COHEN and WOLF P.C.
ATTORNEYS AT LAW

JULIE D. KOHLER

PLEASE REPLY TO: Bridgeport
WRITER'S DIRECT DIAL: (203) 337-4157
E-Mail Address: jkohler@cohenandwolf.com

July 2, 2014

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: Notice of Exempt Modification
AT&T Mobility- Crown Castle/ MetroPCS co-location
Site ID CTHA509A
12 Nepaug Road Burlington, CT

Dear Attorney Bachman:

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

In this case, AT&T Mobility/Crown Castle owns the existing monopole telecommunications tower and related facility at 12 Nepaug Road, Burlington, Connecticut (Latitude:41.782500, Longitude: -72.9896). MetroPCS intends to replace three existing antennas with six new antennas and related equipment at this existing telecommunications facility in Burlington ("Burlington 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 Theodore Shafer, and the property owner, AT&T Mobility.

The existing Burlington Facility consists of a 120 foot monopole tower.[1] MetroPCS plans to replace three existing antennas on pipe mounts with six new antennas on T-arm mounts at a centerline of 90 feet. (See the plans revised to May 6, 2014 attached hereto as Exhibit A). MetroPCS will also install a 6' x 6' concrete pad, replace an equipment cabinet and install a battery backup unit, install fiber cable and reuse existing coax cables. The existing Burlington Facility is structurally capable of supporting MetroPCS' proposed modifications, as indicated in the structural analysis dated June 10, 2014 and attached hereto as Exhibit B.

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

[1] The Burlington Facility was approved at a height of 120 feet (Docket 268), which is consistent with this filing.

1. The proposed modification will not increase the height of the tower. MetroPCS' replacement and additional antennas will be installed at a centerline of 90 feet, merely replacing existing antennas located at the same 90 foot elevation. 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 of the site boundaries or lease area, as depicted on Sheets 2 of Exhibit A. MetroPCS' equipment will be located entirely within the existing compound area.

3. The proposed modification to the Burlington 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 June 30, 2014, MetroPCS' operations would add 1.477% 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 67.697% 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 Burlington Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement by the Council of this proposed exempt modification, MetroPCS shall commence construction approximately sixty days from the date of the Council's notice of acknowledgement.

Sincerely,

Julie D. Kohler, Esq.

cc: Town of Burlington, First Selectman Theodore Shafer
AT&T Mobility
Crown Castle
Sheldon Freincle, NSS

EXHIBIT A

KEY PLAN

N.T.S.

CONFIGURATION

5A

SUBMITTALS	
LE REV A	05-06-14

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

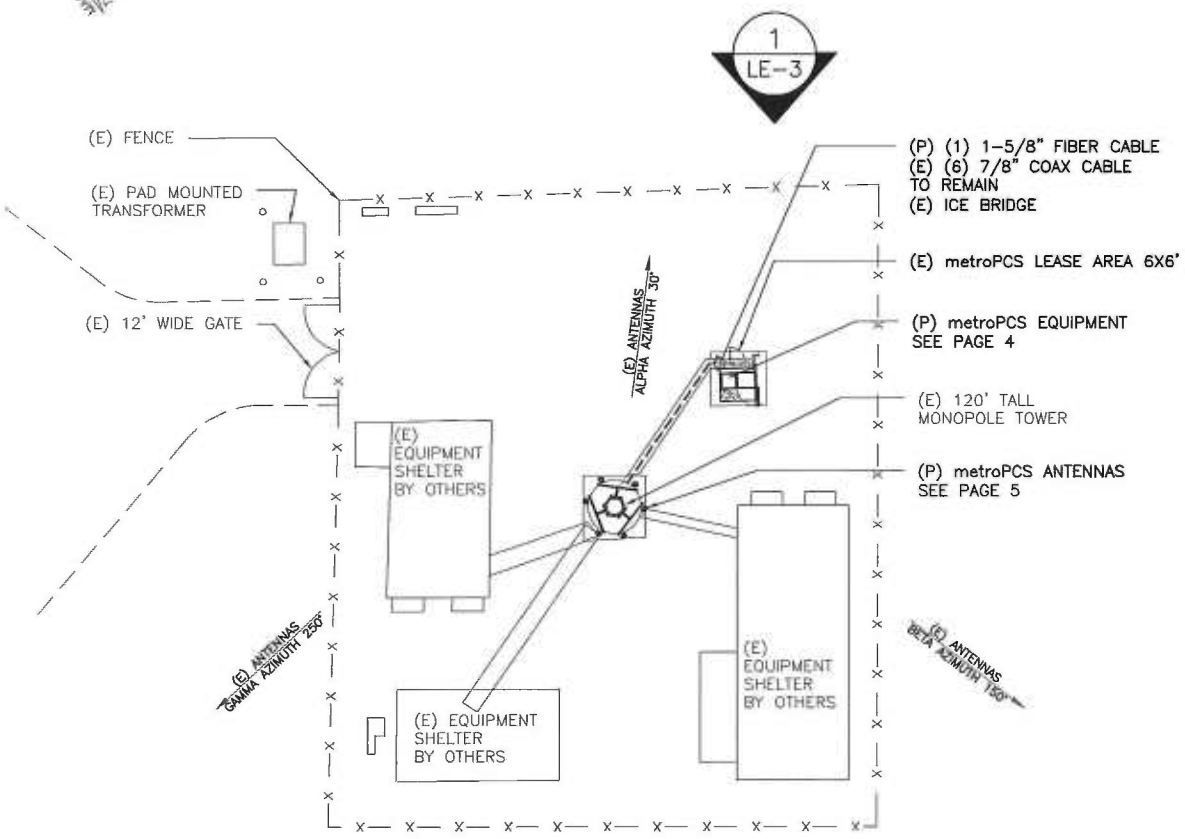
LEASE EXHIBIT

SITE NUMBER:
CTHA509A
SITE NAME:
POCKET SMART WIRELESS
SITE ADDRESS:
12 NEPAUG ROAD
BURLINGTON, CT 06013

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: MA | CHECKED BY: SM



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.

SITE PLAN (1 / LE-2)
SCALE: N.T.S.

CONFIGURATION
5A

SUBMITTALS	
LE REV A	05-06-14

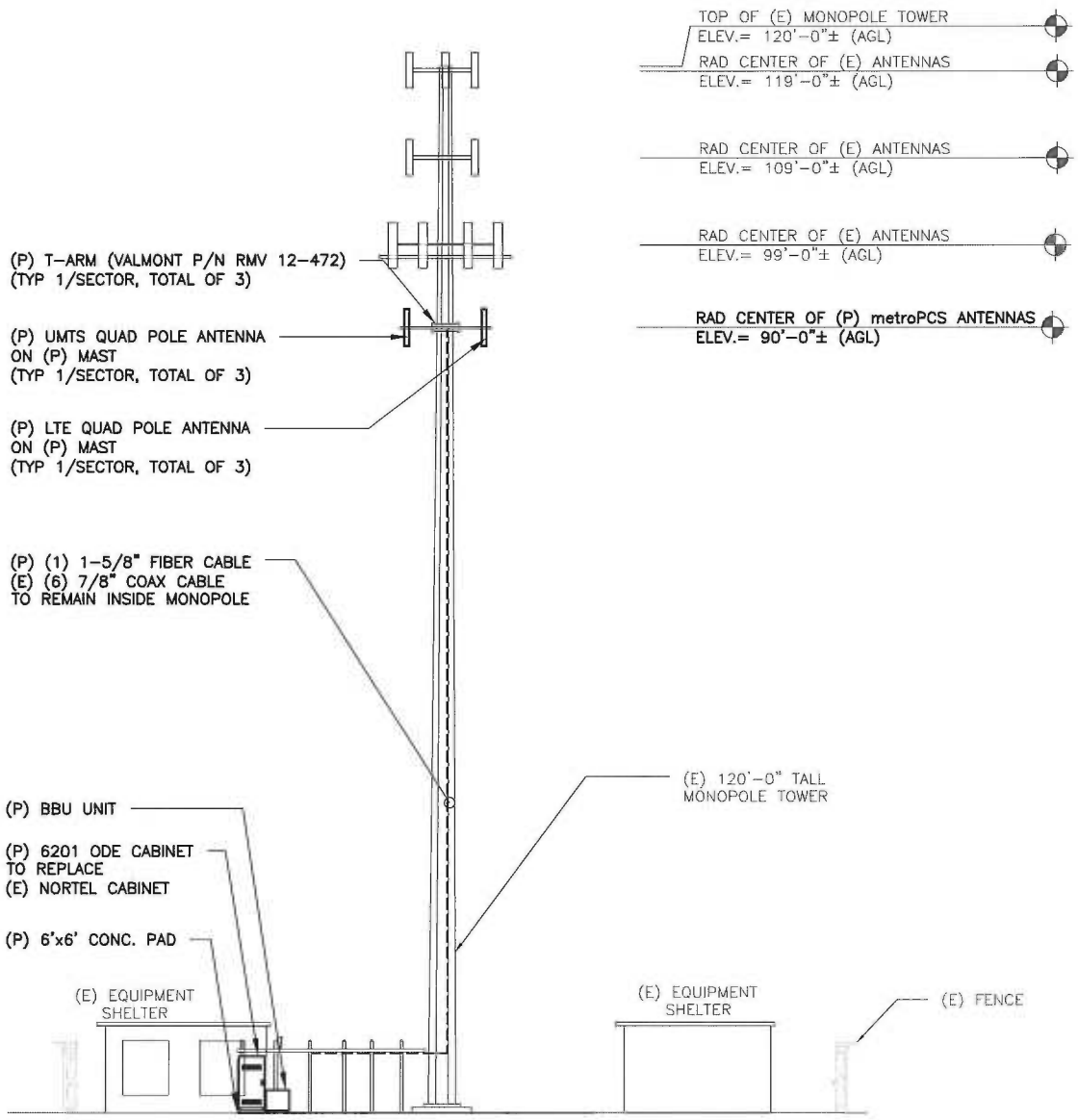
ATLANTIS GROUP
1340 Centre Street
Suite 212
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CTHA509A
SITE NAME:
POCKET SMART WIRELESS
SITE ADDRESS:
12 NEPAUG ROAD
BURLINGTON, CT 06013

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: MA | CHECKED BY: SM



ELEVATION

N.T.S.

1
LE-3

CONFIGURATION

5A

SUBMITTALS	
LE REV A	05-06-14

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

LEASE EXHIBIT

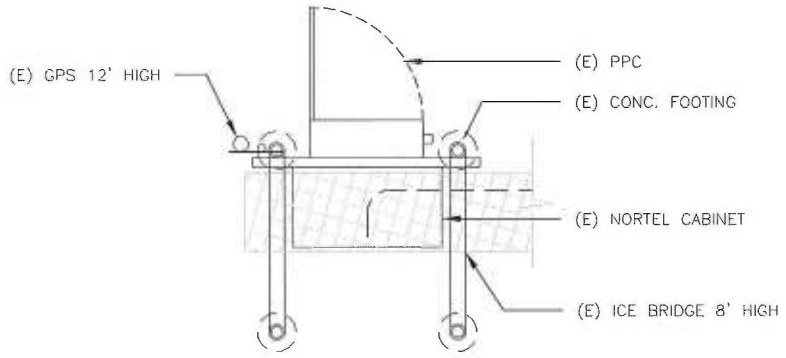
SITE NUMBER:
CTHA509A
SITE NAME:
POCKET SMART WIRELESS
SITE ADDRESS:
12 NEPAUG ROAD
BURLINGTON, CT 06013

NORTHEAST SITE SOLUTIONS
54 MAIN STREET, UNIT 3
STURBRIDGE, MA 01566
(508) 434-5237

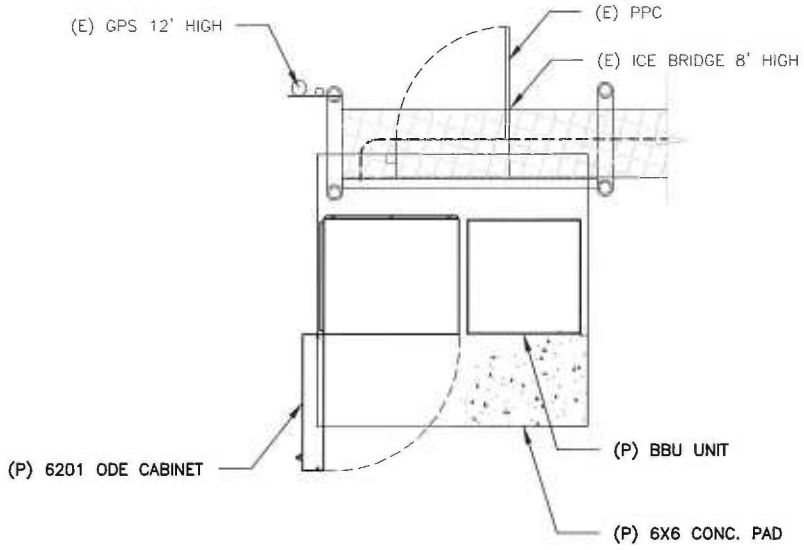
FOR metroPCS.

metroPCS WIRELESS, INC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

DRAWN BY: MA | CHECKED BY: SM



EXISTING EQUIPMENT



PROPOSED EQUIPMENT

CONFIGURATION

5A

SUBMITTALS	
LE REV A	05-06-14

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

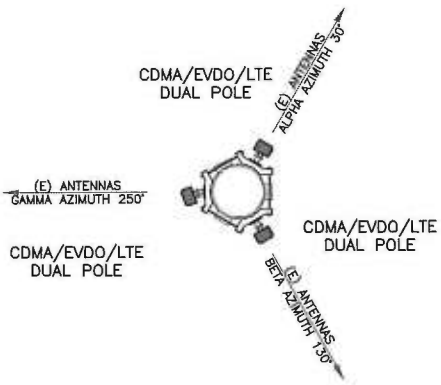
LEASE EXHIBIT

SITE NUMBER:
CTHA509A
SITE NAME:
POCKET SMART WIRELESS
SITE ADDRESS:
12 NEPAUG ROAD
BURLINGTON, CT 06013

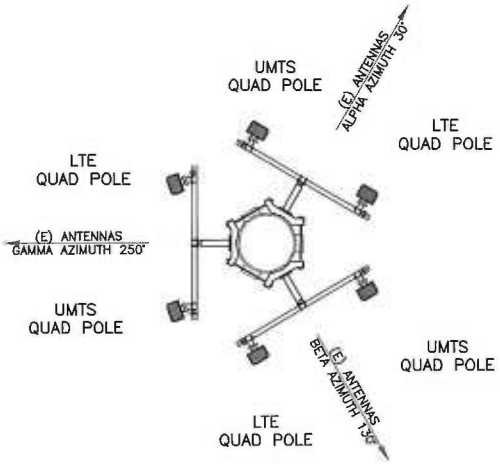
NORTHEAST SITE SOLUTIONS
54 MAIN STREET, UNIT 3
STURBRIDGE, MA 01566
(508) 434-5237

FOR
metroPCS.
metroPCS WIRELESS, INC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

DRAWN BY: MA | CHECKED BY: SM



EXISTING ANTENNA CONFIGURATION



PROPOSED ANTENNA CONFIGURATION

CONFIGURATION
5A

SUBMITTALS	
LE REV A	05-06-14

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

LEASE EXHIBIT

SITE NUMBER:
CTHA509A
SITE NAME:
POCKET SMART WIRELESS
SITE ADDRESS:
12 NEPAUG ROAD
BURLINGTON, CT 06013

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: MA | CHECKED BY: SM

EXHIBIT B

Date: **June 10, 2014**

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

GPD Group
520 South Main Street, Suite 2531
Akon, OH 44311
(614) 859-1607
dpalkovic@gpdgroup.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Metro PCS* Co-Locate**	
	Carrier Site Number:	CTHA509A
Crown Castle Designation:	**Crown Castle BU Number:**	845993
	Crown Castle Site Name:	BURLINGTON-NEPAUG ROAD
	Crown Castle JDE Job Number:	291019
	Crown Castle Work Order Number:	771889
	Crown Castle Application Number:	247460 Rev. 1
Engineering Firm Designation:	**GPD Group Project Number:**	2014777.845993.01
Site Data:	**12 Nepaug Road, Burlington, CT 06013, Hartford County** **Latitude *41° 46' 56.9"*, Longitude *-72° 59' 22.7"*** **118.5 Foot – EEI Monopole Tower**	

Dear Ms. Darcy Tarr,

GPD 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 653211, in accordance with application 247460, revision 1.

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:

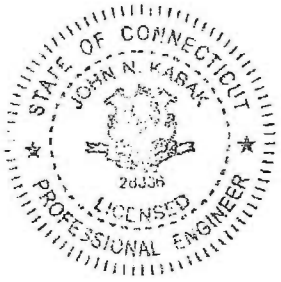
LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The 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 80 mph fastest mile.

We at *GPD 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.

Structural analysis prepared by: Joshua Huffine, E.I.

Respectfully submitted by:



John N. Kabak, P.E.
Connecticut #: PEN.0028336

6/10/2014

TABLE OF CONTENTS

1) INTRODUCTION

The existing monopole has three major sections connected by slip joints. It has 18 sides and is evenly tapered from 51" (flat-flat) at the base to 22" (flat-flat) at the top. The structure is galvanized and has no tower lighting.

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 80 mph with no ice, 38 mph with 1 inch ice thickness (in accordance with ASCE7 ice conditions) 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
88.0	90.0	3	Ericsson	ERICSSON AIR 21 B2A B4P	1	1-5/8	1
		3	Ericsson	ERICSSON AIR 21 B4A B2P			
	88.0	1		T-Arm Mount [TA 602-3]			

Notes:
1) See Appendix B for the proposed coax layout.

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
119.0	119.0	1		Platform Mount [LP 1201-1]	12 2 1	1-5/8 7/8 1/2	
		6	Ericsson	RBS 6601			
		3	KMW Communications	AM-X-CD-16-65-00T-RET			
		6	Powerwave Technologies	7770.00			
		6	Powerwave Technologies	LGP13519			
		6	Powerwave Technologies	LGP21401			
		1	Raycap	DC6-48-60-18-8F			
109.0	109.0	1		Platform Mount [LP 1201-1]	6	1-1/4	
		6	Andrew	950F85T2E-M			
99.0	99.0	1		Platform Mount [LP 1201-1]	12	1-5/8	
		3	Antel	BXA-171085-8BF-EDIN-2			1
		3	Antel	BXA-70063-6CF-2			
		6	Antel	LPA-80080/4CF			
		6	RFS Celwave	FD9R6004/2C-3L			
88.0	88.0				6	1-5/8	
		1		Pipe Mount [PM 602-3]			2
		3	Kathrein	742 213			

Notes:
1) Reserved equipment.
2) Existing equipment is to be removed prior to installation of the proposed loading configuration and was not considered in this analysis.

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Foundation Calculations	URS, Project #: CW1-057, dated 10/28/2005	Doc ID #: 5072131	Crown DMZ
Geotechnical Report	JGI, Project #: 04143G, dated 2/24/2004	Doc ID #: 4551029	Crown DMZ
Tower Mapping	GPD, Project #: 2008265.31, dated 12/3/2008	D. Palkovic	GPD Group
Previous Structural Analysis	GPD, Project #: 2012801.73, dated 10/26/2012	Doc ID #: 4301089	Crown DMZ

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.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	118.5 - 96.5	Pole	TP27.59x22x0.1875	1	-6.32	816.35	25.2	Pass
L2	96.5 - 47.75	Pole	TP39.49x26.1986x0.25	2	-15.97	1555.53	63.8	Pass
L3	47.75 - 0	Pole	TP51x37.6042x0.3125	3	-26.39	2522.69	65.3	Pass
						Summary	ELC:	Load Case 7
						Pole (L3)	65.3	Pass
						Rating =	65.3	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	58.2	Pass
1	Base Plate	0	43.2	Pass
1	Base Foundation	0	14.9	Pass
1	Base Foundation Soil Interaction	0	46.7	Pass

Structure Rating (max from all components) =	65.3%

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

4.1) Recommendations

The existing tower and its foundation are sufficient for the proposed loading and do not require modifications.

5) DISCLAIMER OF WARRANTIES

GPD GROUP has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD GROUP in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD GROUP does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD GROUP provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD GROUP, but are beyond the scope of this report.

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

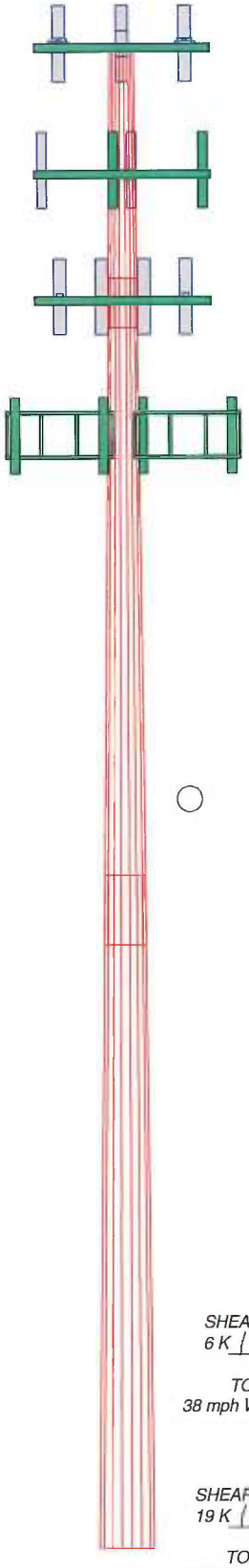
Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

GPD GROUP makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD GROUP will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD GROUP pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3
Length (ft)	22.00	52.75	53.25
Number of Sides	18	18	18
Thickness (in)	0.1875	0.2500	0.3125
Socket Length (ft)	4.00	5.50	
Top Dia (in)	22.0000	26.1986	37.6042
Bot Dia (in)	27.5900	39.4800	51.0000
Grade	A572-65		
Weight (K)	1.1	4.6	7.9



DESIGNED APPURTENANCE LOADING

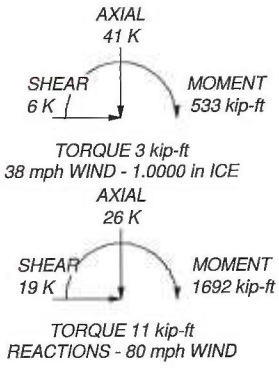
TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 1201-1]	119	(2) Pipe Mount 6'x2.375"	109
AM-X-CD-16-65-00T-RET w/ Mount Pipe	119	(2) Pipe Mount 6'x2.375"	109
		Platform Mount [LP 1201-1]	99
AM-X-CD-16-65-00T-RET w/ Mount Pipe	119	BXA-171085-8BF-EDIN-2 w/ Mount Pipe	99
AM-X-CD-16-65-00T-RET w/ Mount Pipe	119	BXA-171085-8BF-EDIN-2 w/ Mount Pipe	99
(2) 7770.00 w/ Mount Pipe	119	BXA-171085-8BF-EDIN-2 w/ Mount Pipe	99
(2) 7770.00 w/ Mount Pipe	119		
(2) 7770.00 w/ Mount Pipe	119	BXA-70063-6CF-2 w/ Mount Pipe	99
(2) LGP13519	119	BXA-70063-6CF-2 w/ Mount Pipe	99
(2) LGP13519	119	BXA-70063-6CF-2 w/ Mount Pipe	99
(2) LGP13519	119	(2) LPA-80080/4CF w/ Mount Pipe	99
(2) LGP21401	119	(2) LPA-80080/4CF w/ Mount Pipe	99
(2) LGP21401	119	(2) LPA-80080/4CF w/ Mount Pipe	99
(2) LGP21401	119	(2) FD9R6004/2C-3L	99
(2) RBS 6601	119	(2) FD9R6004/2C-3L	99
(2) RBS 6601	119	(2) FD9R6004/2C-3L	99
(2) RBS 6601	119	T-Arm Mount [TA 602-3]	88
DC6-48-60-18-8F	119	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	88
Pipe Mount 6'x2.375"	119		
Pipe Mount 6'x2.375"	119	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	88
Pipe Mount 6'x2.375"	119		
Pipe Mount 6'x2.375"	119	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	88
Pipe Mount 6'x2.375"	119	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	88
Pipe Mount 6'x2.375"	119		
Platform Mount [LP 1201-1]	109	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	88
(2) 950F85T2E-M w/ Mount Pipe	109		
(2) 950F85T2E-M w/ Mount Pipe	109	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	88
(2) 950F85T2E-M w/ Mount Pipe	109		
(2) Pipe Mount 6'x2.375"	109		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 65.3%

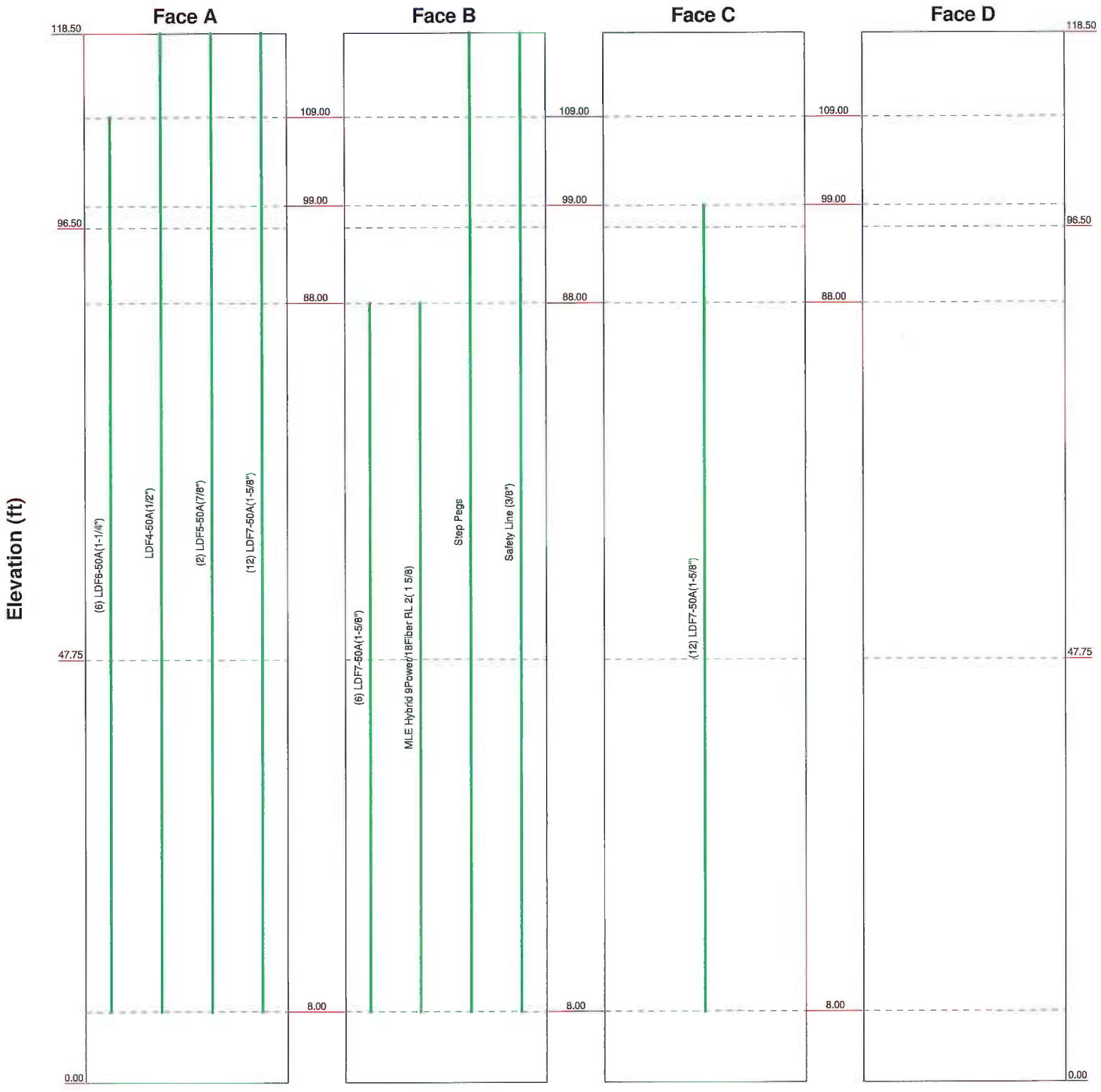


GPD GROUP
Consulting Engineers
GPD Group
520 South Main Street, Suite 2531
Akon, OH 44311
Phone: (330) 572-2153
FAX: (330) 572-2101

Job: ***Burlington-Nepaug Road - BU#: 845993***			
Project: ***2014777.845993.01***			
Client: Crown Castle USA, Inc.	Drawn by: Joshua Huffine	App'd:	
Code: TIA/EIA-222-F	Date: 06/10/14	Scale: NTS	
Path: T:\Crown\845993\01\TNX\845993.eri		Dwg No. E-1	

Feed Line Distribution Chart
0' - 118'6"

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



GPD GROUP
Consulting Engineers

GPD Group
520 South Main Street, Suite 2531
Akon, OH 44311
Phone: (330) 572-2153
FAX: (330) 572-2101

Job: ***Burlington-Nepaug Road - BU#: 845993***			
Project: ***2014777.845993.01***			
Client: Crown Castle USA, Inc.	Drawn by: Joshua Huffine	App'd:	
Code: TIA/EIA-222-F	Date: 06/10/14	Scale: NTS	
Path: T:\Crown\845993\01\TNX\845993.eri		Dwg No. E-7	

tnxTower	Job	Page
	Burlington-Nepaug Road - BU#: 845993	1 of 9
GPD Group 520 South Main Street, Suite 2531 Akon, OH 44311 Phone: (330) 572-2153 FAX: (330) 572-2101	**Project** 2014777.845993.01	**Date** 17:31:25 06/10/14
	Client Crown Castle USA, Inc.	**Designed by** Joshua Huffine

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 Hartford County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
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*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	118.50-96.50	22.00	4.00	18	22.0000	27.5900	0.1875	0.7500	A572-65 (65 ksi)
L2	96.50-47.75	52.75	5.50	18	26.1986	39.4900	0.2500	1.0000	A572-65 (65 ksi)
L3	47.75-0.00	53.25		18	37.6042	51.0000	0.3125	1.2500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	22.3394	12.9812	780.3007	7.7434	11.1760	69.8193	1561.6281	6.4918	3.5420	18.891
	28.0156	16.3079	1547.0922	9.7279	14.0157	110.3826	3096.2202	8.1555	4.5258	24.138
L2	27.6262	20.5902	1751.5720	9.2118	13.3089	131.6090	3505.4488	10.2971	4.1710	16.684
	40.0992	31.1369	6057.1925	13.9302	20.0609	301.9399	12122.3553	15.5714	6.5102	26.041
L3	39.5892	36.9887	6498.7512	13.2385	19.1029	340.1968	13006.0537	18.4979	6.0683	19.419
	51.7868	50.2757	16319.1303	17.9941	25.9080	629.8877	32659.7336	25.1426	8.4260	26.963

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 118.50-96.50				1	1	1		
L2 96.50-47.75				1	1	1		
L3 47.75-0.00				1	1	1		

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 plf
LDF6-50A(1-1/4")	A	No	Inside Pole	109.00 - 8.00	6	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
						2" Ice	0.00	0.66
						4" Ice	0.00	0.66
LDF4-50A(1/2")	A	No	Inside Pole	118.50 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
LDF5-50A(7/8")	A	No	Inside Pole	118.50 - 8.00	2	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33
LDF7-50A(1-5/8")	A	No	Inside Pole	118.50 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
LDF7-50A(1-5/8")	B	No	Inside Pole	88.00 - 8.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	B	No	Inside Pole	88.00 - 8.00	1	No Ice	0.00	1.07
						1/2" Ice	0.00	1.07
						1" Ice	0.00	1.07
						2" Ice	0.00	1.07
						4" Ice	0.00	1.07
Step Pegs	B	No	CaAa (Out Of Face)	118.50 - 8.00	1	No Ice	0.08	2.72
						1/2" Ice	0.18	3.51
						1" Ice	0.28	4.92
						2" Ice	0.48	9.56

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						4" Ice	0.88	26.18
Safety Line (3/8")	B	No	CaAa (Out Of Face)	118.50 - 8.00	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75
						1" Ice	0.24	1.28
						2" Ice	0.44	2.34
						4" Ice	0.84	4.46
LDF7-50A(1-5/8")	C	No	Inside Pole	99.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Platform Mount [LP 1201-1]	C	None			0.0000	119.00	No Ice	23.10	23.10	2.10
							1/2" Ice	26.80	26.80	2.50
							1" Ice	30.50	30.50	2.90
							2" Ice	37.90	37.90	3.70
							4" Ice	52.70	52.70	5.30
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Centroid-Face	4.00	0.00	0.0000	119.00	No Ice	8.50	6.30	0.07
			0.00				1/2" Ice	9.15	7.48	0.14
							1" Ice	9.77	8.37	0.21
							2" Ice	11.03	10.18	0.38
							4" Ice	13.68	14.02	0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Centroid-Face	4.00	0.00	0.0000	119.00	No Ice	8.50	6.30	0.07
			0.00				1/2" Ice	9.15	7.48	0.14
							1" Ice	9.77	8.37	0.21
							2" Ice	11.03	10.18	0.38
							4" Ice	13.68	14.02	0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Centroid-Face	4.00	0.00	0.0000	119.00	No Ice	8.50	6.30	0.07
			0.00				1/2" Ice	9.15	7.48	0.14
							1" Ice	9.77	8.37	0.21
							2" Ice	11.03	10.18	0.38
							4" Ice	13.68	14.02	0.87
(2) 7770.00 w/ Mount Pipe	A	From Centroid-Face	4.00	0.00	0.0000	119.00	No Ice	6.22	4.35	0.06
			0.00				1/2" Ice	6.77	5.20	0.11
							1" Ice	7.30	5.92	0.16
							2" Ice	8.38	7.41	0.29
							4" Ice	10.69	10.76	0.68
(2) 7770.00 w/ Mount Pipe	B	From Centroid-Face	4.00	0.00	0.0000	119.00	No Ice	6.22	4.35	0.06
			0.00				1/2" Ice	6.77	5.20	0.11
							1" Ice	7.30	5.92	0.16
							2" Ice	8.38	7.41	0.29
							4" Ice	10.69	10.76	0.68
(2) 7770.00 w/ Mount Pipe	C	From Centroid-Face	4.00	0.00	0.0000	119.00	No Ice	6.22	4.35	0.06
			0.00				1/2" Ice	6.77	5.20	0.11
							1" Ice	7.30	5.92	0.16
							2" Ice	8.38	7.41	0.29
							4" Ice	10.69	10.76	0.68
(2) LGP13519	A	From Centroid-Face	4.00	0.00	0.0000	119.00	No Ice	0.34	0.21	0.01
			0.00				1/2" Ice	0.42	0.28	0.01
							1" Ice	0.51	0.36	0.01

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	0.73	0.55	0.02
						4" Ice	1.25	1.03	0.07
(2) LGP13519	B	From Centroid-Face	4.00 0.00 0.00	0.0000	119.00	No Ice	0.34	0.21	0.01
						1/2" Ice	0.42	0.28	0.01
						1" Ice	0.51	0.36	0.01
						2" Ice	0.73	0.55	0.02
						4" Ice	1.25	1.03	0.07
(2) LGP13519	C	From Centroid-Face	4.00 0.00 0.00	0.0000	119.00	No Ice	0.34	0.21	0.01
						1/2" Ice	0.42	0.28	0.01
						1" Ice	0.51	0.36	0.01
						2" Ice	0.73	0.55	0.02
						4" Ice	1.25	1.03	0.07
(2) LGP21401	A	From Centroid-Face	4.00 0.00 0.00	0.0000	119.00	No Ice	1.29	0.23	0.01
						1/2" Ice	1.45	0.31	0.02
						1" Ice	1.61	0.40	0.03
						2" Ice	1.97	0.61	0.05
						4" Ice	2.79	1.12	0.14
(2) LGP21401	B	From Centroid-Face	4.00 0.00 0.00	0.0000	119.00	No Ice	1.29	0.23	0.01
						1/2" Ice	1.45	0.31	0.02
						1" Ice	1.61	0.40	0.03
						2" Ice	1.97	0.61	0.05
						4" Ice	2.79	1.12	0.14
(2) LGP21401	C	From Centroid-Face	4.00 0.00 0.00	0.0000	119.00	No Ice	1.29	0.23	0.01
						1/2" Ice	1.45	0.31	0.02
						1" Ice	1.61	0.40	0.03
						2" Ice	1.97	0.61	0.05
						4" Ice	2.79	1.12	0.14
(2) RBS 6601	A	From Centroid-Face	4.00 0.00 0.00	0.0000	119.00	No Ice	0.55	0.40	0.02
						1/2" Ice	0.70	0.52	0.03
						1" Ice	0.86	0.64	0.05
						2" Ice	1.19	0.91	0.09
						4" Ice	1.97	1.55	0.21
(2) RBS 6601	B	From Centroid-Face	4.00 0.00 0.00	0.0000	119.00	No Ice	0.55	0.40	0.02
						1/2" Ice	0.70	0.52	0.03
						1" Ice	0.86	0.64	0.05
						2" Ice	1.19	0.91	0.09
						4" Ice	1.97	1.55	0.21
(2) RBS 6601	C	From Centroid-Face	4.00 0.00 0.00	0.0000	119.00	No Ice	0.55	0.40	0.02
						1/2" Ice	0.70	0.52	0.03
						1" Ice	0.86	0.64	0.05
						2" Ice	1.19	0.91	0.09
						4" Ice	1.97	1.55	0.21
DC6-48-60-18-8F	B	From Centroid-Face	4.00 0.00 0.00	0.0000	119.00	No Ice	2.57	2.57	0.02
						1/2" Ice	2.80	2.80	0.04
						1" Ice	3.04	3.04	0.07
						2" Ice	3.54	3.54	0.13
						4" Ice	4.66	4.66	0.30
Pipe Mount 6'x2.375"	A	From Centroid-Face	4.00 0.00 0.00	0.0000	119.00	No Ice	1.43	1.43	0.03
						1/2" Ice	1.92	1.92	0.04
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
						4" Ice	4.70	4.70	0.23
Pipe Mount 6'x2.375"	B	From Centroid-Face	4.00 0.00 0.00	0.0000	119.00	No Ice	1.43	1.43	0.03
						1/2" Ice	1.92	1.92	0.04
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
						4" Ice	4.70	4.70	0.23

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
Pipe Mount 6'x2.375"	C	From Centroid-Face	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.03 0.04 0.05 0.09 0.23
Pipe Mount 6'x2.375"	A	From Centroid-Face	2.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.03 0.04 0.05 0.09 0.23
Pipe Mount 6'x2.375"	B	From Centroid-Face	2.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.03 0.04 0.05 0.09 0.23
Pipe Mount 6'x2.375"	C	From Centroid-Face	2.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.03 0.04 0.05 0.09 0.23
Platform Mount [LP 1201-1]	C	None		0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	23.10 26.80 30.50 37.90 52.70	23.10 26.80 30.50 37.90 52.70	2.10 2.50 2.90 3.70 5.30
(2) 950F85T2E-M w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.02 3.47 3.90 4.80 6.71	5.66 6.55 7.31 8.95 12.54	0.03 0.07 0.12 0.24 0.59
(2) 950F85T2E-M w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.02 3.47 3.90 4.80 6.71	5.66 6.55 7.31 8.95 12.54	0.03 0.07 0.12 0.24 0.59
(2) 950F85T2E-M w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.02 3.47 3.90 4.80 6.71	5.66 6.55 7.31 8.95 12.54	0.03 0.07 0.12 0.24 0.59
(2) Pipe Mount 6'x2.375"	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.03 0.04 0.05 0.09 0.23
(2) Pipe Mount 6'x2.375"	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.03 0.04 0.05 0.09 0.23
(2) Pipe Mount 6'x2.375"	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.03 0.04 0.05 0.09 0.23
Platform Mount [LP 1201-1]	C	None		0.0000	99.00	No Ice 1/2" Ice	23.10 26.80	23.10 26.80	2.10 2.50

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" Ice	30.50	30.50	2.90
						2" Ice	37.90	37.90	3.70
						4" Ice	52.70	52.70	5.30
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.41 3.88 4.35 5.36 7.52	3.58 4.38 5.06 6.47 9.64	0.03 0.07 0.11 0.21 0.52
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	B	From Centroid-Face	4.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.41 3.88 4.35 5.36 7.52	3.58 4.38 5.06 6.47 9.64	0.03 0.07 0.11 0.21 0.52
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	C	From Centroid-Face	4.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.41 3.88 4.35 5.36 7.52	3.58 4.38 5.06 6.47 9.64	0.03 0.07 0.11 0.21 0.52
BXA-70063-6CF-2 w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.80 6.95 7.82 9.60 13.37	0.04 0.10 0.17 0.34 0.80
BXA-70063-6CF-2 w/ Mount Pipe	B	From Centroid-Face	4.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.80 6.95 7.82 9.60 13.37	0.04 0.10 0.17 0.34 0.80
BXA-70063-6CF-2 w/ Mount Pipe	C	From Centroid-Face	4.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.80 6.95 7.82 9.60 13.37	0.04 0.10 0.17 0.34 0.80
(2) LPA-80080/4CF w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.86 3.22 3.59 4.45 6.32	7.23 7.92 8.63 10.11 13.34	0.03 0.08 0.13 0.25 0.61
(2) LPA-80080/4CF w/ Mount Pipe	B	From Centroid-Face	4.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.86 3.22 3.59 4.45 6.32	7.23 7.92 8.63 10.11 13.34	0.03 0.08 0.13 0.25 0.61
(2) LPA-80080/4CF w/ Mount Pipe	C	From Centroid-Face	4.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.86 3.22 3.59 4.45 6.32	7.23 7.92 8.63 10.11 13.34	0.03 0.08 0.13 0.25 0.61
(2) FD9R6004/2C-3L	A	From Centroid-Face	4.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	0.00 0.01 0.01 0.02 0.06
(2) FD9R6004/2C-3L	B	From Centroid-Face	4.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.37 0.45 0.54 0.75	0.08 0.14 0.20 0.34	0.00 0.01 0.01 0.02

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	1.28	0.74	0.06
(2) FD9R6004/2C-3L	C	From Centroid-Face	4.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	0.00 0.01 0.01 0.02 0.06
T-Arm Mount [TA 602-3]	C	None		0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.59 15.44 19.29 26.99 42.39	11.59 15.44 19.29 26.99 42.39	0.77 0.99 1.21 1.64 2.50
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	4.00 0.00 2.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.90 7.46 8.00 9.10 11.44	5.72 6.63 7.42 9.07 12.58	0.11 0.17 0.24 0.39 0.82
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	4.00 0.00 2.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.90 7.46 8.00 9.10 11.44	5.72 6.63 7.42 9.07 12.58	0.11 0.17 0.24 0.39 0.82
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	4.00 0.00 2.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.90 7.46 8.00 9.10 11.44	5.72 6.63 7.42 9.07 12.58	0.11 0.17 0.24 0.39 0.82
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Face	4.00 0.00 2.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.90 7.46 8.00 9.10 11.44	5.72 6.63 7.42 9.07 12.58	0.11 0.17 0.24 0.39 0.82
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Face	4.00 0.00 2.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.90 7.46 8.00 9.10 11.44	5.72 6.63 7.42 9.07 12.58	0.11 0.17 0.24 0.39 0.82
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Face	4.00 0.00 2.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.90 7.46 8.00 9.10 11.44	5.72 6.63 7.42 9.07 12.58	0.11 0.17 0.24 0.39 0.82

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	118.5 - 96.5	18.108	20	1.3201	0.0387
L2	100.5 - 47.75	13.249	20	1.2337	0.0285
L3	53.25 - 0	3.617	20	0.6336	0.0076

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
119.00	Platform Mount [LP 1201-1]	20	18.108	1.3201	0.0387	25168
109.00	Platform Mount [LP 1201-1]	20	15.508	1.2829	0.0333	13246
99.00	Platform Mount [LP 1201-1]	20	12.861	1.2224	0.0277	6809
88.00	T-Arm Mount [TA 602-3]	20	10.150	1.1151	0.0219	5385

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	118.5 - 96.5	46.015	3	3.3456	0.0989
L2	100.5 - 47.75	33.701	3	3.1327	0.0729
L3	53.25 - 0	9.220	3	1.6144	0.0194

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
119.00	Platform Mount [LP 1201-1]	3	46.015	3.3456	0.0989	10094
109.00	Platform Mount [LP 1201-1]	3	39.428	3.2544	0.0851	5312
99.00	Platform Mount [LP 1201-1]	3	32.718	3.1045	0.0708	2726
88.00	T-Arm Mount [TA 602-3]	3	25.837	2.8348	0.0560	2143

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	118.5 - 96.5 (1)	TP27.59x22x0.1875	22.00	0.00	0.0	39.000	15.7030	-6.32	612.42	0.010
L2	96.5 - 47.75 (2)	TP39.49x26.1986x0.25	52.75	0.00	0.0	38.850	30.0373	-15.97	1166.94	0.014
L3	47.75 - 0 (3)	TP51x37.6042x0.3125	53.25	0.00	0.0	37.642	50.2757	-26.39	1892.49	0.014

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	118.5 - 96.5 (1)	TP27.59x22x0.1875	107.97	12.663	39.000	0.325	0.00	0.000	39.000	0.000
L2	96.5 - 47.75 (2)	TP39.49x26.1986x0.25	760.01	32.465	38.850	0.836	0.00	0.000	38.850	0.000
L3	47.75 - 0 (3)	TP51x37.6042x0.3125	1691.75	32.230	37.642	0.856	0.00	0.000	37.642	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	118.5 - 96.5 (1)	TP27.59x22x0.1875	7.66	0.488	26.000	0.038	5.05	0.289	26.000	0.011
L2	96.5 - 47.75 (2)	TP39.49x26.1986x0.25	15.84	0.527	26.000	0.041	6.55	0.137	26.000	0.005
L3	47.75 - 0 (3)	TP51x37.6042x0.3125	19.17	0.381	26.000	0.029	6.54	0.061	26.000	0.002

Pole Interaction Design Data

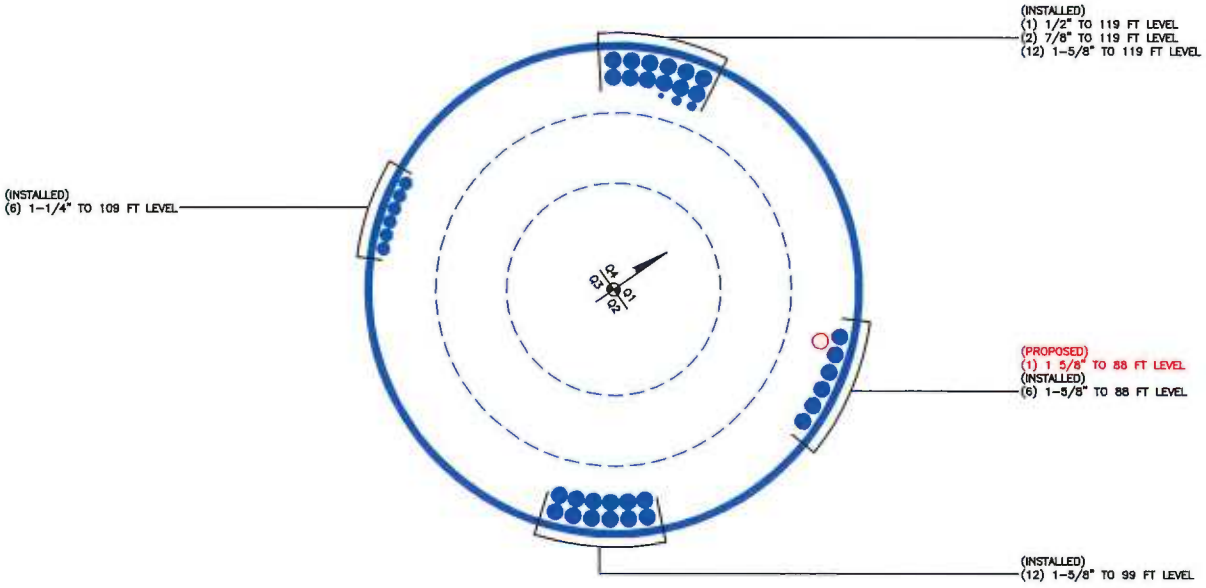
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	118.5 - 96.5 (1)	0.010	0.325	0.000	0.038	0.011	0.336 ✔	1.333	H1-3+VT ✔
L2	96.5 - 47.75 (2)	0.014	0.836	0.000	0.041	0.005	0.850 ✔	1.333	H1-3+VT ✔
L3	47.75 - 0 (3)	0.014	0.856	0.000	0.029	0.002	0.870 ✔	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	118.5 - 96.5	Pole	TP27.59x22x0.1875	1	-6.32	816.35	25.2	Pass
L2	96.5 - 47.75	Pole	TP39.49x26.1986x0.25	2	-15.97	1555.53	63.8	Pass
L3	47.75 - 0	Pole	TP51x37.6042x0.3125	3	-26.39	2522.69	65.3	Pass
						Summary	ELC:	Load Case 7
						Pole (L3)	65.3	Pass
						Rating =	65.3	Pass

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 845993 TOWER ID: C_BASELEVEL

CROWN REGION ADDRESS

USA

△ 23/06/14 UPDATED PER WORK ORDER # 771882

DRAWN BY: VJL
CHECKED BY: AGT
DRAWING DATE: 15/05/14

SITE NUMBER:
SITE NAME:

SITE NAME

BURLINGTON-NEPAUG ROAD

BUSINESS UNIT NUMBER

845993

SITE ADDRESS

12 NEPAUG ROAD
BURLINGTON, CT 06013
HARTFORD COUNTY
USA

SHEET TITLE

BASE LEVEL

SHEET NUMBER

A1-0

BASE LEVEL DRAWING	1" = 1'-0"	1

PLOT DATE: 5/12/2014 FILE NAME: 845993_BASELEVEL.dwg
xw: R:\TEMPLATES\TYPICAL BLOCKS FOR TEMPLATES\TITLE BLOCK SID-VER 0.1.dwg

APPENDIX C

ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data

BU#: *845993*
Site Name: *Burlington-Nepaug Road*
App #: *247460 Rev. 1*
Pole Manufacturer: *Other*

Reactions		
Moment:	1692	ft-kips
Axial:	26	kips
Shear:	19	kips

Anchor Rod Data		
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	58.5	in

Plate Data		
Diam:	66	in
Thick:	2.25	in
Grade:	60	ksi
Single-Rod B-eff:	13.49	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:	51	in
Thick:	0.3125	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

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

Anchor Rod Results

		Rigid
Maximum Rod Tension:	113.5 Kips	Service, ASD
Allowable Tension:	195.0 Kips	Fty*ASIF
Anchor Rod Stress Ratio:	58.2% Pass	

Base Plate Results

	Flexural Check	Rigid
Base Plate Stress:	25.9 ksi	Service ASD
Allowable Plate Stress:	60.0 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	43.2% Pass	Y.L. Length: 28.66

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

GPD GROUP

Mat Foundation Analysis
Burlington-Nepaug Road - BU#: 845993
2014777.845993.01

General Info	
Code	TIA/EIA-222-F (LRFD)
Bearing On	Soil
Foundation Type	Mono Pad
Pier Type	Square
Reinforcing Known	Yes
Max Capacity	1.1

Tower Reactions		
Moment, M	1692	k-ft
Axial, P	26	k
Shear, V	19	k

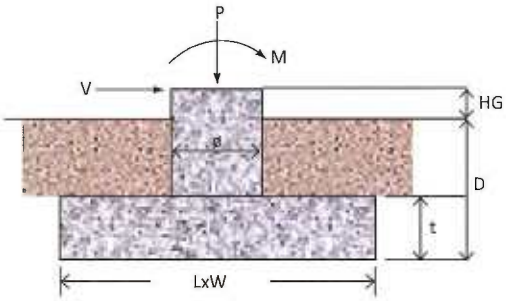
Pad & Pier Geometry		
Pier Width, ø	7	ft
Pad Length, L	25	ft
Pad Width, W	25	ft
Pad Thickness, t	3	ft
Depth, D	5	ft
Height Above Grade, HG	1	ft

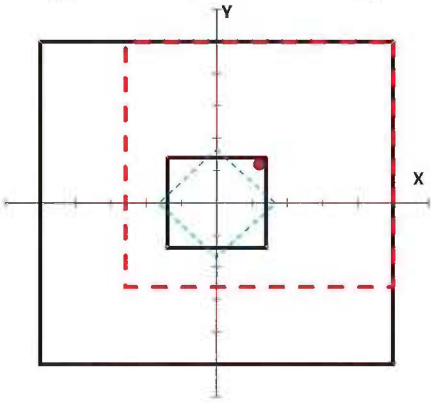
Pad & Pier Reinforcing		
Rebar Fy	60	ksi
Concrete Fc'	4	ksi
Clear Cover	3	in
Reinforced Top & Bottom?	Yes	
Pad Reinforcing Size	# 8	
Pad Quantity Per Layer	29	
Pier Rebar Size	# 8	
Pier Quantity of Rebar	30	

Soil Properties		
Soil Type	Granular	
Soil Unit Weight	120	pcf
Angle of Friction, ø	30	°
Bearing Type	Net	
Ultimate Bearing	12	ksf
Water Table Depth	4	ft
Frost Depth	3.333	ft

Bearing Summary			Load Case
Qxmax	1.27	ksf	1.2D+1.6W
Qymax	1.27	ksf	1.2D+1.6W
Qmax @ 45°	1.43	ksf	1.2D+1.6W
$Q_{(all)\ Gross}$	9.40	ksf	
Controlling Capacity	**15.2%**	**Pass**	

Overturning Summary (Required FS=1.0)			Load Case
FS(ot)x	2.14	≥1.0	0.9D+1.6W
FS(ot)y	2.14	≥1.0	0.9D+1.6W
Controlling Capacity	**46.7%**	**Pass**	





GPD GROUP

Base Foundation Reinforcement Check
Burlington-Nepaug Road - BU#: 845993
2014777.845993.01

Code
TIA/EIA-222-F

Tower Reactions		
Moment	1692	k-ft
Axial	26	k
Shear	19	k

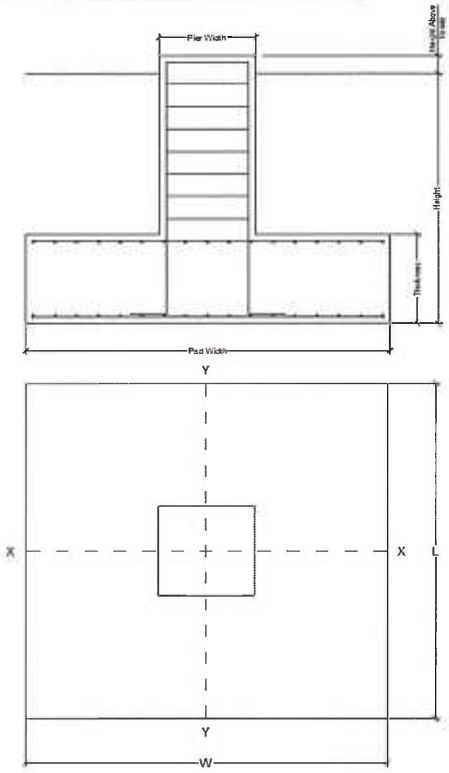
Overall Capacities		
Reinforcement Capacity	14.9%	OK
As Min Met?	No	
Controlling Capacity	**14.9%**	**OK**

Pad & Pier Geometry		
Height	5	ft
Height above Grade	1	ft
Pad Length, L	25	ft
Pad Width, W	25	ft
Pad Thickness	3	ft
Pier Shape	Square	
Square Pier Width	7	ft

Pad & Pier Reinforcing		
Reinforcing Known	Yes	
f_c'	4	ksi
Clear Cover	3	in
Rebar Fy	60	ksi
Pad Rebar Size	# 8	
Pad Rebar Quantity	29	
Pier Rebar Size	# 8	
Pier Rebar Quantity	30	

Unit Weights		
Concrete Unit Weight	150	pcf
Soil Unit Weight	120	pcf

Orthogonal Bearing		
Q_{max}	1.55	ksf
Q_{min}	0.00	ksf
Bearing Length	25	ft



Pad Moment Capacity			
ϕ (bending)=	0.90		
M_u=	18.91	k-ft	
ϕM_n=	127.12	k-ft	
Moment Capacity	14.9%		OK
One-Way (Wide-Beam) Shear			
V_u=	7.68	psi	
ϕV_n=	94.87	psi	
Shear Capacity	8.1%		OK
Two-Way (Punching) Shear			
V_u=	21.72	psi	
ϕV_n=	189.74	psi	
Shear Capacity	11.4%		OK
Pier Compression			
P_u=	33.80	k	
ϕP_n=	9312.25	k	
Compression Capacity	0.4%		OK

<---As min not met, pier checked as plain concrete member

EXHIBIT C

EBI Consulting
environmental | engineering | due diligence

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

MetroPCS / T-Mobile Existing Facility

Site ID: CTHA509A

Pocket Smart Wireless
12 Nepaug Road
Burlington, MA 06013

June 30, 2014

EBI Project Number: 62143647

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

EBI Consulting
environmental | engineering | due diligence

June 30, 2014

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

Re: Emissions Values for Site: **CTHA509A - Pocket Smart Wireless**

EBI Consulting was directed to analyze the proposed MetroPCS / T-Mobile facility located at 12 Nepaug Road, Burlington, MA, for the purpose of determining whether the emissions from the Proposed MetroPCS / T-Mobile 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 / T-Mobile Wireless antenna facility located at 12 Nepaug Road, Burlington, MA, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since MetroPCS / T-Mobile 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) were considered for each sector of the proposed installation.
2) 2 UMTS channels (2110.000 MHz 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 MHz 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 **90 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	CTHA509A - Pocket Smart Wireless
Site Addresss	12 Nepaug Road, Burlington, MA 06013
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	90	84	None	0	0	48.326044	2.46223	0.24622%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	90	84	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	90	84	1-5/8"	0	0	24.163022	1.231115	0.12311%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	90	84	1-5/8"	0	0	24.163022	1.231115	0.12311%
															Sector total Power Density Value:		0.492%

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	90	84	None	0	0	48.326044	2.46223	0.24622%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	90	84	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	90	84	1-5/8"	0	0	24.163022	1.231115	0.12311%
2b	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	90	84	1-5/8"	0	0	24.163022	1.231115	0.12311%
															Sector total Power Density Value:		0.492%

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	90	84	None	0	0	48.326044	2.46223	0.24622%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	90	84	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	90	84	1-5/8"	0	0	24.163022	1.231115	0.12311%
2b	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	90	84	1-5/8"	0	0	24.163022	1.231115	0.12311%
															Sector total Power Density Value:		0.492%

Site Composite MPE %	
Carrier	MPE %
T-Mobile	1.477%
Sprint	7.420%
AT&T	22.700%
Verizon Wireless	36.100%
Total Site MPE %	67.697%

EBI Consulting
environmental | engineering | due diligence

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 / T-Mobile facility are **1.477% (0.492% 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 **67.697%** 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 well within the allowable 100% threshold standard per the federal government.

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803