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

July 9, 2013

Julie D. Kohler, Esq.
Cohen and Wolf, P.C.
1115 Broad Street
Bridgeport, CT 06604

RE: **EM-T-MOBILE-034-130531A** – T-Mobile Northeast LLC notice of intent to modify an existing telecommunications facility located at 41 Padanaram Road, Danbury, Connecticut.

Dear Attorney Kohler:

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:

- The coax lines and accessory equipment shall be installed in accordance with the recommendations made in the Structural Analysis Report prepared by GPD Group dated April 23, 2013 and stamped by John Kabak;
- Within 45 days following completion of the antenna installation, T-Mobile shall provide documentation certified by a professional engineer that its installation complied with the recommendations of the structural analysis;
- Any deviation from the proposed modification as specified in this notice and supporting materials with the 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;
- Within 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 May 29, 2013. 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,

Melanie A. Bachman
Acting Executive Director

MAB/CDM/jb

c: The Honorable Mark D. Boughton, Mayor, City of Danbury
Dennis Elpern, City Planner, City of Danbury
Crown Castle

COHEN and WOLF P.C.
ATTORNEYS AT LAW

RACHEL A. SCHWARTZMAN

Please Reply To: Bridgeport
Writer's Direct Dial: (203) 337-4110
E-Mail: rschwartzman@cohenandwolf.com

April 27, 2015

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06501

Re: EM-T-MOBILE-034-130531A
T-Mobile Site ID CT11896A
41 Padanaram Road, Danbury, CT
Notice of Compliance with Conditions and Construction Completion

Dear Attorney Bachman:

The Connecticut Siting Council ("Council") acknowledged the above referenced T-Mobile Northeast LLC ("T-Mobile") notice of exempt modification on July 9, 2013.

The Council imposed the following condition in its acknowledgment:

- The coax lines and accessory equipment shall be installed in accordance with the recommendations made in the Structural Analysis Report prepared by GPD Group dated April 23, 2013 and stamped by John Kabak; and

- Within 45 days following completion of the antenna installation, T-Mobile shall provide documentation certified by a professional engineer that its installation complied with the recommendations of the structural analysis.

The attached PE Closeout Letter, dated April 23 2015, provides evidence of compliance with the conditions outlined by the Council.

In addition, T-Mobile hereby notifies the Council that construction of the acknowledged modifications were complete as of December 30, 2013.

Please don't hesitate to contact me with any questions.

Sincerely,

Rachel A. Schwartzman, Esq.

cc: Samuel Simons, T-Mobile
Mark Richard, T-Mobile
Rob Stanford, Vertical Development LLC
Julie Kohler, Esq.

TECTONIC
Practical Solutions, Exceptional Service

CORPORATE OFFICE:
Mountainville, NY (800) 829-6531

1279 Route 300
Newburgh, NY 12550

(845) 567-6656 FAX: (845) 567-8703
www.tectonicengineering.com

Sam Simons
Engineering Development - Connecticut
T-Mobile
35 Griffin Road South
Bloomfield, CT 06002
sam.simons@t-mobile.com

April 23, 2015

RE: PE Close Out Letter
EM-T-MOBILE # 034-130531A /T-Mobile Site ID # CT11896A

Dear Mr. Simons:

Tectonic Engineering & Surveying Consultants, P.C. ("Tectonic") has completed its post-construction review of the above-referenced site to determine whether T-Mobile complied with conditions imposed by the Connecticut Siting Council's (the "Council") acknowledgment letter, dated July 9, 2013 ("the Acknowledgment Letter"). Our compliance review included the following: the Acknowledgment Letter, the approved tower structural analysis report by Centek Engineering dated April 23, 2013 (the "Structural Analysis"), and the approved design plans by Tectonic dated April 29, 2013.

On behalf of Tectonic, based on my review of the information, I, Manojkumar B. Patel, licensed professional engineer number 22038, certify that to the best of my knowledge, the T-Mobile work complies with the recommendations of the approved Structural Analysis.

Specifically, as required by the Acknowledgment Letter, I have reviewed the T-Mobile work for compliance with the following structural conditions imposed by the Council:

- The coax lines and accessory equipment shall be installed in accordance with the recommendations made in the Structural Analysis Report prepared by GPD Group dated April 23, 2013 and stamped by John Kabak.

Should you have any questions regarding the foregoing review, please contact me directly at 845-567-6656 ext. 2808.

Very truly yours,

Manojkumar B. Patel, P.E.
Sr. Project Manager

Cc: Rob Stanford (Vertical Development LLC)

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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www.ct.gov/csc

December 24, 2014

Rachel A. Schwartzman, Esq.
Cohen and Wolf, P.C.
P.O. Box 1821
Bridgeport, CT 06601

RE:

EM-T-MOBILE-004-130531	81 Montevideo Road	Avon
EM-T-MOBILE-009-130611	38 Spring Hill Lane	Bethel
EM-T-MOBILE-014-130724	405 Brushy Plain Road	Branford
EM-T-MOBILE-017-130611	2 Willis Street	Bristol
EM-T-MOBILE-017-130729	985 Farmington Avenue	Bristol
EM-T-MOBILE-033-130719	179 Shunpike Road	Cromwell
EM-T-MOBILE-034-130531A	41 Padanaram Road	Danbury
EM-T-MOBILE-034-130531B	303 Boxwood Lane	Danbury
EM-T-MOBILE-034-130726	7 West View Drive	Danbury
EM-T-MOBILE-043-130222	1455 Forbes Street	East Hartford
EM-T-MOBILE-049-130718	1 Ecology Drive	Enfield
EM-T-MOBILE-057-130220	150 Butternut Hollow Road	Greenwich
EM-T-MOBILE-080-130903	11 West Peak Drive	Meriden
EM-T-MOBILE-091-130531A	302 Ball Pond Road	New Fairfield
EM-T-MOBILE-091-130531B	37 Titicus Mountain Road	New Fairfield
EM-T-MOBILE-101-130611	125 Washington Avenue	North Haven
EM-T-MOBILE-110-130621	335 S. Washington Street	Plainville
EM-T-MOBILE-135-130318	555 Main Street	Stamford
EM-T-MOBILE-148-130531	90 N. Plains Industrial Road	Wallingford
EM-T-MOBILE-166-130726	Andrews Road	Wolcott
EM-T-MOBILE-166-130816	Route 322/Meridian Road	Wolcott

Dear Attorney Schwartzman:

The Connecticut Siting Council (Council) is in receipt of your letter dated December 23, 2014, submitted on behalf of T-Mobile, requesting an extension of time to submit a notice of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications.

The Council hereby grants a 60-day extension of time to submit a notice of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications to March 2, 2015.

This extension is granted with the understanding that the Council will be notified should T-Mobile need additional time beyond 60 days to submit a notice of completion and associated post modification inspection reports or decide not to proceed with construction.

Thank you for your attention to this matter.

Sincerley,

Melanie A. Bachman
Acting Executive Director

MAB/cm

COHEN and WOLF P.C.
ATTORNEYS AT LAW

RACHEL A. SCHWARTZMAN

Please Reply To: Bridgeport
Writer's Direct Dial: (203) 337-4110
E-Mail: rschwartzman@cohenandwolf.com

February 27, 2015

Via Electronic and Overnight Mail

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06501

Re: T-Mobile Notice of Completion Filings (Third Quarter Audit)
Connecticut Siting Council Letters, dated November 3, 2014 and February 20, 2015
Request for Extension of Time

Dear Attorney Bachman:

T-Mobile Northeast, LLC ("T-Mobile") respectfully requests an additional two-month extension of time to respond to the Council's request for notice of completion of construction and associated post-modification inspection reports for the following sites:

EM-T-MOBILE-049-130724, 1 Ecology Drive, Enfield (Site ID CT11534A)
EM-T-MOBILE-014-130724 405, Brushy Plains Road, Branford (Site ID NH102C)
EM-T-MOBILE-080-130903, 11 West Peak Drive, Meriden (Site ID11132B)
EM-T-MOBILE-034-130531A, 41 Padnaram Road, Danbury (CT11896A)
EM-T-MOBILE-091-130531A, 302 Ball Pond Road, New Fairfield (CT11797A)
EM-T-MOBILE-009-130611, 38 Spring Hill Road, Bethel (CT11115F)
EM-T-MOBILE-017-130611, 2 Willis Street, Bristol (CT11270C)
EM-T-MOBILE-034-130726, 7 West View, Danbury (CT11923C)
EM-T-MOBILE-166-130816, Route 322 aka Meridan Road aka 347 East Street, Wolcott (CT11494B)
EM-T-MOBILE-004-130531, 81 Montevideo Road, Avon (CT11284A)
EM-T-MOBILE-033-130719, 179 Shunpike Road, Cromwell (CT11059C)
EM-T-MOBILE-166-130726, Andrew Road, Wolcott (CT11403A)

T-Mobile has filed the appropriate compliance filings for several third quarter sites, but needs additional time to provide the requested information for the above-referenced sites. T-Mobile has diligently obtained much of the required documentation, and is working with its vendors and engineers to obtain the proper closeout records. T-Mobile continues to actively compile the requested information, but needs additional time to do so.

COHEN and WOLF P.C.
ATTORNEYS AT LAW

Please do not hesitate to let me know if you have any questions.

Sincerely,

Rachel A. Schwartzman

RAS/lcc

cc: Samuel Simons, T-Mobile Northeast, LLC (via electronic mail)
Mark Richard, T-Mobile Northeast, LLC (via electronic mail)
Robert Stanford, Vertical Development, LLC (via electronic mail)
Julie Kohler, Esq. (via electronic mail)

1115 Broad Street
P.O. Box 1821
Bridgeport, CT 06601-1821
Tel: (203) 368-0211
Fax: (203) 394-9901

158 Deer Hill Avenue
Danbury, CT 06810
Tel: (203) 792-2771
Fax: (203) 791-8149

320 Post Road West
Westport, CT 06880
Tel: (203) 222-1034
Fax: (203) 227-1373

657 Orange Center Road
Orange, CT 06477
Tel: (203) 298-4066
Fax: (203) 298-4068

COHEN and WOLF P.C.
ATTORNEYS AT LAW

RACHEL A. SCHWARTZMAN

Please Reply To: Bridgeport
Writer's Direct Dial: (203) 337-4110
E-Mail: rschwartzman@cohenandwolf.com

December 23, 2014

Via Electronic and Overnight Mail

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

Re: T-Mobile Exempt Modification Compliance Filings
Connecticut Siting Council Audit Letter dated November 3, 2014
Request For Extension of Time

Dear Attorney Bachman:

T-Mobile Northeast, LLC ("T-Mobile") respectfully requests a 60-day extension of time to March 2, 2015 to respond to the Council's request, dated November 3, 2014, for exempt modification compliance data. The attached spreadsheet provides a list of the sites for which T-Mobile seeks a requested extension.

T-Mobile is actively compiling all of the requested information but needs additional time to provide the necessary documentation.

Please do not hesitate to let me know if you have any questions.

Sincerely,

Rachel Schwartzman

Rachel A. Schwartzman, Esq.

RAS/lcc
Enclosure

cc: Samuel Simons, T-Mobile Northeast, LLC (via electronic mail)
Mark Richard, T-Mobile Northeast, LLC (via electronic mail)
Robert Stanford, Vertical Development, LLC (via electronic mail)
Julie Kohler, Esq.

EM/TS #	Address	Town	Council Additional Conditions	Compliance with Council Additional Conditions Received	Notice of Completion Received	Decision Date
EM-T-MOBILE-043-130222	1455 Forbes Street	East Hartford	Yes	No	No	3/12/2013
EM-T-MOBILE-057-130220	150 Butternut Hollow Road	Greenwich	N/A	N/A	No	3/12/2013
EM-T-MOBILE-135-130318	555 Main Street	Stamford	Yes	No	No	4/9/2013
EM-T-MOBILE-006-130528	60 Rice Lane	Beacon Falls	Yes	No	No	6/26/2013
EM-T-MOBILE-002-130529	401 Wakelee Avenue	Ansonia	N/A	N/A	No	6/27/2013
EM-T-MOBILE-004-130531	81 Montevideo Road	Avon	N/A	N/A	No	7/9/2013
EM-T-MOBILE-034-130531A	41 Padanaram Road	Danbury	Yes	No	No	7/9/2013
EM-T-MOBILE-034-130531B	303 Boxwood Lane	Danbury	N/A	N/A	No	7/9/2013
EM-T-MOBILE-091-130531A	302 Ball Pond Road	New Fairfield	N/A	N/A	No	7/9/2013
EM-T-MOBILE-091-130531B	37 Titicus Mountain Road	New Fairfield	N/A	N/A	No	7/9/2013
EM-T-MOBILE-148-130531	90 N. Plains Industrial Road	Wallingford	N/A	N/A	No	7/9/2013
EM-T-MOBILE-101-130611	125 Washington Avenue	North Haven	N/A	N/A	No	7/10/2013
EM-T-MOBILE-009-130611	38 Spring Hill Lane	Bethel	Yes	No	No	7/11/2013
EM-T-MOBILE-017-130611	2 Willis Street	Bristol	Yes	No	No	7/12/2013
EM-T-MOBILE-110-130621	335 S. Washington Street	Plainville	N/A	N/A	No	7/12/2013
EM-T-MOBILE-033-130719	179 Shunpike Road	Cromwell	Yes	No	No	8/7/2013
EM-T-MOBILE-049-130718	1 Ecology Drive	Enfield	N/A	N/A	No	8/7/2013
EM-T-MOBILE-014-130724	405 Brushy Plain Road	Branford	Yes	No	No	8/13/2013
EM-T-MOBILE-017-130729	985 Farmington Avenue	Bristol	N/A	N/A	No	8/20/2013
EM-T-MOBILE-034-130726	7 West View Drive	Danbury	N/A	N/A	No	8/20/2013
EM-T-MOBILE-166-130726	Andrews Road	Wolcott	Yes	No	No	8/20/2013
EM-T-MOBILE-166-130816	Route 322/Meridian Road	Wolcott	N/A	N/A	No	9/3/2013
EM-T-MOBILE-080-130903	11 West Peak Drive	Meriden	Yes	No	No	9/18/2013

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

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www.ct.gov/csc

VIA ELECTRONIC AND FIRST CLASS MAIL

March 2, 2015

Rachel A. Schwartzman, Esq.
Cohen and Wolf, P.C.
1115 Broad Street
Bridgeport, CT 06604

RE: EM-T-MOBILE-049-130724, 1Ecology Drive, Enfield
EM-T-MOBILE-014-130724405, Brushy Plains Road, Branford
EM-T-MOBILE-080-130903, 11West Peak Drive, Meriden
EM-T-MOBILE-034-130531A, 41Padnaram Road, Danbury
EM-T-MOBILE-091-130531A, 302 Ball Pond Road, New Fairfield
EM-T-MOBILE-009-130611, 38 Spring Hill Road, Bethel
EM-T-MOBILE-017-130611, 2 Willis Street, Bristol
EM-T-MOBILE-034-130726, 7 West View, Danbury
EM-T-MOBILE-166-130816, Route 322 aka Meriden Road aka 347 East Street, Wolcott
EM-T-MOBILE-004-130531, 81 Montevideo Road, Avon
EM-T-MOBILE-033-130719, 179 Shunpike Road, Cromwell
EM-T-MOBILE-166-130726, Andrew Road, Wolcott

Dear Attorney Schwartzman:

The Connecticut Siting Council (Council) is in receipt of your letter dated February 27, 2015, submitted on behalf of T-Mobile Northeast, LLC, requesting an extension of time to submit a notice of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications.

The Council hereby grants a 60-day extension of time, until May 2, 2015, to submit a notice of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications.

This extension is granted with the understanding that the Council will be notified should T-Mobile Northeast, LLC need additional time beyond 60 days to submit a notice of completion and associated post modification inspection reports or decide not to proceed with construction.

Thank you for your attention to this matter.

Sincerely,

Melanie A. Bachman
Acting Executive Director

MAB/cm

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

May 29, 2013

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 CT11896A
41 Padanaram Road, Danbury, CT

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 ("Crown") owns the existing wooden telecommunications tower and related facility at 41 Padanaram Road, Danbury Connecticut (coordinates 41 25' 5.4402"/ -73 27' 51.6276"). T-Mobile intends to replace six antennas and related equipment at this existing telecommunications facility in Danbury ("Danbury 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 Mayor Mark D. Boughton, and the property owner, M & M Precast Corporation (Robert Kaufman).

The existing Danbury Facility consists of an 80 foot tall wooden monopole structure. T-Mobile plans to replace six antennas at a centerline of 80 feet. (See the plans dated April 29, 2013 attached hereto as Exhibit A). T-Mobile will also darken one of its equipment cabinets within the existing compound area near the base of the structure, as well as install fiber cable and reuse existing coax cables. The existing Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the Structural Analysis Report dated April 23, 2013 and attached hereto as Exhibit B.

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

COHEN and WOLF P.C. ATTORNEYS AT LAW

1. The proposed modification will not increase the height of the tower. T-Mobile's replacement antennas will be installed at the 80 foot level. T-Mobile's existing antennas are located at the 80 foot level; the proposal is simply to replace those existing antennas at the same height. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

2. The installation of the T-Mobile replacement equipment in the existing compound, as reflected on the attached site plan, will not require an extension of the site boundaries. T-Mobile's proposed equipment will be located entirely within the existing compound area.

3. The proposed modification to the 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 May 23, 2013 T-Mobile's operations would add 1.904% 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 15.934% 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 Danbury Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

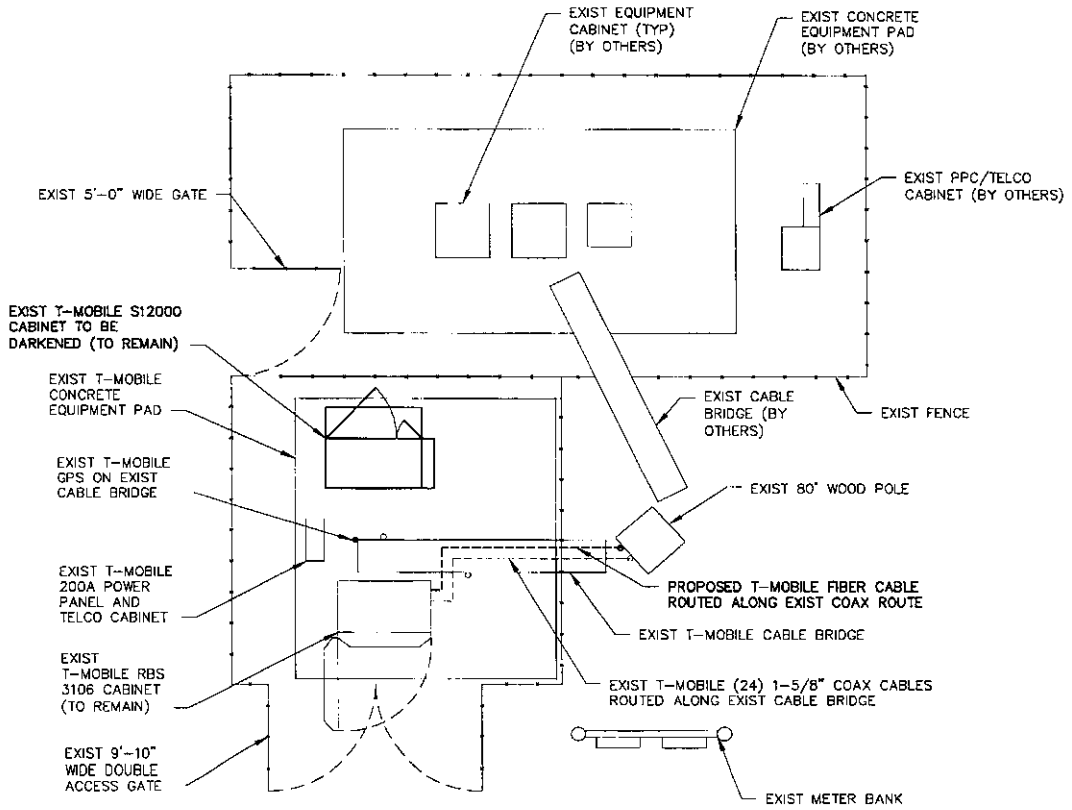
Sincerely,

Julie D. Kohler, Esq.

cc: City of Danbury, Mayor Mark D. Boughton
M & M Precast Corporation, Robert Kaufman
Jamie Ford, HPC Wireless

EXHIBIT A

N APPROX.



1/L-2

1/L-1 SITE PLAN

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

STRUCTURAL NOTE:
EXIST MOUNTS AND WOOD POLE 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) 567-6856
Fax: (845) 567-8703

T-Mobile NORTHEAST LLC.

T-MOBILE NORTHEAST, LLC. PHONE: (973) 886-8300
4 SYLVAN DRIVE
PARSIPPANY, NJ 07054

APPROVALS

T-MOBILE	
LANDLORD	
RF	
CONSTRUCTION	

PROJECT NUMBER	DESIGNED BY
6644.CT11896A	JQ

REV	DATE	REVISION	DRAWN BY
A	04/29/13	FOR COMMENT	AKS

ISSUED BY | DATE

SITE INFORMATION

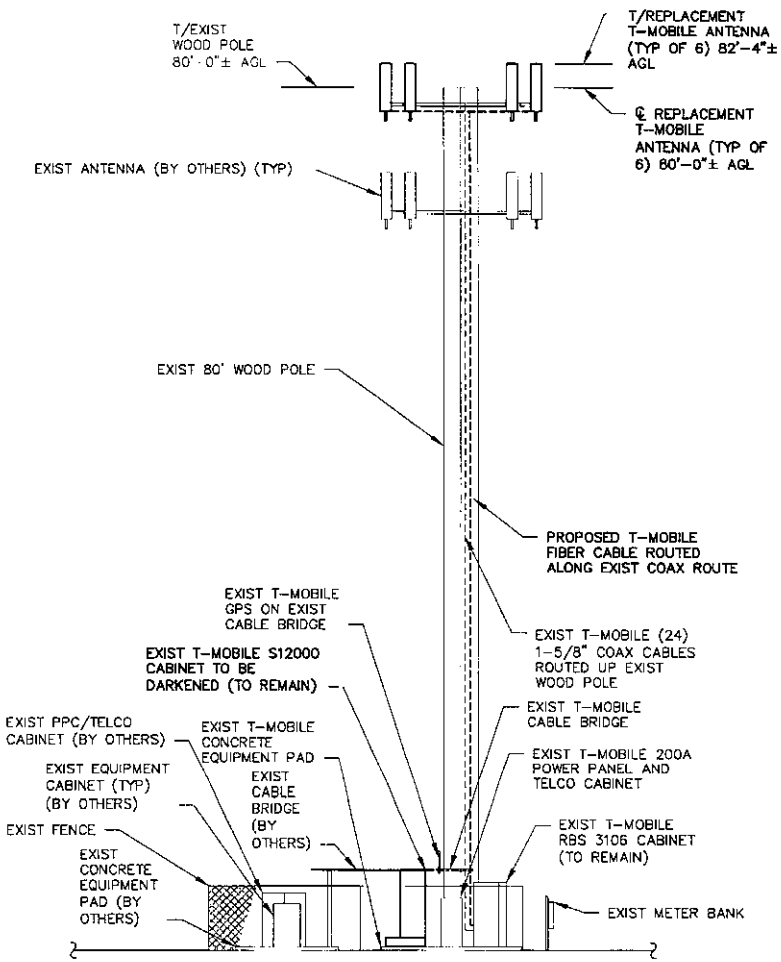
CT11896A
CT896/M&M CONCRETE POLE
41 PADANARAM RD
DANBURY, CT 06811

SHEET TITLE

SITE PLAN

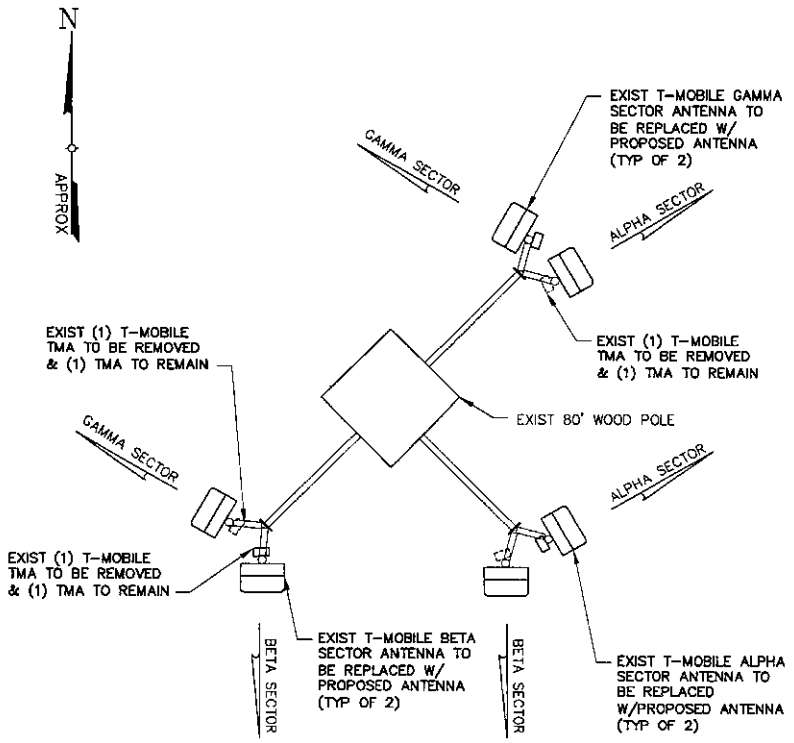
SHEET NUMBER

L-1



1 / L-2 ELEVATION

SCALE: 3/32" = 1'-0"



2 / L-2 ANTENNA PLAN

SCALE: 3/8" = 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) 567-0858
Fax: (845) 567-0703

T-Mobile
NORTHEAST LLC

T-MOBILE NORTHEAST, LLC. PHONE: (973) 586-6000
4 SYLVAN DRIVE
PARSIPPANY, NJ 07054

APPROVALS

T-MOBILE _____
LANDLORD _____
RF _____
CONSTRUCTION _____

PROJECT NUMBER	DESIGNED BY
5544.CT11896A	JQ

REV	DATE	REVISION	DRAWN BY
A	04/29/13	FOR COMMENT	AKS

ISSUED BY _____ DATE _____

SITE INFORMATION

CT11896A
CT896/M&M CONCRETE POLE
41 PADANARAM RD
DANBURY, CT 06811

SHEET TITLE

ELEVATION & ANTENNA PLAN

SHEET NUMBER

L-2

EXHIBIT B

Date: **April 23, 2013**

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Cheryl Schultz
Crown Castle
3530 Toringdon WaySuite 300
Charlotte, NC 28277
(704) 405-6632

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11896A
	Carrier Site Name:	CT11896A
Crown Castle Designation:	**Crown Castle BU Number:**	823531
	Crown Castle Site Name:	CT896/M&M Concrete Pole
	Crown Castle JDE Job Number:	232574
	Crown Castle Work Order Number:	601772
	Crown Castle Application Number:	186961 Rev. 1
Engineering Firm Designation:	**GPD Group Project Number:**	2013775.823531.02
Site Data:	**41 Padanaram Rd, Danbury, Fairfield County, CT**	
	Latitude *41° 25' 8.1"*, Longitude *-73° 27' 43"*	
	80 Foot – E-LAM Wood Monopole Tower	

Dear Cheryl Schultz,

GPD Group is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 539660, in accordance with application 186961, revision 1.

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

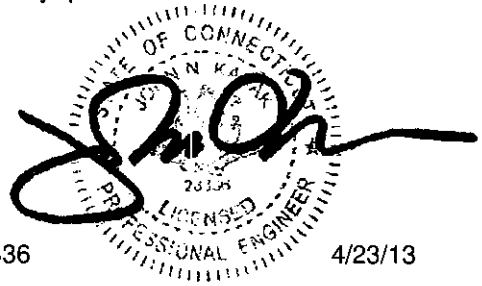
LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity***
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

***The structure has sufficient capacity once the loading changes described in the Recommendations section of this report are completed.**

The analysis has been performed in accordance with the ASCE7-05 standard, the 2005 NDS, and the 2005 Connecticut Building Code based upon a wind speed of 95 mph 3-second gust, exposure category C with topographic category 1 and crest height of 0 feet.

We at *GPD Group* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:



John N. Kabak, P.E.
Connecticut #: PEN.0028336 4/23/13

TABLE OF CONTENTS

1) INTRODUCTION

The existing 80 ft wood monopole has a rectangular cross section and is comprised of laminated sections of Southern Yellow Pine. The pole tapers from a 26.25" x 25.26" base section to a 26.25" x 12" section at the top. The structure consists of a single solid mast that is a total length of 93.5 ft with the lower 13.5 ft embedded into the ground.

This tower is a 80 ft Monopole tower designed by LAMINATED WOOD SYSTEMS, INC. in 2005. The tower was originally designed for a wind speed of 90 mph per ASCE 7-02.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of ASCE 7-05 and the 2005 Connecticut Building Code using a 3-second gust wind speed of 95 mph with no ice, exposure category C with topographic category 1 and crest height of 0 feet.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
80.0	80.0	3	Ericsson	KRY 112 144/1	1	1-5/8	1
		3	Ericsson	ERICSSON AIR 21 B2A B4P			
		3	Ericsson	ERICSSON AIR 21 B4A B2P			

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

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
80.0	80.0	1		Side Arm Mount [SO 702-3]	12	1-5/8	
		6	LPG Telecom	LGP13903	12	1-5/8	1
		6	RFS Celwave	APX16DWV-16DWVS-C			
70.0	70.0	3	Alcatel Lucent	1900MHz RRH	3	1-1/4	2
		3	Alcatel Lucent	800MHZ RRH			
		1	Powerwave Technologies	P40-16-XLPP-RR-A			
		2	RFS Celwave	APXVSPP18-C-A20			
		1		Side Arm Mount [SO 702-3]			

Notes:
1) Equipment to be removed.
2) Reserved equipment.

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
80	80			Antenna Loading (29.4 ft^2)		
70	70			Antenna Loading (29.4 ft^2)		
40	40			Antenna Loading (20.0 ft^2)		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	EBI Job #: 61051632, dated 7/27/05	3529191	CCISITES
4-TOWER MANUFACTURER DRAWINGS	E-LAM Site #: CT-11-896A, dated 9/26/05	3529192	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	GPD Job #: 2013775.823531.01, dated 4/1/13	3756544	CCISITES

3.1) Analysis Method

Microsoft Excel was used to create a model of the tower and calculate stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads.
5) Mount sizes, weights, and manufacturers are best estimates based on photos provided and determined without the benefit of a site visit by GPD.
6) All member connections and foundation steel reinforcing are assumed designed to meet or exceed the load carrying capacity of the connected member and surrounding soils respectively unless otherwise specified in this report.
7) All equipment model numbers, quantities, and centerline elevations are as provided in the CCI CAD package dated 4/17/13 with any adjustments as noted below.

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

4) ANALYSIS RESULTS

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Wood Pole		100.0	Pass
1	Base Foundation Soil Interaction		92.1	Pass

Structure Rating (max from all components) =	100.0%

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

4.1) Recommendations

The tower and foundation have sufficient capacity to carry the existing, reserved, and proposed loading. In order for the results of this analysis to be considered valid the loading modification listed below must be completed.

Loading Changes:

1.) Coax to 80 ft shall be restacked for a final configuration of (1) row of (8) on the NW side of the pole and (5) coax installed in a 2-on-3 configuration on the NE side of the pole as shown in Appendix B.

2.) The proposed KRY 112 144/1 units shall be installed behind the proposed antennas.

No structural modifications are required at this time, provided that the above listed changes are implemented.

5) DISCLAIMER OF WARRANTIES

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

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

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

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

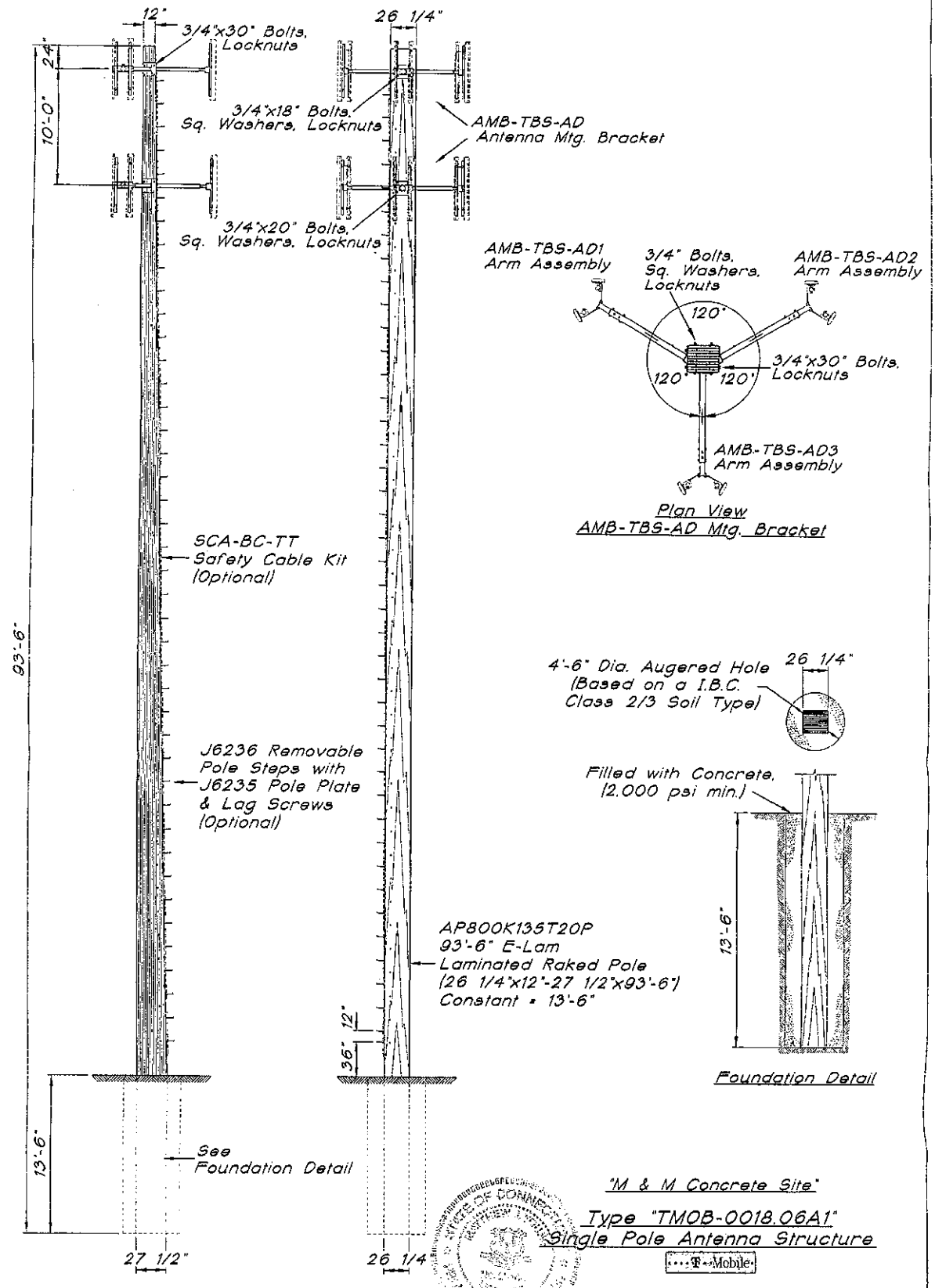
The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable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

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

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

APPENDIX A

TOWER DRAWING AND LOADING



Plan View
AMB-TBS-AD Mtg. Bracket

Foundation Detail

"M & M Concrete Site"

Type "TMOB-0018.06A1"
Single Pole Antenna Structure

T-Mobile

NO.	REVISION	DATE	CK.
1		9-26-05	

ACAD DWG. FILE: TMOB1806A1

Laminated Wood Systems, Inc.

E-LAM

P.O. BOX 386, SEWARD, NE 68434 1-800-949-ELAM

DRAWN	DATE	DWG. NO.
D. Policky	9-20-05	TMOB-0018.06A1

WOOD POLE ANALYSIS
Wind Calculations
823531 CT896/M&M Concrete Pole
2013775.823531.02

Wind Loading	ASCE 7-05		I	1
Strength Design	2005 NDS		G	1.1
Wind Speed	95	mph		
Pole Shape	Rectangular			
Pole Density	0.036	kcf		
Exposure Category	C			
Pole Height	80	ft		
Zg	900	ft		
α	9.5			
Kzmin	0.85			

TOWER (Transverse) (X-X Axis)

Z (ft)	Section Height (ft)	Section Width (in)	Cross Sectional Area (in^2)	AG * 1.05 (ft^2)	Kd	Kzt	Kz	qz (lb/ft^2)	Cf	Force (kips)	Moment (kip-ft)	Weight (kips)
75.00	10.00	26.25	340.43	22.97	0.90	1.00	1.19	24.77	2.00	1.252	93.88	0.851
65.00	10.00	26.25	391.29	22.97	0.90	1.00	1.16	24.04	2.00	1.215	78.94	0.978
55.00	10.00	26.25	442.15	22.97	0.90	1.00	1.12	23.20	2.00	1.173	64.49	1.105
45.00	10.00	26.25	493.01	22.97	0.90	1.00	1.07	22.24	2.00	1.124	50.58	1.233
35.00	10.00	26.25	543.87	22.97	0.90	1.00	1.01	21.10	2.00	1.066	37.31	1.360
25.00	10.00	26.25	594.73	22.97	0.90	1.00	0.95	19.66	2.00	0.993	24.83	1.487
15.00	10.00	26.25	645.59	22.97	0.90	1.00	0.85	17.67	2.00	0.893	13.40	1.614
5.00	10.00	26.25	696.45	22.97	0.90	1.00	0.85	17.67	2.00	0.893	4.47	1.741
									Sub Total	**8.61**	**367.90**	**10.37**

TOWER (Longitudinal) (Y-Y Axis)

Z (ft)	Section Height (ft)	Section Width (in)	Cross Sectional Area (in^2)	AG * 1.05 (ft^2)	Kd	Kzt	Kz	qz (lb/ft^2)	Cf	Force (kips)	Moment (kip-ft)	Weight (kips)
75.00	10.00	12.97	340.43	11.35	0.90	1.00	1.19	24.77	2.00	0.618	46.38	0.851
65.00	10.00	14.91	391.29	13.04	0.90	1.00	1.16	24.04	2.00	0.690	44.83	0.978
55.00	10.00	16.84	442.15	14.74	0.90	1.00	1.12	23.20	2.00	0.752	41.38	1.105
45.00	10.00	18.78	493.01	16.43	0.90	1.00	1.07	22.24	2.00	0.804	36.19	1.233
35.00	10.00	20.72	543.87	18.13	0.90	1.00	1.01	21.10	2.00	0.841	29.45	1.360
25.00	10.00	22.66	594.73	19.82	0.90	1.00	0.95	19.66	2.00	0.857	21.43	1.487
15.00	10.00	24.59	645.59	21.52	0.90	1.00	0.85	17.67	2.00	0.837	12.55	1.614
5.00	10.00	26.53	696.45	23.21	0.90	1.00	0.85	17.67	2.00	0.903	4.51	1.741
									Sub Total	**6.30**	**236.73**	**10.37**

APPURTENANCES (Transverse) (X-X Axis)

	Z (ft)	CfAf (ft^2)	Kd	Kzt	Kz	qz (lb/ft^2)		Force (kips)	Moment (kip-ft)	Weight (kips)
Side Arm Mount [SO 702-3]	80.00	3.22	0.90	1.00	1.21	25.11		0.089	7.11	0.0810
(3) ERICSSON AIR 21 B2A B4P	80.00	17.40	0.90	1.00	1.21	25.11		0.481	38.46	0.3120
(3) ERICSSON AIR 21 B4A B2P	80.00	17.40	0.90	1.00	1.21	25.11		0.481	38.46	0.3120
(3) KRY 112 144/1	80.00	0.28	0.90	1.00	1.21	25.11		0.008	0.62	0.0330
Side Arm Mount [SO 702-3]	70.00	3.22	0.90	1.00	1.17	24.41		0.086	6.05	0.0810
(1) P40-16-XLPP-RR-A	70.00	9.25	0.90	1.00	1.17	24.41		0.249	17.40	0.0700
(2) APXVSPP18-C-A20	70.00	14.01	0.90	1.00	1.17	24.41		0.376	26.34	0.1600
(3) 1900MHz RRH	70.00	10.06	0.90	1.00	1.17	24.41		0.270	18.92	0.1200
(3) 800MHZ RRH	70.00	6.84	0.90	1.00	1.17	24.41		0.184	12.85	0.1500
							Sub Total	**2.22**	**166.21**	**1.32**

APPURTENANCES (Longitudinal) (Y-Y Axis)

	Z (ft)	CfAf (ft^2)	Kd	Kzt	Kz	qz (lb/ft^2)		Force (kips)	Moment (kip-ft)	Weight (kips)
Side Arm Mount [SO 702-3]	80.00	3.22	0.90	1.00	1.21	25.11		0.089	7.11	0.0810
(3) ERICSSON AIR 21 B2A B4P	80.00	17.40	0.90	1.00	1.21	25.11		0.481	38.46	0.3120
(3) ERICSSON AIR 21 B4A B2P	80.00	17.40	0.90	1.00	1.21	25.11		0.481	38.46	0.3120
(3) KRY 112 144/1	80.00	0.28	0.90	1.00	1.21	25.11		0.008	0.62	0.0330
Side Arm Mount [SO 702-3]	70.00	3.22	0.90	1.00	1.17	24.41		0.086	6.05	0.0810
(1) P40-16-XLPP-RR-A	70.00	9.25	0.90	1.00	1.17	24.41		0.249	17.40	0.0700
(2) APXVSPP18-C-A20	70.00	14.01	0.90	1.00	1.17	24.41		0.376	26.34	0.1600
(3) 1900MHz RRH	70.00	10.06	0.90	1.00	1.17	24.41		0.270	18.92	0.1200
(3) 800MHZ RRH	70.00	6.84	0.90	1.00	1.17	24.41		0.184	12.85	0.1500
							Sub Total	**2.22**	**166.21**	**1.32**

COAX (Transverse) (X-X Axis)

	Z (ft)	Af (ft^2)	Kd	Kzt	Kz	qz (lb/ft^2)	Cf	Force (kips)	Moment (kip-ft)	Weight (kips)
(5) 1-5/8"	75.00	3.30	0.90	1.00	1.19	24.77	1.20	0.108	8.09	0.1090
(5) 1-5/8", (3) 1-1/4"	65.00	3.30	0.90	1.00	1.16	24.04	1.20	0.105	6.81	0.1480
(5) 1-5/8", (3) 1-1/4"	55.00	3.30	0.90	1.00	1.12	23.20	1.20	0.101	5.56	0.1480
(5) 1-5/8", (3) 1-1/4"	45.00	3.30	0.90	1.00	1.07	22.24	1.20	0.097	4.36	0.1480
(5) 1-5/8", (3) 1-1/4"	35.00	3.30	0.90	1.00	1.01	21.10	1.20	0.092	3.22	0.1480
(5) 1-5/8", (3) 1-1/4"	25.00	3.30	0.90	1.00	0.95	19.66	1.20	0.086	2.14	0.1480
(5) 1-5/8", (3) 1-1/4"	15.00	3.30	0.90	1.00	0.85	17.67	1.20	0.077	1.15	0.1480
(5) 1-5/8", (3) 1-1/4"	9.00	0.66	0.90	1.00	0.85	17.67	1.20	0.015	0.14	0.0380
							Sub Total	**0.68**	**31.47**	**1.04**

COAX (Longitudinal) (Y-Y Axis)

	Z (ft)	Af (ft^2)	Kd	Kzt	Kz	qz (lb/ft^2)	Cf	Force (kips)	Moment (kip-ft)	Weight (kips)
(8) 1-5/8"	75.00	1.65	0.90	1.00	1.19	24.77	1.20	0.054	4.05	0.1090
(8) 1-5/8"	65.00	1.65	0.90	1.00	1.16	24.04	1.20	0.052	3.40	0.1480
(8) 1-5/8"	55.00	1.65	0.90	1.00	1.12	23.20	1.20	0.051	2.78	0.1480
(8) 1-5/8"	45.00	1.65	0.90	1.00	1.07	22.24	1.20	0.048	2.18	0.1480
(8) 1-5/8"	35.00	1.65	0.90	1.00	1.01	21.10	1.20	0.046	1.61	0.1480
(8) 1-5/8"	25.00	1.65	0.90	1.00	0.95	19.66	1.20	0.043	1.07	0.1480
(8) 1-5/8"	15.00	1.65	0.90	1.00	0.85	17.67	1.20	0.038	0.58	0.1480
(8) 1-5/8"	9.00	0.33	0.90	1.00	0.85	17.67	1.20	0.008	0.07	0.0380
							Sub Total	**0.34**	**15.73**	**1.04**

Transverse

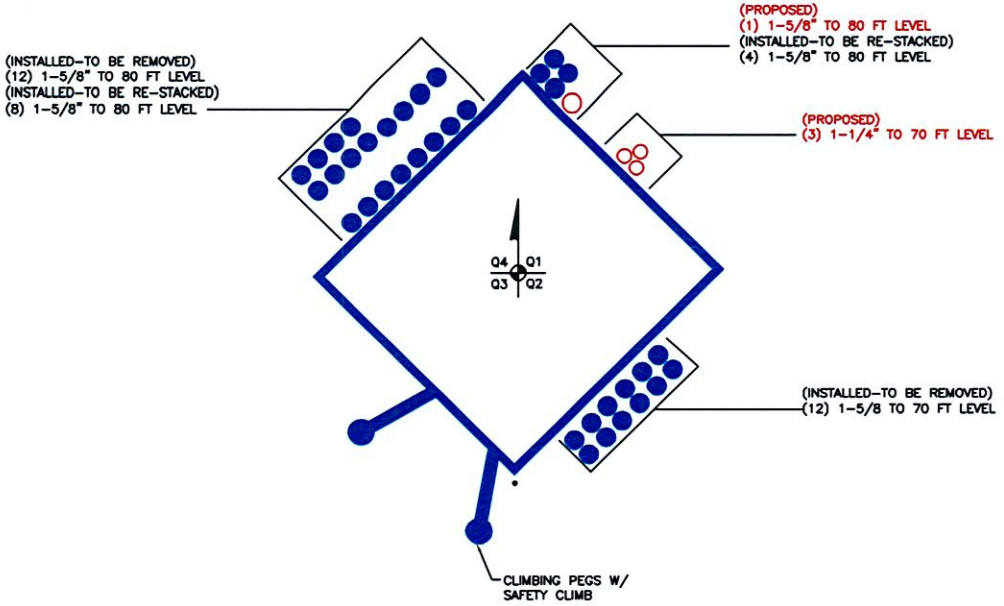
Moment (kip-ft)	Axial (kips)	Shear (kips)	Elevation
565.58	12.72	11.51	0ft

Longitudinal

Moment (kip-ft)	Axial (kips)	Shear (kips)	Elevation
418.67	12.72	8.87	0ft

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 823531 TOWER ID: C_BASELEVEL

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

APPENDIX C

ADDITIONAL CALCULATIONS

WOOD POLE ANALYSIS
Stress Calculations - Wind Loading
823531 CT896/M&M Concrete Pole
2013775.823531.02

Design Code	2005 NDS						$C_{M\ (Fb)}$	0.8	5.1.5
Species	Southern Yellow Pine		C_D	1.6	2.3.2		$C_{M\ (Ft)}$	0.8	5.1.5
Class	24F-V5	5B	C_t	1.0	2.3.3		$C_{M\ (Fv)}$	0.875	5.1.6
$F_{c\perp}$	740 psi		C_{fu}	0.92	5B		$C_{M\ (Fc\perp)}$	0.53	5.1.7
F_t	1150 psi		C_c	1.0	5.3.8		$C_{M\ (Fc)}$	0.73	5.1.8
F_c	1650 psi		C_b	1.0	3.10.4		$C_{M\ (E\ and\ Emin)}$	0.833	5.1.9
Load perpendicular to wide faces of laminations			x	20	5.3.6		F_{by}*	2240 psi	
F_{bx}	2400 psi		c	0.9	3.7.1		F_{bx}*	3072 psi	
F_{vx}	300 psi						F_t'	1472 psi	
E_x	1700000 psi						F_{vy}'	364 psi	
E_{xmin}	880000 psi						F_{vx}'	420 psi	
Load parallel to wide faces of laminations							$F_{c\perp}$'	392.2 psi	
F_{by}	1750 psi		Pole Depth (Base of foundation)	27.5	in		F_c*	1927.2 psi	
F_{vy}	260 psi		Pole Depth (Ground)	27.5	in		E_y'	1249500 psi	
E_y	1500000 psi		Pole Depth (Splice)	n/a	in		E_{ymin}'	649740 psi	
E_{ymin}	780000 psi		Pole Depth (Top)	12	in		E_x'	1416100 psi	
			Pole Width	26.25	in		E_{xmin}'	733040 psi	

Base - Load perpendicular to wide face of laminations			**Base - Load parallel to wide face of laminations**		
b	26.25	in	b	27.50	in
d	27.50	in	d	26.25	in
l_u	80.00	ft	l_u	80.00	ft
$l_{e\ (Bending)}$	147.20	ft	$l_{e\ (Bending)}$	147.20	ft
A	721.88	in^2	A	721.88	in^2
I	45493.16	in^4	I	41451.42	in^4
S	3308.59	in^3	S	3158.20	in^3
R_B	8.40		R_B	7.83	
F_{bxE}	12478.02	psi	F_{byE}	12716.51	psi
C_L	0.98	3.3.3	C_L	1.00	3.3.3
C_V	0.827	C5.3.6	C_V	1.00	C5.3.6
$l_{e\ (Compression)}$	168.00	ft	$l_{e\ (Compression)}$	168.00	ft
F_{cE}	112.12	psi	F_{cE}	90.55	psi
C_P	0.06	3.7	C_P	0.05	3.7
F_{bx}'	2540.38	psi	F_{by}'	2053.41	psi
F_c'	111.44	psi	F_c'	90.11	psi

Stress Analysis

Load Perpendicular to Wide Face of Laminations - Base

Moment (k-ft)	Axial (k)	Shear (k)	f_c (psi)	f_c/F_c'	f_b (psi)	f_b/F_b'	Interaction	Rating
565.58	12.72	11.51	17.62	0.158	2051.32	0.807	0.98	98.3%

Load Parallel to Wide Face of Laminations - Base

Moment (k-ft)	Axial (k)	Shear (k)	f_c (psi)	f_c/F_c'	f_b (psi)	f_b/F_b'	Interaction	Rating
418.67	12.72	8.87	17.62	0.196	1590.81	0.775	1.00	100.0%

WOOD POLE ANALYSIS
Stress Calculations - Wind Loading
823531 CT896/M&M Concrete Pole
2013775.823531.02

Design Code	2005 NDS						$C_{M\ (Fb)}$	0.8	5.1.5
Species	Southern Yellow Pine		C_D	1.6	2.3.2		$C_{M\ (Ft)}$	0.8	5.1.5
Class	24F-V5	5B	C_t	1.0	2.3.3		$C_{M\ (Fv)}$	0.875	5.1.6
$F_{c\perp}$	740 psi		C_{fu}	0.92	5B		$C_{M\ (Fc\perp)}$	0.53	5.1.7
F_t	1150 psi		C_c	1.0	5.3.8		$C_{M\ (Fc)}$	0.73	5.1.8
F_c	1650 psi		C_b	1.0	3.10.4		$C_{M\ (E\ and\ Emin)}$	0.833	5.1.9
Load perpendicular to wide faces of laminations			x	20	5.3.6		F_{by}*	2240	psi
F_{bx}	2400 psi		c	0.9	3.7.1		F_{bx}*	3072	psi
F_{vx}	300 psi						F_t'	1472	psi
E_x	1700000 psi						F_{vy}'	364	psi
E_{xmin}	880000 psi						F_{vx}'	420	psi
Load parallel to wide faces of laminations			Pole Depth (Base of foundation)	27.5	in		$F_{c\perp}$'	392.2	psi
F_{by}	1750 psi		Pole Depth (Ground)	27.5	in		F_c*	1927.2	psi
F_{vy}	260 psi		Pole Depth (Splice)	n/a	in		E_y'	1249500	psi
E_y	1500000 psi		Pole Depth (Top)	12	in		E_{ymin}'	649740	psi
E_{ymin}	780000 psi		Pole Width	26.25	in		E_x'	1416100	psi
							E_{xmin}'	733040	psi

Base - Load perpendicular to wide face of laminations			**Base - Load parallel to wide face of laminations**		
b	26.25	in	b	27.50	in
d	27.50	in	d	26.25	in
l_u	0.00	ft	l_u	0.00	ft
$l_{e\ (Bending)}$	6.88	ft	$l_{e\ (Bending)}$	6.56	ft
A	721.88	in^2	A	721.88	in^2
I	45493.16	in^4	I	41451.42	in^4
S	3308.59	in^3	S	3158.20	in^3
R_B	1.81		R_B	1.65	
F_{bxE}	267165.82	psi	F_{byE}	285237.33	psi
C_L	1.00	3.3.3	C_L	1.00	3.3.3
C_V	0.827	C5.3.6	C_V	1.00	C5.3.6
$l_{e\ (Compression)}$	0.10	ft	$l_{e\ (Compression)}$	0.10	ft
F_{cE}	316448022.92	psi	F_{cE}	255568630.08	psi
C_P	1.00	3.7	C_P	1.00	3.7
F_{bx}'	2540.54	psi	F_{by}'	2053.41	psi
F_c'	1927.20	psi	F_c'	1927.20	psi

Stress Analysis

Load Perpendicular to Wide Face of Laminations - Below Grade

Moment (k-ft)	Axial (k)	Shear (k)	f_c (psi)	f_c/F_c'	f_b (psi)	f_b/F_b'	Interaction	Rating
615.29	13.55	0.00	18.77	0.010	2231.61	0.878	0.88	87.8%

Load Parallel to Wide Face of Laminations - Below Grade

Moment (k-ft)	Axial (k)	Shear (k)	f_c (psi)	f_c/F_c'	f_b (psi)	f_b/F_b'	Interaction	Rating
457.05	13.55	0.00	18.77	0.010	1736.62	0.846	0.85	84.6%

Site Number	823531
Site Name	T896/M&M Concrete Pole

Caisson Analysis

Pier Properties		
Moment	419	kip-ft
Shear	9	kip
Pier Diameter	4.5	ft
Height Above Grade	0.00	ft
Depth Below Grade	13.50	ft
Donut Diameter		ft
Donut Depth		ft

Longitudinal Direction

Analysis Properties		
TIA Code	G	
Soil Safety Factor	1.33	
Water Table Depth	6.0	ft
Ignored Soil Depth	4.0	ft
Cohesion Based on	PLS Caisson	
Max Soil Capacity	100%	

Soil Properties

Layer	Top of Soil Layer (ft)	Layer Thickness (ft)	Bottom of Soil Layer (ft)	Soil Unit Weight (pcf)	Cohesion (psf)	Friction Angle (degrees)
Soil.Layer	*Soil.Top*	*Soil.Thick*	*Soil.Bottom*	*Soil.Weight*	*Soil.Cohesion*	*Soil.Phi*
1	0.00	13.5	13.50	125		35
2						
3						
4						
5						
6						
7						
8						
9						
10						

Critical Depths Below Grade		Results		
Rotation Axis	9.74 ft	Soil Capacity	68.6%	OK
Zero Shear	4.64 ft	Max Pier Moment	457	kip-ft

Moment At User Defined Depths Below Grade			
	kip-ft		kip-ft
	kip-ft		kip-ft

V1.0

Site Number	823531
Site Name	T896/M&M Concrete Pole

Caisson Analysis

Pier Properties		
Moment	566	kip-ft
Shear	12	kip
Pier Diameter	4.5	ft
Height Above Grade	0.00	ft
Depth Below Grade	13.50	ft
Donut Diameter		ft
Donut Depth		ft

Transverse Direction

Analysis Properties		
TIA Code	G	
Soil Safety Factor	1.33	
Water Table Depth	6.0	ft
Ignored Soil Depth	4.0	ft
Cohesion Based on	PLS Caisson	
Max Soil Capacity	100%	

Soil Properties

Layer	Top of Soil Layer (ft)	Layer Thickness (ft)	Bottom of Soil Layer (ft)	Soil Unit Weight (pcf)	Cohesion (psf)	Friction Angle (degrees)
Soil.Layer	*Soil.Top*	*Soil.Thick*	*Soil.Bottom*	*Soil.Weight*	*Soil.Cohesion*	*Soil.Phi*
1	0.00	13.5	13.50	125		35
2						
3						
4						
5						
6						
7						
8						
9						
10						

Critical Depths Below Grade		
Rotation Axis	9.73	ft
Zero Shear	4.62	ft

Results		
Soil Capacity	92.1%	OK
Max Pier Moment	615	kip-ft

Moment At User Defined Depths Below Grade			
	kip-ft		kip-ft
	kip-ft		kip-ft

V1.0

EXHIBIT C

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

T-Mobile Existing Facility

Site ID: CT11896A

M&M Concrete Pole
41 Padanaram Road
Danbury, CT 06811

May 23, 2013

EBI Project Number: 62136624

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

EBI Consulting
environmental | engineering | due diligence

May 23, 2013

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

Re: Emissions Values for Site: **CT11896A - M&M Concrete Pole**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 41 Padanaram Road, Danbury, 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 band 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 41 Padanaram Road, Danbury, 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 **80 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	CT11896A - M&M Concrete Pole
Site Addresss	41 Padanaram Road, Danbury, CT 06811
Site Type	Wood Pole

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	80	74	None	0	0	48.326044	3.172662	0.31727%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	80	74	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	80	74	1-5/8"	0	0	24.163022	1.586331	0.15863%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	80	74	1-5/8"	0	0	24.163022	1.586331	0.15863%
														Sector total Power Density Value:		0.635%	

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	80	74	None	0	0	48.326044	3.172662	0.31727%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	80	74	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	80	74	1-5/8"	0	0	24.163022	1.586331	0.15863%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	80	74	1-5/8"	0	0	24.163022	1.586331	0.15863%
														Sector total Power Density Value:		0.635%	

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	80	74	None	0	0	48.326044	3.172662	0.31727%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	80	74	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	80	74	1-5/8"	0	0	24.163022	1.586331	0.15863%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	80	74	1-5/8"	0	0	24.163022	1.586331	0.15863%
														Sector total Power Density Value:		0.635%	

Site Composite MPE %

Carrier	MPE %
T-Mobile	1.904%
Sprint Nextel	11.460%
Clearwire	2.570%
Total Site MPE %	**15.934%**

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Summary

All calculations performed for this analysis yielded results that were well within the allowable limits for general public exposure to RF Emissions.

The anticipated Maximum Composite contributions from the T-Mobile facility are **1.904 % (0.635% 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 **15.934%** 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

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