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

February 27, 2014

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

Re: Notice of Exempt Modification
Crown Castle/T-Mobile co-location
Site ID CT11217A
201 South Main Street, Newtown

Dear Attorney Bachman:

This office represents T-Mobile Northeast LLC ("T-Mobile") and has been retained to file exempt modification filings with the Connecticut Siting Council on its behalf.

In this case, Crown Castle owns the existing monopole telecommunications tower and related facility at 201 South Main Street Newtown, Connecticut (Latitude 41.378145/Latitude: -73.274123). T-Mobile intends to replace three existing antenna and add three new antenna and related equipment at this existing telecommunications facility in Newtown ("Newtown 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 Newtown First Selectman, E. Patricia Llodra and the property owner, Bluelinx Corporation.

The existing Newtown Facility consists of a 150 foot tall monopole tower.[1] T-Mobile plans to replace three existing antennas with three new antennas, add three antenna and replace three TMAs (tower mounted amplifiers) at a centerline of 148 feet. (See the plans revised to February 26, 2014 attached hereto as Exhibit A). T-Mobile will also install an equipment cabinet, install fiber and coax cable, and reuse existing coax cables. The existing Newtown Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated February 12, 2014 and attached hereto as Exhibit B.

[1] While the online docket for the Connecticut Siting Council does not provide a docket or petition number for the approval of this structure, it does reference this structure in connection with several co-location requests, the most recent being EM-SPRINT-097-131127.

The planned modifications to the Newtown 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. T-Mobile's replacement and additional antennas will be installed at a centerline of 148 feet, merely replacing and adding to the existing antennas located at the same 148 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. T-Mobile's equipment will be located entirely within the existing compound area.

3. The proposed modification to the Newtown 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 February 26, 2014, T-Mobile's operations would add 0.517% 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 40.297% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit C.

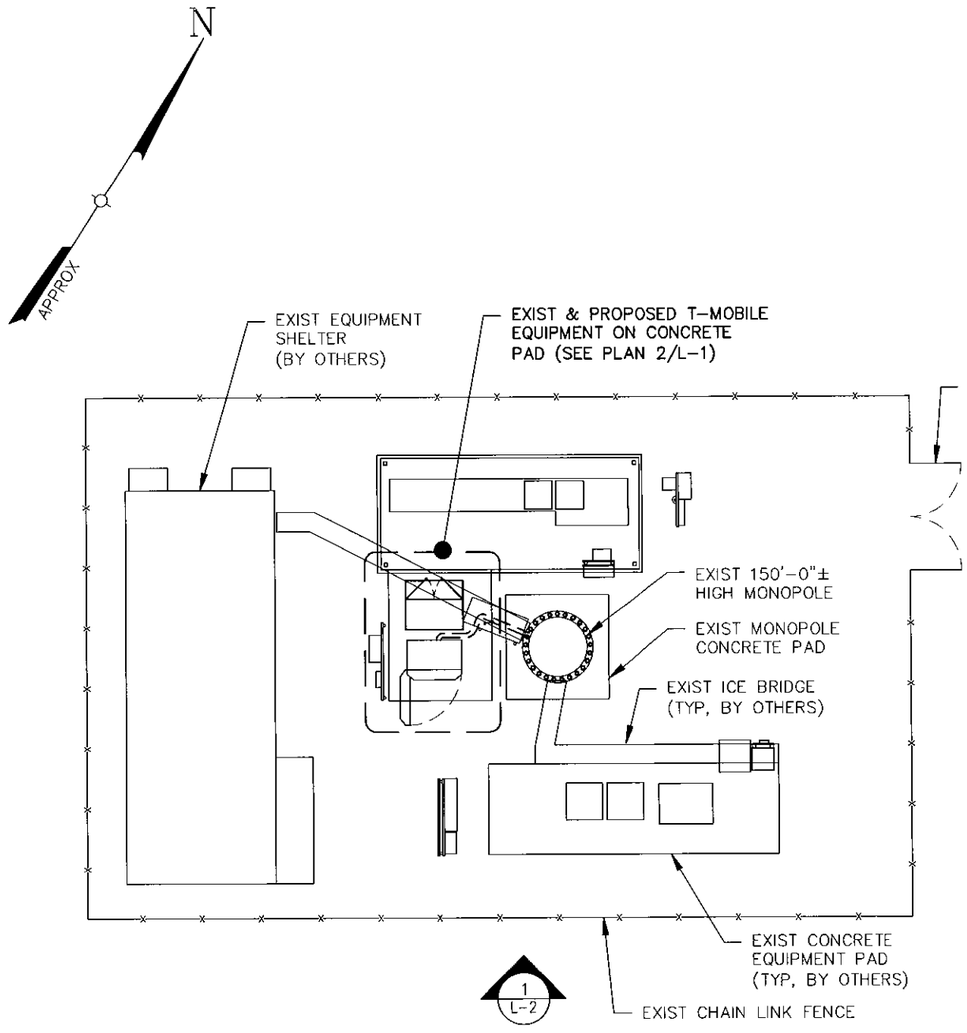
For the foregoing reasons, T-Mobile respectfully submits that the proposed replacement antennas and equipment at the Newtown Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement by the Council of this proposed exempt modification, T-Mobile shall commence construction approximately sixty days from the date of the Council's notice of acknowledgement.

Sincerely,

Julie D. Kohler, Esq.

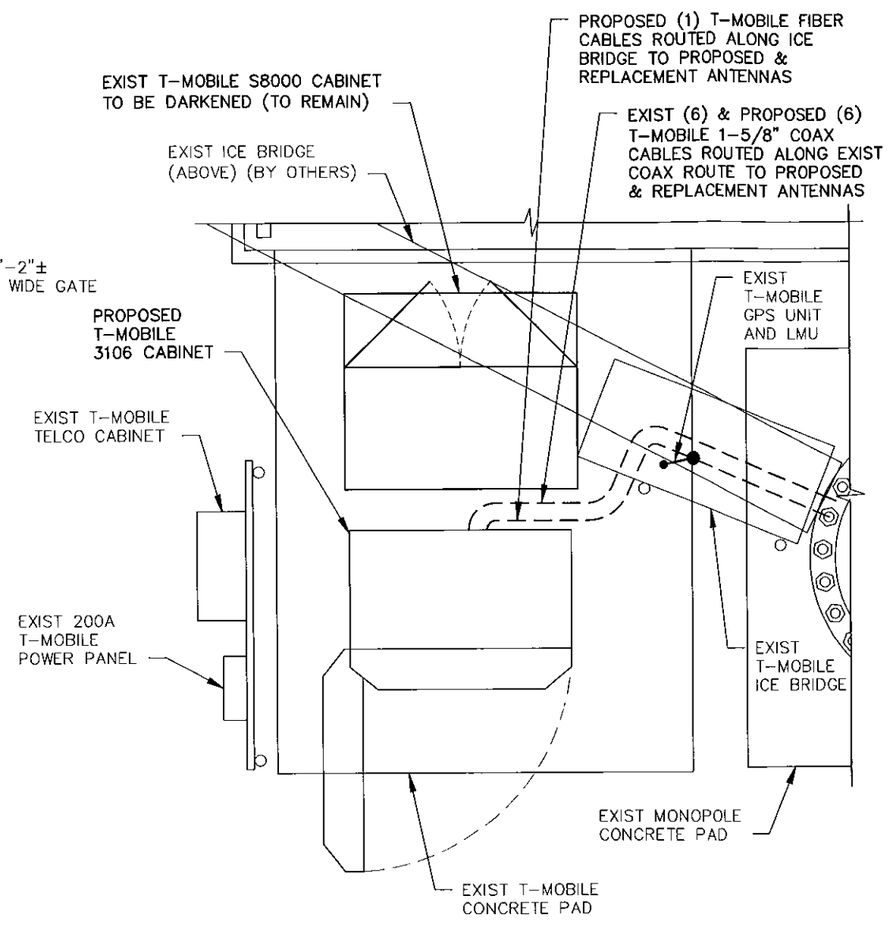
cc: Town of Newtown, First Selectman E. Patricia Llodra
Crown Castle
Bluelinx Corporation
Halene Fujimoto, HPC Wireless

EXHIBIT A



1 L-1 SITE PLAN

SCALE: 1/8" = 1'-0"



2 L-1 EQUIPMENT PLAN

SCALE: 1/4" = 1'-0"

STRUCTURAL NOTE:
EXIST MOUNTS AND MONOPOLE TO BE VERIFIED FOR STRUCTURAL SUITABILITY OF PROPOSED INSTALLATION BY A STATE LICENSED P.E.

CONFIGURATION
2C

0 1 2 3
ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • SURVEYING
• ENGINEERING • CONSTRUCTION MANAGEMENT
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
Fax: (845) 567-8703

T-Mobile

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

APPROVALS

T-MOBILE	
LANDLORD	
RF	
CONSTRUCTION	

PROJECT NUMBER	DESIGNED BY
6644.CT11217A	JQ

REV	DATE	REVISION	DRAWN BY
0	02/26/14	FOR COMMENT	MP

ISSUED BY | DATE

SITE INFORMATION

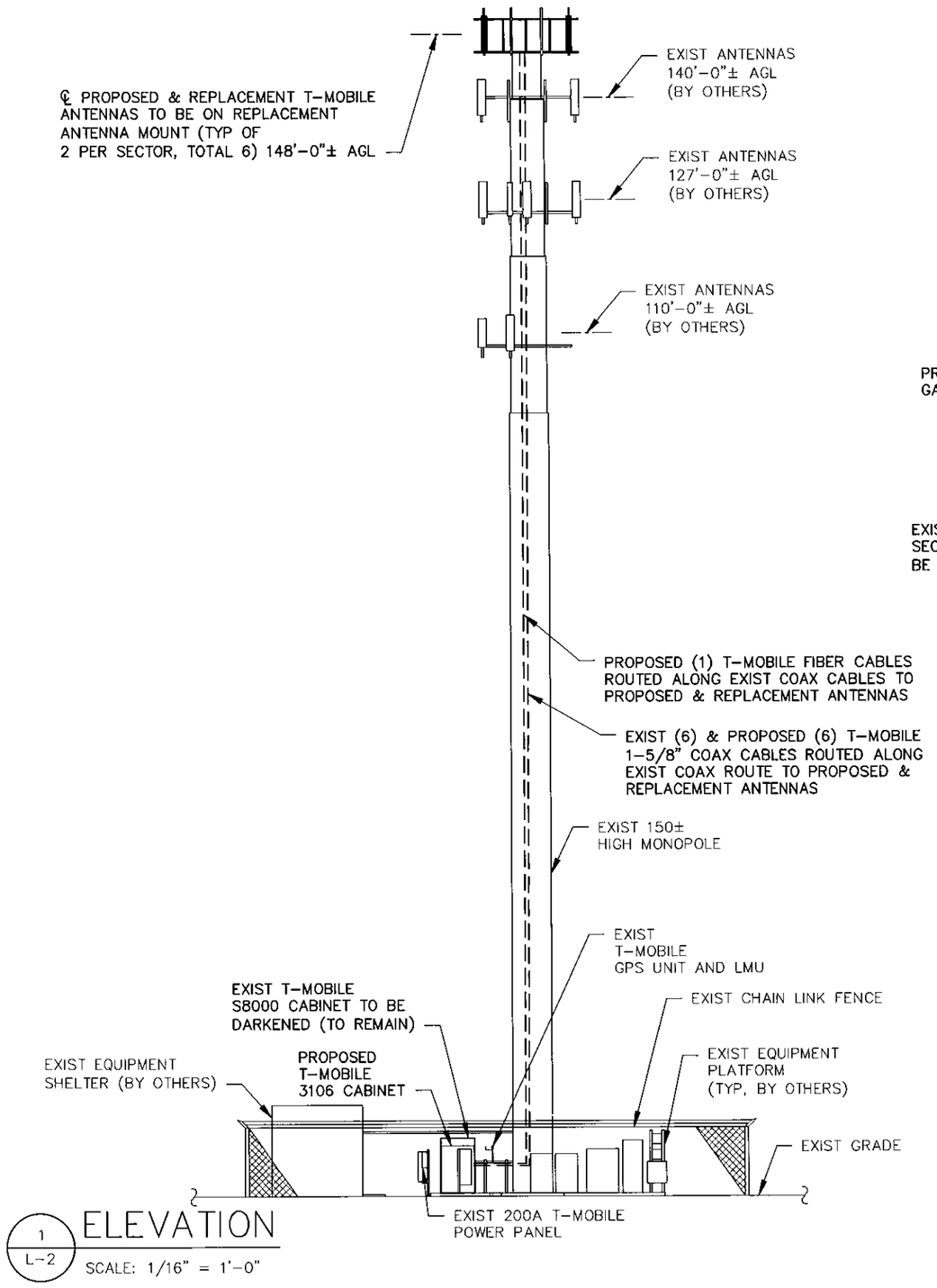
CT11217A
NEWTOWN/RT-25
201 MAIN STREET
NEWTOWN, CT 06470

SHEET TITLE

SITE PLAN &
EQUIPMENT PLAN

SHEET NUMBER

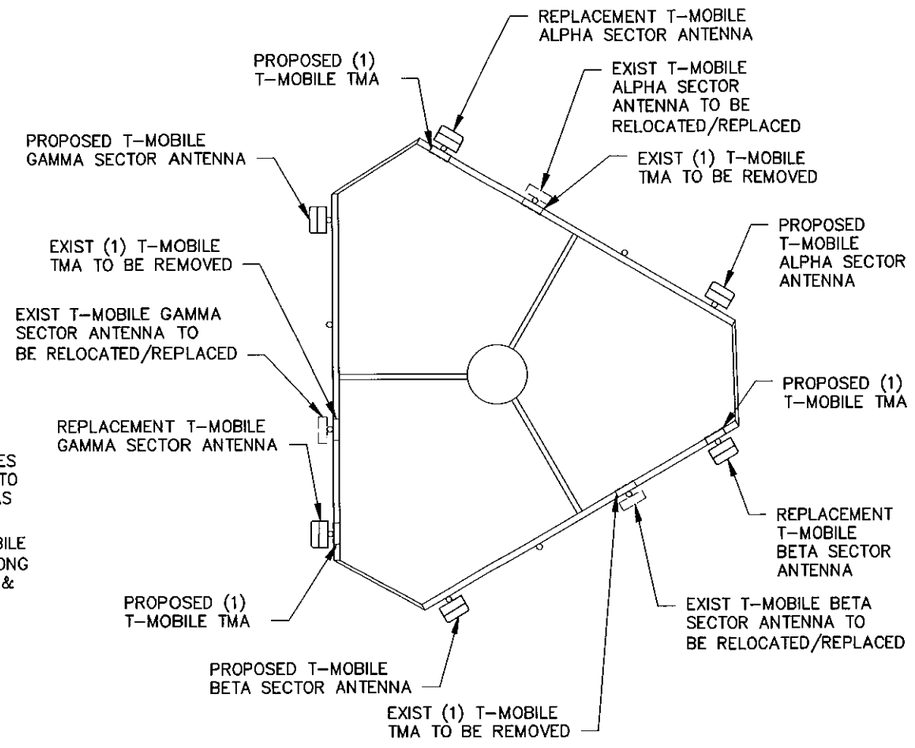
L-1



1/L-2 ELEVATION

SCALE: 1/16" = 1'-0"

STRUCTURAL NOTE:
EXIST MOUNTS AND MONOPOLE TO BE VERIFIED FOR STRUCTURAL SUITABILITY OF PROPOSED INSTALLATION BY A STATE LICENSED P.E.



2/L-2 ANTENNA PLAN

SCALE: 3/16" = 1'-0"

CONFIGURATION
2C

0 1 2 3
ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • ENGINEERING • SURVEYING • CONSTRUCTION MANAGEMENT
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
Fax: (845) 567-8703

T-Mobile

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

APPROVALS
T-MOBILE
LANDLORD
RF
CONSTRUCTION

PROJECT NUMBER	DESIGNED BY
6644.CT11217A	JQ

REV	DATE	REVISION	DRAWN BY
0	02/26/14	FOR COMMENT	MP

ISSUED BY | DATE

SITE INFORMATION
CT11217A
NEWTOWN/RT-25
201 MAIN STREET
NEWTOWN, CT 06470

SHEET TITLE
ELEVATION

SHEET NUMBER
L-2

EXHIBIT B

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

Date: **February 12, 2014**

Patrick Byrum
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Paul J Ford and Company
250 E Broad Street, Suite 1500
Columbus, OH 43215
614.221.6679

Subject: **Structural Analysis Report**

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11217A
	Carrier Site Name:	Newtown/RT-25
Crown Castle Designation:	**Crown Castle BU Number:**	826222
	Crown Castle Site Name:	Newtown/RT-25
	Crown Castle JDE Job Number:	259659
	Crown Castle Work Order Number:	711274
	Crown Castle Application Number:	216336 Rev. 2
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37513-1642 R1
Site Data:	**201 Main Street, Newtown, Fairfield County, CT**	
	Latitude *41° 22' 41.322"*, Longitude *-73° 16' 26.843"*	
	150 Foot - Monopole Tower	

Dear Patrick Byrum,

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 616870, in accordance with application 216336, 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 referenced 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.

Respectfully submitted by:

Jason C. Martin, E.I.
Structural Designer

tnxTower Report - version 6.1.4.1

FEB 13 2014

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

Date: **February 12, 2014**

Patrick Byrum
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Paul J Ford and Company
250 E Broad Street, Suite 1500
Columbus, OH 43215
614.221.6679

Subject: **Structural Analysis Report**

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11217A
	Carrier Site Name:	Newtown/RT-25
Crown Castle Designation:	**Crown Castle BU Number:**	826222
	Crown Castle Site Name:	Newtown/RT-25
	Crown Castle JDE Job Number:	259659
	Crown Castle Work Order Number:	711274
	Crown Castle Application Number:	216336 Rev. 2
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37513-1642 R1
Site Data:	**201 Main Street, Newtown, Fairfield County, CT**	
	Latitude *41° 22' 41.322"*, Longitude *-73° 16' 26.843"*	
	150 Foot - Monopole Tower	

Dear Patrick Byrum,

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 616870, in accordance with application 216336, 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 referenced 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.

Respectfully submitted by:

Jason C. Martin, E.I.
Structural Designer

tnxTower Report - version 6.1.4.1

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 150 ft Monopole tower designed by Pirod Manufactures Inc. in October of 2000. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F. This analysis includes the modifications per the referenced proposed modifications by PJF dated 8/20/2013.

2) ANALYSIS CRITERIA

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.

Table 1 - Proposed Antenna and Cable Information

148.0	148.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	7	1-5/8	--
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			

Table 2 - Existing and Reserved Antenna and Cable Information

148.0	150.0	1	andrew	HP4-102	--	--	3
	148.0	6	andrew	ETW190VS12UB			
		12	andrew	TMBXX-6516-R2M w/ Mount Pipe			
		1	tower mounts	Sector Mount [SM 411-3]	6	1-5/8	1
140.0	140.0	6	decibel	DB980F90E-M w/ Mount Pipe	6	1-5/8	3
		3	decibel	DB980F90T2E-M w/ Mount Pipe			
		1	tower mounts	Platform Mount [LP 712-1]	--	--	1
	137.0	3	alcatel lucent	1900MHz RRH	3	1-1/4	2
		3	alcatel lucent	800MHZ RRH			
		6	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
127.0	127.0	3	alcatel lucent	RRH2x40-AWS	1	1-5/8	2
		1	rfs celwave	DB-B1-6C-8AB-0Z			
		3	kathrein	742 213 w/ Mount Pipe			
		1	antel	BXA-70063/4CF w/ Mount Pipe			
		1	swedcom	SLCP 2x6014 w/ Mount Pipe	--	--	3
		1	antel	BXA-171063-12BF w/ Mount Pipe	12	1-5/8	1
		2	antel	BXA-171063/8CF w/ Mount Pipe			
		6	rfs celwave	APL866513-42T0 w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		2	swedcom	SLCP 2x6014 w/ Mount Pipe			
		1	tower mounts	Platform Mount [LP 304-1]			
110.0	110.0	6	ericsson	RRUS-11	1 2 6	3/4 7/8 1-1/4	1
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		3	powerwave technologies	P65-16-XLH-RR w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 303-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed - Not Considered in this Analysis

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

4-GEOTECHNICAL REPORTS	Dr. Clarence Welti Geotechnica Engineering, 10/16/2000	3536527	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Pirod, A-117711-F-1001206, 10/17/2000	3536528	CCISITES
PROPOSED MODIFICATION DRAWINGS	PJF, 37513-1642 BP, 8/20/2013	3963744	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 reference modification drawings by PJF dated 8/20/2013.

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 4 - Section Capacity (Summary)

L1	150 - 133	Pole	TP26x21.83x0.25	1	-4.38	1032.38	10.9	Pass
L2	133 - 98.45	Pole	TP34.0625x24.7764x0.3125	2	-12.19	1691.15	48.7	Pass
L3	98.45 - 64.8	Pole	TP41.75x32.4841x0.375	3	-18.65	2488.32	61.9	Pass
L4	64.8 - 32	Pole	TP49.0625x39.8387x0.375	4	-26.41	2928.95	72.8	Pass
L5	32 - 0	Pole	TP56.125x46.9597x0.375	5	-36.96	3394.28	80.5	Pass
							Summary	
						Pole (L5)	80.5	Pass
						Rating =	80.5	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC4.7

1	Anchor Rods	0	75.9	Pass
1	Base Plate	0	80.5	Pass
1	Base Foundation Structural Steel	0	96.2	Pass
1	Base Foundation Soil Interaction	0	19.0	Pass

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

4.1) Recommendations

- Reinforce the monopole in conformance with the referenced proposed modification drawings by PJF dated 8/20/2013.

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 Fairfield County, Connecticut.
2) Basic wind speed of 85.00 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 37.60 mph is used in combination with ice.
7) Deflections calculated using a wind speed of 50.00 mph.
8) A non-linear (P-delta) analysis was used.
9) Pressures are calculated at each section.
10) Stress ratio used in pole design is 1.333.
11) 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		
	Leg Bolts Are At Top Of Section		SR Members Have Cut Ends	√	Include Shear-Torsion Interaction
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Always Use Sub-Critical Flow
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Use Top Mounted Sockets
	Add IBC .6D+W Combination		Use TIA-222-G Tension Splice Capacity Exemption		

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	150.0000-133.0000	17.0000	2.95	18	21.8300	26.0000	0.2500	1.0000	A572-65 (65 ksi)
L2	133.0000-98.4500	37.5000	3.85	18	24.7764	34.0625	0.3125	0.1250	A572-65 (65 ksi)
L3	98.4500-64.8000	37.5000	4.70	18	32.4841	41.7500	0.3750	1.5000	A572-65 (65 ksi)
L4	64.8000-32.0000	37.5000	5.50	18	39.8387	49.0625	0.3750	0.1875	A572-65 (65 ksi)
L5	32.0000-0.0000	37.5000		18	46.9597	56.1250	0.3750	0.1875	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/ft
L1	22.1668	17.1237	1007.4853	7.6609	11.0896	90.8492	2016.2962	8.5635	3.4021	13.608
	26.4011	20.4326	1711.6544	9.1412	13.2080	129.5922	3425.5610	10.2183	4.1360	16.544
L2	25.9004	24.2651	1834.7231	8.6847	12.5864	145.7703	3671.8604	12.1349	4.2066	13.461
	34.5880	33.4758	4817.4335	11.9812	17.3038	278.4040	9641.2058	16.7411	5.8410	18.691
L3	33.9512	38.2179	4978.0707	11.3987	16.5019	301.6659	9962.6917	19.1126	5.0572	13.486
	42.3941	49.2466	10650.9822	14.6881	21.2090	502.1916	21315.9793	24.6280	6.6880	17.835
L4	41.6271	46.9716	9242.0494	14.0096	20.2380	456.6670	18496.2597	23.4903	6.8136	18.17
	49.8194	57.9503	17355.1378	17.2841	24.9238	696.3293	34733.1119	28.9807	8.4370	22.499
L5	49.0491	55.4474	15202.1420	16.5376	23.8555	637.2590	30424.2873	27.7290	8.0669	21.512
	56.9908	66.3564	26056.1506	19.7913	28.5115	913.8821	52146.5865	33.1845	9.6800	25.813

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 150.0000-133.0000				1	1	1		
L2 133.0000-98.4500				1	1	1		
L3 98.4500-64.8000				1	1	1		
L4 64.8000-32.0000				1	1	1		
L5 32.0000-0.0000				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
***										

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
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	No	Inside Pole	148.0000 - 0.0000	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
LDF7-50A(1-5/8")	C	No	Inside Pole	148.0000 - 0.0000	6	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
LDF7-50A(1-5/8")	C	No	Inside Pole	148.0000 - 0.0000	6	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

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***								
HB114-1-0813U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	140.0000 - 127.0000	1	No Ice	0.1540	1.20
						1/2" Ice	0.2540	2.45
						1" Ice	0.3540	4.30
						2" Ice	0.5540	9.85
						4" Ice	0.9540	28.27
HB114-1-0813U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	140.0000 - 127.0000	2	No Ice	0.0000	1.20
						1/2" Ice	0.0000	2.45
						1" Ice	0.0000	4.30
						2" Ice	0.0000	9.85
						4" Ice	0.0000	28.27
HB114-1-0813U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	127.0000 - 0.0000	3	No Ice	0.0000	1.20
						1/2" Ice	0.0000	2.45
						1" Ice	0.0000	4.30
						2" Ice	0.0000	9.85
						4" Ice	0.0000	28.27
***								
HB158-1-08U8-S8J18(1-5/8)	C	No	CaAa (Out Of Face)	127.0000 - 0.0000	1	No Ice	0.0000	1.30
						1/2" Ice	0.0000	2.81
						1" Ice	0.0000	4.94
						2" Ice	0.0000	11.02
						4" Ice	0.0000	30.52
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	127.0000 - 0.0000	2	No Ice	0.1980	0.82
						1/2" Ice	0.2980	2.33
						1" Ice	0.3980	4.46
						2" Ice	0.5980	10.54
						4" Ice	0.9980	30.04
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	127.0000 - 0.0000	10	No Ice	0.0000	0.82
						1/2" Ice	0.0000	2.33
						1" Ice	0.0000	4.46
						2" Ice	0.0000	10.54
						4" Ice	0.0000	30.04
***								
9776(3/4")	C	No	Inside Pole	110.0000 - 0.0000	1	No Ice	0.0000	0.31
						1/2" Ice	0.0000	0.31
						1" Ice	0.0000	0.31
						2" Ice	0.0000	0.31
						4" Ice	0.0000	0.31
LDF5-50A(7/8")	C	No	Inside Pole	110.0000 - 0.0000	2	No Ice	0.0000	0.33
						1/2" Ice	0.0000	0.33
						1" Ice	0.0000	0.33
						2" Ice	0.0000	0.33
						4" Ice	0.0000	0.33
LDF6-50A(1-1/4")	C	No	Inside Pole	110.0000 - 0.0000	6	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
***								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.0000-133.0000	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	1.078	0.19
L2	133.0000-98.4500	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	12.230	0.88
L3	98.4500-64.8000	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	13.325	1.03
L4	64.8000-32.0000	A	0.000	0.000	0.000	0.000	0.00
		B	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
		C	0.000	0.000	0.000	12.989	1.00
L5	32.0000-0.0000	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	12.672	0.98

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.0000-133.0000	A	0.893	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	2.328	0.25
L2	133.0000-98.4500	A	0.871	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	23.499	2.34
L3	98.4500-64.8000	A	0.836	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	25.053	2.65
L4	64.8000-32.0000	A	0.785	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	23.953	2.50
L5	32.0000-0.0000	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	22.721	2.33

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150.0000-133.0000	-0.0839	0.0485	-0.1636	0.0944
L2	133.0000-98.4500	-0.4081	0.2356	-0.6708	0.3873
L3	98.4500-64.8000	-0.4567	0.2637	-0.7532	0.4349
L4	64.8000-32.0000	-0.4653	0.2686	-0.7702	0.4447
L5	32.0000-0.0000	-0.4715	0.2722	-0.7730	0.4463

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
***									
(2) 2.375" OD x 5' Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	148.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.1875 1.4956 1.8071 2.4580 3.9194	1.1875 1.4956 1.8071 2.4580 3.9194	0.02 0.03 0.04 0.08 0.20
(2) 2.375" OD x 5' Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	148.0000	No Ice 1/2" Ice 1" Ice	1.1875 1.4956 1.8071 2.4580	1.1875 1.4956 1.8071 2.4580	0.02 0.03 0.04 0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	3.9194	3.9194	0.20
						4" Ice			
(2) 2.375" OD x 5' Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	148.0000	No Ice	1.1875	1.1875	0.02
						1/2" Ice	1.4956	1.4956	0.03
						1" Ice	1.8071	1.8071	0.04
						2" Ice	2.4580	2.4580	0.08
						4" Ice	3.9194	3.9194	0.20
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	148.0000	No Ice	6.8253	5.6424	0.11
						1/2" Ice	7.3471	6.4800	0.17
						1" Ice	7.8632	7.2567	0.23
						2" Ice	8.9261	8.8640	0.38
						4" Ice	11.1755	12.2932	0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	148.0000	No Ice	6.8253	5.6424	0.11
						1/2" Ice	7.3471	6.4800	0.17
						1" Ice	7.8632	7.2567	0.23
						2" Ice	8.9261	8.8640	0.38
						4" Ice	11.1755	12.2932	0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	148.0000	No Ice	6.8253	5.6424	0.11
						1/2" Ice	7.3471	6.4800	0.17
						1" Ice	7.8632	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 0.00	0.0000	148.0000	No Ice	6.8253	5.6424	0.11
						1/2" Ice	7.3471	6.4800	0.17
						1" Ice	7.8632	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	B	From Leg	4.0000 0.00 0.00	0.0000	148.0000	No Ice	6.8253	5.6424	0.11
						1/2" Ice	7.3471	6.4800	0.17
						1" Ice	7.8632	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	C	From Leg	4.0000 0.00 0.00	0.0000	148.0000	No Ice	6.8253	5.6424	0.11
						1/2" Ice	7.3471	6.4800	0.17
						1" Ice	7.8632	7.2567	0.23
						2" Ice	8.9261	8.8640	0.38
						4" Ice	11.1755	12.2932	0.81
KRY 112 144/1	A	From Leg	4.0000 0.00 0.00	0.0000	148.0000	No Ice	0.4083	0.2042	0.01
						1/2" Ice	0.4969	0.2733	0.01
						1" Ice	0.5941	0.3511	0.02
						2" Ice	0.8145	0.5326	0.03
						4" Ice	1.3590	0.9992	0.08
KRY 112 144/1	B	From Leg	4.0000 0.00 0.00	0.0000	148.0000	No Ice	0.4083	0.2042	0.01
						1/2" Ice	0.4969	0.2733	0.01
						1" Ice	0.5941	0.3511	0.02
						2" Ice	0.8145	0.5326	0.03
						4" Ice	1.3590	0.9992	0.08
KRY 112 144/1	C	From Leg	4.0000 0.00 0.00	0.0000	148.0000	No Ice	0.4083	0.2042	0.01
						1/2" Ice	0.4969	0.2733	0.01
						1" Ice	0.5941	0.3511	0.02
						2" Ice	0.8145	0.5326	0.03
						4" Ice	1.3590	0.9992	0.08
Sector Mount [SM 411-3]	C	None		0.0000	148.0000	No Ice	21.8800	21.8800	1.07
						1/2" Ice	30.6800	30.6800	1.48
							39.4800	39.4800	1.90

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
						1" Ice	57.0800	57.0800	2.73
						2" Ice	92.2800	92.2800	4.40
						4" Ice			
***									
(2) APXVSPP18-C-A20 w/ Mount Pipe	A	From Face	4.0000 0.00 -3.00	0.0000	140.0000	No Ice	8.4975	6.9458	0.08
						1/2" Ice	9.1490	8.1266	0.15
						1" Ice	9.7672	9.0212	0.23
						2" Ice	11.0311	10.8440	0.41
						4" Ice	13.6786	14.8507	0.91
(2) APXVSPP18-C-A20 w/ Mount Pipe	B	From Face	4.0000 0.00 -3.00	0.0000	140.0000	No Ice	8.4975	6.9458	0.08
						1/2" Ice	9.1490	8.1266	0.15
						1" Ice	9.7672	9.0212	0.23
						2" Ice	11.0311	10.8440	0.41
						4" Ice	13.6786	14.8507	0.91
(2) APXVSPP18-C-A20 w/ Mount Pipe	C	From Face	4.0000 0.00 -3.00	0.0000	140.0000	No Ice	8.4975	6.9458	0.08
						1/2" Ice	9.1490	8.1266	0.15
						1" Ice	9.7672	9.0212	0.23
						2" Ice	11.0311	10.8440	0.41
						4" Ice	13.6786	14.8507	0.91
1900MHz RRH	A	From Face	4.0000 0.00 -3.00	0.0000	140.0000	No Ice	2.9069	3.8014	0.04
						1/2" Ice	3.1446	4.0650	0.08
						1" Ice	3.3909	4.3372	0.11
						2" Ice	3.9094	4.9076	0.19
						4" Ice	5.0502	6.1520	0.41
1900MHz RRH	B	From Face	4.0000 0.00 -3.00	0.0000	140.0000	No Ice	2.9069	3.8014	0.04
						1/2" Ice	3.1446	4.0650	0.08
						1" Ice	3.3909	4.3372	0.11
						2" Ice	3.9094	4.9076	0.19
						4" Ice	5.0502	6.1520	0.41
1900MHz RRH	C	From Face	4.0000 0.00 -3.00	0.0000	140.0000	No Ice	2.9069	3.8014	0.04
						1/2" Ice	3.1446	4.0650	0.08
						1" Ice	3.3909	4.3372	0.11
						2" Ice	3.9094	4.9076	0.19
						4" Ice	5.0502	6.1520	0.41
800MHZ RRH	A	From Face	4.0000 0.00 -3.00	0.0000	140.0000	No Ice	2.4899	2.0685	0.05
						1/2" Ice	2.7061	2.2705	0.07
						1" Ice	2.9310	2.4812	0.10
						2" Ice	3.4068	2.9284	0.16
						4" Ice	4.4620	3.9265	0.32
800MHZ RRH	B	From Face	4.0000 0.00 -3.00	0.0000	140.0000	No Ice	2.4899	2.0685	0.05
						1/2" Ice	2.7061	2.2705	0.07
						1" Ice	2.9310	2.4812	0.10
						2" Ice	3.4068	2.9284	0.16
						4" Ice	4.4620	3.9265	0.32
800MHZ RRH	C	From Face	4.0000 0.00 -3.00	0.0000	140.0000	No Ice	2.4899	2.0685	0.05
						1/2" Ice	2.7061	2.2705	0.07
						1" Ice	2.9310	2.4812	0.10
						2" Ice	3.4068	2.9284	0.16
						4" Ice	4.4620	3.9265	0.32
Platform Mount [LP 712-1]	C	None		0.0000	140.0000	No Ice	24.5300	24.5300	1.34
						1/2" Ice	29.9400	29.9400	1.65
						1" Ice	35.3500	35.3500	1.96
						2" Ice	46.1700	46.1700	2.58
						4" Ice	67.8100	67.8100	3.82
***									

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
BXA-70063/4CF w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.3988 5.8435 6.2986 7.2405 9.2612	3.6158 4.2169 4.8343 6.1609 9.1826	0.03 0.07 0.12 0.23 0.57
742 213 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.3729 5.9502 6.5014 7.6106 9.9329	4.6203 6.0004 6.9816 8.8524 12.7940	0.05 0.09 0.15 0.28 0.68
742 213 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.3729 5.9502 6.5014 7.6106 9.9329	4.6203 6.0004 6.9816 8.8524 12.7940	0.05 0.09 0.15 0.28 0.68
742 213 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.3729 5.9502 6.5014 7.6106 9.9329	4.6203 6.0004 6.9816 8.8524 12.7940	0.05 0.09 0.15 0.28 0.68
RRH2x40-AWS	A	From Leg	4.0000 0.00 0.00	0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.9764 3.2363 3.5048 4.0678 5.2975	1.5960 1.8239 2.0605 2.5596 3.6614	0.04 0.06 0.08 0.14 0.29
RRH2x40-AWS	B	From Leg	4.0000 0.00 0.00	0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.9764 3.2363 3.5048 4.0678 5.2975	1.5960 1.8239 2.0605 2.5596 3.6614	0.04 0.06 0.08 0.14 0.29
RRH2x40-AWS	C	From Leg	4.0000 0.00 0.00	0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.9764 3.2363 3.5048 4.0678 5.2975	1.5960 1.8239 2.0605 2.5596 3.6614	0.04 0.06 0.08 0.14 0.29
DB-B1-6C-8AB-0Z	C	From Leg	4.0000 0.00 0.00	0.0000	127.0000	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
(2) APL866513-42T0 w/ Mount Pipe	A	From Face	4.0000 0.00 0.00	0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.5308 4.9675 5.4135 6.3370 8.3197	4.9208 5.5962 6.2837 7.7123 10.8330	0.03 0.08 0.13 0.25 0.60
(2) APL866513-42T0 w/ Mount Pipe	B	From Face	4.0000 0.00 0.00	0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.5308 4.9675 5.4135 6.3370 8.3197	4.9208 5.5962 6.2837 7.7123 10.8330	0.03 0.08 0.13 0.25 0.60
(2) APL866513-42T0 w/ Mount Pipe	C	From Face	4.0000 0.00 0.00	0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice	4.5308 4.9675 5.4135 6.3370 8.3197	4.9208 5.5962 6.2837 7.7123 10.8330	0.03 0.08 0.13 0.25 0.60

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" Ice			
(2) BXA-171063/8CF w/ Mount Pipe	A	From Face	4.0000 0.00 0.00	0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.1574 3.5312 3.9415 4.8273 6.7342	3.3303 3.9423 4.5633 5.8553 8.8407	0.03 0.06 0.10 0.19 0.48
(2) SLCP 2x6014 w/ Mount Pipe	B	From Face	4.0000 0.00 0.00	0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.4514 7.9606 8.4698 9.5191 11.7421	6.9545 7.7563 8.5195 10.0997 13.4750	0.04 0.10 0.18 0.34 0.80
BXA-171063-12BF w/ Mount Pipe	C	From Face	4.0000 0.00 0.00	0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.9710 5.5211 6.0361 7.0911 9.3593	5.2283 6.3892 7.2610 9.0462 12.8165	0.04 0.09 0.14 0.27 0.67
(2) FD9R6004/2C-3L	A	From Face	4.0000 0.00 0.00	0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.3665 0.4506 0.5433 0.7546 1.2808	0.0846 0.1362 0.1965 0.3430 0.7396	0.00 0.01 0.01 0.02 0.06
(2) FD9R6004/2C-3L	B	From Face	4.0000 0.00 0.00	0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.3665 0.4506 0.5433 0.7546 1.2808	0.0846 0.1362 0.1965 0.3430 0.7396	0.00 0.01 0.01 0.02 0.06
(2) FD9R6004/2C-3L	C	From Face	4.0000 0.00 0.00	0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.3665 0.4506 0.5433 0.7546 1.2808	0.0846 0.1362 0.1965 0.3430 0.7396	0.00 0.01 0.01 0.02 0.06
Platform Mount [LP 304-1]	C	None		0.0000	127.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	17.4600 22.4400 27.4200 37.3800 57.3000	17.4600 22.4400 27.4200 37.3800 57.3000	1.35 1.62 1.90 2.45 3.55
***									
7770.00 w/ Mount Pipe	A	From Face	4.0000 0.00 0.00	0.0000	110.0000	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
7770.00 w/ Mount Pipe	B	From Face	4.0000 0.00 0.00	0.0000	110.0000	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
7770.00 w/ Mount Pipe	C	From Face	4.0000 0.00 0.00	0.0000	110.0000	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) LGP21401	A	From Face	4.0000 0.00 0.00	0.0000	110.0000	No Ice 1/2" Ice	1.2880 1.4453 1.6112	0.2326 0.3134 0.4028	0.01 0.02 0.03

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
						1" Ice	1.9690	0.6076	0.05
						2" Ice	2.7882	1.1210	0.14
						4" Ice			
(2) LGP21401	B	From Face	4.0000 0.00 0.00	0.0000	110.0000	No Ice	1.2880	0.2326	0.01
						1/2" Ice	1.4453	0.3134	0.02
						1" Ice	1.6112	0.4028	0.03
						2" Ice	1.9690	0.6076	0.05
						4" Ice	2.7882	1.1210	0.14
(2) LGP21401	C	From Face	4.0000 0.00 0.00	0.0000	110.0000	No Ice	1.2880	0.2326	0.01
						1/2" Ice	1.4453	0.3134	0.02
						1" Ice	1.6112	0.4028	0.03
						2" Ice	1.9690	0.6076	0.05
						4" Ice	2.7882	1.1210	0.14
P65-16-XLH-RR w/ Mount Pipe	A	From Face	4.0000 0.00 0.00	0.0000	110.0000	No Ice	8.6375	6.3625	0.08
						1/2" Ice	9.2903	7.5378	0.14
						1" Ice	9.9098	8.4270	0.22
						2" Ice	11.1763	10.2390	0.39
						4" Ice	13.8289	14.0988	0.89
P65-16-XLH-RR w/ Mount Pipe	B	From Face	4.0000 0.00 0.00	0.0000	110.0000	No Ice	8.6375	6.3625	0.08
						1/2" Ice	9.2903	7.5378	0.14
						1" Ice	9.9098	8.4270	0.22
						2" Ice	11.1763	10.2390	0.39
						4" Ice	13.8289	14.0988	0.89
P65-16-XLH-RR w/ Mount Pipe	C	From Face	4.0000 0.00 0.00	0.0000	110.0000	No Ice	8.6375	6.3625	0.08
						1/2" Ice	9.2903	7.5378	0.14
						1" Ice	9.9098	8.4270	0.22
						2" Ice	11.1763	10.2390	0.39
						4" Ice	13.8289	14.0988	0.89
(2) RRUS-11	A	From Face	4.0000 0.00 0.00	0.0000	110.0000	No Ice	3.2486	1.3726	0.05
						1/2" Ice	3.4905	1.5510	0.07
						1" Ice	3.7411	1.7380	0.09
						2" Ice	4.2682	2.1381	0.15
						4" Ice	5.4260	3.0418	0.31
(2) RRUS-11	B	From Face	4.0000 0.00 0.00	0.0000	110.0000	No Ice	3.2486	1.3726	0.05
						1/2" Ice	3.4905	1.5510	0.07
						1" Ice	3.7411	1.7380	0.09
						2" Ice	4.2682	2.1381	0.15
						4" Ice	5.4260	3.0418	0.31
(2) RRUS-11	C	From Face	4.0000 0.00 0.00	0.0000	110.0000	No Ice	3.2486	1.3726	0.05
						1/2" Ice	3.4905	1.5510	0.07
						1" Ice	3.7411	1.7380	0.09
						2" Ice	4.2682	2.1381	0.15
						4" Ice	5.4260	3.0418	0.31
DC6-48-60-18-8F	A	From Face	4.0000 0.00 0.00	0.0000	110.0000	No Ice	2.5667	2.5667	0.02
						1/2" Ice	2.7978	2.7978	0.04
						1" Ice	3.0377	3.0377	0.07
						2" Ice	3.5432	3.5432	0.13
						4" Ice	4.6580	4.6580	0.30
Platform Mount [LP 303-1]	C	None		0.0000	110.0000	No Ice	14.6600	14.6600	1.25
						1/2" Ice	18.8700	18.8700	1.48
						1" Ice	23.0800	23.0800	1.71
						2" Ice	31.5000	31.5000	2.18
						4" Ice	48.3400	48.3400	3.10
***									

Tower Pressures - No Ice

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 150.0000-133.0000	141.2530	1.515	28.02	33.880	A	0.000	33.880	33.880	100.00	0.000	0.000
					B	0.000	33.880		100.00	0.000	0.000
					C	0.000	33.880		100.00	0.000	1.078
L2 133.0000-98.4500	115.0815	1.429	26.40	85.755	A	0.000	85.755	85.755	100.00	0.000	0.000
					B	0.000	85.755		100.00	0.000	0.000
					C	0.000	85.755		100.00	0.000	12.230
L3 98.4500-64.8000	81.2529	1.294	23.88	105.416	A	0.000	105.416	105.416	100.00	0.000	0.000
					B	0.000	105.416		100.00	0.000	0.000
					C	0.000	105.416		100.00	0.000	13.325
L4 64.8000-32.0000	48.3113	1.115	20.51	123.078	A	0.000	123.078	123.078	100.00	0.000	0.000
					B	0.000	123.078		100.00	0.000	0.000
					C	0.000	123.078		100.00	0.000	12.989
L5 32.0000-0.0000	15.6006	1	18.50	139.239	A	0.000	139.239	139.239	100.00	0.000	0.000
					B	0.000	139.239		100.00	0.000	0.000
					C	0.000	139.239		100.00	0.000	12.672

Tower Pressure - With Ice

G_H = 1.690

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
L1 150.0000-133.0000	141.2530	1.515	5.48	0.8930	36.410	A	0.000	36.410	36.410	100.00	0.000	0.000
						B	0.000	36.410		100.00	0.000	0.000
						C	0.000	36.410		100.00	0.000	2.328
L2 133.0000-98.4500	115.0815	1.429	5.17	0.8713	90.897	A	0.000	90.897	90.897	100.00	0.000	0.000
						B	0.000	90.897		100.00	0.000	0.000
						C	0.000	90.897		100.00	0.000	23.499
L3 98.4500-64.8000	81.2529	1.294	4.67	0.8356	110.303	A	0.000	110.303	110.303	100.00	0.000	0.000
						B	0.000	110.303		100.00	0.000	0.000
						C	0.000	110.303		100.00	0.000	25.053
L4 64.8000-32.0000	48.3113	1.115	4.01	0.7851	127.646	A	0.000	127.646	127.646	100.00	0.000	0.000
						B	0.000	127.646		100.00	0.000	0.000
						C	0.000	127.646		100.00	0.000	23.953
L5 32.0000-0.0000	15.6006	1	3.62	0.7500	143.426	A	0.000	143.426	143.426	100.00	0.000	0.000
						B	0.000	143.426		100.00	0.000	0.000
						C	0.000	143.426		100.00	0.000	22.721

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 150.0000-	141.2530	1.515	9.70	33.880	A	0.000	33.880	33.880	100.00	0.000	0.000

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
133.0000					B	0.000	33.880		100.00	0.000	0.000
					C	0.000	33.880		100.00	0.000	1.078
L2 133.0000-98.4500	115.0815	1.429	9.14	85.755	A	0.000	85.755	85.755	100.00	0.000	0.000
					B	0.000	85.755		100.00	0.000	0.000
					C	0.000	85.755		100.00	0.000	12.230
L3 98.4500-64.8000	81.2529	1.294	8.26	105.416	A	0.000	105.416	105.416	100.00	0.000	0.000
					B	0.000	105.416		100.00	0.000	0.000
					C	0.000	105.416		100.00	0.000	13.325
L4 64.8000-32.0000	48.3113	1.115	7.10	123.078	A	0.000	123.078	123.078	100.00	0.000	0.000
					B	0.000	123.078		100.00	0.000	0.000
					C	0.000	123.078		100.00	0.000	12.989
L5 32.0000-0.0000	15.6006	1	6.40	139.239	A	0.000	139.239	139.239	100.00	0.000	0.000
					B	0.000	139.239		100.00	0.000	0.000
					C	0.000	139.239		100.00	0.000	12.672

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	24.82					
Bracing Weight	0.00					
Total Member Self-Weight	24.82			1.62	3.17	
Total Weight	36.97			1.62	3.17	
Wind 0 deg - No Ice		0.13	-29.17	-2975.68	-12.97	-0.74
Wind 30 deg - No Ice		14.77	-25.33	-2584.87	-1508.52	-0.90
Wind 60 deg - No Ice		25.45	-14.69	-1501.01	-2599.02	-0.81
Wind 90 deg - No Ice		29.31	-0.13	-14.52	-2992.26	-0.51
Wind 120 deg - No Ice		25.32	14.47	1476.29	-2582.87	-0.07
Wind 150 deg - No Ice		14.55	25.20	2571.97	-1480.56	0.39
Wind 180 deg - No Ice		-0.13	29.17	2978.92	19.31	0.74
Wind 210 deg - No Ice		-14.77	25.33	2588.11	1514.86	0.90
Wind 240 deg - No Ice		-25.45	14.69	1504.25	2605.35	0.81
Wind 270 deg - No Ice		-29.31	0.13	17.76	2998.59	0.51
Wind 300 deg - No Ice		-25.32	-14.47	-1473.05	2589.21	0.07
Wind 330 deg - No Ice		-14.55	-25.20	-2568.73	1486.90	-0.39
Member Ice	5.96					
Total Weight Ice	55.47			6.53	12.30	
Wind 0 deg - Ice		0.02	-7.02	-724.33	9.29	-0.28
Wind 30 deg - Ice		3.54	-6.09	-627.92	-357.47	-0.27
Wind 60 deg - Ice		6.11	-3.53	-361.51	-625.15	-0.19
Wind 90 deg - Ice		7.04	-0.02	3.52	-722.03	-0.05
Wind 120 deg - Ice		6.09	3.49	369.35	-622.14	0.10
Wind 150 deg - Ice		3.50	6.06	637.96	-352.25	0.22
Wind 180 deg - Ice		-0.02	7.02	737.39	15.32	0.28
Wind 210 deg - Ice		-3.54	6.09	640.98	382.08	0.27
Wind 240 deg - Ice		-6.11	3.53	374.57	649.76	0.19
Wind 270 deg - Ice		-7.04	0.02	9.54	746.64	0.05
Wind 300 deg - Ice		-6.09	-3.49	-356.29	646.75	-0.10
Wind 330 deg - Ice		-3.50	-6.06	-624.91	376.86	-0.22
Total Weight	36.97			1.62	3.17	
Wind 0 deg - Service		0.04	-10.09	-1030.24	-5.27	-0.26
Wind 30 deg - Service		5.11	-8.76	-895.01	-522.76	-0.31
Wind 60 deg - Service		8.81	-5.08	-519.97	-900.10	-0.28
Wind 90 deg - Service		10.14	-0.04	-5.61	-1036.16	-0.18
Wind 120 deg - Service		8.76	5.01	510.24	-894.51	-0.02
Wind 150 deg - Service		5.03	8.72	889.37	-513.09	0.13
Wind 180 deg - Service		-0.04	10.09	1030.18	5.90	0.26
Wind 210 deg - Service		-5.11	8.76	894.95	523.39	0.31
Wind 240 deg - Service		-8.81	5.08	519.91	900.72	0.28
Wind 270 deg - Service		-10.14	0.04	5.56	1036.79	0.18
Wind 300 deg - Service		-8.76	-5.01	-510.29	895.14	0.02
Wind 330 deg - Service		-5.03	-8.72	-889.42	513.72	-0.13

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
15	Dead+Wind 0 deg+Ice
16	Dead+Wind 30 deg+Ice
17	Dead+Wind 60 deg+Ice
18	Dead+Wind 90 deg+Ice
19	Dead+Wind 120 deg+Ice
20	Dead+Wind 150 deg+Ice
21	Dead+Wind 180 deg+Ice
22	Dead+Wind 210 deg+Ice
23	Dead+Wind 240 deg+Ice
24	Dead+Wind 270 deg+Ice
25	Dead+Wind 300 deg+Ice
26	Dead+Wind 330 deg+Ice
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
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 133	Pole	Max Tension	11	0.00	-0.00	-0.00
			Max. Compression	14	-8.62	0.08	-0.05
			Max. Mx	11	-4.38	55.52	-0.02
			Max. My	8	-4.39	0.04	-55.50
			Max. Vy	11	-8.59	55.52	-0.02
			Max. Vx	8	8.59	0.04	-55.50
			Max. Torque	8			-0.01
L2	133 - 98.45	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-22.86	2.71	-0.97
			Max. Mx	11	-12.20	543.55	-3.54
			Max. My	8	-12.22	4.05	-539.35
			Max. Vy	11	-19.96	543.55	-3.54
			Max. Vx	8	19.82	4.05	-539.35
			Max. Torque	4			0.80
L3	98.45 - 64.8	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-32.06	5.60	-2.62

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	11	-18.66	1251.64	-8.22
			Max. My	8	-18.67	9.05	-1242.32
			Max. Vy	11	-23.17	1251.64	-8.22
			Max. Vx	8	23.02	9.05	-1242.32
			Max. Torque	4			0.80
L4	64.8 - 32	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-42.52	8.84	-4.48
			Max. Mx	11	-26.41	2042.49	-12.86
			Max. My	8	-26.42	14.02	-2028.13
			Max. Vy	11	-26.13	2042.49	-12.86
			Max. Vx	8	25.98	14.02	-2028.13
			Max. Torque	4			0.80
L5	32 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-56.20	12.81	-6.78
			Max. Mx	11	-36.96	3083.57	-18.29
			Max. My	8	-36.96	19.89	-3063.34
			Max. Vy	11	-29.33	3083.57	-18.29
			Max. Vx	8	29.19	19.89	-3063.34
			Max. Torque	9			-0.89

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	56.20	-0.00	0.00
	Max. H_x	11	36.97	29.31	-0.13
	Max. H_z	2	36.97	-0.13	29.17
	Max. M_x	2	3060.02	-0.13	29.17
	Max. M_z	5	3077.06	-29.31	0.13
	Max. Torsion	3	0.88	-14.77	25.33
	Min. Vert	11	36.97	29.31	-0.13
	Min. H_x	5	36.97	-29.31	0.13
	Min. H_z	8	36.97	0.13	-29.17
	Min. M_x	8	-3063.34	0.13	-29.17
	Min. M_z	11	-3083.57	29.31	-0.13
	Min. Torsion	9	-0.89	14.77	-25.33

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	36.97	-0.00	0.00	1.62	3.17	0.00
Dead+Wind 0 deg - No Ice	36.97	0.13	-29.17	-3060.02	-13.37	-0.73
Dead+Wind 30 deg - No Ice	36.97	14.77	-25.33	-2658.33	-1551.42	-0.88
Dead+Wind 60 deg - No Ice	36.97	25.45	-14.69	-1543.67	-2672.89	-0.80
Dead+Wind 90 deg - No Ice	36.97	29.31	-0.13	-14.96	-3077.06	-0.51
Dead+Wind 120 deg - No Ice	36.97	25.32	14.47	1518.23	-2656.30	-0.07
Dead+Wind 150 deg - No Ice	36.97	14.55	25.20	2645.08	-1522.65	0.38
Dead+Wind 180 deg - No Ice	36.97	-0.13	29.17	3063.34	19.89	0.73
Dead+Wind 210 deg - No Ice	36.97	-14.77	25.33	2661.65	1557.94	0.89
Dead+Wind 240 deg - No Ice	36.97	-25.45	14.69	1547.00	2679.40	0.80
Dead+Wind 270 deg - No Ice	36.97	-29.31	0.13	18.29	3083.57	0.50
Dead+Wind 300 deg - No Ice	36.97	-25.32	-14.47	-1514.90	2662.82	0.07
Dead+Wind 330 deg - No Ice	36.97	-14.55	-25.20	-2641.74	1529.17	-0.38
Dead+Ice	56.20	0.00	-0.00	6.78	12.81	-0.00
Dead+Wind 0 deg+Ice	56.20	0.02	-7.02	-760.35	9.76	-0.28
Dead+Wind 30 deg+Ice	56.20	3.54	-6.09	-659.15	-375.23	-0.27
Dead+Wind 60 deg+Ice	56.20	6.11	-3.53	-379.50	-656.22	-0.18
Dead+Wind 90 deg+Ice	56.20	7.04	-0.02	3.67	-757.91	-0.05

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead+Wind 120 deg+Ice	56.20	6.09	3.49	387.69	-653.05	0.10
Dead+Wind 150 deg+Ice	56.20	3.50	6.06	669.66	-369.74	0.22
Dead+Wind 180 deg+Ice	56.20	-0.02	7.02	774.03	16.10	0.28
Dead+Wind 210 deg+Ice	56.20	-3.54	6.09	672.83	401.10	0.27
Dead+Wind 240 deg+Ice	56.20	-6.11	3.53	393.18	682.09	0.18
Dead+Wind 270 deg+Ice	56.20	-7.04	0.02	10.01	783.78	0.05
Dead+Wind 300 deg+Ice	56.20	-6.09	-3.49	-374.01	678.92	-0.10
Dead+Wind 330 deg+Ice	56.20	-3.50	-6.06	-655.98	395.61	-0.22
Dead+Wind 0 deg - Service	36.97	0.04	-10.09	-1058.56	-2.49	-0.25
Dead+Wind 30 deg - Service	36.97	5.11	-8.76	-919.39	-535.07	-0.31
Dead+Wind 60 deg - Service	36.97	8.81	-5.08	-533.46	-923.44	-0.28
Dead+Wind 90 deg - Service	36.97	10.14	-0.04	-4.09	-1063.42	-0.18
Dead+Wind 120 deg - Service	36.97	8.76	5.01	526.79	-917.64	-0.03
Dead+Wind 150 deg - Service	36.97	5.03	8.72	916.97	-525.09	0.13
Dead+Wind 180 deg - Service	36.97	-0.04	10.09	1061.89	9.02	0.25
Dead+Wind 210 deg - Service	36.97	-5.11	8.76	922.78	541.63	0.31
Dead+Wind 240 deg - Service	36.97	-8.81	5.08	536.76	929.92	0.28
Dead+Wind 270 deg - Service	36.97	-10.14	0.04	7.42	1069.95	0.17
Dead+Wind 300 deg - Service	36.97	-8.76	-5.01	-523.49	924.22	0.02
Dead+Wind 330 deg - Service	36.97	-5.03	-8.72	-913.64	531.62	-0.13

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-36.97	0.00	0.00	36.97	0.00	0.000%
2	0.13	-36.97	-29.17	-0.13	36.97	29.17	0.004%
3	14.77	-36.97	-25.33	-14.77	36.97	25.33	0.000%
4	25.45	-36.97	-14.69	-25.45	36.97	14.69	0.000%
5	29.31	-36.97	-0.13	-29.31	36.97	0.13	0.004%
6	25.32	-36.97	14.47	-25.32	36.97	-14.47	0.000%
7	14.55	-36.97	25.20	-14.55	36.97	-25.20	0.000%
8	-0.13	-36.97	29.17	0.13	36.97	-29.17	0.004%
9	-14.77	-36.97	25.33	14.77	36.97	-25.33	0.000%
10	-25.45	-36.97	14.69	25.45	36.97	-14.69	0.000%
11	-29.31	-36.97	0.13	29.31	36.97	-0.13	0.004%
12	-25.32	-36.97	-14.47	25.32	36.97	14.47	0.000%
13	-14.55	-36.97	-25.20	14.55	36.97	25.20	0.000%
14	0.00	-56.20	0.00	-0.00	56.20	0.00	0.001%
15	0.02	-56.20	-7.02	-0.02	56.20	7.02	0.002%
16	3.54	-56.20	-6.09	-3.54	56.20	6.09	0.002%
17	6.11	-56.20	-3.53	-6.11	56.20	3.53	0.002%
18	7.04	-56.20	-0.02	-7.04	56.20	0.02	0.002%
19	6.09	-56.20	3.49	-6.09	56.20	-3.49	0.002%
20	3.50	-56.20	6.06	-3.50	56.20	-6.06	0.002%
21	-0.02	-56.20	7.02	0.02	56.20	-7.02	0.002%
22	-3.54	-56.20	6.09	3.54	56.20	-6.09	0.002%
23	-6.11	-56.20	3.53	6.11	56.20	-3.53	0.002%
24	-7.04	-56.20	0.02	7.04	56.20	-0.02	0.002%
25	-6.09	-56.20	-3.49	6.09	56.20	3.49	0.002%
26	-3.50	-56.20	-6.06	3.50	56.20	6.06	0.002%
27	0.04	-36.97	-10.09	-0.04	36.97	10.09	0.002%
28	5.11	-36.97	-8.76	-5.11	36.97	8.76	0.002%
29	8.81	-36.97	-5.08	-8.81	36.97	5.08	0.001%
30	10.14	-36.97	-0.04	-10.14	36.97	0.04	0.002%
31	8.76	-36.97	5.01	-8.76	36.97	-5.01	0.002%
32	5.03	-36.97	8.72	-5.03	36.97	-8.72	0.002%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
33	-0.04	-36.97	10.09	0.04	36.97	-10.09	0.002%
34	-5.11	-36.97	8.76	5.11	36.97	-8.76	0.001%
35	-8.81	-36.97	5.08	8.81	36.97	-5.08	0.002%
36	-10.14	-36.97	0.04	10.14	36.97	-0.04	0.002%
37	-8.76	-36.97	-5.01	8.76	36.97	5.01	0.001%
38	-5.03	-36.97	-8.72	5.03	36.97	8.72	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	7	0.00005642	0.00007476
3	Yes	10	0.00000001	0.00013974
4	Yes	10	0.00000001	0.00014390
5	Yes	7	0.00005640	0.00012917
6	Yes	10	0.00000001	0.00013676
7	Yes	10	0.00000001	0.00013756
8	Yes	7	0.00005642	0.00011337
9	Yes	10	0.00000001	0.00014436
10	Yes	10	0.00000001	0.00014066
11	Yes	7	0.00005638	0.00007866
12	Yes	10	0.00000001	0.00013924
13	Yes	10	0.00000001	0.00013799
14	Yes	4	0.00000001	0.00000825
15	Yes	7	0.00012418	0.00002756
16	Yes	7	0.00012406	0.00006554
17	Yes	7	0.00012406	0.00007543
18	Yes	7	0.00012417	0.00002588
19	Yes	7	0.00012405	0.00007136
20	Yes	7	0.00012405	0.00006855
21	Yes	7	0.00012416	0.00002865
22	Yes	7	0.00012403	0.00008465
23	Yes	7	0.00012403	0.00007507
24	Yes	7	0.00012416	0.00002654
25	Yes	7	0.00012406	0.00007452
26	Yes	7	0.00012405	0.00007674
27	Yes	7	0.00000001	0.00003459
28	Yes	7	0.00000001	0.00014454
29	Yes	8	0.00000001	0.00005883
30	Yes	7	0.00000001	0.00003672
31	Yes	7	0.00000001	0.00014311
32	Yes	7	0.00000001	0.00014614
33	Yes	7	0.00000001	0.00003564
34	Yes	8	0.00000001	0.00005944
35	Yes	7	0.00000001	0.00014748
36	Yes	7	0.00000001	0.00003557
37	Yes	8	0.00000001	0.00005623
38	Yes	7	0.00000001	0.00014747

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 133	27.053	35	1.4864	0.0013
L2	135.95 - 98.45	22.697	35	1.4669	0.0013
L3	102.3 - 64.8	13.101	35	1.1998	0.0009
L4	69.5 - 32	6.066	35	0.8211	0.0004
L5	37.5 - 0	1.785	35	0.4327	0.0002

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.0000	(2) 2.375" OD x 5' Mount Pipe	35	26.430	1.4854	0.0013	47948
140.0000	(2) APXVSPP18-C-A20 w/ Mount Pipe	35	23.945	1.4771	0.0013	23974
127.0000	BXA-70063/4CF w/ Mount Pipe	35	19.986	1.4236	0.0012	10311
110.0000	7770.00 w/ Mount Pipe	35	15.124	1.2804	0.0010	5882

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 133	77.829	10	4.2787	0.0037
L2	135.95 - 98.45	65.308	10	4.2226	0.0037
L3	102.3 - 64.8	37.715	10	3.4546	0.0025
L4	69.5 - 32	17.471	10	2.3650	0.0012
L5	37.5 - 0	5.143	10	1.2466	0.0005

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.0000	(2) 2.375" OD x 5' Mount Pipe	10	76.038	4.2758	0.0037	16827
140.0000	(2) APXVSPP18-C-A20 w/ Mount Pipe	10	68.894	4.2518	0.0037	8413
127.0000	BXA-70063/4CF w/ Mount Pipe	10	57.514	4.0981	0.0035	3623
110.0000	7770.00 w/ Mount Pipe	10	43.534	3.6864	0.0028	2063

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	150 - 133 (1)	TP26x21.83x0.25	17.0000	0.0000	0.0	39.000	19.8584	-4.38	774.48	0.006
L2	133 - 98.45 (2)	TP34.0625x24.7764x0.3125	37.5000	0.0000	0.0	39.000	32.5302	-12.19	1268.68	0.010
L3	98.45 - 64.8 (3)	TP41.75x32.4841x0.375	37.5000	0.0000	0.0	39.000	47.8643	-18.65	1866.71	0.010
L4	64.8 - 32 (4)	TP49.0625x39.8387x0.375	37.5000	0.0000	0.0	39.000	56.3401	-26.41	2197.26	0.012
L5	32 - 0 (5)	TP56.125x46.9597x0.375	37.5000	0.0000	0.0	38.374	66.3564	-36.96	2546.35	0.015

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	150 - 133 (1)	TP26x21.83x0.25	55.54	5.447	39.000	0.140	0.00	0.000	39.000	0.000
L2	133 - 98.45 (2)	TP34.0625x24.7764x0.3125	545.52	24.907	39.000	0.639	0.00	0.000	39.000	0.000
L3	98.45 - 64.8 (3)	TP41.75x32.4841x0.375	1256.29	31.787	39.000	0.815	0.00	0.000	39.000	0.000
L4	64.8 - 32 (4)	TP49.0625x39.8387x0.375	2049.78	37.380	39.000	0.958	0.00	0.000	39.000	0.000
L5	32 - 0 (5)	TP56.125x46.9597x0.375	3093.93	40.626	38.374	1.059	0.00	0.000	38.374	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	150 - 133 (1)	TP26x21.83x0.25	8.60	0.433	26.000	0.033	0.00	0.000	26.000	0.000
L2	133 - 98.45 (2)	TP34.0625x24.7764x0.3125	20.04	0.616	26.000	0.047	0.80	0.018	26.000	0.001
L3	98.45 - 64.8 (3)	TP41.75x32.4841x0.375	23.25	0.486	26.000	0.037	0.80	0.010	26.000	0.000
L4	64.8 - 32 (4)	TP49.0625x39.8387x0.375	26.21	0.465	26.000	0.036	0.80	0.007	26.000	0.000
L5	32 - 0 (5)	TP56.125x46.9597x0.375	29.41	0.443	26.000	0.034	0.80	0.005	26.000	0.000

Pole Interaction Design Data

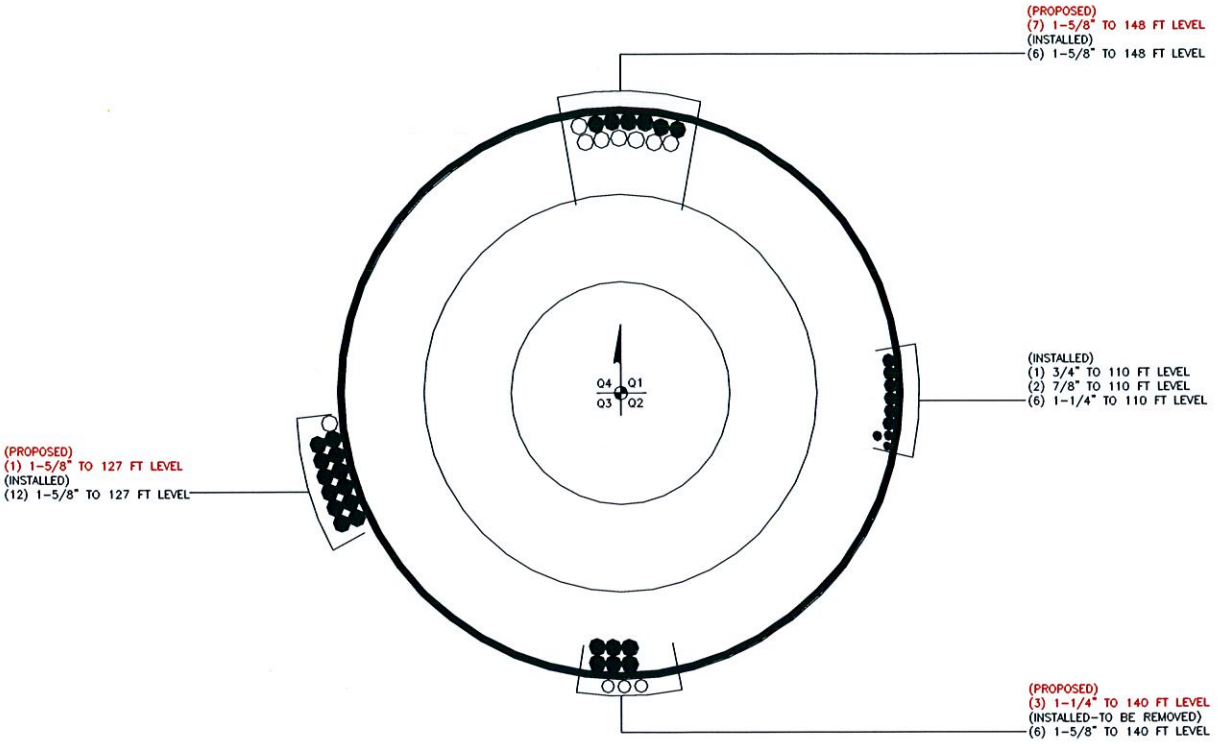
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 133 (1)	0.006	0.140	0.000	0.033	0.000	0.146 ✔	1.333	H1-3+VT ✔
L2	133 - 98.45 (2)	0.010	0.639	0.000	0.047	0.001	0.649 ✔	1.333	H1-3+VT ✔
L3	98.45 - 64.8 (3)	0.010	0.815	0.000	0.037	0.000	0.825 ✔	1.333	H1-3+VT ✔
L4	64.8 - 32 (4)	0.012	0.958	0.000	0.036	0.000	0.971 ✔	1.333	H1-3+VT ✔
L5	32 - 0 (5)	0.015	1.059	0.000	0.034	0.000	1.074 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	150 - 133	Pole	TP26x21.83x0.25	1	-4.38	1032.38	10.9	Pass
L2	133 - 98.45	Pole	TP34.0625x24.7764x0.3125	2	-12.19	1691.15	48.7	Pass
L3	98.45 - 64.8	Pole	TP41.75x32.4841x0.375	3	-18.65	2488.32	61.9	Pass
L4	64.8 - 32	Pole	TP49.0625x39.8387x0.375	4	-26.41	2928.95	72.8	Pass
L5	32 - 0	Pole	TP56.125x46.9597x0.375	5	-36.96	3394.28	80.5	Pass
							Summary	
						Pole (L5)	80.5	Pass
						RATING =	**80.5**	**Pass**

APPENDIX B

BASE LEVEL DRAWING

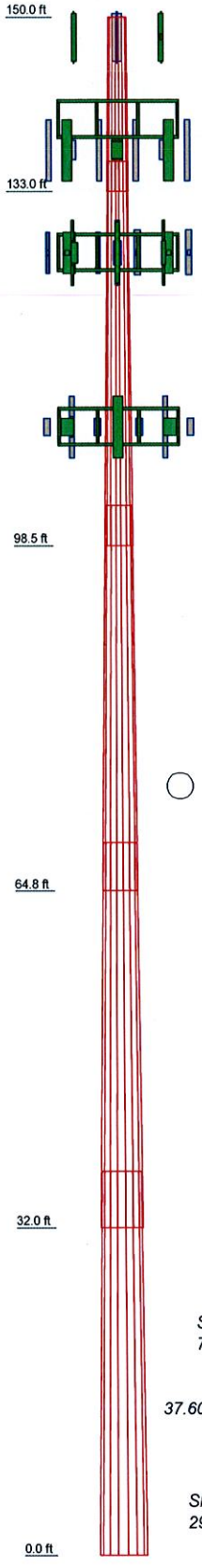


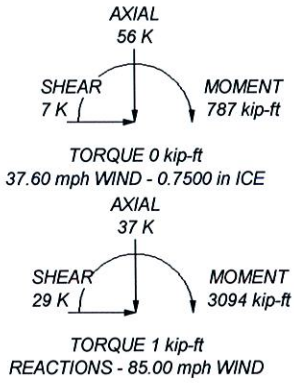
APPENDIX C

ADDITIONAL CALCULATIONS

Section	1	2	3	4	5
Length (ft)	17.0000	37.5000	37.5000	37.5000	37.5000
Number of Sides	18	18	18	18	18
Thickness (in)	0.2500	0.3125	0.3750	0.3750	0.3750
Socket Length (ft)	2.9500	3.8500	4.7000	5.5000	
Top Dia (in)	21.8300	24.7764	32.4841	39.8387	46.9597
Bot Dia (in)	26.0000	34.0625	41.7500	49.0625	56.1250
Grade	A572-65				
Weight (K)	1.1	3.7	5.6	6.7	7.8

24.8





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) 2.375" OD x 5' Mount Pipe	148	742 213 w/ Mount Pipe	127
(2) 2.375" OD x 5' Mount Pipe	148	742 213 w/ Mount Pipe	127
(2) 2.375" OD x 5' Mount Pipe	148	RRH2x40-AWS	127
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	148	RRH2x40-AWS	127
		RRH2x40-AWS	127
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	148	DB-B1-6C-8AB-0Z	127
		(2) APL866513-42T0 w/ Mount Pipe	127
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	148	(2) APL866513-42T0 w/ Mount Pipe	127
		(2) APL866513-42T0 w/ Mount Pipe	127
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	148	(2) BXA-171063/8CF w/ Mount Pipe	127
		(2) SLCP 2x6014 w/ Mount Pipe	127
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	148	BXA-171063-12BF w/ Mount Pipe	127
		(2) FD9R6004/2C-3L	127
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	148	(2) FD9R6004/2C-3L	127
		(2) FD9R6004/2C-3L	127
KRY 112 144/1	148	Platform Mount [LP 304-1]	127
KRY 112 144/1	148	7770.00 w/ Mount Pipe	110
KRY 112 144/1	148	7770.00 w/ Mount Pipe	110
Sector Mount [SM 411-3]	148	7770.00 w/ Mount Pipe	110
(2) APXVSPP18-C-A20 w/ Mount Pipe	140	(2) LGP21401	110
(2) APXVSPP18-C-A20 w/ Mount Pipe	140	(2) LGP21401	110
(2) APXVSPP18-C-A20 w/ Mount Pipe	140	(2) LGP21401	110
1900MHz RRH	140	P65-16-XLH-RR w/ Mount Pipe	110
1900MHz RRH	140	P65-16-XLH-RR w/ Mount Pipe	110
1900MHz RRH	140	P65-16-XLH-RR w/ Mount Pipe	110
800MHZ RRH	140	(2) RRUS-11	110
800MHZ RRH	140	(2) RRUS-11	110
800MHZ RRH	140	(2) RRUS-11	110
Platform Mount [LP 712-1]	140	DC6-48-60-18-8F	110
BXA-70063/4CF w/ Mount Pipe	127	Platform Mount [LP 303-1]	110
742 213 w/ Mount Pipe	127		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85.00 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 37.60 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50.00 mph wind.
5. TOWER RATING: 80.5%

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
Phone: 614.221.6679
FAX: 614.448.4105

Job:	***150-ft Monopole / Newton, CT / Newton/Rt-25***		
Project:	***PJF: 37513-1642 R1 (BU: 8256222)***		
Client: Crown Castle	Drawn by: Jason Martin, E.I.	App'd:	
Code: TIA/EIA-222-F	Date: 02/12/14	Scale: NTS	
Path:		Dwg No. E-1	

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

TIA Rev F

Site Data

BU#: *826222*
Site Name: *Newtown/RT-25*
App #:
Pole Manufacturer: *Pirod*

Reactions		
Moment:	3094	ft-kips
Axial:	37	kips
Shear:	29	kips

Anchor Rod Data		
Qty:	39	
Diam:	1.25	in
Rod Material:	Other	
Strength (Fu):	150	ksi
Yield (Fy):	105	ksi
Bolt Circle:	61	in

Plate Data		
Diam:	65	in
Thick:	1.5	in
Grade:	50	ksi
Single-Rod B-eff:	4.57	in

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:	0.5	in
Fillet V. Weld:	0.5	in
Width:	4.5	in
Height:	8	in
Thick:	0.75	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	56.125	in
Thick:	0.375	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 | Stiffened

Maximum Rod Tension:	61.5 Kips	Service, ASD
Allowable Tension:	81.0 Kips	Fty*ASIF
Anchor Rod Stress Ratio:	75.9% **Pass**	

Base Plate Results | Shear Check Only | Stiffened

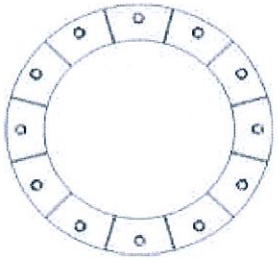
Base Plate Stress:	Rohn/Pirod, OK	Service, ASD
Allowable Plate Stress:	26.7 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	Rohn/Pirod, OK	Y.L. Length: N/A, Roark

Stiffener Results N/A for Rohn / Pirod

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

PJF job no. **37513-1642 R1** Project name **BU 826222 (Pad Bending Check, Part 1)**

Foundation Loads:

Pole weight or tower leg compression =	38	(kips)
Horizontal load at top of pier =	31	(kips)
Overturning moment at top of pier=	2570	(ft-kips)

Design criteria:

Safety factor against overturning =	1.5	

Soil Properties:

Soil density =	125	(pcf)
Allowable soil bearing =	15	(ksf)
Depth to water table =	99	(ft)

Dimensions:

Pier shape (round or square)	R	("R" or "S")
Pier width =	7	(ft)
Pier height above grade =	0.5	(ft)
depth to bottom of footing =	6	(ft)
Footing thickness =	2	(ft)
Footing width =	21	(ft)
Footing length =	21	(ft)

Concrete:

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

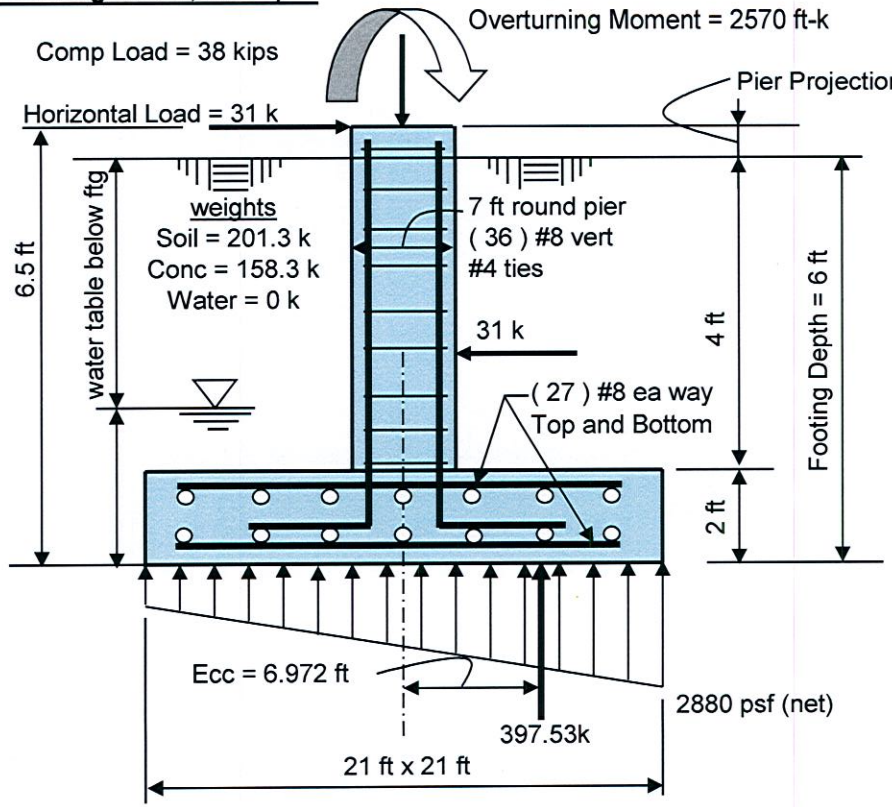
Reinforcing Steel:

	Pad	
minimum cover over rebar =	3	inches
size of pad rebar =	#8	bar
quantity of pad rebar =	27	(ea direction)

Reinforcing Steel:

	Pier	
size of vert rebar in pier=	#8	bar
vertical rebar quantity =	36	
size of pier ties =	#4	bar
minimum cover over rebar =	3	inches

Total volume of concrete = 39.1 cu yd



Summary of analysis results	
Maximum Net Soil Bearing = 2.88 ksf Allowable Net Soil Bearing = 15 ksf **Soil Bearing Stress Ratio = 0.19 Okay**	Ult Bending Shear Capacity = 126 psi Ult Bending Shear Stress = 70 psi **Bending Shear Stress Ratio = 0.55 Okay**
SEE "CHECK OF OVERTURNING CAPACITY" PAGE FOR OVERTURNING CALCUALATIONS & CAPACITY	Pad Bending Moment Capacity= 1800 ft-k Pad Bending Moment = 1330 ft-k **Bending Moment Stress Ratio = 0** **SEE "MICROPILE/ROCK ANCHOR DESIGNFOR MAT OR PAD PIER" PAGE**

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 1500 • Columbus, Ohio 43215-3708

Page: 1 of 1
By: JCM Date: 2/12/2014
Project: 826222
Client: Crown
PROJ#: 37513-1642 R1

Revision Date: 6/17/2013

Micropile/Rock Anchor Design for Mat or Pad Pier

TNX Reactions

M =	524	k-ft
A =	0	kips
S =	0	kips

Foundation Parameters

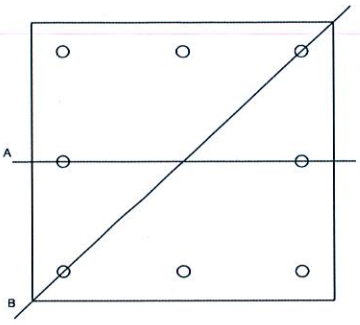
Pier Shape =	R	
Pier Width =	7	ft
Height Above Grade =	0.5	ft
Depth to Bottom =	6	ft
Pad Thickness =	2	ft
Pad Width =	21	ft
Pad Length =	21	ft

Soil Parameters

Unit Weight = 120 pcf

Micropile/Rock Anchor Parameters

Rock Anchor Lockoff =	0	kips
Steel Yield Cap. =	218.1	kips
Steel Ultimate Cap =	260.9	ksi
Total # =	4	



Wind Side (About A)

Bolt #	#	Area, in²	Ybar, in
1	4	3.07	62.2254
2	0		

$I_{boltsA} = \Sigma NAy^2 =$ 47548 in⁴

M = 6288 k-in

Soil and Foundation Compression = 87.87 kips

$f_{1A} = M^*y_{bar1}/I_{boltsA} =$ 8.23 ksi $C_{1A} =$ 113.1 kips $T_{1A} =$ 0.0 kips

$f_{2A} = M^*y_{bar2}/I_{boltsA} =$ 0 ksi $C_{2A} =$ 0.0 kips $T_{2A} =$ 0.0 kips

Capacity,k
156.54
156.54

Wind Into Corner (About B)

Bolt #	#	Area, in²	Ybar, in
1	2	3.07	88.0625
2	0		
3	0		
4	0		

$I_{boltsB} = \Sigma NAy^2 =$ 47616 in⁴

M = 6288 k-in

Soil and Foundation Compression = 87.87 kips

$f_{1B} = M^*y_{bar1}/I_{boltsB} =$ 11.6 ksi $C_{1B} =$ 123.6 kips $T_{1B} =$ 0.0 kips

$f_{2B} = M^*y_{bar2}/I_{boltsB} =$ 0.0 ksi $C_{2B} =$ 0.0 kips $T_{2B} =$ 0.0 kips

$f_{3B} = M^*y_{bar3}/I_{boltsB} =$ 0.0 ksi $C_{3B} =$ 0.0 kips $T_{3B} =$ 0.0 kips

$f_{4B} = M^*y_{bar4}/I_{boltsB} =$ 0.0 ksi $C_{3B} =$ 0.0 kips $T_{3B} =$ 0.0 kips

Capacity,k
156.54
156.54
156.54
156.54

Steel Check

Revision = F

Actual Load

Max Tension/Compression Load = 123.6 kips

Capacity

Capacity = 0.6*Steel Ultimate Capacity = 156.5 kips

Stress Ratio = 78.9%

Bending Check (Wind into side)

Distance from center to end of pier = 42.0 in.

Bending Moment = ∑[# of Bolts * (ybar- 42.0 in.)*Tension] = 381.4 k-ft

Additional Pad Bending Moment from Pad & Pier Spreadsheet = 1336.0 k-ft

Use 1831.8 k-ft to analyze bending in pad

Bottom Clear Dist. = 4 in. b = 84.0 in.

f_c' = 4 ksi As = 21.33 in²

fy = 60 ksi a = 4.48 in.

Number of Bars = 27 d = 19.5 in.

Bar # = 8

Bar Area = 0.790 in.

Bar Diameter = 1.000 in.² øMn = 1969.7 k-ft Capacity = 93.0%

(Overrided from SPColumn)

$$a = \frac{A_s * f_y}{0.85 * f'_c * b}$$

$$\emptyset M_n = 0.9 * A_s * f_y * \left(d - \frac{a}{2}\right)$$

Micropile Embedment Check

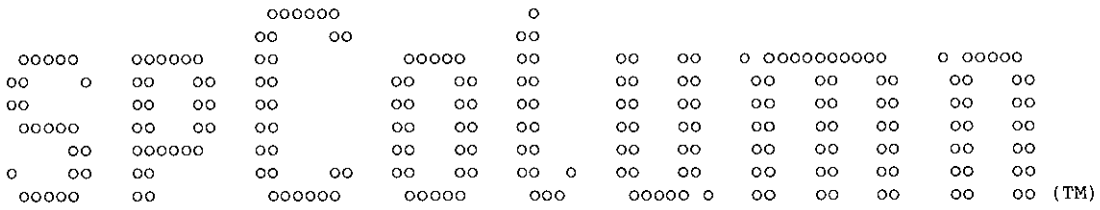
Hole Diameter = 10.5 in

Skin Friction = 30 psi

Actual Embed = 27 ft

Required Embedment = 20.8 ft

Ratio = 77.1%



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

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

File Name: G:\TOWER\375_Crown_Castle\2013\37513-1642 BU 8262...\37513-1642 R1 - 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:
==========

Circular: Diameter = 84 in

Gross section area, Ag = 5541.77 in^2
Ix = 2.44392e+006 in^4 Iy = 2.44392e+006 in^4
rx = 21 in ry = 21 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

Layout: Circular
Pattern: All Sides Equal (Cover to transverse reinforcement)
Total steel area: As = 28.44 in^2 at rho = 0.51% (Note: rho < 1.0%)
Minimum clear spacing = 5.62 in

36 #8 Cover = 3 in

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	0.00	4191.85	4360.09	1.040	14.82	80.00	0.01320	0.900

*** End of output ***

Check Overturning Capacity of Foundation System

PJF job no. **37513-1642 R1**

Assumptions: 1) Micropile reinforcing has been installed
2) Wind into side of foundation is worst case scenario

Pole base moment =	**3094**	ft-k
Pole base shear =	**29**	kips
Pole axial load =	**37**	kips
Total foundation thickness / height =	**6.5**	feet
Distance from center of pole to edge of fdn =	**10.5**	feet
Foundation weight =	**158.3**	kips
Soil weight (abv fdn) =	**201.3**	kips
Quantity of piles =	**2**	
Pile yield strength =	**218.1**	kips
Pile distance to edge of fdn =	**15.75**	feet
Overturning resistance (pole/fdn/soil) =	**4164.3**	ft-k
Overturning resistance (piles) =	**6870.2**	ft-k
Total overturning resistance =	**11034.5**	ft-k
Overturning moment at base of foundation =	**3282.5**	ft-k
Required safety factor against overturning =	**1.5**	
% Capacity =	**44.6%**	**OK**

EXHIBIT C

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11217A

Newtown / Route 25
201 Main Street
Newtown, CT 06470

February 26, 2014

EBI Project Number: 62141036

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

EBI Consulting
environmental | engineering | due diligence

February 26, 2014

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

Re: Emissions Values for Site: **CT11217A - Newtown / Route 25**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 201 Main Street, Newtown, CT, for the purpose of determining whether the emissions from the Proposed 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 T-Mobile Wireless antenna facility located at 201 Main Street, Newtown, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since 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 (1940.000 MHz—to 1950.000 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 **148 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 calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT11217A - Newtown / Route 25
Site Addresss	201 Main Street, Newtown, CT 06470
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	148	142	None	0	0	48.326044	0.86161	0.08616%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	148	142	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	148	142	1-5/8"	0	0	24.163022	0.430805	0.04308%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	148	142	1-5/8"	0	0	24.163022	0.430805	0.04308%
												Sector total Power Density Value:				0.172%	

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	148	142	None	0	0	48.326044	0.86161	0.08616%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	148	142	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	148	142	1-5/8"	0	0	24.163022	0.430805	0.04308%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	148	142	1-5/8"	0	0	24.163022	0.430805	0.04308%
												Sector total Power Density Value:				0.172%	

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	148	142	None	0	0	48.326044	0.86161	0.08616%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	148	142	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	148	142	1-5/8"	0	0	24.163022	0.430805	0.04308%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	148	142	1-5/8"	0	0	24.163022	0.430805	0.04308%
												Sector total Power Density Value:				0.172%	

Site Composite MPE %	
Carrier	MPE %
T-Mobile	0.517%
AT&T	14.640%
Sprint	3.950%
Verizon Wireless	21.190%
Total Site MPE %	**40.297%**

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 T-Mobile facility are **0.517% (0.172% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously.

The anticipated composite MPE value for this site assuming all carriers present is **40.297%** of the allowable FCC established general public limit. 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