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
Tarpon Tower/Florida Tower Partners, LLC/ T-Mobile co-location
Site ID CTNH808A
15 Orchard Park Road, Madison

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, Tarpon Tower/Florida Tower Partners, LLC owns the existing monopole telecommunications tower and related facility at 15 Orchard Park Road, Madison, Connecticut (Coordinates: 41° 16' 59" -72° 37' 23"). T-Mobile intends to replace three and add six new antennas and related equipment at this existing telecommunications facility in Madison ("Madison 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 Fillmore McPherson, and the property owner, 15 Orchard Park, LLC.

The existing Madison Facility consists of a 99 foot tall monopole tower, approved by the Council in Docket No. 390.[1] T-Mobile plans to replace three antennas and add six new antennas and three TMAs (tower mounted amplifiers) at a centerline of 100 feet. (See the plans revised to February 14, 2014 attached hereto as Exhibit A). T-Mobile will also install fiber cable along existing coax routing. The existing Madison Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated February 9, 2014 and attached hereto as Exhibit B.

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

[1] The Decision and Order in this Docket (dated March 26, 2010) contains no relevant requirements or limitations on the configuration of the Madison Facility.

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 100 feet, merely replacing existing antennas located at the same 100 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 Madison 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 24, 2014, T-Mobile's operations would add 1.180% 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 17.940% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit C.

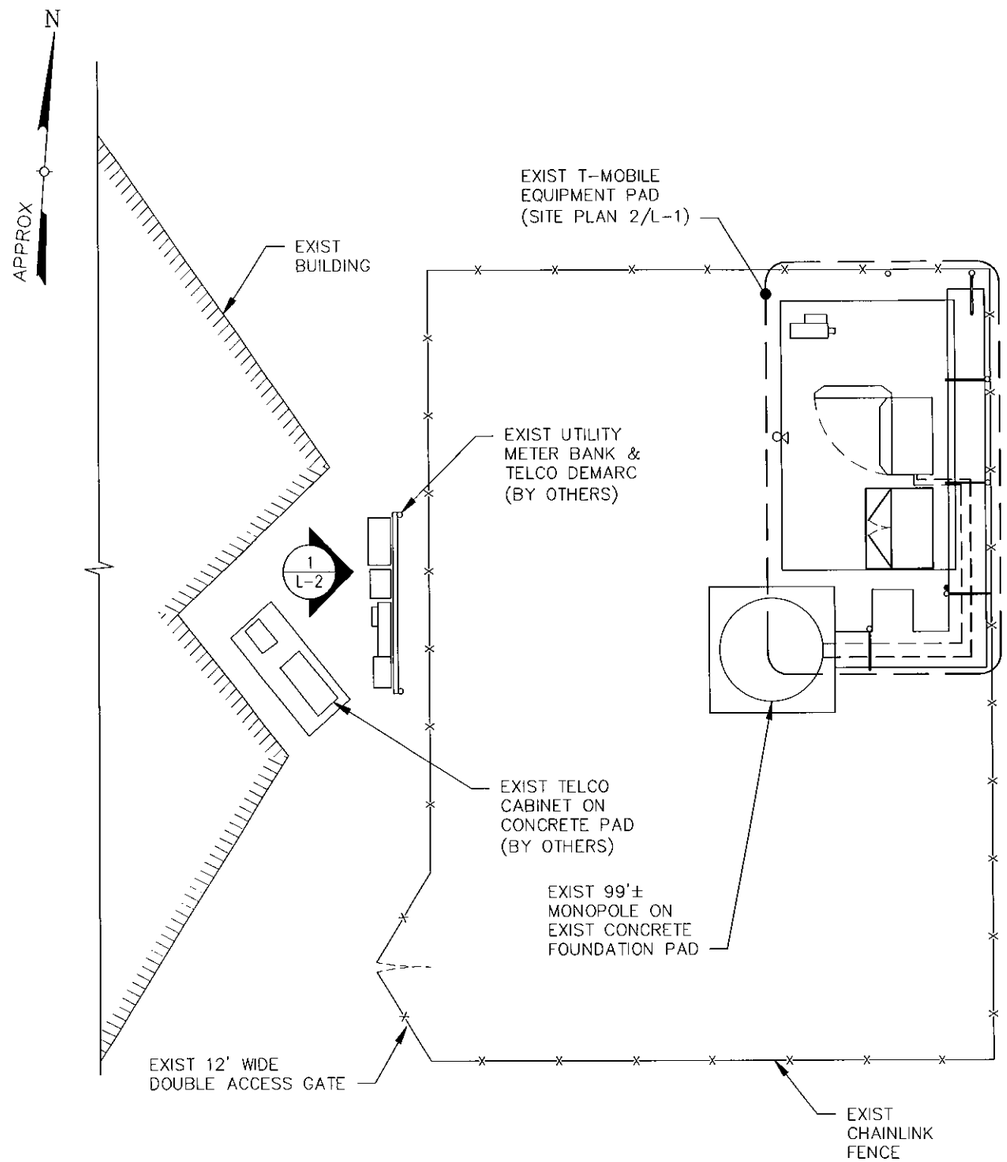
For the foregoing reasons, T-Mobile respectfully submits that the proposed replacement antennas and equipment at the Madison Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement by the Council of this proposed exempt modification, T-Mobile shall commence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

Sincerely,

Julie D. Kohler, Esq.

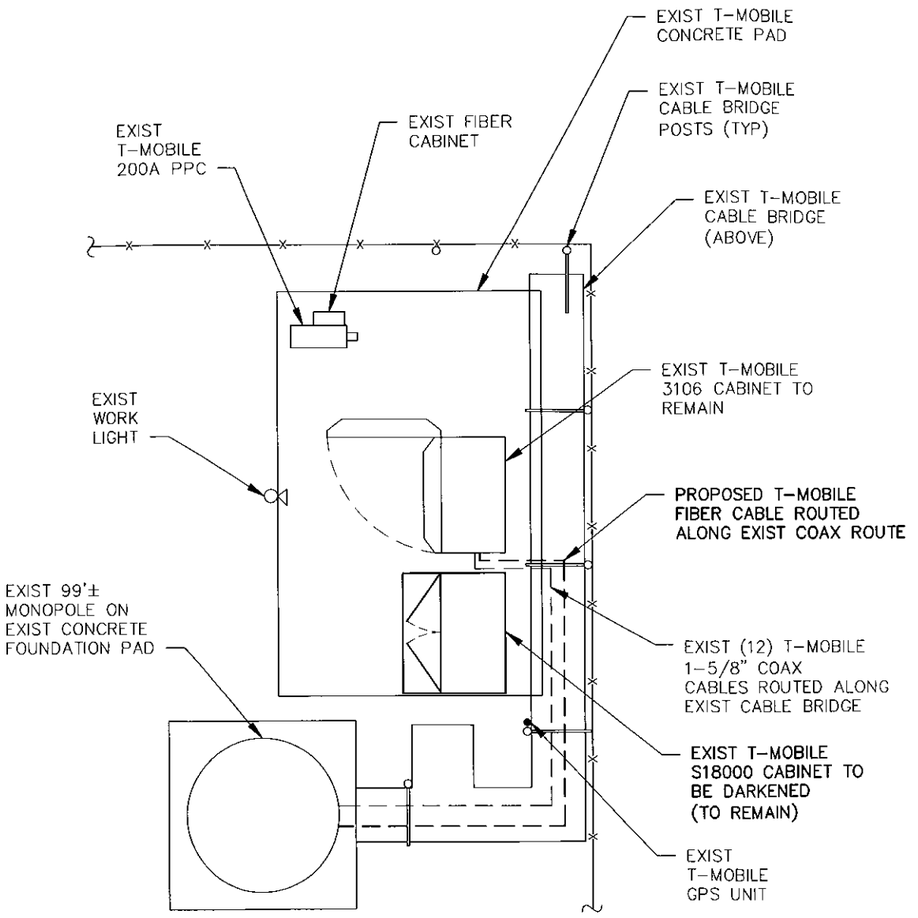
cc: Town of Madison, First Selectman Fillmore McPherson
Tarpon Tower\Florida Tower Partners, LLC
15 Orchard Park Road, LLC
Halene Fujimoto, HPC Wireless Solutions

EXHIBIT A



1 L-1 COMPOUND PLAN

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



2 L-1 EQUIPMENT PLAN

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

STRUCTURAL NOTE:

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

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 NORTHEAST LLC.

T-MOBILE NORTHEAST, LLC. PHONE: (973) 686-6500
4 SYLVAN DRIVE
PARSIPPANY, NJ 07054

APPROVALS

T-MOBILE _____
LANDLORD _____
RF _____
CONSTRUCTION _____

PROJECT NUMBER	DESIGNED BY
6644.CTNH808A	JQ

REV	DATE	REVISION	DRAWN BY
0	02/14/14	FOR COMMENT	DS

ISSUED BY	DATE

SITE INFORMATION

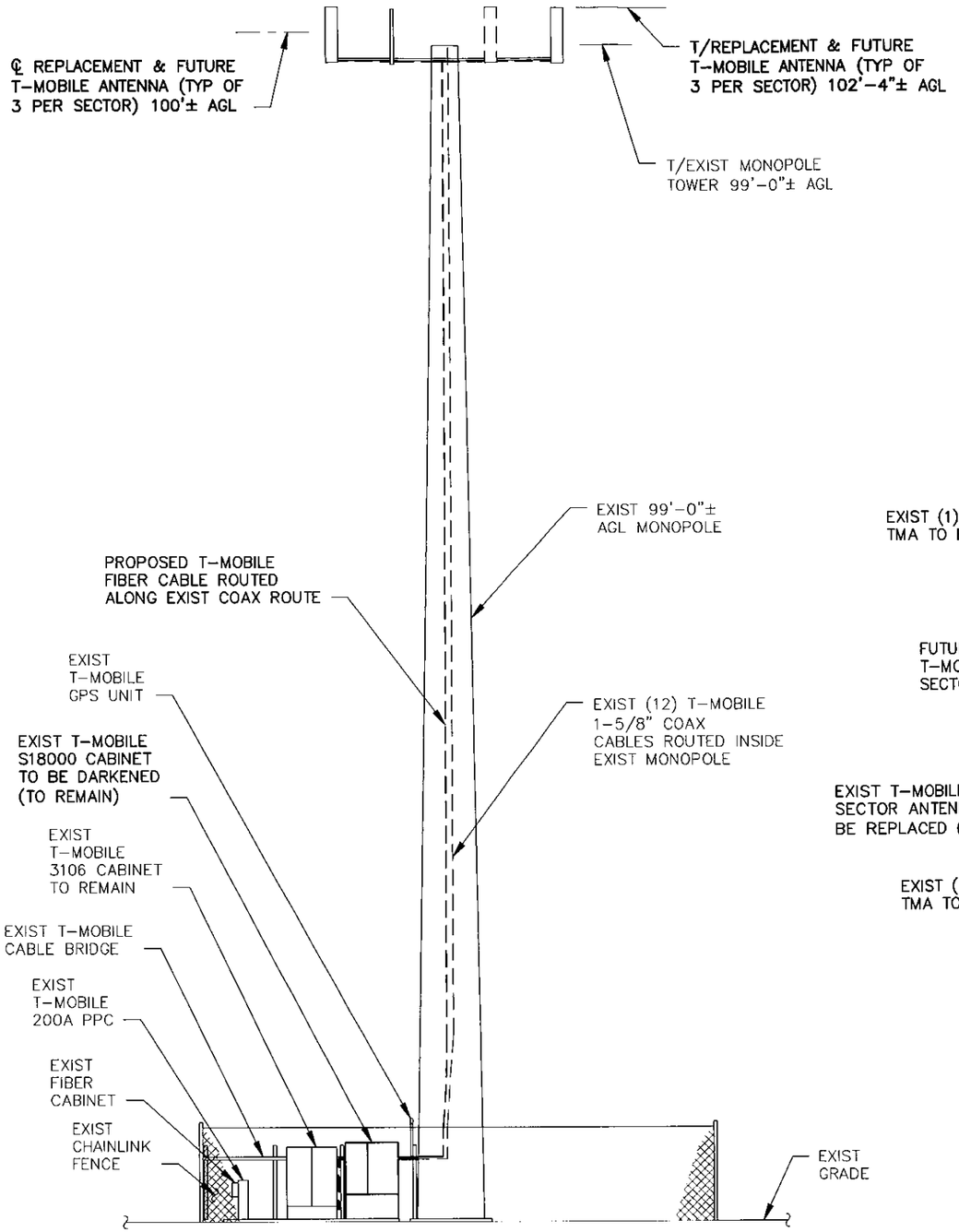
CTNH808A
AMTRAK_MADISON
15 ORCHARD PARK ROAD
MADISON, CT 06443

SHEET TITLE

COMPOUND PLAN & EQUIPMENT PLAN

SHEET NUMBER

L-1

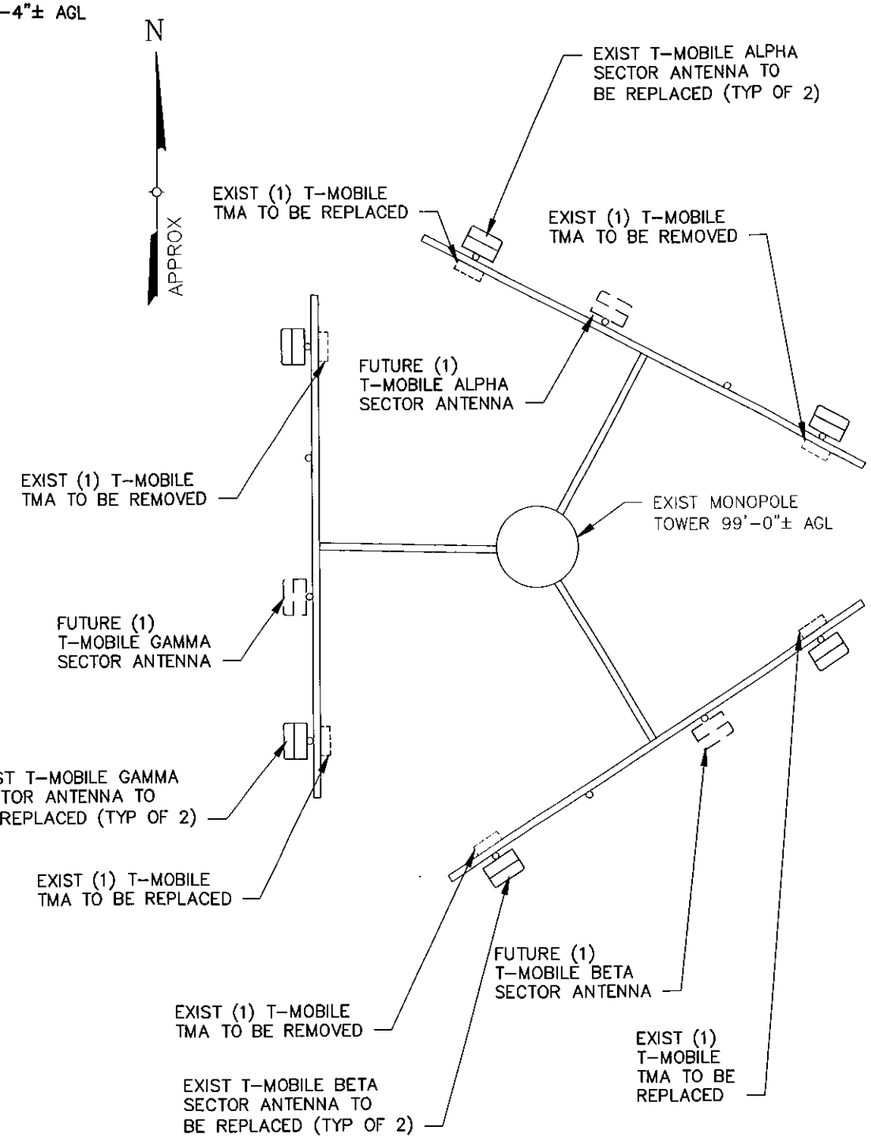


NOTE: SOME SITE FEATURES NOT SHOWN FOR CLARITY.

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

1 / L-2 ELEVATION

SCALE: N.T.S.



2 / L-2 ANTENNA PLAN

SCALE: 1/4" = 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 NORTHEAST LLC.

T-MOBILE NORTHEAST, LLC.
4 SYLVAN DRIVE
PARSIPPANY, NJ 07054
PHONE: (973) 686-6500

APPROVALS
T-MOBILE
LANDLORD
RF
CONSTRUCTION

PROJECT NUMBER	DESIGNED BY
6644.CTNH808A	JQ

REV	DATE	REVISION	DRAWN BY
0	02/14/14	FOR COMMENT	DS

ISSUED BY | DATE

SITE INFORMATION
CTNH808A
AMTRAK_MADISON
15 ORCHARD PARK ROAD
MADISON, CT 06443

SHEET TITLE
ELEVATION & ANTENNA PLAN

SHEET NUMBER
L-2

EXHIBIT B

Structural Analysis
99-ft Monopole

Prepared For:
Florida Tower Partners, LLC
1001 3rd Ave. West, Suite 420
Bradenton, FL 34205

MFP Project #40913-039 r1

Site Location:
CT-1014 / Madison
New Haven Co., Connecticut
Lat/Long: 41°16'59", -72°37'23"

Analysis Type:
ANSI/TIA-222-G

February 9, 2014

Michael F. Plahovinsak, P.E.
18301 State Route 161 W, Plain City, OH 43064
614-398-6250 - mike@mfpeng.com

Project Summary:

I have completed a structural analysis of the existing monopole for the following new configuration:

- 100' – T-Mobile:
  - Install (9) Ericsson AIR-21 Panel and (3) Ericsson KRY-112-144/1 TMA's. (13) 1 5/8" Cables.

The pole has been analyzed in accordance with the requirements of the International Building Code per IBC section 3108.4, and the recommendations of the Telecommunications Industry Association *"Structural Standard for Steel Antenna Supporting Structures"* **ANSI/TIA-222-G.**

This analysis may be considered a "Rigorous Structural Analysis" as defined in ANSI/TIA-222-G 15.5.2.

As indicated in the conclusions of this analysis, I have determined that the existing pole and foundation ***have sufficient capacity*** to support the existing, reserved and proposed antenna loads as detailed herein. Based on the results of my analysis, no structural modifications are required at this time.

Source of Data:

Resource	Source	Job Number	Date
Pole and Foundation Drawings	Sabre Towers	11-30257	03/23/11
Geotechnical Report	Terracon	J2095225	12/21/09

Analysis Criteria:

International Building Code (All Versions) Section 3108.4
Structural Standards for Steel Antenna Supporting Structures **ANSI/TIA-222-G 2**

- Basic Wind Speed 115 mph (3-Sec Gust)
- Basic Wind Speed w/ ¾" Ice 50 mph (3-Sec Gust)
- Operational Wind Speed 60 mph (3-Sec Gust)

Structure Class	Exposure Category	Topographic Category
II (I = 1.0)	B	I

Appurtenance Listing:

Status	Elev.	Antenna / Mounting	Coax	Owner
Proposed	*100'*	*(9) Ericsson AIR-21 Panel + (3) KRY-112-144/1 TMA's T-Arm Mounts*	*(13) 1 5/8"*	*T-Mobile*
Existing	90'	(3) Andrew SBNH-1D6565C + (9) SBNHH-1A65C Panel (18) RRUS-11 RRUs (4) Raycap DC6-48-60-18-8-F Suppressors T-Arm Mounts	(8) 3/4" + (2) 1/2" + (3) 3/8"	AT&T

All antenna lines assumed internally mounted, not exposed to the wind.

Foundation Analysis:

Two foundation alternatives were designed for this site. Both foundation alternatives have sufficient capacity to support the loads from this analysis.

Conclusion:

I have completed a structural analysis of the existing monopole and foundation in accordance with the project specifics outlined above. My analysis indicates that the existing monopole and foundation is stressed to a maximum of 49.9% of its usable capacity when considering the existing plus proposed loading. Please refer to the attached calculations for an itemized listing of all member stress ratios. The existing pole and foundation have sufficient capacity to support the proposed configuration, and structural modifications are not required.

If you have any questions about the contents of this structural report or require any additional information, please feel free to contact my office.

Sincerely,

Michael F. Plahovinsak, P.E.

mike@mfpeng.com – 614.398-6250

Standard Conditions for Providing Structural Consulting Services on Existing Structures

1. The following standard conditions are a general overview of key issues regarding the work product supplied.

2. If the existing conditions are not as represented in this structural report or attached sketches, I should be contacted to evaluate the significance of the deviation and revise the structural assessment accordingly.

3. The structural analysis has been performed assuming that the structure is in "like new" condition. No allowance was made for excessive corrosion, damaged or missing structural members, loose bolts, etc. If there are any known deficiencies in the structure that potentially compromise structural integrity, I should be made aware of the deficiencies. If I am aware of a deficiency that exists in a structure at the time of my analysis, a general explanation of the structural concern due to the deficiency will be included in the structural report, but the deficiency will not be reflected in capacity calculations.

4. The structural analysis provided is an assessment of the primary load carrying capacity of the structure. I provide a limited scope of service in that I have not verified the capacity of every weld, plate, connection detail, etc. In most cases, structural fabrication details are unknown at the time of my analysis, and the detailed field measurement of this information is beyond the scope of my services. In instances where I have not performed connection capacity calculations, it is assumed that existing manufactured connections develop the full capacity of the primary members being connected.

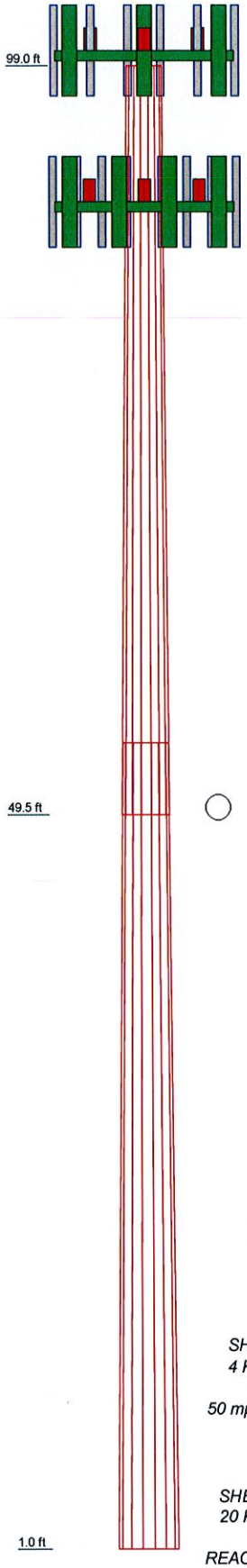
5. The structural integrity of the existing foundation system can only be verified if exact foundation sizes and soils conditions are known. I will not accept any responsibility for the adequacy of the existing foundations unless this site-specific data is supplied.

6. Miscellaneous items such as antenna mounts, coax supports, etc. have not been designed, detailed, or specified as part of my work. It is assumed that material of adequate size and strength will be purchased from a reputable component manufacturer. The attached report and sketches are schematic in nature and should not be used to fabricate or purchase hardware and accessories to be attached to the structure. I recommend field measurement of the structure before fabricating or purchasing new hardware and accessories. I am not responsible for proper fit and clearance of hardware and accessory items in the field.

7. The structural analysis has been performed considering minimum code requirements or recommendations. If alternate wind, ice, or deflection criteria are to be considered, then I shall be made aware of the alternate criteria.

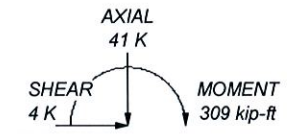
Michael F. Plahovinsak, P.E. - 2014

mike@mfpeng.com

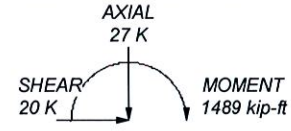


Section	1	2	3	4
Length (ft)	49.50	53.25		
Number of Sides	18	18		
Thickness (in)	0.3125	0.4375		
Socket Length (ft)	4.75			
Top Dia (in)	27.2500	36.6960		
Bot Dia (in)	38.3900	48.6800		
Grade	A572-65			
Weight (K)	5.4	10.6		16.1

ALL REACTIONS ARE FACTORED



50 mph WIND - 0.7500 in ICE



REACTIONS - 115 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(3) Ericsson AIR 21 w/ mount pipe (T-Mobile)	100	(6) Ericsson RRUS11 Dual PA RRU (ATT)	90
Ericsson KRY 112 144-1 TMA (T-Mobile)	100	Andrew SBNH-1D6565C w/ mount pipe (ATT)	90
(3) Ericsson AIR 21 w/ mount pipe (T-Mobile)	100	(3) Andrew SBNHH-1A65C w/ mount pipe (ATT)	90
Ericsson KRY 112 144-1 TMA (T-Mobile)	100	(6) Ericsson RRUS11 Dual PA RRU (ATT)	90
(3) Ericsson AIR 21 w/ mount pipe (T-Mobile)	100	Andrew SBNH-1D6565C w/ mount pipe (ATT)	90
Ericsson KRY 112 144-1 TMA (T-Mobile)	100	(3) Andrew SBNHH-1A65C w/ mount pipe (ATT)	90
T-Arm Mounts (T-Mobile)	100	(6) Ericsson RRUS11 Dual PA RRU (ATT)	90
Andrew SBNH-1D6565C w/ mount pipe (ATT)	90	(4) Raycap DC6-48-60-18-8F Supressor (ATT)	90
(3) Andrew SBNHH-1A65C w/ mount pipe (ATT)	90	T-Arm Mounts (ATT)	90

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 115 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 31.6%

Michael F. Plahovinsak, P.E.
18301 State Route 161 W
Plain City, OH 43064
Phone: 614-398-6250
FAX: mike@mfpeng.com

Job: ***99-ft Monopole / MFP #40913-039 r1***			
Project: ***CT1014, Madison***			
Client: Florida Tower Partners	Drawn by: Mike	App'd:	
Code: TIA-222-G	Date: 02/09/14	Scale: N	
Path: J:\Projects\409-Misc\40913-039\40913-039 r1.eri		Dwg No.	

Tower Input Data

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

Tower is located in New Haven County, Connecticut.
Basic wind speed of 115 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

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	99.00-49.50	49.50	4.75	18	27.2500	38.3900	0.3125	1.2500	A572-65 (65 ksi)
L2	49.50-1.00	53.25		18	36.6960	48.6800	0.4375	1.7500	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	27.6704	26.7186	2449.4369	9.5628	13.8430	176.9441	4902.0968	13.3619	4.2460	13.587
	38.9822	37.7681	6918.3045	13.5175	19.5021	354.7463	13845.7123	18.8876	6.2066	19.861
L2	38.3476	50.3495	8362.8112	12.8718	18.6416	448.6108	16736.6263	25.1795	5.6885	13.002
	49.4310	66.9907	19697.5334	17.1261	24.7294	796.5216	39420.9854	33.5017	7.7977	17.823

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
1 5/8" (T-Mobile)	***C***	***No***	***Inside Pole***	***99.00 - 1.00***	***13***	No Ice	0.00	0.92
						1/2" Ice	0.00	0.92
						1" Ice	0.00	0.92
***								
3/4" (ATT)	C	No	Inside Pole	90.00 - 1.00	8	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
1/2" (ATT)	C	No	Inside Pole	90.00 - 1.00	2	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
3/8" (ATT)	C	No	Inside Pole	90.00 - 1.00	3	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08

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
(3) Ericsson AIR 21 w/ mount pipe (T-Mobile)	***A***	***From Face***	***3.00 / 0.00 / 0.00***	***0.0000***	***100.00***	No Ice	6.61	5.50	0.11
						1/2" Ice	7.08	6.22	0.16
						1" Ice	7.55	6.95	0.22
Ericsson KRY 112 144-1 TMA (T-Mobile)	***A***	***From Face***	***3.00 / 0.00 / 0.00***	***0.0000***	***100.00***	No Ice	0.56	0.25	0.00
						1/2" Ice	0.66	0.32	0.01
						1" Ice	0.78	0.41	0.01
(3) Ericsson AIR 21 w/ mount pipe (T-Mobile)	***B***	***From Face***	***3.00 / 0.00 / 0.00***	***0.0000***	***100.00***	No Ice	6.61	5.50	0.11
						1/2" Ice	7.08	6.22	0.16
						1" Ice	7.55	6.95	0.22
Ericsson KRY 112 144-1 TMA (T-Mobile)	***B***	***From Face***	***3.00 / 0.00 / 0.00***	***0.0000***	***100.00***	No Ice	0.56	0.25	0.00
						1/2" Ice	0.66	0.32	0.01
						1" Ice	0.78	0.41	0.01
(3) Ericsson AIR 21 w/ mount pipe (T-Mobile)	***C***	***From Face***	***3.00 / 0.00 / 0.00***	***0.0000***	***100.00***	No Ice	6.61	5.50	0.11
						1/2" Ice	7.08	6.22	0.16
						1" Ice	7.55	6.95	0.22
Ericsson KRY 112 144-1 TMA (T-Mobile)	***C***	***From Face***	***3.00 / 0.00 / 0.00***	***0.0000***	***100.00***	No Ice	0.56	0.25	0.00
						1/2" Ice	0.66	0.32	0.01
						1" Ice	0.78	0.41	0.01
T-Arm Mounts (T-Mobile)	***C***	***None***		***0.0000***	***100.00***	No Ice	14.00	14.00	1.14
						1/2" Ice	16.00	16.00	1.27
						1" Ice	18.00	18.00	0.47
***									
Andrew SBNH-1D6565C w/ mount pipe (ATT)	A	From Face	3.00 / 0.00 / 0.00	0.0000	90.00	No Ice	11.45	9.60	0.09
						1/2" Ice	12.06	11.02	0.17
						1" Ice	12.69	12.29	0.27
(3) Andrew SBNHH-1A65C w/ mount pipe (ATT)	A	From Face	3.00 / 0.00 / 0.00	0.0000	90.00	No Ice	11.45	9.60	0.08
						1/2" Ice	12.06	11.02	0.16
						1" Ice	12.69	12.29	0.26
(6) Ericsson RRUS11 Dual PA RRU (ATT)	A	From Face	3.00 / 0.00 / 0.00	0.0000	90.00	No Ice	2.55	0.92	0.05
						1/2" Ice	2.77	1.07	0.06
						1" Ice	2.99	1.23	0.08
Andrew SBNH-1D6565C w/ mount pipe	B	From Face	3.00 / 0.00	0.0000	90.00	No Ice	11.45	9.60	0.09
						1/2" Ice	12.06	11.02	0.17

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
(ATT)			0.00			1" Ice	12.69	12.29	0.27
(3) Andrew SBNHH-1A65C w/ mount pipe	B	From Face	3.00 0.00	0.0000	90.00	No Ice 1/2" Ice	11.45 12.06	9.60 11.02	0.08 0.16
(ATT)			0.00			1" Ice	12.69	12.29	0.26
(6) Ericsson RRUS11 Dual PA RRU	B	From Face	3.00 0.00	0.0000	90.00	No Ice 1/2" Ice	2.55 2.77	0.92 1.07	0.05 0.06
(ATT)			0.00			1" Ice	2.99	1.23	0.08
Andrew SBNH-1D6565C w/ mount pipe	C	From Face	3.00 0.00	0.0000	90.00	No Ice 1/2" Ice	11.45 12.06	9.60 11.02	0.09 0.17
(ATT)			0.00			1" Ice	12.69	12.29	0.27
(3) Andrew SBNHH-1A65C w/ mount pipe	C	From Face	3.00 0.00	0.0000	90.00	No Ice 1/2" Ice	11.45 12.06	9.60 11.02	0.08 0.16
(ATT)			0.00			1" Ice	12.69	12.29	0.26
(6) Ericsson RRUS11 Dual PA RRU	C	From Face	3.00 0.00	0.0000	90.00	No Ice 1/2" Ice	2.55 2.77	0.92 1.07	0.05 0.06
(ATT)			0.00			1" Ice	2.99	1.23	0.08
(4) Raycap DC6-48-60-18-8F Supressor	C	None		0.0000	90.00	No Ice 1/2" Ice	1.47 1.67	1.47 1.67	0.03 0.05
(ATT)						1" Ice	1.88	1.88	0.07
T-Arm Mounts (ATT)	C	None		0.0000	90.00	No Ice 1/2" Ice 1" Ice	14.00 16.00 18.00	14.00 16.00 18.00	1.14 1.27 0.47

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 90 deg - No Ice
5	0.9 Dead+1.6 Wind 90 deg - No Ice
6	1.2 Dead+1.6 Wind 180 deg - No Ice
7	0.9 Dead+1.6 Wind 180 deg - No Ice
8	1.2 Dead+1.0 Ice+1.0 Temp
9	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
10	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
11	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
12	Dead+Wind 0 deg - Service
13	Dead+Wind 90 deg - Service
14	Dead+Wind 180 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	99 - 49.5	Pole	Max Tension	12	0.00	0.00	-0.00
			Max. Compression	8	-22.12	0.00	0.00
			Max. Mx	4	-12.63	-530.86	0.00
			Max. My	2	-12.63	0.00	530.86
			Max. Vy	4	15.52	-530.86	0.00
			Max. Vx	2	-15.52	0.00	530.86
L2	49.5 - 1	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	8	-41.17	0.00	0.00
			Max. Mx	4	-27.36	-1488.62	0.00
			Max. My	6	-27.36	0.00	-1488.62
			Max. Vy	4	20.47	-1488.62	0.00
			Max. Vx	6	20.47	0.00	-1488.62

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	99 - 49.5	3.014	12	0.2499	0.0000
L2	54.25 - 1	0.951	12	0.1609	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
100.00	(3) Ericsson AIR 21 w/ mount pipe	12	3.014	0.2499	0.0000	124096
90.00	Andrew SBNH-1D6565C w/ mount pipe	12	2.544	0.2341	0.0000	68942

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	99 - 49.5	19.851	4	1.6461	0.0000
L2	54.25 - 1	6.259	4	1.0597	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
100.00	(3) Ericsson AIR 21 w/ mount pipe	4	19.851	1.6461	0.0000	18865
90.00	Andrew SBNH-1D6565C w/ mount pipe	4	16.750	1.5416	0.0000	10480

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	99 - 49.5 (1)	TP38.39x27.25x0.3125	49.50	0.00	0.0	36.7078	-12.63	2601.61	0.005
L2	49.5 - 1 (2)	TP48.68x36.696x0.4375	53.25	0.00	0.0	66.9907	-27.36	4849.69	0.006

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	99 - 49.5 (1)	TP38.39x27.25x0.3125	530.86	1978.72	0.268	0.00	1978.72	0.000
L2	49.5 - 1 (2)	TP48.68x36.696x0.4375	1488.63	4805.25	0.310	0.00	4805.25	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	99 - 49.5 (1)	TP38.39x27.25x0.3125	15.52	1300.81	0.012	0.00	3962.28	0.000
L2	49.5 - 1 (2)	TP48.68x36.696x0.4375	20.47	2424.85	0.008	0.00	9622.25	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	99 - 49.5 (1)	0.005	0.268	0.000	0.012	0.000	0.273 ✔	1.000	4.8.2 ✔
L2	49.5 - 1 (2)	0.006	0.310	0.000	0.008	0.000	0.316 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	99 - 49.5	Pole	TP38.39x27.25x0.3125	1	-12.63	2601.61	27.3	Pass
L2	49.5 - 1	Pole	TP48.68x36.696x0.4375	2	-27.36	4849.69	31.6	Pass
						Summary		
						Pole (L2)	31.6	Pass
						RATING =	**31.6**	**Pass**

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Job	Page
99-ft monopole - MFP #40913-039	BP-G
Project	**Date**
CT1014, Madison	2/9/2014
Client	**Designed by**
FLORIDA TOWER PARTNERS	Mike

Anchor Rod and Base Plate Calculation

ANSI/TIA-222-G-2

Factored Base Reactions:		***Pole Shape:***	***Anchor Rods:***	***Base Plate:***
Moment:	1489 ft-kips	18-Sided	(16) 2.25 in. A615 GR. 75	3 in. x 55.5 in. Square
Shear:	20 kips	***Pole Dia. (D_f):***	Anchor Rods in Quadrants	fy = 50 ksi
Axial:	27 kips	48.68 in	On a 55 in Bolt Circle	

Anchor Rod Calculation According to TIA-222-G section 4.9.9

ϕ =	0.80	TIA 4.9.9
I_{bolts} =	6050.00	in^2 Momet of Inertia
P_u =	81	kips Tension Force
V_u =	1	kips Shear Force
R_{nt} =	325.00	kips Nominal Tensile Strength
η =	0.50	for detail type (d)

The following Interation Equation Shall Be Satisfied:

$$\left(\frac{P_u + \frac{V_u}{\eta}}{\phi R_{nt}} \right) \leq 1.0$$

$$0.322 \leq 1$$

Base Plate Calculation According to TIA-222-G

ϕ =	0.90	TIA 4.7
M_{PL} =	674.9	in-kip Plate Moment
L =	29.8	in Section Length
Z =	67.1	Plastic Section Modulus
M_P =	3353.5	in-kip Plastic Moment
ϕM_n =	3018.1	in-kip Factored Resistance

Calculated Moment vs Factored Resistance

674.85 in-kip $\leq$ 3018 in-kip

Anchor Rods Are Adequate	**32.2%**	☑
Base Plate is Adequate	**22.4%**	☑

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Job	Page
99-ft monopole - MFP #40913-039	FND
Project	**Date**
CT1014, Madison	2/9/2014
Client	**Designed by**
FLORIDA TOWER PARTNERS	Mike

Caisson Calculation

According to ANSI/TIA-222-G-2

1. Foundation overturning resistance calculated with PLS Caisson, for Brom's method for rigid piles. Soil layers modeled after recommendations from the geotechnical report.
2. Cohesion strength for the upper 15.5 ft has been reduced by 50%
3. In lieu of a soil resistance factor fs = 0.75 (TIA-9.4.1) an additional safey fator against soil failure of 1.33 has been applied.
4. Foundation is designed with a minimum safety factor resisting overturning of 2.0
5. Foundation has been designed with factored loads per TIA-222-G.
6. Design water table = 8 ft below grade

*** PIER PROPERTIES CONCRETE STRENGTH (ksi) = 4.00 STEEL STRENGTH (ksi) = 60.00

DIAMETER (ft) = 7.000 DISTANCE FROM TOP OF PIER TO GROUND LEVEL (ft) = 1.00

*** SOIL PROPERTIES

	LAYER	TYPE	THICKNESS (ft)	DEPTH AT TOP OF LAYER (ft)	DENSITY (pcf)	CU (psf)	KP	PHI (degrees)
1	S		4.00	0.00	0.0		1.000	-0.00
2	S		2.00	4.00	100.0		1.698	14.99
3	S		2.00	6.00	110.0		3.000	30.00
4	S		7.50	8.00	47.6		3.000	30.00
5	C		30.00	15.50	67.6	6000.0		

*** DESIGN (FACTORED) LOADS AT TOP OF PIER MOMENT (ft-k) = 1489.0 VERTICAL (k) = 27.0 SHEAR (k) = 20.0
ADDITIONAL SAFETY FACTOR AGAINST SOIL FAILURE = 1.33

*** CALCULATED PIER LENGTH (ft) = 19.500

*** CHECK OF SOILS PROPERTIES AND ULTIMATE RESISTING FORCES ALONG PIER

TYPE	TOP OF LAYER BELOW TOP OF PIER (ft)	THICKNESS (ft)	DENSITY (pcf)	CU (psf)	KP	FORCE (k)	ARM (ft)
S	1.00	4.00	0.0		1.000	0.00	3.67
S	5.00	2.00	100.0		1.698	7.13	6.33
S	7.00	2.00	110.0		3.000	39.06	8.12
S	9.00	7.50	47.6		3.000	282.79	13.12
C	16.50	1.05	67.6	6000.0		353.12	17.03
C	17.55	1.95	67.6	6000.0		-654.88	18.53

*** SHEAR AND MOMENTS ALONG PIER

DISTANCE BELOW TOP OF PIER (ft)	WITH THE ADDITIONAL SAFETY FACTOR SHEAR (k)	MOMENT (ft-k)	WITHOUT ADDITIONAL SAFETY FACTOR SHEAR (k)	MOMENT (ft-k)
0.00	27.2	2046.6	20.4	1535.4
1.95	27.2	2099.7	20.4	1575.2
3.90	27.2	2152.8	20.4	1615.0
5.85	25.9	2205.5	19.5	1654.6
7.80	7.8	2243.9	5.8	1683.3
9.75	-39.7	2216.3	-29.8	1662.6
11.70	-101.3	2080.7	-76.0	1560.9
13.65	-174.4	1813.7	-130.9	1360.6
15.60	-258.9	1393.0	-194.2	1045.0
17.55	-654.6	638.8	-491.0	479.2
19.50	-0.0	-0.0	-0.0	-0.0

*** TOTAL REINFORCEMENT PCT = 0.42 REINFORCEMENT AREA (in^2) = 23.28
*** USABLE AXIAL CAP. (k) = 27.0 USABLE MOMENT CAP. (ft-k) = 3661.6

Est. Foundation Usage 49.9%

Minimum Steel Per ACI-318 17.85 in^2

7-ft Diameter caisson x 22-ft long (21-ft Embeded with 1-ft above grade) W/(36) #8 Vertical Rebar. Concrete strength =4000 PSI @ 28 days. Estimated Concrete Volume = 31 cubic yards.

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: CTNH808A

Amtrak Madison
15 Orchard Park Road
Madison, CT 06443

February 24, 2014

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

EBI Consulting
environmental | engineering | due diligence

February 24, 2014

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

Re: Emissions Values for Site: **CTNH808A - Amtrak Madison**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 15 Orchard Park Road, Madison, 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 15 Orchard Park Road, Madison, 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 (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 **100 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	CTNH808A - Amtrak Madison
Site Addresss	15 Orchard Park Road, Madison, CT 06443
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	100	94	None	0	0	48.326044	1.966217	0.19662%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	100	94	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	100	94	1-5/8"	0	0	24.163022	0.983109	0.09831%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	100	94	1-5/8"	0	0	24.163022	0.983109	0.09831%
														Sector total Power Density Value:			0.393%

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	100	94	None	0	0	48.326044	1.966217	0.19662%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	100	94	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	100	94	1-5/8"	0	0	24.163022	0.983109	0.09831%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	100	94	1-5/8"	0	0	24.163022	0.983109	0.09831%
														Sector total Power Density Value:			0.393%

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	100	94	None	0	0	48.326044	1.966217	0.19662%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	100	94	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	100	94	1-5/8"	0	0	24.163022	0.983109	0.09831%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	100	94	1-5/8"	0	0	24.163022	0.983109	0.09831%
														Sector total Power Density Value:			0.393%

Site Composite MPE %	
Carrier	MPE %
T-Mobile	1.180%
AT&T	16.760%
Total Site MPE %	**17.940%**

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 **1.180% (0.393% 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 **17.940%** 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

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