COHEN and WOLF P.C.
ATTORNEYS AT LAW

RACHEL A. SCHWARTZMAN

Please Reply To: Bridgeport
Writer's Direct Dial: (203) 337-4110
E-Mail: rschwartzman@cohenandwolf.com

August 11, 2014

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06501

Re: Notice of Exempt Modification
Crown/AT&T/MetroPCS co-location
CTNH516A
719 Amity Road, Bethany, CT

Dear Attorney Bachman:

This office represents MetroPCS Massachusetts, LLC, a Delaware limited liability company ("MetroPCS"), and has been retained to file exempt modification filings with the Connecticut Siting Council on its behalf.

In this case, Crown/AT&T owns the existing monopole telecommunications tower and related facility at 719 Amity Road, Bethany, CT (41.442770/-72.99247). MetroPCS intends to replace 6 existing antennas with 6 new antennas and related equipment at this existing telecommunications facility in Bethany ("Bethany Facility"). Please accept this letter as notification, pursuant to R.C.S.A. §16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R. C.S.A. § 16-50j-73, a copy of this letter is being sent to the First Selectman, Derrylyn Gorski, and the property owner, the Town of Bethany.

The existing Bethany Facility consists of a 150 foot monopole tower.[1] MetroPCS plans to replace 6 existing antennas with 6 new antennas on at a centerline of 120 feet. (See the plans revised to May 2, 2014 attached hereto as **Exhibit A**). MetroPCS will also install a batter backup unit, install a 6201 equipment cabinet on the existing concrete pad, install fiber cable, and reuse existing coax cable on the outside of the monopole tower. The existing Bethany Facility is structurally capable of supporting MetroPCS' proposed modifications, as indicated in the structural analysis dated May 2, 2014, and attached hereto as **Exhibit B**.

[1] While the online docket for the Connecticut Siting Council does not provide a docket or petition number for approval of this structure, it does reference this structure in connection with a notices of intent captioned TS-SPRINT-008-020415, EM-SPECTRA-008-021018, EM-CING-148-008-101-002-061130, EM-CING-008-049-080-132-151-070904, TS-METROPCS-008-111219MA, EM-AT&T-008-120814, EM-SPRINT-NEXTEL-008-130222, EM-VER-008-130802, and EM-AT&T-008-140131.

The planned modifications to the Bethany Facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modification will not increase the height of the tower. MetroPCS' existing antennas are at a centerline of 120 feet; the replacement antennas will be installed at the same 120 foot level. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

2. The proposed modifications will not require an extension on the site boundaries or lease area, as depicted on Sheet 2 of Exhibit A. MetroPCS' equipment will be located entirely within the existing compound area.

3. The proposed modification to the Facility will not increase the noise levels at the existing facility by six decibels or more.

4. The operation of the replacement antennas will not increase the total radio frequency (RF) power density, measured at the base of the tower, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated July 29, 2014. MetroPCS' operations would add 0.802% of the FCC Standard. Therefore, the calculated "worst case" power density for the planned combined operation at the site including all of the proposed antennas would be 43.442% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as **Exhibit C.**

For the foregoing reasons, MetroPCS respectfully submits that the proposed replacement antennas and equipment at the Bethany Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement of this exempt modification, MetroPCS shall commence construction approximately sixty days from the receipt of the Council's decision.

Sincerely,

Rachel A. Schwartzman, Esq.

cc: Town of Bethany, First Selectman Derrylyn Gorski
Crown/AT&T
Sheldon J. Freincle, Northeast Site Solutions

EXHIBIT A

KEY PLAN

N.T.S.

CONFIGURATION
5A

SUBMITTALS	
LE REV A	05.02.14

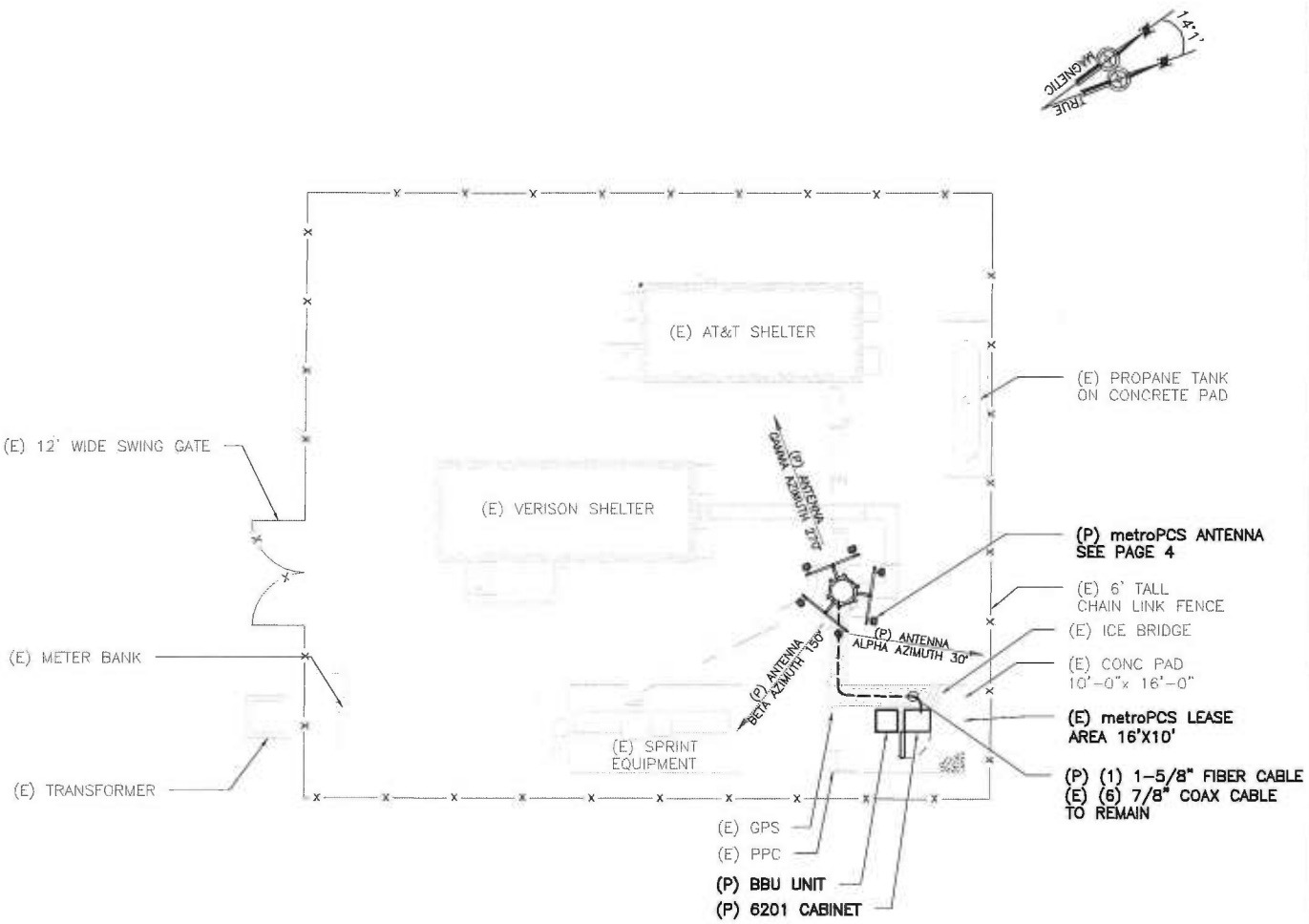
ATLANTIS GROUP
1340 Centre Street
Suite 212
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CTNH516A
SITE NAME:
AT&T BETHANY MONOPOLE
SITE ADDRESS:
719 AMITY ROAD,
BETHANY, CT

NORTHEAST SITE SOLUTIONS
54 MAIN STREET, UNIT 3
STURBRIDGE, MA 01566
(508) 434-5237
FOR
metroPCS.
metroPCS WIRELESS, INC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

DRAWN BY: FG | CHECKED BY: SM



SITE PLAN (1 / LE-2)

SCALE: N.T.S.

ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE'S STRUCTURAL & RF ENGINEERS. LOCATIONS OF POWER & TELEPHONE FACILITIES ARE SUBJECT TO APPROVAL BY UTILITY COMPANIES.

CONFIGURATION

5A

SUBMITTALS	
LE REV A	05.02.14

ATLANTIS GROUP
1340 Centre Street
Suite 212
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CTNH516A
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BETHANY, CT

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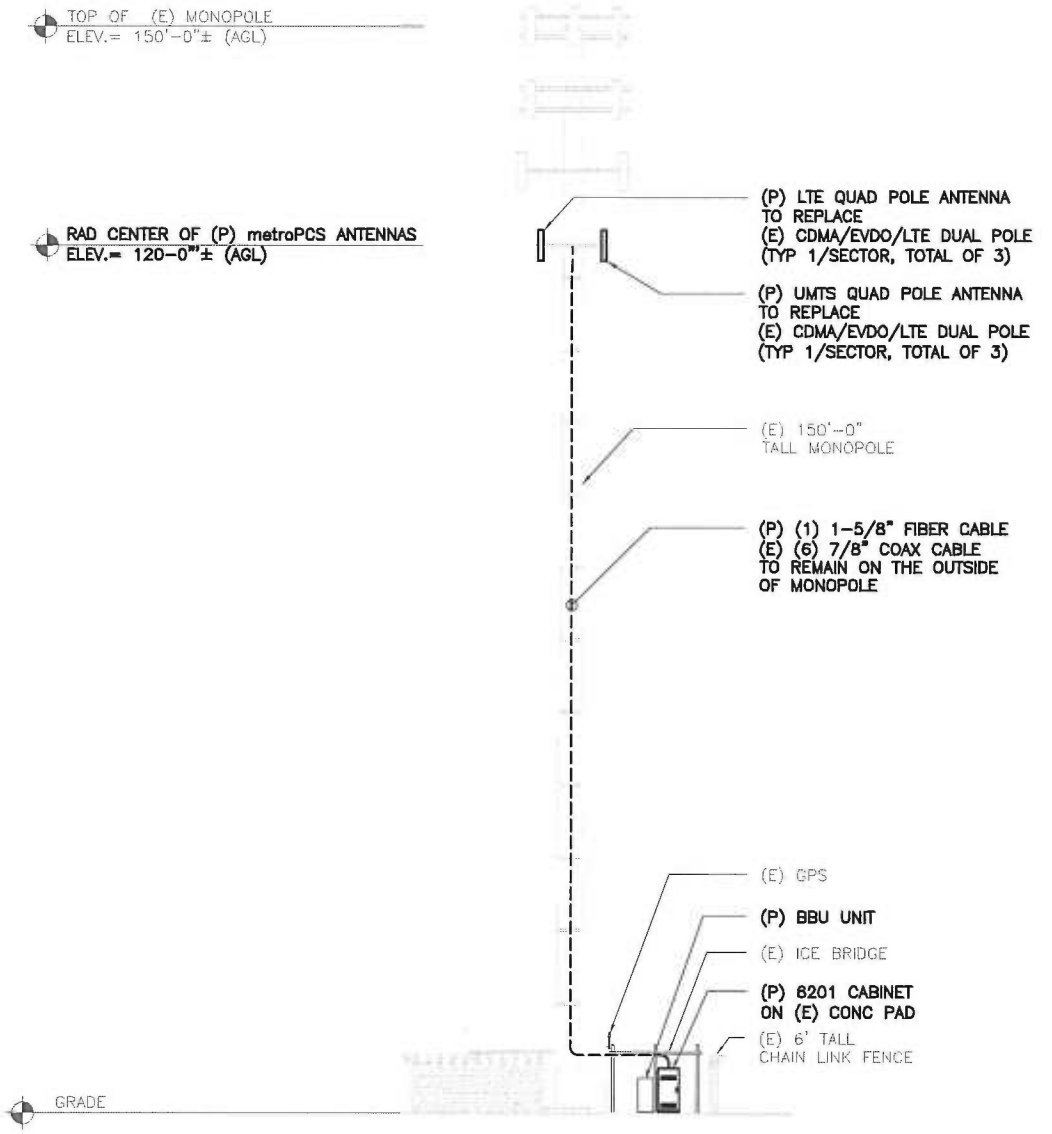
DRAWN BY: FG | CHECKED BY: SM



ELEVATION 1 / LE-3

N.T.S.

CONFIGURATION

5A

SUBMITTALS	
LE REV A	05.02.14

ATLANTIS GROUP
1340 Centre Street
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Newton, MA 02459
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Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
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SITE NAME:
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NORTHEAST SITE SOLUTIONS
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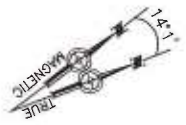
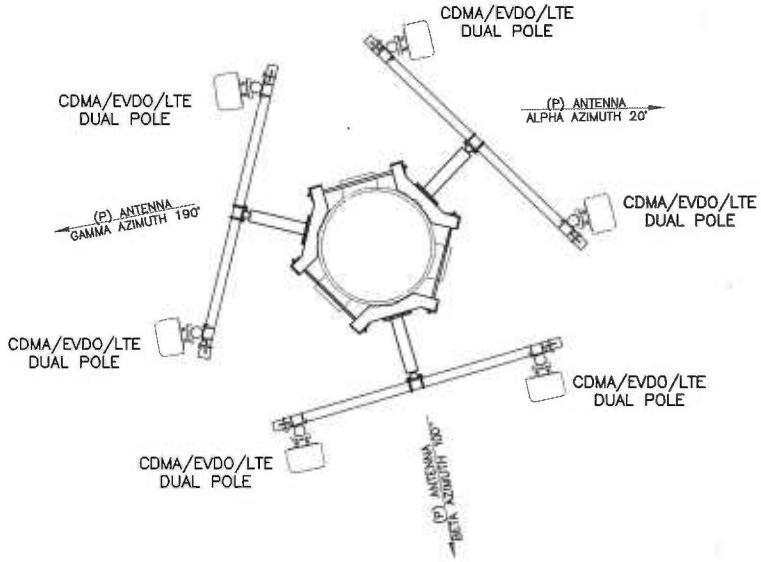
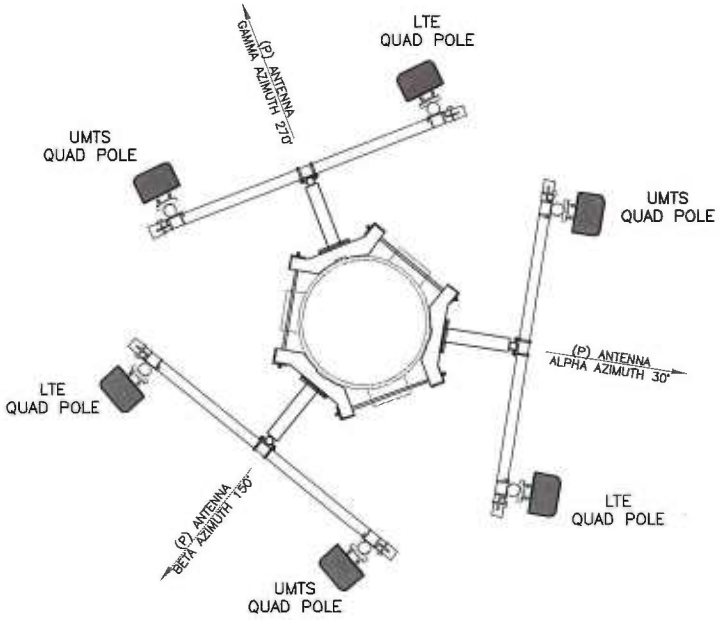
BLOOMFIELD, CT 06002

DRAWN BY: FG | CHECKED BY: SM





EXISTING ANTENNA CONFIGURATION



PROPOSED ANTENNA CONFIGURATION

CONFIGURATION
5A

SUBMITTALS	
LE REV A	05.02.14

ATLANTIS GROUP
1340 Centre Street
Suite 212
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CTNH516A
SITE NAME:
AT&T BETHANY MONOPOLE
SITE ADDRESS:
719 AMITY ROAD,
BETHANY, CT

NORTHEAST SITE SOLUTIONS
54 MAIN STREET, UNIT 3
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FOR
metroPCS.
metroPCS WIRELESS, INC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

DRAWN BY: FG | CHECKED BY: SM

EXHIBIT B

June 25, 2014

Sean Dempsey
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6565

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
btwo@btgrp.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Metro PCS* Co-Locate**	
	Carrier Site Number:	CTNH516A
	Carrier Site Name:	N/A
Crown Castle Designation:	**Crown Castle BU Number:**	841295
	Crown Castle Site Name:	Bethany
	Crown Castle JDE Job Number:	291016
	Crown Castle Work Order Number:	780905
	Crown Castle Application Number:	247523 Rev. 0
Engineering Firm Designation:	**B+T Group Project Number:**	93446.001.01
Site Data:	**719 Amity Road, Bethany, New Haven County, CT** **Latitude *41° 26' 33.93"*, Longitude *-72° 59' 32.86"*** **150 Foot - Monopole Tower**	

Dear Sean Dempsey,

B+T Group is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 660223, in accordance with application 247523, revision 0.

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:

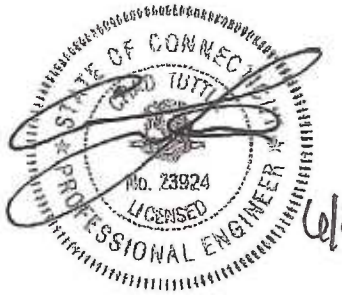
LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment based upon a wind speed of 85 mph fastest mile.

All equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *B+T Group* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:
B+T Engineering, Inc.



6/25/14

Raul Ortiz Jr., E.I.T.
Project Engineer

Chad E. Tuttle, P.E.
President

tnxTower Report - version 6.1.4.1

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 150 ft Monopole tower designed by Valmont. The original design windspeed and standards are unknown. This tower has been modified multiple times in accommodate with additional loading, these modification are listed in table 4.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
122.0	120.0	3	Ericsson	ERICSSON AIR 21 B2A B4P	1	1-5/8	--
		3	Ericsson	ERICSSON AIR 21 B4A B2P			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
148.0	156.0	1	Kathrein	OG-4	12 2 2 2	1-5/8 3/4 3/8 1-1/4	1
	155.0	1	Decibel	DB286-B			
	149.0	6	ADC	CG-1900DD-FULL-DIN			
		6	Comm. Components Inc.	DTMABP7819VG12A			
		6	Ericsson	RRUS-11			
		3	Kathrein	800 10121			
		3	Kathrein	860 10025			
		6	Kmw Comm.	AM-X-CD-16-65-00T-RET			
		12	Powerwave Tech.	LGP21901			
		1	Raycap	DC6-48-60-18-8F			
	148.0	1	--	Platform Mount [LP 713-1]			
140.0	140.0	3	Antel	BXA-70063-6CF-2	--	--	2
		3	Decibel	DB854DG65ESX	12	1-5/8	1
		3	Rymsa Wireless	MG D3-800TV			
		1	--	Platform Mount [LP 303-1]			
132.0	132.0	1	--	Side Arm Mount [SO 102-3]	--	--	1
	131.0	3	Alcatel Lucent	800 EXTERNAL NOTCH FILTER			
		3	Alcatel Lucent	800MHZ RRH			
		3	Alcatel Lucent	TME-1900MHz RRH			
130.0	133.0	1	PCTEL	GPS-TMG-HR-26NCM	1 3	1/2 1-5/8	1
	130.0	9	Rfs Celwave	ACU-A20-N			
		3	Rfs Celwave	APXVSPP18-C-A20			
		1	--	T-Arm Mount [TA 602-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
122.0	124.0	6	Andrew	ATM200-002	1	3/8	3
		6	Andrew	HBX-6516DS-VTM			
	122.0	1	--	Side Arm Mount [SO 103-3]	12	1-5/8	1

Notes:
1) Existing Equipment
2) Reserved Equipment
3) **Equipment To Be Removed**

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
Information Not Available						

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	Metro PCS Co-Locate, Rev 0	247523	CCI Sites
Tower Manufacturer Drawings	Analysis by B+T Group, Project No. 83154	Date: 01/12/2012	On File
Tower Modifications Drawings	B+T Group, Project No. 84427.0002	Date:07/19/2012	On File
Tower Modifications Drawings	B+T Group, Project No. 83134.003A	Date:02/21/2012	On File
Post Modification Inspection	B+T Group, Project No.83154.004	Date:08/03/2012	On File
Foundation Mapping	Analysis by B+T Group, Project No. 83154	Date:01/12/2012	On File
Soil Properties	Analysis by GPD Group, Project No. 2010260.49, Rev 2	Date:01/26/2010	On File
Antenna Configuration	Crown CAD Package	Date:06/10/2014	CCI Sites

3.1) Analysis Method

tnxTower (version 6.1.4.1), 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) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
5) Mount areas and weights are assumed based on photographs provided.
6) 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 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	150 - 123.833	Pole	TP22.508x17.61x0.219	1	-6.323	816.208	84.3	Pass
L2	123.833 - 118.5	Pole	TP23.507x22.508x0.355	2	-7.728	1110.792	84.6	Pass
L3	118.5 - 116.167	Pole	TP23.943x23.507x0.64	3	-8.186	1920.600	96.9	Pass
L4	116.167 - 96.58	Pole	TP27.61x23.943x0.46	4	-10.580	1565.995	87.0	Pass
L5	96.58 - 90.5	Pole	TP28.307x26.345x0.543	5	-13.126	1952.485	91.6	Pass
L6	90.5 - 60.5	Pole	TP33.911x28.307x0.57	6	-19.957	2510.345	96.6	Pass
L7	60.5 - 47.5	Pole	TP36.34x33.911x0.638	7	-22.009	3016.925	97.4	Pass
L8	47.5 - 30.5	Pole	TP38.896x34.687x0.667	8	-30.047	3491.180	94.2	Pass
L9	30.5 - 16.75	Pole	TP41.467x38.896x0.646	9	-34.497	3615.003	84.3	Pass
L10	16.75 - 14.25	Pole	TP41.935x41.467x0.642	10	-35.330	3637.730	84.6	Pass
L11	14.25 - 0	Pole	TP44.6x41.935x0.706	11	-40.627	4436.104	96.9	Pass
							Summary	
						Pole (L10)	97.4	Pass
						Rating =	**97.4**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	90.3	Pass
1	Base Plate	Base	78.0	Pass
1	Base Foundation (Soil Interaction)	Base	75.1	Pass

Structure Rating (max from all components) =	97.4%

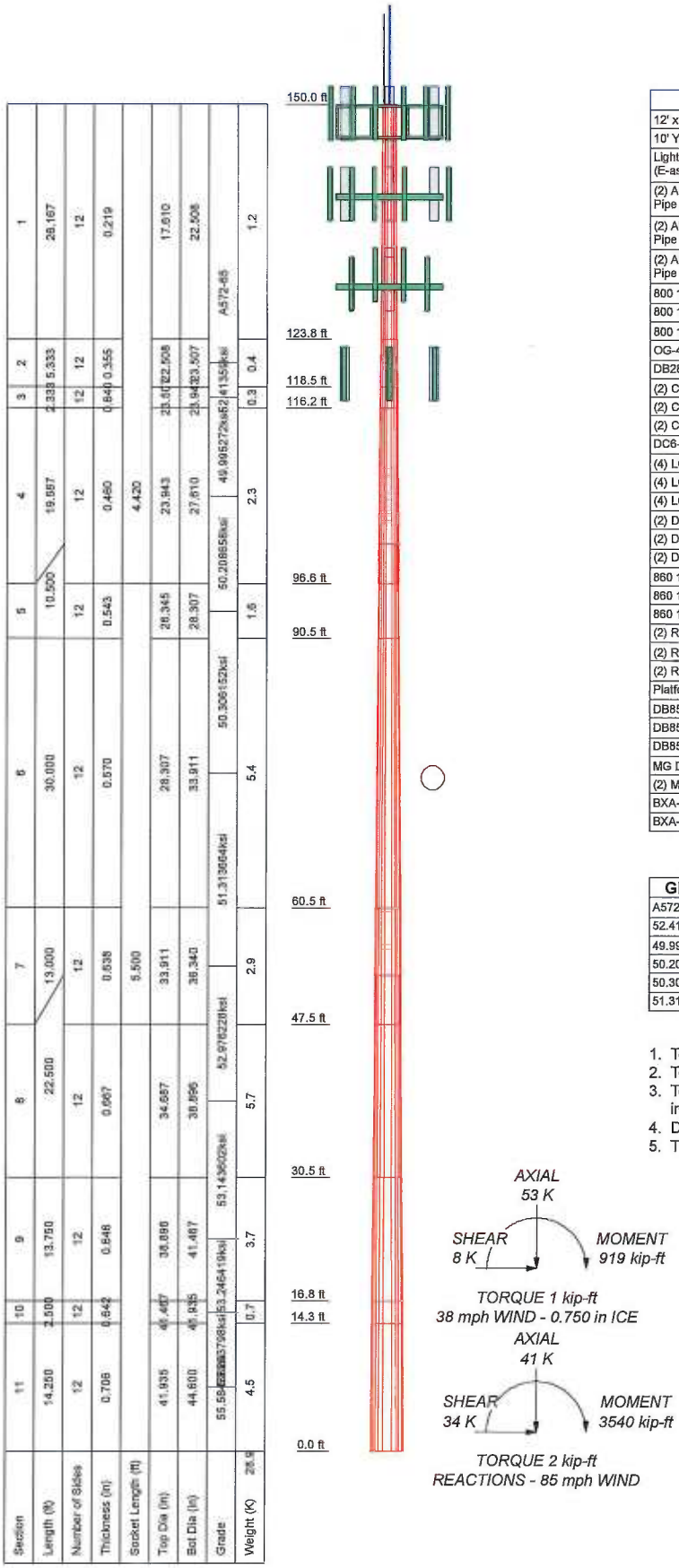
Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT



Section	11	10	9	8	7	6	5	4	3	2	1
Length (ft)	14.250	2.500	13.750	22.500	13.000	30.000	10.500	19.667	2.333	5.333	28.167
Number of Sides	12	12	12	12	12	12	12	12	12	12	12
Thickness (in)	0.708	0.642	0.848	0.667	0.538	0.570	0.543	0.480	0.640	0.355	0.219
Socket Length (ft)					5.500			4.420			
Top Dia (in)	41.935	40.467	38.896	34.667	33.911	29.307	28.345	23.843	23.607	22.508	17.610
Bot Dia (in)	44.600	41.935	40.467	38.896	38.340	33.911	29.307	27.610	25.943	23.507	22.508
Grade	55.58438ksi	53.246419ksi	53.246419ksi	53.143602ksi	52.976228ksi	51.313664ksi	50.306152ksi	49.995272ksi	52.41359ksi	A572-65	
Weight (K)	28.9	0.7	3.7	5.7	2.9	5.4	1.8	2.3	0.3	0.4	1.2

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
12' x 3" Omni (E-as per Photo)	156	BXA-70063-6CF-2 w/ Mount Pipe (R)	140
10' Yagi (E-as per Photo)	155	6' x 2" Mount Pipe (E)	140
Lightning Rod 3/4" x 4' on 5' Pole (E-as per Photo)	150	(2) 6' x 2" Mount Pipe (E)	140
		6' x 2" Mount Pipe (E)	140
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	148	Platform Mount [LP 303-1] (E)	140
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	148	TME-1900MHz RRH (E)	132
		TME-1900MHz RRH (E)	132
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	148	TME-1900MHz RRH (E)	132
		800 EXTERNAL NOTCH FILTER (E)	132
800 10121 w/ Mount Pipe (E)	148	800 EXTERNAL NOTCH FILTER (E)	132
800 10121 w/ Mount Pipe (E)	148	800 EXTERNAL NOTCH FILTER (E)	132
800 10121 w/ Mount Pipe (E)	148	800MHZ RRH (E)	132
OG-4 (E)	148	800MHZ RRH (E)	132
DB286-B (E)	148	800MHZ RRH (E)	132
(2) CG-1900DD-FULL-DIN (E)	148	Side Arm Mount [SO 102-3] (E)	132
(2) CG-1900DD-FULL-DIN (E)	148	APXVSPP18-C-A20 w/ Mount Pipe (E)	130
(2) CG-1900DD-FULL-DIN (E)	148	APXVSPP18-C-A20 w/ Mount Pipe (E)	130
DC6-48-60-18-8F (E)	148	APXVSPP18-C-A20 w/ Mount Pipe (E)	130
(4) LGP21901 (E)	148	GPS-TMG-HR-26NCM (E)	130
(4) LGP21901 (E)	148	(3) ACU-A20-N (E)	130
(4) LGP21901 (E)	148	(3) ACU-A20-N (E)	130
(2) DTMABP7819VG12A (E)	148	(3) ACU-A20-N (E)	130
(2) DTMABP7819VG12A (E)	148	(2) 6' x 2" Mount Pipe (E-as per Photo)	130
(2) DTMABP7819VG12A (E)	148	(2) 6' x 2" Mount Pipe (E-as per Photo)	130
860 10025 (E)	148	(2) 6' x 2" Mount Pipe (E-as per Photo)	130
860 10025 (E)	148	T-Arm Mount [TA 602-3] (E)	130
860 10025 (E)	148	ERICSSON AIR 21 B2A B4P w/ Mount Pipe (P)	122
(2) RRUS-11 (E)	148	ERICSSON AIR 21 B2A B4P w/ Mount Pipe (P)	122
(2) RRUS-11 (E)	148	ERICSSON AIR 21 B2A B4P w/ Mount Pipe (P)	122
(2) RRUS-11 (E)	148	ERICSSON AIR 21 B4A B2P w/ Mount Pipe (P)	122
Platform Mount [LP 713-1] (E)	148	ERICSSON AIR 21 B4A B2P w/ Mount Pipe (P)	122
DB854DG65ESX w/ Mount Pipe (E)	140	ERICSSON AIR 21 B4A B2P w/ Mount Pipe (P)	122
DB854DG65ESX w/ Mount Pipe (E)	140	Side Arm Mount [SO 103-3] (E)	122
DB854DG65ESX w/ Mount Pipe (E)	140		
MG D3-800TV w/ Mount Pipe (E)	140		
(2) MG D3-800TV w/ Mount Pipe (E)	140		
BXA-70063-6CF-2 w/ Mount Pipe (R)	140		
BXA-70063-6CF-2 w/ Mount Pipe (R)	140		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	52.976228ksi	53 ksi	68 ksi
52.41359ksi	52 ksi	67 ksi	53.143602ksi	53 ksi	68 ksi
49.995272ksi	50 ksi	65 ksi	53.246419ksi	53 ksi	68 ksi
50.208658ksi	50 ksi	65 ksi	53.263798ksi	53 ksi	68 ksi
50.306152ksi	50 ksi	65 ksi	55.58438ksi	56 ksi	71 ksi
51.313664ksi	51 ksi	66 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 97.4%

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

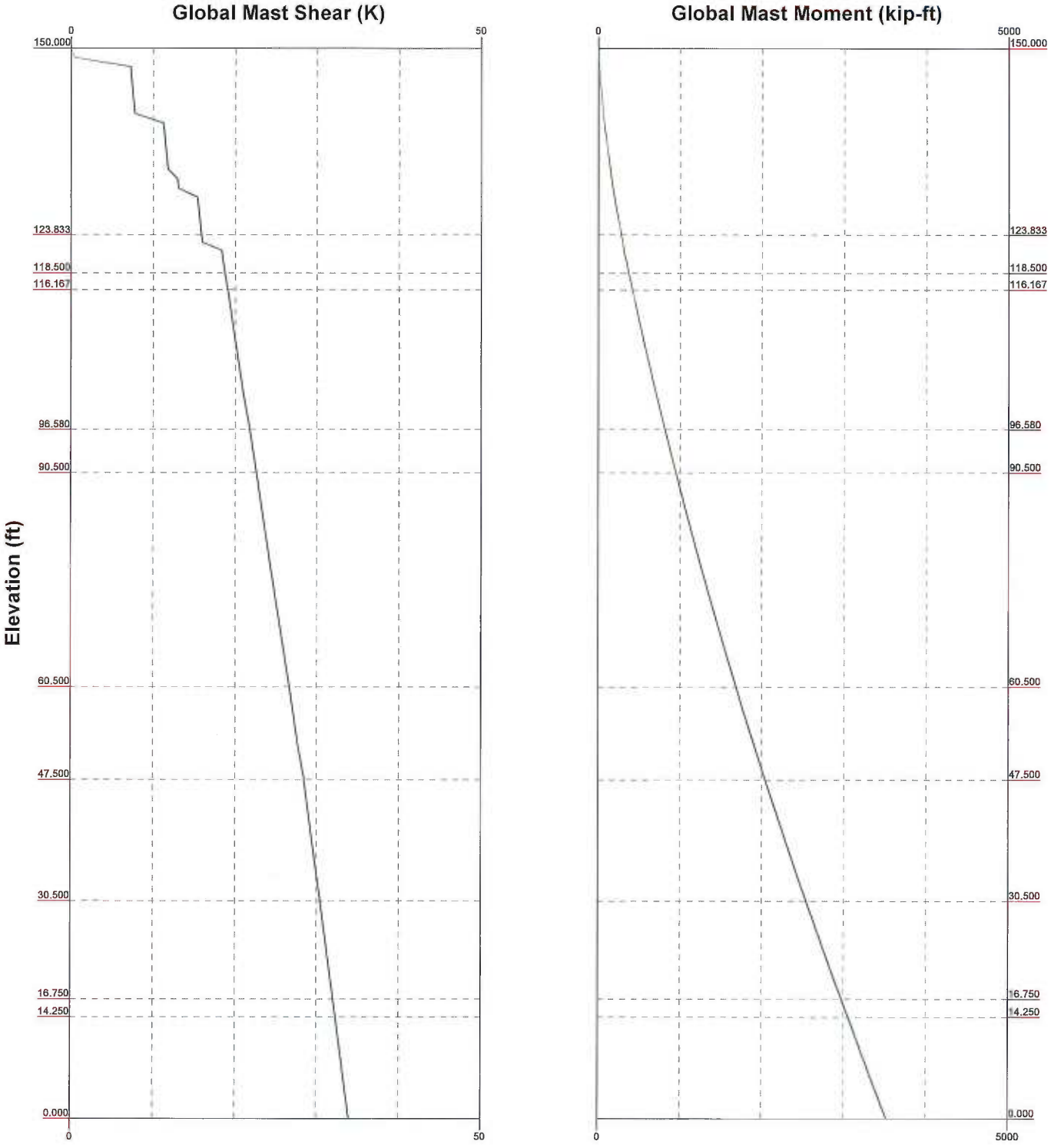
Job: 93446.001.01 - BETHANY, CT (BU# 841295)		
Project:		
Client: Crown Castle	Drawn by: Rortiz	App'd:
Code: TIA/EIA-222-F	Date: 06/25/14	Scale: NTS
Path: S:\Projects\Crown Castle\93446_841295_Bethany\Engineering\93446.001.01_Aero Calculations\Working\SIS\841295 BETHANY.eri		Dwg No. E-1

TIA/EIA-222-F - 85 mph/38 mph 0.750 in Ice

Vx Vz

Maximum Values

Mx Mz

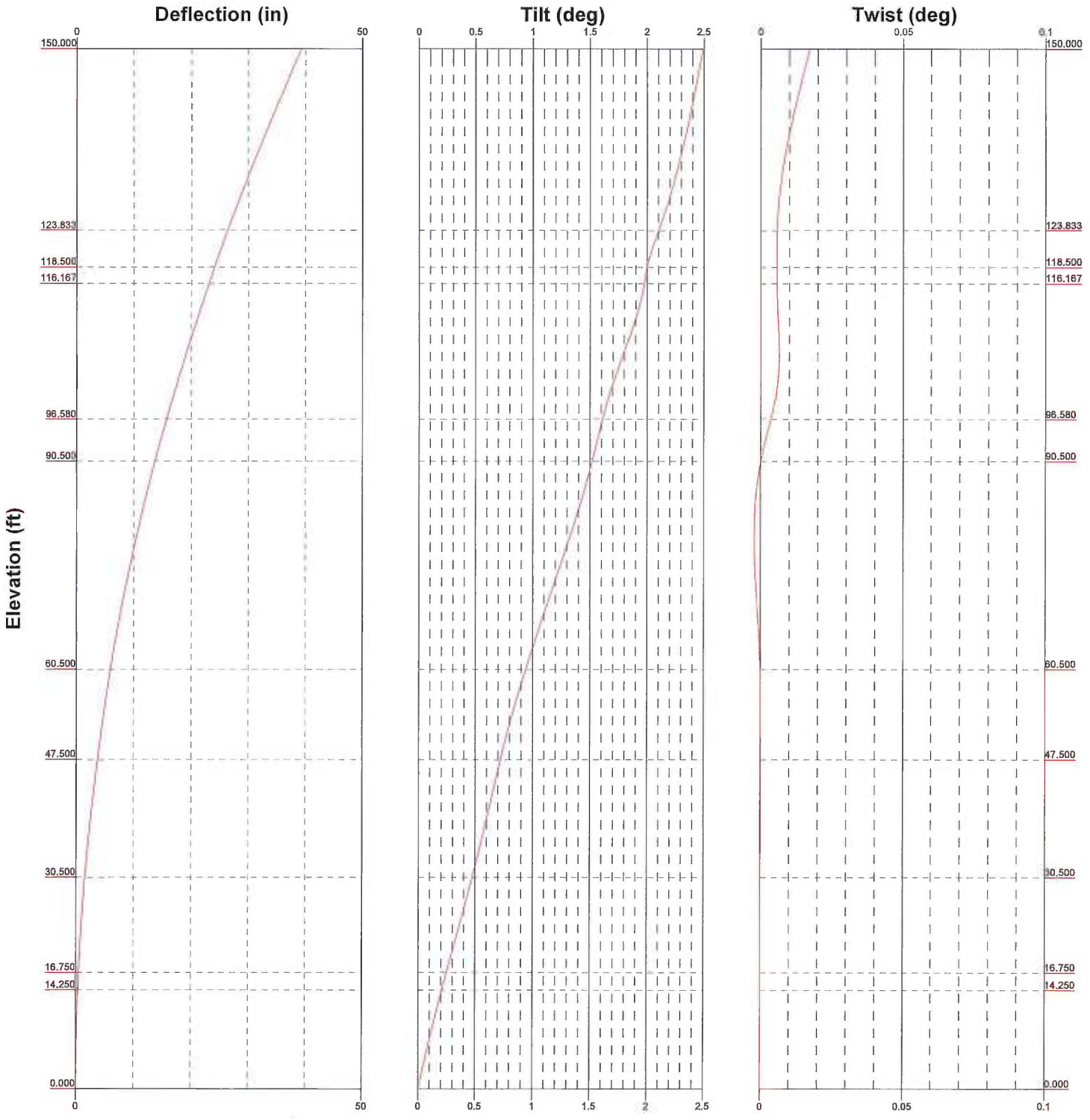


B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 93446.001.01 - BETHANY, CT (BU# 841295)			
Project:			
Client: Crown Castle	Drawn by: Rortiz	App'd:	
Code: TIA/EIA-222-F	Date: 06/25/14	Scale: NTS	
Path: S:\Projects\Crown Castle\93446_841295_Bethany\Engineering\93446.001.01_Aero Calculations\Working\R54\841295 BETHANY.eri		Dwg No. E-4	

TIA/EIA-222-F - Service - 50 mph

Maximum Values



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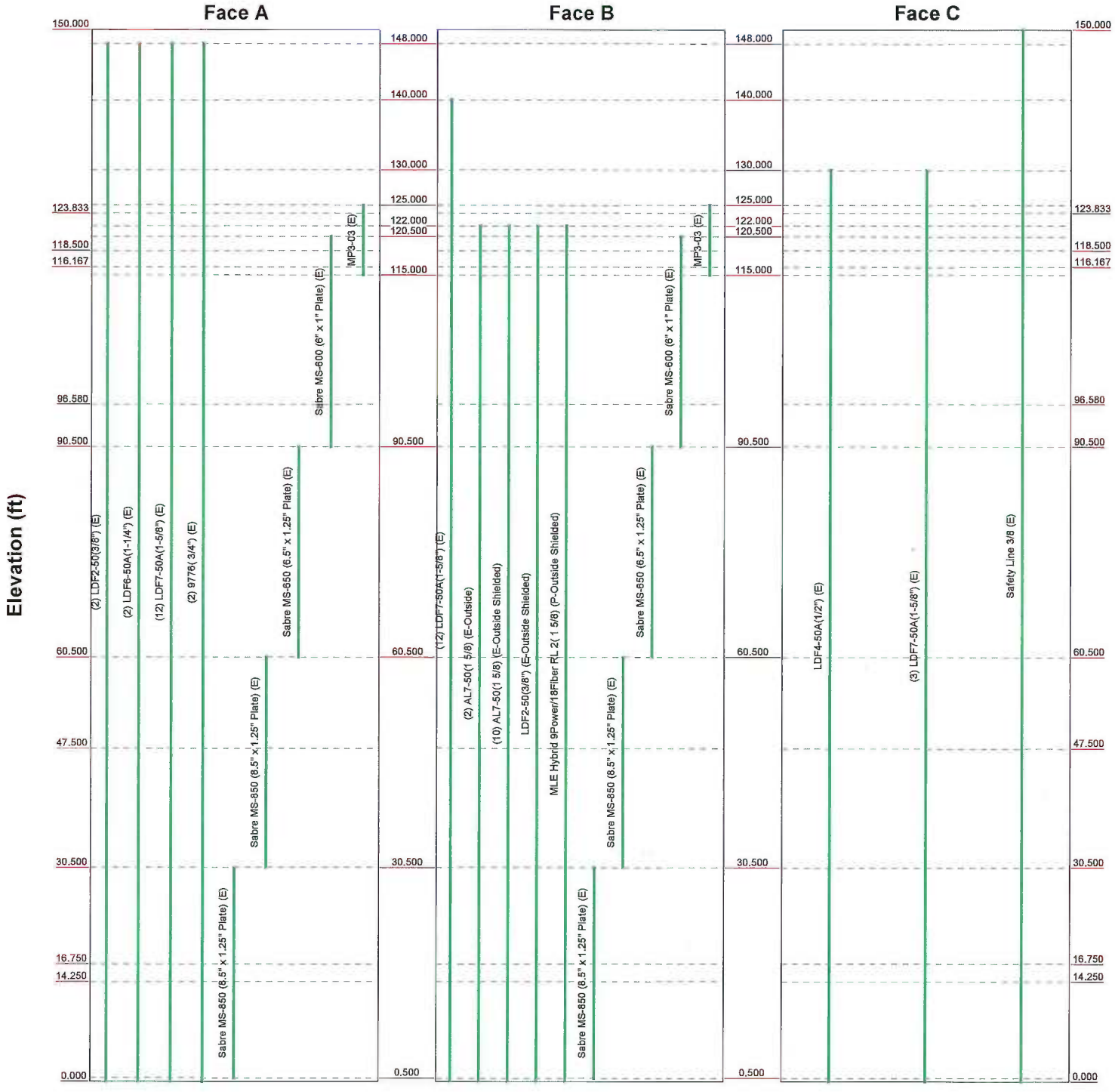
FAX: (918) 295-0265

Job: 93446.001.01 - BETHANY, CT (BU# 841295)			
Project:			
Client: Crown Castle	Drawn by: Rortiz	App'd:	
Code: TIA/EIA-222-F	Date: 06/25/14	Scale: NTS	
Path: S:\Projects\Crown Castle\93446_841295_Bethany\Engineering\93446.001.01_Aero Calculations\Working\RISA\841295 BETHANY.eri		Dwg No. E-5	

Feed Line Distribution Chart
0' - 150'

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



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Job: 93446.001.01 - BETHANY, CT (BU# 841295)			
Project:			
Client: Crown Castle	Drawn by: Rortiz	App'd:	
Code: TIA/EIA-222-F	Date: 06/25/14	Scale: NTS	
Path: S:\Projects\Crown Castle\93446_841295_Bethany\Engineering\93446.001.01_Aero Calculations\Working\RISA\841295 BETHANY.en		Dwg No. E-7	

tnxTower	Job	Page
	93446.001.01 - BETHANY, CT (BU# 841295)	1 of 21
B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Project	Date 16:13:31 06/25/14
	Client Crown Castle	Designed by Rortiz

Tower Input Data

There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.750 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 50 mph.
TOWER RATING: 97.4%.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
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		Treat Feedline Bundles As Cylinder
	Consider Moments - Horizontals		Assume Legs Pinned		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Calculate Redundant Bracing Forces
	Use Moment Magnification	√	Use Clear Spans For Wind Area		Ignore Redundant Members in FEA
√	Use Code Stress Ratios		Use Clear Spans For KL/r		SR Leg Bolts Resist Compression
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		All Leg Panels Have Same Allowable
√	Escalate Ice	√	Bypass Mast Stability Checks		Offset Girt At Foundation
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Consider Feedline Torque
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Include Angle Block Shear Check
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Poles
	Leg Bolts Are At Top Of Section		SR Members Have Cut Ends	√	Include Shear-Torsion Interaction
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Always Use Sub-Critical Flow
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Use Top Mounted Sockets
	Add IBC .6D+W Combination		Use TIA-222-G Tension Splice Capacity Exemption		

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	150.000-123.833	26.167	0.000	12	17.610	22.508	0.219	0.875	A572-65 (65 ksi)
L2	123.833-118.500	5.333	0.000	12	22.508	23.507	0.355	1.422	52.41359ksi (52 ksi)
L3	118.500-116.167	2.333	0.000	12	23.507	23.943	0.640	2.560	49.995272ksi (50 ksi)
L4	116.167-96.580	19.587	4.420	12	23.943	27.610	0.460	1.840	50.208658ksi (50 ksi)
L5	96.580-90.500	10.500	0.000	12	26.345	28.307	0.543	2.171	50.306152ksi (50 ksi)
L6	90.500-60.500	30.000	0.000	12	28.307	33.911	0.570	2.279	51.313664ksi (51 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
L7	60.500-47.500	13.000	5.500	12	33.911	36.340	0.638	2.551	52.976228ksi (53 ksi)
L8	47.500-30.500	22.500	0.000	12	34.687	38.896	0.667	2.669	53.143602ksi (53 ksi)
L9	30.500-16.750	13.750	0.000	12	38.896	41.467	0.646	2.583	53.246419ksi (53 ksi)
L10	16.750-14.250	2.500	0.000	12	41.467	41.935	0.642	2.569	53.263798ksi (53 ksi)
L11	14.250-0.000	14.250		12	41.935	44.600	0.706	2.824	55.58438ksi (56 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	18.231	12.250	472.914	6.226	9.122	51.843	958.252	6.029	4.133	18.895
	23.302	15.700	995.627	7.980	11.659	85.393	2017.411	7.727	5.446	24.896
L2	23.302	25.355	1588.222	7.931	11.659	136.219	3218.168	12.479	5.080	14.291
	24.336	26.498	1812.762	8.288	12.176	148.874	3673.147	13.041	5.347	15.043
L3	24.336	47.131	3145.548	8.186	12.176	258.330	6373.733	23.197	4.584	7.162
	24.788	48.031	3329.243	8.343	12.403	268.429	6745.948	23.640	4.701	7.345
L4	24.788	34.791	2448.871	8.407	12.403	197.447	4962.076	17.123	5.184	11.267
	28.584	40.223	3784.368	9.720	14.302	264.604	7668.156	19.796	6.166	13.403
L5	28.129	45.098	3832.341	9.237	13.647	280.824	7765.361	22.196	5.606	10.327
	29.305	48.527	4774.535	9.939	14.663	325.621	9674.503	23.884	6.131	11.296
L6	29.305	50.885	4996.850	9.930	14.663	340.782	10124.974	25.044	6.059	10.635
	35.108	61.167	8679.170	11.936	17.566	494.087	17586.352	30.105	7.561	13.272
L7	35.108	68.326	9655.488	11.912	17.566	549.667	19564.637	33.628	7.379	11.571
	37.622	73.314	11927.853	12.781	18.824	633.647	24169.065	36.083	8.030	12.592
L8	36.976	73.096	10798.220	12.179	17.968	600.966	21880.121	35.975	7.508	11.252
	40.268	82.137	15321.381	13.686	20.148	760.444	31045.272	40.425	8.636	12.942
L9	40.268	79.539	14853.288	13.693	20.148	737.211	30096.789	39.146	8.693	13.461
	42.930	84.886	18055.108	14.614	21.480	840.553	36584.543	41.778	9.383	14.529
L10	42.930	84.425	17960.168	14.615	21.480	836.133	36392.170	41.551	9.392	14.624
	43.414	85.392	18584.358	14.783	21.722	855.545	37656.949	42.027	9.517	14.819
L11	43.414	93.727	20335.380	14.760	21.722	936.154	41204.994	46.130	9.346	13.239
	46.173	99.786	24539.423	15.714	23.103	1062.184	49723.523	49.111	10.061	14.25

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
L1 150.000-123.833				1	1	1		
L2 123.833-118.500				1	1	0.947563		
L3 118.500-116.167				1	1	0.903895		
L4 116.167-96.580				1	1	0.939879		
L5 96.580-90.500				1	1	0.949242		
L6				1	1	0.949373		

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
90.500-60.500 L7 60.500-47.500 L8 47.500-30.500 L9 30.500-16.750 L10 16.750-14.250 L11 14.250-0.000				1 1 1 1 1	1 1 1 1 1	0.94066 0.952413 0.958101 0.959028 0.959375		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
LDF2-50(3/8") (E)	A	No	Inside Pole	148.000 - 0.000	2	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000 0.000
LDF6-50A(1-1/4") (E)	A	No	Inside Pole	148.000 - 0.000	2	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001 0.001
LDF7-50A(1-5/8") (E)	A	No	Inside Pole	148.000 - 0.000	12	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001 0.001
9776(3/4") (E)	A	No	Inside Pole	148.000 - 0.000	2	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000 0.000
$$$ LDF7-50A(1-5/8") (E)	B	No	Inside Pole	140.000 - 0.000	12	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001 0.001
$$$ LDF4-50A(1/2") (E)	C	No	Inside Pole	130.000 - 0.000	1	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000 0.000
LDF7-50A(1-5/8") (E)	C	No	Inside Pole	130.000 - 0.000	3	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.000 0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001 0.001
$$$ AL7-50(1 5/8)	B	No	CaAa (Out Of	122.000 - 0.000	2	No Ice	0.196	0.001

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
(E-Outside)			Face)			1/2" Ice	0.296	0.002
						1" Ice	0.396	0.004
						2" Ice	0.596	0.010
						4" Ice	0.996	0.030
AL7-50(1 5/8)	B	No	Inside Pole	122.000 - 0.000	10	No Ice	0.000	0.001
(E-Outside Shielded)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
LDF2-50(3/8")	B	No	Inside Pole	122.000 - 0.000	1	No Ice	0.000	0.000
(E-Outside Shielded)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
MLE Hybrid	B	No	Inside Pole	122.000 - 0.000	1	No Ice	0.000	0.001
9Power/18Fiber RL 2(1						1/2" Ice	0.000	0.001
5/8)						1" Ice	0.000	0.001
(P-Outside Shielded)						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
$$$								
Safety Line 3/8	C	No	CaAa (Out Of	150.000 - 0.000	1	No Ice	0.037	0.000
(E)			Face)			1/2" Ice	0.137	0.001
						1" Ice	0.238	0.001
						2" Ice	0.437	0.002
						4" Ice	0.838	0.004
$$$								
Sabre MS-850 (8.5" x	A	No	CaAa (Out Of	30.500 - 0.500	1	No Ice	0.208	0.000
1.25" Plate)			Face)			1/2" Ice	0.292	0.000
(E)						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
Sabre MS-850 (8.5" x	B	No	CaAa (Out Of	30.500 - 0.500	1	No Ice	0.208	0.000
1.25" Plate)			Face)			1/2" Ice	0.292	0.000
(E)						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
**								
**								
Sabre MS-850 (8.5" x	A	No	CaAa (Out Of	60.500 - 30.500	1	No Ice	0.208	0.000
1.25" Plate)			Face)			1/2" Ice	0.292	0.000
(E)						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
Sabre MS-850 (8.5" x	B	No	CaAa (Out Of	60.500 - 30.500	1	No Ice	0.208	0.000
1.25" Plate)			Face)			1/2" Ice	0.292	0.000
(E)						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
**								
Sabre MS-650 (6.5" x	A	No	CaAa (Out Of	90.500 - 60.500	1	No Ice	0.208	0.000
1.25" Plate)			Face)			1/2" Ice	0.292	0.000
(E)						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
Sabre MS-650 (6.5" x	B	No	CaAa (Out Of	90.500 - 60.500	1	No Ice	0.208	0.000
1.25" Plate)			Face)			1/2" Ice	0.292	0.000
(E)						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
**								
Sabre MS-600 (6" x 1"	A	No	CaAa (Out Of	120.500 - 90.500	1	No Ice	0.167	0.000

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
Plate)			Face)			1/2" Ice	0.250	0.000
(E)						1" Ice	0.333	0.000
						2" Ice	0.500	0.000
						4" Ice	0.833	0.000
Sabre MS-600 (6" x 1"	B	No	CaAa (Out Of	120.500 - 90.500	1	No Ice	0.167	0.000
Plate)			Face)			1/2" Ice	0.250	0.000
(E)						1" Ice	0.333	0.000
						2" Ice	0.500	0.000
						4" Ice	0.833	0.000
**								
**								
**								
MP3-03	A	No	CaAa (Out Of	125.000 - 115.000	1	No Ice	0.262	0.010
(E)			Face)			1/2" Ice	0.345	0.015
						1" Ice	0.428	0.020
						2" Ice	0.595	0.040
						4" Ice	0.928	0.080
MP3-03	B	No	Inside Pole	125.000 - 115.000	1	No Ice	0.000	0.010
(E)						1/2" Ice	0.000	0.010
						1" Ice	0.000	0.010
						2" Ice	0.000	0.010
						4" Ice	0.000	0.010

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	150.000-123.833	A	0.000	0.000	0.000	0.305	0.300
		B	0.000	0.000	0.000	0.000	0.171
		C	0.000	0.000	0.000	0.981	0.022
L2	123.833-118.500	A	0.000	0.000	0.000	1.729	0.116
		B	0.000	0.000	0.000	1.705	0.131
		C	0.000	0.000	0.000	0.200	0.015
L3	118.500-116.167	A	0.000	0.000	0.000	0.999	0.051
		B	0.000	0.000	0.000	1.303	0.063
		C	0.000	0.000	0.000	0.087	0.007
L4	116.167-96.580	A	0.000	0.000	0.000	3.570	0.245
		B	0.000	0.000	0.000	10.942	0.349
		C	0.000	0.000	0.000	0.735	0.055
L5	96.580-90.500	A	0.000	0.000	0.000	1.013	0.073
		B	0.000	0.000	0.000	3.397	0.105
		C	0.000	0.000	0.000	0.228	0.017
L6	90.500-60.500	A	0.000	0.000	0.000	6.250	0.358
		B	0.000	0.000	0.000	18.010	0.517
		C	0.000	0.000	0.000	1.125	0.085
L7	60.500-47.500	A	0.000	0.000	0.000	2.708	0.155
		B	0.000	0.000	0.000	7.804	0.224
		C	0.000	0.000	0.000	0.487	0.037
L8	47.500-30.500	A	0.000	0.000	0.000	3.542	0.203
		B	0.000	0.000	0.000	10.206	0.293
		C	0.000	0.000	0.000	0.637	0.048
L9	30.500-16.750	A	0.000	0.000	0.000	2.865	0.164
		B	0.000	0.000	0.000	8.254	0.237
		C	0.000	0.000	0.000	0.516	0.039
L10	16.750-14.250	A	0.000	0.000	0.000	0.521	0.030
		B	0.000	0.000	0.000	1.501	0.043
		C	0.000	0.000	0.000	0.094	0.007

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
L11	14.250-0.000	A	0.000	0.000	0.000	2.865	0.170
		B	0.000	0.000	0.000	8.450	0.246
		C	0.000	0.000	0.000	0.534	0.040

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	150.000-123.833	A	0.889	0.000	0.000	0.000	0.478	0.311
		B		0.000	0.000	0.000	0.000	0.171
		C		0.000	0.000	0.000	5.635	0.047
L2	123.833-118.500	A	0.877	0.000	0.000	0.000	2.800	0.164
		B		0.000	0.000	0.000	3.225	0.153
		C		0.000	0.000	0.000	1.135	0.020
L3	118.500-116.167	A	0.873	0.000	0.000	0.000	1.678	0.072
		B		0.000	0.000	0.000	2.458	0.078
		C		0.000	0.000	0.000	0.495	0.009
L4	116.167-96.580	A	0.863	0.000	0.000	0.000	6.555	0.256
		B		0.000	0.000	0.000	20.520	0.468
		C		0.000	0.000	0.000	4.115	0.073
L5	96.580-90.500	A	0.850	0.000	0.000	0.000	1.888	0.073
		B		0.000	0.000	0.000	6.370	0.142
		C		0.000	0.000	0.000	1.277	0.023
L6	90.500-60.500	A	0.828	0.000	0.000	0.000	10.389	0.358
		B		0.000	0.000	0.000	32.081	0.690
		C		0.000	0.000	0.000	6.091	0.111
L7	60.500-47.500	A	0.796	0.000	0.000	0.000	4.432	0.155
		B		0.000	0.000	0.000	13.665	0.296
		C		0.000	0.000	0.000	2.556	0.048
L8	47.500-30.500	A	0.765	0.000	0.000	0.000	5.796	0.203
		B		0.000	0.000	0.000	17.869	0.386
		C		0.000	0.000	0.000	3.342	0.062
L9	30.500-16.750	A	0.750	0.000	0.000	0.000	4.583	0.164
		B		0.000	0.000	0.000	14.098	0.307
		C		0.000	0.000	0.000	2.578	0.050
L10	16.750-14.250	A	0.750	0.000	0.000	0.000	0.833	0.030
		B		0.000	0.000	0.000	2.563	0.056
		C		0.000	0.000	0.000	0.469	0.009
L11	14.250-0.000	A	0.750	0.000	0.000	0.000	4.583	0.170
		B		0.000	0.000	0.000	14.444	0.318
		C		0.000	0.000	0.000	2.672	0.052

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150.000-123.833	-0.047	0.008	-0.228	0.107
L2	123.833-118.500	0.273	-0.160	0.290	-0.097
L3	118.500-116.167	0.446	-0.129	0.526	-0.063
L4	116.167-96.580	0.497	0.129	0.602	0.245
L5	96.580-90.500	0.509	0.148	0.625	0.274
L6	90.500-60.500	0.551	0.125	0.671	0.259

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L7	60.500-47.500	0.567	0.129	0.699	0.267
L8	47.500-30.500	0.575	0.130	0.714	0.273
L9	30.500-16.750	0.584	0.132	0.726	0.273
L10	16.750-14.250	0.588	0.133	0.735	0.277
L11	14.250-0.000	0.586	0.139	0.736	0.287

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft / ft / ft	°	ft		ft^2	ft^2	K
12' x 3" Omni	A	From Leg	3.000	0.000	156.000	No Ice	3.600	3.600	0.020
(E-as per Photo)			0.000			1/2" Ice	4.833	4.833	0.046
			0.000			1" Ice	6.083	6.083	0.080
						2" Ice	8.017	8.017	0.172
						4" Ice	11.048	11.048	0.455
10' Yagi	A	From Leg	3.000	0.000	155.000	No Ice	2.000	2.000	0.050
(E-as per Photo)			0.000			1/2" Ice	3.020	3.020	0.070
			0.000			1" Ice	4.040	4.040	0.090
						2" Ice	6.080	6.080	0.130
						4" Ice	10.160	10.160	0.210
Lightning Rod 3/4" x 4' on 5'	C	From Leg	0.000	0.000	150.000	No Ice	1.628	1.628	0.059
Pole			0.000			1/2" Ice	2.347	2.347	0.078
(E-as per Photo)			5.000			1" Ice	2.947	2.947	0.101
						2" Ice	4.124	4.124	0.162
						4" Ice	6.831	6.831	0.369
$$$									
(2)	A	From Leg	4.000	0.000	148.000	No Ice	8.498	6.304	0.074
AM-X-CD-16-65-00T-RET			0.000			1/2" Ice	9.149	7.479	0.139
w/ Mount Pipe			1.000			1" Ice	9.767	8.368	0.212
(E)						2" Ice	11.031	10.179	0.385
						4" Ice	13.679	14.024	0.874
(2)	B	From Leg	4.000	0.000	148.000	No Ice	8.498	6.304	0.074
AM-X-CD-16-65-00T-RET			0.000			1/2" Ice	9.149	7.479	0.139
w/ Mount Pipe			1.000			1" Ice	9.767	8.368	0.212
(E)						2" Ice	11.031	10.179	0.385
						4" Ice	13.679	14.024	0.874
(2)	C	From Leg	4.000	0.000	148.000	No Ice	8.498	6.304	0.074
AM-X-CD-16-65-00T-RET			0.000			1/2" Ice	9.149	7.479	0.139
w/ Mount Pipe			1.000			1" Ice	9.767	8.368	0.212
(E)						2" Ice	11.031	10.179	0.385
						4" Ice	13.679	14.024	0.874
800 10121 w/ Mount Pipe	A	From Leg	4.000	0.000	148.000	No Ice	5.685	4.600	0.066
(E)			0.000			1/2" Ice	6.182	5.351	0.114
			1.000			1" Ice	6.676	6.046	0.168
						2" Ice	7.695	7.526	0.298
						4" Ice	9.858	10.832	0.675
800 10121 w/ Mount Pipe	B	From Leg	4.000	0.000	148.000	No Ice	5.685	4.600	0.066
(E)			0.000			1/2" Ice	6.182	5.351	0.114
			1.000			1" Ice	6.676	6.046	0.168
						2" Ice	7.695	7.526	0.298
						4" Ice	9.858	10.832	0.675
800 10121 w/ Mount Pipe	C	From Leg	4.000	0.000	148.000	No Ice	5.685	4.600	0.066
(E)			0.000			1/2" Ice	6.182	5.351	0.114

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
			1.000			1" Ice	6.676	6.046	0.168
						2" Ice	7.695	7.526	0.298
						4" Ice	9.858	10.832	0.675
OG-4	A	From Leg	4.000	0.000	148.000	No Ice	6.000	6.000	0.020
(E)			0.000			1/2" Ice	7.138	7.138	0.061
			8.000			1" Ice	7.863	7.863	0.110
						2" Ice	9.341	9.341	0.233
						4" Ice	12.409	12.409	0.582
DB286-B	B	From Leg	4.000	0.000	148.000	No Ice	4.990	4.990	0.082
(E)			0.000			1/2" Ice	8.982	8.982	0.107
			7.000			1" Ice	12.974	12.974	0.131
						2" Ice	20.958	20.958	0.180
						4" Ice	36.926	36.926	0.279
(2) CG-1900DD-FULL-DIN	A	From Leg	4.000	0.000	148.000	No Ice	1.285	0.319	0.015
(E)			0.000			1/2" Ice	1.439	0.417	0.023
			1.000			1" Ice	1.601	0.524	0.032
						2" Ice	1.951	0.764	0.056
						4" Ice	2.755	1.347	0.136
(2) CG-1900DD-FULL-DIN	B	From Leg	4.000	0.000	148.000	No Ice	1.285	0.319	0.015
(E)			0.000			1/2" Ice	1.439	0.417	0.023
			1.000			1" Ice	1.601	0.524	0.032
						2" Ice	1.951	0.764	0.056
						4" Ice	2.755	1.347	0.136
(2) CG-1900DD-FULL-DIN	C	From Leg	4.000	0.000	148.000	No Ice	1.285	0.319	0.015
(E)			0.000			1/2" Ice	1.439	0.417	0.023
			1.000			1" Ice	1.601	0.524	0.032
						2" Ice	1.951	0.764	0.056
						4" Ice	2.755	1.347	0.136
DC6-48-60-18-8F	A	From Leg	4.000	0.000	148.000	No Ice	2.567	4.317	0.019
(E)			0.000			1/2" Ice	2.798	4.596	0.050
			1.000			1" Ice	3.038	4.885	0.085
						2" Ice	3.543	5.488	0.167
						4" Ice	4.658	6.797	0.383
(4) LGP21901	A	From Leg	4.000	0.000	148.000	No Ice	0.270	0.184	0.006
(E)			0.000			1/2" Ice	0.343	0.248	0.008
			1.000			1" Ice	0.425	0.322	0.011
						2" Ice	0.616	0.494	0.022
						4" Ice	1.101	0.943	0.066
(4) LGP21901	B	From Leg	4.000	0.000	148.000	No Ice	0.270	0.184	0.006
(E)			0.000			1/2" Ice	0.343	0.248	0.008
			1.000			1" Ice	0.425	0.322	0.011
						2" Ice	0.616	0.494	0.022
						4" Ice	1.101	0.943	0.066
(4) LGP21901	C	From Leg	4.000	0.000	148.000	No Ice	0.270	0.184	0.006
(E)			0.000			1/2" Ice	0.343	0.248	0.008
			1.000			1" Ice	0.425	0.322	0.011
						2" Ice	0.616	0.494	0.022
						4" Ice	1.101	0.943	0.066
(2) DTMABP7819VG12A	A	From Leg	4.000	0.000	148.000	No Ice	1.139	0.391	0.019
(E)			0.000			1/2" Ice	1.284	0.488	0.026
			1.000			1" Ice	1.437	0.595	0.036
						2" Ice	1.769	0.833	0.060
						4" Ice	2.538	1.414	0.140
(2) DTMABP7819VG12A	B	From Leg	4.000	0.000	148.000	No Ice	1.139	0.391	0.019
(E)			0.000			1/2" Ice	1.284	0.488	0.026
			1.000			1" Ice	1.437	0.595	0.036
						2" Ice	1.769	0.833	0.060

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
						4" Ice	2.538	1.414	0.140
(2) DTMABP7819VG12A (E)	C	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.139 1.284 1.437 1.769 2.538	0.391 0.488 0.595 0.833 1.414	0.019 0.026 0.036 0.060 0.140
860 10025 (E)	A	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.163 0.229 0.302 0.476 0.927	0.136 0.199 0.270 0.439 0.879	0.001 0.003 0.005 0.014 0.051
860 10025 (E)	B	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.163 0.229 0.302 0.476 0.927	0.136 0.199 0.270 0.439 0.879	0.001 0.003 0.005 0.014 0.051
860 10025 (E)	C	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.163 0.229 0.302 0.476 0.927	0.136 0.199 0.270 0.439 0.879	0.001 0.003 0.005 0.014 0.051
(2) RRUS-11 (E)	A	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.248 3.490 3.741 4.268 5.426	1.379 1.558 1.745 2.146 3.050	0.051 0.072 0.096 0.153 0.314
(2) RRUS-11 (E)	B	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.248 3.490 3.741 4.268 5.426	1.379 1.558 1.745 2.146 3.050	0.051 0.072 0.096 0.153 0.314
(2) RRUS-11 (E)	C	From Leg	4.000 0.000 1.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.248 3.490 3.741 4.268 5.426	1.379 1.558 1.745 2.146 3.050	0.051 0.072 0.096 0.153 0.314
Platform Mount [LP 713-1] (E)	C	None		0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	31.270 39.680 48.090 64.910 98.550	31.270 39.680 48.090 64.910 98.550	1.510 1.929 2.348 3.186 4.862
$$$									
DB854DG65ESX w/ Mount Pipe (E)	A	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.132 6.594 7.064 8.037 10.117	4.100 4.728 5.379 6.793 9.880	0.037 0.084 0.137 0.264 0.630
DB854DG65ESX w/ Mount Pipe (E)	B	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.132 6.594 7.064 8.037 10.117	4.100 4.728 5.379 6.793 9.880	0.037 0.084 0.137 0.264 0.630
DB854DG65ESX w/ Mount Pipe (E)	C	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.132 6.594 7.064 8.037 10.117	4.100 4.728 5.379 6.793 9.880	0.037 0.084 0.137 0.264 0.630

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
MG D3-800TV w/ Mount Pipe	A	From Leg	4.000	0.000	140.000	No Ice	3.570	3.418	0.037
			0.000			1/2" Ice	3.979	4.119	0.071
(E)			0.000			1" Ice	4.387	4.784	0.111
						2" Ice	5.325	6.164	0.210
						4" Ice	7.341	9.175	0.520
(2) MG D3-800TV w/ Mount Pipe	C	From Leg	4.000	0.000	140.000	No Ice	3.570	3.418	0.037
			0.000			1/2" Ice	3.979	4.119	0.071
(E)			0.000			1" Ice	4.387	4.784	0.111
						2" Ice	5.325	6.164	0.210
						4" Ice	7.341	9.175	0.520
BXA-70063-6CF-2 w/ Mount Pipe	A	From Leg	4.000	0.000	140.000	No Ice	7.969	5.801	0.042
			0.000			1/2" Ice	8.609	6.953	0.103
(R)			0.000			1" Ice	9.216	7.819	0.171
						2" Ice	10.459	9.601	0.335
						4" Ice	13.066	13.366	0.804
BXA-70063-6CF-2 w/ Mount Pipe	B	From Leg	4.000	0.000	140.000	No Ice	7.969	5.801	0.042
			0.000			1/2" Ice	8.609	6.953	0.103
(R)			0.000			1" Ice	9.216	7.819	0.171
						2" Ice	10.459	9.601	0.335
						4" Ice	13.066	13.366	0.804
BXA-70063-6CF-2 w/ Mount Pipe	C	From Leg	4.000	0.000	140.000	No Ice	7.969	5.801	0.042
			0.000			1/2" Ice	8.609	6.953	0.103
(R)			0.000			1" Ice	9.216	7.819	0.171
						2" Ice	10.459	9.601	0.335
						4" Ice	13.066	13.366	0.804
6' x 2" Mount Pipe	A	From Leg	4.000	0.000	140.000	No Ice	1.425	1.425	0.022
(E)			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
						4" Ice	4.702	4.702	0.231
(2) 6' x 2" Mount Pipe	B	From Leg	4.000	0.000	140.000	No Ice	1.425	1.425	0.022
(E)			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
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe	C	From Leg	4.000	0.000	140.000	No Ice	1.425	1.425	0.022
(E)			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
						4" Ice	4.702	4.702	0.231
Platform Mount [LP 303-1]	C	None		0.000	140.000	No Ice	14.660	14.660	1.250
(E)						1/2" Ice	18.870	18.870	1.481
						1" Ice	23.080	23.080	1.713
						2" Ice	31.500	31.500	2.175
						4" Ice	48.340	48.340	3.101
$$$									
TME-1900MHz RRH	A	From Leg	1.000	0.000	132.000	No Ice	2.907	3.801	0.044
(E)			0.000			1/2" Ice	3.145	4.065	0.075
			-1.000			1" Ice	3.391	4.337	0.110
						2" Ice	3.909	4.908	0.192
						4" Ice	5.050	6.152	0.407
TME-1900MHz RRH	B	From Leg	1.000	0.000	132.000	No Ice	2.907	3.801	0.044
(E)			0.000			1/2" Ice	3.145	4.065	0.075
			-1.000			1" Ice	3.391	4.337	0.110
						2" Ice	3.909	4.908	0.192
						4" Ice	5.050	6.152	0.407
TME-1900MHz RRH	C	From Leg	1.000	0.000	132.000	No Ice	2.907	3.801	0.044

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
(E)			0.000 -1.000			1/2" Ice 1" Ice 2" Ice 4" Ice	3.145 3.391 3.909 5.050	4.065 4.337 4.908 6.152	0.075 0.110 0.192 0.407
800 EXTERNAL NOTCH FILTER (E)	A	From Leg	1.000 0.000 -1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.770 0.890 1.018 1.301 1.970	0.375 0.465 0.563 0.787 1.337	0.011 0.017 0.024 0.045 0.114
800 EXTERNAL NOTCH FILTER (E)	B	From Leg	1.000 0.000 -1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.770 0.890 1.018 1.301 1.970	0.375 0.465 0.563 0.787 1.337	0.011 0.017 0.024 0.045 0.114
800 EXTERNAL NOTCH FILTER (E)	C	From Leg	1.000 0.000 -1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.770 0.890 1.018 1.301 1.970	0.375 0.465 0.563 0.787 1.337	0.011 0.017 0.024 0.045 0.114
800MHZ RRH (E)	A	From Leg	1.000 0.000 -1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.490 2.706 2.931 3.407 4.462	2.068 2.271 2.481 2.928 3.927	0.053 0.074 0.098 0.157 0.318
800MHZ RRH (E)	B	From Leg	1.000 0.000 -1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.490 2.706 2.931 3.407 4.462	2.068 2.271 2.481 2.928 3.927	0.053 0.074 0.098 0.157 0.318
800MHZ RRH (E)	C	From Leg	1.000 0.000 -1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.490 2.706 2.931 3.407 4.462	2.068 2.271 2.481 2.928 3.927	0.053 0.074 0.098 0.157 0.318
Side Arm Mount [SO 102-3] (E)	C	None		0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.000 3.480 3.960 4.920 6.840	3.000 3.480 3.960 4.920 6.840	0.081 0.111 0.141 0.201 0.321
$$$									
APXVSPP18-C-A20 w/ Mount Pipe (E)	A	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.946 8.127 9.021 10.844 14.851	0.083 0.151 0.227 0.406 0.909
APXVSPP18-C-A20 w/ Mount Pipe (E)	B	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.946 8.127 9.021 10.844 14.851	0.083 0.151 0.227 0.406 0.909
APXVSPP18-C-A20 w/ Mount Pipe (E)	C	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.946 8.127 9.021 10.844 14.851	0.083 0.151 0.227 0.406 0.909
GPS-TMG-HR-26NCM (E)	A	From Leg	4.000 0.000	0.000	130.000	No Ice 1/2" Ice	0.156 0.213	0.156 0.213	0.001 0.002

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Offsets: Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
				3.000			1" Ice	0.279	0.279	0.005
							2" Ice	0.437	0.437	0.014
							4" Ice	0.857	0.857	0.052
(3) ACU-A20-N	A	From Leg	4.000		0.000	130.000	No Ice	0.078	0.136	0.001
(E)			0.000				1/2" Ice	0.121	0.189	0.002
			0.000				1" Ice	0.173	0.251	0.004
							2" Ice	0.302	0.400	0.012
							4" Ice	0.665	0.802	0.045
(3) ACU-A20-N	B	From Leg	4.000		0.000	130.000	No Ice	0.078	0.136	0.001
(E)			0.000				1/2" Ice	0.121	0.189	0.002
			0.000				1" Ice	0.173	0.251	0.004
							2" Ice	0.302	0.400	0.012
							4" Ice	0.665	0.802	0.045
(3) ACU-A20-N	C	From Leg	4.000		0.000	130.000	No Ice	0.078	0.136	0.001
(E)			0.000				1/2" Ice	0.121	0.189	0.002
			0.000				1" Ice	0.173	0.251	0.004
							2" Ice	0.302	0.400	0.012
							4" Ice	0.665	0.802	0.045
(2) 6' x 2" Mount Pipe	A	From Leg	4.000		0.000	130.000	No Ice	1.425	1.425	0.022
(E-as per Photo)			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
							4" Ice	4.702	4.702	0.231
(2) 6' x 2" Mount Pipe	B	From Leg	4.000		0.000	130.000	No Ice	1.425	1.425	0.022
(E-as per Photo)			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
							4" Ice	4.702	4.702	0.231
(2) 6' x 2" Mount Pipe	C	From Leg	4.000		0.000	130.000	No Ice	1.425	1.425	0.022
(E-as per Photo)			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
							4" Ice	4.702	4.702	0.231
T-Arm Mount [TA 602-3]	C	None			0.000	130.000	No Ice	11.590	11.590	0.774
(E)							1/2" Ice	15.440	15.440	0.990
							1" Ice	19.290	19.290	1.206
							2" Ice	26.990	26.990	1.639
							4" Ice	42.390	42.390	2.503
$$$										
ERICSSON AIR 21 B2A	A	From Leg	2.000		0.000	122.000	No Ice	6.825	5.642	0.112
B4P w/ Mount Pipe			0.000				1/2" Ice	7.347	6.480	0.169
(P)			-2.000				1" Ice	7.863	7.257	0.233
							2" Ice	8.926	8.864	0.383
							4" Ice	11.175	12.293	0.807
ERICSSON AIR 21 B2A	B	From Leg	2.000		0.000	122.000	No Ice	6.825	5.642	0.112
B4P w/ Mount Pipe			0.000				1/2" Ice	7.347	6.480	0.169
(P)			-2.000				1" Ice	7.863	7.257	0.233
							2" Ice	8.926	8.864	0.383
							4" Ice	11.175	12.293	0.807
ERICSSON AIR 21 B2A	C	From Leg	2.000		0.000	122.000	No Ice	6.825	5.642	0.112
B4P w/ Mount Pipe			0.000				1/2" Ice	7.347	6.480	0.169
(P)			-2.000				1" Ice	7.863	7.257	0.233
							2" Ice	8.926	8.864	0.383
							4" Ice	11.175	12.293	0.807
ERICSSON AIR 21 B4A	A	From Leg	2.000		0.000	122.000	No Ice	6.825	5.642	0.112
B2P w/ Mount Pipe			0.000				1/2" Ice	7.347	6.480	0.169
(P)			-2.000				1" Ice	7.863	7.257	0.233

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	8.926	8.864	0.383
						4" Ice	11.175	12.293	0.807
ERICSSON AIR 21 B4A B2P w/ Mount Pipe (P)	B	From Leg	2.000 0.000 -2.000	0.000	122.000	No Ice	6.825	5.642	0.112
						1/2" Ice	7.347	6.480	0.169
						1" Ice	7.863	7.257	0.233
						2" Ice	8.926	8.864	0.383
						4" Ice	11.175	12.293	0.807
ERICSSON AIR 21 B4A B2P w/ Mount Pipe (P)	C	From Leg	2.000 0.000 -2.000	0.000	122.000	No Ice	6.825	5.642	0.112
						1/2" Ice	7.347	6.480	0.169
						1" Ice	7.863	7.257	0.233
						2" Ice	8.926	8.864	0.383
						4" Ice	11.175	12.293	0.807
Side Arm Mount [SO 103-3] (E)	C	None		0.000	122.000	No Ice	9.500	9.500	0.224
						1/2" Ice	11.800	11.800	0.317
						1" Ice	14.100	14.100	0.410
						2" Ice	18.700	18.700	0.596
						4" Ice	27.900	27.900	0.968
$$$* *$$$									

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service

Comb. No.	Description
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 123.833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-13.798	0.233	1.069
			Max. Mx	5	-6.323	-285.896	0.099
			Max. My	2	-6.340	-0.201	283.846
			Max. Vy	5	15.895	-285.896	0.099
			Max. Vx	2	-15.808	-0.201	283.846
			Max. Torque	12			-2.880
L2	123.833 - 118.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-16.409	0.217	1.150
			Max. Mx	5	-7.728	-376.782	0.203
			Max. My	2	-7.745	-0.238	374.313
			Max. Vy	5	18.772	-376.782	0.203
			Max. Vx	2	-18.685	-0.238	374.313
			Max. Torque	5			2.672
L3	118.5 - 116.167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-16.971	0.205	1.184
			Max. Mx	5	-8.186	-420.980	0.249
			Max. My	2	-8.203	-0.255	418.327
			Max. Vy	5	19.124	-420.980	0.249
			Max. Vx	2	-19.037	-0.255	418.327
			Max. Torque	5			2.675
L4	116.167 - 96.58	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-19.815	0.121	1.133
			Max. Mx	5	-10.580	-726.092	0.401
			Max. My	2	-10.595	-0.363	722.094
			Max. Vy	5	21.140	-726.092	0.401
			Max. Vx	2	-21.053	-0.363	722.094
			Max. Torque	5			2.675
L5	96.58 - 90.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-22.826	0.060	1.090
			Max. Mx	5	-13.126	-956.244	0.495
			Max. My	2	-13.140	-0.439	951.308
			Max. Vy	5	22.653	-956.244	0.495
			Max. Vx	2	-22.565	-0.439	951.308
			Max. Torque	5			2.642
L6	90.5 - 60.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-30.408	-0.133	0.936
			Max. Mx	5	-19.957	-1695.728	0.718
			Max. My	2	-19.966	-0.660	1688.092
			Max. Vy	5	26.736	-1695.728	0.718
			Max. Vx	2	-26.649	-0.660	1688.092
			Max. Torque	5			2.630

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L7	60.5 - 47.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-32.639	-0.185	0.894
			Max. Mx	5	-22.009	-1899.784	0.767
			Max. My	2	-22.017	-0.716	1891.475
			Max. Vy	5	27.705	-1899.784	0.767
			Max. Vx	2	-27.618	-0.716	1891.475
			Max. Torque	5			2.578
L8	47.5 - 30.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-41.451	-0.349	0.763
			Max. Mx	5	-30.047	-2556.361	0.906
			Max. My	2	-30.052	-0.885	2546.035
			Max. Vy	5	30.550	-2556.361	0.906
			Max. Vx	2	-30.464	-0.885	2546.035
			Max. Torque	5			2.557
L9	30.5 - 16.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-46.186	-0.451	0.680
			Max. Mx	5	-34.497	-2986.876	0.980
			Max. My	2	-34.500	-0.988	2975.331
			Max. Vy	5	32.102	-2986.876	0.980
			Max. Vx	2	-32.016	-0.988	2975.331
			Max. Torque	5			2.530
L10	16.75 - 14.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-47.073	-0.471	0.665
			Max. Mx	5	-35.330	-3067.449	0.992
			Max. My	2	-35.332	-1.007	3055.684
			Max. Vy	5	32.388	-3067.449	0.992
			Max. Vx	2	-32.302	-1.007	3055.684
			Max. Torque	5			2.509
L11	14.25 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-52.704	-0.585	0.573
			Max. Mx	5	-40.627	-3540.473	1.061
			Max. My	2	-40.627	-1.114	3527.464
			Max. Vy	5	34.038	-3540.473	1.061
			Max. Vx	2	-33.954	-1.114	3527.464
			Max. Torque	5			2.505

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	52.704	0.000	0.000
	Max. H_x	11	40.639	34.023	-0.006
	Max. H_z	2	40.639	-0.006	33.939
	Max. M_x	2	3527.464	-0.006	33.939
	Max. M_z	5	3540.473	-34.023	0.006
	Max. Torsion	5	2.481	-34.023	0.006
	Min. Vert	1	40.639	0.000	0.000
	Min. H_x	5	40.639	-34.023	0.006
	Min. H_z	8	40.639	0.006	-33.939
	Min. M_x	8	-3527.104	0.006	-33.939
	Min. M_z	11	-3540.059	34.023	-0.006
	Min. Torsion	11	-2.481	34.023	-0.006

Tower Mast Reaction Summary

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
Dead Only	40.639	0.000	0.000	-0.166	-0.200	0.000
Dead+Wind 0 deg - No Ice	40.639	0.006	-33.939	-3527.464	-1.114	0.613
Dead+Wind 30 deg - No Ice	40.639	17.017	-29.395	-3055.334	-1771.159	-0.711
Dead+Wind 60 deg - No Ice	40.639	29.468	-16.975	-1764.565	-3066.643	-1.843
Dead+Wind 90 deg - No Ice	40.639	34.023	-0.006	-1.061	-3540.473	-2.481
Dead+Wind 120 deg - No Ice	40.639	29.462	16.964	1762.677	-3065.720	-2.454
Dead+Wind 150 deg - No Ice	40.639	17.006	29.389	3054.086	-1769.570	-1.770
Dead+Wind 180 deg - No Ice	40.639	-0.006	33.939	3527.104	0.700	-0.613
Dead+Wind 210 deg - No Ice	40.639	-17.017	29.395	3054.986	1770.723	0.708
Dead+Wind 240 deg - No Ice	40.639	-29.468	16.975	1764.244	3066.207	1.840
Dead+Wind 270 deg - No Ice	40.639	-34.023	0.006	0.753	3540.059	2.481
Dead+Wind 300 deg - No Ice	40.639	-29.462	-16.964	-1762.998	3065.329	2.457
Dead+Wind 330 deg - No Ice	40.639	-17.006	-29.389	-3054.433	1769.179	1.773
Dead+Ice+Temp	52.704	0.000	-0.000	-0.573	-0.585	-0.000
Dead+Wind 0 deg+Ice+Temp	52.704	-0.003	-8.477	-916.541	-0.193	0.400
Dead+Wind 30 deg+Ice+Temp	52.704	4.245	-7.340	-793.631	-459.571	0.092
Dead+Wind 60 deg+Ice+Temp	52.704	7.355	-4.236	-458.241	-795.967	-0.241
Dead+Wind 90 deg+Ice+Temp	52.704	8.495	0.003	-0.239	-919.245	-0.510
Dead+Wind 120 deg+Ice+Temp	52.704	7.358	4.241	457.653	-796.373	-0.641
Dead+Wind 150 deg+Ice+Temp	52.704	4.250	7.343	792.744	-460.275	-0.601
Dead+Wind 180 deg+Ice+Temp	52.704	0.003	8.477	915.246	-1.008	-0.400
Dead+Wind 210 deg+Ice+Temp	52.704	-4.245	7.340	792.335	458.367	-0.092
Dead+Wind 240 deg+Ice+Temp	52.704	-7.355	4.236	456.947	794.762	0.241
Dead+Wind 270 deg+Ice+Temp	52.704	-8.495	-0.003	-1.053	918.041	0.510
Dead+Wind 300 deg+Ice+Temp	52.704	-7.358	-4.241	-458.945	795.171	0.642
Dead+Wind 330 deg+Ice+Temp	52.704	-4.250	-7.343	-794.037	459.074	0.601
Dead+Wind 0 deg - Service	40.639	0.002	-11.744	-1222.791	-0.524	0.213
Dead+Wind 30 deg - Service	40.639	5.888	-10.171	-1059.151	-614.051	-0.253
Dead+Wind 60 deg - Service	40.639	10.197	-5.874	-611.757	-1063.097	-0.651
Dead+Wind 90 deg - Service	40.639	11.773	-0.002	-0.493	-1227.339	-0.874
Dead+Wind 120 deg - Service	40.639	10.194	5.870	610.853	-1062.780	-0.863
Dead+Wind 150 deg - Service	40.639	5.885	10.169	1058.474	-613.504	-0.621
Dead+Wind 180 deg - Service	40.639	-0.002	11.744	1222.426	0.104	-0.213
Dead+Wind 210 deg - Service	40.639	-5.888	10.171	1058.788	613.628	0.252
Dead+Wind 240 deg - Service	40.639	-10.197	5.874	611.397	1062.674	0.650
Dead+Wind 270 deg - Service	40.639	-11.773	0.002	0.135	1226.919	0.874
Dead+Wind 300 deg - Service	40.639	-10.194	-5.870	-611.213	1062.363	0.863
Dead+Wind 330 deg - Service	40.639	-5.885	-10.169	-1058.837	613.087	0.622

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	-40.639	0.000	0.000	40.639	0.000	0.000%
2	0.006	-40.639	-33.939	-0.006	40.639	33.939	0.000%
3	17.017	-40.639	-29.395	-17.017	40.639	29.395	0.000%
4	29.468	-40.639	-16.975	-29.468	40.639	16.975	0.000%
5	34.023	-40.639	-0.006	-34.023	40.639	0.006	0.000%
6	29.462	-40.639	16.964	-29.462	40.639	-16.964	0.000%
7	17.006	-40.639	29.389	-17.006	40.639	-29.389	0.000%
8	-0.006	-40.639	33.939	0.006	40.639	-33.939	0.000%
9	-17.017	-40.639	29.395	17.017	40.639	-29.395	0.000%
10	-29.468	-40.639	16.975	29.468	40.639	-16.975	0.000%
11	-34.023	-40.639	0.006	34.023	40.639	-0.006	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
12	-29.462	-40.639	-16.964	29.462	40.639	16.964	0.000%
13	-17.006	-40.639	-29.389	17.006	40.639	29.389	0.000%
14	0.000	-52.704	0.000	0.000	52.704	0.000	0.000%
15	-0.003	-52.704	-8.477	0.003	52.704	8.477	0.000%
16	4.245	-52.704	-7.340	-4.245	52.704	7.340	0.000%
17	7.355	-52.704	-4.236	-7.355	52.704	4.236	0.000%
18	8.495	-52.704	0.003	-8.495	52.704	-0.003	0.000%
19	7.358	-52.704	4.241	-7.358	52.704	-4.241	0.000%
20	4.250	-52.704	7.343	-4.250	52.704	-7.343	0.000%
21	0.003	-52.704	8.477	-0.003	52.704	-8.477	0.000%
22	-4.245	-52.704	7.340	4.245	52.704	-7.340	0.000%
23	-7.355	-52.704	4.236	7.355	52.704	-4.236	0.000%
24	-8.495	-52.704	-0.003	8.495	52.704	0.003	0.000%
25	-7.358	-52.704	-4.241	7.358	52.704	4.241	0.000%
26	-4.250	-52.704	-7.343	4.250	52.704	7.343	0.000%
27	0.002	-40.639	-11.744	-0.002	40.639	11.744	0.000%
28	5.888	-40.639	-10.171	-5.888	40.639	10.171	0.000%
29	10.197	-40.639	-5.874	-10.197	40.639	5.874	0.000%
30	11.773	-40.639	-0.002	-11.773	40.639	0.002	0.000%
31	10.194	-40.639	5.870	-10.194	40.639	-5.870	0.000%
32	5.885	-40.639	10.169	-5.885	40.639	-10.169	0.000%
33	-0.002	-40.639	11.744	0.002	40.639	-11.744	0.000%
34	-5.888	-40.639	10.171	5.888	40.639	-10.171	0.000%
35	-10.197	-40.639	5.874	10.197	40.639	-5.874	0.000%
36	-11.773	-40.639	0.002	11.773	40.639	-0.002	0.000%
37	-10.194	-40.639	-5.870	10.194	40.639	5.870	0.000%
38	-5.885	-40.639	-10.169	5.885	40.639	10.169	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	4	0.00000001	0.00043740
3	Yes	6	0.00000001	0.00006849
4	Yes	6	0.00000001	0.00007302
5	Yes	5	0.00000001	0.00013884
6	Yes	6	0.00000001	0.00006703
7	Yes	6	0.00000001	0.00007182
8	Yes	4	0.00000001	0.00039794
9	Yes	6	0.00000001	0.00007149
10	Yes	6	0.00000001	0.00006727
11	Yes	5	0.00000001	0.00013598
12	Yes	6	0.00000001	0.00007321
13	Yes	6	0.00000001	0.00006812
14	Yes	4	0.00000001	0.00000355
15	Yes	5	0.00000001	0.00050161
16	Yes	5	0.00000001	0.00066768
17	Yes	5	0.00000001	0.00067431
18	Yes	5	0.00000001	0.00050356
19	Yes	5	0.00000001	0.00065957
20	Yes	5	0.00000001	0.00067276
21	Yes	5	0.00000001	0.00049866
22	Yes	5	0.00000001	0.00066449
23	Yes	5	0.00000001	0.00066056
24	Yes	5	0.00000001	0.00050347
25	Yes	5	0.00000001	0.00067970
26	Yes	5	0.00000001	0.00066372

27	Yes	4	0.00000001	0.00016603
28	Yes	5	0.00000001	0.00016556
29	Yes	5	0.00000001	0.00018634
30	Yes	4	0.00000001	0.00071081
31	Yes	5	0.00000001	0.00015980
32	Yes	5	0.00000001	0.00018000
33	Yes	4	0.00000001	0.00016459
34	Yes	5	0.00000001	0.00017836
35	Yes	5	0.00000001	0.00016061
36	Yes	4	0.00000001	0.00070558
37	Yes	5	0.00000001	0.00018696
38	Yes	5	0.00000001	0.00016374

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 123.833	39.256	30	2.490	0.019
L2	123.833 - 118.5	26.326	30	2.105	0.006
L3	118.5 - 116.167	24.032	30	2.002	0.005
L4	116.167 - 96.58	23.060	30	1.974	0.005
L5	101 - 90.5	17.238	30	1.683	0.003
L6	90.5 - 60.5	13.689	30	1.520	0.003
L7	60.5 - 47.5	5.956	30	0.940	0.001
L8	53 - 30.5	4.581	30	0.811	0.001
L9	30.5 - 16.75	1.469	30	0.477	0.001
L10	16.75 - 14.25	0.427	30	0.248	0.000
L11	14.25 - 0	0.307	30	0.207	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.000	12' x 3" Omni	30	39.256	2.490	0.019	10774
155.000	10' Yagi	30	39.256	2.490	0.019	10774
150.000	Lightning Rod 3/4" x 4' on 5' Pole	30	39.256	2.490	0.019	10774
148.000	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	30	38.217	2.466	0.018	10774
140.000	DB854DG65ESX w/ Mount Pipe	30	34.097	2.369	0.013	5387
132.000	TME-1900MHz RRH	30	30.120	2.254	0.009	2992
130.000	APXVSPP18-C-A20 w/ Mount Pipe	30	29.161	2.221	0.009	2692
122.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	30	25.523	2.066	0.006	2581

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 123.833	112.929	5	7.162	0.054
L2	123.833 - 118.5	75.795	5	6.060	0.018
L3	118.5 - 116.167	69.198	5	5.766	0.015
L4	116.167 - 96.58	66.405	5	5.684	0.015
L5	101 - 90.5	49.657	5	4.848	0.010
L6	90.5 - 60.5	39.443	5	4.379	0.008
L7	60.5 - 47.5	17.171	5	2.710	0.004

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L8	53 - 30.5	13.209	5	2.337	0.003
L9	30.5 - 16.75	4.237	5	1.376	0.001
L10	16.75 - 14.25	1.230	5	0.716	0.001
L11	14.25 - 0	0.886	5	0.598	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.000	12' x 3" Omni	5	112.929	7.162	0.054	3854
155.000	10' Yagi	5	112.929	7.162	0.054	3854
150.000	Lightning Rod 3/4" x 4' on 5' Pole	5	112.929	7.162	0.054	3854
148.000	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	5	109.946	7.095	0.050	3854
140.000	DB854DG65ESX w/ Mount Pipe	5	98.117	6.816	0.038	1926
132.000	TME-1900MHz RRH	5	86.695	6.487	0.027	1068
130.000	APXVSPP18-C-A20 w/ Mount Pipe	5	83.942	6.393	0.024	960
122.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	5	73.486	5.949	0.017	917

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	150 - 123.833 (1)	TP22.508x17.61x0.219	26.167	0.000	0.0	39.000	15.700	-6.323	612.309	0.010
L2	123.833 - 118.5 (2)	TP23.507x22.508x0.355	5.333	0.000	0.0	31.448	26.498	-7.728	833.302	0.009
L3	118.5 - 116.167 (3)	TP23.943x23.507x0.64	2.333	0.000	0.0	29.997	48.031	-8.186	1440.810	0.006
L4	116.167 - 96.58 (4)	TP27.61x23.943x0.46	19.587	0.000	0.0	30.125	38.997	-10.580	1174.790	0.009
L5	96.58 - 90.5 (5)	TP28.307x26.345x0.543	10.500	0.000	0.0	30.184	48.527	-13.126	1464.730	0.009
L6	90.5 - 60.5 (6)	TP33.911x28.307x0.57 H1-3+VT (1.35 CR) - 6	30.000	0.000	0.0	30.788	61.167	-19.957	1883.230	0.011
L7	60.5 - 47.5 (7)	TP36.34x33.911x0.638	13.000	0.000	0.0	31.786	71.204	-22.009	2263.260	0.010
L8	47.5 - 30.5 (8)	TP38.896x34.687x0.667	22.500	0.000	0.0	31.886	82.137	-30.047	2619.040	0.011
L9	30.5 - 16.75 (9)	TP41.467x38.896x0.646 H1-3+VT (1.35 CR) - 9	13.750	0.000	0.0	31.948	84.886	-34.497	2711.930	0.013
L10	16.75 - 14.25 (10)	TP41.935x41.467x0.642 H1-3+VT (1.36 CR) - 10	2.500	0.000	0.0	31.958	85.392	-35.330	2728.980	0.013
L11	14.25 - 0 (11)	TP44.6x41.935x0.706	14.250	0.000	0.0	33.351	99.786	-40.627	3327.910	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	150 - 123.833 (1)	TP22.508x17.61x0.219	285.897	40.176	39.000	1.030	0.000	0.000	39.000	0.000
L2	123.833 - 118.5 (2)	TP23.507x22.508x0.355	376.783	30.371	31.448	0.966	0.000	0.000	31.448	0.000
L3	118.5 - 116.167 (3)	TP23.943x23.507x0.64	420.980	18.820	29.997	0.627	0.000	0.000	29.997	0.000
L4	116.167 - 96.58 (4)	TP27.61x23.943x0.46	726.092	35.050	30.125	1.163	0.000	0.000	30.125	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L5	96.58 - 90.5 (5)	TP28.307x26.345x0.543	956.242	35.240	30.184	1.168	0.000	0.000	30.184	0.000
L6	90.5 - 60.5 (6)	TP33.911x28.307x0.57	1695.725	41.185	30.788	1.338	0.000	0.000	30.788	0.000
L7	60.5 - 47.5 (7)	TP36.34x33.911x0.638	1899.783	38.162	31.786	1.201	0.000	0.000	31.786	0.000
L8	47.5 - 30.5 (8)	TP38.896x34.687x0.667	2556.358	40.340	31.886	1.265	0.000	0.000	31.886	0.000
L9	30.5 - 16.75 (9)	TP41.467x38.896x0.646	2986.875	42.642	31.948	1.335	0.000	0.000	31.948	0.000
L10	16.75 - 14.25 (10)	TP41.935x41.467x0.642	3067.450	43.025	31.958	1.346	0.000	0.000	31.958	0.000
L11	14.25 - 0 (11)	TP44.6x41.935x0.706	3540.475	39.998	33.351	1.199	0.000	0.000	33.351	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	150 - 123.833 (1)	TP22.508x17.61x0.219	15.895	1.012	26.000	0.079	2.665	0.177	26.000	0.007
L2	123.833 - 118.5 (2)	TP23.507x22.508x0.355	18.772	0.708	20.965	0.069	2.672	0.101	20.965	0.005
L3	118.5 - 116.167 (3)	TP23.943x23.507x0.64	19.124	0.398	19.998	0.040	2.675	0.055	19.998	0.003
L4	116.167 - 96.58 (4)	TP27.61x23.943x0.46	21.140	0.542	20.084	0.055	2.651	0.060	20.084	0.003
L5	96.58 - 90.5 (5)	TP28.307x26.345x0.543	22.653	0.467	20.122	0.047	2.632	0.045	20.122	0.002
L6	90.5 - 60.5 (6)	TP33.911x28.307x0.57	26.736	0.437	20.526	0.043	2.581	0.029	20.526	0.001
L7	60.5 - 47.5 (7)	TP36.34x33.911x0.638	27.705	0.389	21.191	0.037	2.568	0.024	21.191	0.001
L8	47.5 - 30.5 (8)	TP38.896x34.687x0.667	30.550	0.372	21.257	0.036	2.532	0.019	21.257	0.001
L9	30.5 - 16.75 (9)	TP41.467x38.896x0.646	32.102	0.378	21.299	0.036	2.510	0.017	21.299	0.001
L10	16.75 - 14.25 (10)	TP41.935x41.467x0.642	32.388	0.379	21.305	0.036	2.507	0.016	21.305	0.001
L11	14.25 - 0 (11)	TP44.6x41.935x0.706	34.038	0.341	22.234	0.031	2.482	0.013	22.234	0.001

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 123.833 (1)	0.010	1.030	0.000	0.079	0.007	1.043 ✔	1.333	H1-3+VT ✔
L2	123.833 - 118.5 (2)	0.009	0.966	0.000	0.069	0.005	0.976 ✔	1.333	H1-3+VT ✔
L3	118.5 - 116.167 (3)	0.006	0.627	0.000	0.040	0.003	0.634 ✔	1.333	H1-3+VT ✔
L4	116.167 - 96.58 (4)	0.009	1.163	0.000	0.055	0.003	1.173 ✔	1.333	H1-3+VT ✔
L5	96.58 - 90.5 (5)	0.009	1.168	0.000	0.047	0.002	1.177 ✔	1.333	H1-3+VT ✔
L6	90.5 - 60.5 (6)	0.011	1.338	0.000	0.043	0.001	1.349 ✔	1.333	H1-3+VT ✔
L7	60.5 - 47.5 (7)	0.010	1.201	0.000	0.037	0.001	1.211 ✔	1.333	H1-3+VT ✔
L8	47.5 - 30.5 (8)	0.011	1.265	0.000	0.036	0.001	1.277 ✔	1.333	H1-3+VT ✔
L9	30.5 - 16.75 (9)	0.013	1.335	0.000	0.036	0.001	1.348 ✔	1.333	H1-3+VT ✔
L10	16.75 - 14.25 (10)	0.013	1.346	0.000	0.036	0.001	1.360 ✔	1.333	H1-3+VT ✔
L11	14.25 - 0 (11)	0.012	1.199	0.000	0.031	0.001	1.212 ✔	1.333	H1-3+VT ✔

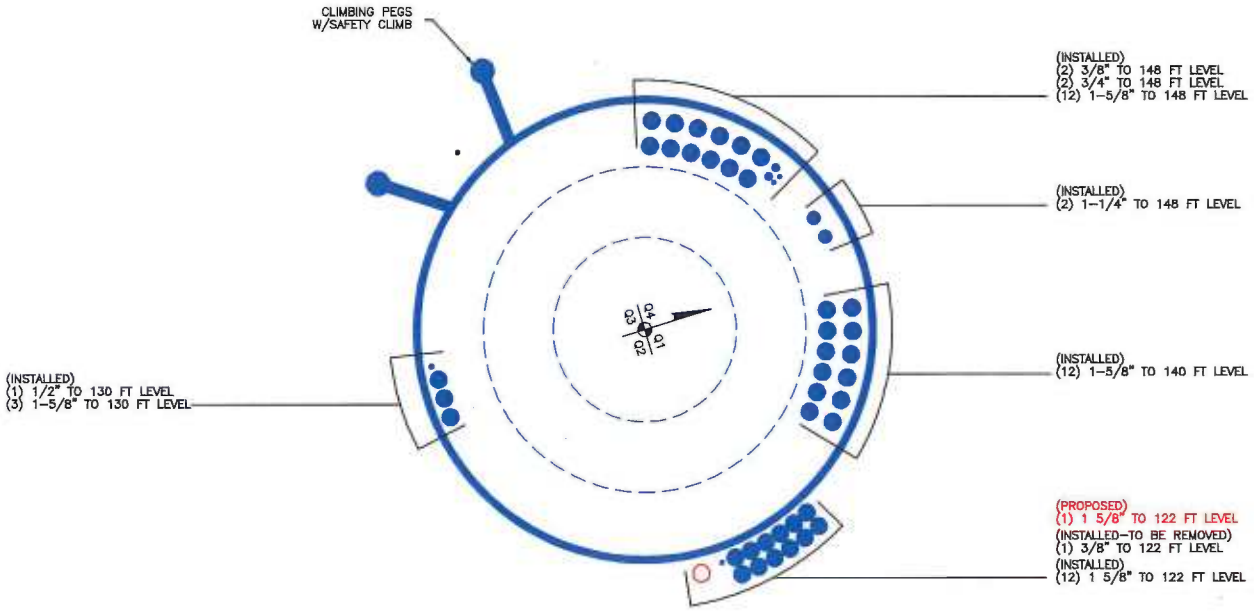
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	150 - 123.833	Pole	TP22.508x17.61x0.219	1	-6.323	816.208	77.3	Pass
L2	123.833 - 118.5	Pole	TP23.507x22.508x0.355	2	-7.728	1110.792	70.0	Pass
L3	118.5 - 116.167	Pole	TP23.943x23.507x0.64	3	-8.186	1920.600	44.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L4	116.167 - 96.58	Pole	TP27.61x23.943x0.46	4	-10.580	1565.995	84.3	Pass
L5	96.58 - 90.5	Pole	TP28.307x26.345x0.543	5	-13.126	1952.485	84.6	Pass
L6	90.5 - 60.5	Pole	TP33.911x28.307x0.57	6	-19.957	2510.345	96.9	Pass
L7	60.5 - 47.5	Pole	TP36.34x33.911x0.638	7	-22.009	3016.925	87.0	Pass
L8	47.5 - 30.5	Pole	TP38.896x34.687x0.667	8	-30.047	3491.180	91.6	Pass
L9	30.5 - 16.75	Pole	TP41.467x38.896x0.646	9	-34.497	3615.003	96.6	Pass
L10	16.75 - 14.25	Pole	TP41.935x41.467x0.642	10	-35.330	3637.730	97.4	Pass
L11	14.25 - 0	Pole	TP44.6x41.935x0.706	11	-40.627	4436.104	94.2	Pass
							Summary	
						Pole (L10)	97.4	Pass
						RATING =	**97.4**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 841295 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Reinforcement 1						
Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0	30.5	2	MS-850	F	0	T&C
30.5	60.5	3	MS-850	F	0	T&C
60.5	90.5	3	MS-650	F	0	T&C
90.5	118.5	3	MS-600	F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Reinforcement 2						
Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0	16.75	2	MS-850	F	0	T&C
14.25	30.5	1	MS-850	F	0	T&C
116.167	123.833	3	MP303	F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Reinforcement 3						
Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Bottom Elevation	Top Elevation	Original Thickness	Original Yield Stress	Original Ultimate Stress	Reinforced Shaft Capacity	Reinf. 1 QTY	Reinf. 1 Type	Rein. 1 Capacity	Reinf. 2 QTY	Reinf. 2 Type	Rein. 2 Capacity	Reinf. 3 QTY	Reinf. 3 Type	Rein. 3 Capacity	Control Stress Ratio	Top Height	Section Length	Lap Splice	# of Sides	Top Diameter	Bottom Diameter	Equivalent Shaft Thickness	Equivalent Shaft Fy	Equivalent Weight Mult.
123.8330	150.0000	0.2188	65	80	77.3%										77.3%	150.0000	26.1670	0.0000	12	17.6100	22.5084			
118.5000	123.8330	0.2188	65	80	57.3%				1	MP303	70.0%				70.0%	123.8330	5.3330	0.0000	12	22.5084	23.5067			
116.1670	118.5000	0.2188	65	80	35.5%	3	MS-600	44.9%	3	MP303	37.3%				44.9%	118.5000	2.3330	0.0000	12	23.5067	23.9434			
96.5800	116.1670	0.2188	65	80	66.5%	3	MS-600	84.3%							84.3%	116.1670	19.5870	4.4200	12	23.9434	27.6100			
90.5000	101.0000	0.3125	65	80	66.3%	3	MS-600	84.6%							84.6%	101.0000	10.5000	0.0000	12	26.3451	28.3067			
60.5000	90.5000	0.3125	65	80	77.6%	3	MS-650	96.9%							96.9%	90.5000	30.0000	0.0000	12	28.3067	33.9113			
47.5000	60.5000	0.3125	65	80	72.1%	3	MS-850	87.0%							87.0%	60.5000	13.0000	5.5000	12	33.9113	36.3400			
30.5000	53.0000	0.3750	65	80	76.1%	3	MS-850	91.6%							91.6%	53.0000	22.5000	0.0000	12	34.6875	38.8956			
16.7500	30.5000	0.3750	65	80	80.4%	2	MS-850	50.2%	1	MS-850	96.6%				96.6%	30.5000	13.7500	0.0000	12	38.8956	41.4673			
14.2500	16.7500	0.3750	65	80	81.2%	2	MS-850	50.6%	1	MS-850	97.4%				97.4%	16.7500	2.5000	0.0000	12	41.4673	41.9348			
0.0000	14.2500	0.3750	65	80	78.8%	2	MS-850	94.2%	2	MS-850	75.0%				94.2%	14.2500	14.2500	0.0000	12	41.9348	44.6000			

	Bottom Elevation Failure	Top Elevation Failure	Section Failure %
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

Rein1

Bottom	Top	Qty	Model	Position	T or T&C
0	30.5	2	MS-850	F	T&C
30.5	60.5	3	MS-850	F	T&C
60.5	90.5	3	MS-650	F	T&C
90.5	118.5	3	MS-600	F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

Flats (Used for relative orientation only. Actual flat numbers may vary.)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		1								1							
		1				1				1							
		1				1				1							
		1				1				1							

Rein2

Bottom	Top	Qty	Model	Position	T or T&C
0	16.75	2	MS-850	F	T&C
14.25	30.5	1	MS-850	F	T&C
116.167	123.833	3	MP303	F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
					1		1										
						1											
			1				1				1						

Rein3

Bottom	Top	Qty	Model	Position	T or T&C
0				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

Reinforcement Capacity

AeroSolutions LLC
Optimizing Your Tower Infrastructure
5500 Flatirons Parkway, Suite 100
Boulder, CO 80301
720-304-6882

Dimensions and Properties														Compression				Axial				
																		ASD-9			LRFD	
Model	Weight (lb/ft)	Area (in^2)	Moment of Inertia (in^4)	Moment of Inertia (in^4)	Centroid from Mating Edge (in)	Centroid from Bolt Hole Center (in)	Web Thickness (in)	Width (in)	Flange Width (in)	Flange Thickness (in)	Hole Diameter (in)	Yield Stress (ksi)	Ultimate Stress (ksi)	Slender. Ratio Coefficient	Unbraced Length (in)	Slender. Ratio Coefficient	Unbraced Length (in)	Allowable Axial (kip)	Allowable Axial w/ Increase (kip)	Governing Axial	Design Axial Strength (kip)	Governing Axial
Model	*Wt*	*A*	*Ix*	*Iy*	*Y*	*X*	*Tw*	*W*	*Wf*	*Tf*	*Dh*	*Fy*	*Fu*	*Kx*	*Lx*	*Ky*	*Ly*	*PAll*	*Pall.inc*	*Ptype.ASD*	*phiPn*	*Ptype.LRFD*
MP303	9.9	2.92	0.66	6.57	0.59	0	0.30	4.06	1.57	0.64	1.21875	65	80	0.80	18	1.00	18	96.4	128.6	Rupture	144.7	Rupture
MS-400	10.2	3.00	0.14	4.00	0.375	0	0.75	4	0	0	1.25	65	80	0.80	16.875	1.00	16.875	80.6	107.5	Rupture	120.9	Rupture
MS-450	15.3	4.50	0.38	7.59	0.5	0	1	4.5	0	0	1.25	65	80	0.80	20.625	1.00	20.625	127.5	170.0	Rupture	191.3	Rupture
MS-600	20.4	6.00	0.50	18.00	0.5	0	1	6	0	0	1.25	65	80	0.80	16.375	1.00	16.375	187.5	250.0	Rupture	281.3	Rupture
MS-650	27.6	8.13	1.06	28.61	0.625	0	1.25	6.5	0	0	1.25	65	80	0.80	19.25	1.00	19.25	259.4	345.8	Rupture	389.1	Rupture
MS-850	36.2	10.63	1.38	63.97	0.625	0	1.25	8.5	0	0	1.25	65	80	0.80	17.25	1.00	17.25	349.7	466.2	Compress.	539.1	Rupture

Anchor Rod Information for TIA/EIA-222-F and TIA-222-G-2

Site Information	
ID:	841295
Name:	BETHANY
App. #:	247523 Revision # 0

AeroSolutions LLC
Optimizing Your Tower Infrastructure

Base Reactions		
Moment:	3540	ft-kip
Axial:	41	kip
Shear:	34	kip
Base Plate Type:	Circular	

Design Information	
TIA Code:	F
ASIF:	1.333
Failure:	105%
eta Factor:	0.50

Original Anchor Rod Data		
Quantity:	12	
Diameter:	2.25	in
Material:	A615 GR 75	
Bolt Circle:	52.7	in
Bolt Spacing:		in
Bolt Group Area:	47.71	in^2
Bolt Group MOIx:	16552	in^4

Reactions Seen by Original AR Group		
Moment:	2360.3	kip-ft
Axial:	40.6	kip
Shear:	34.0	kip

Original AR Capacity Check		
Tension Load:	175.8	kip
Allowable load:	194.8	kip
AR Capacity:	90.3%	Pass

First Added Anchor Rod Data		
Quantity:	6	
Diameter:	2.25	in
Material:	A772	
Bolt Circle:	52.7	in
Bolt Group Area:	23.86	in^2
Bolt Group MOIx:	8276	in^4

Reactions Seen by First Added AR Group		
Moment:	1180.2	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

First Added AR Capacity Check		
Tension Load:	173.1	kip
Allowable load:	262.4	kip
AR Capacity:	66.0%	Pass

Second Added Anchor Rod Data		
Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Second Added AR Group		
Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Second Added AR Capacity Check		
Tension Load:	0.0	kip
Allowable load:	0.0	kip
AR Capacity:	0.0%	

Third Added Anchor Rod Data		
Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Second Added AR Group		
Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Second Added AR Capacity Check		
Tension Load:	0.0	kip
Allowable load:	0.0	kip
AR Capacity:	0.0%	

Rev.4.1

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

BU#: *841295*
Site Name: *BETHANY*
App #: *247523 Revision # 0*

Pole Manufacturer:	*Other*

Reactions		
Moment:	2360.3156	ft-kips
Axial:	40.627	kips
Shear:	34.038201	kips

Anchor Rod Data		
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	52.68	in

If No stiffeners, Criteria:	AISC ASD	<-Only Applcable to Unstiffened Cases

Anchor Rod Results

		Rigid
Maximum Rod Tension:	175.8 Kips	Service, ASD
Allowable Tension:	195.0 Kips	Fty*ASIF
Anchor Rod Stress Ratio:	90.2% Pass	

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a

Pole Data		
Diam:	44.6	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

BU#: *841295*
Site Name: *BETHANY*
App #: *247523 Revision # 0*

Pole Manufacturer:	*Other*

Reactions		
Moment:	3540	ft-kips
Axial:	41	kips
Shear:	34	kips

If No stiffeners, Criteria:	AISC ASD	<-Only Applcable to Unstiffened Cases

Plate Data		
Diam:	58.67	in
Thick:	2.75	in
Grade:	60	ksi
Single-Rod B-eff:	11.95	in

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	44.6	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Base Plate Results Flexural Check

Base Plate Stress:	46.8 ksi	Rigid
Allowable Plate Stress:	60.0 ksi	Service ASD
Base Plate Stress Ratio:	78.0% Pass	0.75*Fy*ASIF
		Y.L. Length: 28.04

n/a

Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a

* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

PROJECT	**841295 - Bethany, CT**			
SUBJECT	**Foundation Analysis**			
DATE	**06/25/14**	PAGE 1	OF 1	

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(918) 587-4630

Monopole Pad & Pier Foundation Analysis

Rev. Type: F

Design Loads:

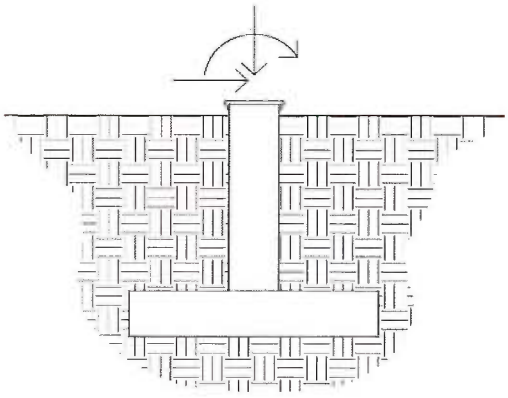
	Input unfactored loads	
Shear:	34.0	kips
Moment:	3,540.0	ft-kips
Tower Height:	150.0	ft
Tower Weight:	41.0	kips

Pad & Pier Dimensions / Properties:

Pole Diameter at Base:	44.60	in
Bearing Depth:	7.5	ft
Pad Width:	25.0	ft
Neglected Depth:	3.3	ft
Thickness:	6.0	ft
Pier Diameter:	6.0	ft
Pier Height Above Grade:	0.5	ft
BP Dist. Above Pier:	0.0	in
Clear Cover:	3.0	in

Rebar Yield Strength:	60000	psi
Concrete Strength:	3000	psi
Concrete Unit Weight:	0.15	kcf

Elevation Overview



Soil Data:

	Allowable Values	
Soil Unit Weight:	0.100	kcf
Ult. Bearing Capacity:	8.000	ksf
Angle of Friction:	30.000	deg
Cohesion:	0.000	ksf
Passive Pressure:	0.000	ksf
Base Friction:	0.300	

** Notes:

Summary of Results

Req'd Pier Diam.	OK
Overturning	75.1%
Shear Capacity	32.0%
Bearing	51.3%
Pad Shear - 1-way	17.6%
Pad Shear - 2-way	2.0%

EXHIBIT C

EBI Consulting
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RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

MetroPCS Existing Facility

Site ID: CTNH516A

AT&T Bethany Monopole

719 Amity Road
Bethany CT 06524

August 8, 2014

EBI PROJECT NUMBER: 62144082

21 B Street Burlington, MA 01803 Tel: (781) 273.2500 Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

August 8, 2014

MetroPCS USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Re: Emissions Values for Site: **CTNH516A - AT&T Bethany Monopole**

EBI Consulting was directed to analyze the proposed MetroPCS facility located at 719 Amity Road, Bethany CT, for the purpose of determining whether the emissions from the Proposed MetroPCS Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of μW/cm2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter (μW/cm2). The general population exposure limit for the cellular band is 567 μW/cm2, and the general population exposure limit for the PCS and AWS bands is 1000 μW/cm2. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed MetroPCS Wireless antenna facility located at 719 Amity Road, Bethany CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since MetroPCS is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, the actual antenna pattern gain value in the direction of the sample area was used. For this report the sample point is a 6 foot person standing at the base of the tower

For all calculations, all equipment was calculated using the following assumptions:

1) 2 GSM channels (1935.000 MHz—to 1945.000 MHz / 1980.000 MHz—to 1985.000 MHz) were considered for each sector of the proposed installation.
2) 2 UMTS channels (2110.000 to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation.
3) 2 LTE channels (2110.000 to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation.
4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
6) The antenna used in this modeling is the Ericsson AIR21 for LTE, UMTS and GSM. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.6 dBd gain value at its main lobe. Actual antenna gain values were used for all calculations as per the manufacturers specifications

7) The antenna mounting height centerline of the proposed antennas is **120 feet** above ground level (AGL)
8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general public threshold limits.

Site ID	CTNH516A - AT&T Bethany Monopole
Site Addresss	719 Amity Road, Bethany CT 06524
Site Type	Monopole

Sector 1																	
Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	120	114	None	0	0	48.326044	1.336834	0.13368%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	120	114	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	120	114	1-5/8"	0	0	24.163022	0.668417	0.06684%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	120	114	1-5/8"	0	0	24.163022	0.668417	0.06684%
														Sector total Power Density Value:		0.267%	

Sector 2																	
Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	120	114	None	0	0	48.326044	1.336834	0.13368%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	120	114	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	120	114	1-5/8"	0	0	24.163022	0.668417	0.06684%
2b	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	120	114	1-5/8"	0	0	24.163022	0.668417	0.06684%
														Sector total Power Density Value:		0.267%	

Sector 3																	
Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	120	114	None	0	0	48.326044	1.336834	0.13368%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	120	114	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	120	114	1-5/8"	0	0	24.163022	0.668417	0.06684%
2b	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	120	114	1-5/8"	0	0	24.163022	0.668417	0.06684%
														Sector total Power Density Value:		0.267%	

Site Composite MPE %	
Carrier	MPE %
MetroPCS	0.802%
Sprint	4.390%
Bethany FD	0.420%
Bethany Hwy Dept	0.700%
AT&T	17.110%
Verizon Wireless	20.020%
Total Site MPE %	**43.442%**

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Summary

All calculations performed for this analysis yielded results that were well within the allowable limits for general public exposure to RF Emissions.

The anticipated Maximum Composite contributions from the MetroPCS facility are **0.802% (0.267% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **43.442%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were within the allowable 100% threshold standard per the federal government.

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803