STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

August 1, 2011

Jennifer A. Herz, Esq.
Brown Rudnick LLP
CityPlace I, 185 Asylum Street
Hartford, CT 06103

RE: **EM-T-MOBILE-014-110714** - Omnipoint Communications, as subsidiary of T-Mobile USA, Inc., notice of intent to modify an existing telecommunications facility located at 10 Sylvia Street, Branford, Connecticut.

Dear Attorney Herz:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated July 14, 2011. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable Anthony "Unk" DaRos, First Selectman, Town of Branford
Diana Ross, Inland Wetland Enforcement Officer, Town of Branford
Laura Magaraci, Zoning Enforcement Officer, Town of Branford
Hans Fiedler, T-Mobile
Julie Kohler, Esq., Cohen and Wolf, P.C.

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July 18, 2011

The Honorable Anthony "Unk" DaRos
First Selectman
Town of Branford
Town Hall
1019 Main Street
P. O. Box 150
Branford, CT 06405-0150

RE: **EM-T-MOBILE-014-110714** - Omnipoint Communications, as subsidiary of T-Mobile USA, Inc., notice of intent to modify an existing telecommunications facility located at 10 Sylvia Street, Branford, Connecticut.

Dear First Selectman DaRos:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by August 1, 2011.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: Diana RossLaura Magaraci, Zoning Enforcement Officer, Town of Branford

CSC
CONNECTICUT SITING COUNCIL

EM-T-MOBILE-014-110714

JENNIFER A. HERZ
Direct Dial: (860) 509-6527
jherz@brownrudnick.com

BROWNRUDNICK
CityPlace I
185 Asylum
Street
Hartford
Connecticut
06103
tel 860.509.6500
fax 860.509.6501

Via Hand Delivery

July 14, 2011

Robert Stein, Chairman
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: **Notice of Exempt Modification / Branford @ 10 Sylvia Street**

Dear Chairman Stein:

On behalf of T-Mobile Northeast, LLC ("T-Mobile"), enclosed for filing is an original and 5 copies of T-Mobile's Notice of Exempt Modification for the Facility located at 10 Sylvia Street in Branford.

I also enclose herewith a check in the amount of $625.00 representing the filing fee.

I would appreciate it if you would date-stamp the enclosed copy of this transmittal letter and return it to the courier delivering this package.

If you have any questions, please feel free to contact me.

Very truly yours,

BROWN RUDNICK LLP

Jennifer A. Herz

JH/bh
Enclosures

cc/encl: First Selectman Anthony DaRos

40285111 v1 - HERZJA - 029431/0001

CONNECTICUT SITING COUNCIL

In re:		
T-Mobile Northeast, LLC's Notice to Make an	:	**EXEMPT MODIFICATION NO. _____**
Exempt Modification to an Existing Facility at	:	
10 Sylvia Street, Branford, Connecticut.	:	July 14, 2011

NOTICE OF EXEMPT MODIFICATION

Pursuant to Conn. Agencies Regs. §§ 16-50j-73 and 16-50j-72(b), T-Mobile Northeast, LLC ("T-Mobile") hereby gives notice to the Connecticut Siting Council ("Council") and the Town of Branford of T-Mobile's intent to make an exempt modification to the existing monopole tower (the "Tower") located at 10 Sylvia Street in Branford, Connecticut. Specifically, T-Mobile plans to upgrade its wireless system in Connecticut by implementing its Universal Mobile Telecommunications System ("UMTS"). UMTS is a third-generation ("3G") technology that utilizes a code division multiple access ("CDMA") base to allow for fast and large data transfers. To accomplish this upgrade, T-Mobile must modify its antenna and equipment configurations at many of its existing sites.

Once the UMTS upgrade is complete, T-Mobile will operate on a more unified communication system, allowing international wireless telephones to function world-wide. Furthermore, UMTS will enhance global positioning system ("GPS") navigation capabilities and provide emergency responders with more advanced tracking capabilities. The proposed UMTS technology is compatible with the existing second-generation ("2G") Global System for Mobile Communication ("GSM") currently on the Tower and the proposed upgrade is expected to enhance the existing 2G system. In order to accomplish the upgrade at this site, T-Mobile plans to add UMTS technology and install associated equipment at the base of the Tower.

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185 ASYLUM STREET
HARTFORD, CT 06103
(860) 509-6500

Under the Council's regulations (Conn. Agencies Regs. § 16-50j-72(b)), T-Mobile's plans do not constitute a modification subject to the Council's review because T-Mobile will not change the height of the Tower, will not extend the boundaries of the site, will not increase the noise levels at the site, and will not increase the total radio frequency electromagnetic radiation power density at the site to levels above applicable standards.

The Tower is a 125-foot monopole tower located at 10 Sylvia Street in Branford, Connecticut (latitude N 41° 17' 38.08", longitude W -72° 47' 8.62"). The Tower is owned by T-Mobile. Multiple carriers are currently located on the Tower. Currently, T-Mobile has 6 panel antennas and 6 Tower Mounted Amplifiers ("TMA") with a centerline of 122 feet mounted on the Tower. A site plan with Tower specifications is attached.

T-Mobile plans install 3 UMTS antennas (Model No. APX16DWV) and 3 Twin AWS TMA on the Tower. The centerline of the new antennas and TMAs will remain at 122 feet. Additionally, T-Mobile plans to run 6 additional 1-5/8 inch coaxial cables inside the Tower to its new antennas.

To confirm the Tower can support these changes, T-Mobile commissioned Tower Engineering Professionals to perform a structural assessment of the Tower (attached). According to the Structural Analysis Report, dated June 15, 2011 the Tower has "sufficient capacity" to support the proposed and existing loading. (Structural Analysis Report, page 1).

Within the existing compound T-Mobile will locate its equipment cabinet on its existing 8′ 5″ by 11′ 5″ (approximately) concrete pad. Additionally, T-Mobile plans to extend the existing canopy by 8′ 5″ by 6′ (approximately) in order to cover the new cabinet. Hence, no increase in the size of the boundaries of the site is necessary. Excluding brief, minor, construction-related noise during the addition of the antennas, TMAs and the installation of the equipment cabinet, the proposed changes to the Tower will not increase noise levels at the site.

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The proposed antennas will not adversely impact the health and safety of the surrounding community or the people working on the Tower. The total radio frequency exposure measured around the Tower will be well below the National Council on Radiation Protection and Measurements' ("NCRP") standard adopted by the Federal Communications Commission ("FCC"). The worst-case power density analysis measured at the base of the Tower indicates that T-Mobile's antennas will emit 6.67% of the NCRP's standard for maximum permissible exposure. Collectively, the antennas on the Tower will emit 19.79% of the NCRP's standard for maximum permissible exposure. Therefore, the power density levels will be below the FCC mandated radio frequency exposure limits in all locations around the Tower, even with extremely conservative assumptions. The power density analysis is attached.

In conclusion, T-Mobile's proposed plan install antennas, TMAs and ground equipment at this site does not constitute a modification subject to the Council's jurisdiction because T-Mobile will not increase the height of the Tower, will not extend the boundaries of the site, will not increase the noise levels at the site, and the total radio frequency electromagnetic radiation power density will stay within all applicable standards. *See* Conn. Agencies Regs. § 16-50j-72.

T-MOBILE NORTHEAST, LLC

By: _____

Jennifer A. Herz
Brown Rudnick LLP
185 Asylum Street
Hartford, CT 06103-3402
Email - jherz@brownrudnick.com
Phone - 860.509.6527 /Fax - 860.509.6501

BROWN RUDNICK LLP
CITYPLACE I
185 ASYLUM STREET
HARTFORD, CT 06103
(860) 509-6500

Certificate of Service

This is to certify that on this 14th day of July, 2011, the foregoing Notice of Exempt Modification was sent, via first class mail, to the following:

First Selectman Anthony DaRos
Branford Town Hall
1019 Main Street
Branford, CT 06405

By: _____
Jennifer A. Herz

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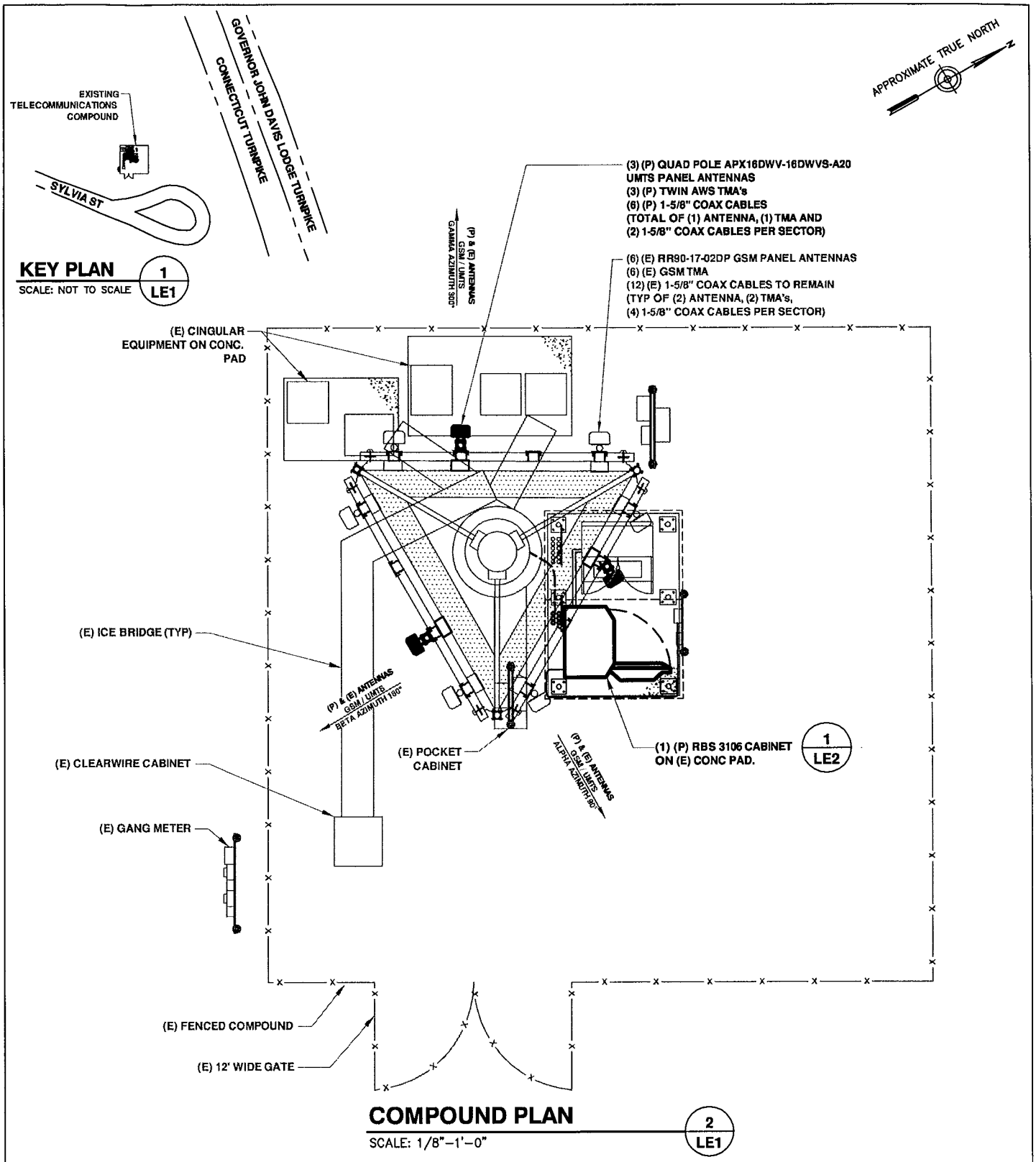
BROWN RUDNICK LLP
CITYPLACE I
185 ASYLUM STREET
HARTFORD, CT 06103
(860) 509-6500



SUBMITTALS	
LE REV A	05-17-11
LE REV 0	06-27-11

ATLANTIS GROUP
1340 Centre Street
Suite 203
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER: CT11025B

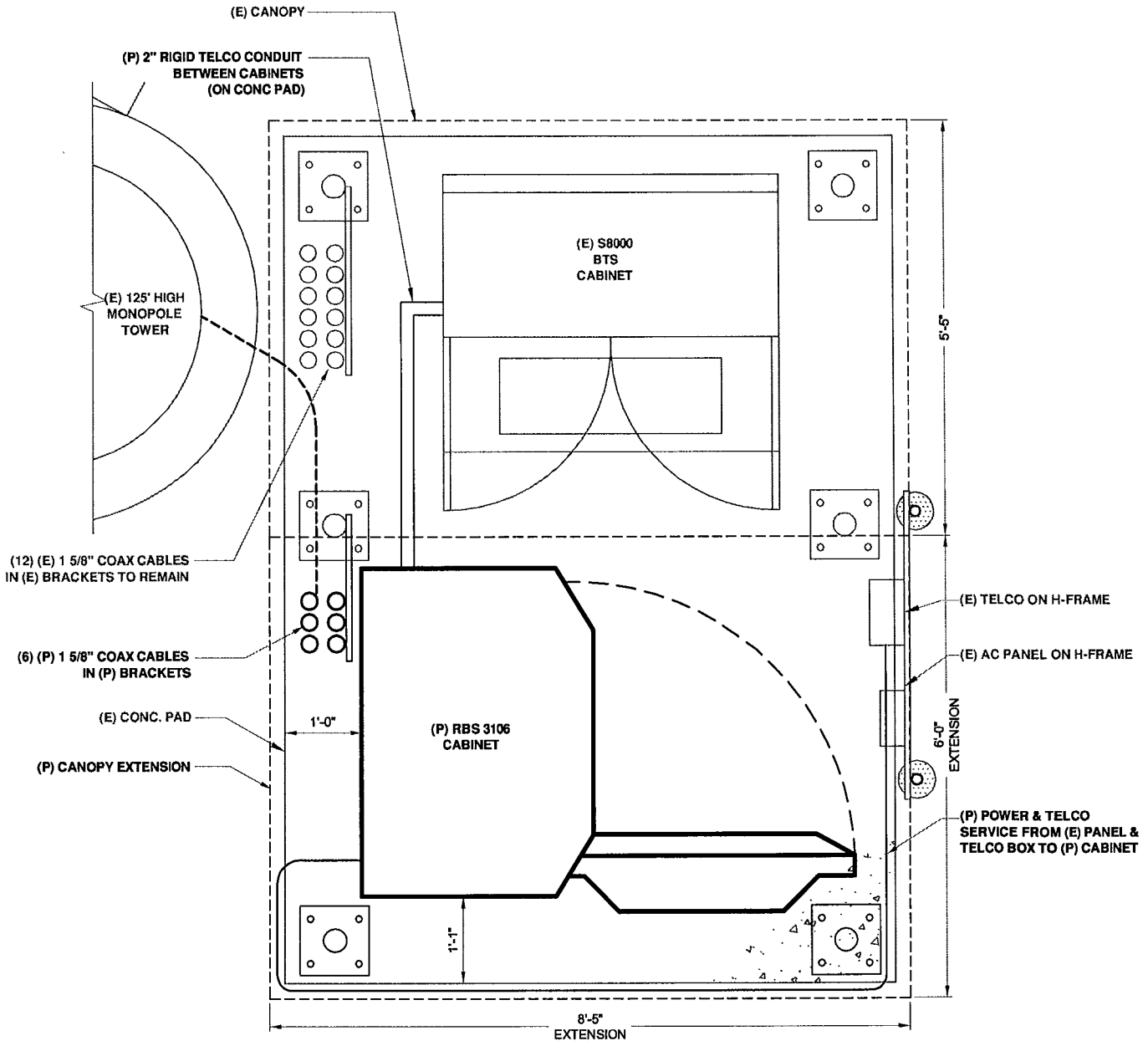
10 SYLVIA STREET
BRANFORD, CT 06405

NORTHEAST TOWERS
199 BRICKYARD ROAD
FARMINGTON, CT 06032
OFFICE: (860) 677-1999

FOR

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

DRAWN BY: GC | CHECKED BY: SM



EQUIPMENT PLAN

SCALE: 1/2"=1'-0"

1
LE2

SUBMITTALS	
LE REV A	05-17-11
LE REV 0	06-27-11

ATLANTIS GROUP
1340 Centre Street
Suite 203
Newton, MA 02459
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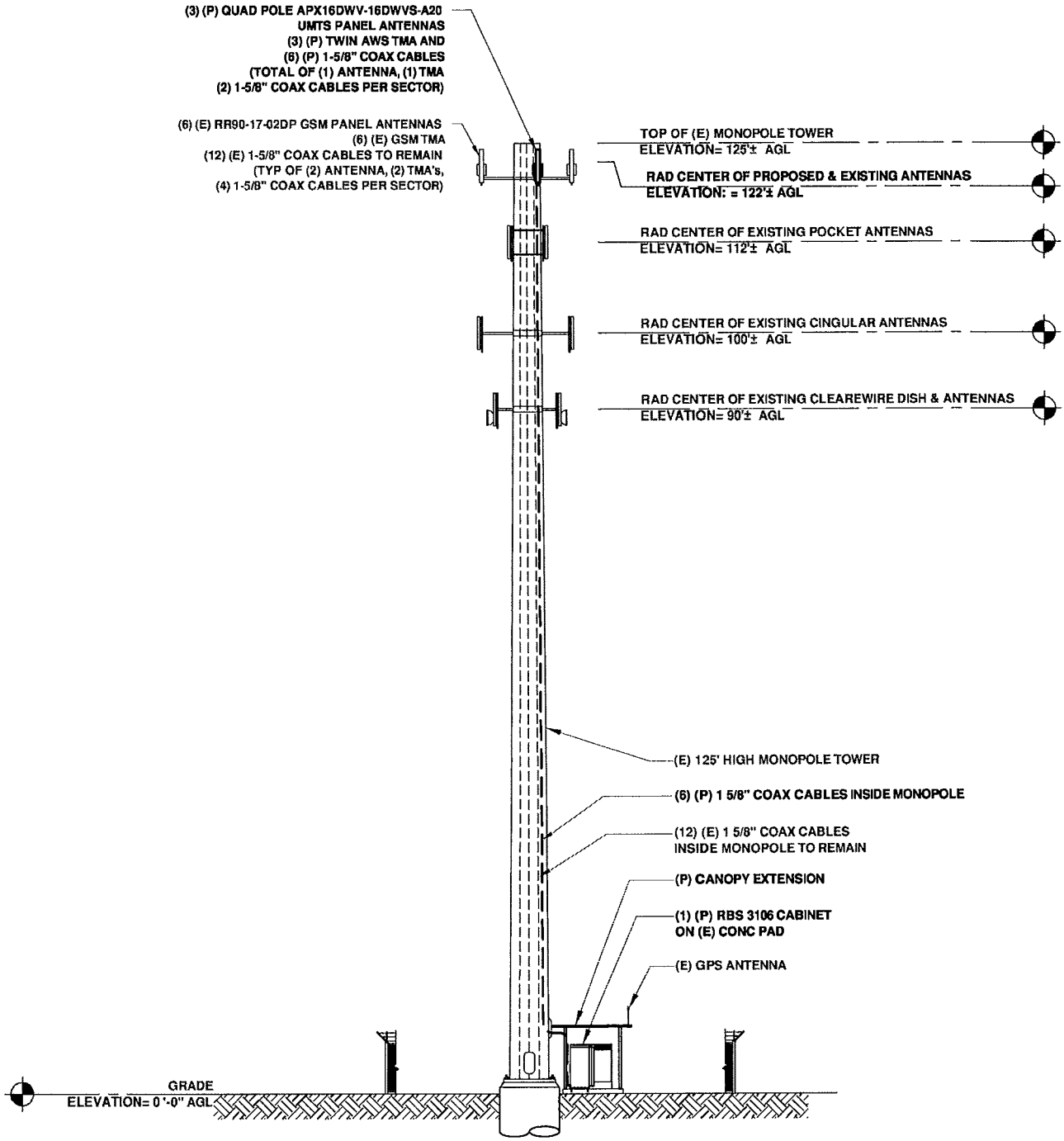

WEST ELEVATION VIEW

SCALE: 1" = 20'-0"

1
LE3

SUBMITTALS	
LE REV A	05-17-11
LE REV 0	06-27-11

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FOR

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

DRAWN BY: GC | CHECKED BY: SM

APPROVED
By Nicole Hennelly at 10:19 am, Jun 20, 2011

Date: **June 15, 2011**

Margaret Anderson
T-Mobile Towers
12920 SE 38th Street
Bellevue, WA 98006
(425) 383-3537

Tower Engineering Professionals
3703 Junction Blvd
Raleigh, NC 27603
(919) 661-6351
bboudreau@tepgroup.net

Subject: **Structural Analysis Report**

T-Mobile Designation:	***T-Mobile Reconfiguration***	
	T-Mobile Site Number:	Branford/ I-95/X55/Dtn 1
	T-Mobile Site Name:	CT11025B
Engineering Firm Designation:	**TEP Project Number:**	111984
Site Data:	**10 Sylvia St., Branford, New Haven County, CT 06405** ***Latitude N 41° 17' 38.08", Longitude W 72° 47' 8.62"*** **125 Foot - Monopole Tower**	

Dear Ms. Anderson,

Tower Engineering Professionals is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

The purpose of the analysis is to determine structural acceptability of the structure stress level. Based on our analysis we have determined the stress level for the structure and foundation, under the following load case, to be:

LC1: Existing + Future + Proposed Equipment **Sufficient Capacity**
Note: See Table 1 for the existing, future, and proposed loading.

Structure Capacity	Controlling Component
97.5%	Base Foundation

The analysis has been performed in accordance with the ANSI/TIA/EIA-222-F-1996 Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, and the 2005 Connecticut State Building Code with 2009 Supplements.

All modifications and equipment proposed in this report shall be installed in accordance with the appurtenances listed in Table 1 for the determined available structural capacity to be effective.

We at *Tower Engineering Professionals* appreciate the opportunity of providing our continuing professional services to you and *T-Mobile Towers*. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Andrew T. Haldane, P.E.

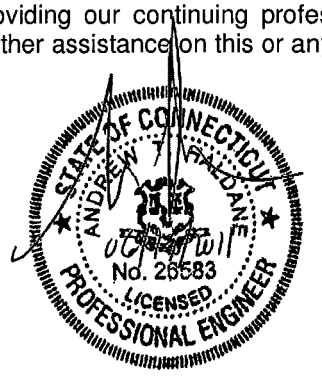


TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 125-ft monopole tower designed by Pirod in January of 1999. This tower was designed for a fastest mile wind speed of 85 mph with 0.5" radial ice and 50 mph for twist and sway per EIA/TIA-222-F for the appurtenances listed in Table 2. TEP did not visit the site. All information provided to TEP was assumed accurate and complete.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 90 mph with no ice (110 mph 3-sec gust per Appendix K of the CT building code), 77.9 mph with 0.5" of simultaneous ice, and 50 mph under service loads with the following criteria:

Table 1 - Existing, Future, and Proposed Antenna and Cable Information

Existing/ Future/ Proposed	Elevation (Ft)	Qty	Antenna Model	Mount Type	Qty Coax	Coax Size	Coax Location	Owner/ Tenant
Proposed	*122*	*6*	*KRY 112 89/5 TMA*	*Low Profile Platform*	*18*	*1 5/8*	*Inside*	*T-Mobile*
		3	*ATMAA 1412D-1A20 TMA*					
		6	*RR65-19-02DP*					
		3	*APX16DWV-16DWVS-A20*					
Future	*122*	*3*	*Andrew TMBXX-6516-R2M*		*7*	*1 5/8*	*Inside*	*T-Mobile*
		1	*4' HP MW Dish*					
Existing	112	3	Kathrein 742 213	Flush Mounted	6	1 5/8	Inside	Pocket
	100	12	LGP 214nn TMA	Low Profile Platform	12	1 1/4	Inside	Cingular
		6	Powerwave 7770.00					
	90	3	Horizon DUO radios	Flush Mounted	3	1/2	Outside	Clearwire
		3	Dragonwave A-ANT-18G-2-C		3[1]	1/4[1]		
		3	Samsung RRH BTS		6[1]	5/8[1]		
		3	Argus LLPX310R		1[1]	5/16"Ø[1]		

Notes:
1) Coax runs inside of (2) 2" flexible conduits.

Table 2 - Design Antenna and Cable Information

Mounting Level (ft)	Centerline Elevation (ft)	Number of Antennas	Antenna Model	Number of Coax	Coax Size	Coax Location
125	125	12	ALP9212	12	1 5/8	Inside
		-	Low Profile Platform	-	-	
		3	S4000 Smart	3 3	1/2 1 DC cable	Inside

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Design Drawings	Pirod, dated January 14, 1999 No: A-115233	-	T-Mobile
Geotechnical Report	French & Parrello, dated October 12, 1998 FPA No: 98A191ER1	-	T-Mobile
Correspondence	Correspondence from T-Mobile with regards to the existing and proposed loading, dated May 31, 2011	-	T-Mobile

3.1) Analysis Method

RISATower (version 5.4.2.0), 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 Table 1.
4) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
5) This report is not a construction document.

4) ANALYSIS RESULTS

Table 4 - Component Stresses vs. Capacity

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
L1	125 - 100	Pole	P24x0.375	1	-6294.660	934939.501	32.0	Pass
L2	100 - 80	Pole	P30x0.375	2	-12565.300	1166569.570	58.6	Pass
L3	80 - 60	Pole	P36x0.375	3	-16829.500	1325677.776	74.3	Pass
L4	60 - 40	Pole	P42x3/8	4	-21603.100	1484548.708	83.8	Pass
L5	40 - 20	Pole	P48x3/8	5	-26878.900	1643282.342	89.7	Pass
L6	20 - 0	Pole	P54x3/8	6	-32230.301	1801922.665	93.6	Pass
							Summary	
						Pole (L6)	93.6	Pass
						RATING =	**93.6**	**Pass**

Table 5 - Component Stresses vs. Capacity - Foundation

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
-	Anchor Bolts	-	60.8	Pass
-	Pirod Base Plate	-	-	Pass
-	Exterior Flange Bolts	20	79.1	Pass
-	Pirod Exterior Flange Plate	20	-	Pass
-	Exterior Flange Bolts	40	74.4	Pass
-	Pirod Exterior Flange Plate	40	-	Pass
-	Exterior Flange Bolts	60	66.4	Pass
-	Pirod Exterior Flange Plate	60	-	Pass
-	Exterior Flange Bolts	80	52.5	Pass
-	Pirod Exterior Flange Plate	80	-	Pass
-	Exterior Flange Bolts	100	29.4	Pass
-	Pirod Exterior Flange Plate	100	-	Pass
-	Base Foundation	-	97.5	Pass

Structure Rating (max from all components) =	97.5%

Table 6 - Dish Twist/Sway Results for 50 mph Service Wind Speed

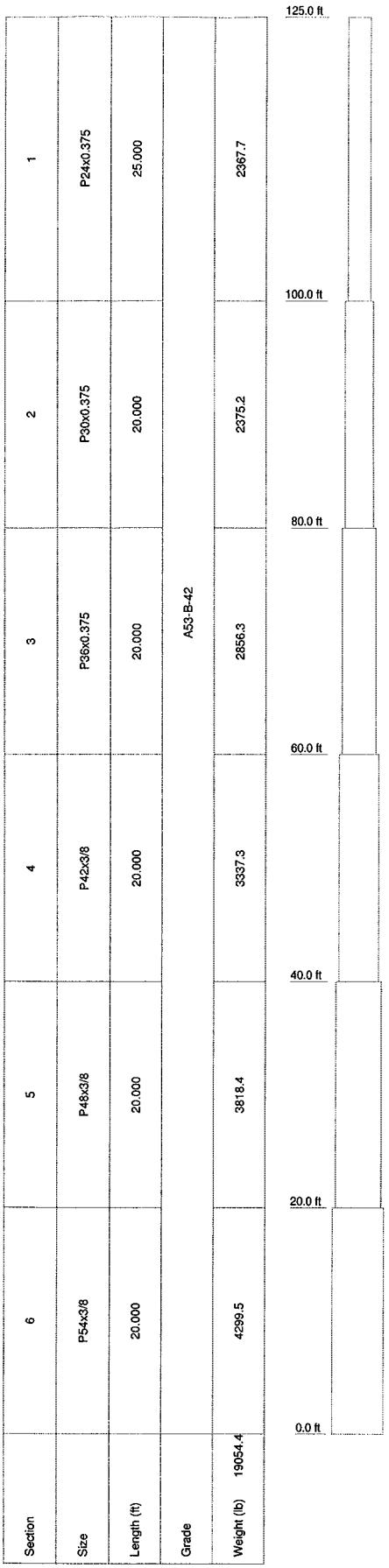
Elevation (ft)	Dish Model	Beam Deflection		
		Deflection (in)	Tilt (deg)	Twist (deg)
122	***4' MW HP Dish***	***10.567***	***0.747***	***0.003***
90	Dragonwave A-ANT-18G-2-C	5.822	0.624	0.001
90	Dragonwave A-ANT-18G-2-C	5.822	0.624	0.001
90	Dragonwave A-ANT-18G-2-C	5.822	0.624	0.001

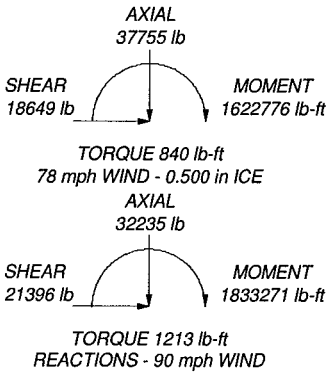
4.1) Recommendations

1) If the load differs from that described in Table 1 of this report, or the provisions of this analysis are found to be invalid, another structural analysis should be performed.

APPENDIX A

RISA TOWER OUTPUT





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) KRY 112 89/5	122	(4) LGP 214nn TMA	100
(2) KRY 112 89/5	122	(2) 7770.00 w/ Mount Pipe	100
(2) KRY 112 89/5	122	(2) 7770.00 w/ Mount Pipe	100
ATMAA1412D-1A20 (TMA)	122	(2) 7770.00 w/ Mount Pipe	100
ATMAA1412D-1A20 (TMA)	122	(4) LGP 214nn TMA	100
ATMAA1412D-1A20 (TMA)	122	Platform Mount [LP 405-1]	100
(2) RR65-19-02DP w/Mount Pipe	122	(4) LGP 214nn TMA	100
(2) RR65-19-02DP w/Mount Pipe	122	4.5" Dia. x 3' Dish Mount	90
(2) RR65-19-02DP w/Mount Pipe	122	4.5" Dia. x 3' Dish Mount	90
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	122	4.5" Dia. x 3' Dish Mount	90
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	122	RRH	90
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	122	RRH	90
TMBXX-6516-R2M w/ Mount Pipe	122	RRH	90
TMBXX-6516-R2M w/ Mount Pipe	122	LLPX310R w/ Mount Pipe	90
TMBXX-6516-R2M w/ Mount Pipe	122	LLPX310R w/ Mount Pipe	90
4.5" Dia. x 4' Dish Mount	122	LLPX310R w/ Mount Pipe	90
Platform Mount [LP 405-1]	122	Horizon Duo	90
4-FT HP MICROWAVE	122	Horizon Duo	90
742 213 w/ Mount Pipe	112	Side Arm Mount [SO 102-3]	90
742 213 w/ Mount Pipe	112	Horizon Duo	90
742 213 w/ Mount Pipe	112	A-ANT-18G-2-C	90
		A-ANT-18G-2-C	90
		A-ANT-18G-2-C	90

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 78 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 93.6%

Tower Engineering Professionals
3703 Junction Blvd
Raleigh, NC, 27603
Phone: (919) 661-6351
FAX: (919) 661-6350

Job: CT11025B - Branford/I-95-X55/DTN 1			
Project: TEP# 111984 - Rev 0			
Client: T-Mobile	Drawn by: BRB	App'd:	
Code: TIA/EIA-222-F	Date: 06/14/11	Scale: NTS	
Path: P\11984_CT11025\Structural\Rev 0\Risa\Rev 0\CT11025B - Branford.er		Dwg No. E-1	

Tower Input Data

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

Tower is located in New Haven County, Connecticut.
Basic wind speed of 90 mph.
Nominal ice thickness of 0.500 in.
Ice density of 56 pcf.
A wind speed of 78 mph is used in combination with ice.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	Use Clear Spans For KL/r	SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	All Leg Panels Have Same Allowable
Escalate Ice	√ Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	√ Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	Include Angle Block Shear Check
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Poles
Leg Bolts Are At Top Of Section	SR Members Have Cut Ends	√ Include Shear-Torsion Interaction
Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination		

Pole Section Geometry

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L1	125.000-100.000	25.000	P24x0.375	A53-B-42 (42 ksi)	
L2	100.000-80.000	20.000	P30x0.375	A53-B-42 (42 ksi)	
L3	80.000-60.000	20.000	P36x0.375	A53-B-42 (42 ksi)	
L4	60.000-40.000	20.000	P42x3/8	A53-B-42 (42 ksi)	
L5	40.000-20.000	20.000	P48x3/8	A53-B-42 (42 ksi)	
L6	20.000-0.000	20.000	P54x3/8	A53-B-42 (42 ksi)	

Tower Elevation ft	Gusset Area (per face) ft²	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 125.000-100.000				1	1	1		
L2 100.000-80.000				1	1	1		
L3 80.000-60.000				1	1	1		
L4 60.000-40.000				1	1	1		
L5 40.000-20.000				1	1	1		
L6 20.000-0.000				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight plf
Ladder Rung - SR 5/8" (18" width / 12" step)	C	No	CaAa (Out Of Face)	125.000 - 10.000	1	No Ice	0.094	31.319
						1/2" Ice	0.194	32.197
Safety Line 3/8	C	No	CaAa (Out Of Face)	125.000 - 10.000	1	No Ice	0.037	0.220
						1/2" Ice	0.137	0.750
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	122.000 - 3.000	18	No Ice	0.000	0.820
						1/2" Ice	0.000	0.820
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	122.000 - 3.000	7	No Ice	0.000	0.820
						1/2" Ice	0.000	0.820
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	112.000 - 3.000	6	No Ice	0.000	0.820
						1/2" Ice	0.000	0.820
LDF6-50A (1-1/4 FOAM)	C	No	Inside Pole	100.000 - 3.000	12	No Ice	0.000	0.660
						1/2" Ice	0.000	0.660
LDF4P-50A (1/2 FOAM)	C	No	CaAa (Out Of Face)	90.000 - 3.000	3	No Ice	0.000	0.150
						1/2" Ice	0.000	0.840
LDF1-50A (1/4 FOAM)	C	No	Inside Pole	90.000 - 3.000	3	No Ice	0.000	0.060
						1/2" Ice	0.000	0.060
LDF4.5-50 (5/8 FOAM)	C	No	Inside Pole	90.000 - 3.000	3	No Ice	0.000	0.150
						1/2" Ice	0.000	0.150
5/16" Coax	C	No	Inside Pole	90.000 - 3.000	1	No Ice	0.000	0.088
						1/2" Ice	0.000	0.088
2" Flexible Conduit	C	No	CaAa (Out Of Face)	90.000 - 3.000	1	No Ice	0.200	0.340
						1/2" Ice	0.300	1.867
2" Flexible Conduit	C	No	CaAa (Out Of Face)	90.000 - 3.000	1	No Ice	0.000	0.340
						1/2" Ice	0.000	1.867

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 lb
L1	125.000-100.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	3.283	1298.515
L2	100.000-80.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	4.626	1316.059
L3	80.000-60.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	6.626	1334.538
L4	60.000-40.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	6.626	1334.538
L5	40.000-20.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	6.626	1334.538
L6	20.000-0.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	4.713	913.584

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 lb
L1	125.000-100.000	A	0.500	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	8.282	1333.726
L2	100.000-80.000	A	0.500	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	9.626	1395.479
L3	80.000-60.000	A	0.500	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	12.626	1465.210
L4	60.000-40.000	A	0.500	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	12.626	1465.210
L5	40.000-20.000	A	0.500	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	12.626	1465.210
L6	20.000-0.000	A	0.500	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	8.413	1014.796

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	125.000-100.000	-0.160	0.092	-0.356	0.206
L2	100.000-80.000	-0.275	0.159	-0.510	0.294
L3	80.000-60.000	-0.388	0.224	-0.662	0.382
L4	60.000-40.000	-0.393	0.227	-0.681	0.393
L5	40.000-20.000	-0.397	0.229	-0.696	0.402
L6	20.000-0.000	-0.291	0.168	-0.491	0.284

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 lb
(2) KRY 112 89/5	A	From Leg	3.000	0.000	0.000	122.000	No Ice	0.233	0.428	15.400
			0.000				1/2" Ice	0.302	0.529	20.456
			0.000							
(2) KRY 112 89/5	B	From Leg	3.000	0.000	0.000	122.000	No Ice	0.233	0.428	15.400
			0.000				1/2" Ice	0.302	0.529	20.456
			0.000							
(2) KRY 112 89/5	C	From Leg	3.000	0.000	0.000	122.000	No Ice	0.233	0.428	15.400
			0.000				1/2" Ice	0.302	0.529	20.456
			0.000							
ATMAA1412D-1A20 (TMA)	A	From Leg	3.000	0.000	0.000	122.000	No Ice	1.167	0.467	13.000
			0.000				1/2" Ice	1.314	0.575	20.616
			0.000							
ATMAA1412D-1A20 (TMA)	B	From Leg	3.000	0.000	0.000	122.000	No Ice	1.167	0.467	13.000
			0.000				1/2" Ice	1.314	0.575	20.616
			0.000							
ATMAA1412D-1A20 (TMA)	C	From Leg	3.000	0.000	0.000	122.000	No Ice	1.167	0.467	13.000
			0.000				1/2" Ice	1.314	0.575	20.616
			0.000							
(2) RR65-19-02DP w/Mount Pipe	A	From Leg	3.000	0.000	0.000	122.000	No Ice	6.104	4.412	48.550
			0.000				1/2" Ice	6.666	5.624	92.728
			0.000							
(2) RR65-19-02DP w/Mount Pipe	B	From Leg	3.000	0.000	0.000	122.000	No Ice	6.104	4.412	48.550
			0.000				1/2" Ice	6.666	5.624	92.728
			0.000							
(2) RR65-19-02DP w/Mount Pipe	C	From Leg	3.000	0.000	0.000	122.000	No Ice	6.104	4.412	48.550
			0.000				1/2" Ice	6.666	5.624	92.728
			0.000							
APX16DWV-16DWV-S-E-A 20 w/ Mount Pipe	A	From Leg	3.000	0.000	0.000	122.000	No Ice	7.547	3.575	62.600
			0.000				1/2" Ice	8.111	4.415	109.596
			0.000							
APX16DWV-16DWV-S-E-A 20 w/ Mount Pipe	B	From Leg	3.000	0.000	0.000	122.000	No Ice	7.547	3.575	62.600
			0.000				1/2" Ice	8.111	4.415	109.596
			0.000							
APX16DWV-16DWV-S-E-A 20 w/ Mount Pipe	C	From Leg	3.000	0.000	0.000	122.000	No Ice	7.547	3.575	62.600
			0.000				1/2" Ice	8.111	4.415	109.596
			0.000							
TMBXX-6516-R2M w/ Mount Pipe	A	From Leg	3.000	0.000	0.000	122.000	No Ice	7.083	5.242	56.500
			0.000				1/2" Ice	7.637	6.117	109.723
			0.000							
TMBXX-6516-R2M w/ Mount Pipe	B	From Leg	3.000	0.000	0.000	122.000	No Ice	7.083	5.242	56.500
			0.000				1/2" Ice	7.637	6.117	109.723
			0.000							
TMBXX-6516-R2M w/ Mount Pipe	C	From Leg	3.000	0.000	0.000	122.000	No Ice	7.083	5.242	56.500
			0.000				1/2" Ice	7.637	6.117	109.723
			0.000							
4.5" Dia. x 4' Dish Mount	A	From Leg	0.833	0.000	0.000	122.000	No Ice	1.322	1.322	43.200
			0.000				1/2" Ice	1.577	1.577	56.187
			0.000							
742 213 w/ Mount Pipe	A	From Leg	3.000	0.000	0.000	112.000	No Ice	5.373	4.620	48.919
			0.000				1/2" Ice	5.950	6.000	90.561

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 lb
			0.000						
742 213 w/ Mount Pipe	B	From Leg	3.000	0.000	112.000	No Ice	5.373	4.620	48.919
			0.000			1/2" Ice	5.950	6.000	90.561
			0.000						
742 213 w/ Mount Pipe	C	From Leg	3.000	0.000	112.000	No Ice	5.373	4.620	48.919
			0.000			1/2" Ice	5.950	6.000	90.561
			0.000						
(4) LGP 214nn TMA	A	From Leg	3.000	0.000	100.000	No Ice	0.281	0.281	9.900
			0.000			1/2" Ice	0.372	0.372	12.563
			0.000						
(4) LGP 214nn TMA	B	From Leg	3.000	0.000	100.000	No Ice	0.281	0.281	9.900
			0.000			1/2" Ice	0.372	0.372	12.563
			0.000						
(4) LGP 214nn TMA	C	From Leg	3.000	0.000	100.000	No Ice	0.281	0.281	9.900
			0.000			1/2" Ice	0.372	0.372	12.563
			0.000						
(2) 7770.00 w/ Mount Pipe	A	From Leg	3.000	0.000	100.000	No Ice	6.218	4.353	56.900
			0.000			1/2" Ice	6.769	5.198	102.995
			0.000						
(2) 7770.00 w/ Mount Pipe	B	From Leg	3.000	0.000	100.000	No Ice	6.218	4.353	56.900
			0.000			1/2" Ice	6.769	5.198	102.995
			0.000						
(2) 7770.00 w/ Mount Pipe	C	From Leg	3.000	0.000	100.000	No Ice	6.218	4.353	56.900
			0.000			1/2" Ice	6.769	5.198	102.995
			0.000						
Horizon Duo	A	From Leg	3.000	0.000	90.000	No Ice	0.547	0.343	7.000
			0.000			1/2" Ice	0.648	0.426	11.778
			0.000						
Horizon Duo	B	From Leg	3.000	0.000	90.000	No Ice	0.547	0.343	7.000
			0.000			1/2" Ice	0.648	0.426	11.778
			0.000						
Horizon Duo	C	From Leg	3.000	0.000	90.000	No Ice	0.547	0.343	7.000
			0.000			1/2" Ice	0.648	0.426	11.778
			0.000						
4.5" Dia. x 3' Dish Mount	A	From Leg	0.500	0.000	90.000	No Ice	0.925	0.925	32.400
			0.000			1/2" Ice	1.131	1.131	42.333
			0.000						
4.5" Dia. x 3' Dish Mount	B	From Leg	0.500	0.000	90.000	No Ice	0.925	0.925	32.400
			0.000			1/2" Ice	1.131	1.131	42.333
			0.000						
4.5" Dia. x 3' Dish Mount	C	From Leg	0.500	0.000	90.000	No Ice	0.925	0.925	32.400
			0.000			1/2" Ice	1.131	1.131	42.333
			0.000						
RRH	A	From Leg	3.000	0.000	90.000	No Ice	1.816	0.830	12.000
			0.000			1/2" Ice	2.000	0.973	23.912
			0.000						
RRH	B	From Leg	3.000	0.000	90.000	No Ice	1.816	0.830	12.000
			0.000			1/2" Ice	2.000	0.973	23.912
			0.000						
RRH	C	From Leg	3.000	0.000	90.000	No Ice	1.816	0.830	12.000
			0.000			1/2" Ice	2.000	0.973	23.912
			0.000						
LLPX310R w/ Mount Pipe	A	From Leg	3.000	0.000	90.000	No Ice	4.982	2.874	43.868
			0.000			1/2" Ice	5.376	3.398	79.254
			0.000						
LLPX310R w/ Mount Pipe	B	From Leg	3.000	0.000	90.000	No Ice	4.982	2.874	43.868
			0.000			1/2" Ice	5.376	3.398	79.254

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 lb
			0.000						
LLPX310R w/ Mount Pipe	C	From Leg	3.000	0.000	90.000	No Ice	4.982	2.874	43.868
			0.000			1/2" Ice	5.376	3.398	79.254
			0.000						
****									
Platform Mount [LP 405-1]	C	None		0.000	122.000	No Ice	20.800	20.800	1800.000
						1/2" Ice	28.100	28.100	2066.000
Platform Mount [LP 405-1]	C	None		0.000	100.000	No Ice	20.800	20.800	1800.000
						1/2" Ice	28.100	28.100	2066.000
Side Arm Mount [SO 102-3]	C	None		0.000	90.000	No Ice	3.000	3.000	81.000
						1/2" Ice	3.480	3.480	111.000

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
4-FT HP MICROWAVE	A	Paraboloid w/Shroud (HP)	From Leg	1.500 0.000 0.000	0.000		122.000	4.000	No Ice 1/2" Ice	12.570 13.100	170.000 237.247
A-ANT-18G-2-C	A	Paraboloid w/o Radome	From Leg	1.000 0.000 0.000	0.000		90.000	2.175	No Ice 1/2" Ice	3.720 4.010	27.150 47.730
A-ANT-18G-2-C	B	Paraboloid w/o Radome	From Leg	1.000 0.000 0.000	0.000		90.000	2.175	No Ice 1/2" Ice	3.720 4.010	27.150 47.730
A-ANT-18G-2-C	C	Paraboloid w/o Radome	From Leg	1.000 0.000 0.000	0.000		90.000	2.175	No Ice 1/2" Ice	3.720 4.010	27.150 47.730

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

Comb. No.	Description
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 Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 100	11.042	33	0.753	0.004
L2	100 - 80	7.203	33	0.681	0.002
L3	80 - 60	4.573	33	0.555	0.001
L4	60 - 40	2.528	33	0.408	0.001
L5	40 - 20	1.104	33	0.263	0.000
L6	20 - 0	0.275	33	0.126	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
122.000	4-FT HP MICROWAVE	33	10.567	0.747	0.003	52902
112.000	742 213 w/ Mount Pipe	33	9.001	0.725	0.003	20347
100.000	(4) LGP 214nn TMA	33	7.203	0.681	0.002	10791
90.000	A-ANT-18G-2-C	33	5.822	0.624	0.001	9076

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 100	35.662	8	2.436	0.012
L2	100 - 80	23.259	8	2.201	0.006
L3	80 - 60	14.766	8	1.792	0.003
L4	60 - 40	8.163	8	1.318	0.002
L5	40 - 20	3.565	8	0.848	0.001
L6	20 - 0	0.889	8	0.407	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
122.000	4-FT HP MICROWAVE	8	34.129	2.417	0.011	16326
112.000	742 213 w/ Mount Pipe	8	29.067	2.342	0.008	6279
100.000	(4) LGP 214nn TMA	8	23.259	2.201	0.006	3330
90.000	A-ANT-18G-2-C	8	18.798	2.017	0.004	2809

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 lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L1	125 - 100 (1)	P24x0.375	25.000	0.000	0.0	25.200	27.833	-6294.660	701380.000	0.009
L2	100 - 80 (2)	P30x0.375	20.000	0.000	0.0	25.075	34.901	-12565.300	875146.000	0.014
L3	80 - 60 (3)	P36x0.375	20.000	0.000	0.0	23.696	41.970	-16829.500	994507.000	0.017
L4	60 - 40 (4)	P42x3/8	20.000	0.000	0.0	22.711	49.038	-21603.100	1113690.000	0.019
L5	40 - 20 (5)	P48x3/8	20.000	0.000	0.0	21.972	56.107	-26878.900	1232770.000	0.022
L6	20 - 0 (6)	P54x3/8	20.000	0.000	0.0	21.397	63.175	-32230.301	1351780.000	0.024

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	125 - 100 (1)	P24x0.375	155803.333	11.551	27.720	0.417	0.000	0.000	27.720	0.000
L2	100 - 80 (2)	P30x0.375	407619.167	19.160	25.075	0.764	0.000	0.000	25.075	0.000
L3	80 - 60 (3)	P36x0.375	709845.833	23.026	23.696	0.972	0.000	0.000	23.696	0.000
L4	60 - 40 (4)	P42x3/8	1048541	24.877	22.711	1.095	0.000	0.000	22.711	0.000

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L5	40 - 20 (5)	P48x3/8	1423100.667	25.764	21.972	1.173	0.000	0.000	21.972	0.000
L6	20 - 0 (6)	P54x3/8	1833266.000	26.155	21.397	1.222	0.000	0.000	21.397	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V lb	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T lb-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	125 - 100 (1)	P24x0.375	8181.910	0.588	16.800	0.035	21.752	0.001	16.800	0.000
L2	100 - 80 (2)	P30x0.375	14170.300	0.812	16.800	0.048	58.210	0.001	15.644	0.000
L3	80 - 60 (3)	P36x0.375	15988.400	0.762	16.800	0.045	117.103	0.002	12.270	0.000
L4	60 - 40 (4)	P42x3/8	17811.000	0.726	16.800	0.043	178.997	0.002	10.930	0.000
L5	40 - 20 (5)	P48x3/8	19567.699	0.698	16.800	0.042	241.424	0.002	9.889	0.000
L6	20 - 0 (6)	P54x3/8	21402.600	0.678	16.800	0.040	290.517	0.002	9.053	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	125 - 100 (1)	0.009	0.417	0.000	0.035	0.000	0.427 ✓	1.333	H1-3+VT ✓
L2	100 - 80 (2)	0.014	0.764	0.000	0.048	0.000	0.781 ✓	1.333	H1-3+VT ✓
L3	80 - 60 (3)	0.017	0.972	0.000	0.045	0.000	0.991 ✓	1.333	H1-3+VT ✓
L4	60 - 40 (4)	0.019	1.095	0.000	0.043	0.000	1.117 ✓	1.333	H1-3+VT ✓
L5	40 - 20 (5)	0.022	1.173	0.000	0.042	0.000	1.196 ✓	1.333	H1-3+VT ✓
L6	20 - 0 (6)	0.024	1.222	0.000	0.040	0.000	1.248 ✓	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	125 - 100	Pole	P24x0.375	1	-6294.660	934939.501	32.0	Pass
L2	100 - 80	Pole	P30x0.375	2	-12565.300	1166569.570	58.6	Pass
L3	80 - 60	Pole	P36x0.375	3	-16829.500	1325677.776	74.3	Pass
L4	60 - 40	Pole	P42x3/8	4	-21603.100	1484548.708	83.8	Pass
L5	40 - 20	Pole	P48x3/8	5	-26878.900	1643282.342	89.7	Pass
L6	20 - 0	Pole	P54x3/8	6	-32230.301	1801922.665	93.6	Pass
						Summary		
						Pole (L6)	93.6	Pass
						RATING =	**93.6**	**Pass**

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APPENDIX B

ADDITIONAL CALCULATIONS

Job Name (Client Site #):	CT11025B		
Foundation Description:	Caisson		
Job Number:	111984	**Pier or Pole Diameter:**	6.0 ft
Engineer:	BRB	**Distance of top of pier above ground:**	0.5 ft
Code Revision:	TIA-F	**Direct Embed. Pole?:**	No
Loads:		**Material Strengths:**	
Moment:	1833.27 kip-ft	**Concrete Strength:**	4 ksi
Axial:	32.22 kips	**Steel Yield Strength:**	60 ksi
Shear:	21.40 kips		
Additional Factor of Safety:	1.54	**Generate Caisson File**	

Design Parameters						
Soil Class	**Soil Description**	**Depth (ft)**		**Eff. Unit Weight (pcf)**	**Strength (Cohesion) (psf)**	**Friction Angle (ϕ) (deg.)**
		From	**To**			
1	Clay	0.00	3.33	120	0	
2	Sand	3.33	11	120		34
3	Sand	11.00	21	120		33
4	Sand					
5	Sand					
6	Sand					
7	Clay					
8	Clay					
9	Sand					
10	Sand					
11	Sand					
12	Sand					
13	Sand					
14	Sand					
15	Sand					
16	Sand					
17	Sand					
18	Sand					
19	Sand					
20	Sand					

CAISSON Version 10.35 5:29:40 PM Tuesday, June 14, 2011
Tower Engineering Professionals

Project Title: CT11025B - Caisson - TIA-F
Project Notes: TEP Job #: 111984

Calculation Method: Full 8CD

******* I N P U T D A T A

Pier Properties

Diameter (ft)	Distance of Top of Pier above Ground (ft)	Concrete Strength (ksi)	Steel Yield Strength (ksi)
6.00	0.50	4.00	60.00

Soil Properties

Layer	Type	Thickness (ft)	Depth at Top of Layer (ft)	Density (lbs/ft^3)	CU (psf)	KP	PHI (deg)
1	Clay	3.33	0.00	120.0			
2	Sand	7.67	3.33	120.0		3.537	34.00
3	Sand	10.00	11.00	120.0		3.392	33.00

Design (Factored) Loads at Top of Pier

Moment (ft-k)	Axial Load (kips)	Shear Load (kips)	Additional Safety Factor Against Soil Failure		
2383.3	41.9	27.81	2.21	Soil Factored	1.53846/2.105 = 63.3%

******* R E S U L T S

Calculated Pier Properties

Length (ft)	Weight (kips)	End Bearing Pressure (psf)
21.500	91.185	1481.6

Ultimate Resisting Forces Along Pier

Type	Distance of Top of Layer to Top of Pier (ft)	Thickness (ft)	Density (lbs/ft^3)	CU (psf)	KP	Force (kips)	Arm (ft)
Clay	0.50	3.33	120.0			0.00	2.17
Sand	3.83	7.67	120.0		3.537	419.79	8.35
Sand	11.50	4.23	120.0		3.392	406.97	13.73
Sand	15.73	5.77	120.0		3.392	-765.34	18.77

Shear and Moments Along Pier

Distance below Top of Pier (ft)	Shear (with Safety Factor) (kips)	Moment (with Safety Factor) (ft-k)	Shear (without Safety Factor) (kips)	Moment (without Safety Factor) (ft-k)
0.00	61.4	5272.1	27.9	2391.0
2.15	61.4	5404.1	27.9	2450.9
4.30	48.7	5533.3	22.1	2509.4
6.45	-31.4	5558.2	-14.2	2520.7
8.60	-146.8	5373.1	-66.6	2436.8
10.75	-297.5	4901.8	-134.9	2223.0
12.90	-478.4	4072.1	-217.0	1846.7
15.05	-690.7	2821.4	-313.2	1279.6
17.20	-593.9	1325.4	-269.3	601.1
19.35	-313.9	343.5	-142.3	155.8
21.50	-0.0	0.0	-0.0	0.0

T-Mobile

T-Mobile USA Inc.
35 Griffin Rd South, Bloomfield, CT 06002-1853
Phone: (860) 692-7100
Fax: (860) 692-7159

Technical Memo

To: Northeast Tower Inc
From: Amir Uzzaman - Radio Frequency Engineer
cc: Jason Overbey
Subject: Power Density Report for CT11025B
Date: July 7, 2011

1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the T-Mobile antenna installation on a Monopole at 10 Sylvia St, Branford, CT. This study incorporates the most conservative consideration for determining the practical combined worst case power density levels that would be theoretically encountered from locations surrounding the transmitting location.

2. Discussion:

The following assumptions were used in the calculations:

1) The emissions from T-Mobile transmitters are in the (1935-1944.8), (1980.2-1984.8), (2140-2145), (2110-2120)MHz frequency Band.
2) The antenna array consists of three sectors, with 3 antennas per sector.
3) The model number for GSM antenna is RR90-17-02DP.
3) The model number for UMTS antenna is APX16DWV-16DWV.
4) GSM antenna center line height is 122 ft.
4) UMTS antenna center line height is 122 ft.
5) The maximum transmit power from any GSM sector is 1698.71 Watts Effective Radiated Power (EiRP) assuming 8 channels per sector.
5) The maximum transmit power from any UMTS sector is 2393.81 Watts Effective Radiated Power (EiRP) assuming 2 channels per sector.
6) All the antennas are simultaneously transmitting and receiving, 24 hours a day.
7) Power levels emitting from the antennas 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.
8) The average ground level of the studied area does not change significantly with respect to the transmitting location.

Equations given in "FCC OET Bulletin 65, Edition 97-01" were then used with the above information to perform the calculations.

3. Conclusion:

Based on the above worst case assumptions, the power density calculation from the T-Mobile antenna installation on a Monopole at 10 Sylvia St, Branford, CT, is 0.06673 mW/cm^2. This value represents 6.673% of the Maximum Permissible Exposure (MPE) standard of 1 milliwatt per square centimeter (mW/cm^2) set forth in the FCC/ANSI/IEEE C95.1-1991. Furthermore, the proposed antenna location for T-Mobile will not interfere with existing public safety communications, AM or FM radio broadcasts, TV, Police Communications, HAM Radio communications or any other signals in the area.
The combined Power Density from other carriers is 13.11469%. The combined Power Density for the site is 19.787% of the M.P.E. standard.

Connecticut Market

T-Mobile

Worst Case Power Density

Site:	**CT11025B**
Site Address:	**10 Sylvia St**
Town:	**Branford**
Tower Height:	**125 ft.**
Tower Style:	**Monopole**

GSM Data		**UMTS Data**	
Base Station TX output	20 W	**Base Station TX output**	40 W
Number of channels	8	**Number of channels**	2
Antenna Model	RR90-17-02DP	**Antenna Model**	APX16DWV-16DWV
Cable Size	1 5/8 in.	**Cable Size**	1 5/8 in.
Cable Length	150 ft.	**Cable Length**	150 ft.
Antenna Height	122.0 ft.	**Antenna Height**	122.0 ft.
Ground Reflection	1.6	**Ground Reflection**	1.6
Frequency	1945.0 MHz	**Frequency**	2.1 GHz
Jumper & Connector loss	4.50 dB	**Jumper & Connector loss**	1.50 dB
Antenna Gain	16.5 dBi	**Antenna Gain**	18.0 dBi
Cable Loss per foot	0.0116 dB	**Cable Loss per foot**	0.0116 dB
Total Cable Loss	1.7400 dB	**Total Cable Loss**	1.7400 dB
Total Attenuation	6.2400 dB	**Total Attenuation**	3.2400 dB
Total EIRP per Channel	53.27 dBm	**Total EIRP per Channel**	60.78 dBm
(In Watts)	212.34 W	**(In Watts)**	1196.91 W
Total EIRP per Sector	62.30 dBm	**Total EIRP per Sector**	63.79 dBm
(In Watts)	1698.71 W	**(In Watts)**	2393.81 W
nsg	10.2600	**nsg**	14.7600
Power Density (S) =	**0.027696 mW/cm^2**	**Power Density (S) =**	**0.039030 mW/cm^2**

T-Mobile Worst Case % MPE = 6.6726%

Equation Used :

Office of Engineering and Technology (OET) Bulletin 65, Edition 97-01, August 1997

Co-Location Total

Carrier	**% of Standard**
Cingular	1.7978 %
Pocket	5.4262 %
Clearwire	1.3584 %
Clearwire	0.9366 %
AT&T	3.5957 %
Other Antenna Systems	
Total Excluding T-Mobile	**13.1147 %**
T-Mobile	6.6726
Total % MPE for Site	**19.7873%**