.0000
L37	61	CCI 6" x 1" Plate	56.75 - 57.75	1.0000	1.0000
L37	62	CCI 6" x 1" Plate	56.75 - 57.75	1.0000	1.0000
L38	8	WR-VG86ST-BRD(3/4)	56.50 - 56.75	1.0000	1.0000
L38	18	LDF7-50A(1-5/8)	56.50 - 56.75	1.0000	1.0000
L38	32	CCI 6.5" x 1.25" Plate	56.50 - 56.75	1.0000	1.0000
L38	33	CCI 6.5" x 1.25" Plate	56.50 - 56.75	1.0000	1.0000
L38	34	CCI 6.5" x 1.25" Plate	56.50 - 56.75	1.0000	1.0000
L38	52	CCI 8.5" x 1.25" Plate	56.50 - 56.75	1.0000	1.0000
L38	58	CCI 6.5" x 1.25" Plate	56.50 - 56.75	1.0000	1.0000
L38	60	CCI 6" x 1" Plate	56.50 - 56.75	1.0000	1.0000
L38	61	CCI 6" x 1" Plate	56.50 - 56.75	1.0000	1.0000
L38	62	CCI 6" x 1" Plate	56.50 - 56.75	1.0000	1.0000
L39	8	WR-VG86ST-BRD(3/4)	51.50 - 56.50	1.0000	1.0000
L39	18	LDF7-50A(1-5/8)	51.50 - 56.50	1.0000	1.0000
L39	32	CCI 6.5" x 1.25" Plate	51.50 - 56.50	1.0000	1.0000
L39	33	CCI 6.5" x 1.25" Plate	51.50 - 56.50	1.0000	1.0000
L39	34	CCI 6.5" x 1.25" Plate	51.50 - 56.50	1.0000	1.0000
L39	52	CCI 8.5" x 1.25" Plate	51.50 - 56.50	1.0000	1.0000
L39	58	CCI 6.5" x 1.25" Plate	51.50 - 56.50	1.0000	1.0000
L39	60	CCI 6" x 1" Plate	56.00 - 56.50	1.0000	1.0000
L39	61	CCI 6" x 1" Plate	56.00 - 56.50	1.0000	1.0000
L39	62	CCI 6" x 1" Plate	56.00 - 56.50	1.0000	1.0000
L40	8	WR-VG86ST-BRD(3/4)	42.04 - 51.50	1.0000	1.0000
L40	18	LDF7-50A(1-5/8)	42.04 - 51.50	1.0000	1.0000
L40	32	CCI 6.5" x 1.25" Plate	42.04 - 51.50	1.0000	1.0000
L40	33	CCI 6.5" x 1.25" Plate	42.04 - 51.50	1.0000	1.0000
L40	34	CCI 6.5" x 1.25" Plate	42.04 - 51.50	1.0000	1.0000
L40	52	CCI 8.5" x 1.25" Plate	42.04 - 51.50	1.0000	1.0000
L40	58	CCI 6.5" x 1.25" Plate	42.04 - 51.50	1.0000	1.0000
L42	8	WR-VG86ST-BRD(3/4)	36.04 - 41.04	1.0000	1.0000
L42	18	LDF7-50A(1-5/8)	36.04 - 41.04	1.0000	1.0000
L42	32	CCI 6.5" x 1.25" Plate	36.04 - 41.04	1.0000	1.0000
L42	33	CCI 6.5" x 1.25" Plate	36.04 - 41.04	1.0000	1.0000
L42	34	CCI 6.5" x 1.25" Plate	36.04 - 41.04	1.0000	1.0000
L42	52	CCI 8.5" x 1.25" Plate	36.04 - 41.04	1.0000	1.0000
L42	58	CCI 6.5" x 1.25" Plate	36.04 - 41.04	1.0000	1.0000
L43	8	WR-VG86ST-BRD(3/4)	31.25 - 36.04	1.0000	1.0000
L43	18	LDF7-50A(1-5/8)	31.25 - 36.04	1.0000	1.0000
L43	28	CCI 8.5" x 1.25" Plate	31.25 - 35.00	1.0000	1.0000
L43	29	CCI 8.5" x 1.25" Plate	31.25 - 35.00	1.0000	1.0000
L43	30	CCI 8.5" x 1.25" Plate	31.25 - 35.00	1.0000	1.0000
L43	32	CCI 6.5" x 1.25" Plate	31.25 - 36.04	1.0000	1.0000
L43	33	CCI 6.5" x 1.25" Plate	35.00 - 36.04	1.0000	1.0000
L43	34	CCI 6.5" x 1.25" Plate	35.00 - 36.04	1.0000	1.0000
L43	52	CCI 8.5" x 1.25" Plate	31.25 - 36.04	1.0000	1.0000
L43	58	CCI 6.5" x 1.25" Plate	31.25 - 36.04	1.0000	1.0000
L44	8	WR-VG86ST-BRD(3/4)	31.00 - 31.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L44	18	LDF7-50A(1-5/8)	31.00 - 31.25	1.0000	1.0000
L44	28	CCI 8.5" x 1.25" Plate	31.00 - 31.25	1.0000	1.0000
L44	29	CCI 8.5" x 1.25" Plate	31.00 - 31.25	1.0000	1.0000
L44	30	CCI 8.5" x 1.25" Plate	31.00 - 31.25	1.0000	1.0000
L44	32	CCI 6.5" x 1.25" Plate	31.00 - 31.25	1.0000	1.0000
L44	52	CCI 8.5" x 1.25" Plate	31.00 - 31.25	1.0000	1.0000
L44	58	CCI 6.5" x 1.25" Plate	31.00 - 31.25	1.0000	1.0000
L45	8	WR-VG86ST-BRD(3/4)	27.75 - 31.00	1.0000	1.0000
L45	18	LDF7-50A(1-5/8)	27.75 - 31.00	1.0000	1.0000
L45	28	CCI 8.5" x 1.25" Plate	27.75 - 31.00	1.0000	1.0000
L45	29	CCI 8.5" x 1.25" Plate	27.75 - 31.00	1.0000	1.0000
L45	30	CCI 8.5" x 1.25" Plate	27.75 - 31.00	1.0000	1.0000
L45	32	CCI 6.5" x 1.25" Plate	27.75 - 31.00	1.0000	1.0000
L45	48	CCI 5.5" x 1.25" Plate	27.75 - 30.00	1.0000	1.0000
L45	49	CCI 5.5" x 1.25" Plate	27.75 - 30.00	1.0000	1.0000
L45	50	CCI 6.5" x 1.25" Plate	27.75 - 30.00	1.0000	1.0000
L45	52	CCI 8.5" x 1.25" Plate	27.75 - 31.00	1.0000	1.0000
L45	58	CCI 6.5" x 1.25" Plate	27.75 - 31.00	1.0000	1.0000
L46	8	WR-VG86ST-BRD(3/4)	27.50 - 27.75	1.0000	1.0000
L46	18	LDF7-50A(1-5/8)	27.50 - 27.75	1.0000	1.0000
L46	28	CCI 8.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L46	29	CCI 8.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L46	30	CCI 8.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L46	32	CCI 6.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L46	48	CCI 5.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L46	49	CCI 5.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L46	50	CCI 6.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L46	52	CCI 8.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L46	58	CCI 6.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L47	8	WR-VG86ST-BRD(3/4)	27.25 - 27.50	1.0000	1.0000
L47	18	LDF7-50A(1-5/8)	27.25 - 27.50	1.0000	1.0000
L47	28	CCI 8.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L47	29	CCI 8.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L47	30	CCI 8.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L47	32	CCI 6.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L47	48	CCI 5.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L47	49	CCI 5.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L47	50	CCI 6.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L47	52	CCI 8.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L47	58	CCI 6.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L48	8	WR-VG86ST-BRD(3/4)	27.00 - 27.25	1.0000	1.0000
L48	18	LDF7-50A(1-5/8)	27.00 - 27.25	1.0000	1.0000
L48	28	CCI 8.5" x 1.25" Plate	27.00 - 27.25	1.0000	1.0000
L48	29	CCI 8.5" x 1.25" Plate	27.00 - 27.25	1.0000	1.0000
L48	30	CCI 8.5" x 1.25" Plate	27.00 - 27.25	1.0000	1.0000
L48	32	CCI 6.5" x 1.25" Plate	27.00 - 27.25	1.0000	1.0000
L48	48	CCI 5.5" x 1.25" Plate	27.00 - 27.25	1.0000	1.0000
L48	49	CCI 5.5" x 1.25" Plate	27.00 - 27.25	1.0000	1.0000
L48	50	CCI 6.5" x 1.25" Plate	27.00 - 27.25	1.0000	1.0000
L48	58	CCI 6.5" x 1.25" Plate	27.00 - 27.25	1.0000	1.0000
L49	8	WR-VG86ST-BRD(3/4)	22.00 - 27.00	1.0000	1.0000
L49	18	LDF7-50A(1-5/8)	22.00 - 27.00	1.0000	1.0000
L49	28	CCI 8.5" x 1.25" Plate	22.00 - 27.00	1.0000	1.0000
L49	29	CCI 8.5" x 1.25" Plate	22.00 - 27.00	1.0000	1.0000
L49	30	CCI 8.5" x 1.25" Plate	22.00 - 27.00	1.0000	1.0000
L49	32	CCI 6.5" x 1.25" Plate	25.00 - 27.00	1.0000	1.0000
L49	48	CCI 5.5" x 1.25" Plate	22.00 - 27.00	1.0000	1.0000
L49	49	CCI 5.5" x 1.25" Plate	22.00 - 27.00	1.0000	1.0000
L49	50	CCI 6.5" x 1.25" Plate	22.00 - 27.00	1.0000	1.0000
L49	58	CCI 6.5" x 1.25" Plate	24.50 - 27.00	1.0000	1.0000
L50	8	WR-VG86ST-BRD(3/4)	17.00 - 22.00	1.0000	1.0000
L50	18	LDF7-50A(1-5/8)	17.00 - 22.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L50	28	CCI 8.5" x 1.25" Plate	17.00 - 22.00	1.0000	1.0000
L50	29	CCI 8.5" x 1.25" Plate	17.00 - 22.00	1.0000	1.0000
L50	30	CCI 8.5" x 1.25" Plate	17.00 - 22.00	1.0000	1.0000
L50	48	CCI 5.5" x 1.25" Plate	17.00 - 22.00	1.0000	1.0000
L50	49	CCI 5.5" x 1.25" Plate	17.00 - 22.00	1.0000	1.0000
L50	50	CCI 6.5" x 1.25" Plate	17.00 - 22.00	1.0000	1.0000
L51	8	WR-VG86ST-BRD(3/4)	12.00 - 17.00	1.0000	1.0000
L51	18	LDF7-50A(1-5/8)	12.00 - 17.00	1.0000	1.0000
L51	28	CCI 8.5" x 1.25" Plate	12.00 - 17.00	1.0000	1.0000
L51	29	CCI 8.5" x 1.25" Plate	12.00 - 17.00	1.0000	1.0000
L51	30	CCI 8.5" x 1.25" Plate	12.00 - 17.00	1.0000	1.0000
L51	48	CCI 5.5" x 1.25" Plate	12.00 - 17.00	1.0000	1.0000
L51	49	CCI 5.5" x 1.25" Plate	12.00 - 17.00	1.0000	1.0000
L51	50	CCI 6.5" x 1.25" Plate	12.00 - 17.00	1.0000	1.0000
L52	8	WR-VG86ST-BRD(3/4)	7.00 - 12.00	1.0000	1.0000
L52	18	LDF7-50A(1-5/8)	7.00 - 12.00	1.0000	1.0000
L52	28	CCI 8.5" x 1.25" Plate	7.00 - 12.00	1.0000	1.0000
L52	29	CCI 8.5" x 1.25" Plate	7.00 - 12.00	1.0000	1.0000
L52	30	CCI 8.5" x 1.25" Plate	7.00 - 12.00	1.0000	1.0000
L52	48	CCI 5.5" x 1.25" Plate	7.00 - 12.00	1.0000	1.0000
L52	49	CCI 5.5" x 1.25" Plate	7.00 - 12.00	1.0000	1.0000
L52	50	CCI 6.5" x 1.25" Plate	7.00 - 12.00	1.0000	1.0000
L53	8	WR-VG86ST-BRD(3/4)	2.00 - 7.00	1.0000	1.0000
L53	18	LDF7-50A(1-5/8)	2.00 - 7.00	1.0000	1.0000
L53	28	CCI 8.5" x 1.25" Plate	2.00 - 7.00	1.0000	1.0000
L53	29	CCI 8.5" x 1.25" Plate	2.00 - 7.00	1.0000	1.0000
L53	30	CCI 8.5" x 1.25" Plate	2.00 - 7.00	1.0000	1.0000
L53	48	CCI 5.5" x 1.25" Plate	2.00 - 7.00	1.0000	1.0000
L53	49	CCI 5.5" x 1.25" Plate	2.00 - 7.00	1.0000	1.0000
L53	50	CCI 6.5" x 1.25" Plate	2.00 - 7.00	1.0000	1.0000
L54	8	WR-VG86ST-BRD(3/4)	0.00 - 2.00	1.0000	1.0000
L54	18	LDF7-50A(1-5/8)	0.00 - 2.00	1.0000	1.0000
L54	28	CCI 8.5" x 1.25" Plate	0.00 - 2.00	1.0000	1.0000
L54	29	CCI 8.5" x 1.25" Plate	0.00 - 2.00	1.0000	1.0000
L54	30	CCI 8.5" x 1.25" Plate	0.00 - 2.00	1.0000	1.0000
L54	48	CCI 5.5" x 1.25" Plate	0.00 - 2.00	1.0000	1.0000
L54	49	CCI 5.5" x 1.25" Plate	0.00 - 2.00	1.0000	1.0000
L54	50	CCI 6.5" x 1.25" Plate	0.00 - 2.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod 5/8" x 5' (E)	C	None		0.000	147.000	No Ice	0.313	0.313	0.006
						1/2" Ice	0.826	0.826	0.010
						1" Ice	1.322	1.322	0.016
						2" Ice	1.957	1.957	0.040
Strobe (E)	C	None		0.000	149.500	No Ice	4.500	3.000	0.020
						1/2" Ice	4.770	3.237	0.058
						1" Ice	5.048	3.481	0.100

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	5.626	3.993	0.198
5' x 2" Pipe Mount (E-For Strobe)	C	None		0.000	147.000	No Ice	1.188	1.188	0.018
						1/2" Ice	1.496	1.496	0.027
						1" Ice	1.807	1.807	0.040
						2" Ice	2.458	2.458	0.076
Top Hat (E)	C	None		0.000	146.000	No Ice	3.000	3.000	0.081
						1/2" Ice	3.480	3.480	0.111
						1" Ice	3.960	3.960	0.141
						2" Ice	4.920	4.920	0.201
-									
840370799 w/ Mount Pipe (P)	A	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice	13.898	9.326	0.139
						1/2" Ice	14.603	10.841	0.236
						1" Ice	15.317	12.381	0.343
						2" Ice	16.681	14.712	0.593
840370799 w/ Mount Pipe (P)	B	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice	13.898	9.326	0.139
						1/2" Ice	14.603	10.841	0.236
						1" Ice	15.317	12.381	0.343
						2" Ice	16.681	14.712	0.593
840370799 w/ Mount Pipe (P)	C	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice	13.898	9.326	0.139
						1/2" Ice	14.603	10.841	0.236
						1" Ice	15.317	12.381	0.343
						2" Ice	16.681	14.712	0.593
AM-X-CD-17-65-00T-RET w/ Mount Pipe (P)	B	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice	6.090	4.310	0.092
						1/2" Ice	6.660	4.860	0.170
						1" Ice	7.240	5.420	0.261
						2" Ice	8.430	6.570	0.484
RRUS 4478 B5 (P)	A	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice	1.843	1.059	0.060
						1/2" Ice	2.012	1.197	0.076
						1" Ice	2.190	1.342	0.094
						2" Ice	2.566	1.656	0.140
RRUS 4478 B5 (P)	B	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice	1.843	1.059	0.060
						1/2" Ice	2.012	1.197	0.076
						1" Ice	2.190	1.342	0.094
						2" Ice	2.566	1.656	0.140
RRUS 4478 B5 (P)	C	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice	1.843	1.059	0.060
						1/2" Ice	2.012	1.197	0.076
						1" Ice	2.190	1.342	0.094
						2" Ice	2.566	1.656	0.140
RRUS 4478 B14 (P)	A	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice	1.843	1.059	0.060
						1/2" Ice	2.012	1.197	0.076
						1" Ice	2.190	1.342	0.094
						2" Ice	2.566	1.656	0.140
RRUS 4478 B14 (P)	B	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice	1.843	1.059	0.060
						1/2" Ice	2.012	1.197	0.076
						1" Ice	2.190	1.342	0.094
						2" Ice	2.566	1.656	0.140
RRUS 4478 B14 (P)	C	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice	1.843	1.059	0.060
						1/2" Ice	2.012	1.197	0.076
						1" Ice	2.190	1.342	0.094
						2" Ice	2.566	1.656	0.140
RRUS 32 (P)	A	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice	2.857	1.777	0.055
						1/2" Ice	3.083	1.968	0.077
						1" Ice	3.316	2.166	0.103
						2" Ice	3.805	2.583	0.165
RRUS 32 (P)	B	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice	2.857	1.777	0.055
						1/2" Ice	3.083	1.968	0.077
						1" Ice	3.316	2.166	0.103

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	3.805	2.583	0.165
RRUS 32	C	From Leg	4.000	0.000	145.000	No Ice	2.857	1.777	0.055
(P)			0.000			1/2" Ice	3.083	1.968	0.077
			0.000			1" Ice	3.316	2.166	0.103
						2" Ice	3.805	2.583	0.165
RRUS 32 B2	A	From Leg	4.000	0.000	145.000	No Ice	2.731	1.668	0.053
(P)			0.000			1/2" Ice	2.953	1.855	0.074
			0.000			1" Ice	3.182	2.049	0.098
						2" Ice	3.663	2.458	0.157
RRUS 32 B2	B	From Leg	4.000	0.000	145.000	No Ice	2.731	1.668	0.053
(P)			0.000			1/2" Ice	2.953	1.855	0.074
			0.000			1" Ice	3.182	2.049	0.098
						2" Ice	3.663	2.458	0.157
RRUS 32 B2	C	From Leg	4.000	0.000	145.000	No Ice	2.731	1.668	0.053
(P)			0.000			1/2" Ice	2.953	1.855	0.074
			0.000			1" Ice	3.182	2.049	0.098
						2" Ice	3.663	2.458	0.157
(2) LGP21401	A	From Leg	4.000	0.000	145.000	No Ice	1.104	0.207	0.014
(P)			0.000			1/2" Ice	1.239	0.274	0.021
			0.000			1" Ice	1.381	0.348	0.030
						2" Ice	1.688	0.521	0.055
(2) LGP21401	B	From Leg	4.000	0.000	145.000	No Ice	1.104	0.207	0.014
(P)			0.000			1/2" Ice	1.239	0.274	0.021
			0.000			1" Ice	1.381	0.348	0.030
						2" Ice	1.688	0.521	0.055
(2) LGP21401	C	From Leg	4.000	0.000	145.000	No Ice	1.104	0.207	0.014
(P)			0.000			1/2" Ice	1.239	0.274	0.021
			0.000			1" Ice	1.381	0.348	0.030
						2" Ice	1.688	0.521	0.055
(2) DBCT108F1V92-1	A	From Leg	4.000	0.000	145.000	No Ice	0.637	0.604	0.029
(P)			0.000			1/2" Ice	0.740	0.705	0.036
			0.000			1" Ice	0.850	0.813	0.045
						2" Ice	1.093	1.052	0.069
(2) DBCT108F1V92-1	B	From Leg	4.000	0.000	145.000	No Ice	0.637	0.604	0.029
(P)			0.000			1/2" Ice	0.740	0.705	0.036
			0.000			1" Ice	0.850	0.813	0.045
						2" Ice	1.093	1.052	0.069
(2) DBCT108F1V92-1	C	From Leg	4.000	0.000	145.000	No Ice	0.637	0.604	0.029
(P)			0.000			1/2" Ice	0.740	0.705	0.036
			0.000			1" Ice	0.850	0.813	0.045
						2" Ice	1.093	1.052	0.069
DC6-48-60-0-8F	B	From Leg	4.000	0.000	145.000	No Ice	0.917	0.917	0.033
(P)			0.000			1/2" Ice	1.458	1.458	0.051
			0.000			1" Ice	1.643	1.643	0.071
						2" Ice	2.042	2.042	0.119
DC6-48-60-18-8F	B	From Leg	4.000	0.000	145.000	No Ice	1.212	1.212	0.033
(P)			0.000			1/2" Ice	1.892	1.892	0.055
			0.000			1" Ice	2.105	2.105	0.080
						2" Ice	2.570	2.570	0.138
7770.00 w/ Mount Pipe	A	From Leg	4.000	0.000	145.000	No Ice	5.746	4.254	0.055
(Existing)			0.000			1/2" Ice	6.179	5.014	0.103
			0.000			1" Ice	6.607	5.711	0.157
						2" Ice	7.488	7.155	0.287
7770.00 w/ Mount Pipe	B	From Leg	4.000	0.000	145.000	No Ice	5.746	4.254	0.055
(Existing)			0.000			1/2" Ice	6.179	5.014	0.103
			0.000			1" Ice	6.607	5.711	0.157
						2" Ice	7.488	7.155	0.287

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
7770.00 w/ Mount Pipe (Existing)	C	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.746 6.179 6.607 7.488	4.254 5.014 5.711 7.155	0.055 0.103 0.157 0.287
AM-X-CD-17-65-00T-RET w/ Mount Pipe (Existing)	B	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.090 6.660 7.240 8.430	4.310 4.860 5.420 6.570	0.092 0.170 0.261 0.484
SBNH-1D6565C w/ Mount Pipe (Existing)	C	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.560 6.070 6.590 7.650	4.470 4.970 5.470 6.520	0.085 0.167 0.262 0.495
(2) 7020.00 (Existing)	A	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.102 0.147 0.199 0.326	0.175 0.239 0.311 0.476	0.002 0.005 0.009 0.022
(2) 7020.00 (Existing)	B	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.102 0.147 0.199 0.326	0.175 0.239 0.311 0.476	0.002 0.005 0.009 0.022
(2) 7020.00 (Existing)	C	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.102 0.147 0.199 0.326	0.175 0.239 0.311 0.476	0.002 0.005 0.009 0.022
(2) RRUS 11 (Existing)	A	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.784 2.992 3.207 3.658	1.187 1.334 1.490 1.833	0.048 0.068 0.092 0.150
(2) RRUS 11 (Existing)	B	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.784 2.992 3.207 3.658	1.187 1.334 1.490 1.833	0.048 0.068 0.092 0.150
(2) RRUS 11 (Existing)	C	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.784 2.992 3.207 3.658	1.187 1.334 1.490 1.833	0.048 0.068 0.092 0.150
DC6-48-60-18-8F (Existing)	B	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.212 1.892 2.105 2.570	1.212 1.892 2.105 2.570	0.033 0.055 0.080 0.138
8' x 2" Pipe Mount (E)	A	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
8' x 2" Pipe Mount (E)	B	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
8' x 2" Pipe Mount (E)	C	From Leg	4.000 0.000 0.000	0.000	145.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
Miscellaneous [NA 507-1] (P-HRK12)	C	None		0.000	148.500	No Ice 1/2" Ice 1" Ice 2" Ice	4.560 6.390 8.180 11.660	4.560 6.390 8.180 11.660	0.245 0.311 0.402 0.657
Platform Mount [LP 601-1]	C	None		0.000	145.000	No Ice	28.500	28.500	1.122

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(Existing)						1/2" Ice	31.690	31.690	1.676
						1" Ice	34.870	34.870	2.282
						2" Ice	41.230	41.230	3.653
Climbing Ladder (Flat) (E-Per Photos)	A	From Leg	3.000 0.000 -2.000	0.000	145.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.844 10.300 14.756 23.668	5.844 10.300 14.756 23.668	0.048 0.071 0.094 0.140
_									
QUAD656C0000X w/ Mount Pipe (R)	A	From Leg	4.000 0.000 2.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	13.479 14.096 14.682 15.867	7.331 8.547 9.500 11.376	0.080 0.174 0.277 0.512
QUAD656C0000X w/ Mount Pipe (R)	B	From Leg	4.000 0.000 2.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	13.479 14.096 14.682 15.867	7.331 8.547 9.500 11.376	0.080 0.174 0.277 0.512
QUAD656C0000X w/ Mount Pipe (R)	C	From Leg	4.000 0.000 2.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	13.479 14.096 14.682 15.867	7.331 8.547 9.500 11.376	0.080 0.174 0.277 0.512
(2) HBXX-6517DS-A2M w/ Mount Pipe (R)	A	From Leg	4.000 0.000 2.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.970 8.730 9.500 11.110	5.990 6.720 7.470 9.020	0.078 0.141 0.216 0.399
(2) HBXX-6517DS-A2M w/ Mount Pipe (R)	B	From Leg	4.000 0.000 2.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.970 8.730 9.500 11.110	5.990 6.720 7.470 9.020	0.078 0.141 0.216 0.399
(2) HBXX-6517DS-A2M w/ Mount Pipe (R)	C	From Leg	4.000 0.000 2.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.970 8.730 9.500 11.110	5.990 6.720 7.470 9.020	0.078 0.141 0.216 0.399
RRH2x60-700 (R)	A	From Leg	4.000 0.000 2.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.500 3.761 4.029 4.585	1.816 2.052 2.289 2.785	0.060 0.083 0.109 0.173
RRH2x60-700 (R)	B	From Leg	4.000 0.000 2.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.500 3.761 4.029 4.585	1.816 2.052 2.289 2.785	0.060 0.083 0.109 0.173
RRH2x60-700 (R)	C	From Leg	4.000 0.000 2.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.500 3.761 4.029 4.585	1.816 2.052 2.289 2.785	0.060 0.083 0.109 0.173
RRH2X60-PCS (R)	A	From Leg	4.000 0.000 2.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.200 2.393 2.593 3.015	1.723 1.901 2.087 2.480	0.055 0.075 0.099 0.155
RRH2X60-PCS (R)	B	From Leg	4.000 0.000 2.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.200 2.393 2.593 3.015	1.723 1.901 2.087 2.480	0.055 0.075 0.099 0.155
RRH2X60-PCS (R)	C	From Leg	4.000 0.000 2.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.200 2.393 2.593 3.015	1.723 1.901 2.087 2.480	0.055 0.075 0.099 0.155
B66A RRH4X45	A	From Leg	4.000	0.000	135.000	No Ice	2.580	1.630	0.057

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(R)			0.000			1/2" Ice	2.794	1.811	0.077
			2.000			1" Ice	3.015	1.999	0.101
						2" Ice	3.479	2.396	0.158
B66A RRH4X45	B	From Leg	4.000	0.000	135.000	No Ice	2.580	1.630	0.057
(R)			0.000			1/2" Ice	2.794	1.811	0.077
			2.000			1" Ice	3.015	1.999	0.101
						2" Ice	3.479	2.396	0.158
B66A RRH4X45	C	From Leg	4.000	0.000	135.000	No Ice	2.580	1.630	0.057
(R)			0.000			1/2" Ice	2.794	1.811	0.077
			2.000			1" Ice	3.015	1.999	0.101
						2" Ice	3.479	2.396	0.158
DB-T1-6Z-8AB-0Z	C	From Leg	4.000	0.000	135.000	No Ice	4.800	2.000	0.044
(R)			0.000			1/2" Ice	5.070	2.193	0.080
			2.000			1" Ice	5.348	2.393	0.120
						2" Ice	5.926	2.815	0.213
LNX-6512DS-VTM w/	A	From Leg	4.000	0.000	135.000	No Ice	2.670	2.150	0.047
Mount Pipe			0.000			1/2" Ice	2.940	2.420	0.091
(E)			2.000			1" Ice	3.220	2.690	0.143
						2" Ice	3.810	3.250	0.272
LNX-6512DS-VTM w/	B	From Leg	4.000	0.000	135.000	No Ice	2.670	2.150	0.047
Mount Pipe			0.000			1/2" Ice	2.940	2.420	0.091
(E)			2.000			1" Ice	3.220	2.690	0.143
						2" Ice	3.810	3.250	0.272
LNX-6512DS-VTM w/	C	From Leg	4.000	0.000	135.000	No Ice	2.670	2.150	0.047
Mount Pipe			0.000			1/2" Ice	2.940	2.420	0.091
(E)			2.000			1" Ice	3.220	2.690	0.143
						2" Ice	3.810	3.250	0.272
DB-T1-6Z-8AB-0Z	A	From Leg	4.000	0.000	135.000	No Ice	4.800	2.000	0.044
(E)			0.000			1/2" Ice	5.070	2.193	0.080
			2.000			1" Ice	5.348	2.393	0.120
						2" Ice	5.926	2.815	0.213
Platform Mount [LP 601-1]	C	None		0.000	135.000	No Ice	28.500	28.500	1.122
(E)						1/2" Ice	31.690	31.690	1.676
						1" Ice	34.870	34.870	2.282
						2" Ice	41.230	41.230	3.653
Climbing Ladder (Flat)	A	From Leg	3.000	0.000	135.000	No Ice	5.844	5.844	0.048
(E-Per Photos)			0.000			1/2" Ice	10.300	10.300	0.071
			-2.000			1" Ice	14.756	14.756	0.094
						2" Ice	23.668	23.668	0.140
_									
APXVAARR24_43-U-NA20	A	From Leg	4.000	0.000	128.000	No Ice	14.690	6.870	0.186
w/ Mount Pipe			0.000			1/2" Ice	15.460	7.550	0.315
(R)			0.000			1" Ice	16.230	8.250	0.458
						2" Ice	17.820	9.670	0.788
APXVAARR24_43-U-NA20	B	From Leg	4.000	0.000	128.000	No Ice	14.690	6.870	0.186
w/ Mount Pipe			0.000			1/2" Ice	15.460	7.550	0.315
(R)			0.000			1" Ice	16.230	8.250	0.458
						2" Ice	17.820	9.670	0.788
APXVAARR24_43-U-NA20	C	From Leg	4.000	0.000	128.000	No Ice	14.690	6.870	0.186
w/ Mount Pipe			0.000			1/2" Ice	15.460	7.550	0.315
(R)			0.000			1" Ice	16.230	8.250	0.458
						2" Ice	17.820	9.670	0.788
RADIO 4449 B12/B71	A	From Leg	4.000	0.000	128.000	No Ice	1.650	1.300	0.075
(R)			0.000			1/2" Ice	1.810	1.445	0.092
			0.000			1" Ice	1.978	1.597	0.112
						2" Ice	2.336	1.924	0.161
RADIO 4449 B12/B71	B	From Leg	4.000	0.000	128.000	No Ice	1.650	1.300	0.075

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(R)			0.000			1/2" Ice	1.810	1.445	0.092
			0.000			1" Ice	1.978	1.597	0.112
						2" Ice	2.336	1.924	0.161
RADIO 4449 B12/B71	C	From Leg	4.000	0.000	128.000	No Ice	1.650	1.300	0.075
(R)			0.000			1/2" Ice	1.810	1.445	0.092
			0.000			1" Ice	1.978	1.597	0.112
						2" Ice	2.336	1.924	0.161
ERICSSON AIR 21 B2A	A	From Leg	4.000	0.000	128.000	No Ice	6.329	5.642	0.112
B4P w/ Mount Pipe			0.000			1/2" Ice	6.775	6.426	0.169
(E)			0.000			1" Ice	7.214	7.131	0.233
						2" Ice	8.117	8.591	0.383
ERICSSON AIR 21 B2A	B	From Leg	4.000	0.000	128.000	No Ice	6.329	5.642	0.112
B4P w/ Mount Pipe			0.000			1/2" Ice	6.775	6.426	0.169
(E)			0.000			1" Ice	7.214	7.131	0.233
						2" Ice	8.117	8.591	0.383
ERICSSON AIR 21 B2A	C	From Leg	4.000	0.000	128.000	No Ice	6.329	5.642	0.112
B4P w/ Mount Pipe			0.000			1/2" Ice	6.775	6.426	0.169
(E)			0.000			1" Ice	7.214	7.131	0.233
						2" Ice	8.117	8.591	0.383
ERICSSON AIR 21 B4A	A	From Leg	4.000	0.000	128.000	No Ice	6.329	5.642	0.112
B2P w/ Mount Pipe			0.000			1/2" Ice	6.775	6.426	0.169
(E)			0.000			1" Ice	7.214	7.131	0.233
						2" Ice	8.117	8.591	0.383
ERICSSON AIR 21 B4A	B	From Leg	4.000	0.000	128.000	No Ice	6.329	5.642	0.112
B2P w/ Mount Pipe			0.000			1/2" Ice	6.775	6.426	0.169
(E)			0.000			1" Ice	7.214	7.131	0.233
						2" Ice	8.117	8.591	0.383
ERICSSON AIR 21 B4A	C	From Leg	4.000	0.000	128.000	No Ice	6.329	5.642	0.112
B2P w/ Mount Pipe			0.000			1/2" Ice	6.775	6.426	0.169
(E)			0.000			1" Ice	7.214	7.131	0.233
						2" Ice	8.117	8.591	0.383
KRY 112 144/1	A	From Leg	4.000	0.000	128.000	No Ice	0.350	0.175	0.011
(E)			0.000			1/2" Ice	0.426	0.234	0.014
			-2.000			1" Ice	0.509	0.301	0.019
						2" Ice	0.698	0.456	0.032
KRY 112 144/1	B	From Leg	4.000	0.000	128.000	No Ice	0.350	0.175	0.011
(E)			0.000			1/2" Ice	0.426	0.234	0.014
			-2.000			1" Ice	0.509	0.301	0.019
						2" Ice	0.698	0.456	0.032
KRY 112 144/1	C	From Leg	4.000	0.000	128.000	No Ice	0.350	0.175	0.011
(E)			0.000			1/2" Ice	0.426	0.234	0.014
			-2.000			1" Ice	0.509	0.301	0.019
						2" Ice	0.698	0.456	0.032
Platform Mount [LP 601-1]	C	None		0.000	128.000	No Ice	28.500	28.500	1.122
(E)						1/2" Ice	31.690	31.690	1.676
						1" Ice	34.870	34.870	2.282
						2" Ice	41.230	41.230	3.653
Miscellaneous [NA 507-1]	C	None		0.000	128.000	No Ice	4.560	4.560	0.245
(R-Mount MOD-HRK 12)						1/2" Ice	6.390	6.390	0.311
						1" Ice	8.180	8.180	0.402
						2" Ice	11.660	11.660	0.657
Climbing Ladder (Flat)	A	From Leg	3.000	0.000	128.000	No Ice	5.844	5.844	0.048
			0.000			1/2" Ice	10.300	10.300	0.071
			-2.000			1" Ice	14.756	14.756	0.094
						2" Ice	23.668	23.668	0.140
-									
APXVSPP18-C-A20 w/	A	From Leg	4.000	0.000	118.000	No Ice	4.600	4.010	0.095

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.000			1/2" Ice	5.050	4.450	0.160
(E)			0.000			1" Ice	5.500	4.890	0.235
						2" Ice	6.440	5.820	0.419
APXVSPP18-C-A20 w/	B	From Leg	4.000	0.000	118.000	No Ice	4.600	4.010	0.095
Mount Pipe			0.000			1/2" Ice	5.050	4.450	0.160
(E)			0.000			1" Ice	5.500	4.890	0.235
						2" Ice	6.440	5.820	0.419
APXVSPP18-C-A20 w/	C	From Leg	4.000	0.000	118.000	No Ice	4.600	4.010	0.095
Mount Pipe			0.000			1/2" Ice	5.050	4.450	0.160
(E)			0.000			1" Ice	5.500	4.890	0.235
						2" Ice	6.440	5.820	0.419
APXVTM14-C-120 w/	A	From Leg	4.000	0.000	118.000	No Ice	4.090	2.860	0.077
Mount Pipe			0.000			1/2" Ice	4.480	3.230	0.127
(E)			0.000			1" Ice	4.880	3.610	0.185
						2" Ice	5.710	4.400	0.331
APXVTM14-C-120 w/	B	From Leg	4.000	0.000	118.000	No Ice	4.090	2.860	0.077
Mount Pipe			0.000			1/2" Ice	4.480	3.230	0.127
(E)			0.000			1" Ice	4.880	3.610	0.185
						2" Ice	5.710	4.400	0.331
APXVTM14-C-120 w/	C	From Leg	4.000	0.000	118.000	No Ice	4.090	2.860	0.077
Mount Pipe			0.000			1/2" Ice	4.480	3.230	0.127
(E)			0.000			1" Ice	4.880	3.610	0.185
						2" Ice	5.710	4.400	0.331
TD-RRH8X20-25	A	From Leg	4.000	0.000	118.000	No Ice	4.045	1.535	0.070
(E)			0.000			1/2" Ice	4.298	1.714	0.097
			0.000			1" Ice	4.557	1.901	0.128
						2" Ice	5.098	2.295	0.201
TD-RRH8X20-25	B	From Leg	4.000	0.000	118.000	No Ice	4.045	1.535	0.070
(E)			0.000			1/2" Ice	4.298	1.714	0.097
			0.000			1" Ice	4.557	1.901	0.128
						2" Ice	5.098	2.295	0.201
TD-RRH8X20-25	C	From Leg	4.000	0.000	118.000	No Ice	4.045	1.535	0.070
(E)			0.000			1/2" Ice	4.298	1.714	0.097
			0.000			1" Ice	4.557	1.901	0.128
						2" Ice	5.098	2.295	0.201
Platform Mount [LP 601-1]	C	None		0.000	118.000	No Ice	28.500	28.500	1.122
(E)						1/2" Ice	31.690	31.690	1.676
						1" Ice	34.870	34.870	2.282
						2" Ice	41.230	41.230	3.653
Climbing Ladder (Flat)	A	From Leg	3.000	0.000	118.000	No Ice	5.844	5.844	0.048
(E-Per Photos)			0.000			1/2" Ice	10.300	10.300	0.071
			-2.000			1" Ice	14.756	14.756	0.094
						2" Ice	23.668	23.668	0.140
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TME-PCS 1900MHz	A	From Leg	4.000	0.000	108.000	No Ice	2.322	2.238	0.060
4x45W-65MHz			0.000			1/2" Ice	2.527	2.441	0.083
(E)			0.000			1" Ice	2.739	2.651	0.110
						2" Ice	3.185	3.093	0.173
TME-PCS 1900MHz	B	From Leg	4.000	0.000	108.000	No Ice	2.322	2.238	0.060
4x45W-65MHz			0.000			1/2" Ice	2.527	2.441	0.083
(E)			0.000			1" Ice	2.739	2.651	0.110
						2" Ice	3.185	3.093	0.173
TME-PCS 1900MHz	C	From Leg	4.000	0.000	108.000	No Ice	2.322	2.238	0.060
4x45W-65MHz			0.000			1/2" Ice	2.527	2.441	0.083
(E)			0.000			1" Ice	2.739	2.651	0.110
						2" Ice	3.185	3.093	0.173
TME-800MHz 2X50W RRH	A	From Leg	4.000	0.000	108.000	No Ice	2.058	1.932	0.064

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
W/FILTER			0.000			1/2" Ice	2.240	2.109	0.086
(E)			-2.000			1" Ice	2.429	2.293	0.111
						2" Ice	2.829	2.684	0.172
TME-800MHz 2X50W RRH	B	From Leg	4.000	0.000	108.000	No Ice	2.058	1.932	0.064
W/FILTER			0.000			1/2" Ice	2.240	2.109	0.086
(E)			-2.000			1" Ice	2.429	2.293	0.111
						2" Ice	2.829	2.684	0.172
TME-800MHz 2X50W RRH	C	From Leg	4.000	0.000	108.000	No Ice	2.058	1.932	0.064
W/FILTER			0.000			1/2" Ice	2.240	2.109	0.086
(E)			-2.000			1" Ice	2.429	2.293	0.111
						2" Ice	2.829	2.684	0.172
Side Arm Mount [SO 102-3]	C	None		0.000	108.000	No Ice	3.600	3.600	0.075
(E)						1/2" Ice	4.180	4.180	0.105
						1" Ice	4.750	4.750	0.135
						2" Ice	5.900	5.900	0.195
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6' x 2" Mount Pipe	A	From Leg	4.000	0.000	103.000	No Ice	1.425	1.425	0.022
(E-Per Photos)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
6' x 2" Mount Pipe	B	From Leg	4.000	0.000	103.000	No Ice	1.425	1.425	0.022
(E-Per Photos)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
6' x 2" Mount Pipe	C	From Leg	4.000	0.000	103.000	No Ice	1.425	1.425	0.022
(E-Per Photos)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
8' x 2" Pipe Mount	A	From Leg	4.000	0.000	103.000	No Ice	1.900	1.900	0.029
(E-Per Photos)			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.063
						2" Ice	4.396	4.396	0.119
8' x 2" Pipe Mount	B	From Leg	4.000	0.000	103.000	No Ice	1.900	1.900	0.029
(E-Per Photos)			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.063
						2" Ice	4.396	4.396	0.119
8' x 2" Pipe Mount	C	From Leg	4.000	0.000	103.000	No Ice	1.900	1.900	0.029
(E-Per Photos)			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.063
						2" Ice	4.396	4.396	0.119
Climbing Ladder (Flat)	A	From Leg	3.000	0.000	103.000	No Ice	5.844	5.844	0.048
(E-Per Photos)			0.000			1/2" Ice	10.300	10.300	0.071
			-2.000			1" Ice	14.756	14.756	0.094
						2" Ice	23.668	23.668	0.140
Platform Mount [LP 601-1]	C	None		0.000	103.000	No Ice	28.500	28.500	1.122
(E-Per Photos)						1/2" Ice	31.690	31.690	1.676
						1" Ice	34.870	34.870	2.282
						2" Ice	41.230	41.230	3.653
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Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	144.5 - 139.5	Pole	Max Tension	26	0.000	0.000	0.000
			Max. Compression	26	-11.932	-3.026	-3.206

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-3.341	-64.445	-1.046
			Max. My	14	-3.375	-1.117	-63.478
			Max. Vy	8	11.482	-64.445	-1.046
			Max. Vx	2	-11.334	-0.370	61.759
			Max. Torque	4			-2.439
L2	139.5 - 134.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-21.192	-2.308	-2.336
			Max. Mx	8	-5.753	-136.475	-1.083
			Max. My	14	-5.787	-1.159	-134.810
			Max. Vy	8	19.770	-136.475	-1.083
			Max. Vx	2	-19.688	-0.036	133.791
			Max. Torque	4			-2.439
L3	134.5 - 129.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-21.855	-2.340	-2.400
			Max. Mx	8	-6.188	-236.502	-1.087
			Max. My	14	-6.221	-1.223	-234.428
			Max. Vy	8	20.248	-236.502	-1.087
			Max. Vx	2	-20.166	-0.024	233.404
			Max. Torque	14			1.720
L4	129.5 - 124.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-30.853	-2.373	-2.019
			Max. Mx	8	-9.391	-360.557	-1.056
			Max. My	14	-9.430	-1.287	-357.846
			Max. Vy	8	27.131	-360.557	-1.056
			Max. Vx	2	-27.047	-0.010	357.256
			Max. Torque	11			2.466
L5	124.5 - 117.568	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-31.350	-2.392	-2.112
			Max. Mx	8	-9.776	-444.843	-1.068
			Max. My	14	-9.814	-1.325	-441.878
			Max. Vy	8	27.417	-444.843	-1.068
			Max. Vx	2	-27.334	0.001	441.268
			Max. Torque	11			2.464
L6	117.568 - 116.409	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-38.282	-2.422	-1.749
			Max. Mx	8	-12.512	-588.711	-1.023
			Max. My	14	-12.553	-1.386	-585.098
			Max. Vy	8	31.811	-588.711	-1.023
			Max. Vx	2	-31.726	0.018	584.929
			Max. Torque	11			3.713
L7	116.409 - 112.583	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.054	-2.444	-1.866
			Max. Mx	8	-13.134	-711.051	-1.042
			Max. My	14	-13.175	-1.431	-707.115
			Max. Vy	8	32.169	-711.051	-1.042
			Max. Vx	2	-32.084	0.033	706.924
			Max. Torque	11			3.711
L8	112.583 - 112.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.110	-2.446	-1.874
			Max. Mx	8	-13.203	-719.095	-1.045
			Max. My	14	-13.245	-1.434	-715.136
			Max. Vy	8	32.199	-719.095	-1.045
			Max. Vx	2	-32.114	0.035	714.945
			Max. Torque	11			3.708
L9	112.333 - 107.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-41.300	-2.470	-2.027

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-14.464	-882.133	-1.077
			Max. My	2	-14.492	0.058	877.533
			Max. Vy	8	33.899	-882.133	-1.077
			Max. Vx	2	-33.814	0.058	877.533
			Max. Torque	11			3.707
L10	107.333 - 106.92	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-41.395	-2.472	-2.040
			Max. Mx	8	-14.555	-896.142	-1.080
			Max. My	2	-14.583	0.061	891.504
			Max. Vy	8	33.958	-896.142	-1.080
			Max. Vx	2	-33.874	0.061	891.504
			Max. Torque	11			3.702
L11	106.92 - 106.67	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-41.481	-2.474	-2.049
			Max. Mx	8	-14.623	-904.636	-1.082
			Max. My	2	-14.651	0.061	899.976
			Max. Vy	8	34.003	-904.636	-1.082
			Max. Vx	2	-33.918	0.061	899.976
			Max. Torque	11			3.702
L12	106.67 - 103.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-42.611	-2.487	-2.146
			Max. Mx	8	-15.352	-1013.410	-1.102
			Max. My	2	-15.379	0.077	1008.462
			Max. Vy	8	34.636	-1013.410	-1.102
			Max. Vx	2	-34.550	0.077	1008.462
			Max. Torque	11			3.702
L13	103.5 - 103.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-42.704	-2.489	-2.155
			Max. Mx	8	-15.425	-1022.074	-1.104
			Max. My	2	-15.452	0.078	1017.103
			Max. Vy	8	34.680	-1022.074	-1.104
			Max. Vx	2	-34.596	0.078	1017.103
			Max. Torque	11			3.700
L14	103.25 - 98.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-48.203	-2.508	-1.782
			Max. Mx	8	-17.897	-1200.214	-1.034
			Max. My	2	-17.926	0.101	1195.022
			Max. Vy	8	38.280	-1200.214	-1.034
			Max. Vx	2	-38.181	0.101	1195.022
			Max. Torque	11			4.947
L15	98.5 - 98.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-48.311	-2.511	-1.793
			Max. Mx	8	-17.991	-1209.788	-1.036
			Max. My	2	-18.020	0.102	1204.569
			Max. Vy	8	38.323	-1209.788	-1.036
			Max. Vx	2	-38.223	0.102	1204.569
			Max. Torque	11			4.944
L16	98.25 - 97.58	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-48.602	-2.513	-1.813
			Max. Mx	8	-18.181	-1235.510	-1.041
			Max. My	2	-18.211	0.106	1230.218
			Max. Vy	8	38.468	-1235.510	-1.041
			Max. Vx	2	-38.361	0.106	1230.218
			Max. Torque	11			4.944
L17	97.58 - 97.33	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-48.701	-2.515	-1.822
			Max. Mx	8	-18.253	-1245.132	-1.043
			Max. My	2	-18.283	0.107	1239.812
			Max. Vy	8	38.516	-1245.132	-1.043

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-38.408	0.107	1239.812
			Max. Torque	11			4.943
L18	97.33 - 92.33	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.574	-2.533	-1.984
			Max. Mx	8	-19.576	-1440.169	-1.084
			Max. My	2	-19.609	0.133	1434.176
			Max. Vy	8	39.514	-1440.169	-1.084
			Max. Vx	2	-39.366	0.133	1434.176
			Max. Torque	11			4.943
L19	92.33 - 87.1178	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.779	-2.536	-2.004
			Max. Mx	8	-19.750	-1463.385	-1.089
			Max. My	2	-19.782	0.136	1457.302
			Max. Vy	8	39.576	-1463.385	-1.089
			Max. Vx	2	-39.427	0.136	1457.302
			Max. Torque	11			4.940
L20	87.1178 - 86.1178	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-53.657	-2.556	-2.191
			Max. Mx	8	-21.929	-1688.080	-1.138
			Max. My	2	-21.961	0.166	1681.121
			Max. Vy	8	40.305	-1688.080	-1.138
			Max. Vx	14	40.238	-1.710	-1673.640
			Max. Torque	11			4.937
L21	86.1178 - 83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-54.564	-2.567	-2.295
			Max. Mx	8	-22.698	-1814.503	-1.171
			Max. My	2	-22.746	0.184	1806.691
			Max. Vy	8	40.831	-1814.503	-1.171
			Max. Vx	14	40.764	-1.739	-1799.874
			Max. Torque	11			4.936
L22	83 - 82.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-54.641	-2.568	-2.305
			Max. Mx	8	-22.787	-1824.711	-1.175
			Max. My	2	-22.836	0.186	1816.799
			Max. Vy	8	40.860	-1824.711	-1.175
			Max. Vx	14	40.794	-1.742	-1810.068
			Max. Torque	11			4.933
L23	82.75 - 77.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-56.255	-2.574	-2.459
			Max. Mx	8	-24.031	-2031.237	-1.231
			Max. My	2	-24.080	0.217	2021.134
			Max. Vy	8	41.778	-2031.237	-1.231
			Max. Vx	14	41.712	-1.787	-2016.294
			Max. Torque	11			4.932
L24	77.75 - 77.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-56.428	-2.574	-2.474
			Max. Mx	8	-24.178	-2052.139	-1.238
			Max. My	2	-24.227	0.220	2041.803
			Max. Vy	8	41.861	-2052.139	-1.238
			Max. Vx	14	41.795	-1.792	-2037.167
			Max. Torque	11			4.927
L25	77.25 - 77	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-56.557	-2.576	-2.484
			Max. Mx	8	-24.290	-2062.608	-1.241
			Max. My	2	-24.339	0.222	2052.155
			Max. Vy	8	41.908	-2062.608	-1.241
			Max. Vx	14	41.842	-1.794	-2047.621
			Max. Torque	11			4.927
L26	77 - 76.75	Pole	Max Tension	1	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-56.668	-2.575	-2.491
			Max. Mx	8	-24.372	-2073.091	-1.244
			Max. My	2	-24.420	0.223	2062.519
			Max. Vy	8	41.960	-2073.091	-1.244
			Max. Vx	14	41.895	-1.796	-2058.089
			Max. Torque	11			4.927
L27	76.75 - 71.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-58.801	-2.574	-2.639
			Max. Mx	8	-26.030	-2285.303	-1.302
			Max. My	2	-26.077	0.254	2272.311
			Max. Vy	8	42.944	-2285.303	-1.302
			Max. Vx	14	42.878	-1.841	-2270.005
			Max. Torque	11			4.927
L28	71.75 - 69	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-60.021	-2.574	-2.723
			Max. Mx	8	-26.961	-2404.096	-1.335
			Max. My	2	-27.005	0.272	2389.749
			Max. Vy	8	43.485	-2404.096	-1.335
			Max. Vx	14	43.439	-1.866	-2388.663
			Max. Torque	11			4.924
L29	69 - 68.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-60.153	-2.576	-2.733
			Max. Mx	8	-27.089	-2414.969	-1.339
			Max. My	2	-27.134	0.273	2400.498
			Max. Vy	8	43.520	-2414.969	-1.339
			Max. Vx	14	43.477	-1.868	-2399.526
			Max. Torque	11			4.923
L30	68.75 - 63.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-62.796	-2.574	-2.886
			Max. Mx	8	-29.125	-2635.128	-1.400
			Max. My	14	-29.149	-1.912	-2619.626
			Max. Vy	8	44.561	-2635.128	-1.400
			Max. Vx	14	44.567	-1.912	-2619.626
			Max. Torque	11			4.922
L31	63.75 - 60	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-64.829	-2.550	-3.052
			Max. Mx	8	-30.682	-2803.685	-1.447
			Max. My	14	-30.706	-1.944	-2788.244
			Max. Vy	8	45.366	-2803.685	-1.447
			Max. Vx	14	45.378	-1.944	-2788.244
			Max. Torque	11			4.920
L32	60 - 59.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-64.966	-2.550	-3.068
			Max. Mx	8	-30.807	-2815.029	-1.451
			Max. My	14	-30.830	-1.947	-2799.593
			Max. Vy	8	45.408	-2815.029	-1.451
			Max. Vx	14	45.419	-1.947	-2799.593
			Max. Torque	11			4.919
L33	59.75 - 58.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-65.667	-2.535	-3.150
			Max. Mx	8	-31.314	-2871.956	-1.467
			Max. My	14	-31.338	-1.957	-2856.538
			Max. Vy	8	45.694	-2871.956	-1.467
			Max. Vx	14	45.700	-1.957	-2856.538
			Max. Torque	11			4.919
L34	58.5 - 58.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-65.808	-2.534	-3.170
			Max. Mx	8	-31.439	-2883.382	-1.471
			Max. My	14	-31.462	-1.959	-2867.967
			Max. Vy	8	45.736	-2883.382	-1.471
			Max. Vx	14	45.741	-1.959	-2867.967

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	11			4.918
L35	58.25 - 58	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-65.949	-2.531	-3.188
			Max. Mx	8	-31.545	-2894.822	-1.474
			Max. My	14	-31.568	-1.962	-2879.410
			Max. Vy	8	45.790	-2894.822	-1.474
			Max. Vx	14	45.794	-1.962	-2879.410
			Max. Torque	11			4.918
L36	58 - 57.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-66.082	-2.528	-3.206
			Max. Mx	8	-31.644	-2906.275	-1.477
			Max. My	14	-31.668	-1.964	-2890.866
			Max. Vy	8	45.844	-2906.275	-1.477
			Max. Vx	14	45.847	-1.964	-2890.866
			Max. Torque	11			4.918
L37	57.75 - 56.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-66.617	-2.517	-3.276
			Max. Mx	8	-32.030	-2952.220	-1.490
			Max. My	14	-32.053	-1.972	-2936.818
			Max. Vy	8	46.066	-2952.220	-1.490
			Max. Vx	14	46.064	-1.972	-2936.818
			Max. Torque	11			4.918
L38	56.75 - 56.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-66.759	-2.515	-3.296
			Max. Mx	8	-32.156	-2963.739	-1.494
			Max. My	14	-32.180	-1.974	-2948.338
			Max. Vy	8	46.107	-2963.739	-1.494
			Max. Vx	14	46.105	-1.974	-2948.338
			Max. Torque	11			4.918
L39	56.5 - 51.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-69.471	-2.461	-3.657
			Max. Mx	8	-34.304	-3196.826	-1.562
			Max. My	14	-34.347	-2.016	-3180.295
			Max. Vy	8	47.149	-3196.826	-1.562
			Max. Vx	2	-46.746	0.386	3174.178
			Max. Torque	11			4.917
L40	51.5 - 42.0418	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-71.477	-2.421	-3.930
			Max. Mx	8	-35.920	-3371.731	-1.614
			Max. My	14	-35.974	-2.046	-3352.901
			Max. Vy	8	47.887	-3371.731	-1.614
			Max. Vx	2	-47.522	0.410	3347.640
			Max. Torque	11			4.915
L41	42.0418 - 41.0418	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-77.981	-2.348	-4.433
			Max. Mx	8	-41.198	-3701.435	-1.707
			Max. My	14	-41.272	-2.103	-3675.128
			Max. Vy	8	49.432	-3701.435	-1.707
			Max. Vx	2	-49.135	0.455	3675.047
			Max. Torque	11			4.913
L42	41.0418 - 36.0418	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-80.903	-2.294	-4.805
			Max. Mx	8	-43.609	-3950.914	-1.781
			Max. My	2	-43.627	0.490	3923.123
			Max. Vy	8	50.397	-3950.914	-1.781
			Max. Vx	2	-50.149	0.490	3923.123
			Max. Torque	11			4.913
L43	36.0418 - 31.25	Pole	Max Tension	1	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-83.791	-2.192	-5.109
			Max. Mx	8	-45.955	-4194.574	-1.853
			Max. My	2	-45.971	0.523	4165.581
			Max. Vy	8	51.345	-4194.574	-1.853
			Max. Vx	2	-51.108	0.523	4165.581
			Max. Torque	11			4.911
L44	31.25 - 31	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-83.941	-2.187	-5.126
			Max. Mx	8	-46.098	-4207.411	-1.857
			Max. My	2	-46.113	0.525	4178.356
			Max. Vy	8	51.375	-4207.411	-1.857
			Max. Vx	2	-51.138	0.525	4178.356
			Max. Torque	11			4.910
L45	31 - 27.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-85.949	-2.138	-5.309
			Max. Mx	8	-47.676	-4375.377	-1.908
			Max. My	2	-47.689	0.548	4345.554
			Max. Vy	8	52.021	-4375.377	-1.908
			Max. Vx	2	-51.802	0.548	4345.554
			Max. Torque	11			4.910
L46	27.75 - 27.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-86.106	-2.137	-5.324
			Max. Mx	8	-47.821	-4388.382	-1.912
			Max. My	2	-47.834	0.550	4358.502
			Max. Vy	8	52.049	-4388.382	-1.912
			Max. Vx	2	-51.833	0.550	4358.502
			Max. Torque	11			4.909
L47	27.5 - 27.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-86.263	-2.134	-5.338
			Max. Mx	8	-47.945	-4401.398	-1.916
			Max. My	2	-47.958	0.552	4371.463
			Max. Vy	8	52.097	-4401.398	-1.916
			Max. Vx	2	-51.883	0.552	4371.463
			Max. Torque	11			4.909
L48	27.25 - 27	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-86.418	-2.134	-5.347
			Max. Mx	8	-48.069	-4414.427	-1.920
			Max. My	2	-48.082	0.553	4384.436
			Max. Vy	8	52.143	-4414.427	-1.920
			Max. Vx	2	-51.930	0.553	4384.436
			Max. Torque	11			4.909
L49	27 - 22	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-89.454	-2.198	-5.467
			Max. Mx	8	-50.525	-4677.290	-1.999
			Max. My	2	-50.535	0.589	4646.298
			Max. Vy	8	53.032	-4677.290	-1.999
			Max. Vx	2	-52.861	0.589	4646.298
			Max. Torque	11			4.909
L50	22 - 17	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-92.467	-2.303	-5.546
			Max. Mx	8	-53.035	-4944.358	-2.080
			Max. My	2	-53.042	0.625	4912.561
			Max. Vy	8	53.842	-4944.358	-2.080
			Max. Vx	2	-53.708	0.625	4912.561
			Max. Torque	11			4.908
L51	17 - 12	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-95.495	-2.408	-5.625
			Max. Mx	8	-55.581	-5215.351	-2.164
			Max. My	2	-55.585	0.661	5182.930
			Max. Vy	8	54.603	-5215.351	-2.164
			Max. Vx	2	-54.505	0.661	5182.930

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	11			4.907
L52	12 - 7	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-98.529	-2.509	-5.704
			Max. Mx	8	-58.161	-5490.155	-2.249
			Max. My	2	-58.163	0.698	5457.282
			Max. Vy	8	55.367	-5490.155	-2.249
			Max. Vx	2	-55.304	0.698	5457.282
			Max. Torque	11			4.907
L53	7 - 2	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-101.546	-2.603	-5.782
			Max. Mx	8	-60.779	-5768.773	-2.335
			Max. My	2	-60.780	0.735	5735.623
			Max. Vy	8	56.131	-5768.773	-2.335
			Max. Vx	2	-56.102	0.735	5735.623
			Max. Torque	11			4.906
L54	2 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-102.727	-2.635	-5.811
			Max. Mx	8	-61.838	-5881.289	-2.370
			Max. My	2	-61.838	0.750	5848.077
			Max. Vy	8	56.437	-5881.289	-2.370
			Max. Vx	2	-56.423	0.750	5848.077
			Max. Torque	11			4.906

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	102.727	-0.000	-0.000
	Max. H_x	21	46.396	56.302	0.007
	Max. H_z	2	61.862	0.007	56.397
	Max. M_x	2	5848.077	0.007	56.397
	Max. M_z	8	5881.289	-56.411	-0.007
	Max. Torsion	11	4.906	-46.732	-26.946
	Min. Vert	19	46.396	46.517	-26.814
	Min. H_x	9	46.396	-56.411	-0.007
	Min. H_z	14	61.862	-0.007	-54.784
	Min. M_x	14	-5781.371	-0.007	-54.784
	Min. M_z	20	-5828.260	56.302	0.007
	Min. Torsion	23	-4.902	49.047	28.283

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	51.551	0.000	0.000	0.593	-0.655	-0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	61.862	-0.007	-56.397	-5848.077	0.750	1.670
0.9 Dead+1.0 Wind 0 deg - No Ice	46.396	-0.007	-56.397	-5795.939	0.947	1.631
1.2 Dead+1.0 Wind 30 deg - No Ice	61.862	28.273	-48.911	-5059.957	-2927.840	-0.877

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.0 Wind 30 deg - No Ice	46.396	28.273	-48.911	-5014.958	-2901.467	-0.932
1.2 Dead+1.0 Wind 60 deg - No Ice	61.862	49.300	-28.421	-2941.173	-5108.600	-3.190
0.9 Dead+1.0 Wind 60 deg - No Ice	46.396	49.300	-28.421	-2915.146	-5062.809	-3.245
1.2 Dead+1.0 Wind 90 deg - No Ice	61.862	56.411	0.007	2.371	-5881.289	-4.659
0.9 Dead+1.0 Wind 90 deg - No Ice	46.396	56.411	0.007	2.145	-5828.437	-4.700
1.2 Dead+1.0 Wind 120 deg - No Ice	61.862	46.732	26.946	2870.944	-4981.056	-4.890
0.9 Dead+1.0 Wind 120 deg - No Ice	46.396	46.732	26.946	2844.765	-4935.751	-4.906
1.2 Dead+1.0 Wind 150 deg - No Ice	61.862	28.203	48.776	5041.577	-2918.132	-3.809
0.9 Dead+1.0 Wind 150 deg - No Ice	46.396	28.203	48.776	4996.267	-2891.791	-3.795
1.2 Dead+1.0 Wind 180 deg - No Ice	61.862	0.007	54.784	5781.371	-2.404	-1.696
0.9 Dead+1.0 Wind 180 deg - No Ice	46.396	0.007	54.784	5729.093	-2.164	-1.656
1.2 Dead+1.0 Wind 210 deg - No Ice	61.862	-27.444	47.475	5006.091	2894.169	0.881
0.9 Dead+1.0 Wind 210 deg - No Ice	46.396	-27.444	47.475	4960.744	2868.269	0.935
1.2 Dead+1.0 Wind 240 deg - No Ice	61.862	-46.517	26.814	2862.052	4967.154	3.221
0.9 Dead+1.0 Wind 240 deg - No Ice	46.396	-46.517	26.814	2835.931	4922.344	3.275
1.2 Dead+1.0 Wind 270 deg - No Ice	61.862	-56.302	-0.007	-0.783	5828.260	4.687
0.9 Dead+1.0 Wind 270 deg - No Ice	46.396	-56.302	-0.007	-0.966	5776.272	4.727
1.2 Dead+1.0 Wind 300 deg - No Ice	61.862	-49.047	-28.283	-2933.965	5091.308	4.886
0.9 Dead+1.0 Wind 300 deg - No Ice	46.396	-49.047	-28.283	-2907.944	5046.006	4.902
1.2 Dead+1.0 Wind 330 deg - No Ice	61.862	-28.337	-49.008	-5092.517	2946.804	3.779
0.9 Dead+1.0 Wind 330 deg - No Ice	46.396	-28.337	-49.008	-5047.198	2920.660	3.766
1.2 Dead+1.0 Ice+1.0 Temp	102.727	0.000	0.000	5.811	-2.635	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	102.727	-0.001	-10.322	-1177.102	-2.567	0.480
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	102.727	5.198	-8.994	-1023.099	-597.708	-0.880
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	102.727	8.974	-5.176	-587.169	-1031.955	-2.003
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	102.727	10.288	0.001	6.240	-1187.440	-2.591
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	102.727	8.839	5.098	595.281	-1024.653	-2.484
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	102.727	5.186	8.973	1032.164	-596.153	-1.712
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	102.727	0.001	10.290	1188.533	-2.929	-0.480
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	102.727	-5.153	8.917	1029.049	588.651	0.880
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	102.727	-8.859	5.109	595.056	1019.129	2.005

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	102.727	-10.358	-0.001	5.878	1183.355	2.592
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	102.727	-8.936	-5.155	-586.005	1024.081	2.484
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	102.727	-5.163	-8.932	-1020.036	590.653	1.711
Dead+Wind 0 deg - Service	51.551	-0.001	-10.492	-1083.397	-0.403	0.315
Dead+Wind 30 deg - Service	51.551	5.260	-9.099	-937.324	-543.173	-0.172
Dead+Wind 60 deg - Service	51.551	9.172	-5.287	-544.656	-947.372	-0.613
Dead+Wind 90 deg - Service	51.551	10.495	0.001	0.902	-1090.588	-0.890
Dead+Wind 120 deg - Service	51.551	8.694	5.013	532.534	-923.680	-0.929
Dead+Wind 150 deg - Service	51.551	5.247	9.074	934.849	-541.376	-0.719
Dead+Wind 180 deg - Service	51.551	0.001	10.192	1071.936	-0.987	-0.316
Dead+Wind 210 deg - Service	51.551	-5.106	8.832	928.257	535.844	0.172
Dead+Wind 240 deg - Service	51.551	-8.654	4.989	530.883	920.013	0.614
Dead+Wind 270 deg - Service	51.551	-10.474	-0.001	0.318	1079.646	0.891
Dead+Wind 300 deg - Service	51.551	-9.125	-5.262	-543.319	943.081	0.929
Dead+Wind 330 deg - Service	51.551	-5.272	-9.118	-943.386	545.619	0.718

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-51.551	0.000	0.000	51.551	0.000	0.000%
2	-0.007	-61.862	-56.397	0.007	61.862	56.397	0.000%
3	-0.007	-46.396	-56.397	0.007	46.396	56.397	0.000%
4	28.273	-61.862	-48.911	-28.273	61.862	48.911	0.000%
5	28.273	-46.396	-48.911	-28.273	46.396	48.911	0.000%
6	49.300	-61.862	-28.421	-49.300	61.862	28.421	0.000%
7	49.300	-46.396	-28.421	-49.300	46.396	28.421	0.000%
8	56.411	-61.862	0.007	-56.411	61.862	-0.007	0.000%
9	56.411	-46.396	0.007	-56.411	46.396	-0.007	0.000%
10	46.732	-61.862	26.946	-46.732	61.862	-26.946	0.000%
11	46.732	-46.396	26.946	-46.732	46.396	-26.946	0.000%
12	28.203	-61.862	48.776	-28.203	61.862	-48.776	0.000%
13	28.203	-46.396	48.776	-28.203	46.396	-48.776	0.000%
14	0.007	-61.862	54.784	-0.007	61.862	-54.784	0.000%
15	0.007	-46.396	54.784	-0.007	46.396	-54.784	0.000%
16	-27.444	-61.862	47.475	27.444	61.862	-47.475	0.000%
17	-27.444	-46.396	47.475	27.444	46.396	-47.475	0.000%
18	-46.517	-61.862	26.814	46.517	61.862	-26.814	0.000%
19	-46.517	-46.396	26.814	46.517	46.396	-26.814	0.000%
20	-56.302	-61.862	-0.007	56.302	61.862	0.007	0.000%
21	-56.302	-46.396	-0.007	56.302	46.396	0.007	0.000%
22	-49.047	-61.862	-28.283	49.047	61.862	28.283	0.000%
23	-49.047	-46.396	-28.283	49.047	46.396	28.283	0.000%
24	-28.337	-61.862	-49.008	28.337	61.862	49.008	0.000%
25	-28.337	-46.396	-49.008	28.337	46.396	49.008	0.000%
26	0.000	-102.727	0.000	-0.000	102.727	-0.000	0.000%
27	-0.001	-102.727	-10.322	0.001	102.727	10.322	0.000%
28	5.198	-102.727	-8.994	-5.198	102.727	8.994	0.000%
29	8.974	-102.727	-5.176	-8.974	102.727	5.176	0.000%
30	10.288	-102.727	0.001	-10.288	102.727	-0.001	0.000%
31	8.839	-102.727	5.098	-8.839	102.727	-5.098	0.000%
32	5.186	-102.727	8.973	-5.186	102.727	-8.973	0.000%
33	0.001	-102.727	10.290	-0.001	102.727	-10.290	0.000%
34	-5.153	-102.727	8.917	5.153	102.727	-8.917	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
35	-8.859	-102.727	5.109	8.859	102.727	-5.109	0.000%
36	-10.358	-102.727	-0.001	10.358	102.727	0.001	0.000%
37	-8.936	-102.727	-5.155	8.936	102.727	5.155	0.000%
38	-5.163	-102.727	-8.932	5.163	102.727	8.932	0.000%
39	-0.001	-51.551	-10.492	0.001	51.551	10.492	0.000%
40	5.260	-51.551	-9.099	-5.260	51.551	9.099	0.000%
41	9.172	-51.551	-5.287	-9.172	51.551	5.287	0.000%
42	10.495	-51.551	0.001	-10.495	51.551	-0.001	0.000%
43	8.694	-51.551	5.013	-8.694	51.551	-5.013	0.000%
44	5.247	-51.551	9.074	-5.247	51.551	-9.074	0.000%
45	0.001	-51.551	10.192	-0.001	51.551	-10.192	0.000%
46	-5.106	-51.551	8.832	5.106	51.551	-8.832	0.000%
47	-8.654	-51.551	4.989	8.654	51.551	-4.989	0.000%
48	-10.474	-51.551	-0.001	10.474	51.551	0.001	0.000%
49	-9.125	-51.551	-5.262	9.125	51.551	5.262	0.000%
50	-5.272	-51.551	-9.118	5.272	51.551	9.118	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00046953
3	Yes	5	0.00000001	0.00018337
4	Yes	6	0.00000001	0.00064369
5	Yes	6	0.00000001	0.00016684
6	Yes	6	0.00000001	0.00067628
7	Yes	6	0.00000001	0.00017682
8	Yes	6	0.00000001	0.00004803
9	Yes	5	0.00000001	0.00051124
10	Yes	6	0.00000001	0.00062086
11	Yes	6	0.00000001	0.00015938
12	Yes	6	0.00000001	0.00067856
13	Yes	6	0.00000001	0.00017824
14	Yes	5	0.00000001	0.00051259
15	Yes	5	0.00000001	0.00020127
16	Yes	6	0.00000001	0.00066056
17	Yes	6	0.00000001	0.00017222
18	Yes	6	0.00000001	0.00063119
19	Yes	6	0.00000001	0.00016305
20	Yes	6	0.00000001	0.00004984
21	Yes	5	0.00000001	0.00053050
22	Yes	6	0.00000001	0.00068906
23	Yes	6	0.00000001	0.00018100
24	Yes	6	0.00000001	0.00062812
25	Yes	6	0.00000001	0.00016077
26	Yes	4	0.00000001	0.00061670
27	Yes	6	0.00000001	0.00090432
28	Yes	7	0.00000001	0.00011715
29	Yes	7	0.00000001	0.00012066
30	Yes	6	0.00000001	0.00093738
31	Yes	7	0.00000001	0.00011844
32	Yes	7	0.00000001	0.00012154
33	Yes	6	0.00000001	0.00091788
34	Yes	7	0.00000001	0.00011873
35	Yes	7	0.00000001	0.00011691

36	Yes	6	0.00000001	0.00092626
37	Yes	7	0.00000001	0.00012015
38	Yes	7	0.00000001	0.00011565
39	Yes	5	0.00000001	0.00004068
40	Yes	5	0.00000001	0.00022420
41	Yes	5	0.00000001	0.00025845
42	Yes	5	0.00000001	0.00007635
43	Yes	5	0.00000001	0.00020730
44	Yes	5	0.00000001	0.00025974
45	Yes	5	0.00000001	0.00004086
46	Yes	5	0.00000001	0.00023587
47	Yes	5	0.00000001	0.00021040
48	Yes	5	0.00000001	0.00007595
49	Yes	5	0.00000001	0.00027228
50	Yes	5	0.00000001	0.00021377

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	144.5 - 139.5	21.973	42	1.522	0.006
L2	139.5 - 134.5	20.384	42	1.508	0.006
L3	134.5 - 129.5	18.820	42	1.478	0.006
L4	129.5 - 124.5	17.297	42	1.427	0.006
L5	124.5 - 117.568	15.837	42	1.357	0.005
L6	121.409 - 116.409	14.975	42	1.305	0.004
L7	116.409 - 112.583	13.632	42	1.253	0.004
L8	112.583 - 112.333	12.655	42	1.185	0.004
L9	112.333 - 107.333	12.593	42	1.180	0.004
L10	107.333 - 106.92	11.408	42	1.083	0.003
L11	106.92 - 106.67	11.314	42	1.075	0.003
L12	106.67 - 103.5	11.258	42	1.072	0.003
L13	103.5 - 103.25	10.557	42	1.040	0.003
L14	103.25 - 98.5	10.503	42	1.037	0.003
L15	98.5 - 98.25	9.497	42	0.984	0.002
L16	98.25 - 97.58	9.445	42	0.982	0.002
L17	97.58 - 97.33	9.308	42	0.976	0.002
L18	97.33 - 92.33	9.257	42	0.974	0.002
L19	92.33 - 87.1178	8.266	42	0.919	0.002
L20	91.7428 - 86.1178	8.153	42	0.912	0.002
L21	86.1178 - 83	7.102	42	0.863	0.002
L22	83 - 82.75	6.557	42	0.808	0.002
L23	82.75 - 77.75	6.514	42	0.804	0.002
L24	77.75 - 77.25	5.720	42	0.714	0.001
L25	77.25 - 77	5.645	42	0.706	0.001
L26	77 - 76.75	5.608	42	0.703	0.001
L27	76.75 - 71.75	5.572	42	0.701	0.001
L28	71.75 - 69	4.867	42	0.646	0.001
L29	69 - 68.75	4.504	41	0.615	0.001
L30	68.75 - 63.75	4.472	41	0.613	0.001
L31	63.75 - 60	3.854	41	0.569	0.001
L32	60 - 59.75	3.420	41	0.535	0.001
L33	59.75 - 58.5	3.393	41	0.533	0.001
L34	58.5 - 58.25	3.255	41	0.522	0.001
L35	58.25 - 58	3.227	41	0.519	0.001
L36	58 - 57.75	3.200	41	0.517	0.001
L37	57.75 - 56.75	3.173	41	0.514	0.001
L38	56.75 - 56.5	3.067	41	0.503	0.001
L39	56.5 - 51.5	3.040	41	0.501	0.001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L40	51.5 - 42.0418	2.541	41	0.454	0.001
L41	47.8178 - 41.0418	2.205	41	0.418	0.001
L42	41.0418 - 36.0418	1.634	41	0.383	0.001
L43	36.0418 - 31.25	1.257	41	0.338	0.000
L44	31.25 - 31	0.940	41	0.294	0.000
L45	31 - 27.75	0.924	41	0.291	0.000
L46	27.75 - 27.5	0.738	41	0.257	0.000
L47	27.5 - 27.25	0.724	41	0.254	0.000
L48	27.25 - 27	0.711	41	0.252	0.000
L49	27 - 22	0.698	41	0.249	0.000
L50	22 - 17	0.462	41	0.202	0.000
L51	17 - 12	0.275	41	0.155	0.000
L52	12 - 7	0.137	41	0.109	0.000
L53	7 - 2	0.046	41	0.063	0.000
L54	2 - 0	0.004	41	0.018	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.500	Strobe	42	21.973	1.522	0.006	12541
148.500	Miscellaneous [NA 507-1]	42	21.973	1.522	0.006	12541
147.000	Lightning Rod 5/8" x 5'	42	21.973	1.522	0.006	12541
146.000	Top Hat	42	21.973	1.522	0.006	12541
145.000	840370799 w/ Mount Pipe	42	21.973	1.522	0.006	12541
135.000	QUAD656C0000X w/ Mount Pipe	42	18.975	1.482	0.006	7400
128.000	APXVAARR24_43-U-NA20 w/ Mount Pipe	42	16.851	1.409	0.005	4246
118.000	APXVSPP18-C-A20 w/ Mount Pipe	42	14.053	1.270	0.004	4317
108.000	TME-PCS 1900MHz 4x45W-65MHz	42	11.560	1.098	0.003	3413
103.000	6' x 2" Mount Pipe	42	10.448	1.034	0.003	5263

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	144.5 - 139.5	118.178	8	8.175	0.034
L2	139.5 - 134.5	109.673	8	8.106	0.032
L3	134.5 - 129.5	101.287	8	7.949	0.032
L4	129.5 - 124.5	93.119	8	7.680	0.029
L5	124.5 - 117.568	85.284	8	7.309	0.026
L6	121.409 - 116.409	80.654	8	7.026	0.024
L7	116.409 - 112.583	73.437	8	6.747	0.022
L8	112.583 - 112.333	68.185	8	6.385	0.019
L9	112.333 - 107.333	67.852	8	6.360	0.019
L10	107.333 - 106.92	61.473	8	5.838	0.016
L11	106.92 - 106.67	60.971	8	5.793	0.015
L12	106.67 - 103.5	60.669	8	5.780	0.015
L13	103.5 - 103.25	56.895	8	5.605	0.014

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L14	103.25 - 98.5	56.603	8	5.591	0.014
L15	98.5 - 98.25	51.188	8	5.308	0.013
L16	98.25 - 97.58	50.911	8	5.296	0.013
L17	97.58 - 97.33	50.171	8	5.264	0.012
L18	97.33 - 92.33	49.896	8	5.250	0.012
L19	92.33 - 87.1178	44.559	8	4.954	0.011
L20	91.7428 - 86.1178	43.953	8	4.919	0.011
L21	86.1178 - 83	38.292	8	4.653	0.010
L22	83 - 82.75	35.353	8	4.357	0.009
L23	82.75 - 77.75	35.126	8	4.334	0.009
L24	77.75 - 77.25	30.842	8	3.853	0.007
L25	77.25 - 77	30.441	8	3.805	0.007
L26	77 - 76.75	30.242	8	3.794	0.007
L27	76.75 - 71.75	30.044	8	3.780	0.007
L28	71.75 - 69	26.246	6	3.482	0.006
L29	69 - 68.75	24.291	6	3.319	0.006
L30	68.75 - 63.75	24.118	6	3.307	0.005
L31	63.75 - 60	20.785	6	3.067	0.005
L32	60 - 59.75	18.450	6	2.886	0.004
L33	59.75 - 58.5	18.300	6	2.874	0.004
L34	58.5 - 58.25	17.556	6	2.814	0.004
L35	58.25 - 58	17.409	6	2.802	0.004
L36	58 - 57.75	17.263	6	2.790	0.004
L37	57.75 - 56.75	17.117	6	2.775	0.004
L38	56.75 - 56.5	16.543	6	2.715	0.004
L39	56.5 - 51.5	16.401	6	2.702	0.004
L40	51.5 - 42.0418	13.707	6	2.447	0.004
L41	47.8178 - 41.0418	11.894	6	2.257	0.003
L42	41.0418 - 36.0418	8.813	6	2.064	0.003
L43	36.0418 - 31.25	6.779	6	1.822	0.002
L44	31.25 - 31	5.070	6	1.586	0.002
L45	31 - 27.75	4.987	6	1.572	0.002
L46	27.75 - 27.5	3.981	6	1.387	0.002
L47	27.5 - 27.25	3.908	6	1.373	0.002
L48	27.25 - 27	3.837	6	1.359	0.002
L49	27 - 22	3.766	6	1.346	0.002
L50	22 - 17	2.491	6	1.090	0.001
L51	17 - 12	1.483	6	0.837	0.001
L52	12 - 7	0.737	6	0.588	0.001
L53	7 - 2	0.250	6	0.343	0.000
L54	2 - 0	0.020	6	0.097	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.500	Strobe	8	118.178	8.175	0.034	2611
148.500	Miscellaneous [NA 507-1]	8	118.178	8.175	0.034	2611
147.000	Lightning Rod 5/8" x 5'	8	118.178	8.175	0.034	2611
146.000	Top Hat	8	118.178	8.175	0.034	2611
145.000	840370799 w/ Mount Pipe	8	118.178	8.175	0.034	2611
135.000	QUAD656C0000X w/ Mount Pipe	8	102.117	7.970	0.032	1476
128.000	APXVAARR24_43-U-NA20 w/ Mount Pipe	8	90.727	7.584	0.028	825
118.000	APXVSPP18-C-A20 w/ Mount Pipe	8	75.696	6.842	0.022	828
108.000	TME-PCS 1900MHz	8	62.292	5.918	0.016	649

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
103.000	4x45W-65MHz 6' x 2" Mount Pipe	8	56.311	5.576	0.014	997

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	144.5 - 139.5 (1)	TP22.092x21x0.188	5.000	0.000	0.0	13.036	-3.346	762.603	0.004
L2	139.5 - 134.5 (2)	TP23.184x22.092x0.188	5.000	0.000	0.0	13.686	-5.770	800.623	0.007
L3	134.5 - 129.5 (3)	TP24.276x23.184x0.188	5.000	0.000	0.0	14.336	-6.205	838.642	0.007
L4	129.5 - 124.5 (4)	TP25.368x24.276x0.188	5.000	0.000	0.0	14.986	-9.413	876.662	0.011
L5	124.5 - 117.568 (5)	TP26.882x25.368x0.188	6.932	0.000	0.0	15.387	-9.799	900.167	0.011
L6	117.568 - 116.409 (6)	TP26.737x25.668x0.25	5.000	0.000	0.0	21.017	-12.512	1229.520	0.010
L7	116.409 - 112.583 (7)	TP27.555x26.737x0.25	3.826	0.000	0.0	21.666	-13.134	1267.470	0.010
L8	112.583 - 112.333 (8)	TP27.608x27.555x0.25	0.250	0.000	0.0	21.709	-13.203	1269.950	0.010
L9	112.333 - 107.333 (9)	TP28.677x27.608x0.25	5.000	0.000	0.0	22.557	-14.464	1319.560	0.011
L10	107.333 - 106.92 (10)	TP28.765x28.677x0.25	0.413	0.000	0.0	22.627	-14.555	1323.660	0.011
L11	106.92 - 106.67 (11)	TP28.818x28.765x0.538	0.250	0.000	0.0	48.248	-14.623	2822.500	0.005
L12	106.67 - 103.5 (12)	TP29.496x28.818x0.525	3.170	0.000	0.0	48.276	-15.352	2824.120	0.005
L13	103.5 - 103.25 (13)	TP29.549x29.496x0.525	0.250	0.000	0.0	48.365	-15.425	2829.330	0.005
L14	103.25 - 98.5 (14)	TP30.564x29.549x0.513	4.750	0.000	0.0	48.885	-17.897	2859.760	0.006
L15	98.5 - 98.25 (15)	TP30.618x30.564x0.675	0.250	0.000	0.0	64.151	-17.991	3752.840	0.005
L16	98.25 - 97.58 (16)	TP30.761x30.618x0.675	0.670	0.000	0.0	64.458	-18.181	3770.790	0.005
L17	97.58 - 97.33 (17)	TP30.815x30.761x0.563	0.250	0.000	0.0	54.011	-18.253	3159.660	0.006
L18	97.33 - 92.33 (18)	TP31.883x30.815x0.55	5.000	0.000	0.0	54.698	-19.576	3199.850	0.006
L19	92.33 - 87.1178 (19)	TP32.997x31.883x0.55	5.212	0.000	0.0	54.917	-19.750	3212.660	0.006
L20	87.1178 - 86.1178 (20)	TP32.72x31.509x0.375	5.625	0.000	0.0	38.499	-21.929	2252.200	0.010
L21	86.1178 - 83 (21)	TP33.392x32.72x0.375	3.118	0.000	0.0	39.299	-22.698	2298.970	0.010
L22	83 - 82.75 (22)	TP33.446x33.392x0.375	0.250	0.000	0.0	39.363	-22.787	2302.720	0.010
L23	82.75 - 77.75	TP34.523x33.446x0.375	5.000	0.000	0.0	40.645	-24.032	2377.720	0.010

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L24	77.75 - 77.25 (24)	TP34.631x34.523x0.375	0.500	0.000	0.0	40.773	-24.178	2385.220	0.010
L25	77.25 - 77 (25)	TP34.685x34.631x0.825	0.250	0.000	0.0	88.663	-24.291	5186.790	0.005
L26	77 - 76.75 (26)	TP34.738x34.685x0.638	0.250	0.000	0.0	69.001	-24.372	4036.540	0.006
L27	76.75 - 71.75 (27)	TP35.816x34.738x0.625	5.000	0.000	0.0	69.809	-26.031	4083.850	0.006
L28	71.75 - 69 (28)	TP36.408x35.816x0.625	2.750	0.000	0.0	70.985	-26.961	4152.600	0.006
L29	69 - 68.75 (29)	TP36.462x36.408x0.8	0.250	0.000	0.0	90.553	-27.090	5297.330	0.005
L30	68.75 - 63.75 (30)	TP37.539x36.462x0.788	5.000	0.000	0.0	91.861	-29.125	5373.890	0.005
L31	63.75 - 60 (31)	TP38.347x37.539x0.775	3.750	0.000	0.0	92.421	-30.682	5406.630	0.006
L32	60 - 59.75 (32)	TP38.401x38.347x0.775	0.250	0.000	0.0	92.554	-30.807	5414.380	0.006
L33	59.75 - 58.5 (33)	TP38.67x38.401x0.775	1.250	0.000	0.0	93.216	-31.314	5453.130	0.006
L34	58.5 - 58.25 (34)	TP38.724x38.67x0.775	0.250	0.000	0.0	93.349	-31.439	5460.880	0.006
L35	58.25 - 58 (35)	TP38.778x38.724x0.775	0.250	0.000	0.0	93.481	-31.545	5468.630	0.006
L36	58 - 57.75 (36)	TP38.832x38.778x0.613	0.250	0.000	0.0	74.301	-31.644	4346.590	0.007
L37	57.75 - 56.75 (37)	TP39.047x38.832x0.613	1.000	0.000	0.0	74.719	-32.030	4371.090	0.007
L38	56.75 - 56.5 (38)	TP39.101x39.047x0.738	0.250	0.000	0.0	89.802	-32.156	5253.410	0.006
L39	56.5 - 51.5 (39)	TP40.178x39.101x0.725	5.000	0.000	0.0	90.787	-34.304	5311.050	0.006
L40	51.5 - 42.0418 (40)	TP42.216x40.178x0.713	9.458	0.000	0.0	91.044	-35.920	5326.080	0.007
L41	42.0418 - 41.0418 (41)	TP41.678x40.221x0.788	6.776	0.000	0.0	102.206	-41.198	5979.060	0.007
L42	41.0418 - 36.0418 (42)	TP42.753x41.678x0.788	5.000	0.000	0.0	104.893	-43.609	6136.220	0.007
L43	36.0418 - 31.25 (43)	TP43.783x42.753x0.763	4.792	0.000	0.0	104.116	-45.955	6090.790	0.008
L44	31.25 - 31 (44)	TP43.836x43.783x0.65	0.250	0.000	0.0	89.098	-46.098	5212.210	0.009
L45	31 - 27.75 (45)	TP44.535x43.836x0.65	3.250	0.000	0.0	90.539	-47.676	5296.530	0.009
L46	27.75 - 27.5 (46)	TP44.589x44.535x0.65	0.250	0.000	0.0	90.650	-47.809	5303.020	0.009
L47	27.5 - 27.25 (47)	TP44.642x44.589x0.65	0.250	0.000	0.0	90.761	-47.933	5309.500	0.009
L48	27.25 - 27 (48)	TP44.696x44.642x0.725	0.250	0.000	0.0	101.184	-48.056	5919.280	0.008
L49	27 - 22 (49)	TP45.771x44.696x0.713	5.000	0.000	0.0	101.899	-50.514	5961.060	0.008
L50	22 - 17 (50)	TP46.846x45.771x0.713	5.000	0.000	0.0	104.329	-53.026	6103.250	0.009
L51	17 - 12 (51)	TP47.921x46.846x0.713	5.000	0.000	0.0	106.760	-55.575	6245.440	0.009
L52	12 - 7 (52)	TP48.995x47.921x0.713	5.000	0.000	0.0	109.190	-58.157	6387.640	0.009
L53	7 - 2 (53)	TP50.07x48.995x0.7	5.000	0.000	0.0	109.690	-60.778	6416.890	0.009
L54	2 - 0 (54)	TP50.5x50.07x0.7	2.000	0.000	0.0	110.646	-61.838	6472.770	0.010

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	144.5 - 139.5 (1)	TP22.092x21x0.188	64.846	412.151	0.157	0.000	412.151	0.000
L2	139.5 - 134.5 (2)	TP23.184x22.092x0.188	136.743	447.433	0.306	0.000	447.433	0.000
L3	134.5 - 129.5	TP24.276x23.184x0.188	236.684	483.412	0.490	0.000	483.412	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L4	129.5 - 124.5 (3)	TP25.368x24.276x0.188	360.538	519.990	0.693	0.000	519.990	0.000
L5	124.5 - 117.568 (4)	TP26.882x25.368x0.188	444.767	542.862	0.819	0.000	542.862	0.000
L6	117.568 - 116.409 (5)	TP26.737x25.668x0.25	588.712	825.969	0.713	0.000	825.969	0.000
L7	116.409 - 112.583 (6)	TP27.555x26.737x0.25	711.052	870.592	0.817	0.000	870.592	0.000
L8	112.583 - 112.333 (7)	TP27.608x27.555x0.25	719.096	873.533	0.823	0.000	873.533	0.000
L9	112.333 - 107.333 (8)	TP28.677x27.608x0.25	882.133	932.942	0.946	0.000	932.942	0.000
L10	107.333 - 106.92 (9)	TP28.765x28.677x0.25	896.142	937.892	0.955	0.000	937.892	0.000
L11	106.92 - 106.67 (10)	TP28.818x28.765x0.538	904.633	2061.800	0.439	0.000	2061.800	0.000
L12	106.67 - 103.5 (11)	TP29.496x28.818x0.525	1013.408	2115.150	0.479	0.000	2115.150	0.000
L13	103.5 - 103.25 (12)	TP29.549x29.496x0.525	1022.075	2123.033	0.481	0.000	2123.033	0.000
L14	103.25 - 98.5 (13)	TP30.564x29.549x0.513	1200.217	2224.100	0.540	0.000	2224.100	0.000
L15	98.5 - 98.25 (14)	TP30.618x30.564x0.675	1209.792	2892.475	0.418	0.000	2892.475	0.000
L16	98.25 - 97.58 (15)	TP30.761x30.618x0.675	1235.508	2920.508	0.423	0.000	2920.508	0.000
L17	97.58 - 97.33 (16)	TP30.815x30.761x0.563	1245.133	2469.958	0.504	0.000	2469.958	0.000
L18	97.33 - 92.33 (17)	TP31.883x30.815x0.55	1440.167	2593.417	0.555	0.000	2593.417	0.000
L19	92.33 - 87.1178 (18)	TP32.997x31.883x0.55	1463.383	2614.417	0.560	0.000	2614.417	0.000
L20	87.1178 - 86.1178 (19)	TP32.72x31.509x0.375	1688.083	1895.433	0.891	0.000	1895.433	0.000
L21	86.1178 - 83 (20)	TP33.392x32.72x0.375	1814.500	1975.433	0.919	0.000	1975.433	0.000
L22	83 - 82.75 (21)	TP33.446x33.392x0.375	1824.708	1981.917	0.921	0.000	1981.917	0.000
L23	82.75 - 77.75 (22)	TP34.523x33.446x0.375	2031.233	2113.875	0.961	0.000	2113.875	0.000
L24	77.75 - 77.25 (23)	TP34.631x34.523x0.375	2052.142	2127.300	0.965	0.000	2127.300	0.000
L25	77.25 - 77 (24)	TP34.685x34.631x0.825	2062.608	4512.550	0.457	0.000	4512.550	0.000
L26	77 - 76.75 (25)	TP34.738x34.685x0.638	2073.092	3556.550	0.583	0.000	3556.550	0.000
L27	76.75 - 71.75 (26)	TP35.816x34.738x0.625	2285.300	3716.608	0.615	0.000	3716.608	0.000
L28	71.75 - 69 (27)	TP36.408x35.816x0.625	2404.100	3843.908	0.625	0.000	3843.908	0.000
L29	69 - 68.75 (28)	TP36.462x36.408x0.8	2414.967	4863.200	0.497	0.000	4863.200	0.000
L30	68.75 - 63.75 (29)	TP37.539x36.462x0.788	2635.125	5089.233	0.518	0.000	5089.233	0.000
L31	63.75 - 60 (30)	TP38.347x37.539x0.775	2803.683	5238.642	0.535	0.000	5238.642	0.000
L32	60 - 59.75 (31)	TP38.401x38.347x0.775	2815.033	5253.825	0.536	0.000	5253.825	0.000
L33	59.75 - 58.5 (32)	TP38.67x38.401x0.775	2871.958	5330.058	0.539	0.000	5330.058	0.000
L34	58.5 - 58.25 (33)	TP38.724x38.67x0.775	2883.383	5345.367	0.539	0.000	5345.367	0.000
L35	58.25 - 58 (34)	TP38.778x38.724x0.775	2894.825	5360.708	0.540	0.000	5360.708	0.000
L36	58 - 57.75 (35)	TP38.832x38.778x0.613	2906.275	4303.483	0.675	0.000	4303.483	0.000
L37	57.75 - 56.75 (36)	TP39.047x38.832x0.613	2952.217	4352.517	0.678	0.000	4352.517	0.000
		(37)						

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L38	56.75 - 56.5 (38)	TP39.101x39.047x0.738	2963.742	5204.558	0.569	0.000	5204.558	0.000
L39	56.5 - 51.5 (39)	TP40.178x39.101x0.725	3196.825	5415.617	0.590	0.000	5415.617	0.000
L40	51.5 - 42.0418 (40)	TP42.216x40.178x0.713	3371.733	5545.550	0.608	0.000	5545.550	0.000
L41	42.0418 - 41.0418 (41)	TP41.678x40.221x0.788	3701.433	6313.417	0.586	0.000	6313.417	0.000
L42	41.0418 - 36.0418 (42)	TP42.753x41.678x0.788	3950.917	6652.891	0.594	0.000	6652.891	0.000
L43	36.0418 - 31.25 (43)	TP43.783x42.753x0.763	4194.575	6776.591	0.619	0.000	6776.591	0.000
L44	31.25 - 31 (44)	TP43.836x43.783x0.65	4207.408	5836.825	0.721	0.000	5836.825	0.000
L45	31 - 27.75 (45)	TP44.535x43.836x0.65	4375.375	6028.617	0.726	0.000	6028.617	0.000
L46	27.75 - 27.5 (46)	TP44.589x44.535x0.65	4388.442	6043.500	0.726	0.000	6043.500	0.000
L47	27.5 - 27.25 (47)	TP44.642x44.589x0.65	4401.575	6058.400	0.727	0.000	6058.400	0.000
L48	27.25 - 27 (48)	TP44.696x44.642x0.725	4414.717	6739.541	0.655	0.000	6739.541	0.000
L49	27 - 22 (49)	TP45.771x44.696x0.713	4679.983	6959.567	0.672	0.000	6959.567	0.000
L50	22 - 17 (50)	TP46.846x45.771x0.713	4949.508	7298.191	0.678	0.000	7298.191	0.000
L51	17 - 12 (51)	TP47.921x46.846x0.713	5222.950	7644.858	0.683	0.000	7644.858	0.000
L52	12 - 7 (52)	TP48.995x47.921x0.713	5500.208	7999.575	0.688	0.000	7999.575	0.000
L53	7 - 2 (53)	TP50.07x48.995x0.7	5781.275	8221.867	0.703	0.000	8221.867	0.000
L54	2 - 0 (54)	TP50.5x50.07x0.7	5894.767	8366.667	0.705	0.000	8366.667	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	144.5 - 139.5 (1)	TP22.092x21x0.188	11.501	228.781	0.050	0.011	438.868	0.000
L2	139.5 - 134.5 (2)	TP23.184x22.092x0.188	19.752	240.187	0.082	1.228	483.718	0.003
L3	134.5 - 129.5 (3)	TP24.276x23.184x0.188	20.230	251.593	0.080	1.227	530.751	0.002
L4	129.5 - 124.5 (4)	TP25.368x24.276x0.188	27.110	262.999	0.103	2.448	579.964	0.004
L5	124.5 - 117.568 (5)	TP26.882x25.368x0.188	27.396	270.050	0.101	2.446	611.482	0.004
L6	117.568 - 116.409 (6)	TP26.737x25.668x0.25	31.811	368.856	0.086	3.272	855.600	0.004
L7	116.409 - 112.583 (7)	TP27.555x26.737x0.25	32.169	380.242	0.085	3.268	909.233	0.004
L8	112.583 - 112.333 (8)	TP27.608x27.555x0.25	32.199	380.986	0.085	3.268	912.800	0.004
L9	112.333 - 107.333 (9)	TP28.677x27.608x0.25	33.899	395.868	0.086	3.263	985.500	0.003
L10	107.333 - 106.92 (10)	TP28.765x28.677x0.25	33.959	397.097	0.086	3.262	991.625	0.003
L11	106.92 - 106.67 (11)	TP28.818x28.765x0.538	34.003	846.750	0.040	3.262	2097.142	0.002
L12	106.67 - 103.5 (12)	TP29.496x28.818x0.525	34.636	847.237	0.041	3.260	2149.542	0.002
L13	103.5 - 103.25 (13)	TP29.549x29.496x0.525	34.680	848.799	0.041	3.260	2157.483	0.002

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L14	103.25 - 98.5 (14)	TP30.564x29.549x0.513	38.280	857.928	0.045	4.697	2257.900	0.002
L15	98.5 - 98.25 (15)	TP30.618x30.564x0.675	38.323	1125.850	0.034	4.696	2952.267	0.002
L16	98.25 - 97.58 (16)	TP30.761x30.618x0.675	38.468	1131.240	0.034	4.696	2980.575	0.002
L17	97.58 - 97.33 (17)	TP30.815x30.761x0.563	38.516	947.897	0.041	4.696	2511.283	0.002
L18	97.33 - 92.33 (18)	TP31.883x30.815x0.55	39.514	959.955	0.041	4.693	2634.117	0.002
L19	92.33 - 87.1178 (19)	TP32.997x31.883x0.55	39.576	963.799	0.041	4.692	2655.258	0.002
L20	87.1178 - 86.1178 (20)	TP32.72x31.509x0.375	40.305	675.660	0.060	4.689	1913.908	0.002
L21	86.1178 - 83 (21)	TP33.392x32.72x0.375	40.831	689.690	0.059	4.686	1994.217	0.002
L22	83 - 82.75 (22)	TP33.446x33.392x0.375	40.860	690.815	0.059	4.685	2000.725	0.002
L23	82.75 - 77.75 (23)	TP34.523x33.446x0.375	41.778	713.315	0.059	4.681	2133.175	0.002
L24	77.75 - 77.25 (24)	TP34.631x34.523x0.375	41.861	715.565	0.058	4.680	2146.658	0.002
L25	77.25 - 77 (25)	TP34.685x34.631x0.825	41.907	1556.040	0.027	4.680	4614.050	0.001
L26	77 - 76.75 (26)	TP34.738x34.685x0.638	41.960	1210.960	0.035	4.680	3616.408	0.001
L27	76.75 - 71.75 (27)	TP35.816x34.738x0.625	42.944	1225.150	0.035	4.677	3775.700	0.001
L28	71.75 - 69 (28)	TP36.408x35.816x0.625	43.485	1245.780	0.035	4.676	3903.892	0.001
L29	69 - 68.75 (29)	TP36.462x36.408x0.8	43.520	1589.200	0.027	4.675	4963.208	0.001
L30	68.75 - 63.75 (30)	TP37.539x36.462x0.788	44.561	1612.170	0.028	4.673	5188.775	0.001
L31	63.75 - 60 (31)	TP38.347x37.539x0.775	45.366	1621.990	0.028	4.672	5336.925	0.001
L32	60 - 59.75 (32)	TP38.401x38.347x0.775	45.408	1624.320	0.028	4.672	5352.233	0.001
L33	59.75 - 58.5 (33)	TP38.67x38.401x0.775	45.694	1635.940	0.028	4.671	5429.117	0.001
L34	58.5 - 58.25 (34)	TP38.724x38.67x0.775	45.736	1638.270	0.028	4.671	5444.558	0.001
L35	58.25 - 58 (35)	TP38.778x38.724x0.775	45.790	1640.590	0.028	4.671	5460.025	0.001
L36	58 - 57.75 (36)	TP38.832x38.778x0.613	45.844	1303.980	0.035	4.671	4364.458	0.001
L37	57.75 - 56.75 (37)	TP39.047x38.832x0.613	46.066	1311.330	0.035	4.671	4413.792	0.001
L38	56.75 - 56.5 (38)	TP39.101x39.047x0.738	46.107	1576.020	0.029	4.670	5294.908	0.001
L39	56.5 - 51.5 (39)	TP40.178x39.101x0.725	47.149	1593.320	0.030	4.669	5505.050	0.001
L40	51.5 - 42.0418 (40)	TP42.216x40.178x0.713	47.887	1597.820	0.030	4.667	5633.375	0.001
L41	42.0418 - 41.0418 (41)	TP41.678x40.221x0.788	49.432	1793.720	0.028	4.666	6423.241	0.001
L42	41.0418 - 36.0418 (42)	TP42.753x41.678x0.788	50.397	1840.870	0.027	4.664	6765.341	0.001
L43	36.0418 - 31.25 (43)	TP43.783x42.753x0.763	51.345	1827.240	0.028	4.663	6884.083	0.001
L44	31.25 - 31 (44)	TP43.836x43.783x0.65	51.375	1563.660	0.033	4.663	5913.841	0.001
L45	31 - 27.75 (45)	TP44.535x43.836x0.65	52.021	1588.960	0.033	4.662	6106.725	0.001
L46	27.75 - 27.5 (46)	TP44.589x44.535x0.65	52.518	1590.910	0.033	3.192	6121.683	0.001
L47	27.5 - 27.25 (47)	TP44.642x44.589x0.65	52.569	1592.850	0.033	3.192	6136.675	0.001
L48	27.25 - 27 (48)	TP44.696x44.642x0.725	52.616	1775.780	0.030	3.192	6838.133	0.000
L49	27 - 22 (49)	TP45.771x44.696x0.713	53.527	1788.320	0.030	3.192	7056.691	0.000
L50	22 - 17 (50)	TP46.846x45.771x0.713	54.337	1830.980	0.030	3.191	7397.358	0.000
L51	17 - 12 (51)	TP47.921x46.846x0.713	55.098	1873.630	0.029	3.191	7746.050	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L52	12 - 7 (52)	TP48.995x47.921x0.713	55.862	1916.290	0.029	3.190	8102.775	0.000
L53	7 - 2 (53)	TP50.07x48.995x0.7	56.625	1925.070	0.029	3.190	8323.191	0.000
L54	2 - 0 (54)	TP50.5x50.07x0.7	56.931	1941.830	0.029	3.190	8468.750	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	144.5 - 139.5 (1)	0.004	0.157	0.000	0.050	0.000	0.164 ✔	1.050	4.8.2 ✔
L2	139.5 - 134.5 (2)	0.007	0.306	0.000	0.082	0.003	0.320 ✔	1.050	4.8.2 ✔
L3	134.5 - 129.5 (3)	0.007	0.490	0.000	0.080	0.002	0.504 ✔	1.050	4.8.2 ✔
L4	129.5 - 124.5 (4)	0.011	0.693	0.000	0.103	0.004	0.716 ✔	1.050	4.8.2 ✔
L5	124.5 - 117.568 (5)	0.011	0.819	0.000	0.101	0.004	0.841 ✔	1.050	4.8.2 ✔
L6	117.568 - 116.409 (6)	0.010	0.713	0.000	0.086	0.004	0.731 ✔	1.050	4.8.2 ✔
L7	116.409 - 112.583 (7)	0.010	0.817	0.000	0.085	0.004	0.835 ✔	1.050	4.8.2 ✔
L8	112.583 - 112.333 (8)	0.010	0.823	0.000	0.085	0.004	0.841 ✔	1.050	4.8.2 ✔
L9	112.333 - 107.333 (9)	0.011	0.946	0.000	0.086	0.003	0.964 ✔	1.050	4.8.2 ✔
L10	107.333 - 106.92 (10)	0.011	0.955	0.000	0.086	0.003	0.974 ✔	1.050	4.8.2 ✔
L11	106.92 - 106.67 (11)	0.005	0.439	0.000	0.040	0.002	0.446 ✔	1.050	4.8.2 ✔
L12	106.67 - 103.5 (12)	0.005	0.479	0.000	0.041	0.002	0.486 ✔	1.050	4.8.2 ✔
L13	103.5 - 103.25 (13)	0.005	0.481	0.000	0.041	0.002	0.489 ✔	1.050	4.8.2 ✔
L14	103.25 - 98.5 (14)	0.006	0.540	0.000	0.045	0.002	0.548 ✔	1.050	4.8.2 ✔
L15	98.5 - 98.25 (15)	0.005	0.418	0.000	0.034	0.002	0.424 ✔	1.050	4.8.2 ✔
L16	98.25 - 97.58 (16)	0.005	0.423	0.000	0.034	0.002	0.429 ✔	1.050	4.8.2 ✔
L17	97.58 - 97.33 (17)	0.006	0.504	0.000	0.041	0.002	0.512 ✔	1.050	4.8.2 ✔
L18	97.33 - 92.33 (18)	0.006	0.555	0.000	0.041	0.002	0.563 ✔	1.050	4.8.2 ✔
L19	92.33 - 87.1178 (19)	0.006	0.560	0.000	0.041	0.002	0.568 ✔	1.050	4.8.2 ✔
L20	87.1178 - 86.1178 (20)	0.010	0.891	0.000	0.060	0.002	0.904 ✔	1.050	4.8.2 ✔

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L21	86.1178 - 83 (21)	0.010	0.919	0.000	0.059	0.002	0.932 ✔	1.050	4.8.2 ✔
L22	83 - 82.75 (22)	0.010	0.921	0.000	0.059	0.002	0.934 ✔	1.050	4.8.2 ✔
L23	82.75 - 77.75 (23)	0.010	0.961	0.000	0.059	0.002	0.975 ✔	1.050	4.8.2 ✔
L24	77.75 - 77.25 (24)	0.010	0.965	0.000	0.058	0.002	0.978 ✔	1.050	4.8.2 ✔
L25	77.25 - 77 (25)	0.005	0.457	0.000	0.027	0.001	0.463 ✔	1.050	4.8.2 ✔
L26	77 - 76.75 (26)	0.006	0.583	0.000	0.035	0.001	0.590 ✔	1.050	4.8.2 ✔
L27	76.75 - 71.75 (27)	0.006	0.615	0.000	0.035	0.001	0.623 ✔	1.050	4.8.2 ✔
L28	71.75 - 69 (28)	0.006	0.625	0.000	0.035	0.001	0.633 ✔	1.050	4.8.2 ✔
L29	69 - 68.75 (29)	0.005	0.497	0.000	0.027	0.001	0.502 ✔	1.050	4.8.2 ✔
L30	68.75 - 63.75 (30)	0.005	0.518	0.000	0.028	0.001	0.524 ✔	1.050	4.8.2 ✔
L31	63.75 - 60 (31)	0.006	0.535	0.000	0.028	0.001	0.542 ✔	1.050	4.8.2 ✔
L32	60 - 59.75 (32)	0.006	0.536	0.000	0.028	0.001	0.542 ✔	1.050	4.8.2 ✔
L33	59.75 - 58.5 (33)	0.006	0.539	0.000	0.028	0.001	0.545 ✔	1.050	4.8.2 ✔
L34	58.5 - 58.25 (34)	0.006	0.539	0.000	0.028	0.001	0.546 ✔	1.050	4.8.2 ✔
L35	58.25 - 58 (35)	0.006	0.540	0.000	0.028	0.001	0.547 ✔	1.050	4.8.2 ✔
L36	58 - 57.75 (36)	0.007	0.675	0.000	0.035	0.001	0.684 ✔	1.050	4.8.2 ✔
L37	57.75 - 56.75 (37)	0.007	0.678	0.000	0.035	0.001	0.687 ✔	1.050	4.8.2 ✔
L38	56.75 - 56.5 (38)	0.006	0.569	0.000	0.029	0.001	0.576 ✔	1.050	4.8.2 ✔
L39	56.5 - 51.5 (39)	0.006	0.590	0.000	0.030	0.001	0.598 ✔	1.050	4.8.2 ✔
L40	51.5 - 42.0418 (40)	0.007	0.608	0.000	0.030	0.001	0.616 ✔	1.050	4.8.2 ✔
L41	42.0418 - 41.0418 (41)	0.007	0.586	0.000	0.028	0.001	0.594 ✔	1.050	4.8.2 ✔
L42	41.0418 - 36.0418 (42)	0.007	0.594	0.000	0.027	0.001	0.602 ✔	1.050	4.8.2 ✔
L43	36.0418 - 31.25 (43)	0.008	0.619	0.000	0.028	0.001	0.627 ✔	1.050	4.8.2 ✔
L44	31.25 - 31 (44)	0.009	0.721	0.000	0.033	0.001	0.731 ✔	1.050	4.8.2 ✔
L45	31 - 27.75 (45)	0.009	0.726	0.000	0.033	0.001	0.736 ✔	1.050	4.8.2 ✔
L46	27.75 - 27.5 (46)	0.009	0.726	0.000	0.033	0.001	0.736 ✔	1.050	4.8.2 ✔

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L47	27.5 - 27.25 (47)	0.009	0.727	0.000	0.033	0.001	0.737 ✔	1.050	4.8.2 ✔
L48	27.25 - 27 (48)	0.008	0.655	0.000	0.030	0.000	0.664 ✔	1.050	4.8.2 ✔
L49	27 - 22 (49)	0.008	0.672	0.000	0.030	0.000	0.682 ✔	1.050	4.8.2 ✔
L50	22 - 17 (50)	0.009	0.678	0.000	0.030	0.000	0.688 ✔	1.050	4.8.2 ✔
L51	17 - 12 (51)	0.009	0.683	0.000	0.029	0.000	0.693 ✔	1.050	4.8.2 ✔
L52	12 - 7 (52)	0.009	0.688	0.000	0.029	0.000	0.698 ✔	1.050	4.8.2 ✔
L53	7 - 2 (53)	0.009	0.703	0.000	0.029	0.000	0.714 ✔	1.050	4.8.2 ✔
L54	2 - 0 (54)	0.010	0.705	0.000	0.029	0.000	0.715 ✔	1.050	4.8.2 ✔

Section Capacity Table

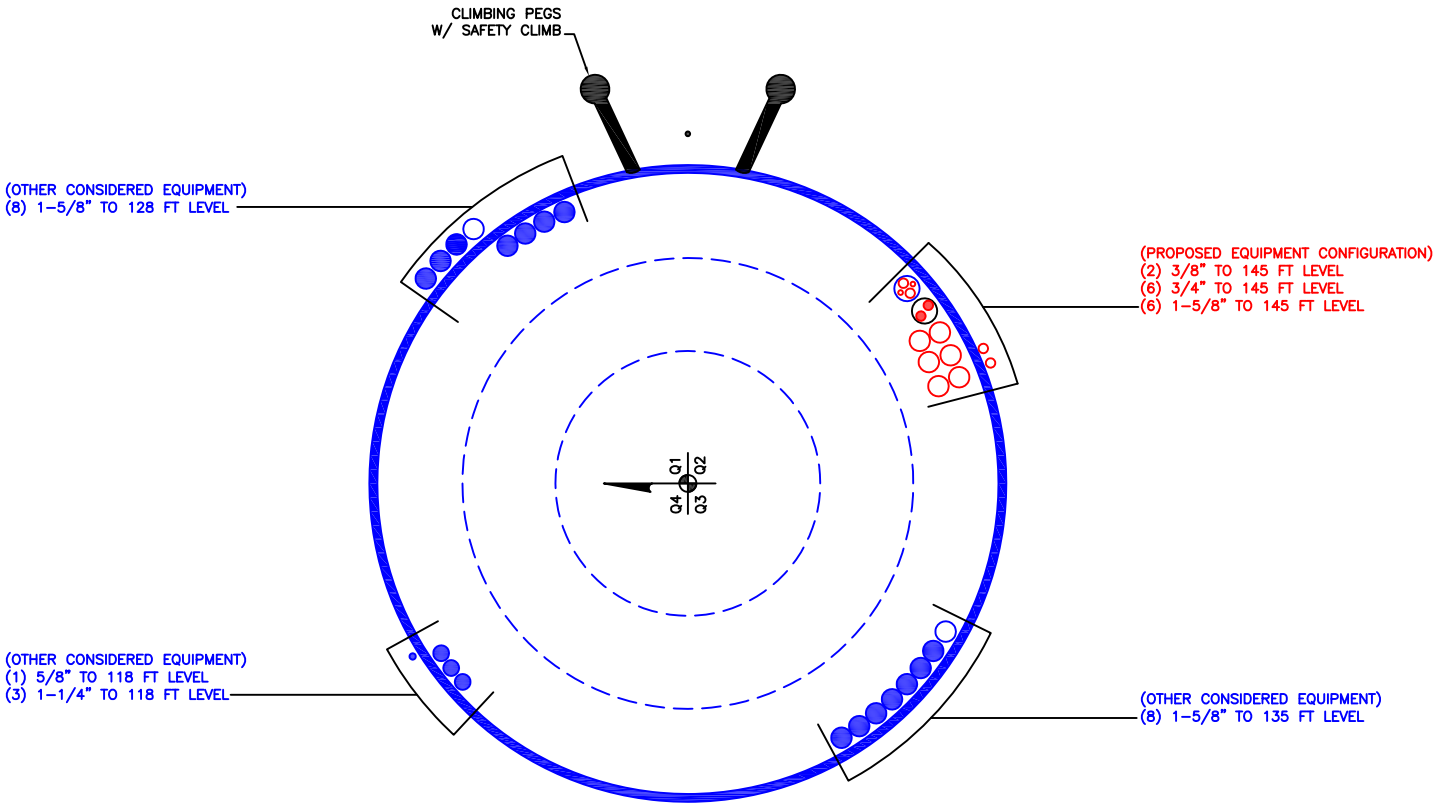
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	144.5 - 139.5	Pole	TP22.092x21x0.188	1	-3.346	800.733	**	**
L2	139.5 - 134.5	Pole	TP23.184x22.092x0.188	2	-5.770	840.654	**	**
L3	134.5 - 129.5	Pole	TP24.276x23.184x0.188	3	-6.205	880.574	**	**
L4	129.5 - 124.5	Pole	TP25.368x24.276x0.188	4	-9.413	920.495	**	**
L5	124.5 - 117.568	Pole	TP26.882x25.368x0.188	5	-9.799	945.175	**	**
L6	117.568 - 116.409	Pole	TP26.737x25.668x0.25	6	-12.512	1290.996	**	**
L7	116.409 - 112.583	Pole	TP27.555x26.737x0.25	7	-13.134	1330.843	**	**
L8	112.583 - 112.333	Pole	TP27.608x27.555x0.25	8	-13.203	1333.447	**	**
L9	112.333 - 107.333	Pole	TP28.677x27.608x0.25	9	-14.464	1385.538	**	**
L10	107.333 - 106.92	Pole	TP28.765x28.677x0.25	10	-14.555	1389.843	**	**
L11	106.92 - 106.67	Pole	TP28.818x28.765x0.538	11	-14.623	2963.625	**	**
L12	106.67 - 103.5	Pole	TP29.496x28.818x0.525	12	-15.352	2965.326	**	**
L13	103.5 - 103.25	Pole	TP29.549x29.496x0.525	13	-15.425	2970.796	**	**
L14	103.25 - 98.5	Pole	TP30.564x29.549x0.513	14	-17.897	3002.748	**	**
L15	98.5 - 98.25	Pole	TP30.618x30.564x0.675	15	-17.991	3940.482	**	**
L16	98.25 - 97.58	Pole	TP30.761x30.618x0.675	16	-18.181	3959.329	**	**
L17	97.58 - 97.33	Pole	TP30.815x30.761x0.563	17	-18.253	3317.643	**	**
L18	97.33 - 92.33	Pole	TP31.883x30.815x0.55	18	-19.576	3359.842	**	**
L19	92.33 - 87.1178	Pole	TP32.997x31.883x0.55	19	-19.750	3373.293	**	**
L20	87.1178 - 86.1178	Pole	TP32.72x31.509x0.375	20	-21.929	2364.810	**	**
L21	86.1178 - 83	Pole	TP33.392x32.72x0.375	21	-22.698	2413.918	**	**
L22	83 - 82.75	Pole	TP33.446x33.392x0.375	22	-22.787	2417.856	**	**
L23	82.75 - 77.75	Pole	TP34.523x33.446x0.375	23	-24.032	2496.606	**	**
L24	77.75 - 77.25	Pole	TP34.631x34.523x0.375	24	-24.178	2504.481	**	**
L25	77.25 - 77	Pole	TP34.685x34.631x0.825	25	-24.291	5446.129	**	**
L26	77 - 76.75	Pole	TP34.738x34.685x0.638	26	-24.372	4238.367	**	**
L27	76.75 - 71.75	Pole	TP35.816x34.738x0.625	27	-26.031	4288.042	**	**
L28	71.75 - 69	Pole	TP36.408x35.816x0.625	28	-26.961	4360.230	**	**
L29	69 - 68.75	Pole	TP36.462x36.408x0.8	29	-27.090	5562.196	**	**
L30	68.75 - 63.75	Pole	TP37.539x36.462x0.788	30	-29.125	5642.584	**	**

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L31	63.75 - 60	Pole	TP38.347x37.539x0.775	31	-30.682	5676.961	**	**
L32	60 - 59.75	Pole	TP38.401x38.347x0.775	32	-30.807	5685.099	**	**
L33	59.75 - 58.5	Pole	TP38.67x38.401x0.775	33	-31.314	5725.786	**	**
L34	58.5 - 58.25	Pole	TP38.724x38.67x0.775	34	-31.439	5733.924	**	**
L35	58.25 - 58	Pole	TP38.778x38.724x0.775	35	-31.545	5742.061	**	**
L36	58 - 57.75	Pole	TP38.832x38.778x0.613	36	-31.644	4563.919	**	**
L37	57.75 - 56.75	Pole	TP39.047x38.832x0.613	37	-32.030	4589.644	**	**
L38	56.75 - 56.5	Pole	TP39.101x39.047x0.738	38	-32.156	5516.080	**	**
L39	56.5 - 51.5	Pole	TP40.178x39.101x0.725	39	-34.304	5576.602	**	**
L40	51.5 - 42.0418	Pole	TP42.216x40.178x0.713	40	-35.920	5592.384	**	**
L41	42.0418 - 41.0418	Pole	TP41.678x40.221x0.788	41	-41.198	6278.013	**	**
L42	41.0418 - 36.0418	Pole	TP42.753x41.678x0.788	42	-43.609	6443.031	**	**
L43	36.0418 - 31.25	Pole	TP43.783x42.753x0.763	43	-45.955	6395.329	**	**
L44	31.25 - 31	Pole	TP43.836x43.783x0.65	44	-46.098	5472.820	**	**
L45	31 - 27.75	Pole	TP44.535x43.836x0.65	45	-47.676	5561.356	**	**
L46	27.75 - 27.5	Pole	TP44.589x44.535x0.65	46	-47.809	5568.171	**	**
L47	27.5 - 27.25	Pole	TP44.642x44.589x0.65	47	-47.933	5574.975	**	**
L48	27.25 - 27	Pole	TP44.696x44.642x0.725	48	-48.056	6215.244	**	**
L49	27 - 22	Pole	TP45.771x44.696x0.713	49	-50.514	6259.113	**	**
L50	22 - 17	Pole	TP46.846x45.771x0.713	50	-53.026	6408.412	**	**
L51	17 - 12	Pole	TP47.921x46.846x0.713	51	-55.575	6557.712	**	**
L52	12 - 7	Pole	TP48.995x47.921x0.713	52	-58.157	6707.022	**	**
L53	7 - 2	Pole	TP50.07x48.995x0.7	53	-60.778	6737.734	**	**
L54	2 - 0	Pole	TP50.5x50.07x0.7	54	-61.838	6796.408	**	**
							Summary	
						Pole (L24)	**	**
						RATING =	**	**

** Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 881533

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 881533

Work Order: 1779587

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	144.5	26.9323	3.8411	18	21	26.8823	0.1875	Auto	A572-65
2	121.4088	34.291	4.625	18	25.67	32.9971	0.25	Auto	A572-65
3	91.7428	49.701	5.776	18	31.51	42.2155	0.375	Auto	A572-65
4	47.8178	47.8178	0	18	40.22	50.5	0.4375	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	91.48	98.5	plate	CCI-SFP-045100	3		E3						E3						E3				
2	0	31.25	plate	CCI-WSFP-085125	3		E4								E4						E4		
3	31.25	60	plate	CCI-SFP-065125	3				E4						E4						E4		
4	60	77.25	plate	CCI-SFP-065125	3				E4						E4						E4		
5	91.48	103.5	plate	CCI-SFP-045100	3			E4						E4						E4			
6	77	83	plate	CCI-SFP-060100	3		E5						E5						E5				
7	103.5	112.583	plate	CCI-SFP-045100	3						E5						E5						E5
8	0	27.75	plate	WCFP-5.5x1.25	2					E6							E6						
9	0	27.25	plate	CCI-WSFP-065125	1															E6			
10	31.25	58.5	plate	CCI-SFP-085125	1							E6											
11	97.58	106.92	plate	CCI-SFP-040075	3	E6						E6						E6					
12	27.25	56.75	plate	CCI-SFP-065125	1													E7					
13	58	69	plate	CCI-SFP-060100	3						E7						E7						E7
14																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
2	8.5	1.25	10.625	0.625	n/a	45.000	17.000	9.063	1.1875	A572-65
3	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
4	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
5	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
6	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
7	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
8	5.5	1.25	6.875	0.625	n/a	27.000	21.000	5.313	1.1875	A572-65
9	6.5	1.25	8.125	0.625	n/a	33.000	19.000	6.563	1.1875	A572-65
10	8.5	1.25	10.625	0.625	45.000	45.000	17.000	9.063	1.1875	A572-65
11	4	0.75	3	0.375	12.000	12.000	16.000	2.063	1.1875	A572-65
12	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
13	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	144.5 - 139.5	5		18	21.000	22.092	0.1875	A572-65	1.000
2	139.5 - 134.5	5		18	22.092	23.184	0.1875	A572-65	1.000
3	134.5 - 129.5	5		18	23.184	24.276	0.1875	A572-65	1.000
4	129.5 - 124.5	5		18	24.276	25.368	0.1875	A572-65	1.000
5	124.5 - 121.4088	6.9323	3.8411	18	25.368	26.882	0.1875	A572-65	1.000
6	121.4088 - 116.4088	5		18	25.668	26.737	0.25	A572-65	1.000
7	116.4088 - 112.583	3.8258		18	26.737	27.555	0.25	A572-65	1.000
8	112.583 - 112.333	0.25		18	27.555	27.608	0.25	A572-65	1.000
9	112.333 - 107.333	5		18	27.608	28.677	0.25	A572-65	1.000
10	107.333 - 106.92	0.413		18	28.677	28.765	0.25	A572-65	1.000
11	106.92 - 106.67	0.25		18	28.765	28.818	0.5375	A572-65	0.936
12	106.67 - 103.5	3.17		18	28.818	29.496	0.525	A572-65	0.947
13	103.5 - 103.25	0.25		18	29.496	29.549	0.525	A572-65	0.946
14	103.25 - 98.5	4.75		18	29.549	30.564	0.5125	A572-65	0.952
15	98.5 - 98.25	0.25		18	30.564	30.618	0.675	A572-65	0.937
16	98.25 - 97.58	0.67		18	30.618	30.761	0.675	A572-65	0.934
17	97.58 - 97.33	0.25		18	30.761	30.815	0.5625	A572-65	0.949
18	97.33 - 92.33	5		18	30.815	31.883	0.55	A572-65	0.953
19	92.33 - 91.7428	5.2122	4.625	18	31.883	32.997	0.55	A572-65	0.951
20	91.7428 - 86.1178	5.625		18	31.509	32.720	0.375	A572-65	1.000
21	86.1178 - 83	3.1178		18	32.720	33.392	0.375	A572-65	1.000
22	83 - 82.75	0.25		18	33.392	33.446	0.375	A572-65	1.000
23	82.75 - 77.75	5		18	33.446	34.523	0.375	A572-65	1.000
24	77.75 - 77.25	0.5		18	34.523	34.631	0.375	A572-65	1.000
25	77.25 - 77	0.25		18	34.631	34.685	0.825	A572-65	0.939
26	77 - 76.75	0.25		18	34.685	34.738	0.6375	A572-65	0.946
27	76.75 - 71.75	5		18	34.738	35.816	0.625	A572-65	0.953
28	71.75 - 69	2.75		18	35.816	36.408	0.625	A572-65	0.948
29	69 - 68.75	0.25		18	36.408	36.462	0.8	A572-65	0.942
30	68.75 - 63.75	5		18	36.462	37.539	0.7875	A572-65	0.943
31	63.75 - 60	3.75		18	37.539	38.347	0.775	A572-65	0.948
32	60 - 59.75	0.25		18	38.347	38.401	0.775	A572-65	0.947
33	59.75 - 58.5	1.25		18	38.401	38.670	0.775	A572-65	0.944
34	58.5 - 58.25	0.25		18	38.670	38.724	0.775	A572-65	0.943
35	58.25 - 58	0.25		18	38.724	38.778	0.775	A572-65	0.942
36	58 - 57.75	0.25		18	38.778	38.832	0.6125	A572-65	1.087
37	57.75 - 56.75	1		18	38.832	39.047	0.6125	A572-65	1.084
38	56.75 - 56.5	0.25		18	39.047	39.101	0.7375	A572-65	0.994
39	56.5 - 51.5	5		18	39.101	40.178	0.725	A572-65	0.997
40	51.5 - 47.8178	9.4582	5.776	18	40.178	42.216	0.7125	A572-65	1.004
41	47.8178 - 41.0418	6.776		18	40.221	41.678	0.7875	A572-65	0.982
42	41.0418 - 36.0418	5		18	41.678	42.753	0.7875	A572-65	0.971
43	36.0418 - 31.25	4.7918		18	42.753	43.783	0.7625	A572-65	0.992
44	31.25 - 31	0.25		18	43.783	43.836	0.65	A572-65	1.125
45	31 - 27.75	3.25		18	43.836	44.535	0.65	A572-65	1.118
46	27.75 - 27.5	0.25		18	44.535	44.589	0.65	A572-65	1.118
47	27.5 - 27.25	0.25		18	44.589	44.642	0.65	A572-65	1.117
48	27.25 - 27	0.25		18	44.642	44.696	0.725	A572-65	1.003
49	27 - 22	5		18	44.696	45.771	0.7125	A572-65	1.010
50	22 - 17	5		18	45.771	46.846	0.7125	A572-65	1.001
51	17 - 12	5		18	46.846	47.921	0.7125	A572-65	0.992
52	12 - 7	5		18	47.921	48.995	0.7125	A572-65	0.984
53	7 - 2	5		18	48.995	50.070	0.7	A572-65	0.993
54	2 - 0	2		18	50.070	50.500	0.7	A572-65	0.990

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	144.5 - 139.5	3.35	64.85	11.50
2	139.5 - 134.5	5.77	136.74	19.75
3	134.5 - 129.5	6.21	236.68	20.23
4	129.5 - 124.5	9.43	360.56	27.12
5	124.5 - 121.4088	9.78	444.84	27.42
6	121.4088 - 116.4088	12.57	588.71	31.79
7	116.4088 - 112.583	13.13	711.05	32.17
8	112.583 - 112.333	13.20	719.10	32.20
9	112.333 - 107.333	14.51	882.13	33.88
10	107.333 - 106.92	14.56	896.14	33.96
11	106.92 - 106.67	14.62	904.64	34.00
12	106.67 - 103.5	15.35	1013.41	34.64
13	103.5 - 103.25	15.42	1022.07	34.68
14	103.25 - 98.5	17.90	1200.21	38.28
15	98.5 - 98.25	17.99	1209.79	38.32
16	98.25 - 97.58	18.18	1235.51	38.47
17	97.58 - 97.33	18.25	1245.13	38.52
18	97.33 - 92.33	19.58	1440.17	39.51
19	92.33 - 91.7428	19.75	1463.39	39.58
20	91.7428 - 86.1178	22.00	1688.08	40.27
21	86.1178 - 83	22.70	1814.50	40.83
22	83 - 82.75	22.79	1824.71	40.86
23	82.75 - 77.75	24.03	2031.24	41.78
24	77.75 - 77.25	24.18	2052.14	41.86
25	77.25 - 77	24.29	2062.61	41.91
26	77 - 76.75	24.37	2073.09	41.96
27	76.75 - 71.75	26.03	2285.30	42.94
28	71.75 - 69	26.96	2404.10	43.48
29	69 - 68.75	27.09	2414.97	43.52
30	68.75 - 63.75	29.12	2635.13	44.56
31	63.75 - 60	30.68	2803.69	45.37
32	60 - 59.75	30.81	2815.03	45.41
33	59.75 - 58.5	31.31	2871.96	45.69
34	58.5 - 58.25	31.44	2883.38	45.74
35	58.25 - 58	31.54	2894.82	45.79
36	58 - 57.75	31.64	2906.28	45.84
37	57.75 - 56.75	32.03	2952.22	46.07
38	56.75 - 56.5	32.16	2963.74	46.11
39	56.5 - 51.5	34.30	3196.83	47.15
40	51.5 - 47.8178	35.92	3371.73	47.89
41	47.8178 - 41.0418	41.20	3701.44	49.43
42	41.0418 - 36.0418	43.61	3950.91	50.40
43	36.0418 - 31.25	45.96	4194.57	51.35
44	31.25 - 31	46.10	4207.41	51.37
45	31 - 27.75	47.68	4375.38	52.02
46	27.75 - 27.5	47.81	4388.44	52.52
47	27.5 - 27.25	47.93	4401.57	52.57
48	27.25 - 27	48.06	4414.72	52.62
49	27 - 22	50.51	4679.98	53.53
50	22 - 17	53.03	4949.50	54.34
51	17 - 12	55.57	5222.95	55.10
52	12 - 7	58.16	5500.21	55.86
53	7 - 2	60.78	5781.27	56.63
54	2 - 0	61.84	5894.77	56.93

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
144.5 - 139.5	Pole	TP22.092x21x0.1875	Pole	15.4%	Pass
139.5 - 134.5	Pole	TP23.184x22.092x0.1875	Pole	29.9%	Pass
134.5 - 129.5	Pole	TP24.276x23.184x0.1875	Pole	47.4%	Pass
129.5 - 124.5	Pole	TP25.368x24.276x0.1875	Pole	67.2%	Pass
124.5 - 121.41	Pole	TP26.882x25.368x0.1875	Pole	79.3%	Pass
121.41 - 116.41	Pole	TP26.737x25.668x0.25	Pole	68.8%	Pass
116.41 - 112.58	Pole	TP27.555x26.737x0.25	Pole	78.8%	Pass
112.58 - 112.33	Pole	TP27.608x27.555x0.25	Pole	79.4%	Pass
112.33 - 107.33	Pole	TP28.677x27.608x0.25	Pole	91.1%	Pass
107.33 - 106.92	Pole	TP28.765x28.677x0.25	Pole	92.0%	Pass
106.92 - 106.67	Pole + Reinf.	TP28.818x28.765x0.5375	Reinf. 11 Tension Rupture	77.2%	Pass
106.67 - 103.5	Pole + Reinf.	TP29.496x28.818x0.525	Reinf. 11 Tension Rupture	83.5%	Pass
103.5 - 103.25	Pole + Reinf.	TP29.549x29.496x0.525	Reinf. 11 Tension Rupture	84.0%	Pass
103.25 - 98.5	Pole + Reinf.	TP30.564x29.549x0.5125	Reinf. 11 Tension Rupture	93.8%	Pass
98.5 - 98.25	Pole + Reinf.	TP30.618x30.564x0.675	Reinf. 11 Tension Rupture	72.4%	Pass
98.25 - 97.58	Pole + Reinf.	TP30.761x30.618x0.675	Reinf. 11 Tension Rupture	73.5%	Pass
97.58 - 97.33	Pole + Reinf.	TP30.815x30.761x0.5625	Reinf. 1 Tension Rupture	83.6%	Pass
97.33 - 92.33	Pole + Reinf.	TP31.883x30.815x0.55	Reinf. 1 Tension Rupture	91.9%	Pass
92.33 - 91.74	Pole + Reinf.	TP32.997x31.883x0.55	Reinf. 1 Tension Rupture	92.9%	Pass
91.74 - 86.12	Pole	TP32.72x31.509x0.375	Pole	85.6%	Pass
86.12 - 83	Pole	TP33.392x32.72x0.375	Pole	88.2%	Pass
83 - 82.75	Pole	TP33.446x33.392x0.375	Pole	88.5%	Pass
82.75 - 77.75	Pole	TP34.523x33.446x0.375	Pole	92.3%	Pass
77.75 - 77.25	Pole	TP34.631x34.523x0.375	Pole	92.7%	Pass
77.25 - 77	Pole + Reinf.	TP34.685x34.631x0.825	Reinf. 6 Tension Rupture	68.9%	Pass
77 - 76.75	Pole + Reinf.	TP34.738x34.685x0.6375	Reinf. 4 Tension Rupture	87.8%	Pass
76.75 - 71.75	Pole + Reinf.	TP35.816x34.738x0.625	Reinf. 4 Tension Rupture	92.1%	Pass
71.75 - 69	Pole + Reinf.	TP36.408x35.816x0.625	Reinf. 4 Tension Rupture	94.3%	Pass
69 - 68.75	Pole + Reinf.	TP36.462x36.408x0.8	Reinf. 13 Tension Rupture	74.9%	Pass
68.75 - 63.75	Pole + Reinf.	TP37.539x36.462x0.7875	Reinf. 13 Tension Rupture	78.3%	Pass
63.75 - 60	Pole + Reinf.	TP38.347x37.539x0.775	Reinf. 13 Tension Rupture	80.7%	Pass
60 - 59.75	Pole + Reinf.	TP38.401x38.347x0.775	Reinf. 13 Tension Rupture	80.8%	Pass
59.75 - 58.5	Pole + Reinf.	TP38.67x38.401x0.775	Reinf. 13 Tension Rupture	81.6%	Pass
58.5 - 58.25	Pole + Reinf.	TP38.724x38.67x0.775	Reinf. 13 Tension Rupture	81.8%	Pass
58.25 - 58	Pole + Reinf.	TP38.778x38.724x0.775	Reinf. 13 Tension Rupture	81.9%	Pass
58 - 57.75	Pole + Reinf.	TP38.832x38.778x0.6125	Reinf. 3 Tension Rupture	93.4%	Pass
57.75 - 56.75	Pole + Reinf.	TP39.047x38.832x0.6125	Reinf. 3 Tension Rupture	94.0%	Pass
56.75 - 56.5	Pole + Reinf.	TP39.101x39.047x0.7375	Reinf. 3 Tension Rupture	85.4%	Pass
56.5 - 51.5	Pole + Reinf.	TP40.178x39.101x0.725	Reinf. 3 Tension Rupture	88.3%	Pass
51.5 - 47.82	Pole + Reinf.	TP42.216x40.178x0.7125	Reinf. 3 Tension Rupture	90.3%	Pass
47.82 - 41.04	Pole + Reinf.	TP41.678x40.221x0.7875	Reinf. 3 Tension Rupture	88.3%	Pass
41.04 - 36.04	Pole + Reinf.	TP42.753x41.678x0.7875	Reinf. 3 Tension Rupture	90.5%	Pass
36.04 - 31.25	Pole + Reinf.	TP43.783x42.753x0.7625	Reinf. 3 Tension Rupture	92.4%	Pass
31.25 - 31	Pole + Reinf.	TP43.836x43.783x0.65	Reinf. 2 Bolt Shear	91.0%	Pass
31 - 27.75	Pole + Reinf.	TP44.535x43.836x0.65	Reinf. 2 Compression	88.7%	Pass
27.75 - 27.5	Pole + Reinf.	TP44.589x44.535x0.65	Reinf. 2 Compression	88.7%	Pass
27.5 - 27.25	Pole + Reinf.	TP44.642x44.589x0.65	Reinf. 2 Compression	88.8%	Pass
27.25 - 27	Pole + Reinf.	TP44.696x44.642x0.725	Reinf. 2 Compression	90.6%	Pass
27 - 22	Pole + Reinf.	TP45.771x44.696x0.7125	Reinf. 2 Compression	92.3%	Pass
22 - 17	Pole + Reinf.	TP46.846x45.771x0.7125	Reinf. 2 Compression	94.0%	Pass
17 - 12	Pole + Reinf.	TP47.921x46.846x0.7125	Reinf. 2 Compression	95.6%	Pass
12 - 7	Pole + Reinf.	TP48.995x47.921x0.7125	Reinf. 2 Compression	97.0%	Pass
7 - 2	Pole + Reinf.	TP50.07x48.995x0.7	Reinf. 2 Compression	98.4%	Pass
2 - 0	Pole + Reinf.	TP50.5x50.07x0.7	Reinf. 2 Compression	98.9%	Pass
				Summary	
			Pole	92.7%	Pass
			Reinforcement	98.9%	Pass
			Overall	98.9%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*												
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13
144.5 - 139.5	790	n/a	790	13.04	n/a	13.04	15.4%													
139.5 - 134.5	914	n/a	914	13.69	n/a	13.69	29.9%													
134.5 - 129.5	1051	n/a	1051	14.34	n/a	14.34	47.4%													
129.5 - 124.5	1200	n/a	1200	14.99	n/a	14.99	67.2%													
124.5 - 121.41	1299	n/a	1299	15.39	n/a	15.39	79.3%													
121.41 - 116.41	1862	n/a	1862	21.02	n/a	21.02	68.8%													
116.41 - 112.58	2040	n/a	2040	21.67	n/a	21.67	78.8%													
112.58 - 112.33	2052	n/a	2052	21.71	n/a	21.71	79.4%													
112.33 - 107.33	2302	n/a	2302	22.56	n/a	22.56	91.1%													
107.33 - 106.92	2324	n/a	2324	22.63	n/a	22.63	92.0%													
106.92 - 106.67	2337	2502	4839	22.67	22.50	45.17	44.2%							74.1%				77.2%		
106.67 - 103.5	2507	2617	5124	23.21	22.50	45.71	48.1%							80.2%				83.5%		
103.5 - 103.25	2521	2626	5146	23.25	22.50	45.75	48.4%					80.6%						84.0%		
103.25 - 98.5	2792	2803	5594	24.05	22.50	46.55	54.7%					90.0%						93.8%		
98.5 - 98.25	2807	4511	7318	24.10	36.00	60.10	42.3%	69.5%				69.5%						72.4%		
98.25 - 97.58	2846	4552	7398	24.21	36.00	60.21	43.0%	70.5%				70.5%						73.5%		
97.58 - 97.33	2861	3440	6301	24.25	27.00	51.25	51.0%	83.6%				83.6%								
97.33 - 92.33	3172	3673	6845	25.10	27.00	52.10	56.7%	91.9%				91.9%								
92.33 - 91.74	3210	3701	6911	25.20	27.00	52.20	57.4%	92.9%				92.9%								
91.74 - 86.12	5087	n/a	5087	38.50	n/a	38.50	85.6%													
86.12 - 83	5411	n/a	5411	39.30	n/a	39.30	88.2%													
83 - 82.75	5437	n/a	5437	39.36	n/a	39.36	88.5%													
82.75 - 77.75	5986	n/a	5986	40.64	n/a	40.64	92.3%													
77.75 - 77.25	6043	n/a	6043	40.77	n/a	40.77	92.7%													
77.25 - 77	6071	6872	12943	40.84	42.38	83.21	43.0%				68.0%		68.9%							
77 - 76.75	6100	3991	10091	40.90	24.38	65.27	55.5%				87.8%									
76.75 - 71.75	6692	4230	10922	42.18	24.38	66.56	58.2%				92.1%									
71.75 - 69	7033	4365	11398	42.89	24.38	67.26	59.9%				94.3%									
69 - 68.75	7064	7563	14627	42.95	42.38	85.33	47.0%				73.9%									74.9%
68.75 - 63.75	7716	7998	15714	44.23	42.38	86.61	49.5%				77.2%									78.3%
63.75 - 60	8230	8333	16563	45.19	42.38	87.57	51.3%				79.6%									80.7%
60 - 59.75	8265	8355	16621	45.26	42.38	87.63	51.4%			79.8%										80.8%
59.75 - 58.5	8442	8469	16911	45.58	42.38	87.95	52.0%			80.5%										81.6%
58.5 - 58.25	8478	8491	16969	45.64	42.38	88.02	52.1%			80.7%										81.8%
58.25 - 58	8514	8514	17028	45.71	42.38	88.08	52.3%			80.8%										81.9%
58 - 57.75	8571	5226	13797	45.77	35.00	80.77	67.8%			93.4%							66.4%			
57.75 - 56.75	8715	5281	13997	46.03	35.00	81.03	68.3%			94.0%							66.9%			
56.75 - 56.5	8809	7891	16700	46.09	43.13	89.22	58.8%			85.4%							67.1%		76.4%	
56.5 - 51.5	9562	8314	17876	47.37	43.13	90.50	61.2%			88.3%							69.6%		79.1%	
51.5 - 47.82	10144	8633	18776	48.32	43.13	91.44	63.0%			90.3%							71.4%		81.1%	
47.82 - 41.04	12369	9355	21724	57.27	43.13	100.39	58.7%			88.3%							71.2%		80.4%	
41.04 - 36.04	13359	9826	23185	58.76	43.13	101.88	60.5%			90.5%							73.2%		82.6%	
36.04 - 31.25	14356	10288	24645	60.19	43.13	103.31	62.2%			92.4%							77.9%		84.5%	
31.25 - 31	14751	6753	21504	60.26	40.00	100.26	76.1%		91.0%										85.6%	
31 - 27.75	15466	6968	22434	61.23	40.00	101.23	77.3%		88.7%										86.9%	
27.75 - 27.5	15522	6984	22506	61.31	40.00	101.31	77.4%		88.7%										86.9%	
27.5 - 27.25	15578	7001	22579	61.38	40.00	101.38	77.5%		88.8%										87.0%	
27.25 - 27	15256	9465	24721	61.46	40.00	101.46	65.7%		90.6%							87.7%				
27 - 22	16393	9909	26302	62.95	40.00	102.95	67.4%		92.3%							89.5%				
22 - 17	17556	10786	28342	64.44	40.00	104.44	68.0%		94.0%							91.2%				
17 - 12	18803	11269	30072	65.93	40.00	105.93	69.6%		95.6%							92.8%				
12 - 7	20108	11763	31871	67.43	40.00	107.43	71.2%		97.0%							94.4%				
7 - 2	21472	12268	33740	68.92	40.00	108.92	72.7%		98.4%							95.8%				
2 - 0	22035	12472	34507	69.52	40.00	109.52	73.3%		98.9%							96.3%				

Note: Section capacity checked in 5 degree increments.
Rating per TIA-222-H Section 15.5.

PROJECT	**92739.015.01 - GROTON TOWER, CT**
SUBJECT	**Anchor Rod Bracket Analysis**
DATE	**08/10/19**
V4.2.0	

TIA-222 Rev.	H
Apply TIA-222-H Section 15.5?	Yes

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

Analysis Criteria		
Design/Analysis	Analysis	
Load Type	Current Load	
Current load	148.68	kips
AR Capacity	199.5	kips

Tower Type	Monopole

Manufacturers Tower Prop.		
Pole Thickness	0.4375	in
Pole Grade	A572-65	
Pole Sides #	18	
Pole Base OD	50.5	in
Fy	65	ksi
Fu	80	ksi
Base Plate Gr.	A572-60	
Fy	60	ksi
Fu	75	ksi
Anchor Rods		
Size	2.25	in
Quantity	16	
Bolt Circle	59	in
Grade	A615-75	
Fy	75	ksi
Fu	100	ksi

Post-Installed Adhesive AR Mod.		
ARB Type	Welded	
Size	1.75	in
AR Layout	Asymmetric	
Quantity	7	
Bolt Circle	62.6	in
Grade	F1554-105	
Fy	105	ksi
Fu	125	ksi

Anchor Rod Bracket Analysis Checks		
Tube Bearing	37.9%	-
Tube Compression	N/A	
Gusset Shear	13.1%	-
Gusset Flexure	N/A	-
Welds: Gusset to Tower and BP	32.2%	-
Welds: Gusset to Tube	42.4%	-
Welds: Geometry	N/A	
Tower Punching	18.0%	-
Tube Punching	11.3%	-
Utilization	**42.4%**	

Bracket Properties

Gusset			Pipe/Tube			Weld - Gusset to Pipe/Tube		
Thickness	1.25	in	Size	HSS4x4x1/2		FEXX	70	ksi
Width at Tube	4	in	Total Length	27	in	Weld Type	Double Fillet	
Height at Pole	30	in	Length above Gusset	3	in	Fillet Size	5/16	in
Height at Tube	24	in	Length below Gusset	0	in			
Grade	A572-65		Grade	A500 Grade B (Square)				
Fy	65	ksi	Fy	46	ksi			
Fu	80	ksi	Fu	58	ksi			

Weld - Gusset to Tower			Weld - Gusset to Base Plate		
FEXX	70	ksi	FEXX	70	ksi
Weld Type	Double Fillet		Weld Type	Double Bevel+Fillet	
Fillet Size	5/16	in	Fillet Size	9/16	in
			Bevel Depth	9/16	in
Length	30	in	Gap	0	in
Load Angle	45	deg.	Notch (horiz)	0.75	in
			Notch (vert)	0.75	in
			Pipe/Tube Welded to Base/Footpad?	Yes	
			Fillet Size	1/2	in

PROJECT	**92739.015.01 - GROTON TOWER, CT**
SUBJECT	**Anchor Rod Bracket Analysis**
DATE	**08/10/19**
V4.2.0	

TIA-222 Rev.	H
Apply TIA-222-H Section 15.5?	Yes

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

Analysis Criteria		
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Pole Thickness	0.4375	in
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Fy	60	ksi
Fu	75	ksi
Anchor Rods		
Size	2.25	in
Quantity	16	
Bolt Circle	59	in
Grade	A615-75	
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Post-Installed Adhesive AR Mod.		
ARB Type	Welded	
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AR Layout	Asymmetric	
Quantity	7	
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Grade	F1554-105	
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Fu	125	ksi

Anchor Rod Bracket Analysis Checks		
Tube Bearing	37.9%	-
Tube Compression	N/A	
Gusset Shear	13.1%	-
Gusset Flexure	N/A	-
Welds: Gusset to Tower and BP	33.7%	-
Welds: Gusset to Tube	42.4%	-
Welds: Geometry	N/A	
Tower Punching	14.2%	-
Tube Punching	11.3%	-
Utilization	**42.4%**	

Bracket Properties

Gusset			Pipe/Tube			Weld - Gusset to Pipe/Tube		
Thickness	1.25	in	Size	HSS4x4x1/2		FEXX	70	ksi
Width at Tube	2.75	in	Total Length	27	in	Weld Type	Double Fillet	
Height at Pole	30	in	Length above Gusset	3	in	Fillet Size	5/16	in
Height at Tube	24	in	Length below Gusset	0	in			
Grade	A572-65		Grade	A500 Grade B (Square)				
Fy	65	ksi	Fy	46	ksi			
Fu	80	ksi	Fu	58	ksi			

Weld - Gusset to Tower			Weld - Gusset to Base Plate		
FEXX	70	ksi	FEXX	70	ksi
Weld Type	Double Fillet		Weld Type	Double Bevel+Fillet	
Fillet Size	5/16	in	Fillet Size	9/16	in
			Bevel Depth	9/16	in
Length	30	in	Gap	0	in
Load Angle	45	deg.	Notch (horiz)	0.75	in
			Notch (vert)	0.75	in
			Pipe/Tube Welded to Base/Footpad?	Yes	
			Fillet Size	1/2	in

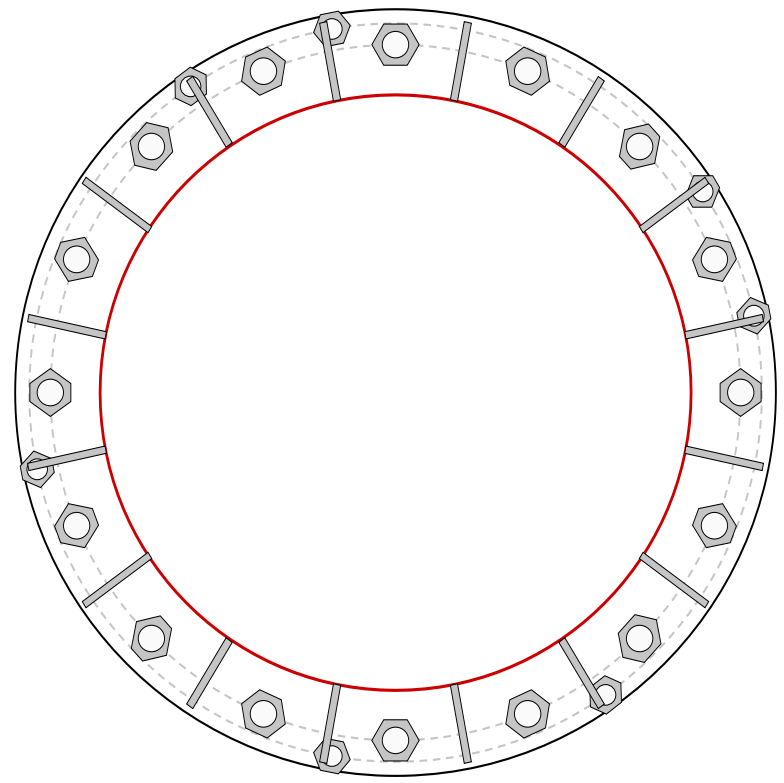
Monopole Base Plate Connection

Site Info	
BU #	881533
Site Name	GROTON TOWER, CT
Order #	472775, Rev. 2

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0

Applied Loads	
Moment (kip-ft)	5894.77
Axial Force (kips)	61.84
Shear Force (kips)	56.93

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 59" BC

GROUP 2: (7) 1-3/4" ø bolts (F1554-105 N; Fy=105 ksi, Fu=125 ksi) on 62.61" BC

pos. (deg): 12, 33, 100, 124, 192, 260, 305

Base Plate Data

65" OD x 2" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

(16) 17.75"H x 6.75"W x 0.625"T, Notch: 0.75"
plate: Fy= 50 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.625" fillet
vert. weld: 0.375" fillet

Pole Data

50.5" x 0.4375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

GROUP 1:		
Pu_c = 244.02	ϕPn_c = 243.75	**Stress Rating**
Vu = 3.56	ϕVn = 73.13	**95.6%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_c = 148.68	ϕPn_c = 199.5	**Stress Rating**
Vu = 0	ϕVn = 59.85	**71.0%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	41.11	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**72.5%**	**Pass**

Stiffener Summary

Horizontal Weld:	**77.6%**	**Pass**
Vertical Weld:	**50.9%**	**Pass**
Plate Flexure+Shear:	**31.5%**	**Pass**
Plate Tension+Shear:	**85.9%**	**Pass**
Plate Compression:	**90.0%**	**Pass**

Pole Summary

Punching Shear:	**12.9%**	**Pass**

Pier and Pad Foundation

BU # :	881533
Site Name:	GROTON TOWER
App. Number:	472775, Rev. 2

TIA-222 Revision:	H
Tower Type:	Monopole

Top & Bot. Pad Rein. Different?:	☐
Block Foundation?:	☑

Superstructure Analysis Reactions

Compression, P_{comp}:	62	kips
Base Shear, Vu_comp:	57	kips
Moment, M_u:	5895	ft-kips
Tower Height, **H**:	145	ft
BP Dist. Above Fdn, bp_{dist}:	3	in
Bolt Circle / Bearing Plate Width, **BC**:	59	in

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	249.53	57.00	**21.8%**	**Pass**
Bearing Pressure (ksf)	18.00	3.53	**19.6%**	**Pass**
*Overturning (kip*ft)*	9312.13	6194.25	**66.5%**	**Pass**
*Pad Flexure (kip*ft)*	8579.25	3046.33	**33.8%**	**Pass**
Pad Shear - 1-way (kips)	1861.32	316.74	**16.2%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.002	**1.2%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	8603.29	0.00	**0.0%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Soil Rating*:	**66.5%**
Structural Rating*:	**33.8%**

Pad Properties

Depth, **D**:	5	ft
Pad Width, **W**:	30	ft
Pad Thickness, **T**:	5	ft
Pad Rebar Size (Bottom), **Sp**:	8	
Pad Rebar Quantity (Bottom), **mp**:	45	
Pad Clear Cover, cc_{pad}:	4	in

Material Properties

Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	4	ksi
Dry Concrete Density, δc:	150	pcf

Soil Properties

Total Soil Unit Weight, γ:	165	pcf
Ultimate Gross Bearing, Qult:	24.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, N_{blows}:	0	
Base Friction, μ:		
Neglected Depth, **N**:	3.50	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, **gw**:	N/A	ft

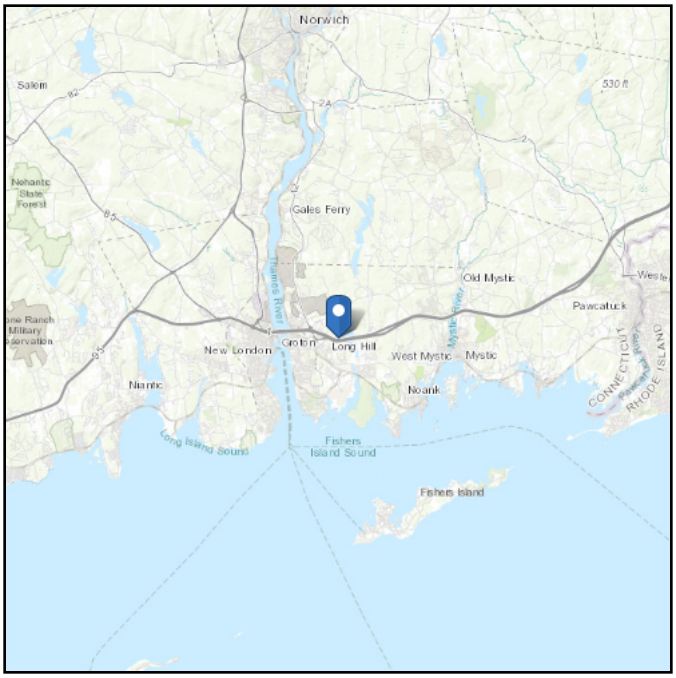
<--Toggle between Gross and Net

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 128.26 ft (NAVD 88)
Latitude: 41.360222
Longitude: -72.048639



Wind

Results:

Wind Speed:	135 Vmph
10-year MRI	80 Vmph
25-year MRI	90 Vmph
50-year MRI	99 Vmph
100-year MRI	109 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Sat Aug 10 2019

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

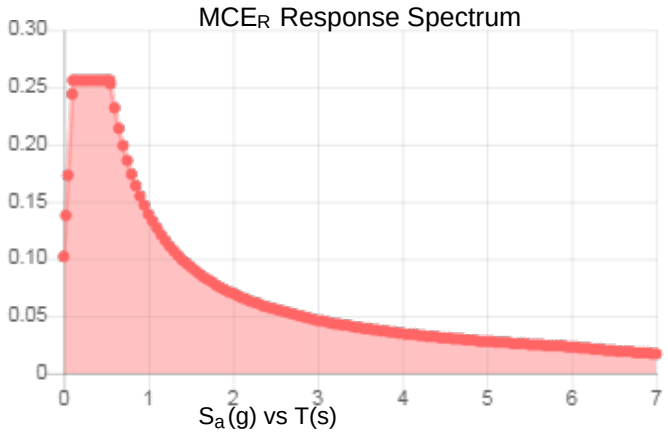
Seismic

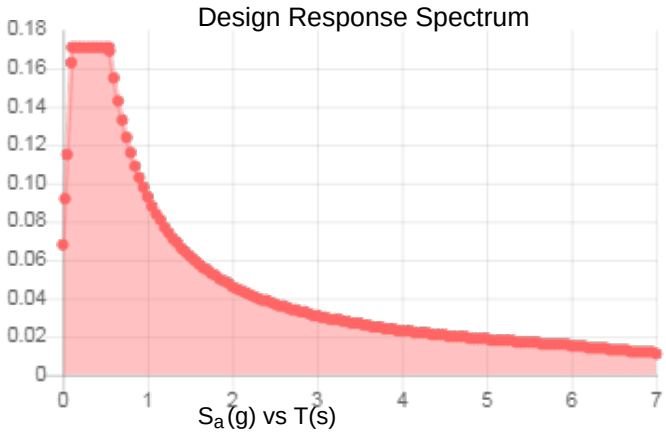
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.16	S_{DS} :	0.171
S_1 :	0.058	S_{D1} :	0.093
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.08
S_{MS} :	0.256	PGA_M :	0.128
S_{M1} :	0.139	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Sat Aug 10 2019

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

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:	Sat Aug 10 2019

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.

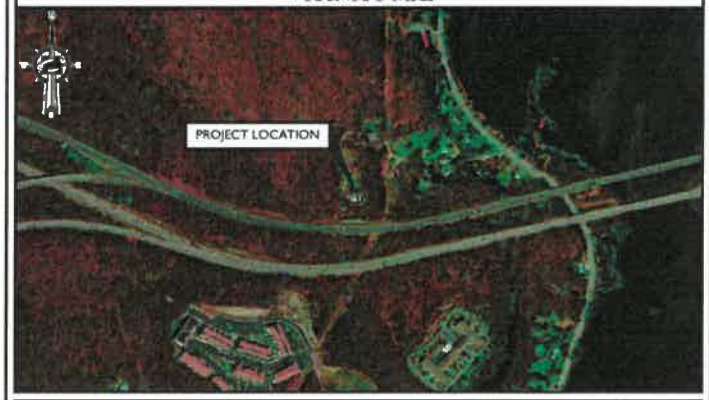
PROJECT NOTES

1. SITE INFORMATION OBTAINED FROM THE FOLLOWING:
   A. PLAN ENTITLED "GROTON ROBERTS RD" PREPARED BY CENTEK ENGINEERING OF BRADFORD, CT LAST REVISED 11/13/2017.
   B. LIMITED FIELD OBSERVATION BY MASER CONSULTING ON 06/19/2018.
2. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITY COMPANIES OR OTHER PUBLIC/GOVERNING AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
4. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE AS A RESULT OF CONSTRUCTION OF THIS FACILITY AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
6. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
7. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING THE BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND CONSTRUCTION DRAWINGS.
8. THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THESE DRAWINGS MUST BE VERIFIED. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
9. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY POTENTIALLY DANGEROUS EXPOSURE LEVELS.
10. THE PROPOSED FACILITY WILL CAUSE AN INSIGNIFICANT OR "DE-MINIMUS" INCREASE IN STORM WATER RUNOFF, THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.
11. NO NOISE, SMOKE, DUST OR ODOR WILL RESULT FROM THIS FACILITY AS TO CAUSE A NUISANCE.
12. THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION (NO HANDICAP ACCESS IS REQUIRED).
13. THE FACILITY DOES NOT REQUIRE POTABLE WATER OR SANITARY SERVICE.
14. CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTHS WITH RF ENGINEERING PRIOR TO INSTALLATION.
15. THE TOWER, MOUNTS AND ANTENNAS SHALL BE DESIGNED TO MEET EIA/TIA-222-H AS PER IBC REQUIREMENTS.
16. ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.
17. CONTRACTOR MUST FIELD LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO ANY EXCAVATION.
18. CONSTRUCTION SHALL NOT COMMENCE UNTIL COMPLETION OF A PASSING STRUCTURAL ANALYSIS CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER. THE STRUCTURAL ANALYSIS IS TO BE PERFORMED BY OTHERS.

at&t

SITE NAME: GROTON ROBERTS RD
FA NUMBER: 10035316
SITE NUMBER: CT2182
4C - MRCTB030889
5C - MRCTB031379
6C - MRCTB031913
75 ROBERTS ROAD
GROTON, CT 06340
NEW LONDON COUNTY
CROWN CASTLE # 881533

VICINITY MAP



CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.

1. 2018 CONNECTICUT STATE BUILDING CODE, INCORPORATING THE 2015 IBC
2. 2017 NATIONAL ELECTRICAL CODE - NFPA 70
3. 2015 NFPA 101
4. AMERICAN INSTITUTE OF STEEL CONSTRUCTION 360-10
5. AMERICAN CONCRETE INSTITUTE
6. TIA-222-H
7. TIA 607 FOR GROUNDING
8. INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS 81 IEEE C2 LATEST EDITION
9. TELCORDIA GR-1275
10. ANSI T1.311
11. PROPOSED USE: UNMANNED TELECOM FACILITY
12. HANDICAP REQUIREMENTS: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.
13. CONSTRUCTION TYPE: IIB
14. USE GROUP: U

PROJECT INFORMATION

SITE INFORMATION

LATITUDE:	41.3602139° N
LONGITUDE:	72.0486381° W
JURISDICTION:	NEW LONDON COUNTY

APPLICANT/LESSEE

COMPANY:	NEW CINGULAR WIRELESS PCS, LLC
ADDRESS:	550 COCHITUATE ROAD
CITY, STATE, ZIP:	FRAMINGHAM, MA 01701

TOWER OWNER

COMPANY:	CROWN CASTLE USA
ADDRESS:	2000 CORPORATE DRIVE
CITY, STATE, ZIP:	CANONSBURG, PA 15317
CROWN #	881533

CLIENT REPRESENTATIVE

COMPANY:	EMPIRE TELECOM
ADDRESS:	16 ESQUIRE ROAD
CITY, STATE, ZIP:	BILLERICA, MA 01862
CONTACT:	DAVID COOPER
E-MAIL:	DCOOPER@EMPIRETELECOM.COM

SITE ACQUISITION

COMPANY:	EMPIRE TELECOM
ADDRESS:	16 ESQUIRE ROAD
CITY, STATE, ZIP:	BILLERICA, MA 01862
CONTACT:	DAVID COOPER
E-MAIL:	DCOOPER@EMPIRETELECOM.COM

ENGINEER

COMPANY:	MASER CONSULTING CONNECTICUT
ADDRESS:	331 NEWMAN SPRINGS ROAD, SUITE 203
CITY, STATE, ZIP:	RED BANK, NJ 07701-5699
CONTACT:	ROBERT ANDREWS
PHONE:	(856) 797-0412
E-MAIL:	RANDREWS@MASERCONSULTING.COM

PROJECT DESCRIPTION/ SCOPE OF WORK

- INSTALL (9) NEW RRUS, (3) PER SECTOR
- RELOCATE (6) EXISTING RRUS, (2) PER SECTOR)
- INSTALL (3) NEW PANEL ANTENNAS, (1) PER SECTOR
- RELOCATE (3) EXISTING PANEL ANTENNAS, (1) PER SECTOR
- INSTALL (6) LOW BAND COMBINERS, (2) PER SECTOR
- INSTALL (1) NEW DC-6 SURGE SUPPRESSION DOME
- INSTALL (2) NEW 6/C DC CABLES
- INSTALL (1) 18-PAIR FIBER TRUNK
- INSTALL 2ND 5216
- INSTALL 2ND XMU WITH IDLe AND (1) 6630
- INSTALL (1) RACK MOUNTED DC-12-48-60-RM
- INSTALL (1) NEW SUPPORT RAIL KIT

PROPOSED PROJECT SCOPE BASED ON RFDS ID# 321 4383, VERSION 1.00, LAST UPDATED 06/20/19.

SHEET INDEX

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Suite 203
Red Bank, NJ 07701-5699
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at&t

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01862

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SCALE:	JOB NUMBER:
AS SHOWN	18943013A

REV	DATE	DESCRIPTION	BY	APP
1	10/31/19	CLIENT COMMENTS	AJC	RA
2	11/21/19	ADDRESS TBD COMMENTS	AJC	RA
3	12/02/19	RELEASED FOR CONSTRUCTION	MRB	RA

STATE OF CONNECTICUT
PETROS D. KOKKALIS
3257
LICENSED PROFESSIONAL ENGINEER

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SITE NAME:
GROTON ROBERTS RD
FA# 10035316
SITE# CT2182
75 ROBERTS ROAD
GROTON, CT 06340
NEW LONDON COUNTY

TITLE SHEET

T-1

GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5O HMS OR LESS.
4. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
5. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
6. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
7. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE EQUIPMENT GROUND RING WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
8. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
9. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
10. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
11. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. ALL BENDS SHALL BE MADE WITH 12" RADIUS OR LARGER.
12. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
13. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS EXCEPT FOR GROUND BAR CONNECTION FROM MGB TO OUTSIDE EXTERIOR GROUND SHALL ALL BE CADWELD CONNECTIONS.
14. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
15. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED TO THE TOWER GROUND BAR.
16. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
17. ALL EXTERIOR AND INTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
18. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
19. BOND ALL METALLIC OBJECTS WITHIN 6 FT OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
20. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G. NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
21. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/4" IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50.
22. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

    CONTRACTOR - EMPIRE TELECOM
    SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
    OWNER - AT&T (NEW CINGULAR WIRELESS PCS, LLC)

23. ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
24. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
25. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.
26. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
27. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
28. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
29. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
30. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
31. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
32. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE RESPONSIBLE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.
33. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.
34. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION.
35. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
36. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
37. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
38. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
39. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
40. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
41. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
42. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR.
43. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
44. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
45. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS.
46. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (F_y = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (F_y = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
47. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
48. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
49. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION, ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
50. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN ALERT OF DANGEROUS EXPOSURE LEVELS.

MASER CONSULTING CONNECTICUT

at&t

EMPIRE telecom

16 ESQUIRE ROAD
BILLERICA, MA 01862

AS SHOWN | 18963013A

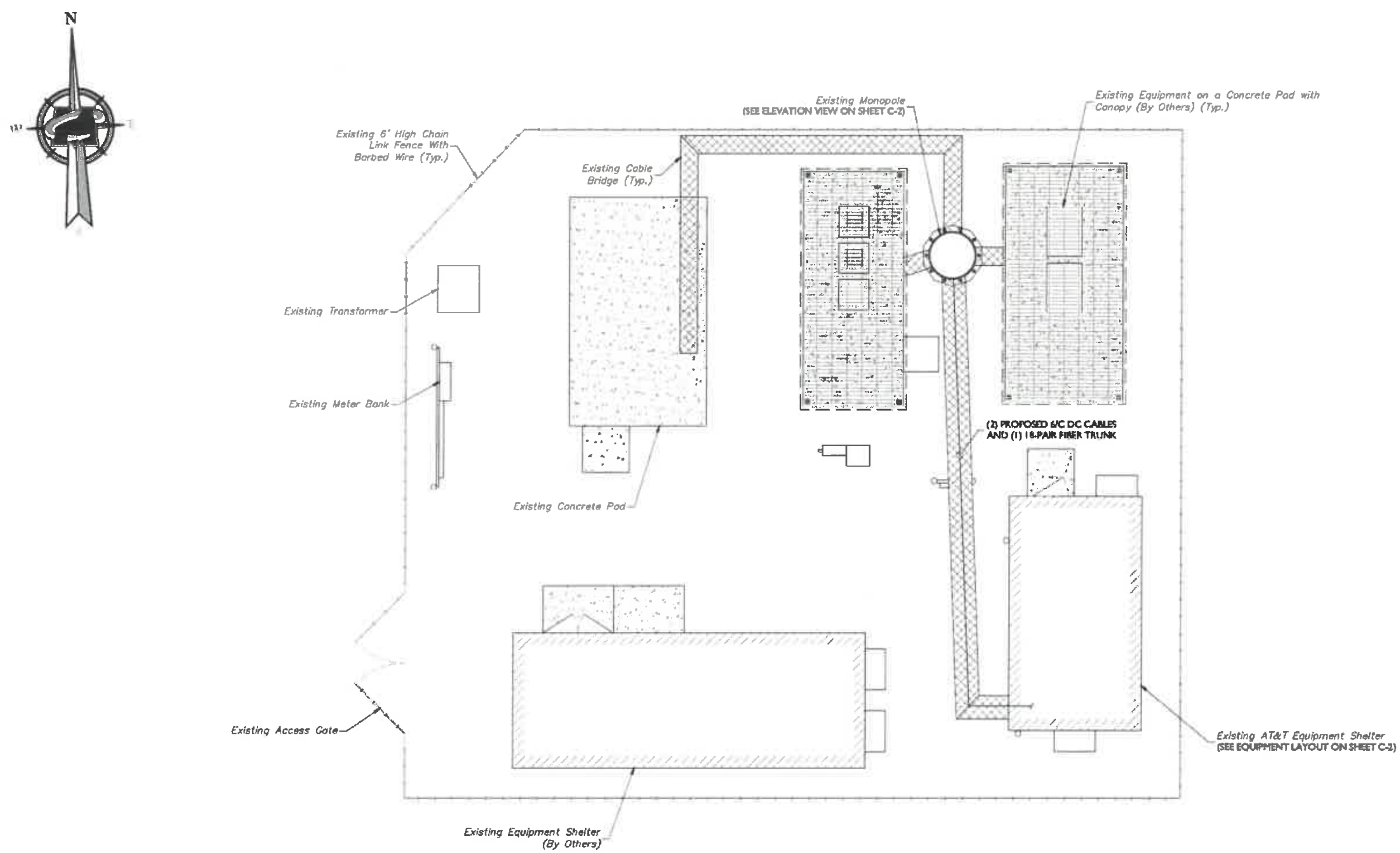
SITE NAME:

GROTON ROBERTS RD
FA# 10035316
SITE# CT2182

75 ROBERTS ROAD
GROTON, CT 06340
NEW LONDON COUNTY

GENERAL NOTES

GN-1



COMPOUND PLAN

SCALE : 1" = 5' FOR 22"X34"
(SCALE : 1" = 10' FOR 11"X17")

MASER CONSULTING CONNECTICUT

at&t

EMPIRE telecom

16 ESQUIRE ROAD
BILLERICA, MA 01862

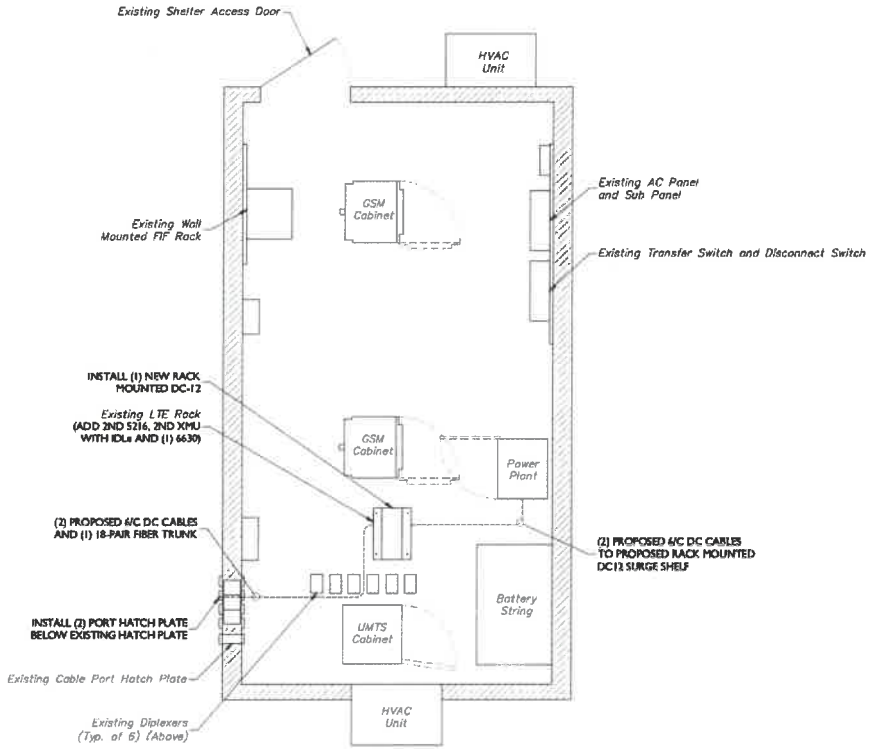
AS SHOWN | 18963013A

SITE NAME:

GROTON ROBERTS RD
FA# 10035316
SITE# CT2182
75 ROBERTS ROAD
GROTON, CT 06340
NEW LONDON COUNTY

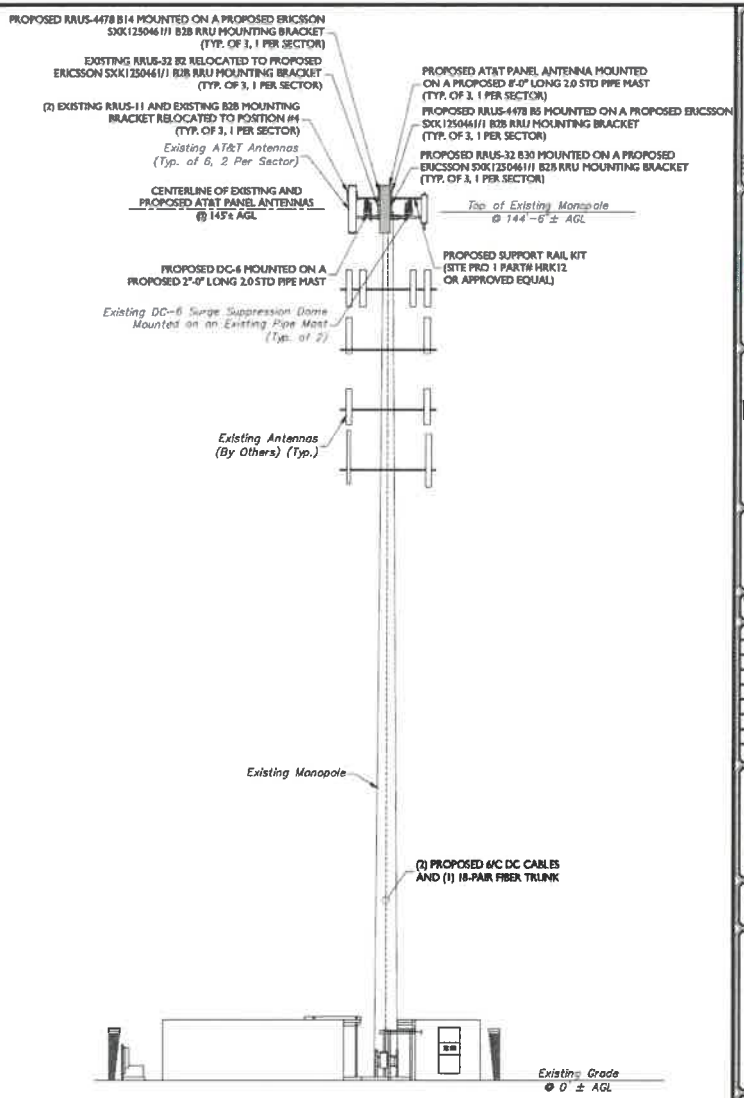
COMPOUND PLAN

C-1



EQUIPMENT LAYOUT

SCALE : 1" = 2' FOR 22"X34"
(SCALE : 1" = 4' FOR 11"X17")



ELEVATION VIEW

SCALE : 1" = 10' FOR 22"X34"
(SCALE : 1" = 20' FOR 11"X17")

MASER CONSULTING CONNECTICUT

16 ESQUIRE ROAD
BILLERICA, MA 01862

AS SHOWN | RF963013A

PETROS P. PAPAKALOS
CONNECTICUT
32577
REGISTERED PROFESSIONAL ENGINEER

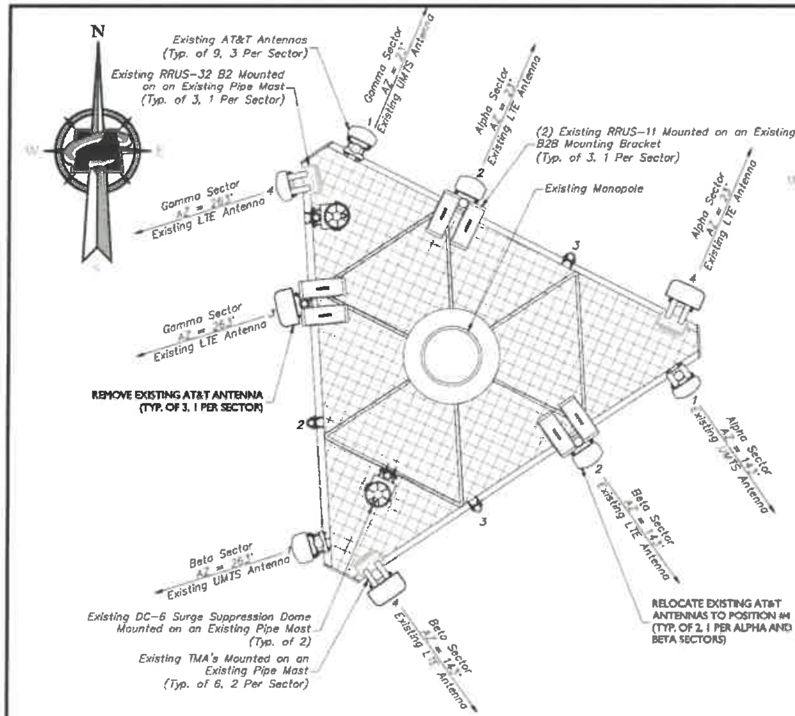
SITE NAME:

GROTON ROBERTS RD
FA# 10035316
SITE# CT2182

75 ROBERTS ROAD
GROTON, CT 06340
NEW LONDON COUNTY

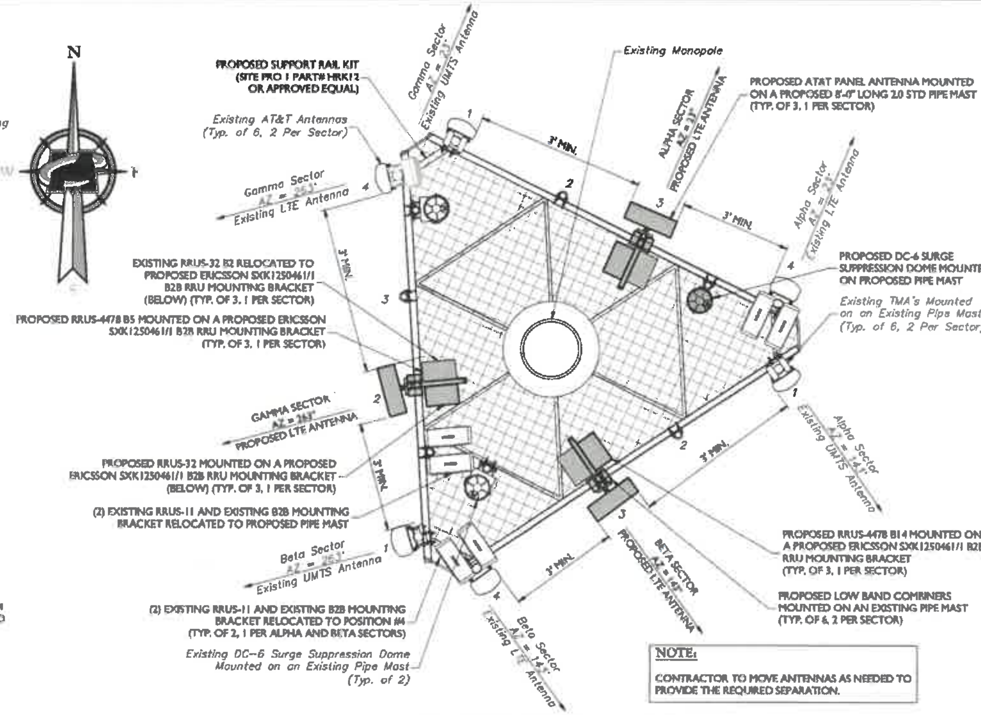
EQUIPMENT LAYOUT AND ELEVATION VIEW

C-2


N
Existing AT&T Antennas (Typ. of 9, 3 Per Sector)
Existing RRUS-32 B2 Mounted on an Existing Pipe Mast (Typ. of 3, 1 Per Sector)
Gamma Sector AZ = 263° Existing UMTS Antenna
Alpha Sector AZ = 23° Existing LTE Antenna
(2) Existing RRUS-11 Mounted on an Existing B2B Mounting Bracket (Typ. of 3, 1 Per Sector)
Existing Monopole
Gamma Sector AZ = 263° Existing LTE Antenna
Alpha Sector AZ = 23° Existing LTE Antenna
REMOVE EXISTING AT&T ANTENNA (TYP. OF 3, 1 PER SECTOR)
Alpha Sector AZ = 23° Existing UMTS Antenna
Beta Sector AZ = 143° Existing LTE Antenna
Beta Sector AZ = 143° Existing UMTS Antenna
RELOCATE EXISTING AT&T ANTENNAS TO POSITION #4 (TYP. OF 2, 1 PER ALPHA AND BETA SECTORS)
Existing DC-6 Surge Suppression Dome Mounted on an Existing Pipe Mast (Typ. of 2)
Existing TMA's Mounted on an Existing Pipe Mast (Typ. of 6, 2 Per Sector)
Beta Sector AZ = 143° Existing LTE Antenna

EXISTING ANTENNA LAYOUT

NOT TO SCALE


N
PROPOSED SUPPORT RAIL KIT (SITE PRO 1 PART# HRK12 OR APPROVED EQUAL)
Existing AT&T Antennas (Typ. of 6, 2 Per Sector)
Gamma Sector AZ = 263° Existing UMTS Antenna
Existing Monopole
ALPHA SECTOR AZ = 23° PROPOSED LTE ANTENNA
PROPOSED AT&T PANEL ANTENNA MOUNTED ON A PROPOSED 8'-0" LONG 2.0 STD PIPE MAST (TYP. OF 3, 1 PER SECTOR)
3' MIN.
Gamma Sector AZ = 263° Existing LTE Antenna
EXISTING RRUS-32 B2 RELOCATED TO PROPOSED ERICSSON SXK1250461/1 B2B RRU MOUNTING BRACKET (BELOW) (TYP. OF 3, 1 PER SECTOR)
PROPOSED RRUS-4478 B5 MOUNTED ON A PROPOSED ERICSSON SXK1250461/1 B2B RRU MOUNTING BRACKET (TYP. OF 3, 1 PER SECTOR)
Alpha Sector AZ = 23° Existing LTE Antenna
PROPOSED DC-6 SURGE SUPPRESSION DOME MOUNTED ON PROPOSED PIPE MAST
Existing TMA's Mounted on an Existing Pipe Mast (Typ. of 6, 2 Per Sector)
GAMMA SECTOR AZ = 263° PROPOSED LTE ANTENNA
PROPOSED RRUS-32 MOUNTED ON A PROPOSED ERICSSON SXK1250461/1 B2B RRU MOUNTING BRACKET (BELOW) (TYP. OF 3, 1 PER SECTOR)
(2) EXISTING RRUS-11 AND EXISTING B2B MOUNTING BRACKET RELOCATED TO PROPOSED PIPE MAST
Alpha Sector AZ = 23° Existing UMTS Antenna
Beta Sector AZ = 143° Existing UMTS Antenna
(2) EXISTING RRUS-11 AND EXISTING B2B MOUNTING BRACKET RELOCATED TO POSITION #4 (TYP. OF 2, 1 PER ALPHA AND BETA SECTORS)
Existing DC-6 Surge Suppression Dome Mounted on an Existing Pipe Mast (Typ. of 2)
BETA SECTOR AZ = 143° PROPOSED LTE ANTENNA
Beta Sector AZ = 143° Existing LTE Antenna
PROPOSED RRUS-4478 B14 MOUNTED ON A PROPOSED ERICSSON SXK1250461/1 B2B RRU MOUNTING BRACKET (TYP. OF 3, 1 PER SECTOR)
PROPOSED LOW BAND COMBINERS MOUNTED ON AN EXISTING PIPE MAST (TYP. OF 6, 2 PER SECTOR)

NOTE:
CONTRACTOR TO MOVE ANTENNAS AS NEEDED TO PROVIDE THE REQUIRED SEPARATION.

PROPOSED ANTENNA LAYOUT

NOT TO SCALE

ANTENNA SCHEDULE

SECTOR		EXISTING ANTENNA	PROPOSED ANTENNA	TECHNOLOGY	ANTENNA STATUS	HEIGHT (in)	WIDTH (in)	DEPTH (in)	WEIGHT (lbs)	ANTENNA AZIMUTH (DEG.)	ANT. CL ELEV. (ft.)	REMOTE RADIO/TMA CONFIGURATION	TRANSMISSION CABLE QUANTITY	TYPE	STATUS
Sector 1	1	POWERWAVE 7770	POWERWAVE 7770	UMTS	EXISTING	55.00	11.00	5.00	35.00	143	145'	(2) 782-10250 DIPLEXER (EXISTING) (2) LGP 21401 TMA (EXISTING)	2	1 5/8" COAX	EXISTING
	2	KMW AM-X-CD-17-65-00T-RET	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	KATHREIN 80010799	LTE	PROPOSED	96.00	14.90	6.50	[illegible]	23	148'	(1) RRUS-4478 B14 (PROPOSED) (1) RRUS-4478 B5 (PROPOSED) (1) RRUS-32 B30 (PROPOSED) (2) DBCT108F1V92-1 DIPLEXER (PROPOSED) (1) RRUS-32 B2 (RELOCATED)	1 / 1/2	FIBER / FIBER/DC	EXISTING / PROPOSED
	4	CCI TPA-65R-LCUUUU-H6	KMW AM-X-CD-17-65-00T-RET	LTE	RELOCATED	96.00	11.80	6.00	74.50	23	145'	(1) RRUS-11 B12 (RELOCATED) (1) RRUS-11 B4 (RELOCATED)	1/2	FIBER/DC	EXISTING
Sector 2	1	POWERWAVE 7770	POWERWAVE 7770	UMTS	EXISTING	55.00	11.00	5.00	35.00	263	145'	(2) 782-10250 DIPLEXER (EXISTING) (2) LGP 21401 TMA (EXISTING)	2	1 5/8" COAX	EXISTING
	2	KMW AM-X-CD-17-65-00T-RET	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	-	KATHREIN 80010799	LTE	PROPOSED	96.00	14.90	6.50	[illegible]	143	148'	(1) RRUS-4478 B14 (PROPOSED) (1) RRUS-4478 B5 (PROPOSED) (1) RRUS-32 B30 (PROPOSED) (2) DBCT108F1V92-1 DIPLEXER (PROPOSED) (1) RRUS-32 B2 (RELOCATED)			
	4	CCI TPA-65R-LCUUUU-H6	KMW AM-X-CD-17-65-00T-RET	LTE	RELOCATED	96.00	11.80	6.00	74.50	143	145'	(1) RRUS-11 B12 (RELOCATED) (1) RRUS-11 B4 (RELOCATED)	1/2	FIBER/DC	EXISTING
Sector 3	1	COMMSCOPE SBNH-1D6565C	COMMSCOPE SBNH-1D6565C	LTE	EXISTING	94.40	11.90	7.10	40.70	255	148'	(1) RRUS-11 B12 (RELOCATED) (1) RRUS-11 B4 (RELOCATED)			
	2	-	KATHREIN 80010799	LTE	PROPOSED	96.00	14.90	6.50	[illegible]	263	148'	(1) RRUS-4478 B14 (PROPOSED) (1) RRUS-4478 B5 (PROPOSED) (1) RRUS-32 B30 (PROPOSED) (2) DBCT108F1V92-1 DIPLEXER (PROPOSED) (1) RRUS-32 B2 (RELOCATED)			
	3	CCI TPA-65R-LCUUUU-H6	-	-	REMOVED	-	-	-	-	-	-	-	-	-	-
	4	POWERWAVE 7770	POWERWAVE 7770	UMTS	EXISTING	55.00	11.00	5.00	35.00	23	145'	(2) 782-10250 DIPLEXER (EXISTING) (2) LGP 21401 TMA (EXISTING)	2	1 5/8" COAX	EXISTING

MASER CONSULTING CONNECTICUT

at&t

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01862

AS SHOWN | 18963015A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
2		CLIENT COMMENTS	AJC	RA
1		REVISED PER COMMENTS	AJC	RA
0		ISSUED FOR REVIEW	MRB	RA

PETROS E. TSOUKALAS
CONNECTICUT PROFESSIONAL ENGINEER 32577

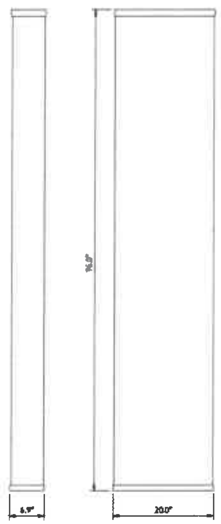
SITE NAME:

GROTON ROBERTS RD
FA# 10035316
SITE# CT2182
75 ROBERTS ROAD
GROTON, CT 06340
NEW LONDON COUNTY

RED BANK OFFICE

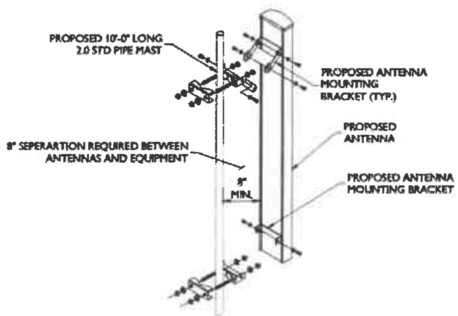
ANTENNA LAYOUT AND ANTENNA SCHEDULE

C-3

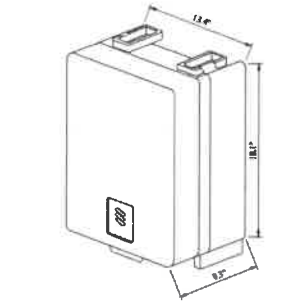


KATHREIN 800-10966

ANTENNA DETAIL
NOT TO SCALE

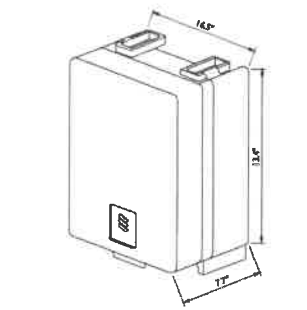


ANTENNA MOUNTING DETAIL
NOT TO SCALE



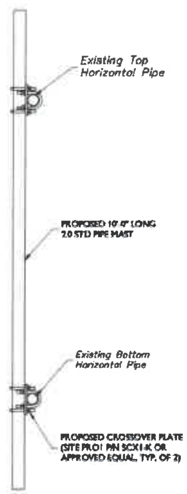
DIMENSIONS (H X W X D): 18.1"H X 13.4"W X 8.3"D (INCLUDES SUNSHIELD)
WEIGHT: 59.4 LBS

RRUS-4478 B14 DETAIL
NOT TO SCALE

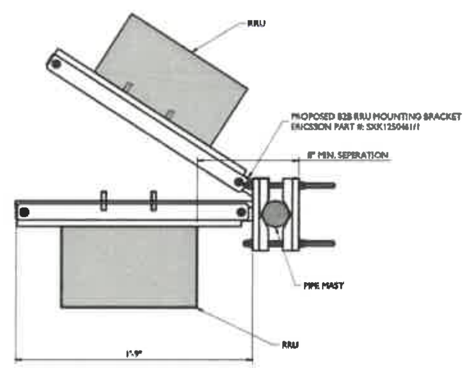


DIMENSIONS (H X W X D): 16.5"H X 13.4"W X 7.7"D (INCLUDES SUNSHIELD)
WEIGHT: 59.9 LBS

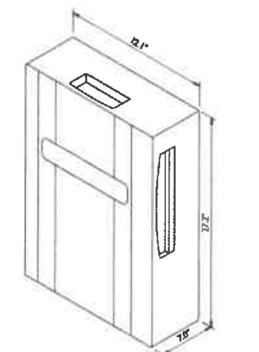
RRU-4478-B5 DETAIL
NOT TO SCALE



PIPE MAST MOUNTING DETAIL
NOT TO SCALE



RRU MOUNTING DETAIL
NOT TO SCALE



RRUS-32 DIMENSIONS (H X W X D): 27.2" X 12.1" X 7.0" (INCLUDES SUNSHIELD)
WEIGHT: 53 LBS

RRUS-32 DETAIL
NOT TO SCALE

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—CONNECTICUT—

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BILLERICA, MA 01862

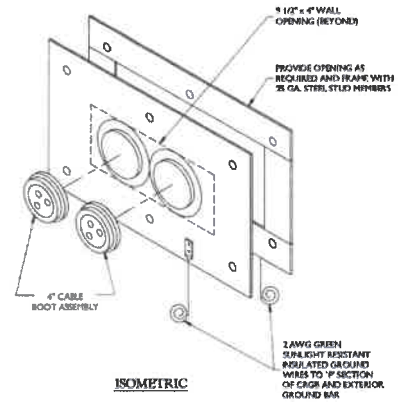
AS SHOWN
18963013A

PETROS E. TSOUKALAS
32577

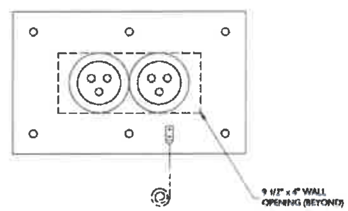
SITE NAME:
GROTON ROBERTS RD
FA# 10035316
SITE# CT2182
75 ROBERTS ROAD
GROTON, CT 06340
NEW LONDON COUNTY

DETAILS

A-1



ISOMETRIC



CABLE ENTRY PANEL CHART

SITE PRO E1448 FOR (2 PORTS)
SITE PRO BAZERO, 4" BOOT
SITE PRO BA78, 4" BOOT FOR (1) 7/8" COAX
SITE PRO B158, 4" BOOT FOR (1) 1-5/8" COAX

NOTES:

1. ENTRY PANEL AND BOOTS BY SITE PRO (SEE CHART FOR PART #). ORDER BOOTS SEPARATELY FOR SPECIFIC CABLE SIZE(S) & QUANTITY. PROVIDE PLUGS BY SITE PRO FOR EACH UNUSED HOLE IN BOOT.
2. AN APPROVED EQUAL MAY BE SUBSTITUTED FOR SITE PRO PARTS REFERENCED IN THIS DETAIL.
3. STEEL FRAMES ARE REQUIRED ON BOTH SIDES OF THE WALL. THE FRAMES SHALL BE SEALED WITH THE MANUFACTURER'S RECOMMENDED SEALANT TO HELP RESIST WEATHER EXPOSURE ON THE INTERIOR OF THE SHELTER.
4. OPENING IN WALL CAN BE EITHER ONE OVERALL RECTANGULAR OPENING OR SEVERAL ROUND CORE DRILLS PLACED TO MATCH BOOT LOCATIONS IN THE STEEL FRAMES.

CABLE ENTRY PANEL DETAIL 2 PORT

NOT TO SCALE

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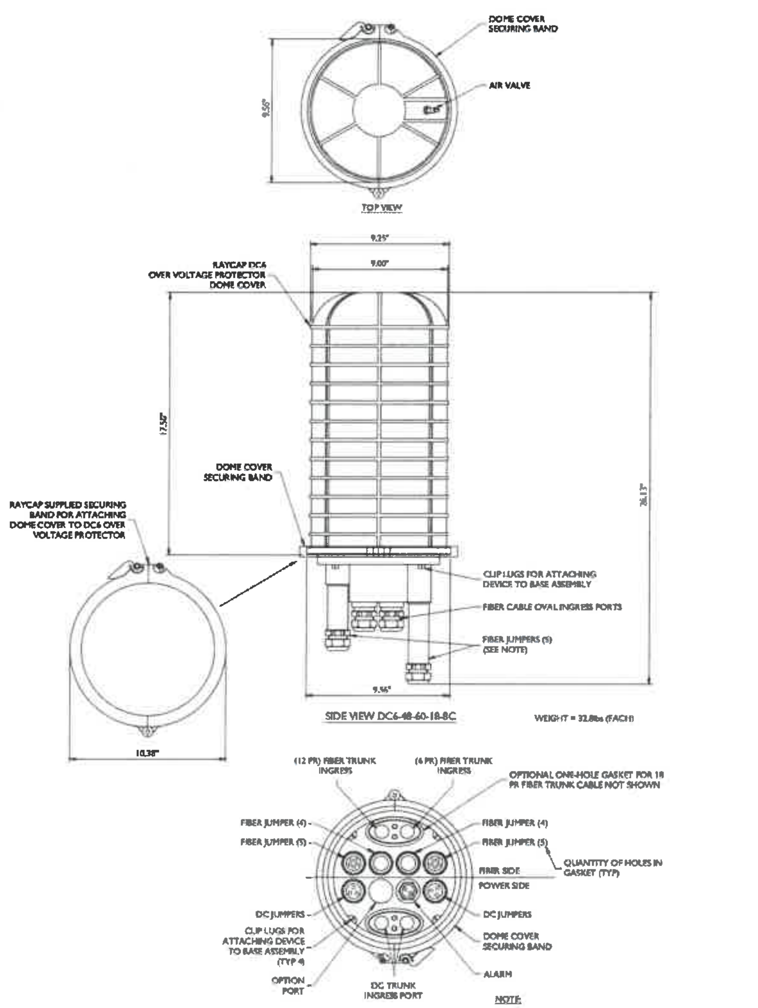
REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
2		CLIENT COMMENTS	AJC	TA
1		REVISED PER COMMENTS	AJC	TA
0		ISSUED FOR REVIEW	MHS	BA

SITE NAME:
GROTON ROBERTS RD
FA# 10035316
SITE# CT2182
75 ROBERTS ROAD
GROTON, CT 06340
NEW LONDON COUNTY

DETAILS

A-2

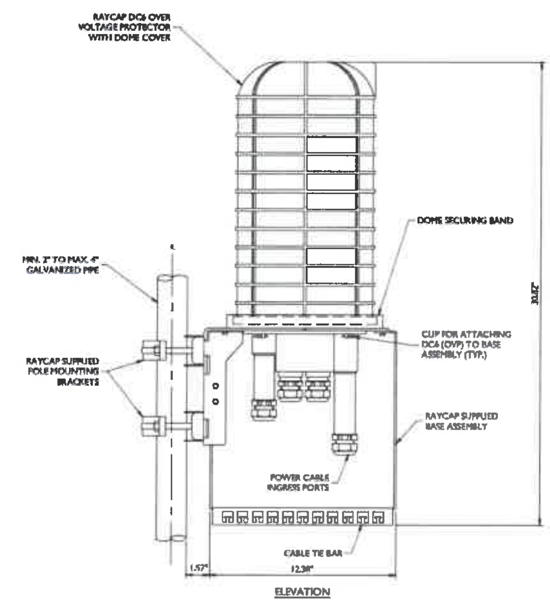

DOME COVER SECURING BAND
AIR VALVE
9.50"
TOP VIEW
9.25"
9.00"
RAYCAP DC6 OVER VOLTAGE PROTECTOR DOME COVER
17.50"
DOME COVER SECURING BAND
RAYCAP SUPPLIED SECURING BAND FOR ATTACHING DOME COVER TO DC6 OVER VOLTAGE PROTECTOR
26.13"
CLIP LUGS FOR ATTACHING DEVICE TO BASE ASSEMBLY
FIBER CABLE OVAL INGRESS PORTS
FIBER JUMPERS (5) (SEE NOTE)
9.56"
10.38"
SIDE VIEW DC6-48-60-18-8C
WEIGHT = 32.8lbs (EACH)
(12 PR) FIBER TRUNK INGRESS
(6 PR) FIBER TRUNK INGRESS
OPTIONAL ONE-HOLE GASKET FOR 18 PR FIBER TRUNK CABLE NOT SHOWN
FIBER JUMPER (4)
FIBER JUMPER (5)
FIBER JUMPER (4)
FIBER JUMPER (5)
QUANTITY OF HOLES IN GASKET (TYP)
FIBER SIDE
POWER SIDE
DC JUMPERS
DC JUMPERS
CLIP LUGS FOR ATTACHING DEVICE TO BASE ASSEMBLY (TYP 4)
DOME COVER SECURING BAND
ALARM
OPTION PORT
DC TRUNK INGRESS PORT

NOTE:
REMOVE CABLE SEALING GLAND AND INSTALL M32x1.5 METRIC-TO-1" NPT ADAPTER (COOPER CROUSE-HINDS P/N CAP 740 994 OR EQUIVALENT MFR) WHEN CONNECTING CONDUIT TO OVP.

BOTTOM VIEW
DC6-48-60-18-8C

DC6 SURGE SUPPRESSION DOME DETAIL

NOT TO SCALE


RAYCAP DC6 OVER VOLTAGE PROTECTOR WITH DOME COVER
DOME SECURING BAND
MIN. 2" TO MAX. 4" GALVANIZED PIPE
30.82"
CLIP FOR ATTACHING DC6 (OVP) TO BASE ASSEMBLY (TYP.)
RAYCAP SUPPLIED POLE MOUNTING BRACKETS
RAYCAP SUPPLIED BASE ASSEMBLY
POWER CABLE INGRESS PORTS
CABLE TIE BAR
1.57"
12.30"
ELEVATION

NOTES:
RAYCAP VIA AT&T SUPPLIES THE DC6 OVER VOLTAGE PROTECTOR AND PIPE MOUNTING BRACKETS. SUBCONTRACTOR SHALL SUPPLY THE PIPE.

RAYCAP DC6-48-60-18-8F & DC6-48-60-0-8F DC POWER OVER VOLTAGE PROTECTOR (OVP) POLE MOUNT BASE ASSEMBLY

NOT TO SCALE

MASER CONSULTING —CONNECTICUT—

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BILLERICA, MA 01862

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SITE NAME:
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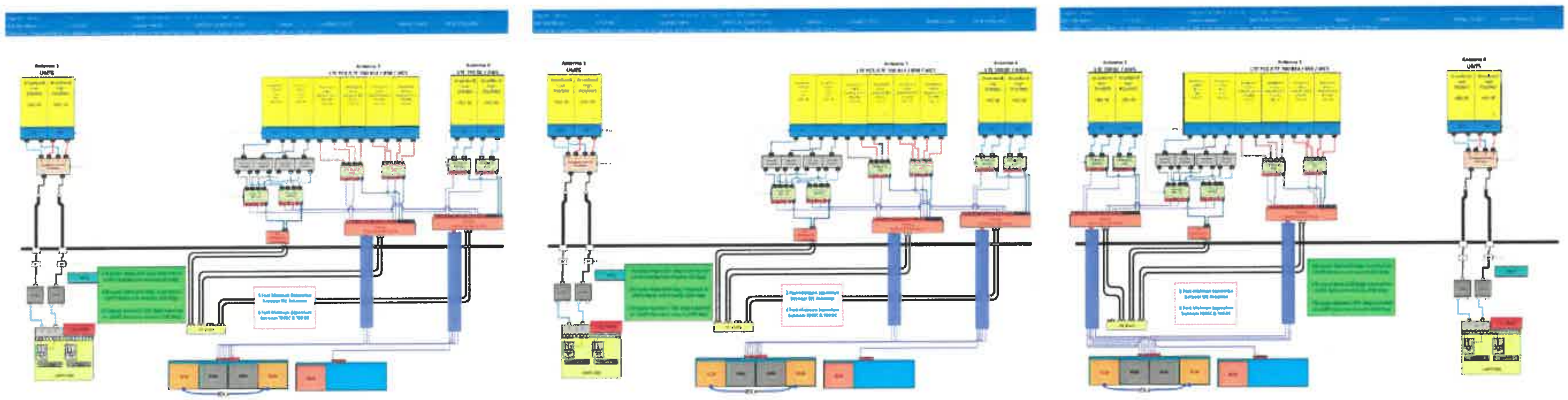
SITE# CT2182
75 ROBERTS ROAD
GROTON, CT 06340
NEW LONDON COUNTY

DETAILS

A-3



ALPHA SECTOR

BETA SECTOR

GAMMA SECTOR

BASED ON: RF ENGINEERING DESIGN ENTITLED "NEW-ENGLAND_CONNECTICUT_CTV2182_2018-LTE-Next-Carrier_LTE_om636a_2051A0G...", LAST REVISED 08/20/19.

RF PLUMBING DIAGRAMS

MASER CONSULTING CONNECTICUT

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SITE# CT2182

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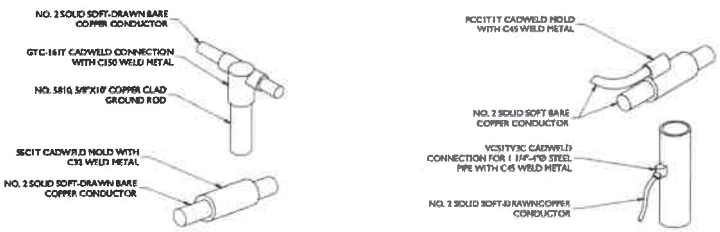
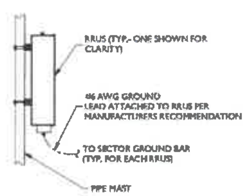
RF PLUMBING DIAGRAM

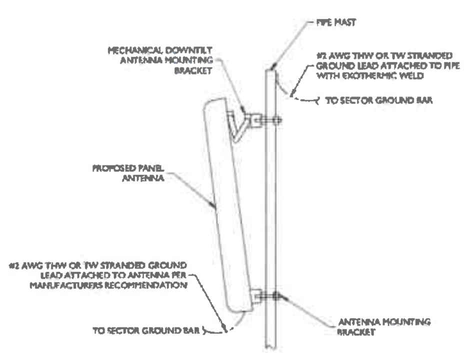
A-4


NO. 2 SOLID SOFT-DRAWN BARE COPPER CONDUCTOR
GTC-161T CADWELD CONNECTION WITH C150 WELD METAL
NO. 5810, 5/8"X10' COPPER CLAD GROUND ROD
SECIT CADWELD MOLD WITH C32 WELD METAL
NO. 2 SOLID SOFT-DRAWN BARE COPPER CONDUCTOR
PCC1T1T CADWELD MOLD WITH C45 WELD METAL
NO. 2 SOLID SOFT BARE COPPER CONDUCTOR
VCSITY3C CADWELD CONNECTION FOR 1 1/4"-4"Ø STEEL PIPE WITH C45 WELD METAL
NO. 2 SOLID SOFT-DRAWNCOPPER CONDUCTOR

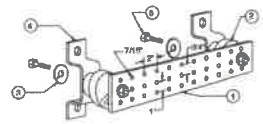
CADWELD DETAILS
NOT TO SCALE



RRU GROUNDING
NOT TO SCALE


PIPE MAST
MECHANICAL DOWNTILT ANTENNA MOUNTING BRACKET
#2 AWG THW OR TW STRANDED GROUND LEAD ATTACHED TO PIPE WITH EXOTHERMIC WELD
TO SECTOR GROUND BAR
PROPOSED PANEL ANTENNA
#2 AWG THW OR TW STRANDED GROUND LEAD ATTACHED TO ANTENNA PER MANUFACTURERS RECOMMENDATION
TO SECTOR GROUND BAR
ANTENNA MOUNTING BRACKET

ANTENNA GROUNDING
NOT TO SCALE



LEGEND

1- TINNED COPPER GROUND BAR, 1/4"x4"x20", NEWTON INSTRUMENT CO. CAT. NO. B-6142 OR EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.

2- INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4

3- 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8

4- WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-5056

5- 5/8-11 X 1" HHCS BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1

6- EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

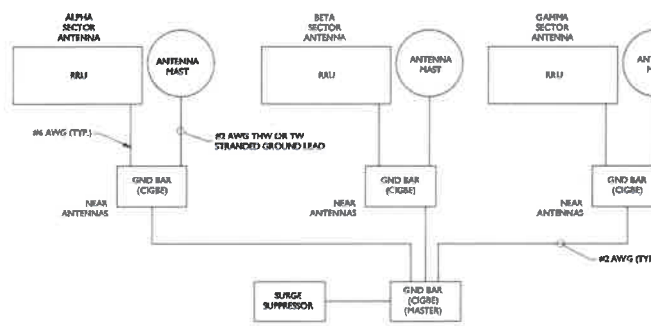
SECTION "P" - SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
+24V POWER SUPPLY RETURN BAR (#2)
-48V POWER SUPPLY RETURN BAR (#2)
RECTIFIER FRAMES.

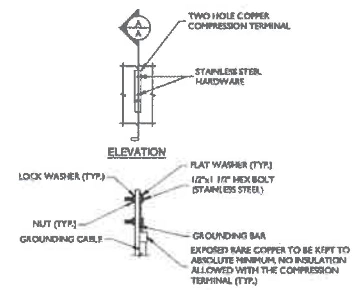
SECTION "A" - SURGE ABSORBERS

INTERIOR GROUND RING (#2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
BUILDING STEEL (IF AVAILABLE) (#2)

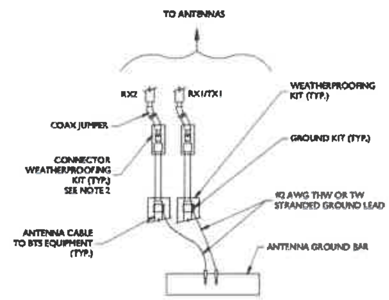
MASTER GROUND BAR
NOT TO SCALE


ALPHA SECTOR ANTENNA
RRU
ANTENNA MAST
BETA SECTOR ANTENNA
RRU
ANTENNA MAST
GAMMA SECTOR ANTENNA
RRU
ANTENNA MAST
#6 AWG (TYP.)
#2 AWG THW OR TW STRANDED GROUND LEAD
GND BAR (CIGBE)
NEAR ANTENNAS
GND BAR (CIGBE)
NEAR ANTENNAS
GND BAR (CIGBE)
NEAR ANTENNAS
#2 AWG (TYP.)
SURGE SUPPRESSOR
GND BAR (CIGBE) (MASTER)

SCHEMATIC DIAGRAM GROUNDING SYSTEM


TWO HOLE COPPER COMPRESSION TERMINAL
STAINLESS STEEL HARDWARE
ELEVATION
LOCK WASHER (TYP.)
FLAT WASHER (TYP.)
1/2"x1 1/2" HEX BOLT (STAINLESS STEEL)
NUT (TYP.)
GROUNDING CABLE
GROUNDING BAR
EXPOSED BARE COPPER TO BE KEPT TO ABSOLUTE MINIMUM, NO INSULATION ALLOWED WITH THE COMPRESSION TERMINAL (TYP.)
SECTION A-A

TYPICAL GROUND BAR CONNECTION DETAIL
NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

TYPICAL GROUND WIRE TO GROUNDING BAR
NOT TO SCALE

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1			PRO	RA

STATE OF CONNECTICUT
PETROS E. TSOUKALAS
32577
PROFESSIONAL ENGINEER

SITE NAME:

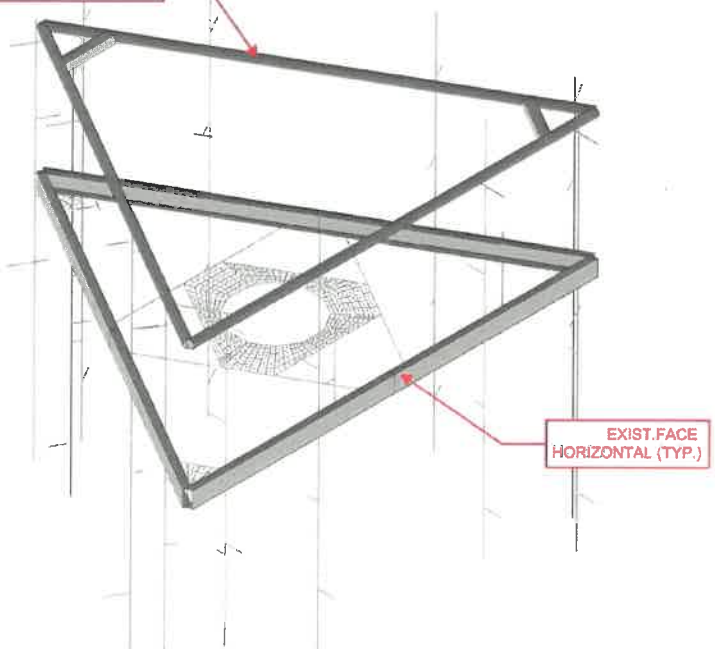
GROTON ROBERTS RD
FA# 10035316
SITE# CT2182
75 ROBERTS ROAD
GROTON, CT 06340
NEW LONDON COUNTY

RED BANK OFFICE

GROUNDING DETAILS

G-1

MOUNT MODIFICATION SKETCH (1 OF 2)



OVERALL MOUNT VIEW

NOTES:
1) MOUNT MEMBERS NOT SHOWN FOR CLARITY U.N.O.
2) EXIST. RADIO AND/OR TME POSITIONS SHALL BE ADJUSTED VERTICALLY AS NEEDED IN ORDER TO ACHIEVE INSTALLATION OF HORIZONTAL AS SHOWN. EOR SHALL BE NOTIFIED IF EQUIPMENT NEEDS TO BE RELOCATED TO ANOTHER MOUNT PIPE.
3) CONNECT NEW FACE HORIZONTAL TO EXISITNG MOUNT PIPES WITH CROSSOVER PLATES (SITE PRO 1 PART #: SCX1-K & SCX-K OR EOR APPROVED EQUIVALENT).
4) TRIM SUPPORT RAIL MEMBERS AS NEEDED.

Envelope Only Solution

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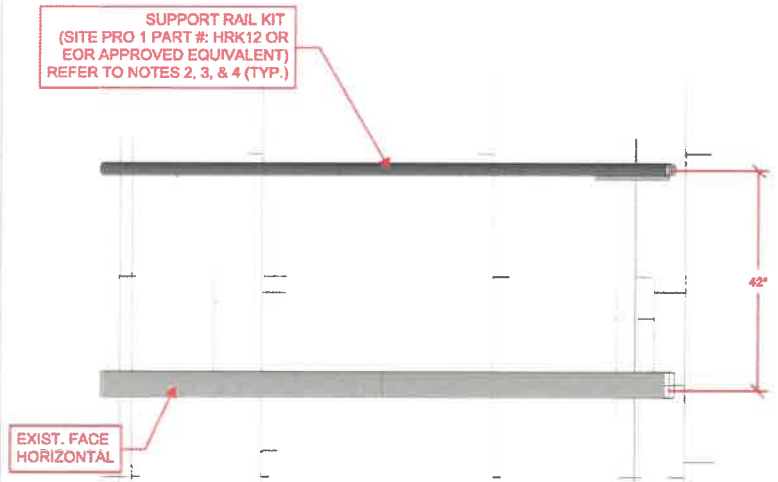
JRH		July 12, 2019 at 12:35 AM
18963013A		Platform.r3d

MOUNT MODIFICATION SKETCH (2 OF 2)



SIDE ELEVATION VIEW (TYP. ALL SECTORS)

NOTES:
1) MOUNT MEMBERS NOT SHOWN FOR CLARITY U.N.O.
2) EXIST. RADIO AND/OR TME POSITIONS SHALL BE ADJUSTED VERTICALLY AS NEEDED IN ORDER TO ACHIEVE INSTALLATION OF HORIZONTAL AS SHOWN. EOR SHALL BE NOTIFIED IF EQUIPMENT NEEDS TO BE RELOCATED TO ANOTHER MOUNT PIPE.
3) CONNECT NEW FACE HORIZONTAL TO EXISITNG MOUNT PIPES WITH CROSSOVER PLATES (SITE PRO 1 PART #: SCX1-K & SCX-K OR EOR APPROVED EQUIVALENT).
4) TRIM SUPPORT RAIL MEMBERS AS NEEDED.

Envelope Only Solution

Maser Consulting P.A.	Platform Analysis	Modification Page 2
JRH		July 12, 2019 at 12:36 AM
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STATE OF CONNECTICUT
PETROS S. KALKANIS
32577
PROFESSIONAL ENGINEER

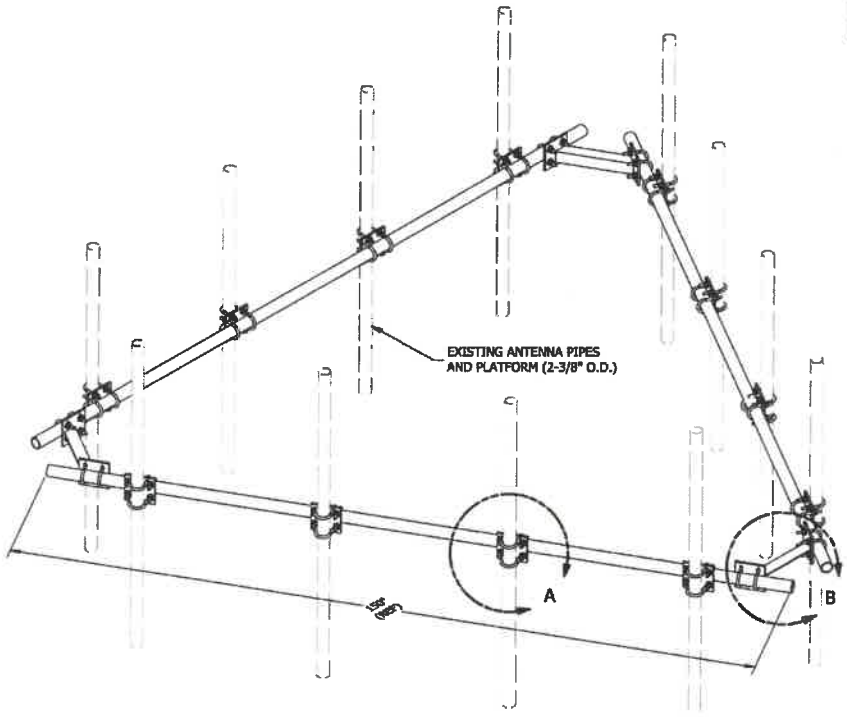
SITE NAME:
GROTON ROBERTS RD
FA# 10035316
SITE# CT2182
75 ROBERTS ROAD
GROTON, CT 06340
NEW LONDON COUNTY

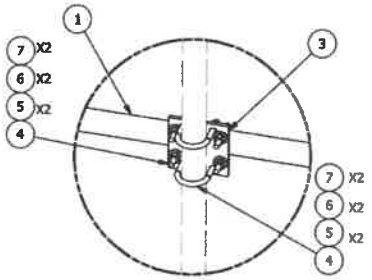
MASER CONSULTING
RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701-5699
Phone: 732.383.1950
Fax: 732.383.1964

MOUNT MODIFICATION SKETCH

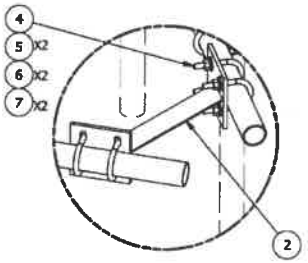
S-1

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" O.D. X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY ZH HEX NUT		0.07	8.60
					TOTAL WT. #	272.43





DETAIL A



DETAIL B

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP		CEK	7/10/2014
	REVISION HISTORY			

DESCRIPTION: HANDRAIL KIT FOR 12'-6" FACE

SITE PRO 1 — A valmont company
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

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81 / 01	CUSTOMER	BMC 7/13/2014	HRK12	

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1	7/10/14	ISSUED FOR REVIEW	MSB	RA
REV	DATE		BY	CHECKED BY

STATE OF CONNECTICUT
PETROS S. DOUKAS
32577
REGISTERED PROFESSIONAL ENGINEER

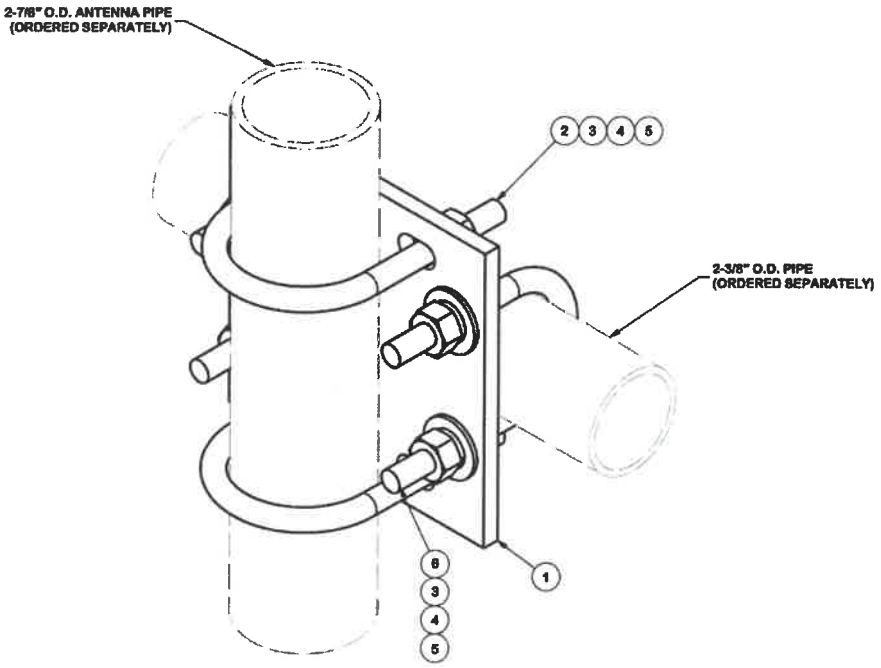
SITE NAME:
GROTON ROBERTS RD
FA# 10035316
SITE# CT2182
75 ROBERTS ROAD
GROTON, CT 06340
NEW LONDON COUNTY

MID BANK OFFICE
331 Newman Springs Road
Suite 249
Red Bank, NJ 07701-3691
Phone: 732.383.1950
Fax: 732.383.1954

MOUNT MODIFICATION DETAIL

S-2

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	SCX2	CROSSOVER PLATE	7 In	4.80	4.80
2	2	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.66	1.31
3	8	G12FW	1/2" HDG USS FLATWASHER		0.03	0.27
4	8	G12LW	1/2" HDG LOCKWASHER		0.01	0.11
5	8	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	0.57
6	2	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	1.25
					TOTAL WT. #	8.39



TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

DESCRIPTION: CROSSOVER PLATE KIT

SITE PRO 1 — A valmont company
Engineering Support Team: 1-888-753-7448
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

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	CEK 6/30/2011		SCX2-K	1 OF 1
CLASS: SUB	DRAWING USAGE: SHOP	CHECKED BY: BMC 7/1/2011	DWG. NO.: SCX2-K	

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2	07/01/11	CLIENT COMMENTS	AIC	BA
1	06/21/11	REVISED PER COMMENTS	AIC	BA
0	06/20/11	ISSUED FOR APPROVAL	MBB	BA
REV	DATE	DESCRIPTION	BY	CHK'D BY

STATE OF CONNECTICUT — PETROS C. KALKALIS — 32577 — REGISTERED PROFESSIONAL ENGINEER

SITE NAME:
GROTON ROBERTS RD
FA# 10035316
SITE# CT2182
75 ROBERTS ROAD
GROTON, CT 06340
NEW LONDON COUNTY

MID-BANK OFFICE
Suite 205
Red Bank, NJ 07701-5699
Phone: 732.383.1950
Fax: 732.383.1964

SHEET TITLE: MOUNT MODIFICATION DETAIL

SHEET NUMBER: S-2

MASER CONSULTING
— CONNECTICUT —

Engineers Planners Surveyors Landscape Architects Environmental Scientists

Mount Analysis Report

FOR

CT2182 – Groton Roberts Rd

FA # 10035316
75 Roberts Road
Groton, CT 06340
New London County
41.3602139, -72.0486381

Mount Utilization: 74.1%*

***Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.**

July 19, 2019

Prepared For

AT&T
550 Cochituate Road
Framingham, MA 01701

Prepared By

Maser Consulting Connecticut
331 Newman Springs Road, Suite 203
Red Bank, N.J. 07701
T. 732.383.1950

STATE OF CONNECTICUT
PETROS TSOUKALAS
32577
LICENSED PROFESSIONAL ENGINEER

Petros E. Tsoukalas, P.E.
Geographic Discipline Leader
Connecticut License No. 32557

MC Project No. 18963013A

Objective:

The objective of this report is to determine the capacity of the antenna support mount at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards.

Introduction:

Maser Consulting Connecticut has reviewed the following documents in completing this report:

Document Type	Remarks	Source
Mount Mapping	*Tower Engineering Professionals Site #: 10035316 Dated June 25, 2018*	*Maser Consulting*
Radio Frequency Data Sheet (RFDS)	*RFDS ID: 3214383 Version: 1.00 Dated June 20, 2019*	*Empire*
Preliminary Construction Drawings	*Maser Consulting Project #: 18963013A dated July 11, 2019*	*Maser Consulting*
Previous Mount Analysis	*Maser Consulting Project #: 18963013A dated September 6, 2018*	*Maser Consulting*

Codes, Standards and Loading:

Jurisdictional adopted codes and standards:

- 2018 Connecticut State Building Code, Incorporating The 2015 IBC

Maser Consulting Connecticut utilized the following codes and standards:

- Structural Standards for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures ANSI/TIA-222-H
    - Ultimate Wind Speed – 127 mph
    - Exposure Category – C
    - Structural Class – II
    - Topographic Category, K_{zt} - 1.0
    - Mean Base Elevation (AMSL) - 128.26’
    - Ice Wind – 50 mph (3-Second Gust)
    - Design Ice Thickness – 1.00”
    - Maintenance Wind Speed – 30 mph
        - Maintenance Live Load – 250 lbs. at the worst-case location on the mount
        - Maintenance Live Load – 500 lbs. at the worst-case antenna location

The following equipment has been considered for the analysis of the antenna mount(s):

Quantity	Manufacturer	Antenna/ Appurtenance	Status	Sector
3	POWERWAVE	7770	Existing	Alpha, Beta, & Gamma
2	KMW	AM-X-CD-17-65-00T-RET	Existing	Alpha & Beta
1	COMMSCOPE	SBNH-1D6565C	Existing	Gamma
3	**KATHREIN**	**840-370799**	**Proposed**	**Alpha, Beta, & Gamma**
6	**KAELUS**	**DBCT108F1V92-1**	**Proposed**	**Alpha, Beta, & Gamma**
3	ERICSSON	RRUS 11 B12	Existing	Alpha, Beta, & Gamma
3	ERICSSON	RRUS 11 B4	Existing	Alpha, Beta, & Gamma
3	**ERICSSON**	**RRUS 32 B30**	**Proposed**	**Alpha, Beta, & Gamma**
3	ERICSSON	RRUS 32 B2	Existing	Alpha, Beta, & Gamma
3	**ERICSSON**	**RRUS 4478 B5**	**Proposed**	**Alpha, Beta, & Gamma**
3	**ERICSSON**	**RRUS 4478 B14**	**Proposed**	**Alpha, Beta, & Gamma**
6	POWERWAVE	LGP 21401	Existing	Alpha, Beta, & Gamma
2	RAYCAP	DC6-48-60-18-8F	Existing	Alpha & Beta
1	**RAYCAP**	**DC6-48-60-0-8F**	**Proposed**	**Gamma**

Analysis Approach:

The antenna mount has been modeled in RISA-3D (V17), a comprehensive structural analysis program. The program performs design checks of structures under user specified loads. The user specified loads have been calculated separately based on the requirements of the above referenced codes and standards. The program performs an analysis based on the applicable steel code to determine the adequacy of the members and produces the reactions at the connection points of the mounts to the existing structure.

The scope of this assessment does not include analysis of the supporting tower structure. This mounting frame was not analyzed as an anchor attachment point for fall protection. All climbing activities are required to have a fall protection plan completed by a competent engineer.

Assumptions:

General Site Design Assumptions:

1. All engineering services are performed on the basis that the information provided to Maser Consulting Connecticut and used in this analysis is current and correct.
2. The mounting frames were properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.
3. The connection from the tower to the mount is in good condition and has been analyzed and found sufficient assuming it will achieve its theoretical strength.
4. It is the responsibility of the client to ensure that the information provided to Maser Consulting Connecticut and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that the original design, material production, fabrication, and erection of the existing structure was performed in accordance with accepted industry design standards and in accordance with all applicable codes. Further, it is assumed that the existing structure and appurtenances have been properly maintained in accordance with all applicable codes and manufacturer's specifications and no structural defects and/or deterioration to the structural members has occurred.
5. 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.
6. The existing equipment loading has been applied at locations determined from the supplied documentation and field observations. Should the existing equipment configuration differ from what is utilized in this analysis, the results of this analysis are invalid.
7. All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Maser Consulting Connecticut is not responsible for the conclusion, opinions, and recommendations made by others based on the information supplied.

Site Specific Assumptions and Design Parameters:

1. Structural Steel Grades have been assumed as follows, if applicable, unless otherwise noted in this analysis:
    - Channel, Angle, Plate — ASTM A36 (Gr. 36)
    - Pipe — ASTM A53 (Gr. B-35)
    - Bolts — ASTM A325
2. All proposed equipment locations are to be as depicted in the rendered diagram in Appendix A of this report. Any changes made to the proposed equipment locations will render this report invalid.
3. Due to the site specific analysis parameters, it is assumed that wind forces will control over seismic forces and as such, seismic forces have not been considered in this analysis.
4. Loading locations have been considered in accordance with the above referenced construction drawings.

Discrepancies between in-field conditions and the assumptions listed above may render this analysis invalid unless explicitly approved by Maser Consulting Connecticut.

Calculations:

Selected calculations and analysis output can be found in Appendix A of this report.

Analysis Results and Conclusion:

Component	Utilization %	Pass/Fail
Channel Horizontal	*74.1*	*Pass*
Mount Pipes	*65.9*	*Pass*
Support Rail	*30.0*	*Pass*
Plate	*68.9*	*Pass*
Mount Connection	*7.6*	*Pass*

Structure Rating – *(Controlling Utilization of all Components)*	**74.1%**

Recommendation:

In order for the results of this analysis to be considered valid, the modifications listed below and shown in Appendix A shall be completed on all sectors:

- Install **(1) one** support rail kit (Site Pro 1 Part #: HRK-12 or EOR approved equivalent) 42" above existing horizontal [mount modification sketch and specification sheet attached].

The conclusions reached by Maser Consulting Connecticut in this evaluation are only applicable for the structural members supporting the **AT&T Mobility** telecommunications installation described herein. Further, no structural qualifications are made or implied by this document for the existing structure. The mount was checked up to, and including, the bolts that fasten it to the flange attachment. However, no structural qualifications are made or implied by this document for the flange attachment.

Maser Consulting Connecticut reserves the right to amend this report if additional information regarding the members is provided. The conclusions reached by Maser Consulting Connecticut in this report are only valid for the appurtenances listed in this report. Any change to the installation will require a revision to this structural analysis.

We appreciate the opportunity to be of service on this project. If you should have any questions or require any additional information, please do not hesitate to call our office.

Sincerely,
Maser Consulting Connecticut

Petros E. Tsoukalas, P.E.
Geographic Discipline Leader

Nathaniel Ober
Assistant Project Manager

Disclaimer of Warranties:

The engineering services rendered by Maser Consulting Connecticut in connection with this structural analysis are limited to a computer analysis of the mounting frame structure and theoretical capacity of its main structural members. No allowance has been made for any damaged, bent, missing, loose, or rusted members or connections.

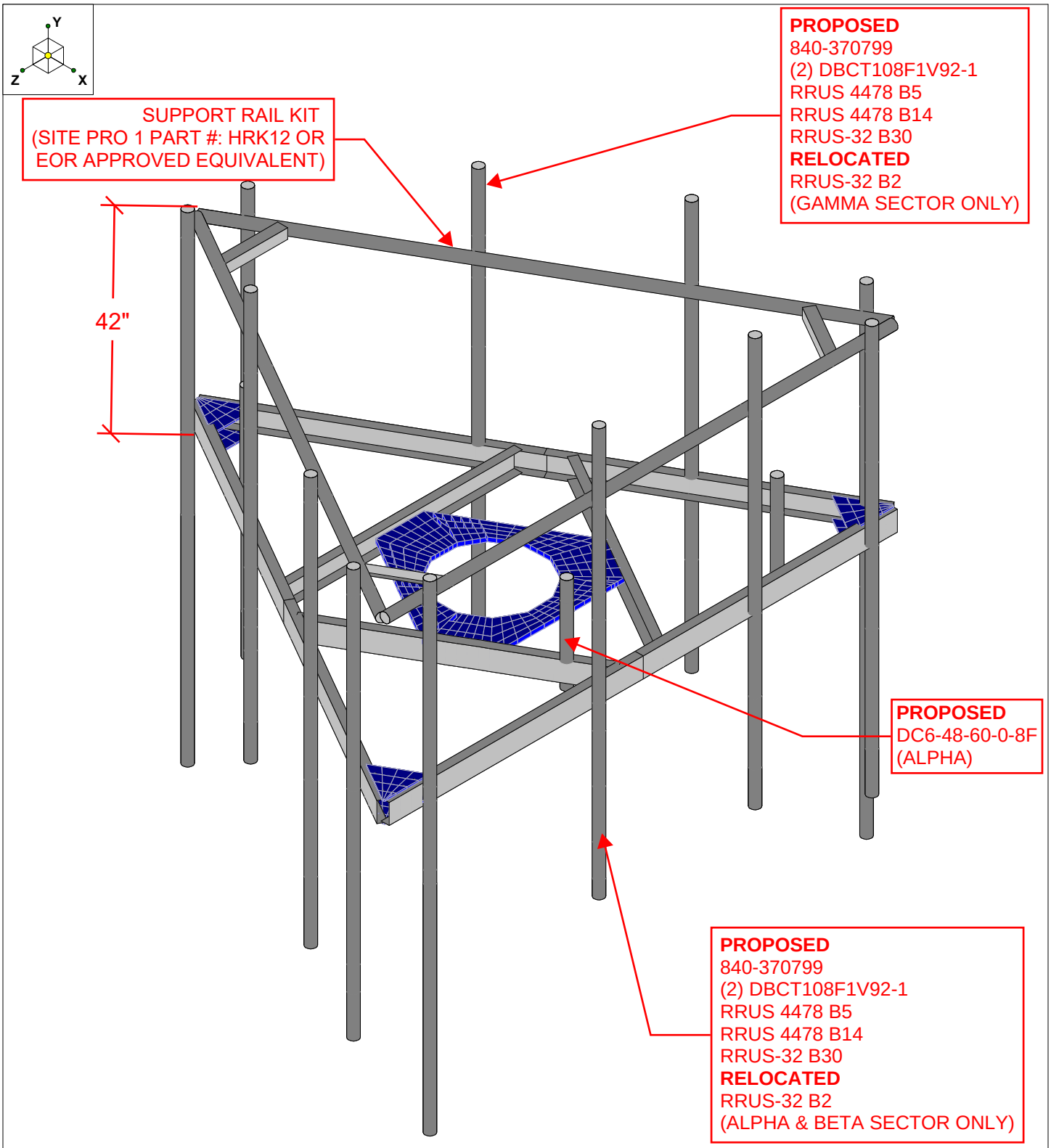
Maser Consulting Connecticut will accept no liability which may arise due to any deficiency in design, material, fabrication, erection, construction, or lack of maintenance. Maser Consulting Connecticut has not performed a site visit of the mounting frame to verify member sizes or equipment loading. Contractor should inspect the condition of the existing structure, mounting frames and connections and notify Maser Consulting Connecticut of any discrepancies or deficiencies before proceeding with installation.

The attached sketch is a schematic representation of the analyzed mounting frames. The contractor shall be responsible for field verifying the existing conditions, proper fit, and clearances in the field. Any mention of structural modifications are reasonable estimates and should not be used as a construction document. Construction documents depicting the required modification are obtainable from Maser Consulting P.A. but are beyond the scope of this report.

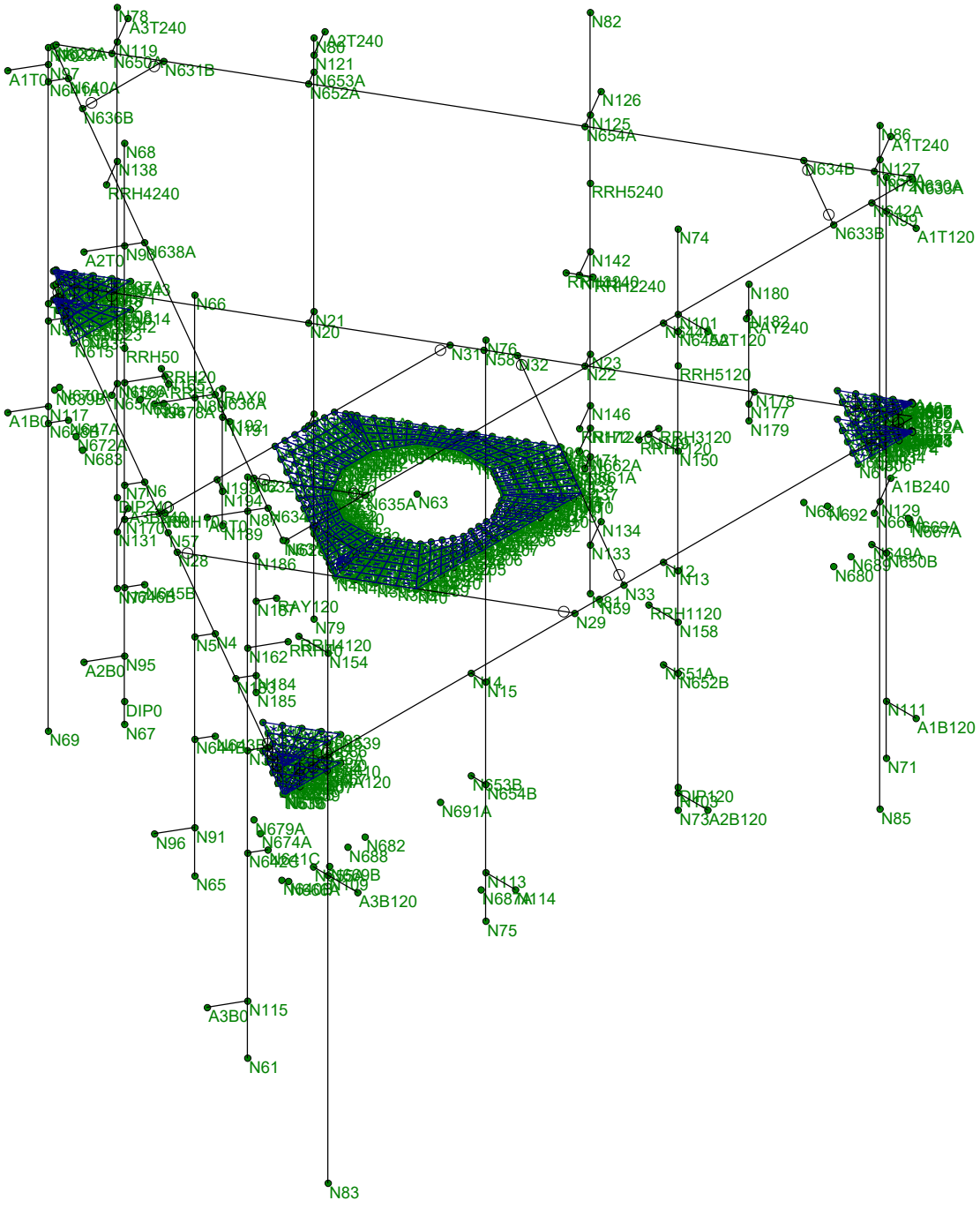
Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as part of our work. We recommend that material of suitable size and strength be purchased from a reputable manufacturer.

Maser Consulting Connecticut makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of the mounting frames. Maser Consulting Connecticut will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report.

APPENDIX A

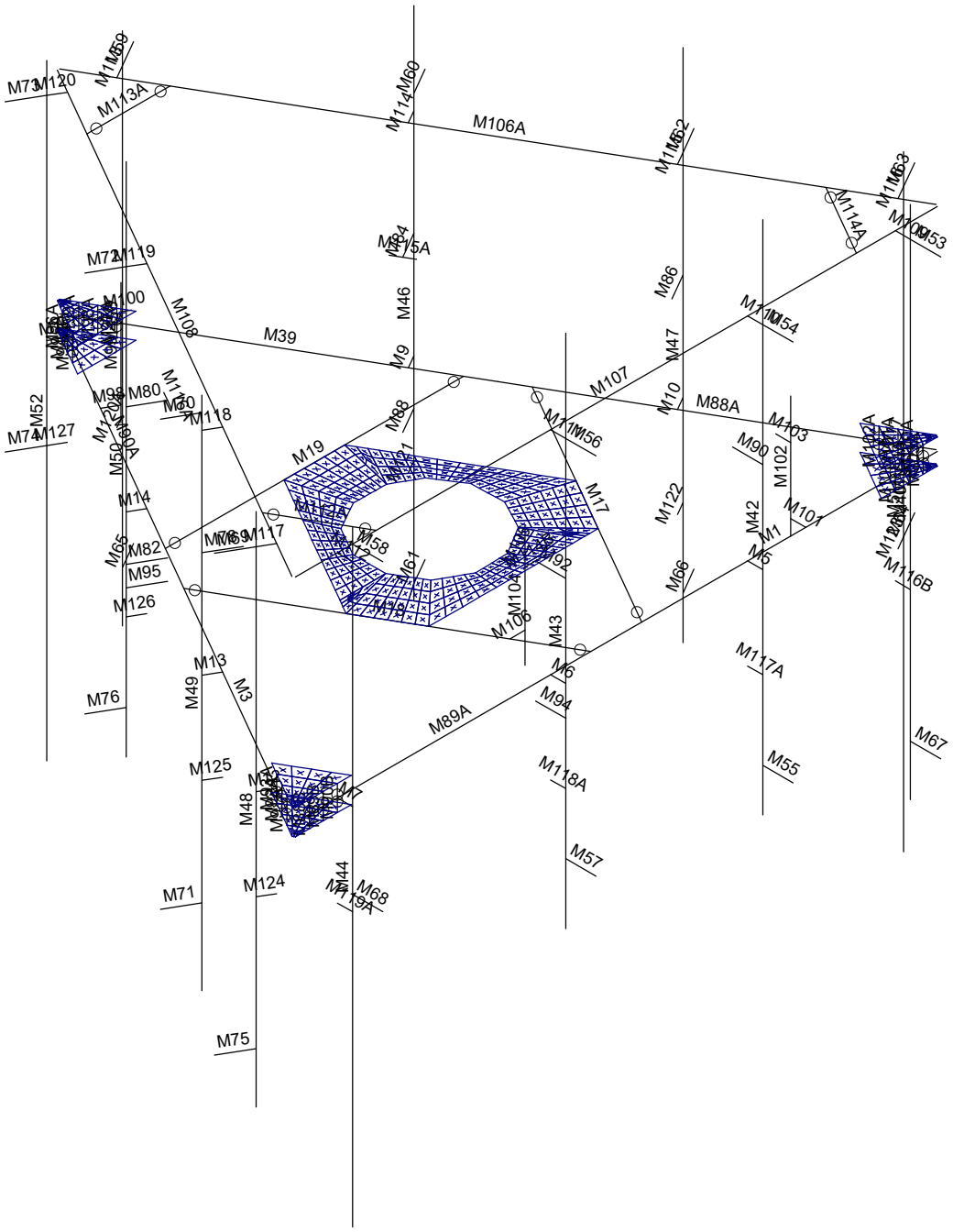


Maser Consulting P.A.	Platform Analysis	Rendered Model
NRO		July 18, 2019 at 10:24 AM
18963013A		Platform.r3d



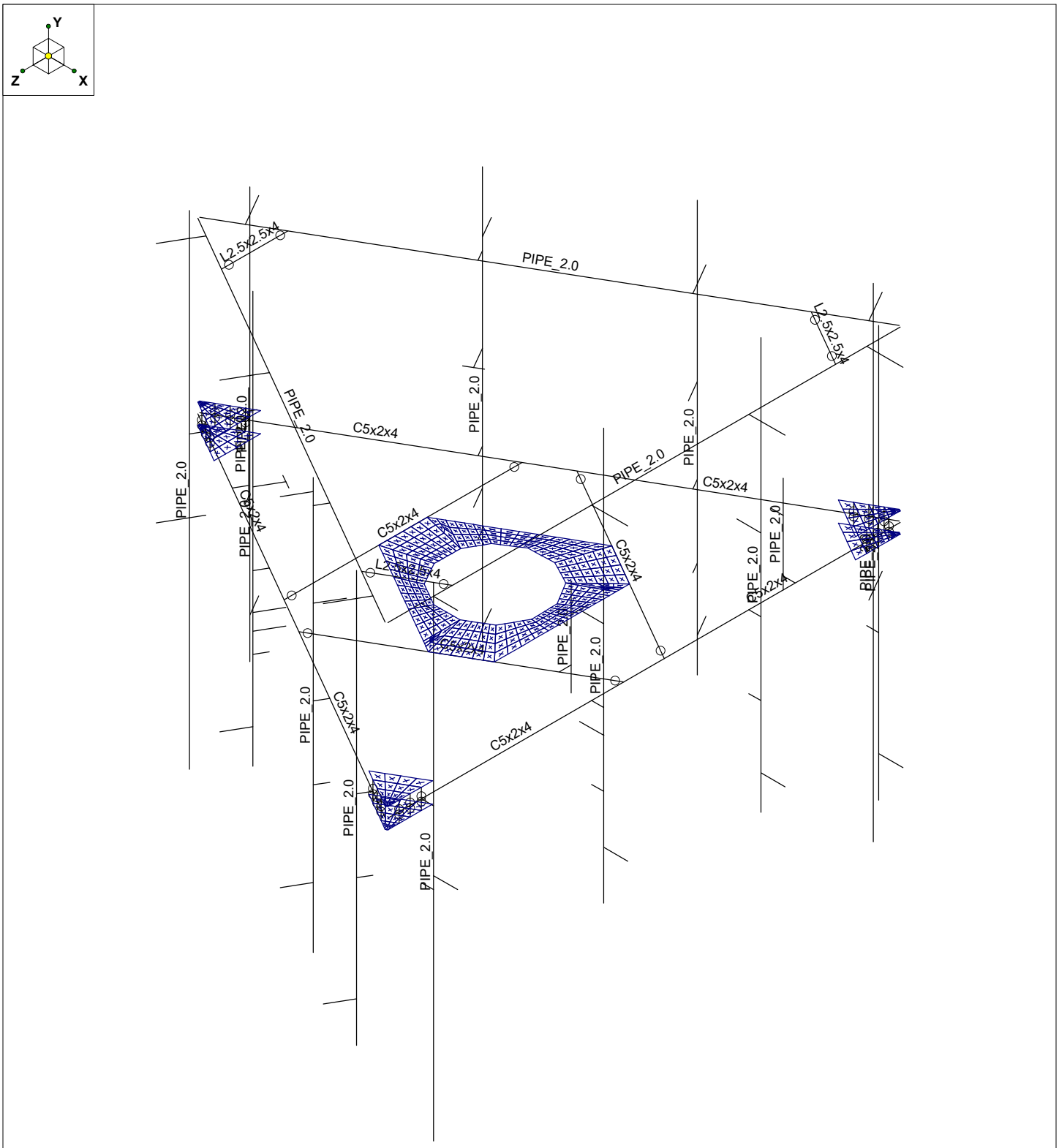
Envelope Only Solution

Maser Consulting P.A.	Platform Analysis	Joint Labels
NRO		July 18, 2019 at 10:07 AM
18963013A		Platform.r3d



Envelope Only Solution

Maser Consulting P.A.	Platform Analysis	Member Label
NRO		July 18, 2019 at 9:42 AM
18963013A		Platform.r3d



Envelope Only Solution

Maser Consulting P.A.	Platform Analysis	Member Shape
NRO		July 18, 2019 at 9:42 AM
18963013A		Platform.r3d

I. LOADING SUMMARY

Quantity	Manufacturer	Antenna/ Appurtenance	Status	Sector
3	POWERWAVE	7770	Existing	Alpha, Beta, & Gamma
2	KMW	AM-X-CD-17-65-00T-RET	Existing	Alpha & Beta
1	COMMSCOPE	SBNH-1D6565C	Existing	Gamma
3	**KATHREIN**	**840-370799**	**Proposed**	**Alpha, Beta, & Gamma**
6	**KAELUS**	**DBCT108F1V92-1**	**Proposed**	**Alpha, Beta, & Gamma**
6	ERICSSON	RRUS 11	Existing	Alpha, Beta, & Gamma
3	**ERICSSON**	**RRUS 32 B30**	**Proposed**	**Alpha, Beta, & Gamma**
3	ERICSSON	RRUS 32 B2	Existing	Alpha, Beta, & Gamma
3	**ERICSSON**	**RRUS 4478 B5**	**Proposed**	**Alpha, Beta, & Gamma**
3	**ERICSSON**	**RRUS 4478 B14**	**Proposed**	**Alpha, Beta, & Gamma**
6	POWERWAVE	LGP 21401	Existing	Alpha, Beta, & Gamma
2	RAYCAP	DC6-48-60-18-8F	Existing	Alpha & Beta
1	**RAYCAP**	**DC6-48-60-0-8F**	**Proposed**	**Gamma**

II. DESIGN CRITERIA

Basic Site Criteria:

TIA Standard:		TIA-222-H	
Antenna Centerline:	z	145	ft
Supporting Structure Type:		Monopole Tower	
Risk Category:		II	
Basic Wind Speed (3 sec. Gust, 700-Year MRI):	V	127	mph
Basic Wind Speed with ice (3 sec. Gust):	V_i	50	mph
Maintenance Wind Speed:	V_m	30	mph
Design Ice Thickness (500-Year MRI):	t_i	1.0	in
Exposure Category:		C	
Topographic Category:		1	
Topographic Factor:	K_{zt}	1.00	
Ground Elevation (AMSL):		128.26	ft
Ground Elevation Factor:	K_e	1.00	
Shielding Factor:	K_a	0.90	
Gust Effect Factor:	G_h	1.00	
Wind Directionality Factor:	K_d	0.95	
Velocity Pressure Coefficient:	K_z	1.37	
Importance Factor$_{Wind,\ no\ ice}$:	I_{wind}	1.00	
Importance Factor$_{Wind,\ with\ ice}$:	$I_{wind\ w/ice}$	1.00	
Importance Factor$_{Ice}$:	I_{ice}	1.00	
Ice Velocity Pressure Exposure Coefficient:	K_{iz}	1.16	

Wind and Ice Design Criteria:

Velocity Pressure:	q_z	48.09	psf
Velocity Pressure (With Ice):	q_{zi}	7.45	psf
Velocity Pressure (Maintenance):	q_{zm}	2.68	psf
Factored Ice Thickness:	t_{iz}	1.16	in

Grating Loading:

Grating Type:		Bar	
Grating Self Weight:		9.0	psf
Grating Ice Weight:		10.8	psf

III. CALCULATIONS

- ***Load on Appurtenances***

Antenna/ Appurtenance	*Non-Iced Condition*									*Iced Condition*						
	Mounting Pipe		Equipment					Force Coefficient		Mounting Pipe		Equipment			Force Coefficient	
	Length (in)	Diameter (in)	Shape Type	Height (in)	Width (in)	Depth (in)	Weight (lbs)	$C_{a\ Front}$	$C_{a\ Side}$	Length (in)	Diameter (in)	Height (in)	Width (in)	Depth (in)	$C_{a\ Front}$	$C_{a\ Side}$
7770	102.0	2.375	Rect	55.00	11.00	5.00	35.00	1.31	1.53	104.3	4.7	57.32	13.32	7.32	1.28	1.43
AM-X-CD-17-65-00T-RET	102.0	2.375	Rect	96.00	11.80	6.00	74.50	1.44	1.70	104.3	4.7	98.32	14.12	8.32	1.40	1.56
SBNH-1D6565C	120.0	2.375	Rect	96.40	11.90	7.10	60.70	1.44	1.62	122.3	4.7	98.72	14.22	9.42	1.40	1.52
840-370799	102.0	2.375	Rect	96.00	14.90	6.50	105.80	1.38	1.66	104.3	4.7	98.32	17.22	8.82	1.34	1.54
DBCT108F1V92-1	0.0	0.000	Rect	6.80	5.70	3.52	6.40	1.20	1.20	0.0	0.0	9.12	8.02	5.84	1.20	1.20
RRUS 11	0.0	0.000	Rect	19.70	17.00	7.20	55.70	1.20	1.21	0.0	0.0	22.02	19.32	9.52	1.20	1.20
RRUS 32 B30	0.0	0.000	Rect	27.20	12.00	7.00	52.90	1.20	1.26	0.0	0.0	29.52	14.32	9.32	1.20	1.23
RRUS 32 B2	0.0	0.000	Rect	27.20	12.00	7.00	52.90	1.20	1.26	0.0	0.0	29.52	14.32	9.32	1.20	1.23
RRUS 4478 B5	0.0	0.000	Rect	16.50	13.40	7.70	59.90	1.20	1.20	0.0	0.0	18.82	15.72	10.02	1.20	1.20
RRUS 4478 B14	0.0	0.000	Rect	18.10	13.40	8.30	59.40	1.20	1.20	0.0	0.0	20.42	15.72	10.62	1.20	1.20
LGP 21401	0.0	0.000	Rect	13.80	14.40	3.70	30.00	1.20	1.25	0.0	0.0	16.12	16.72	6.02	1.20	1.21
DC6-48-60-18-8F	0.0	0.000	Round	31.40	10.20	10.20	26.20	0.71	0.71	0.0	0.0	33.72	12.52	12.52	0.70	0.70
DC6-48-60-0-8F	0.0	0.000	Round	24.00	11.00	11.00	32.80	FALSE	FALSE	0.0	0.0	26.32	13.32	13.32	FALSE	FALSE

Antenna/ Appurtenance	# of Brackets	Turned 90°?	% Shield Front	% Shield Side	Non-Iced Condition			Iced Condition			Maintenance Condition		Seismic Condition	
					Wind Force (lbs.)		Gravity (lbs.)	Wind Force (lbs.)		Gravity (lbs.)	Wind Force (lbs.)		Vertical (lbs.)	Horizontal (lbs.)
					F_N	F_T		F_N	F_T		F_N	F_T	E_V	E_H
7770	2				154.8	118.9	**17.5**	32.1	30.7	**44.8**	8.6	6.6	0.0	0.0
AM-X-CD-17-65-00T-RET	2				274.8	212.0	**37.3**	51.1	48.2	**83.6**	15.3	11.8	0.0	0.0
SBNH-1D6565C	2				286.4	242.2	**30.4**	54.2	54.3	**87.5**	16.0	13.5	0.0	0.0
840-370799	2				331.3	221.4	**52.9**	59.7	49.7	**101.1**	18.5	12.4	0.0	0.0
DBCT108F1V92-1	1				15.5	9.6	**6.4**	4.5	3.6	**8.5**	0.9	0.5	0.0	0.0
RRUS 11	1	Yes			57.3	134.2	**55.7**	13.4	26.4	**51.0**	3.2	7.5	0.0	0.0
RRUS 32 B30	1	Yes			80.2	130.8	**52.9**	17.8	26.3	**52.5**	4.5	7.3	0.0	0.0
RRUS 32 B2	1	Yes			80.2	130.8	**52.9**	17.8	26.3	**52.5**	4.5	7.3	0.0	0.0
RRUS 4478 B5	1	No			88.6	50.9	**59.9**	18.4	12.0	**36.9**	4.9	2.8	0.0	0.0
RRUS 4478 B14	1	No			97.2	60.2	**59.4**	19.9	13.8	**40.8**	5.4	3.4	0.0	0.0
LGP 21401	1				79.6	21.4	**30.0**	16.7	6.4	**30.5**	4.4	1.2	0.0	0.0
DC6-48-60-18-8F	1				76.2	76.2	**26.2**	15.4	15.7	**45.2**	4.3	4.3	0.0	0.0
DC6-48-60-0-8F	2				0.0	0.0	**16.4**	0.0	0.2	**18.9**	0.0	0.0	0.0	0.0

** ALL CALCULATED LOADS ARE PER MOUNTING BRACKET. TO GET THE TOTAL EQUIPMENT LOAD, MULTIPLY THE INDIVIDUAL LOADS BY THE NUMBER OF BRACKETS*

- ***Load on Framing Members***

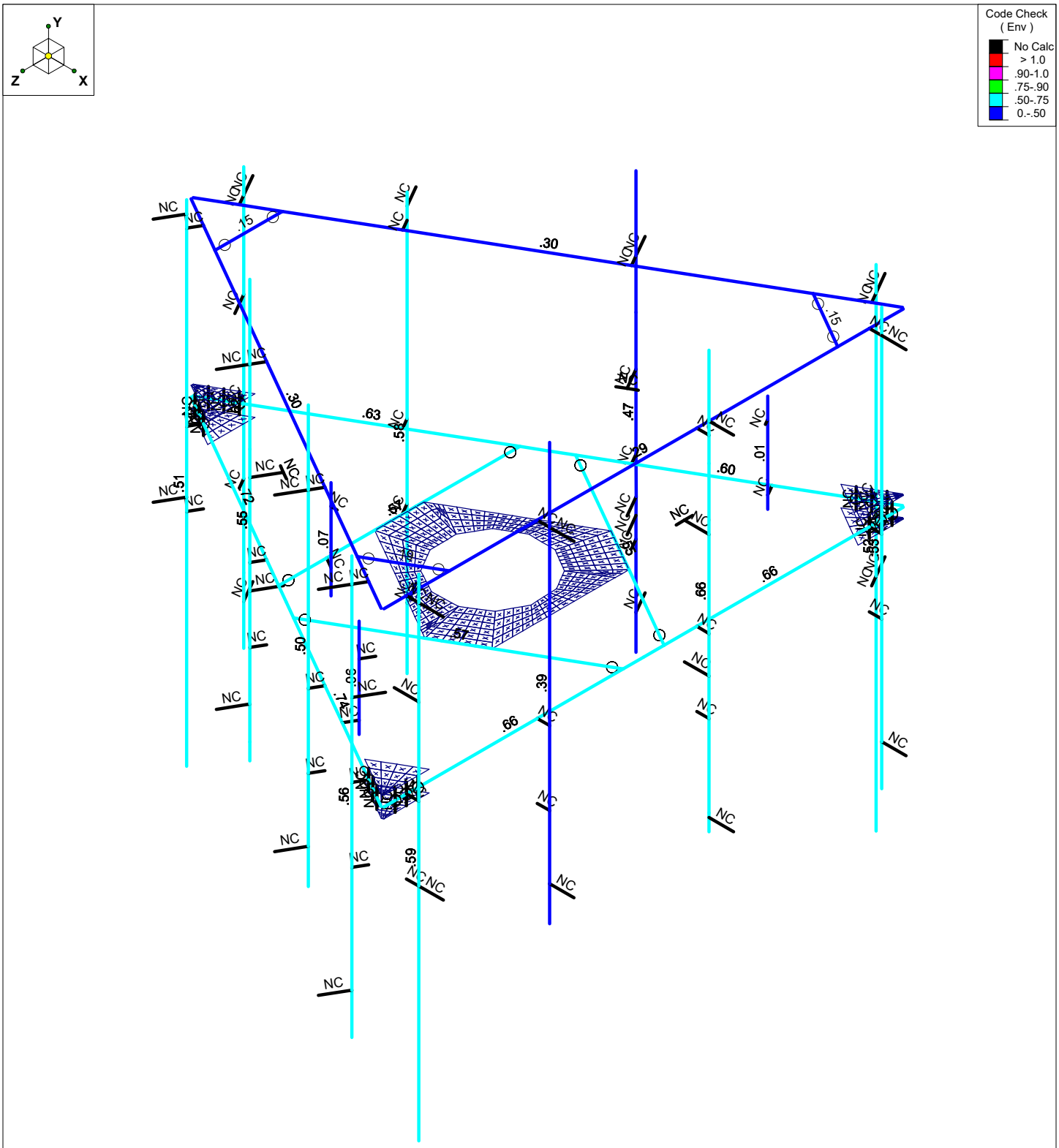
RISA Section Set Name	RISA Shape	Member Category	AISC Member Label	Member Surface	Non-Iced Condition			Iced Condition					Maintenance Condition
					Exposed Wind Height (in)	Force Coefficient C_a	Wind Load (plf)	Exposed Wind Height (in)	D_C (in)	Force Coefficient C_a	Wind Load (plf)	Ice Weight (plf)	Wind Load (plf)
C5x2x4	C5x2x4	Channel		Square	5.00	2.00	40.08	7.32	5.39	2.00	9.09	9.28	2.24
PIPE_2.0	PIPE_2.0	Pipe	Pipe 2.0	Round	2.38	1.20	11.42	4.69	2.38	1.20	3.50	5.01	0.64
Support Rail	PIPE_2.0	Pipe	Pipe 2.0	Round	2.38	1.20	11.42	4.69	2.38	1.20	3.50	5.01	0.00
Support Rail Angle	L2.5x2.5x4	Equal Angle	L2.5x2.5	Square	2.50	2.00	20.04	4.82	3.54	2.00	5.99	6.65	1.12
Mount Pipe	PIPE_2.0	Pipe	Pipe 2.0	Round	0.00	1.20	0.00	0.00	2.38	1.20	0.00	5.01	0.00

IV. RISA INPUT

▪ ***Joint Load Input Data***

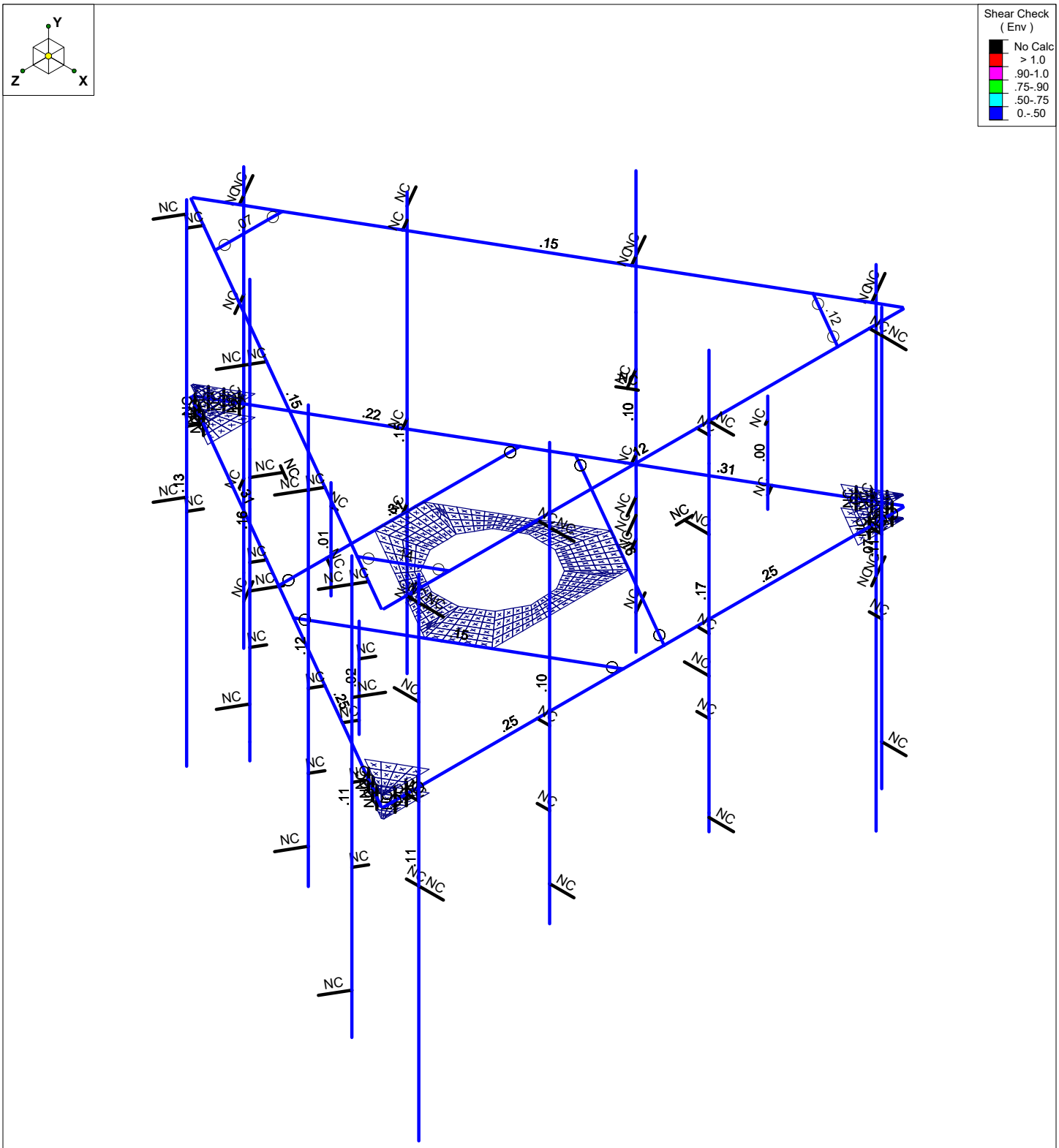
			Non-Iced Condition, Wind Force (lbs.)												Iced Condition, Wind Force (lbs.)												Maintenance Condition, Wind Force (lbs.)											
			Global Azimuth												Global Azimuth												Global Azimuth											
Loaded Joints by Name	Associated Appurtenance	Relative Azimuth	0	30	60	90	120	150	180	210	240	270	300	330	0	30	60	90	120	150	180	210	240	270	300	330	0	30	60	90	120	150	180	210	240	270	300	330
A1T0	7770	0	154.8	146.7	128.9	118.9	128.9	146.7	154.8	146.7	128.9	118.9	128.9	146.7	32.1	31.8	31.1	30.7	31.1	31.8	32.1	31.8	31.1	30.7	31.1	31.8	8.6	8.2	7.2	6.6	7.2	8.2	8.6	8.2	7.2	6.6	7.2	8.2
A1B0	7770	0	154.8	146.7	128.9	118.9	128.9	146.7	154.8	146.7	128.9	118.9	128.9	146.7	32.1	31.8	31.1	30.7	31.1	31.8	32.1	31.8	31.1	30.7	31.1	31.8	8.6	8.2	7.2	6.6	7.2	8.2	8.6	8.2	7.2	6.6	7.2	8.2
A2T0	840-370799	0	331.3	307.5	253.4	221.4	253.4	307.5	331.3	307.5	253.4	221.4	253.4	307.5	59.7	57.4	52.4	49.7	52.4	57.4	59.7	57.4	52.4	49.7	52.4	57.4	18.5	17.2	14.1	12.4	14.1	17.2	18.5	17.2	14.1	12.4	14.1	17.2
A2B0	840-370799	0	331.3	307.5	253.4	221.4	253.4	307.5	331.3	307.5	253.4	221.4	253.4	307.5	59.7	57.4	52.4	49.7	52.4	57.4	59.7	57.4	52.4	49.7	52.4	57.4	18.5	17.2	14.1	12.4	14.1	17.2	18.5	17.2	14.1	12.4	14.1	17.2
A3T0	AM-X-CD-17-65-00T-RET	0	274.8	260.6	229.3	212.0	229.3	260.6	274.8	260.6	229.3	212.0	229.3	260.6	51.1	50.4	49.0	48.2	49.0	50.4	51.1	50.4	49.0	48.2	49.0	50.4	15.3	14.5	12.8	11.8	12.8	14.5	15.3	14.5	12.8	11.8	12.8	14.5
A3B0	AM-X-CD-17-65-00T-RET	0	274.8	260.6	229.3	212.0	229.3	260.6	274.8	260.6	229.3	212.0	229.3	260.6	51.1	50.4	49.0	48.2	49.0	50.4	51.1	50.4	49.0	48.2	49.0	50.4	15.3	14.5	12.8	11.8	12.8	14.5	15.3	14.5	12.8	11.8	12.8	14.5
RRH10	RRUS 32 B30	0	80.2	95.4	120.2	130.8	120.2	95.4	80.2	95.4	120.2	130.8	120.2	95.4	17.8	20.3	24.4	26.3	24.4	20.3	17.8	20.3	24.4	26.3	24.4	20.3	4.5	5.3	6.7	7.3	6.7	5.3	4.5	5.3	6.7	7.3	6.7	5.3
RRH20	RRUS 4478 B14	0	97.2	89.4	71.3	60.2	71.3	89.4	97.2	89.4	71.3	60.2	71.3	89.4	19.9	18.6	15.6	13.8	15.6	18.6	19.9	18.6	15.6	13.8	15.6	18.6	5.4	5.0	4.0	3.4	4.0	5.0	5.4	5.0	4.0	3.4	4.0	5.0
RRH30	RRUS 4478 B5	0	88.6	80.9	62.5	50.9	62.5	80.9	88.6	80.9	62.5	50.9	62.5	80.9	18.4	17.0	13.9	12.0	13.9	17.0	18.4	17.0	13.9	12.0	13.9	17.0	4.9	4.5	3.5	2.8	3.5	4.5	4.9	4.5	3.5	2.8	3.5	4.5
RRH40	RRUS 11	0	57.3	83.5	119.7	134.2	119.7	83.5	57.3	83.5	119.7	134.2	119.7	83.5	13.4	17.6	23.8	26.4	23.8	17.6	13.4	17.6	23.8	26.4	23.8	17.6	3.2	4.7	6.7	7.5	6.7	4.7	3.2	4.7	6.7	7.5	6.7	4.7
RRH40	RRUS 11	0	57.3	83.5	119.7	134.2	119.7	83.5	57.3	83.5	119.7	134.2	119.7	83.5	13.4	17.6	23.8	26.4	23.8	17.6	13.4	17.6	23.8	26.4	23.8	17.6	3.2	4.7	6.7	7.5	6.7	4.7	3.2	4.7	6.7	7.5	6.7	4.7
RRH50	RRUS 32 B2	0	80.2	95.4	120.2	130.8	120.2	95.4	80.2	95.4	120.2	130.8	120.2	95.4	17.8	20.3	24.4	26.3	24.4	20.3	17.8	20.3	24.4	26.3	24.4	20.3	4.5	5.3	6.7	7.3	6.7	5.3	4.5	5.3	6.7	7.3	6.7	5.3
A1T120	7770	120	128.9	118.9	128.9	146.7	154.8	146.7	128.9	118.9	128.9	146.7	154.8	146.7	31.1	30.7	31.1	31.8	32.1	31.8	31.1	30.7	31.1	31.8	32.1	31.8	7.2	6.6	7.2	8.2	8.6	8.2	7.2	6.6	7.2	8.2	8.6	8.2
A1B120	7770	120	128.9	118.9	128.9	146.7	154.8	146.7	128.9	118.9	128.9	146.7	154.8	146.7	31.1	30.7	31.1	31.8	32.1	31.8	31.1	30.7	31.1	31.8	32.1	31.8	7.2	6.6	7.2	8.2	8.6	8.2	7.2	6.6	7.2	8.2	8.6	8.2
A2T120	840-370799	120	253.4	221.4	253.4	307.5	331.3	307.5	253.4	221.4	253.4	307.5	331.3	307.5	52.4	49.7	52.4	57.4	59.7	57.4	52.4	49.7	52.4	57.4	59.7	57.4	14.1	12.4	14.1	17.2	18.5	17.2	14.1	12.4	14.1	17.2	18.5	17.2
A2B120	840-370799	120	253.4	221.4	253.4	307.5	331.3	307.5	253.4	221.4	253.4	307.5	331.3	307.5	52.4	49.7	52.4	57.4	59.7	57.4	52.4	49.7	52.4	57.4	59.7	57.4	14.1	12.4	14.1	17.2	18.5	17.2	14.1	12.4	14.1	17.2	18.5	17.2
A3T120	AM-X-CD-17-65-00T-RET	120	229.3	212.0	229.3	260.6	274.8	260.6	229.3	212.0	229.3	260.6	274.8	260.6	49.0	48.2	49.0	50.4	51.1	50.4	49.0	48.2	49.0	50.4	51.1	50.4	12.8	11.8	12.8	14.5	15.3	14.5	12.8	11.8	12.8	14.5	15.3	14.5
A3B120	AM-X-CD-17-65-00T-RET	120	229.3	212.0	229.3	260.6	274.8	260.6	229.3	212.0	229.3	260.6	274.8	260.6	49.0	48.2	49.0	50.4	51.1	50.4	49.0	48.2	49.0	50.4	51.1	50.4	12.8	11.8	12.8	14.5	15.3	14.5	12.8	11.8	12.8	14.5	15.3	14.5
RRH1120	RRUS 32 B30	120	120.2	130.8	120.2	95.4	80.2	95.4	120.2	130.8	120.2	95.4	80.2	95.4	24.4	26.3	24.4	20.3	17.8	20.3	24.4	26.3	24.4	20.3	17.8	20.3	6.7	7.3	6.7	5.3	4.5	5.3	6.7	7.3	6.7	5.3	4.5	5.3
RRH2120	RRUS 4478 B14	120	71.3	60.2	71.3	89.4	97.2	89.4	71.3	60.2	71.3	89.4	97.2	89.4	15.6	13.8	15.6	18.6	19.9	18.6	15.6	13.8	15.6	18.6	19.9	18.6	4.0	3.4	4.0	5.0	5.4	5.0	4.0	3.4	4.0	5.0	5.4	5.0
RRH3120	RRUS 4478 B5	120	62.5	50.9	62.5	80.9	88.6	80.9	62.5	50.9	62.5	80.9	88.6	80.9	13.9	12.0	13.9	17.0	18.4	17.0	13.9	12.0	13.9	17.0	18.4	17.0	3.5	2.8	3.5	4.5	4.9	4.5	3.5	2.8	3.5	4.5	4.9	4.5
RRH4120	RRUS 11	120	119.7	134.2	119.7	83.5	57.3	83.5	119.7	134.2	119.7	83.5	57.3	83.5	23.8	26.4	23.8	17.6	13.4	17.6	23.8	26.4	23.8	17.6	13.4	17.6	6.7	7.5	6.7	4.7	3.2	4.7	6.7	7.5	6.7	4.7	3.2	4.7
RRH4120	RRUS 11	120	119.7	134.2	119.7	83.5	57.3	83.5	119.7	134.2	119.7	83.5	57.3	83.5	23.8	26.4	23.8	17.6	13.4	17.6	23.8	26.4	23.8	17.6	13.4	17.6	6.7	7.5	6.7	4.7	3.2	4.7	6.7	7.5	6.7	4.7	3.2	4.7
RRH5120	RRUS 32 B2	120	120.2	130.8	120.2	95.4	80.2	95.4	120.2	130.8	120.2	95.4	80.2	95.4	24.4	26.3	24.4	20.3	17.8	20.3	24.4	26.3	24.4	20.3	17.8	20.3	6.7	7.3	6.7	5.3	4.5	5.3	6.7	7.3	6.7	5.3	4.5	5.3
A1T240	7770	240	128.9	146.7	154.8	146.7	128.9	118.9	128.9	146.7	154.8	146.7	128.9	118.9	31.1	31.8	32.1	31.8	31.1	30.7	31.1	31.8	32.1	31.8	31.1	30.7	7.2	8.2	8.6	8.2	7.2	6.6	7.2	8.2	8.6	8.2	7.2	6.6
A1B240	7770	240	128.9	146.7	154.8	146.7	128.9	118.9	128.9	146.7	154.8	146.7	128.9	118.9	31.1	31.8	32.1	31.8	31.1	30.7	31.1	31.8	32.1	31.8	31.1	30.7	7.2	8.2	8.6	8.2	7.2	6.6	7.2	8.2	8.6	8.2	7.2	6.6
A2T240	840-370799	240	253.4	307.5	331.3	307.5	253.4	221.4	253.4	307.5	331.3	307.5	253.4	221.4	52.4	57.4	59.7	57.4	52.4	49.7	52.4	57.4	59.7	57.4	52.4	49.7	14.1	17.2	18.5	17.2	14.1	12.4	14.1	17.2	18.5	17.2	14.1	12.4
A2B240	840-370799	240	253.4	307.5	331.3	307.5	253.4	221.4	253.4	307.5	331.3	307.5	253.4	221.4	52.4	57.4	59.7	57.4	52.4	49.7	52.4	57.4	59.7	57.4	52.4	49.7	14.1	17.2	18.5	17.2	14.1	12.4	14.1	17.2	18.5	17.2	14.1	12.4
A3T240	SBNH-1D6565C	240	253.9	276.0	286.4	276.0	253.9	242.2	253.9	276.0	286.4	276.0	253.9	242.2	54.3	54.2	54.2	54.2	54.3	54.3	54.3	54.2	54.2	54.2	54.3	54.3	14.2	15.4	16.0	15.4	14.2	13.5	14.2	15.4	16.0	15.4	14.2	13.5
A3B240	SBNH-1D6565C	240	253.9	276.0	286.4	276.0	253.9	242.2	253.9	276.0	286.4	276.0	253.9	242.2	54.3	54.2	54.2	54.2	54.3	54.3	54.3	54.2	54.2	54.2	54.3	54.3	14.2	15.4	16.0	15.4	14.2	13.5	14.2	15.4	16.0	15.4	14.2	13.5
RRH1240	RRUS 32 B30	240	120.2	95.4	80.2	95.4	120.2	130.8	120.2	95.4	80.2	95.4	120.2	130.8	24.4	20.3	17.8	20.3	24.4	26.3	24.4	20.3	17.8	20.3	24.4	26.3	6.7	5.3	4.5	5.3	6.7	7.3	6.7	5.3	4.5	5.3	6.7	7.3
RRH2240	RRUS 4478 B14	240	71.3	89.4	97.2	89.4	71.3	60.2	71.3	89.4	97.2	89.4	71.3	60.2	15.6	18.6	19.9	18.6	15.6	13.8	15.6	18.6	19.9	18.6	15.6	13.8	4.0	5.0	5.4	5.0	4.0	3.4	4.0	5.0	5.4	5.0	4.0	3.4
RRH3240	RRUS 4478 B5	240	62.5	80.9	88.6	80.9	62.5	50.9	62.5	80.9	88.6	80.9	62.5	50.9	13.9	17.0	18.4	17.0	13.9	12.0	13.9	17.0	18.4	17.0	13.9	12.0	3.5	4.5	4.9	4.5	3.5	2.8	3.5	4.5	4.9	4.5	3.5	2.8
RRH4240	RRUS 11	240	119.7	83.5	57.3	83.5	119.7	134.2	119.7	83.5	57.3	83.5	119.7	134.2	23.8	17.6	13.4	17.6	23.8	26.4	23.8	17.6	13.4	17.6	23.8	26.4	6.7	4.7	3.2	4.7	6.7	7.5	6.7	4.7	3.2	4.7	6.7	7.5
RRH4240	RRUS 11	240	119.7	83.5	57.3	83.5	119.7	134.2	119.7	83.5	57.3	83.5	119.7	134.2	23.8	17.6	13.4	17.6	23.8	26.4	23.8	17.6	13.4	17.6	23.8	26.4	6.7	4.7	3.2	4.7	6.7	7.5	6.7	4.7	3.2	4.7	6.7	7.5
RRH5240	RRUS 32 B2	240	120.2	95.4	80.2	95.4	120.2	130.8	120.2	95.4	80.2	95.4	120.2	130.8	24.4	20.3	17.8	20.3	24.4	26.3	24.4	20.3	17.8	20.3	24.4	26.3	6.7	5.3	4.5	5.3	6.7	7.3	6.7	5.3	4.5	5.3	6.7	7.3
DIP0	DBCT108F1V92-1	0	15.5	14.3	11.4	9.6	11.4	14.3	15.5	14.3	11.4	9.6	11.4	14.3	4.5	4.3	3.9	3.6	3.9	4.3	4.5	4.3	3.9	3.6	3.9	4.3	0.9	0.8	0.6	0.5	0.6	0.8	0.9	0.8	0.6	0.5	0.6	0.8
DIP0	DBCT108F1V92-1	0	15.5	14.3	11.4	9.6	11.4	14.3	15.5	14.3	11.4	9.6	11.4	14.3	4.5	4.3	3.9	3.6	3.9	4.3	4.5	4.3	3.9	3.6	3.9	4.3	0.9	0.8	0.6	0.5	0.6	0.8	0.9	0.8	0.6	0.5	0.6	0.8
DIP120	DBCT108F1V92-1	120	11.4	9.6	11.4	14.3	15.5	14.3	11.4	9.6	11.4	14.3	15.5	14.3	3.9	3.6	3.9	4.3	4.5	4.3	3.9	3.6	3.9	4.3	4.5	4.3	0.6	0.5	0.6	0.8	0.9	0.8	0.6	0.5	0.6	0.8	0.9	0.8
DIP120	DBCT108F1V92-1	120	11.4	9.6	11.4	14.3	15.5	14.3	11.4	9.6	11.4	14.3	15.5	14.3	3.9	3.6	3.9	4.3	4.5	4.3	3.9	3.6	3.9	4.3	4.5	4.3	0.6	0.5	0.6	0.8	0.9	0.8	0.6	0.5	0.6	0.8	0.9	0.8
DIP240	DBCT108F1V92-1	240	11.4	14.3	15.5	14.3	11.4	9.6	11.4	14.3	15.5	14.3	11.4	9.6	3.9	4.3	4.5	4.3	3.9	3.6	3.9	4.3	4.5	4.3	3.9	3.6	0.6	0.8	0.9	0.8	0.6	0.5	0.6	0.8	0.9	0.8	0.6	0.5
DIP240	DBCT108F1V92-1	240	11.4	14.3	15.5	14.3	11.4	9.6	11.4	14.3	15.5	14.3	11.4	9.6	3.9	4.3	4.5	4.3	3.9	3.6	3.9	4.3	4.5	4.3	3.9	3.6	0.6	0.8	0.9	0.8	0.6	0.5	0.6	0.8	0.9	0.8	0.6	0.5
TMA0	LGP 21401	0	79.6	69.8	43.9	21.4	43.9	69.8	79.6	69.8	43.9	21.4	43.9	69.8	16.7	14.8	10.0	6.4	10.0	14.8	16.7	14.8	10.0	6.4	10.0	14.8	4.4	3.9	2.5	1.2	2.5	3.9	4.4	3.9	2.5	1.2	2.5	3.9
TMA0	LGP 21401	0	79.6	69.8	43.9	21.4	43.9	69.8	79.6	69.8	43.9	21.4	43.9	69.8	16.7	14.8	10.0	6.4	10.0	14.8	16.7	14.8	10.0	6.4	10.0	14.8	4.4	3.9	2.5	1.2	2.5	3.9	4.4	3.9	2.5	1.2	2.5	3.9
TMA120	LGP 21401	120	43.9	21.4	43.9	69.8	79.6	69.8	43.9	21.4	43.9	69.8	79.6	69.8	10.0	6.4	10.0	14.8	16.7	14.8	10.0	6.4	10.0	14.8	16.7	14.8	2.5	1.2	2.5	3.9	4.4	3.9	2.5	1.2	2.5	3.9	4.4	3.9
TMA120	LGP 21401	120	43.9	21.4	43.9	69.8	79.6	69.8	43.9	21.4	43.9	69.8	79.6	69.8	10.0	6.4	10.0	14.8	16.7	14.8	10.0	6.4	10.0	14.8	16.7	14.8	2.5	1.2	2.5	3.9	4.4	3.9	2.5	1.2	2.5	3.9	4.4	3.9
TMA240	LGP 21401	240	43.9	69.8	79.6	69.8	43.9	21.4	43.9	69.8	79.6	69.8	43.9	21.4	10.0	14.8	16.7	14.8	10.0	6.4	10.0	14.8	16.7	14.8	10.0	6.4	2.5	3.9	4.4	3.9	2.5	1.2	2.5	3.9	4.4	3.9	2.5	1.2
TMA240	LGP 21401	240	43.9	69.8	79.6	69.8	43.9	21.4	43.9	69.8	79.6	69.8	43.9	21.4	10.0	14.8	16.7	14.8	10.0	6.4	10.0	14.8	16.7	14.8	10.0	6.4	2.5	3.9	4.4	3.9	2.5	1.2	2.5	3.9	4.4	3.9	2.5	1.2
RAY0	DC6-48-60-18-8F	0	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	15.4	15.5	15.6	15.7	15.6	15.5	15.4	15.5	15.6	15.7	15.6	15.5	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
RAY120	DC6-48-60-18-8F	120	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	15.6	15.7	15.6	15.5	15.4	15.5	15.6	15.7	15.6	15.5	15.4	15.5	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
RAY240	DC6-48-60-0-8F	240	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: Azimuths determined with the mount face parallel with z-axis in model as 0 degrees and sequential orientations clockwise in 30 degree increments.



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Maser Consulting P.A.	Platform Analysis	Unity Bending
NRO		July 18, 2019 at 10:04 AM
18963013A		Platform.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Maser Consulting P.A.	Platform Analysis	Shear Check
NRO		July 18, 2019 at 10:06 AM
18963013A		Platform.r3d

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N57	N480A		180	C5x2x4	None	None	A36 Gr.36	Typical
2	M3	N58	N481A		180	C5x2x4	None	None	A36 Gr.36	Typical
3	M4	N2	N3			RIGID	None	None	RIGID	Typical
4	M5	N4	N5			RIGID	None	None	RIGID	Typical
5	M6	N6	N7			RIGID	None	None	RIGID	Typical
6	M7	N8	N9			RIGID	None	None	RIGID	Typical
7	M8	N10	N11			RIGID	None	None	RIGID	Typical
8	M9	N12	N13			RIGID	None	None	RIGID	Typical
9	M10	N14	N15			RIGID	None	None	RIGID	Typical
10	M11	N16	TMA120			RIGID	None	None	RIGID	Typical
11	M12	N18	N19			RIGID	None	None	RIGID	Typical
12	M13	N20	N21			RIGID	None	None	RIGID	Typical
13	M14	N22	N23			RIGID	None	None	RIGID	Typical
14	M15	N24	TMA240			RIGID	None	None	RIGID	Typical
15	M17	N28	N29		180	C5x2x4	None	None	A36 Gr.36	Typical
16	M18	N30	N31			C5x2x4	None	None	A36 Gr.36	Typical
17	M19	N32	N33			C5x2x4	None	None	A36 Gr.36	Typical
18	M39	N59	N482A		180	C5x2x4	None	None	A36 Gr.36	Typical
19	M40	N61	N62			Mount Pipe	None	None	A53 Gr.B	Typical
20	M42	N65	N66			Mount Pipe	None	None	A53 Gr.B	Typical
21	M43	N67	N68			PIPE_2.0	None	None	A53 Gr.B	Typical
22	M44	N69	N70			Mount Pipe	None	None	A53 Gr.B	Typical
23	M45	N71	N72			Mount Pipe	None	None	A53 Gr.B	Typical
24	M46	N73	N74			Mount Pipe	None	None	A53 Gr.B	Typical
25	M47	N75	N76			PIPE_2.0	None	None	A53 Gr.B	Typical
26	M48	N77	N78			Mount Pipe	None	None	A53 Gr.B	Typical
27	M49	N79	N80			Mount Pipe	None	None	A53 Gr.B	Typical
28	M50	N81	N82			PIPE_2.0	None	None	A53 Gr.B	Typical
29	M51	N83	N84			Mount Pipe	None	None	A53 Gr.B	Typical
30	M52	N85	N86			Mount Pipe	None	None	A53 Gr.B	Typical
31	M53	N87	A3T0			RIGID	None	None	RIGID	Typical
32	M54	N89	N94			RIGID	None	None	RIGID	Typical
33	M55	N91	N96			RIGID	None	None	RIGID	Typical
34	M56	N93	A2T0			RIGID	None	None	RIGID	Typical
35	M57	N95	A2B0			RIGID	None	None	RIGID	Typical
36	M58	N97	A1T0			RIGID	None	None	RIGID	Typical
37	M59	N99	A1T120			RIGID	None	None	RIGID	Typical
38	M60	N101	A2T120			RIGID	None	None	RIGID	Typical
39	M61	N103	A2B120			RIGID	None	None	RIGID	Typical
40	M62	N105	N106			RIGID	None	None	RIGID	Typical
41	M63	N107	A3T120			RIGID	None	None	RIGID	Typical
42	M64	N109	A3B120			RIGID	None	None	RIGID	Typical
43	M65	N111	A1B120			RIGID	None	None	RIGID	Typical
44	M66	N113	N114			RIGID	None	None	RIGID	Typical
45	M67	N115	A3B0			RIGID	None	None	RIGID	Typical
46	M68	N117	A1B0			RIGID	None	None	RIGID	Typical
47	M69	N119	A3T240			RIGID	None	None	RIGID	Typical
48	M70	N121	A2T240			RIGID	None	None	RIGID	Typical
49	M71	N123	A2B240			RIGID	None	None	RIGID	Typical
50	M72	N125	N126			RIGID	None	None	RIGID	Typical
51	M73	N127	A1T240			RIGID	None	None	RIGID	Typical
52	M74	N129	A1B240			RIGID	None	None	RIGID	Typical
53	M75	N131	A3B240			RIGID	None	None	RIGID	Typical
54	M76	N133	N134			RIGID	None	None	RIGID	Typical
55	M78	RRH4240	N138			RIGID	None	None	RIGID	Typical
56	M80	N141	N142			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
57	M82	RRH1240	N146			RIGID	None	None	RIGID	Typical
58	M84	N149	N150			RIGID	None	None	RIGID	Typical
59	M86	RRH4120	N154			RIGID	None	None	RIGID	Typical
60	M88	RRH1120	N158			RIGID	None	None	RIGID	Typical
61	M90	RRH40	N162			RIGID	None	None	RIGID	Typical
62	M92	N165	N166			RIGID	None	None	RIGID	Typical
63	M94	RRH10	N170			RIGID	None	None	RIGID	Typical
64	M95	N171	N172			RIGID	None	None	RIGID	Typical
65	M98	N177	N178			RIGID	None	None	RIGID	Typical
66	M99	N179	N180			PIPE_2.0	None	None	A53 Gr.B	Typical
67	M100	RAY240	N182			RIGID	None	None	RIGID	Typical
68	M101	N183	N184			RIGID	None	None	RIGID	Typical
69	M102	N185	N186			PIPE_2.0	None	None	A53 Gr.B	Typical
70	M103	N187	RAY120			RIGID	None	None	RIGID	Typical
71	M104	N189	RAY0			PIPE_2.0	None	None	A53 Gr.B	Typical
72	M105	N191	N192			RIGID	None	None	RIGID	Typical
73	M106	N193	N194			RIGID	None	None	RIGID	Typical
74	M88A	N477A	N59		180	C5x2x4	None	None	A36 Gr.36	Typical
75	M89A	N478A	N57		180	C5x2x4	None	None	A36 Gr.36	Typical
76	M90A	N479A	N58		180	C5x2x4	None	None	A36 Gr.36	Typical
77	M88B	N568	N639			RIGID	None	None	RIGID	Typical
78	M89B	N551	N622			RIGID	None	None	RIGID	Typical
79	M90B	N534A	N605			RIGID	None	None	RIGID	Typical
80	M91A	N575	N646		300	RIGID	None	None	RIGID	Typical
81	M92A	N555	N626		300	RIGID	None	None	RIGID	Typical
82	M93A	N537A	N608		300	RIGID	None	None	RIGID	Typical
83	M94A	N589	N660		300	RIGID	None	None	RIGID	Typical
84	M95A	N538A	N609		300	RIGID	None	None	RIGID	Typical
85	M96A	N594	N665		300	RIGID	None	None	RIGID	Typical
86	M97A	N535	N606		60	RIGID	None	None	RIGID	Typical
87	M98A	N563	N634		60	RIGID	None	None	RIGID	Typical
88	M99A	N603	N674		60	RIGID	None	None	RIGID	Typical
89	M100A	N588	N659		60	RIGID	None	None	RIGID	Typical
90	M101A	N536A	N607		60	RIGID	None	None	RIGID	Typical
91	M102A	N586	N657		60	RIGID	None	None	RIGID	Typical
92	M103A	N580	N651			RIGID	None	None	RIGID	Typical
93	M104A	N556	N627			RIGID	None	None	RIGID	Typical
94	M105A	N533A	N604			RIGID	None	None	RIGID	Typical
95	M106A	N633A	N628A			PIPE_2.0	None	None	A53 Gr.B	Typical
96	M107	N631A	N629A			PIPE_2.0	None	None	A53 Gr.B	Typical
97	M108	N632A	N630A			PIPE_2.0	None	None	A53 Gr.B	Typical
98	M109	N634A	N87			RIGID	None	None	RIGID	Typical
99	M110	N636A	N89			RIGID	None	None	RIGID	Typical
100	M111	N638A	N93			RIGID	None	None	RIGID	Typical
101	M112	N640A	N641A			RIGID	None	None	RIGID	Typical
102	M113	N642A	N99			RIGID	None	None	RIGID	Typical
103	M114	N644A	N645A			RIGID	None	None	RIGID	Typical
104	M115	N646A	N105			RIGID	None	None	RIGID	Typical
105	M116	N648A	N107			RIGID	None	None	RIGID	Typical
106	M117	N650A	N119			RIGID	None	None	RIGID	Typical
107	M118	N652A	N653A			RIGID	None	None	RIGID	Typical
108	M119	N654A	N125			RIGID	None	None	RIGID	Typical
109	M120	N656A	N127			RIGID	None	None	RIGID	Typical
110	M112A	N631B	N636B		90	Support Rail A...	None	None	A36 Gr.36	Typical
111	M113A	N634B	N633B		180	Support Rail A...	None	None	A36 Gr.36	Typical
112	M114A	N635A	N632B		180	Support Rail A...	None	None	A36 Gr.36	Typical
113	M114B	RRH20	RRH30			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
114	M115A	RRH2120	RRH3120			RIGID	None	None	RIGID	Typical
115	M116A	RRH2240	RRH3240			RIGID	None	None	RIGID	Typical
116	M116B	N641C	N642C			RIGID	None	None	RIGID	Typical
117	M117A	N643B	N644B			RIGID	None	None	RIGID	Typical
118	M118A	N645B	N646B			RIGID	None	None	RIGID	Typical
119	M119A	N647A	N648B			RIGID	None	None	RIGID	Typical
120	M120A	N649A	N650B			RIGID	None	None	RIGID	Typical
121	M121	N651A	N652B			RIGID	None	None	RIGID	Typical
122	M122	N653B	N654B			RIGID	None	None	RIGID	Typical
123	M123	N655A	N109			RIGID	None	None	RIGID	Typical
124	M124	N657A	N658A			RIGID	None	None	RIGID	Typical
125	M125	N659A	N660A			RIGID	None	None	RIGID	Typical
126	M126	N661A	N662A			RIGID	None	None	RIGID	Typical
127	M127	N663A	N129			RIGID	None	None	RIGID	Typical
128	M128	N639B	N640B			PIPE_2.0	None	None	A53 Gr.B	Typical
129	M129	N666A	N667A			PIPE_2.0	None	None	A53 Gr.B	Typical
130	M130	N669A	N670A			PIPE_2.0	None	None	A53 Gr.B	Typical
131	M132	N669B	N672A		180	Mod Kickers	None	None	A36 Gr.36	Typical
132	M133	N669B	N674A		90	Mod Kickers	None	None	A36 Gr.36	Typical
133	M137A	N678A	N683		90	Support Rail A...	None	None	A36 Gr.36	Typical
134	M138	N681	N680		180	Support Rail A...	None	None	A36 Gr.36	Typical
135	M139	N682	N679A		180	Support Rail A...	None	None	A36 Gr.36	Typical
136	M136	N687A	N688		180	Mod Kickers	None	None	A36 Gr.36	Typical
137	M137	N687A	N689		90	Mod Kickers	None	None	A36 Gr.36	Typical
138	M138A	N691A	N692		180	Mod Kickers	None	None	A36 Gr.36	Typical
139	M139A	N691A	N693		90	Mod Kickers	None	None	A36 Gr.36	Typical

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	Dead	DL		-1.05		51				
2	0	WL				102		278		
3	30	WL				102		278		
4	60	WL				102		278		
5	90	WL				102		278		
6	120	WL				102		278		
7	150	WL				102		278		
8	180	WL				102		278		
9	210	WL				102		278		
10	240	WL				102		278		
11	270	WL				102		278		
12	300	WL				102		278		
13	330	WL				102		278		
14	Ice	None				51		139		
15	0Ice	None				102		278		
16	30Ice	None				102		278		
17	60Ice	None				102		278		
18	90Ice	None				102		278		
19	120Ice	None				102		278		
20	150Ice	None				102		278		
21	180Ice	None				102		278		
22	210Ice	None				102		278		
23	240Ice	None				102		278		
24	270Ice	None				102		278		
25	300Ice	None				102		278		
26	330Ice	None				102		278		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
27	0M	None				102		278		
28	30M	None				102		278		
29	60M	None				102		278		
30	90M	None				102		278		
31	120M	None				102		278		
32	150M	None				102		278		
33	180M	None				102		278		
34	210M	None				102		278		
35	240M	None				102		278		
36	270M	None				102		278		
37	300M	None				102		278		
38	330M	None				102		278		
39	L_M	None								
40	L_V	None								
41	E_V	ELY				51				
42	E_Hx	ELX				51				
43	E_Hz	ELZ				51				

Load Combinations

	Description	S...	P...	S...	B...	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4D	Yes	Y		1	1.4																		
2	1.2D+1.0W1	Yes	Y		1	1.2	2	1																
3	1.2D+1.0W2	Yes	Y		1	1.2	3	1																
4	1.2D+1.0W3	Yes	Y		1	1.2	4	1																
5	1.2D+1.0W4	Yes	Y		1	1.2	5	1																
6	1.2D+1.0W5	Yes	Y		1	1.2	6	1																
7	1.2D+1.0W6	Yes	Y		1	1.2	7	1																
8	1.2D+1.0W7	Yes	Y		1	1.2	8	1																
9	1.2D+1.0W8	Yes	Y		1	1.2	9	1																
10	1.2D+1.0W9	Yes	Y		1	1.2	10	1																
11	1.2D+1.0W10	Yes	Y		1	1.2	11	1																
12	1.2D+1.0W11	Yes	Y		1	1.2	12	1																
13	1.2D+1.0W12	Yes	Y		1	1.2	13	1																
14	0.9D+1.0W1	Yes	Y		1	.9	2	1																
15	0.9D+1.0W2	Yes	Y		1	.9	3	1																
16	0.9D+1.0W3	Yes	Y		1	.9	4	1																
17	0.9D+1.0W4	Yes	Y		1	.9	5	1																
18	0.9D+1.0W5	Yes	Y		1	.9	6	1																
19	0.9D+1.0W6	Yes	Y		1	.9	7	1																
20	0.9D+1.0W7	Yes	Y		1	.9	8	1																
21	0.9D+1.0W8	Yes	Y		1	.9	9	1																
22	0.9D+1.0W9	Yes	Y		1	.9	10	1																
23	0.9D+1.0W10	Yes	Y		1	.9	11	1																
24	0.9D+1.0W11	Yes	Y		1	.9	12	1																
25	0.9D+1.0W12	Yes	Y		1	.9	13	1																
26	1.2D+1.0 Ice	Yes	Y		1	1.2	14	1																
27	1.2D+1.0ICE+1.0W1I...	Yes	Y		1	1.2	14	1	15	1														
28	1.2D+1.0ICE+1.0W2I...	Yes	Y		1	1.2	14	1	16	1														
29	1.2D+1.0ICE+1.0W3I...	Yes	Y		1	1.2	14	1	17	1														
30	1.2D+1.0ICE+1.0W4I...	Yes	Y		1	1.2	14	1	18	1														
31	1.2D+1.0ICE+1.0W5I...	Yes	Y		1	1.2	14	1	19	1														
32	1.2D+1.0ICE+1.0W6I...	Yes	Y		1	1.2	14	1	20	1														
33	1.2D+1.0ICE+1.0W7I...	Yes	Y		1	1.2	14	1	21	1														
34	1.2D+1.0ICE+1.0W8I...	Yes	Y		1	1.2	14	1	22	1														
35	1.2D+1.0ICE+1.0W9I...	Yes	Y		1	1.2	14	1	23	1														

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
36	1.2D+1.0ICE+1.0W10...	Yes	Y		1	1.2	14	1	24	1														
37	1.2D+1.0ICE+1.0W11...	Yes	Y		1	1.2	14	1	25	1														
38	1.2D+1.0ICE+1.0W12...	Yes	Y		1	1.2	14	1	26	1														
39	1.2D+1.5LM1+1.0W1...	Yes	Y		1	1.2	39	1.5	27	1														
40	1.2D+1.5LM1+1.0W2...	Yes	Y		1	1.2	39	1.5	28	1														
41	1.2D+1.5LM1+1.0W3...	Yes	Y		1	1.2	39	1.5	29	1														
42	1.2D+1.5LM1+1.0W4...	Yes	Y		1	1.2	39	1.5	30	1														
43	1.2D+1.5LM1+1.0W5...	Yes	Y		1	1.2	39	1.5	31	1														
44	1.2D+1.5LM1+1.0W6...	Yes	Y		1	1.2	39	1.5	32	1														
45	1.2D+1.5LM1+1.0W7...	Yes	Y		1	1.2	39	1.5	33	1														
46	1.2D+1.5LM1+1.0W8...	Yes	Y		1	1.2	39	1.5	34	1														
47	1.2D+1.5LM1+1.0W9...	Yes	Y		1	1.2	39	1.5	35	1														
48	1.2D+1.5LM1+1.0W1...	Yes	Y		1	1.2	39	1.5	36	1														
49	1.2D+1.5LM1+1.0W1...	Yes	Y		1	1.2	39	1.5	37	1														
50	1.2D+1.5LM1+1.0W1...	Yes	Y		1	1.2	39	1.5	38	1														
51																								
52	1.2D+1.5LV	Yes	Y		1	1.2	40	1.5																
53																								
54	1.2D + Ev + Ehx	Yes	Y		1	1.2	41	1	42	1	43													
55	1.2D + Ev + Ehz	Yes	Y		1	1.2	41	1	42		43	1												
56	1.2D + Ev - Ehx	Yes	Y		1	1.2	41	1	42	-1	43													
57	1.2D + Ev - Ehz	Yes	Y		1	1.2	41	1	42		43	-1												
58	0.9D - Ev + Ehx	Yes	Y		1	.9	41	-1	42	1	43													
59	0.9D - Ev + Ehz	Yes	Y		1	.9	41	-1	42		43	1												
60	0.9D - Ev - Ehx	Yes	Y		1	.9	41	-1	42	-1	43													
61	0.9D - Ev - Ehz	Yes	Y		1	.9	41	-1	42		43	-1												

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N44	max	476.48	19	25.285	20	1913.056	18	0	61	0	61	0	61
2		min	-477.127	13	-824.857	27	-1909.702	12	0	1	0	1	0	1
3	N45	max	689.66	14	2251.26	8	2143.368	19	0	61	0	61	0	61
4		min	-692.917	8	-515.7	15	-2136.977	25	0	1	0	1	0	1
5	N46	max	2162.062	25	2811.853	37	461.307	13	0	61	0	61	0	61
6		min	-2158.49	7	-412.387	17	-446.457	19	0	1	0	1	0	1
7	N47	max	1313.682	23	1647.037	4	1547.46	16	0	61	0	61	0	61
8		min	-1327.676	5	-933.947	22	-1555.524	10	0	1	0	1	0	1
9	N48	max	1718.275	2	341.995	24	1287.859	2	0	61	0	61	0	61
10		min	-1703.191	20	-461.762	6	-1272.966	20	0	1	0	1	0	1
11	N49	max	1095.079	5	4015.277	38	1488.64	17	0	61	0	61	0	61
12		min	-1098.111	22	-373.587	19	-1500.429	11	0	1	0	1	0	1
13	N50	max	1960.447	4	-261.579	22	803.048	3	0	61	0	61	0	61
14		min	-1963.242	22	-1573.728	29	-801.671	21	0	1	0	1	0	1
15	N51	max	1572.864	24	31.881	16	562.881	6	0	61	0	61	0	61
16		min	-1589.372	6	-795.931	35	-557.871	24	0	1	0	1	0	1
17	N52	max	1145.473	14	-227.456	14	1035.484	8	0	61	0	61	0	61
18		min	-1145.015	8	-1669.726	33	-1034.711	14	0	1	0	1	0	1
19	N53	max	338.498	9	99.56	20	1645.877	16	0	61	0	61	0	61
20		min	-338.65	15	-712.146	27	-1659.568	10	0	1	0	1	0	1
21	N54	max	1767.322	4	2966.437	5	199.086	8	0	61	0	61	0	61
22		min	-1761.234	22	-664.969	23	-199.135	14	0	1	0	1	0	1
23	N55	max	665.689	2	1811.087	8	1506.262	15	0	61	0	61	0	61
24		min	-660.345	20	-708.518	14	-1514.372	9	0	1	0	1	0	1
25	N669B	max	0	61	0	61	0	61	0	61	0	61	0	61
26		min	0	1	0	1	0	1	0	1	0	1	0	1

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
27	N687A	max	0	61	0	61	0	61	0	61	0	61	0	61
28		min	0	1	0	1	0	1	0	1	0	1	0	1
29	N691A	max	0	61	0	61	0	61	0	61	0	61	0	61
30		min	0	1	0	1	0	1	0	1	0	1	0	1
31	Totals:	max	8199.746	2	7267.416	35	7962.528	17						
32		min	-8199.74	20	2803.184	16	-7962.565	11						

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

	Member	Shape	Code ...	Loc[in]	LC	Shear ..	Loc[in]	Dir	LC	phi*Pnc...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	M1	C5x2x4	.741	5.292	2	.249	0	z	9	37564.4...	68850	2.198	9.83	2...	H1-1b
2	M89A	C5x2x4	.721	58.2...	3	.306	58.2...	y	12	37564.4...	68850	2.198	9.83	3...	H1-1b
3	M88A	C5x2x4	.662	58.2...	11	.250	63.5	z	11	37564.4...	68850	2.198	9.83	1...	H1-1b
4	M39	C5x2x4	.661	5.292	11	.250	0	z	11	37564.4...	68850	2.198	9.83	3...	H1-1b
5	M46	PIPE_2.0	.659	42.5	13	.170	63.75		12	13511.2...	32130	1.872	1.872	1...	H1-1b
6	M3	C5x2x4	.633	5.292	6	.216	0	z	13	37564.4...	68850	2.198	9.83	2...	H1-1b
7	M48	PIPE_2.0	.617	53.1...	10	.118	54.1...		6	13511.2...	32130	1.872	1.872	1...	H1-1b
8	M90A	C5x2x4	.596	58.2...	7	.310	58.2...	z	9	37564.4...	68850	2.198	9.83	3...	H1-1b
9	M51	PIPE_2.0	.586	72.5	13	.108	72.5		7	9836.597	32130	1.872	1.872	2...	H1-1b
10	M49	PIPE_2.0	.585	54.1...	10	.150	54.1...		10	13511.2...	32130	1.872	1.872	1...	H1-1b
11	M17	C5x2x4	.575	23.3...	9	.146	23.3...	y	37	40808.4...	68850	2.198	9.83	1...	H1-1b
12	M18	C5x2x4	.574	23.3...	3	.314	23.3...	z	8	40808.4...	68850	2.198	9.83	1...	H1-1b
13	M40	PIPE_2.0	.556	54.1...	7	.106	36.1...		9	13511.2...	32130	1.872	1.872	1...	H1-1b
14	M43	PIPE_2.0	.551	42.5	9	.156	60.5...		2	13511.2...	32130	1.872	1.872	2...	H1-1b
15	M19	C5x2x4	.547	35.6...	6	.163	23.9...	z	8	40808.4...	68850	2.198	9.83	1...	H1-1b
16	M45	PIPE_2.0	.535	53.1...	12	.106	36.1...		23	13511.2...	32130	1.872	1.872	1...	H1-1b
17	M52	PIPE_2.0	.524	72.5	9	.069	72.5		3	9836.597	32130	1.872	1.872	2...	H1-1b
18	M44	PIPE_2.0	.515	72.5	10	.127	75		12	9836.597	32130	1.872	1.872	3...	H1-1b
19	M42	PIPE_2.0	.504	42.5	2	.125	24.4...		9	13511.2...	32130	1.872	1.872	1...	H1-1b
20	M50	PIPE_2.0	.466	42.5	13	.101	60.5...		7	13511.2...	32130	1.872	1.872	1...	H1-1b
21	M47	PIPE_2.0	.393	42.5	6	.101	42.5		6	13511.2...	32130	1.872	1.872	1...	H1-1b
22	M107	PIPE_2.0	.300	117....	10	.146	75.4...		2	8782.132	32130	1.872	1.872	4...	H1-1b
23	M108	PIPE_2.0	.299	37.0...	6	.146	17.1...		10	8782.132	32130	1.872	1.872	2...	H1-1b
24	M106A	PIPE_2.0	.285	9.26	11	.120	88.6...		11	8782.132	32130	1.872	1.872	4...	H1-1b
25	M114A	L2.5x2.5x4	.185	16.5	3	.138	0	y	13	36249.3...	38556	1.114	2.537	1...	H2-1
26	M112A	L2.5x2.5x4	.153	0	12	.070	16.5	z	11	36249.3...	38556	1.114	2.537	1...	H2-1
27	M113A	L2.5x2.5x4	.147	.344	12	.118	0	y	9	36249.3...	38556	1.114	2.537	1...	H2-1
28	M104	PIPE_2.0	.070	6	2	.010	6		2	30625.4...	32130	1.872	1.872	1...	H1-1b
29	M102	PIPE_2.0	.059	3	6	.022	3		9	30625.4...	32130	1.872	1.872	1...	H1-1b
30	M99	PIPE_2.0	.012	3	10	.002	3		10	30625.4...	32130	1.872	1.872	1...	H1-1b

Envelope Plate/Shell Principal Stresses

	Plate		Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [ksi]	LC
1	P156	max	T	3.497	25	-.621	16	11.197	36	.235	17	22.315	35
2		min		-2.673	8	-22.393	35	.46	16	-.781	14	.814	16
3		max	B	22.298	35	1.83	8	11.237	36	1.871	17	22.384	36
4		min		.923	16	-3.167	25	.524	16	.757	15	.992	16
5	P121A	max	T	2.189	20	-.967	17	10.667	35	1.883	19	20.911	36
6		min		-.391	25	-20.53	36	.815	17	.801	16	1.42	17
7		max	B	20.418	36	-.041	25	10.61	35	.388	19	20.825	36
8		min		1.48	17	-2.406	20	.97	17	-.708	16	1.755	17
9	P174	max	T	2.905	18	-.865	16	9.042	34	.533	18	19.719	35
10		min		-4.162	12	-21.118	35	.603	16	-.571	15	1.077	16
11		max	B	21.058	35	3.525	37	9.095	34	2.132	18	19.756	34
12		min		.936	16	-2.598	18	.484	16	.945	15	.953	16

Envelope Plate/Shell Principal Stresses (Continued)

	Plate		Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [ksi]	LC
13	P19	max	T	17.955	35	-.017	19	10.377	35	.587	14	19.506	35
14		min		.84	15	-3.898	12	.54	15	-.557	16	.983	15
15		max	B	3.859	12	-.342	15	10.314	35	2.211	14	19.379	35
16		min		-.425	18	-17.95	34	.328	15	1.09	16	.569	15
17	P139	max	T	1.857	20	-.48	19	9.28	27	2.277	10	19.345	27
18		min		-2.019	12	-20.044	27	.441	19	-.736	8	.766	19
19		max	B	19.995	27	1.954	12	9.223	27	1.081	20	19.267	27
20		min		.493	19	-1.833	17	.506	19	-.171	18	.877	19
21	P109	max	T	3.079	8	-.77	17	10.031	35	2.158	18	19.286	35
22		min		-.697	2	-18.502	36	.517	17	1.131	16	.931	17
23		max	B	18.532	35	.088	25	10.087	35	.584	19	19.405	35
24		min		1.08	17	-2.989	8	.633	17	-.521	16	1.184	17

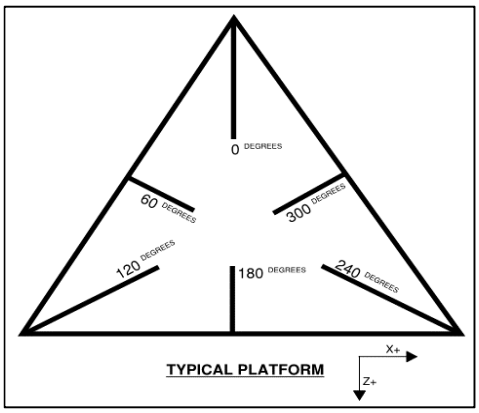
Client:	AT&T Mobility Empire	Date:	7/18/2019
Site Name:	Groton Roberts Rd		
Project No.	18963013A		
Title:	Mount Analysis	Page:	1

Version 2.5

I. Mount-to-Tower Connection Check

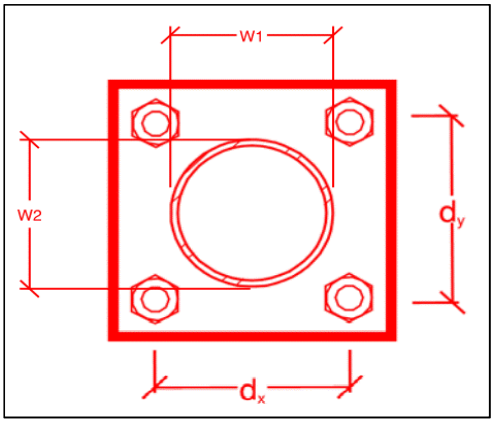
RISA Model Data

Nodes *(labeled per RISA)*	Orientation *(per graphic of typical platform)*
N46	120
N49	240
N51	300
N52	300
N54	0
N55	0
N53	60
N44	60
N45	120



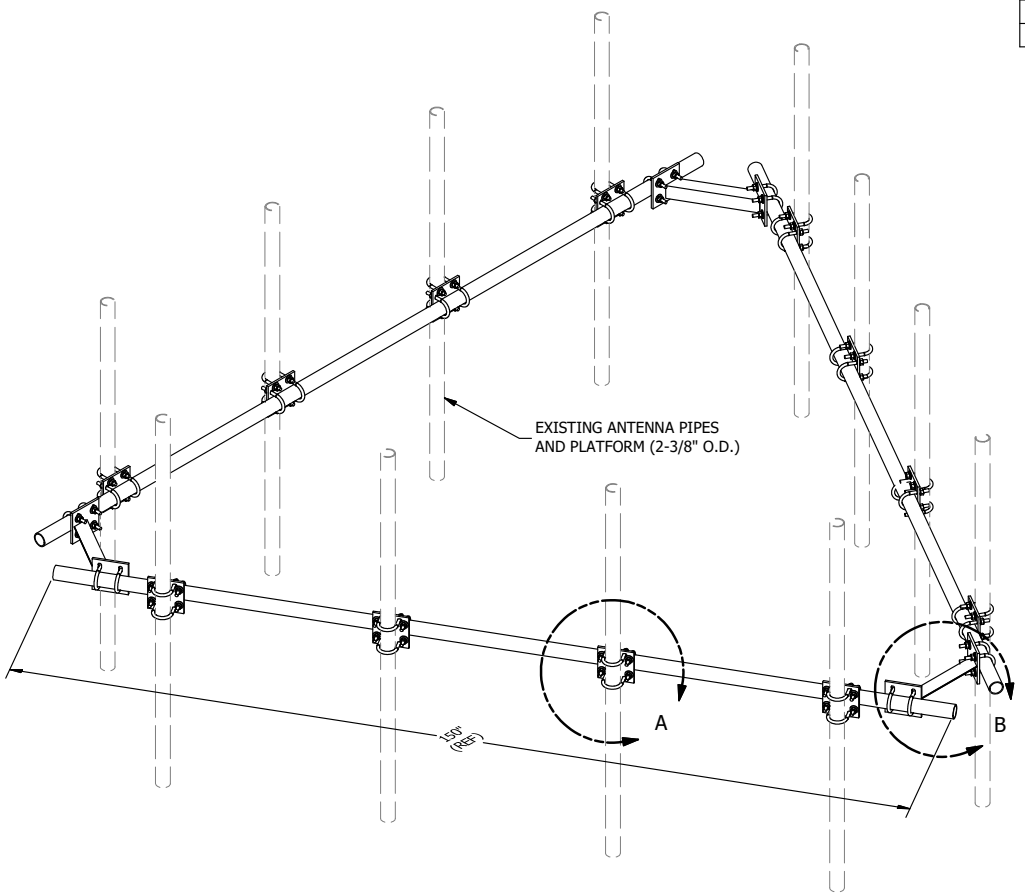
Tower Connection Bolt Checks

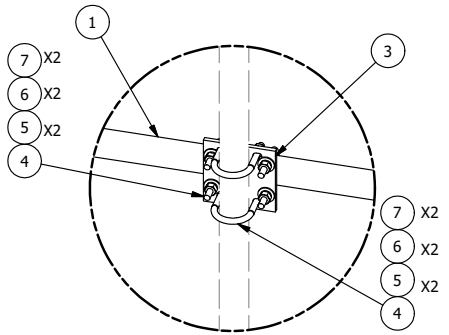
Any moment resistance?:	no
Bolt Quantity per Reaction:	1
d_x (in) *(Delta X of typ. bolt config. sketch)* :	
d_y (in) *(Delta Y of typ. bolt config. sketch)* :	
Bolt Type:	A325N
Bolt Diameter (in):	1
Required Tensile Strength (kips):	4.0
Required Shear Strength (kips):	2.2
Tensile Strength / bolt (kips):	53.0
Shear Strength / bolt (kips):	31.8
Tensile Capacity Overall:	**7.6%***
Shear Capacity Overall:	**7.0%**



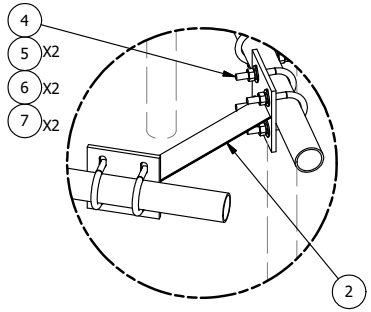
**Note: Tension reduction not required if tension or shear capacity < 30%*

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" O.D. X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
					TOTAL WT. #	272.43





DETAIL A



DETAIL B

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP		CEK	7/10/2014

REVISION HISTORY

TOLERANCE NOTES

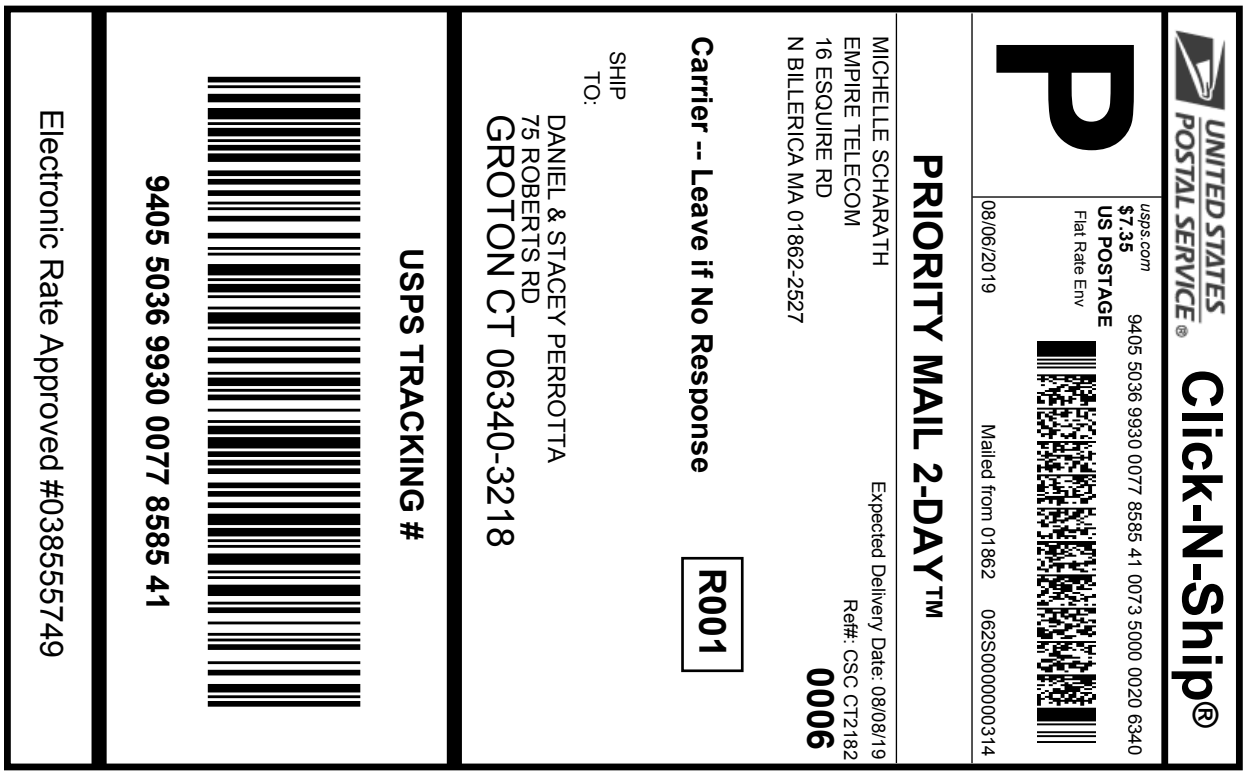
TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

DESCRIPTION: **HANDRAIL KIT FOR 12'-6" FACE**

SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	KC8 5/30/2012		HRK12

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 7/13/2014	HRK12



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0077 8585 41

Trans. #:	469782313
Print Date:	08/06/2019
Ship Date:	08/06/2019
Expected Delivery Date:	08/08/2019

Priority Mail® Postage:	**$7.35**
Total	**$7.35**

From: MICHELLE SCHARATH
EMPIRE TELECOM
16 ESQUIRE RD
N BILLERICA MA 01862-2527

Ref#: CSC CT2182

To: DANIEL & STACEY PERROTTA
75 ROBERTS RD
GROTON CT 06340-3218

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FAQs > (https://www.usps.com/faqs/uspstracking-faqs.htm)

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Tracking Number: 9405503699300077858541

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Your item was delivered in or at the mailbox at 3:22 pm on August 8, 2019 in GROTON, CT 06340.

Delivered

August 8, 2019 at 3:22 pm
Delivered, In/At Mailbox
GROTON, CT 06340

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Feedback

Text & Email Updates ⌄

Tracking History ⌄

Product Information ⌄

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(https://reg.usps.com/entreg/RegistrationAction_input?app=UspsTools&appURL=https%3A%2F%2Ftools.usps.com%2Fgo

*NOTE: Black and white (grayscale) images show the outside, front of letter-sized envelopes and mailpieces that are processed through USPS automated equipment.

Feedback

Robidoux, Evan

From: Michelle Scharath <mscharath@empiretelecomm.com>
Sent: Tuesday, August 20, 2019 2:38 PM
To: CSC-DL Siting Council
Cc: Lauren Groppi
Subject: Re: Response to incomplete letter EM-AT&T-059T-190723AT&T notice of exempt modification - 75 Roberts Road, Groton, CT / Site ID CT2182
Attachments: CSC response to incomplete letter7.24.2019.CT2182.pdf

Good Day,

Attached please find a response to the CSC incomplete letter dated July 24, 2019. The hard copy to this response will arrive VIA UPS no later than Thursday.

Should you have any questions or require anything further please don't hesitate to contact me.

Thanks,

Michelle Scharath
Site Acquisition Specialist

Empire Telecom
16 Esquire Road | Billerica, MA 01862
Mobile: 978-935-6913
Email: mscharath@empiretelecomm.com
Website: www.EmpireTelecomm.com