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 31, 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 CTNH510A
201 Granite Road, Guilford, Connecticut

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, AT&T Mobility/Crown Castle owns the existing monopole tower and related facility located at 201 Granite Road, Guilford Connecticut (Latitude: 41.291900 Longitude: -72.732778). MetroPCS intends to replace three antennas with six new antennas and related equipment at this existing telecommunications facility in Guilford ("Guilford 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, Joseph S. Mazza, and the property owner, Guilford Retirement Residence Limited Partnership.

The existing Guilford Facility consists of a 109 foot tall monopole tower.[1] MetroPCS plans to replace three antennas with six antennas mounted on T-arms at a centerline of 86 feet. (See the plans revised to April 30, 2014 attached hereto as Exhibit A). MetroPCS will also replace an existing Nortel cabinet with a 6201 cabinet, install battery backup unit on a new 6'x 6' concrete pad, install fiber cable and reuse existing coax cable. The existing Guilford Facility is structurally capable of supporting MetroPCS' proposed modifications, as indicated in the structural analysis dated June 23, 2014 and attached hereto as Exhibit B.

The planned modifications to the Guilford Facility fall squarely within those activities

[1] The Guilford Facility was first approved by the Council in Docket No. 252. MetroPCS' equipment is located well below the maximum height set forth in the Decision and Order in that Docket. Further, this Facility has been the subject of two notices of intent since its initial approval. See. EM-POCKET-060-081024 and EM-AT&T-060-120723

The planned modifications to the Guilford 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' replacement antennas will be installed at a centerline of 86 feet, merely replacing existing antennas located at the same 86 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. MetroPCS' equipment will be located entirely within the existing compound and equipment pad as shown on page 2 of Exhibit A.

3. The proposed modification to the Guilford 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 30, 2014, MetroPCS' operations would add 1.629% 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 35.799% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit C.

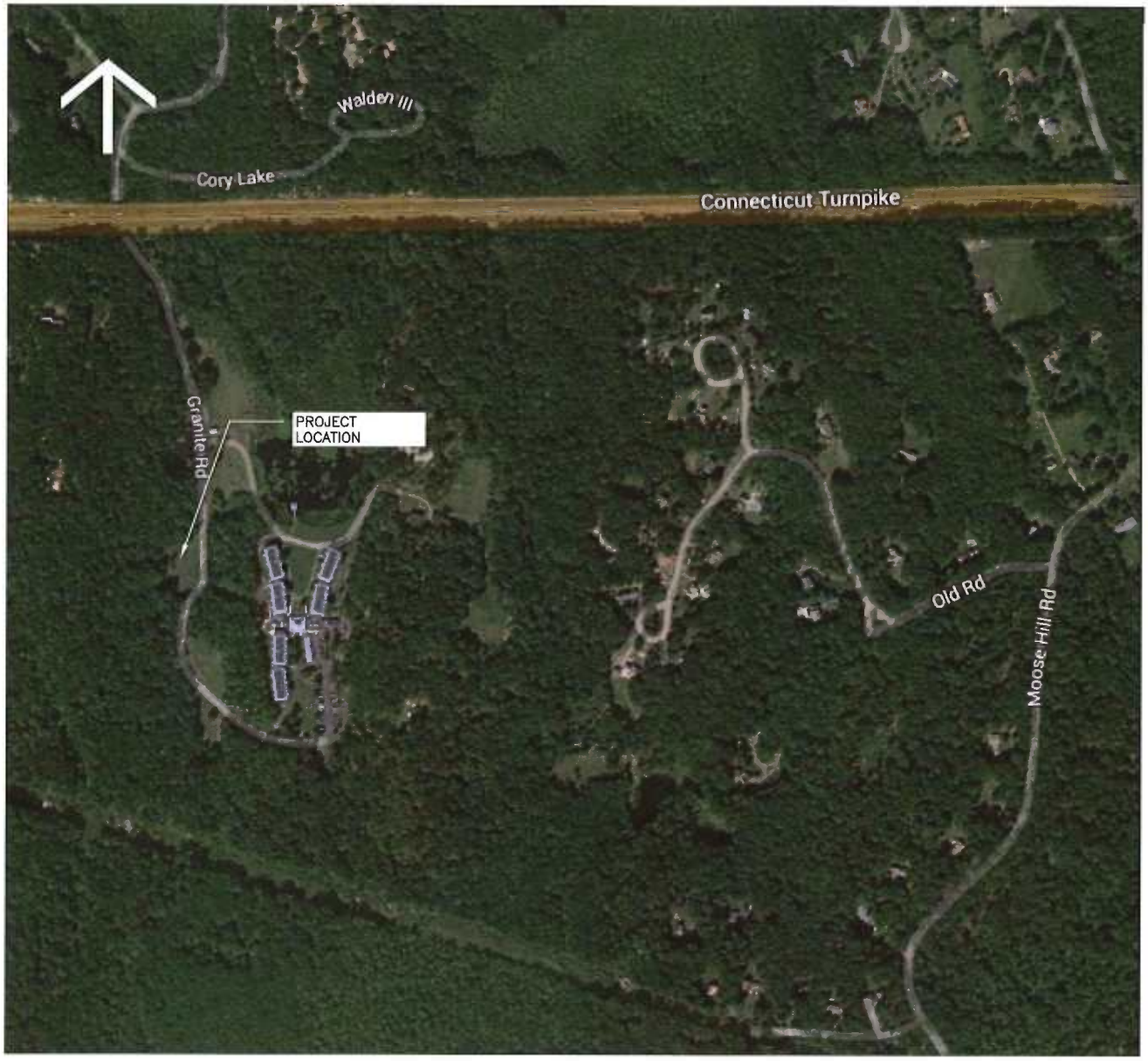
For the foregoing reasons, MetroPCS respectfully submits that the proposed replacement antennas and equipment at the Guilford Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement by the Council of this proposed exempt modification, MetroPCS shall commence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

Sincerely,

Julie D. Kohler, Esq.

cc: Town of Guilford, First Selectman, Joseph S. Mazza
AT&T Mobility/Crown Castle
Guilford Retirement Residence Limited Partnership
Northeast Site Solutions, Sheldon J. Freincle

EXHIBIT A



KEY PLAN

N.T.S.

CONFIGURATION

5A

SUBMITTALS	
LE REV A	04.30.14

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

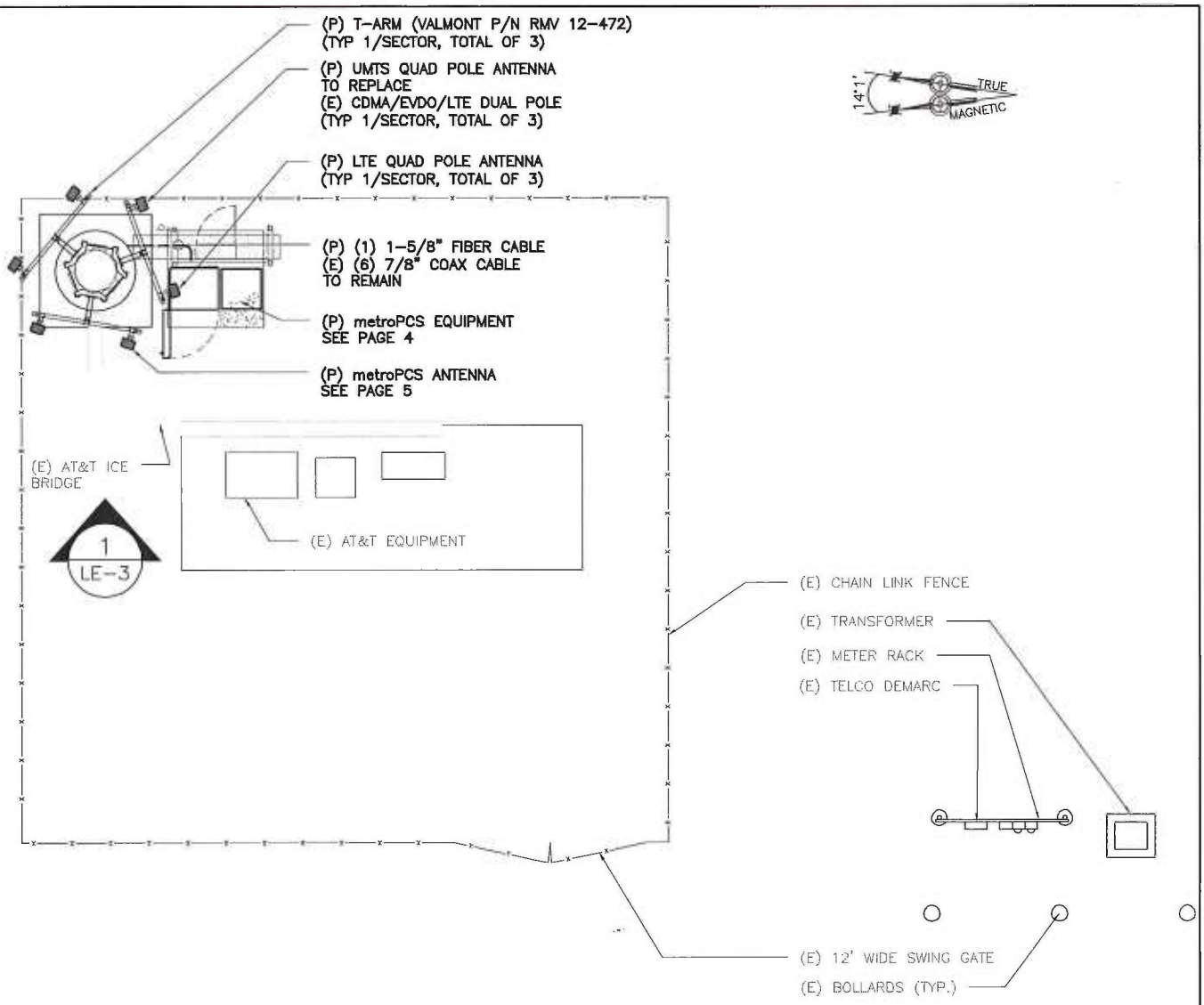
LEASE EXHIBIT

SITE NUMBER:
CTNH510A
SITE NAME:
AT&T GUILFORD MONOPOLE
SITE ADDRESS:
201 GRANITE RD,
GUILFORD, 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: MB | 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

SCALE: N.T.S.

1
LE-2

CONFIGURATION
5A

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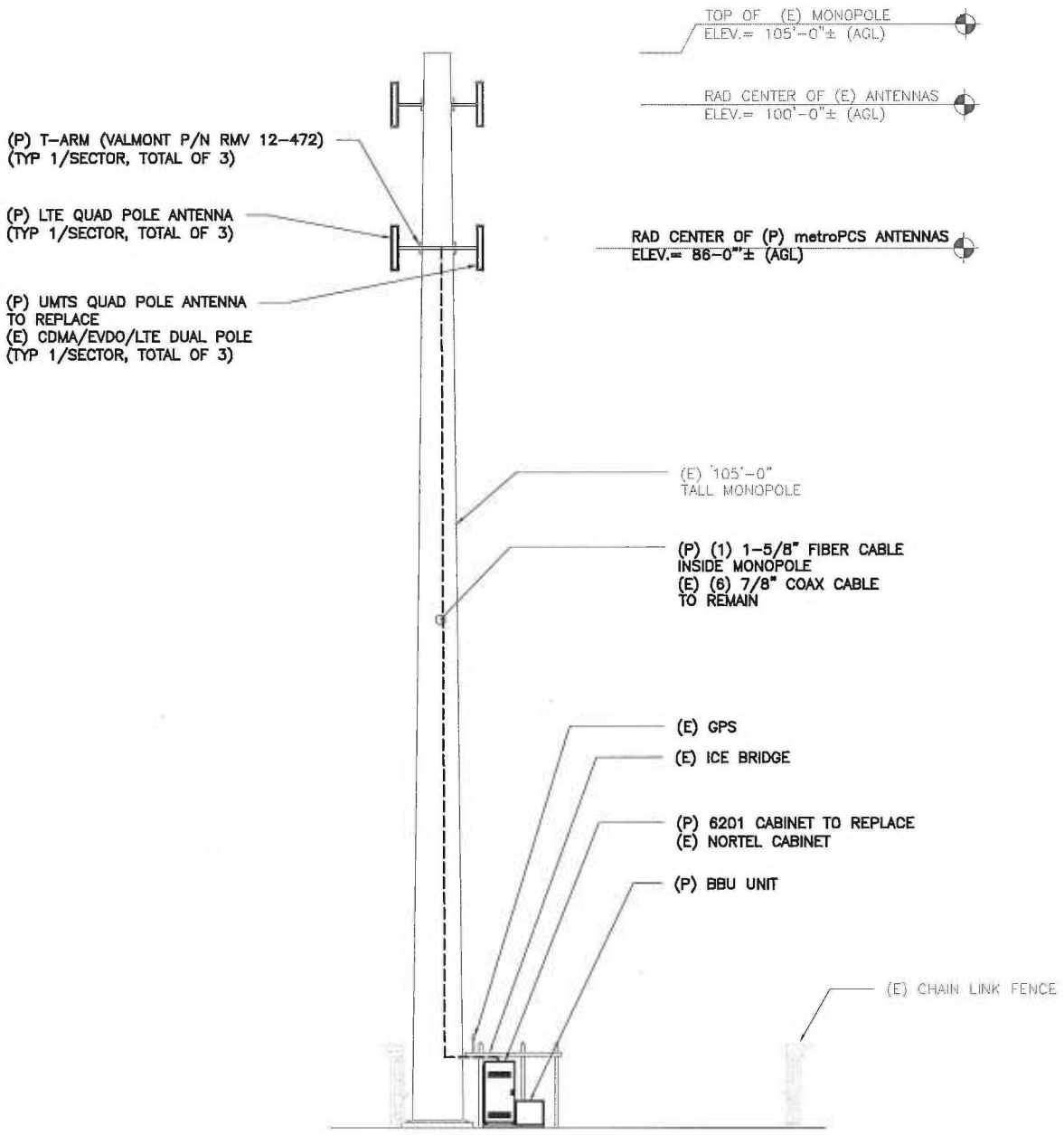

ELEVATION 1 / LE-3

N.T.S.

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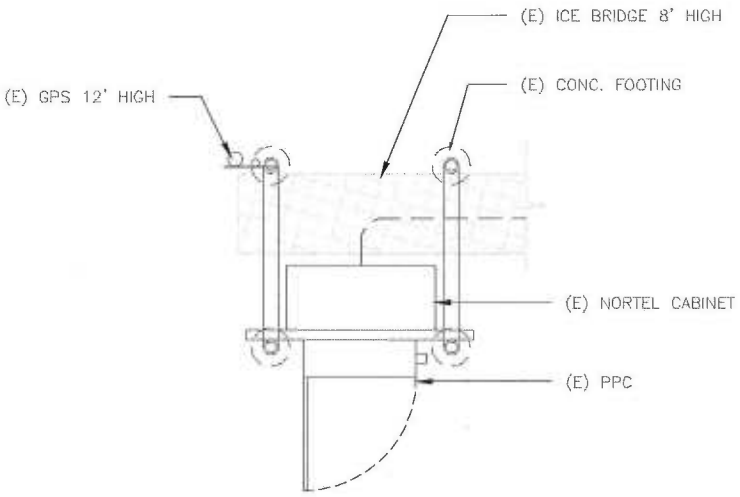
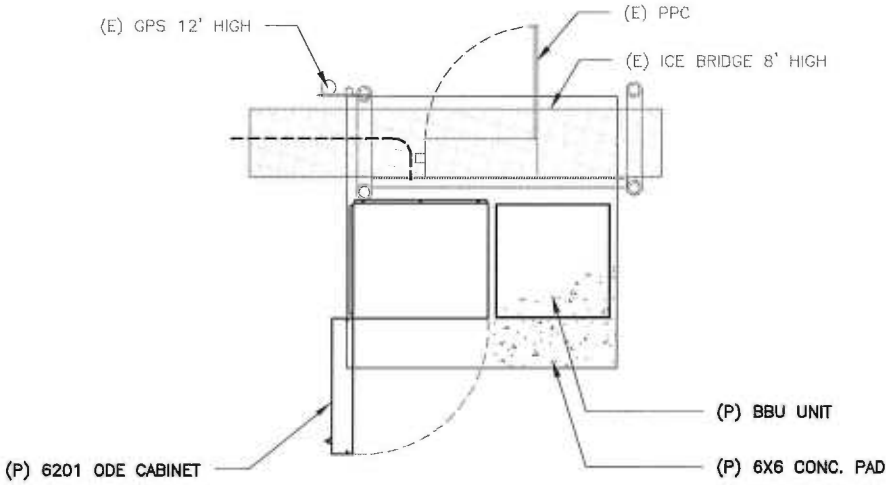


EXISTING EQUIPMENT



PROPOSED EQUIPMENT

CONFIGURATION

5A

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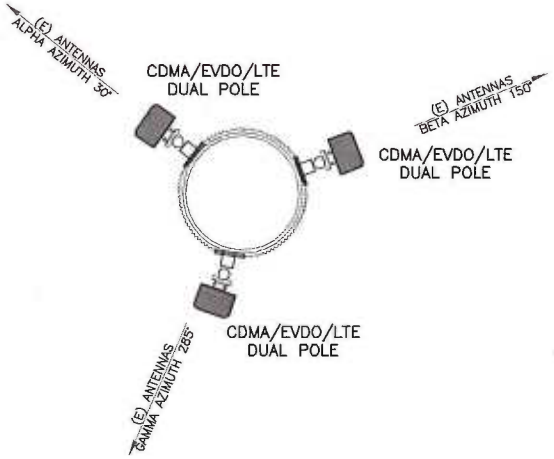
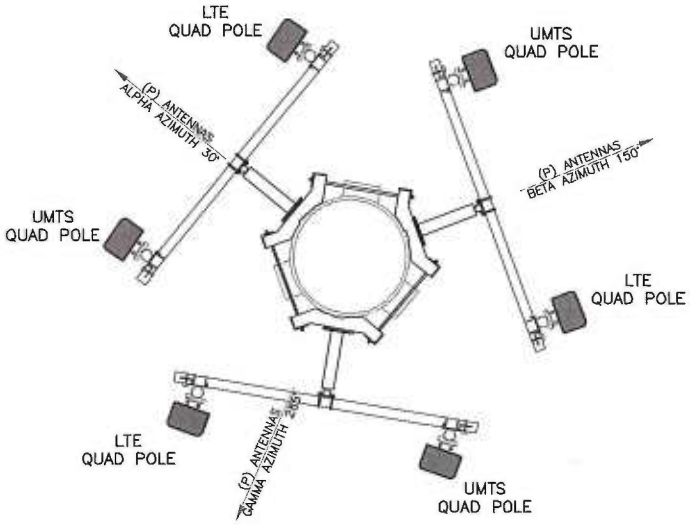


EXISTING ANTENNA CONFIGURATION



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BLOOMFIELD, CT 06002

DRAWN BY: MB | CHECKED BY: SM

EXHIBIT B

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Date: **June 20, 2014**

Sean Dempsey
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Paul J Ford and Company
250 E. Broad Street Suite 600
Columbus, OH 43215
614.221.6679

Subject: **Structural Analysis Report**

Carrier Designation:	***Metro PCS* Co-Locate**	
	Carrier Site Number:	CTNH510A
	Carrier Site Name:	N/A
Crown Castle Designation:	**Crown Castle BU Number:**	842864
	Crown Castle Site Name:	GUILFORD SW
	Crown Castle JDE Job Number:	291017
	Crown Castle Work Order Number:	777694
	Crown Castle Application Number:	247507 Rev. 2
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37514-1352.001.7805
Site Data:	**201 GRANITE ROAD, GUILFORD, New Haven County, CT** **Latitude *41° 17' 31.14"*, Longitude *-72° 43' 58.28"*** **109 Foot - Monopole Tower**	

Dear Sean Dempsey,

Paul J Ford and Company 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 660005, in accordance with application 247507, revision 2.

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:

LC4.7: Existing + Reserved + Proposed Equipment & Modifications **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the 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.

All modifications and 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 *Paul J Ford and Company* 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:

Respectfully submitted by:

Seth Tschanen
Structural Designer

tnxTower Report - version 6.1.4.1

JUN 23 2014

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Date: **June 20, 2014**

Sean Dempsey
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

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Structural analysis prepared by:

Respectfully submitted by:

Seth Tschanen
Structural Designer

tnxTower Report - version 6.1.4.1

TABLE OF CONTENTS

1) INTRODUCTION

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the 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.

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
90.0	86.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	1	1 5/8	--
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
	90.0	1	tower mounts	T-Arm Mount [TA 602-3]			

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
110.0	110.0	3	alcatel lucent	RRH2X40-07-U	14	1 5/8	2
		3	alcatel lucent	RRH2X40-AWS			
		6	amphenol	BXA-171063-12CF-EDIN-X w/ Mount Pipe			
		6	amphenol	BXA-70063-6CF-EDIN-X w/ Mount Pipe			
		1	rfs celwave	DB-B1-6C-8AB-0Z			
		1	tower mounts	Platform Mount [LP 301-1]			
98.0	98.0	6	ericsson	RBS 6601	3 12	1/2 1 1/4	1
		3	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		6	powerwave	7770.00 w/ Mount Pipe			
		6	powerwave	LGP21401			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 303-1]			
90.0	90.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	--	--	3
		1	tower mounts	Pipe Mount [PM 601-3]			
		--	--	--	6	7/8	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)
--	--	--	--	--	--	--

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	JGI, 03580G, 10/15/03	4713222	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEI, 12051, 11/03/03	4492141	CCISITES
4-TOWER MANUFACTURER DRAWINGS	EEI, 12051, 11/03/03	4492171	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	B+T, 88725.002.01, 2/20/14	4492170	CCISITES

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) Monopole will be reinforced in conformance with the referenced modification drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J Ford and Company 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	110 - 100.5	Pole	TP24x24x0.375	1	-3.14	225.99	13.3	Pass
L2	100.5 - 100	Pole	TP26.42x24x0.375	2	-3.14	225.99	13.3	Pass
L3	100 - 47.93	Pole	TP37.12x26.42x0.313	3	-12.50	665.63	47.2	Pass
L4	47.93 - 1	Pole	TP46x35.4378x0.375	4	-23.22	1551.59	56.6	Pass
							Summary	
						Pole (L4)	56.6	Pass
						Rating =	56.6	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC4.7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	46.4	Pass
1	Base Plate	0	59.9	Pass
1	Base Foundation Steel	0	53.4	Pass
1,2	Base Foundation Soil Interaction	0	44.0	Pass
1	Flange	100	32.8	Pass

Structure Rating (max from all components) =	59.9%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
2) Foundation capacity determined by comparing analysis reactions to original design reactions.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

1) Tower is located in New Haven County, Connecticut.
2) Basic wind speed of 85 mph.
3) Nominal ice thickness of 0.7500 in.
4) Ice thickness is considered to increase with height.
5) Ice density of 56.00 pcf.
6) A wind speed of 38 mph is used in combination with ice.
7) Temperature drop of 50 °F.
8) Deflections calculated using a wind speed of 50 mph.
9) A non-linear (P-delta) analysis was used.
10) Pressures are calculated at each section.
11) Stress ratio used in pole design is 1.333.
12) 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	110.0000-100.5000	9.5000	0.00	Round	24.0000	24.0000	0.3750		A53-B-35 (35 ksi)
L2	100.5000-100.0000	0.5000	0.00	Round	24.0000	26.4200	0.3750		A53-B-35 (35 ksi)
L3	100.0000-47.9300	52.0700	5.14	18	26.4200	37.1200	0.3130	1.2520	A572-65 (65 ksi)
L4	47.9300-1.0000	52.0700		18	35.4378	46.0000	0.3750	1.5000	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	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
L2	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
	26.4200	30.6835	2602.2814	9.2093	13.2100	196.9933	5204.5628	15.3326	0.0000	0
L3	26.8276	25.9363	2233.3645	9.2680	13.4214	166.4037	4469.6678	12.9706	4.0990	13.096
	37.6926	36.5664	6258.6400	13.0665	18.8570	331.9008	12525.5153	18.2867	5.9822	19.113
L4	37.0432	41.7335	6482.0777	12.4473	18.0024	360.0677	12972.6848	20.8707	5.5770	14.872
	46.7096	54.3052	14281.8436	16.1969	23.3680	611.1710	28582.4796	27.1577	7.4360	19.829

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 110.0000-100.5000				1	1	1		
L2 100.5000-100.0000				1	1	1		
L3 100.0000-47.9300				1	1	1		
L4 47.9300-1.0000				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
LDF7-50A(1-5/8")	C	No	Inside Pole	110.0000 - 1.0000	12	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
						2" Ice	0.0000	0.82
						4" Ice	0.0000	0.82
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	110.0000 - 1.0000	2	No Ice	0.0000	1.30
						1/2" Ice	0.0000	1.30
						1" Ice	0.0000	1.30
						2" Ice	0.0000	1.30
						4" Ice	0.0000	1.30
***								
LDF4-50A(1/2")	C	No	Inside Pole	98.0000 - 1.0000	3	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15
LDF6-50A(1-1/4")	C	No	Inside Pole	98.0000 - 1.0000	12	No Ice	0.0000	0.66
						1/2" Ice	0.0000	0.66
						1" Ice	0.0000	0.66
						2" Ice	0.0000	0.66
						4" Ice	0.0000	0.66
***								
AL5-50(7/8)	C	No	Inside Pole	90.0000 - 1.0000	6	No Ice	0.0000	0.26
						1/2" Ice	0.0000	0.26
						1" Ice	0.0000	0.26
						2" Ice	0.0000	0.26
						4" Ice	0.0000	0.26
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	No	Inside Pole	90.0000 - 1.0000	1	No Ice	0.0000	1.07
						1/2" Ice	0.0000	1.07
						1" Ice	0.0000	1.07
						2" Ice	0.0000	1.07
						4" Ice	0.0000	1.07

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	110.0000-100.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.12
L2	100.5000-100.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L3	100.0000-47.9300	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1.18
L4	47.9300-1.0000	A	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1.10

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	110.0000-100.5000	A	0.862	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.12
L2	100.5000-100.0000	A	0.857	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.01
L3	100.0000-47.9300	A	0.825	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1.18
L4	47.9300-1.0000	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1.10

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	110.0000-100.5000	0.0000	0.0000	0.0000	0.0000
L2	100.5000-100.0000	0.0000	0.0000	0.0000	0.0000
L3	100.0000-47.9300	0.0000	0.0000	0.0000	0.0000
L4	47.9300-1.0000	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) BXA-70063-6CF-EDIN-X w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.9686 8.6091 9.2158 10.4591 13.0655	5.8008 6.9529 7.8191 9.6015 13.3662	0.04 0.10 0.17 0.34 0.80
(2) BXA-70063-6CF-EDIN-X w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.9686 8.6091 9.2158 10.4591 13.0655	5.8008 6.9529 7.8191 9.6015 13.3662	0.04 0.10 0.17 0.34 0.80
(2) BXA-70063-6CF-EDIN-X w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.9686 8.6091 9.2158 10.4591 13.0655	5.8008 6.9529 7.8191 9.6015 13.3662	0.04 0.10 0.17 0.34 0.80
(2) BXA-171063-12CF-EDIN-X w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.0353 5.5890 6.1094 7.1723 9.4424	5.2954 6.4667 7.3557 9.1567 12.9587	0.04 0.08 0.14 0.27 0.68
(2) BXA-171063-12CF-EDIN-X w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice	5.0353 5.5890 6.1094 7.1723	5.2954 6.4667 7.3557 9.1567	0.04 0.08 0.14 0.27

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	9.4424	12.9587	0.68
(2) BXA-171063-12CF-EDIN-X w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.0353 5.5890 6.1094 7.1723 9.4424	5.2954 6.4667 7.3557 9.1567 12.9587	0.04 0.08 0.14 0.27 0.68
RRH2X40-AWS	A	From Leg	4.0000 0.00 0.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.5217 2.7530 2.9930 3.4990 4.6146	1.5894 1.7953 2.0098 2.4648 3.4785	0.04 0.06 0.08 0.13 0.28
RRH2X40-AWS	B	From Leg	4.0000 0.00 0.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.5217 2.7530 2.9930 3.4990 4.6146	1.5894 1.7953 2.0098 2.4648 3.4785	0.04 0.06 0.08 0.13 0.28
RRH2X40-AWS	C	From Leg	4.0000 0.00 0.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.5217 2.7530 2.9930 3.4990 4.6146	1.5894 1.7953 2.0098 2.4648 3.4785	0.04 0.06 0.08 0.13 0.28
RRH2X40-07-U	A	From Leg	4.0000 0.00 0.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.2458 2.4472 2.6572 3.1031 4.0987	1.2277 1.3850 1.5509 1.9087 2.7280	0.05 0.07 0.09 0.13 0.27
RRH2X40-07-U	B	From Leg	4.0000 0.00 0.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.2458 2.4472 2.6572 3.1031 4.0987	1.2277 1.3850 1.5509 1.9087 2.7280	0.05 0.07 0.09 0.13 0.27
RRH2X40-07-U	C	From Leg	4.0000 0.00 0.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.2458 2.4472 2.6572 3.1031 4.0987	1.2277 1.3850 1.5509 1.9087 2.7280	0.05 0.07 0.09 0.13 0.27
DB-B1-6C-8AB-0Z	A	From Leg	4.0000 0.00 0.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.6000 5.9154 6.2395 6.9136 8.3654	2.3333 2.5580 2.7914 3.2840 4.3728	0.04 0.08 0.12 0.21 0.45
Platform Mount [LP 301-1]	C	None		0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	30.1000 40.8000 51.5000 72.9000 115.7000	30.1000 40.8000 51.5000 72.9000 115.7000	1.59 2.03 2.47 3.35 5.11
***									
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	98.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.1194 6.6258 7.1283 8.1643 10.3599	4.2543 5.0137 5.7109 7.1553 10.4117	0.06 0.10 0.16 0.29 0.66
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	98.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.1194 6.6258 7.1283 8.1643 10.3599	4.2543 5.0137 5.7109 7.1553 10.4117	0.06 0.10 0.16 0.29 0.66
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	98.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.1194 6.6258 7.1283 8.1643 10.3599	4.2543 5.0137 5.7109 7.1553 10.4117	0.06 0.10 0.16 0.29 0.66
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	98.0000	No Ice 1/2" Ice 1" Ice	8.4975 9.1490 9.7672	6.3042 7.4790 8.3676	0.07 0.14 0.21

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	11.0311	10.1785	0.38
						4" Ice	13.6786	14.0237	0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	98.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.4975 9.1490 9.7672 11.0311 13.6786	6.3042 7.4790 8.3676 10.1785 14.0237	0.07 0.14 0.21 0.38 0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	98.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.4975 9.1490 9.7672 11.0311 13.6786	6.3042 7.4790 8.3676 10.1785 14.0237	0.07 0.14 0.21 0.38 0.87
(2) LGP21401	A	From Leg	4.0000 0.00 0.00	0.00	98.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.2880 1.4453 1.6112 1.9690 2.7882	0.2326 0.3134 0.4028 0.6076 1.1210	0.01 0.02 0.03 0.05 0.14
(2) LGP21401	B	From Leg	4.0000 0.00 0.00	0.00	98.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.2880 1.4453 1.6112 1.9690 2.7882	0.2326 0.3134 0.4028 0.6076 1.1210	0.01 0.02 0.03 0.05 0.14
(2) LGP21401	C	From Leg	4.0000 0.00 0.00	0.00	98.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.2880 1.4453 1.6112 1.9690 2.7882	0.2326 0.3134 0.4028 0.6076 1.1210	0.01 0.02 0.03 0.05 0.14
(2) RBS 6601	A	From Leg	4.0000 0.00 0.00	0.00	98.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.4759 0.6195 0.7718 1.1022 1.8668	0.3467 0.4571 0.5761 0.8400 1.4716	0.02 0.03 0.05 0.08 0.20
(2) RBS 6601	B	From Leg	4.0000 0.00 0.00	0.00	98.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.4759 0.6195 0.7718 1.1022 1.8668	0.3467 0.4571 0.5761 0.8400 1.4716	0.02 0.03 0.05 0.08 0.20
(2) RBS 6601	C	From Leg	4.0000 0.00 0.00	0.00	98.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.4759 0.6195 0.7718 1.1022 1.8668	0.3467 0.4571 0.5761 0.8400 1.4716	0.02 0.03 0.05 0.08 0.20
DC6-48-60-18-8F	C	From Leg	4.0000 0.00 0.00	0.00	98.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.5667 2.7978 3.0377 3.5432 4.6580	2.5667 2.7978 3.0377 3.5432 4.6580	0.02 0.04 0.07 0.13 0.30
Platform Mount [LP 303-1]	C	None		0.00	98.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	14.6600 18.8700 23.0800 31.5000 48.3400	14.6600 18.8700 23.0800 31.5000 48.3400	1.25 1.48 1.71 2.18 3.10
***									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.0000 0.00 -4.00	0.00	90.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.8253 7.3471 7.8631 8.9261 11.1755	5.6424 6.4800 7.2567 8.8640 12.2932	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.0000 0.00 -4.00	0.00	90.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.8253 7.3471 7.8631 8.9261 11.1755	5.6424 6.4800 7.2567 8.8640 12.2932	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.0000 0.00	0.00	90.0000	No Ice 1/2" Ice	6.8253 7.3471	5.6424 6.4800	0.11 0.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			-4.00			1" Ice	7.8631	7.2567	0.23
						2" Ice	8.9261	8.8640	0.38
						4" Ice	11.1755	12.2932	0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.0000 0.00 -4.00	0.00	90.0000	No Ice	6.8155	5.6334	0.11
						1/2" Ice	7.3373	6.4717	0.17
						1" Ice	7.8532	7.2478	0.23
						2" Ice	8.9160	8.8537	0.38
						4" Ice	11.1650	12.2804	0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.0000 0.00 -4.00	0.00	90.0000	No Ice	6.8155	5.6334	0.11
						1/2" Ice	7.3373	6.4717	0.17
						1" Ice	7.8532	7.2478	0.23
						2" Ice	8.9160	8.8537	0.38
						4" Ice	11.1650	12.2804	0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.0000 0.00 -4.00	0.00	90.0000	No Ice	6.8155	5.6334	0.11
						1/2" Ice	7.3373	6.4717	0.17
						1" Ice	7.8532	7.2478	0.23
						2" Ice	8.9160	8.8537	0.38
						4" Ice	11.1650	12.2804	0.81
T-Arm Mount [TA 602-3]	C	None		0.00	90.0000	No Ice	11.5900	11.5900	0.77
						1/2" Ice	15.4400	15.4400	0.99
						1" Ice	19.2900	19.2900	1.21
						2" Ice	26.9900	26.9900	1.64
						4" Ice	42.3900	42.3900	2.50

Tower Pressures - No Ice

$G_H = 1.690$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 110.0000-100.5000	105.2500	1.393	25.763	19.000	A	0.000	19.000	19.000	100.00	0.000	0.000
					B	0.000	19.000		100.00	0.000	0.000
					C	0.000	19.000		100.00	0.000	0.000
L2 100.5000-100.0000	100.2460	1.374	25.407	1.050	A	0.000	1.050	1.050	100.00	0.000	0.000
					B	0.000	1.050		100.00	0.000	0.000
					C	0.000	1.050		100.00	0.000	0.000
L3 100.0000-47.9300	73.1628	1.255	23.086	137.855	A	0.000	137.855	137.855	100.00	0.000	0.000
					B	0.000	137.855		100.00	0.000	0.000
					C	0.000	137.855		100.00	0.000	0.000
L4 47.9300-1.0000	23.7056	1	18.712	161.284	A	0.000	161.284	161.284	100.00	0.000	0.000
					B	0.000	161.284		100.00	0.000	0.000
					C	0.000	161.284		100.00	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.690$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 110.0000-100.5000	105.2500	1.393	5.041	0.8620	20.365	A	0.000	20.365	20.365	100.00	0.000	0.000
						B	0.000	20.365		100.00	0.000	0.000
						C	0.000	20.365		100.00	0.000	0.000
L2 100.5000-100.0000	100.2460	1.374	4.972	0.8570	1.122	A	0.000	1.122	1.122	100.00	0.000	0.000
						B	0.000	1.122		100.00	0.000	0.000
						C	0.000	1.122		100.00	0.000	0.000
L3 100.0000-47.9300	73.1628	1.255	4.517	0.8252	145.017	A	0.000	145.017	145.017	100.00	0.000	0.000
						B	0.000	145.017		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L4 47.9300-1.0000	23.7056	1	3.662	0.7500	167.738	C	0.000	145.017		100.00	0.000	0.000
						A	0.000	167.738	167.738	100.00	0.000	0.000
						B	0.000	167.738		100.00	0.000	0.000
						C	0.000	167.738		100.00	0.000	0.000

Tower Pressure - Service

$G_H = 1.690$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 110.0000-100.5000	105.2500	1.393	8.914	19.000	A	0.000	19.000	19.000	100.00	0.000	0.000
					B	0.000	19.000		100.00	0.000	0.000
					C	0.000	19.000		100.00	0.000	0.000
L2 100.5000-100.0000	100.2460	1.374	8.791	1.050	A	0.000	1.050	1.050	100.00	0.000	0.000
					B	0.000	1.050		100.00	0.000	0.000
					C	0.000	1.050		100.00	0.000	0.000
L3 100.0000-47.9300	73.1628	1.255	7.988	137.855	A	0.000	137.855	137.855	100.00	0.000	0.000
					B	0.000	137.855		100.00	0.000	0.000
					C	0.000	137.855		100.00	0.000	0.000
L4 47.9300-1.0000	23.7056	1	6.475	161.284	A	0.000	161.284	161.284	100.00	0.000	0.000
					B	0.000	161.284		100.00	0.000	0.000
					C	0.000	161.284		100.00	0.000	0.000

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
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service

Comb. No.	Description
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	110 - 100.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-5.86	0.00	0.55
			Max. Mx	11	-3.15	52.09	0.18
			Max. My	2	-3.14	0.00	53.68
			Max. Vy	11	-5.75	52.09	0.18
			Max. Vx	2	-5.89	0.00	53.68
			Max. Torque	11			-0.52
L2	100.5 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-5.93	-0.00	0.55
			Max. Mx	11	-3.21	54.97	0.18
			Max. My	2	-3.20	0.00	56.63
			Max. Vy	11	-5.78	54.97	0.18
			Max. Vx	2	-5.92	0.00	56.63
			Max. Torque	11			-0.52
L3	100 - 47.93	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-19.42	0.27	0.39
			Max. Mx	11	-12.51	622.58	0.15
			Max. My	2	-12.50	0.09	631.03
			Max. Vy	11	-14.41	622.58	0.15
			Max. Vx	2	-14.56	0.09	631.03
			Max. Torque	3			0.54
L4	47.93 - 1	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-31.97	0.27	0.39
			Max. Mx	11	-23.22	1461.01	0.15
			Max. My	2	-23.22	0.09	1477.09
			Max. Vy	11	-17.79	1461.01	0.15
			Max. Vx	2	-17.93	0.09	1477.09
			Max. Torque	3			0.54

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	31.97	0.00	0.00
	Max. H_x	11	23.23	17.77	0.00
	Max. H_z	2	23.23	0.00	17.92
	Max. M_x	2	1477.09	0.00	17.92
	Max. M_z	5	1460.82	-17.77	0.00
	Max. Torsion	3	0.54	-8.89	15.52
	Min. Vert	2	23.23	0.00	17.92
	Min. H_x	5	23.23	-17.77	0.00
	Min. H_z	8	23.23	0.00	-17.92
	Min. M_x	8	-1476.79	0.00	-17.92
	Min. M_z	11	-1461.01	17.77	0.00
	Min. Torsion	9	-0.54	8.89	-15.52

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	23.23	0.00	0.00	-0.15	0.09	0.00
Dead+Wind 0 deg - No Ice	23.23	-0.00	-17.92	-1477.09	0.09	-0.48
Dead+Wind 30 deg - No Ice	23.23	8.89	-15.52	-1279.26	-730.38	-0.54
Dead+Wind 60 deg - No Ice	23.23	15.39	-8.96	-738.65	-1265.14	-0.45
Dead+Wind 90 deg - No Ice	23.23	17.77	-0.00	-0.15	-1460.82	-0.24
Dead+Wind 120 deg - No Ice	23.23	15.39	8.96	738.34	-1265.14	0.03
Dead+Wind 150 deg - No Ice	23.23	8.89	15.52	1278.96	-730.38	0.30
Dead+Wind 180 deg - No Ice	23.23	-0.00	17.92	1476.79	0.09	0.48
Dead+Wind 210 deg - No Ice	23.23	-8.89	15.52	1278.96	730.57	0.54
Dead+Wind 240 deg - No Ice	23.23	-15.39	8.96	738.34	1265.32	0.45
Dead+Wind 270 deg - No Ice	23.23	-17.77	-0.00	-0.15	1461.01	0.24
Dead+Wind 300 deg - No Ice	23.23	-15.39	-8.96	-738.65	1265.32	-0.03
Dead+Wind 330 deg - No Ice	23.23	-8.89	-15.52	-1279.26	730.57	-0.30
Dead+Ice+Temp	31.97	-0.00	-0.00	-0.39	0.27	0.00
Dead+Wind 0 deg+Ice+Temp	31.97	0.00	-4.19	-360.76	0.28	-0.11
Dead+Wind 30 deg+Ice+Temp	31.97	2.08	-3.62	-312.49	-178.23	-0.13
Dead+Wind 60 deg+Ice+Temp	31.97	3.60	-2.09	-180.59	-308.90	-0.11
Dead+Wind 90 deg+Ice+Temp	31.97	4.16	0.00	-0.41	-356.74	-0.06
Dead+Wind 120 deg+Ice+Temp	31.97	3.60	2.09	179.76	-308.90	0.00
Dead+Wind 150 deg+Ice+Temp	31.97	2.08	3.62	311.66	-178.23	0.07
Dead+Wind 180 deg+Ice+Temp	31.97	0.00	4.19	359.94	0.28	0.11
Dead+Wind 210 deg+Ice+Temp	31.97	-2.08	3.62	311.66	178.79	0.13
Dead+Wind 240 deg+Ice+Temp	31.97	-3.60	2.09	179.76	309.47	0.11
Dead+Wind 270 deg+Ice+Temp	31.97	-4.16	0.00	-0.41	357.30	0.06
Dead+Wind 300 deg+Ice+Temp	31.97	-3.60	-2.09	-180.59	309.47	-0.00
Dead+Wind 330 deg+Ice+Temp	31.97	-2.08	-3.62	-312.49	178.79	-0.07
Dead+Wind 0 deg - Service	23.23	-0.00	-6.20	-511.32	0.09	-0.17
Dead+Wind 30 deg - Service	23.23	3.07	-5.37	-442.88	-252.74	-0.19
Dead+Wind 60 deg - Service	23.23	5.33	-3.10	-255.76	-437.82	-0.16
Dead+Wind 90 deg - Service	23.23	6.15	0.00	-0.15	-505.52	-0.08
Dead+Wind 120 deg - Service	23.23	5.33	3.10	255.45	-437.82	0.01
Dead+Wind 150 deg - Service	23.23	3.07	5.37	442.57	-252.74	0.10
Dead+Wind 180 deg - Service	23.23	-0.00	6.20	511.01	0.09	0.17
Dead+Wind 210 deg - Service	23.23	-3.07	5.37	442.57	252.92	0.19
Dead+Wind 240 deg - Service	23.23	-5.33	3.10	255.45	438.01	0.16
Dead+Wind 270 deg - Service	23.23	-6.15	0.00	-0.15	505.71	0.08
Dead+Wind 300 deg - Service	23.23	-5.33	-3.10	-255.76	438.01	-0.01
Dead+Wind 330 deg - Service	23.23	-3.07	-5.37	-442.88	252.92	-0.10

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-23.23	0.00	0.00	23.23	0.00	0.000%
2	0.00	-23.23	-17.92	0.00	23.23	17.92	0.002%
3	8.89	-23.23	-15.52	-8.89	23.23	15.52	0.000%
4	15.39	-23.23	-8.96	-15.39	23.23	8.96	0.000%
5	17.77	-23.23	0.00	-17.77	23.23	0.00	0.002%
6	15.39	-23.23	8.96	-15.39	23.23	-8.96	0.000%
7	8.89	-23.23	15.52	-8.89	23.23	-15.52	0.000%
8	0.00	-23.23	17.92	0.00	23.23	-17.92	0.002%
9	-8.89	-23.23	15.52	8.89	23.23	-15.52	0.000%
10	-15.39	-23.23	8.96	15.39	23.23	-8.96	0.000%
11	-17.77	-23.23	0.00	17.77	23.23	0.00	0.002%
12	-15.39	-23.23	-8.96	15.39	23.23	8.96	0.000%
13	-8.89	-23.23	-15.52	8.89	23.23	15.52	0.000%
14	0.00	-31.97	0.00	0.00	31.97	0.00	0.000%
15	0.00	-31.97	-4.19	-0.00	31.97	4.19	0.000%
16	2.08	-31.97	-3.62	-2.08	31.97	3.62	0.000%
17	3.60	-31.97	-2.09	-3.60	31.97	2.09	0.000%
18	4.16	-31.97	0.00	-4.16	31.97	-0.00	0.000%
19	3.60	-31.97	2.09	-3.60	31.97	-2.09	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
20	2.08	-31.97	3.62	-2.08	31.97	-3.62	0.000%
21	0.00	-31.97	4.19	-0.00	31.97	-4.19	0.000%
22	-2.08	-31.97	3.62	2.08	31.97	-3.62	0.000%
23	-3.60	-31.97	2.09	3.60	31.97	-2.09	0.000%
24	-4.16	-31.97	0.00	4.16	31.97	-0.00	0.000%
25	-3.60	-31.97	-2.09	3.60	31.97	2.09	0.000%
26	-2.08	-31.97	-3.62	2.08	31.97	3.62	0.000%
27	0.00	-23.23	-6.20	0.00	23.23	6.20	0.003%
28	3.08	-23.23	-5.37	-3.07	23.23	5.37	0.001%
29	5.33	-23.23	-3.10	-5.33	23.23	3.10	0.001%
30	6.15	-23.23	0.00	-6.15	23.23	-0.00	0.003%
31	5.33	-23.23	3.10	-5.33	23.23	-3.10	0.001%
32	3.08	-23.23	5.37	-3.07	23.23	-5.37	0.001%
33	0.00	-23.23	6.20	0.00	23.23	-6.20	0.003%
34	-3.08	-23.23	5.37	3.07	23.23	-5.37	0.001%
35	-5.33	-23.23	3.10	5.33	23.23	-3.10	0.001%
36	-6.15	-23.23	0.00	6.15	23.23	-0.00	0.003%
37	-5.33	-23.23	-3.10	5.33	23.23	3.10	0.001%
38	-3.08	-23.23	-5.37	3.07	23.23	5.37	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	11	0.00000001	0.00011846
3	Yes	13	0.00000001	0.00013321
4	Yes	13	0.00000001	0.00014273
5	Yes	11	0.00000001	0.00008386
6	Yes	13	0.00000001	0.00013758
7	Yes	13	0.00000001	0.00013563
8	Yes	11	0.00000001	0.00011841
9	Yes	13	0.00000001	0.00014434
10	Yes	13	0.00000001	0.00013331
11	Yes	11	0.00000001	0.00008388
12	Yes	13	0.00000001	0.00013796
13	Yes	13	0.00000001	0.00014143
14	Yes	6	0.00000001	0.00000001
15	Yes	12	0.00000001	0.00008285
16	Yes	12	0.00000001	0.00009336
17	Yes	12	0.00000001	0.00009340
18	Yes	12	0.00000001	0.00008165
19	Yes	12	0.00000001	0.00009271
20	Yes	12	0.00000001	0.00009300
21	Yes	12	0.00000001	0.00008247
22	Yes	12	0.00000001	0.00009369
23	Yes	12	0.00000001	0.00009285
24	Yes	12	0.00000001	0.00008191
25	Yes	12	0.00000001	0.00009344
26	Yes	12	0.00000001	0.00009394
27	Yes	10	0.00000001	0.00009894
28	Yes	11	0.00000001	0.00007925
29	Yes	11	0.00000001	0.00009565
30	Yes	10	0.00000001	0.00009107
31	Yes	11	0.00000001	0.00008613
32	Yes	11	0.00000001	0.00008252
33	Yes	10	0.00000001	0.00009882
34	Yes	11	0.00000001	0.00009808
35	Yes	11	0.00000001	0.00007969
36	Yes	10	0.00000001	0.00009114
37	Yes	11	0.00000001	0.00008678
38	Yes	11	0.00000001	0.00009246

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	110 - 100.5	11.78	27	0.88	0.00
L2	100.5 - 100	10.04	27	0.86	0.00
L3	100 - 47.93	9.95	27	0.86	0.00
L4	53.07 - 1	2.90	27	0.51	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
110.0000	(2) BXA-70063-6CF-EDIN-X w/ Mount Pipe	27	11.78	0.88	0.00	40701
98.0000	(2) 7770.00 w/ Mount Pipe	27	9.59	0.86	0.00	17981
90.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	27	8.18	0.82	0.00	11592

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	110 - 100.5	34.01	2	2.53	0.00
L2	100.5 - 100	29.00	2	2.49	0.00
L3	100 - 47.93	28.74	2	2.49	0.00
L4	53.07 - 1	8.37	2	1.46	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
110.0000	(2) BXA-70063-6CF-EDIN-X w/ Mount Pipe	2	34.01	2.53	0.00	14292
98.0000	(2) 7770.00 w/ Mount Pipe	2	27.70	2.48	0.00	6279
90.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	2	23.63	2.38	0.00	4035

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	110 - 100.5 (1)	TP24x24x0.375	9.5000	0.0000	0.0	21.00	27.8325	-3.14	584.48	0.005
L2	100.5 - 100 (2)	TP26.42x24x0.375	0.5000	0.0000	0.0	21.00	27.8325	-3.14	584.48	0.005
L3	100 - 47.93 (3)	TP37.12x26.42x0.313	52.0700	0.0000	0.0	39.00	35.5170	-12.50	1385.16	0.009
L4	47.93 - 1 (4)	TP46x35.4378x0.375	52.0700	0.0000	0.0	39.00	54.3052	-23.22	2117.90	0.011

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	110 - 100.5 (1)	TP24x24x0.375	53.68	3.98	23.10	0.172	0.00	0.00	23.10	0.000
L2	100.5 - 100 (2)	TP26.42x24x0.375	53.68	3.98	23.10	0.172	0.00	0.00	23.10	0.000
L3	100 - 47.93 (3)	TP37.12x26.42x0.313	631.03	24.19	39.00	0.620	0.00	0.00	39.00	0.000
L4	47.93 - 1 (4)	TP46x35.4378x0.375	1477.09	29.00	39.00	0.744	0.00	0.00	39.00	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	110 - 100.5 (1)	TP24x24x0.375	5.89	0.21	14.00	0.030	0.00	0.00	14.00	0.000
L2	100.5 - 100 (2)	TP26.42x24x0.375	5.92	0.21	14.00	0.028	0.00	0.00	14.00	0.000
L3	100 - 47.93 (3)	TP37.12x26.42x0.313	14.56	0.41	26.00	0.032	0.48	0.01	26.00	0.000
L4	47.93 - 1 (4)	TP46x35.4378x0.375	17.93	0.33	26.00	0.025	0.48	0.00	26.00	0.000

Pole Interaction Design Data

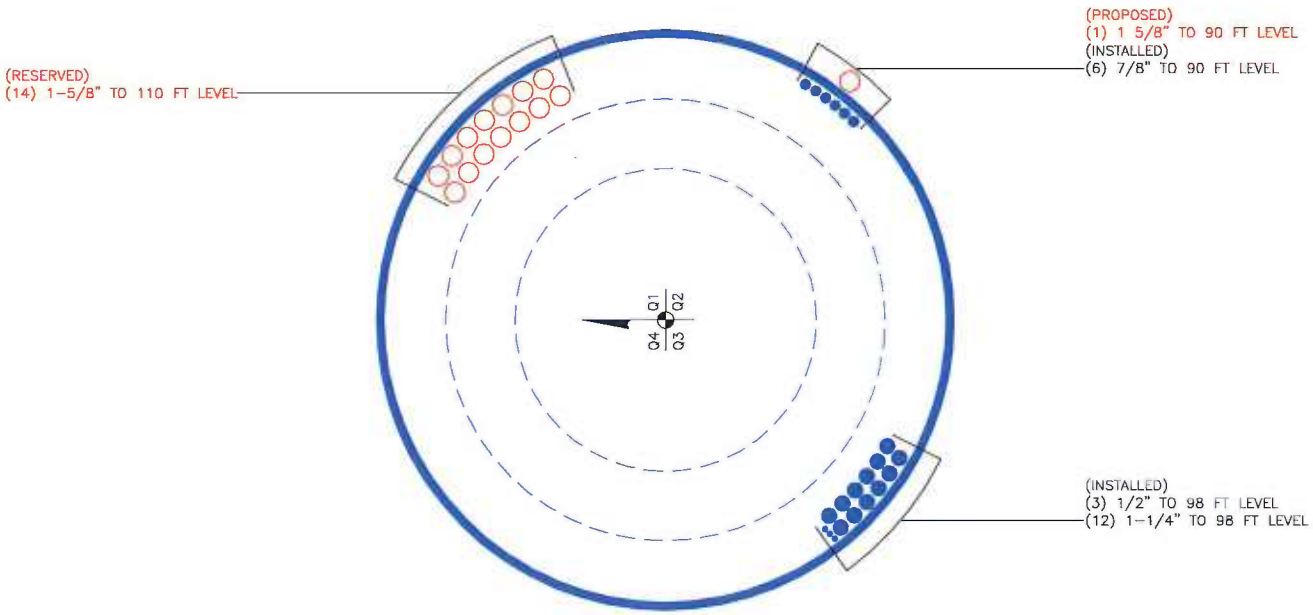
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	110 - 100.5 (1)	0.005	0.172	0.000	0.030	0.000	0.178 ✔	1.333	H1-3+VT ✔
L2	100.5 - 100 (2)	0.005	0.172	0.000	0.028	0.000	0.178 ✔	1.333	H1-3+VT ✔
L3	100 - 47.93 (3)	0.009	0.620	0.000	0.032	0.000	0.630 ✔	1.333	H1-3+VT ✔
L4	47.93 - 1 (4)	0.011	0.744	0.000	0.025	0.000	0.755 ✔	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	110 - 100.5	Pole	TP24x24x0.375	1	-3.14	779.12	13.3	Pass
L2	100.5 - 100	Pole	TP26.42x24x0.375	2	-3.14	779.12	13.3	Pass
L3	100 - 47.93	Pole	TP37.12x26.42x0.313	3	-12.50	1846.42	47.2	Pass
L4	47.93 - 1	Pole	TP46x35.4378x0.375	4	-23.22	2823.16	56.6	Pass
							Summary	
						Pole (L4)	56.6	Pass
						RATING =	**56.6**	**Pass**

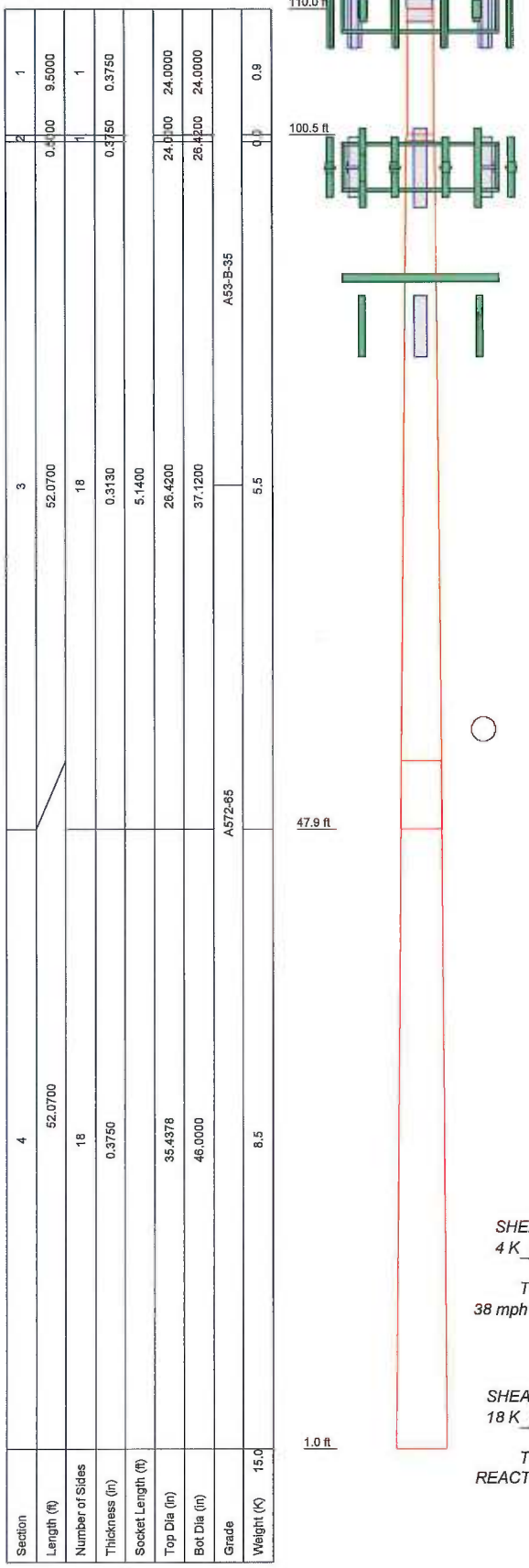
APPENDIX B

BASE LEVEL DRAWING



APPENDIX C

ADDITIONAL CALCULATIONS



Section	1	2	3	4
Length (ft)	9.5000	0.4000	52.0700	52.0700
Number of Sides	1	1	18	18
Thickness (in)	0.3750	0.3750	0.3130	0.3750
Socket Length (ft)			5.1400	
Top Dia (in)	24.0000	24.0000	26.4200	35.4378
Bot Dia (in)	24.0000	26.4200	37.1200	46.0000
Grade	A53-B-35			A572-65
Weight (K)	0.9	0.0	5.5	8.5

DESIGNED APPURTENANCE LOADING

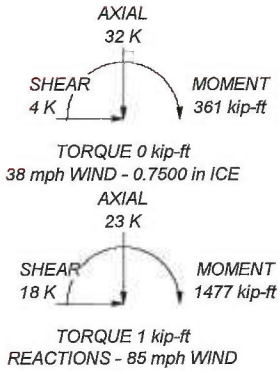
TYPE	ELEVATION	TYPE	ELEVATION
(2) BXA-70063-6CF-EDIN-X w/ Mount Pipe	110	AM-X-CD-16-65-00T-RET w/ Mount Pipe	98
(2) BXA-70063-6CF-EDIN-X w/ Mount Pipe	110	AM-X-CD-16-65-00T-RET w/ Mount Pipe	98
(2) BXA-70063-6CF-EDIN-X w/ Mount Pipe	110	(2) LGP21401	98
(2) BXA-171063-12CF-EDIN-X w/ Mount Pipe	110	(2) LGP21401	98
(2) BXA-171063-12CF-EDIN-X w/ Mount Pipe	110	(2) LGP21401	98
(2) BXA-171063-12CF-EDIN-X w/ Mount Pipe	110	(2) RBS 6601	98
RRH2X40-AWS	110	(2) RBS 6601	98
RRH2X40-AWS	110	(2) RBS 6601	98
RRH2X40-AWS	110	DC6-48-60-18-8F	98
RRH2X40-07-U	110	Platform Mount [LP 303-1]	98
RRH2X40-07-U	110	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	90
RRH2X40-07-U	110	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	90
DB-B1-6C-8AB-0Z	110	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	90
Platform Mount [LP 301-1]	110	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	90
(2) 7770.00 w/ Mount Pipe	98	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	90
(2) 7770.00 w/ Mount Pipe	98	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	90
(2) 7770.00 w/ Mount Pipe	98	T-Arm Mount [TA 602-3]	90
AM-X-CD-16-65-00T-RET w/ Mount Pipe	98		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi	A572-65	65 ksi	80 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: 56.6%



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Job: *110' Monopole / Guilford*		
Project: *37514-1352.001.7805 / BU 842864*		
Client: Crown Castle	Drawn by: Seth Tschanen	App'd:
Code: TIA/EIA-222-F	Date: 06/23/14	Scale: NTS
Path: G:\TOWER\375...\Crown Castle\37514-1352 BU 842864\WD 777694 BU 842864 - 001.SAT\37514-1352.001.7805.eri		Dwg No. E-1

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

TIA Rev F

Site Data

BU#: *842864*
Site Name: *Guilford SW*
App #:

Pole Manufacturer:	*Other*

Reactions		
Moment:	1477	ft-kips
Axial:	23	kips
Shear:	18	kips

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

Anchor Rod Data		
Qty:	14	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	55	in

Anchor Rod Results

Maximum Rod Tension:	90.4 Kips	Rigid
Allowable Tension:	195.0 Kips	Service, ASD
Anchor Rod Stress Ratio:	46.4% Pass	Fty*ASIF

Plate Data		
Diam:	61	in
Thick:	2	in
Grade:	60	ksi
Single-Rod B-eff:	10.43	in

Base Plate Results Flexural Check

Base Plate Stress:	35.9 ksi	Rigid
Allowable Plate Stress:	60.0 ksi	Service ASD
Base Plate Stress Ratio:	59.9% Pass	0.75*Fy*ASIF
		Y.L. Length: 30.15

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
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 Data		
Diam:	46	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Pole Results

Pole Punching Shear Check: n/a

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

Foundation Loads:

Pole weight or tower leg compression =	**23**	(kips)
Horizontal load at top of pier =	**18**	(kips)
Overturning moment at top of pier=	**1477**	(ft-kips)

Design criteria:

Safety factor against overturning =	**1.5**	

Soil Properties:

Soil density =	**120**	(pcf)
Allowable soil bearing =	**30**	(ksf)
Depth to water table =	**99**	(ft)

Dimensions:

Pier shape (round or square)	**S**	("R" or "S")
Pier width =	**7**	(ft)
Pier height above grade =	**1**	(ft)
depth to bottom of footing =	**7**	(ft)
Footing thickness =	**3**	(ft)
Footing width =	**21.5**	(ft)
Footing length =	**21.5**	(ft)

Concrete:

Concrete strength =	**4**	(ksi)
Rebar strength =	**60**	(ksi)
ultimate load factor =	**1.3**	

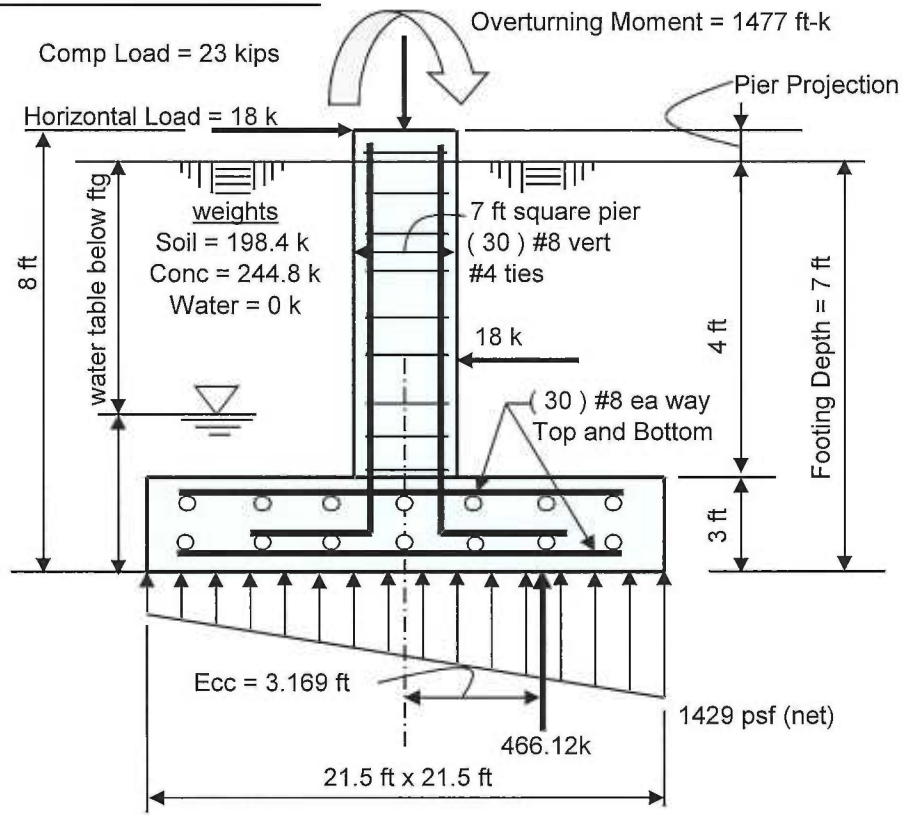
Reinforcing Steel:

	Pad	
minimum cover over rebar =	**3**	inches
size of pad rebar =	**#8**	bar
quantity of pad rebar =	**30**	(ea direction)

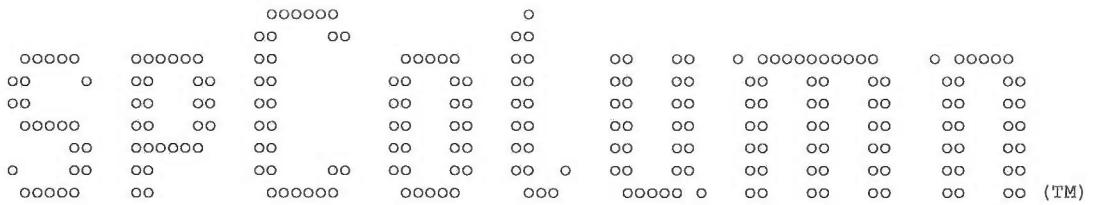
Reinforcing Steel:

	Pier	
size of vert rebar in pier=	**#8**	bar
vertical rebar quantity =	**30**	
size of pier ties =	**#4**	bar
minimum cover over rebar =	**3**	inches

Total volume of concrete = 60.4 cu yd



Summary of analysis results	
Maximum Net Soil Bearing = 1.429 ksf Allowable Net Soil Bearing = 30 ksf **Soil Bearing Stress Ratio = 0.05 Okay**	Ult Bending Shear Capacity = 126 psi Ult Bending Shear Stress = 17 psi **Bending Shear Stress Ratio = 0.14 Okay**
Ftg Overturning Resistance = 5011 ft-kips Overturning Moment = 1477 ft-kips Required Overturning Safety Factor = 1.5 Overturning Safety Factor = 3.393 **Ratio = 0.44 Okay**	Pad Bending Moment Capacity= 3273 ft-k Pad Bending Moment = 565 ft-k **Bending Moment Stress Ratio = 0.17 OK**



spColumn v4.80 (TM)
Computer program for the Strength Design of Reinforced Concrete Sections

General Information:
==========

File Name: g:\tower\375_crown_castle\2014\37514-1352 bu 842...\37514-1352.001 - pier steel check.col
Project:
Column: Engineer:
Code: ACI 318-05 Units: English

Run Option: Investigation Slenderness: Not considered
Run Axis: X-axis Column Type: Architectural

Material Properties:
==========

f'c = 4 ksi fy = 60 ksi
Ec = 3605 ksi Es = 29000 ksi
Ultimate strain = 0.003 in/in
Beta1 = 0.85

Section:
==========

Rectangular: Width = 84 in Depth = 84 in

Gross section area, Ag = 7056 in^2
Ix = 4.14893e+006 in^4 Iy = 4.14893e+006 in^4
rx = 24.2487 in ry = 24.2487 in
Xo = 0 in Yo = 0 in

Reinforcement:
==========

Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Confinement: Tied; #4 ties with #10 bars, #4 with larger bars.
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Pattern: Irregular
Total steel area: As = 23.70 in^2 at rho = 0.34% (Note: rho < 0.50%)
Minimum clear spacing = 6.94 in

Area in^2	X (in)	Y (in)	Area in^2	X (in)	Y (in)	Area in^2	X (in)	Y (in)
0.79	0.0	38.0	0.79	7.9	37.2	0.79	15.5	34.7
0.79	22.3	30.7	0.79	28.2	25.4	0.79	32.9	19.0
0.79	36.1	11.7	0.79	37.8	4.0	0.79	37.8	-4.0
0.79	36.1	-11.7	0.79	32.9	-19.0	0.79	28.2	-25.4
0.79	22.3	-30.7	0.79	15.5	-34.7	0.79	7.9	-37.2
0.79	0.0	-38.0	0.79	-7.9	-37.2	0.79	-15.5	-34.7
0.79	-22.3	-30.7	0.79	-28.2	-25.4	0.79	-32.9	-19.0
0.79	-36.1	-11.7	0.79	-37.8	-4.0	0.79	-37.8	4.0
0.79	-36.1	11.7	0.79	-32.9	19.0	0.79	-28.2	25.4
0.79	-22.3	30.7	0.79	-15.5	34.7	0.79	-7.9	37.2

Factored Loads and Moments with Corresponding Capacities:
==========

No.	Pu kip	Mux k-ft	PhiMnx k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi
1	23.00	2107.30	3945.65	1.872	11.27	80.00	0.01830	0.900

*** End of output ***

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: *842864*
Site Name: *Guilford SW*
App #:

Pole Manufacturer:	Other

Reactions		
Moment:	53.68	ft-kips
Axial:	3.14	kips
Shear:	5.92	kips
Elevation:	100	feet

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

Bolt Data			
Qty:	24		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty: 44.00
N/A:		<-- Disregard	
Circle (in.):	30		

Plate Data		
Diam:	33	in
Thick, t:	1.5	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.49	in

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

Pole Data		
Diam:	26.42	in
Thick:	0.313	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	

Flange Bolt Results

		Rigid
Bolt Tension Capacity, **B**:	46.07 kips	Service, ASD
Max Bolt directly applied T:	3.45 Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.692 in	
Min PL "treq" for actual **T w/ Pry**:	0.356 in	
Min PL "t1" for actual **T w/o Pry**:	0.463 in	
T allowable with Prying:	42.19 kips	0≤α'≤1 case
Prying Force, Q:	0.00 kips	
Total Bolt Tension=T+Q:	3.45 kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	7.5% **Pass**	

Exterior Flange Plate Results Flexural Check

		Rigid
Compression Side Plate Stress:	3.1 ksi	Service ASD
Allowable Plate Stress:	36.0 ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	8.7% **Pass**	Comp. Y.L. Length:
No Prying		14.21
Tension Side Stress Ratio, (treq/t)^2:	5.6% **Pass**	

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

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: *842864*
Site Name: *Guilford SW*
App #:

Pole Manufacturer:	Other

Reactions		
Moment:	53.68	ft-kips
Axial:	3.14	kips
Shear:	5.92	kips
Elevation:	100	feet

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

Bolt Data			
Qty:	24		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty: 44.00
N/A:		<-- Disregard	
Circle (in.):	30		

Plate Data		
Diam:	33	in
Thick, t:	1	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.14	in

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

Pole Data		
Diam:	24	in
Thick:	0.375	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

			Non-Rigid
Bolt Tension Capacity, **B**:	46.07	kips	Service, ASD
Max Bolt directly applied T:	3.45	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	2.472	in	
Min PL "treq" for actual **T w/ Pry**:	0.525	in	
Min PL "t1" for actual **T w/o Pry**:	0.676	in	
T allowable with Prying:	12.53	kips	α'>1 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	3.45	kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	7.5%	Pass	

Exterior Flange Plate Results Flexural Check

			Non-Rigid
Compression Side Plate Stress:	11.8	ksi	Service ASD
Allowable Plate Stress:	36.0	ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	32.8%	Pass	Comp. Y.L. Length:
No Prying			18.00
Tension Side Stress Ratio, (treq/t)^2:	27.5%	Pass	

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

EXHIBIT C

EBI Consulting
environmental | engineering | due diligence

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

Metro MobilePCS Existing Facility

Site ID: CTNH510A

AT&T Guilford Monopole

201 Granite Road
Guilford, CT 06437

July 30, 2014

EBI PROJECT NUMBER: 62144083

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

EBI Consulting
environmental | engineering | due diligence

July 30, 2014

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

Re: Emissions Values for Site: **CTNH510A - AT&T Guilford Monopole**

EBI Consulting was directed to analyze the proposed Metro MobilePCS facility located at 201 Granite Road, Guilford, CT, for the purpose of determining whether the emissions from the Proposed Metro MobilePCS 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 Metro MobilePCS Wireless antenna facility located at 201 Granite Road, Guilford, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Metro MobilePCS 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 **86 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	CTNH510A - AT&T Guilford Monopole
Site Addresss	201 Granite Road, Guilford, CT 06437
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	86	80	None	0	0	48.326044	2.714609	0.27146%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	86	80	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	86	80	1-5/8"	0	0	24.163022	1.357304	0.13573%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	86	80	1-5/8"	0	0	24.163022	1.357304	0.13573%
														Sector total Power Density Value:		0.543%	

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	86	80	None	0	0	48.326044	2.714609	0.27146%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	86	80	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	86	80	1-5/8"	0	0	24.163022	1.357304	0.13573%
2b	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	86	80	1-5/8"	0	0	24.163022	1.357304	0.13573%
														Sector total Power Density Value:		0.543%	

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	86	80	None	0	0	48.326044	2.714609	0.27146%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	86	80	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	86	80	1-5/8"	0	0	24.163022	1.357304	0.13573%
2b	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	86	80	1-5/8"	0	0	24.163022	1.357304	0.13573%
														Sector total Power Density Value:		0.543%	

Site Composite MPE %

Carrier	MPE %
Metro MobilePCS	1.629%
AT&T	34.170%
Total Site MPE %	**35.799%**

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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 Metro MobilePCS facility are **1.629% (0.543% 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 **35.799%** 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