**STATE OF CONNECTICUT**
**CONNECTICUT SITING COUNCIL**

RE: PETITION BY T-MOBILE NORTHEAST LLC FOR A DECLARATORY RULING THAT NO CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED IS REQUIRED TO MODIFY THE TELECOMMUNICATIONS FACILITY OFF OF ROOD ROAD, STRUCTURE NO. 20073 IN THE TOWN OF WINDSOR, CONNECTICUT

PETITION NO. _____

Date: December 10, 2014

## PETITION FOR DECLARATORY RULING

Pursuant to General Statutes § 16-50g *et seq.* and § 16-50j-1 *et seq.* of the Regulations of Connecticut State Agencies, T-Mobile Northeast LLC ("T-Mobile") submits this Petition for a Declaratory Ruling ("Petition") for a determination that T-Mobile does not require a Certificate of Environmental Compatibility and Public Need ("Certificate") for the modification of the wireless telecommunications facility Off of Rood Road, Structure #20073, Line #1779, in the Town of Windsor ("Windsor Facility" or "Facility"). T-Mobile respectfully requests that the Connecticut Siting Council ("Council") issue a declaratory ruling that the modified Windsor Facility would not have a substantial adverse impact on the environment and, accordingly, T-Mobile does not need to obtain a Certificate for the modifications to the Windsor Facility.

## II. BACKGROUND INFORMATION

### A. The Applicant

T-Mobile is a limited liability company, organized under the laws of Delaware, with a Connecticut office at 35 Griffin Road South, Bloomfield, Connecticut 06002. The company and its affiliated entities are licensed by the Federal Communications Commission ("FCC") to construct and operate a personal wireless services system in Connecticut, which has been interpreted as a "cellular system" within the meaning of General Statutes § 16-50i (a) (6). T-Mobile does not conduct any other business in the State of Connecticut other than the provision of cellular services under FCC rules and regulations.

Correspondence and/or communications regarding this Petition should be addressed to the attorney for the Applicant:

Cohen and Wolf, P.C.
1115 Broad Street
Bridgeport, CT 06604
Telephone: (203) 368-0211
Attention: Julie D. Kohler, Esq.

### B. The Windsor Facility

Structure No. 20073 is a Northeast Utilities transmission line structure that is a component of transmission Line No. 1779. In Petition No. 590, the Council approved T-Mobile's request for location of its antennas on a 16 foot pipe extension on this 148 foot Facility, bringing the height of the Facility to 164 feet.[1] Further, T-Mobile's equipment

[1] The Petition No. 590 staff report indicates that "Two sets of three-panel antennas would be mounted at centerline heights of 155 and 161 feet above ground level (agl). The total height of the structure would be 164 feet agl."

cabinets were approved to be installed on a 12-foot by 14-foot concrete pad enclosed within a fenced 18-foot by 20-foot compound.

T-Mobile subsequently modified the Facility in a notice to intent captioned EM-T-MOBILE-164-100819.

A copy of the Petition No. 590 approval and the EM-T-MOBILE-164-100819 acknowledgement are attached hereto as Exhibit A.

## II. PROPOSED MODIFICATIONS TO THE WINDSOR FACILITY

T-Mobile seeks to modify the existing Windsor Facility by:

- Replacing three (3) antennas at a centerline of 155 feet;
- Relocating three (3) existing TMAs (tower mounted amplifiers) from a centerline of 155 feet to a centerline of 161 feet;
- Adding three (3) RRUS (remote radio units) on a proposed H-frame; and
- Expanding the chain link fenced area by a dimension of 12 feet x 20 feet 3 inches to enclose the transmission structure and existing ice bridge, as required by Northeast Utilities. Portions of the existing fence would be removed to accommodate this enlarged perimeter.

Plans (revised to November 10, 2014) detailing these proposed modifications are attached hereto as Exhibit B.

The majority of proposed modifications to this Facility qualify for acknowledgement as an exempt modification. However, fencing in the transmission structure will technically expand the boundaries of the existing site. Although this is not

a substantial change, it is a deviation from the Petition No. 590 approval and T-Mobile seeks a Petition to allow for these modifications.[2]

## III. STATEMENT OF NEED

The Facility is an integral component of T-Mobile's wireless network in this area of Windsor. It is imperative that T-Mobile upgrade its antennas and equipment so that it may provide improved wireless services to people living in and traveling through this area of the State.

T-Mobile has acquired 700 MHz wireless spectrum in Connecticut to improve the service provided to customers. As T-Mobile's current spectrum deployment is in the PCS (1900 MHz) and AWS (2100 MHz) bands, this new spectrum provides an opportunity to significantly improve coverage for wireless subscribers throughout the area. The 700 MHz spectrum is primarily intended to improve in-building coverage for voice and E911 services. The 700 MHz spectrum has a better ability to penetrate building structures so it will provide superior coverage and will now become the priority use of spectrum for customers that attempt to utilize their phones in poorly covered areas.

As part of this new deployment, T-Mobile has chosen to use the best antennas available so that the best possible service can be provided to customers. The proposed antennas have a gain of 16.7 dBi, which is 1 dB more than a shorter model. This additional gain allows each existing antenna installation to provide the absolute maximum possible coverage from that location. The incremental coverage from each site will provide additional in-building coverage to residents in the area and will ensure

[2] T-Mobile also seeks approval of the other proposed facility modifications identified in Section II.

fewer areas are out of coverage. Ensuring maximum possible coverage will provide voice service to more customers and provides the ability for E911 services to more area. It will also minimize the need to build additional facilities in the Town.

To summarize, these antennas do provide a significant amount of additional coverage that is necessary to provide the full utilization of this T-Mobile installation, in order to best provide voice coverage and E911 services to residents.

## IV. THE PROPOSED MODIFICATIONS WILL NOT HAVE A SUBSTANTIAL ADVERSE ENVIRONMENTAL EFFECT

As indicated above, the reason this proposed modification is being filed as a Petition is only due to the minimal expansion of the site boundaries. Northeast Utilities has required that T-Mobile enclose the transmission tower and existing ice bridge with a fence as part of this equipment upgrade. A Letter of Approval from Northeast Utilities is attached hereto as Exhibit C.

This de minimus site expansion will not result in any adverse environmental effect. The remainder of the proposed site modifications fall within the exempt modifications criteria, so by regulation have been established to not have a substantial adverse environmental effect.

### A. Limited Site Impacts

T-Mobile is already collocated on this Facility and it seeks to install a necessary equipment upgrade. The proposed modifications would be situated on the existing structure and include an expansion of the fenced area simply to enclose two existing structures – the transmission tower and ice bridge. No clearing or grading is required

and this area is already disturbed by the presence of the existing transmission line. Further, T-Mobile does not propose any generators or HVAC units. The proposed modifications to the Facility would not have a significant adverse impact on the environment.

**B. Compliance with MPE Limits**

The operation of the proposed 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 Consulting dated November 4, 2014 T-Mobile's operations would add 5.50% 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 5.50% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit D.

**C. Structural Analysis**

The Windsor Facility is structurally capable of supporting T-Mobile's proposed antennas. The Structural Analysis Report dated September 24, 2014 and attached hereto as Exhibit E concluded that "the subject tower is adequate to support the proposed modified antenna configuration."

### D. Other Environmental Factors

T-Mobile's continued collocation on the Windsor Facility is consistent with the Council's Decision and Staff Report in Petition No. 590 approval as it relates to other environmental factors. As such, the modified Windsor Facility will not have a significant adverse effect on any of the following: the natural environment; ecological balance; public health and safety; scenic, historic, and recreational values; forests and parks; air; water purity; and fish, aquaculture, and wildlife.

## V. NOTICE REQUIRED

In accordance with R.C.S.A. § 16-50j-40(a), T-Mobile sent notice of its intent to file this Petition to each person appearing of record as an owner of property that abuts the site, as well as the appropriate municipal officials. A copy of the notice, list of the property owners and municipal officials to whom the notice was sent and a certification of such notice are included in Exhibit F.

## VI. CONCLUSION

The information and exhibits referenced above demonstrate that a Petition should issue for the modifications T-Mobile proposes at this Facility.

This Petition and the accompanying materials and documentation demonstrate that the only aspect of the proposal that would not receive acknowledgement as an exempt activity is the expansion of the fenced area. In order for T-Mobile to upgrade its facility at this location it is required to fence in the transmission structure and ice bridge

area. The expansion of the fenced area is not a significant change to the site and given the disturbed nature of the site, would not result in an adverse environmental impact.

The other modifications will all be located within the existing compound or on the tower. T-Mobile therefore respectfully requests that the Council issue a declaratory ruling approving the Windsor Facility modifications as proposed in this filing.

**Respectfully Submitted,**

**T-MOBILE NORTHEAST LLC**

By: _____

Julie D. Kohler, Esq.
Cohen and Wolf, P.C.
1115 Broad Street
Bridgeport, CT 06604
Tel. (203) 368-0211
Fax (203) 394-9901
jkohler@cohenandwolf.com

# EXHIBIT A

Petition No. 590
Omnipoint Communications, Inc. d/b/a T-Mobile USA, Inc.
Windsor, Connecticut
Staff Report
November 7, 2002

On October 30, 2002, Connecticut Siting Council (Council) member Gerald Heffernan and Robert Mercier of the Council staff met with Omnipoint Communications, Inc (Omnipoint) representatives at a Connecticut Light and Power (CL&P) right-of-way south of Rood Avenue in Windsor, Connecticut for inspection of an electric transmission structure owned by CL&P. Omnipoint, with the agreement of CL&P, proposes to modify the structure by installing antennas on a pipe mount and an equipment compound for telecommunications use and is petitioning the Council for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required for the modification.

Omnipoint proposes to install a 16-foot pipe mast on the existing 148-foot electric transmission line structure (no. 20073). Two sets of three-panel antennas would be mounted at centerline heights of 155 and 161 feet above ground level (agl). The total height of the structure would be 164 feet agl.

Three equipment cabinets would be installed on a 12-foot by 14-foot concrete pad enclosed within an 18-foot by 20-foot compound. A six-foot high chain link fence would enclose the gravel compound area. Access to the proposed site would be via a graded grassy track that would require minimal clearing. Utility service would be provided from an underground conduit that would extend from an existing utility pole on Pine Line Extension, through a residential property to the right-of-way.

The tower location abuts a residential area to the south and west, Interstate 91 to the east and a continuation of the right-of-way to the north. The right-of way contains two separate transmission lines and associated tower structures. The proposed compound site is in a cleared area that would be visible from the backyards of several homes that directly abut the right-of-way. In the petition, Omnipoint proposes to locate the compound access gate on the west side of the compound, in view of the residences. Omnipoint would be willing to relocate the gate to the north side of the compound and establish vegetative screening on the west side to minimize potential visual impacts.

Omnipoint investigated the possible shared use of existing telecommunications facilities on Cottage Grove Road and Emerson Road in Windsor and determined coverage objectives could not be met.

The worst-case power density for the telecommunications operations at the site has been calculated to be 1.9% of the applicable standard for uncontrolled environments.

The proposed project is designed to provide coverage to coverage gaps on Interstate 91 in the vicinity of Exit 36. Omnipoint contends that the proposed modification of the structure would not cause a substantial adverse environmental impact, and would prevent the construction of a new tower in the area.

# 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

Internet: ct.gov/csc

*Daniel F. Caruso*
*Chairman*


September 8, 2010

Thomas J. Regan, Esq.
Brown Rudnick LLP
CityPlace I, 185 Asylum Street
Hartford, CT 06103

RE: **EM-T-MOBILE-164-100819** - Omnipoint Communications, as subsidiary of T-Mobile USA, Inc., notice of intent to modify an existing telecommunications facility located off of Rood Avenue, Windsor, Connecticut.

Dear Attorney Regan:

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:

- Prior to the antenna/dish installation, the foundation shall be reinforced in accordance with the structural analysis prepared by CENTEK Engineering, Inc. April 29, 2010 and stamped by Carlo F. Centore, P.E.; and
- The foundation shall not exceed 100 percent of its post-construction structural rating; and
- Prior to the antenna/dish installation, a signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be submitted to the Council to certify that the reinforcements have been properly completed and the foundation does not exceed 100 percent of its post-construction structural rating.

The proposed modifications are to be implemented as specified here and in your notice dated August 19, 2010, including the placement of all necessary equipment and shelters within the tower compound. 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. Any

deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,

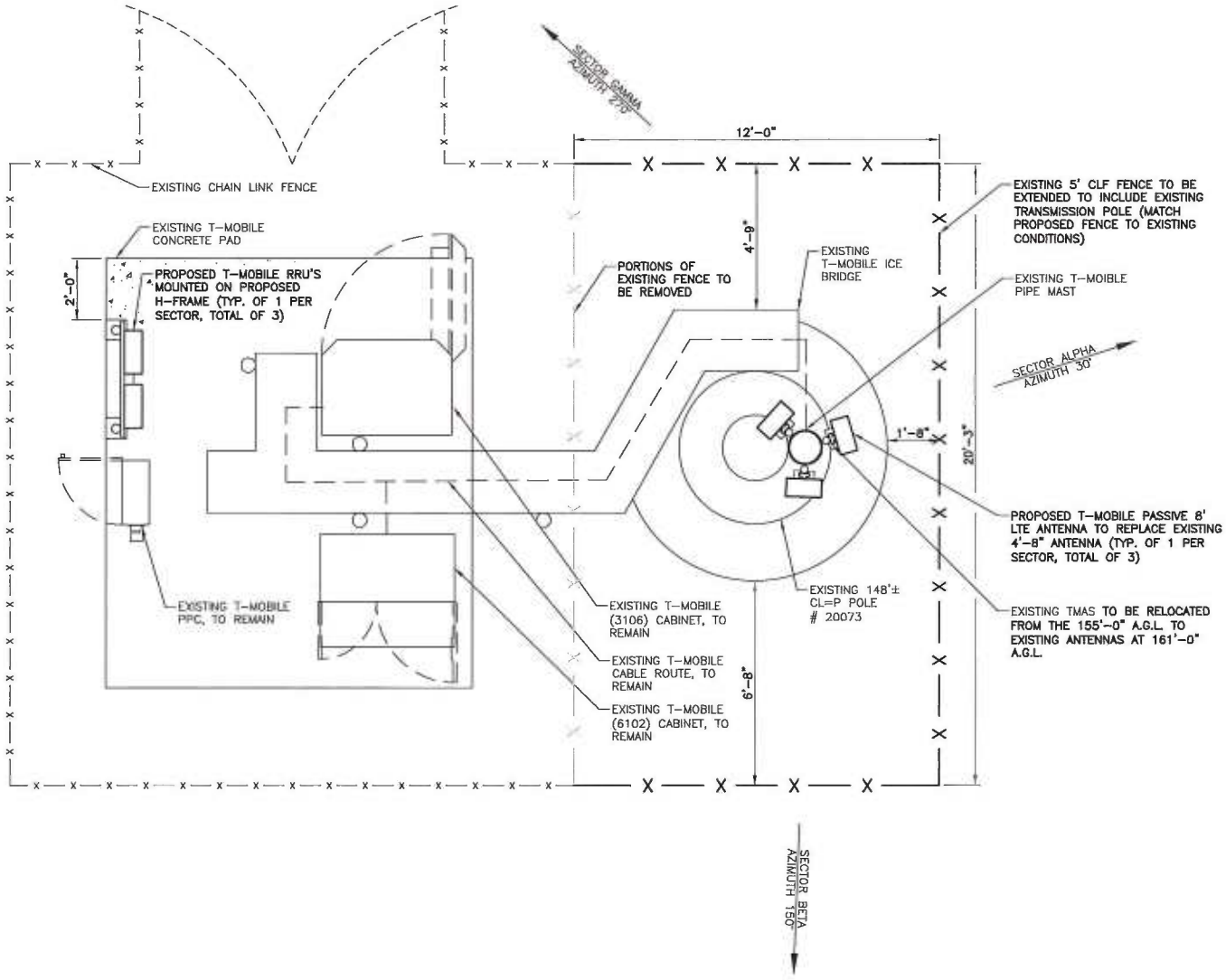
Linda Roberts

Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable Donald Trinks, Mayor, Town of Windsor
Peter Souza, Town Manager, Town of Windsor
Eric Barz, Town Planner, Town of Windsor
Daniel J. Garstka, Senior Engineer, Transmission Projects, Northeast Utilities Service Company

# EXHIBIT B




CONFIGURATION

# 704BU

APPROX. NORTH

NOTE:
ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE STRUCTURAL AND RF ENGINEERS.

## SITE PLAN

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


PREPARED BY:
EBI Consulting
environmental | engineering | due diligence
21 B Street | Burlington, MA 01803
Tel: (781) 273-2500 | Fax: (781) 273-3311
www.ebiconsulting.com
EBI JOB NO.: 81140815

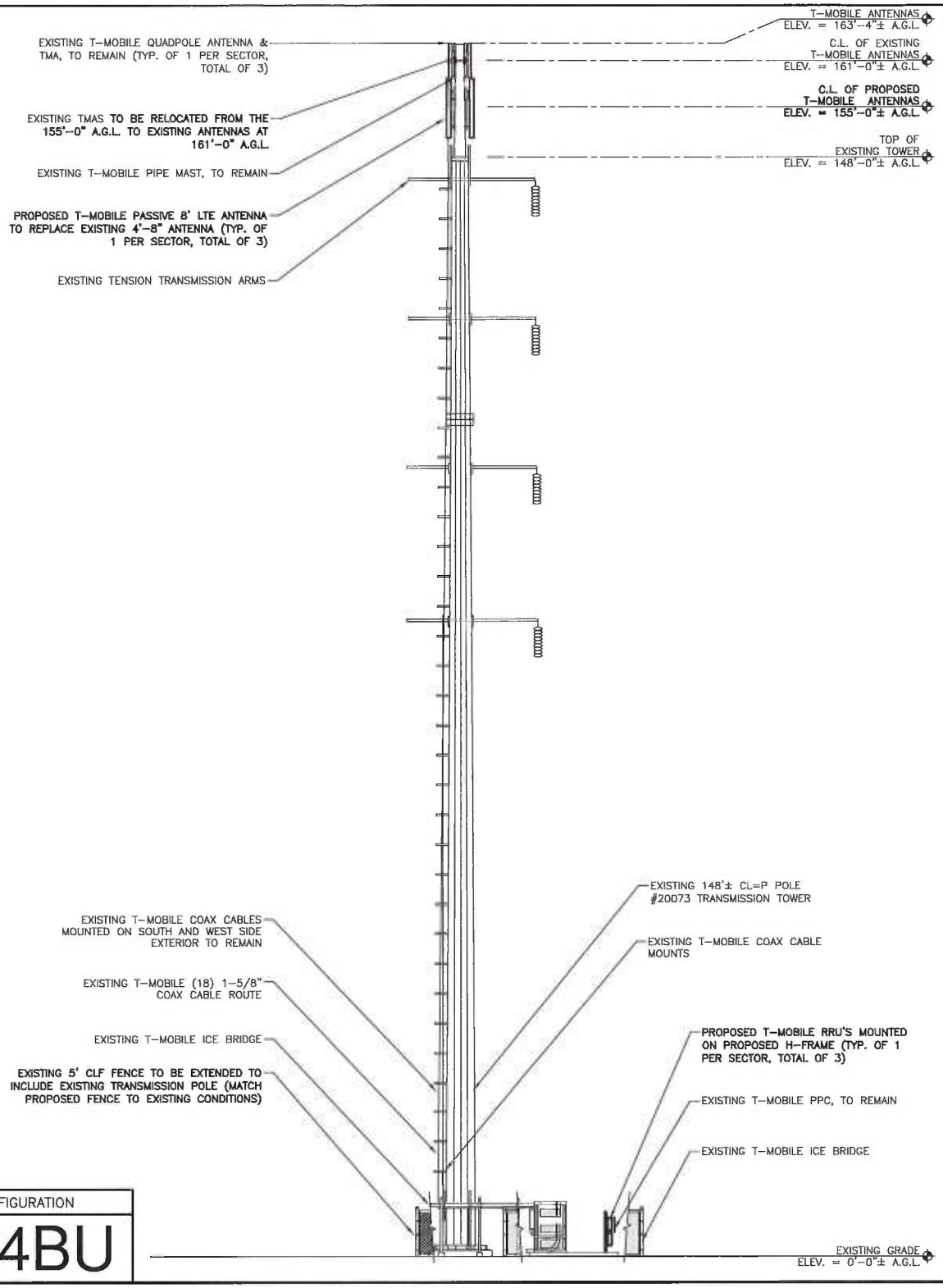
CLIENT:
T-Mobile Northeast, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860.692.7100


SITE INFO:
CT11446
CL&P MONOPOLE, WINDSOR
OFF OF ROOD ROAD POLE #20073, LINE 1779
WINDSOR, CT. 06095

| SUBMITTALS | | | |
|---|---|---|---|
| NO. | DATE | DESCRIPTION | BY |
| A | 08/06/00 | FOR REVIEW | SH |
| B | 10/27/14 | PER COMMENTS | SS |
| C | 11/10/14 | ANTENNAS COMMENTS | MK |
| | | | |

DRAWN BY: SH
CHECKED BY: PM
DATE: 08/01/14

SHEET NO: LE-1




CONFIGURATION

# 704BU

NOTE:
ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE STRUCTURAL AND RF ENGINEERS.

## ELEVATION

SCALE: 1:20


PREPARED BY:
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environmental | engineering | due diligence
21 B Street | Burlington, MA 01803
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www.ebiconsulting.com
EBI JOB NO.: 81140815

CLIENT:
T-Mobile Northeast, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860.692.7100


SITE INFO:
CT11446
CL&P MONOPOLE, WINDSOR
OFF OF ROOD ROAD POLE #20073, LINE 1779
WINDSOR, CT. 06095

| SUBMITTALS | | | | DRAWN BY: | SHEET NO: |
|---|---|---|---|---|---|
| NO. | DATE | DESCRIPTION | BY | SH | LE-2 |
| A | 08/06/00 | FOR REVIEW | SH | CHECKED BY: PM | |
| B | 10/27/14 | PER COMMENTS | SS | | |
| C | 11/10/14 | ANTENNAS COMMENTS | MK | DATE: 08/01/14 | |
| | | | | | |

# EXHIBIT C

Northeast
Utilities System

56 Prospect Street, Hartford, CT 06103

Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270
(203) 665-5000

October 31, 2014

Mr. Mark Richard
T-Mobile
35 Griffin Rd.
Bloomfield, CT 06002

RE: T-Mobile Antenna Site, CT-11 446A, Rood Rd., Windsor CT, structure 20073.

Dear Mr. Richard:

Based on our reviews of the site drawings, the structural analysis provided by Centek Engineering and, and the foundation analyses performed by Centek Engineering, we have reviewed for acceptance this modification

Since there are no outstanding structural or site related issues to resolve at this time, construction at these locations may begin as soon as scheduling allows. You may contact Mr. O'Brien (860-665-6987); once the lease issues are secured you may then contact Mr. John Landry directly (860-665-5425) to begin the construction arrangements

Sincerely,

Robert Gray
Transmission Line Engineering

Ref: CT11446A_L700_CD_REV.C_704BU_10.21.14.pdf

Ref: 14025.010 - CT11446A Structural Analysis Rev0 14-09-24.pdf

# EXHIBIT D

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11446A

CL&P Monopole, Windsor
Off of Rood Road Pole #20073, Line 1779
Windsor, CT 06095

**November 4, 2014**

**EBI Project Number: 62145548**

| Site Compliance Summary | |
|---|---|
| Compliance Status: | COMPLIANT |
| Site total MPE% of FCC general public allowable limit: | 5.50 % |

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

EBI Consulting
environmental | engineering | due diligence

November 4, 2014

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

Emissions Analysis for Site: **CT11446A – CL&P Monopole, Windsor**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **Off of Rood Road Pole #20073, Line 1779, Windsor, 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 $\mu W/cm^2$ 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 ($\mu W/cm^2$). The general population exposure limit for the 700 MHz Band is 467 $\mu W/cm^2$, and the general population exposure limit for the PCS and AWS bands is 1000 $\mu W/cm^2$. 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 **Off of Rood Road Pole #20073, Line 1779, Windsor, 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, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of 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 (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel

2) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

5) 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.

6) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antennas used in this modeling are the **RFS APX16DWV-16DWVS-E-A20** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **RFS APX16DWV-16DWVS-E-A20** has a maximum gain of **16.3 dBd** at its main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antenna mounting height centerlines of the proposed antennas are **161 feet and 155 feet** above ground level (AGL).

9) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general public threshold limits.

EBI Consulting
environmental | engineering | due diligence

## T-Mobile Site Inventory and Power Data

| Sector: | A | Sector: | B | Sector: | C |
|---|---|---|---|---|---|
| Antenna #: | **1** | Antenna #: | **1** | Antenna #: | **1** |
| Make / Model: | RFS APX16DWV-16DWVS-E-A20 | Make / Model: | RFS APX16DWV-16DWVS-E-A20 | Make / Model: | RFS APX16DWV-16DWVS-E-A20 |
| Gain: | 16.3 dBd | Gain: | 16.3 dBd | Gain: | 16.3 dBd |
| Height (AGL): | 161 feet | Height (AGL): | 161 feet | Height (AGL): | 161 feet |
| Frequency Bands | 1900 MHz(PCS) / 2100 MHz (AWS) | Frequency Bands | 1900 MHz(PCS) / 2100 MHz (AWS) | Frequency Bands | 1900 MHz(PCS) / 2100 MHz (AWS) |
| Channel Count | 6 | Channel Count | 6 | # PCS Channels: | 6 |
| Total TX Power: | 240 | Total TX Power: | 240 | # AWS Channels: | 240 |
| ERP (W): | 3,833.82 | ERP (W): | 3,833.82 | ERP (W): | 3,833.82 |
| Antenna A1 MPE% | 1.53 | Antenna B1 MPE% | 1.53 | Antenna C1 MPE% | 1.53 |
| Antenna #: | **2** | Antenna #: | **2** | Antenna #: | **2** |
| Make / Model: | Commscope LNX-6515DS-VTM | Make / Model: | Commscope LNX-6515DS-VTM | Make / Model: | Commscope LNX-6515DS-VTM |
| Gain: | 14.6 dBd | Gain: | 14.6 dBd | Gain: | 14.6 dBd |
| Height (AGL): | 155 feet | Height (AGL): | 155 feet | Height (AGL): | 155 feet |
| Frequency Bands | 700 Mhz | Frequency Bands | 700 Mhz | Frequency Bands | 700 Mhz |
| Channel Count | 1 | Channel Count | 1 | Channel Count | 1 |
| Total TX Power: | 30 | Total TX Power: | 30 | Total TX Power: | 30 |
| ERP (W): | 445.37 | ERP (W): | 445.37 | ERP (W): | 445.37 |
| Antenna A2 MPE% | 0.30 | Antenna B2 MPE% | 0.30 | Antenna C2 MPE% | 0.30 |

| **Site Composite MPE%** | |
|---|---|
| **Carrier** | **MPE%** |
| T-Mobile | **5.50** |
| No Additional Carriers | |
| **Site Total MPE %:** | **5.50 %** |

| | |
|---|---|
| T-Mobile Sector 1 Total: | 1.83 % |
| T-Mobile Sector 2 Total: | 1.83 % |
| T-Mobile Sector 3 Total: | 1.83 % |
| | |
| Site Total: | 5.50 % |

EBI Consulting
environmental | engineering | due diligence

## Summary

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

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

| T-Mobile Sector | Power Density Value (%) |
|---|---|
| Sector 1: | 1.83 % |
| Sector 2: | 1.83 % |
| Sector 3 : | 1.83 % |
| T-Mobile Total: | 5.50 % |
| | |
| Site Total: | 5.50 % |
| | |
| Site Compliance Status: | **COMPLIANT** |

The anticipated composite MPE value for this site assuming all carriers present is **5.50%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

Scott Heffernan
RF Engineering Director

**EBI Consulting**
21 B Street
Burlington, MA 01803`

# EXHIBIT E

CENTEK engineering

Centered on Solutions℠

# Structural Analysis of Antenna Mast and CL&P Pole

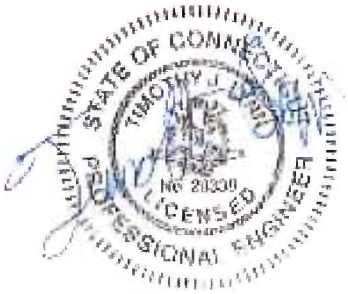
T-Mobile: CT11446A

CL&P Structure No. 20073
148' Electric Transmission Pole

Rood Ave,
Windsor, CT

CENTEK Project No. 14025.010

Date: September 24, 2014




**Prepared for:**
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# Table of Contents

## *Introduction*

The purpose of this report is to analyze the existing 51' long antenna mast and 148' CL&P pole located off Rood Ave in Windsor, CT for the proposed antenna and equipment upgrade by T-Mobile.

The proposed loads consist of the following:

- T-MOBILE (Existing to Remain):

  Antennas: Three (3) RFS APX16DWV-16DWVS-E-A20 panel antennas and three (3) RFS ATMAA1412D-1A20 TMA's flush mounted on the existing pipe mast with a RAD center elevation of 161-ft above tower base plate.
  Coax Cables: Eighteen (18) 1-5/8" ∅ coax cables mounted to the exterior of the existing CL&P pole and antenna mast.

- T-MOBILE (Existing to Relocate):

  Antennas: Three (3) RFS ATMAA1412D-1A20 TMA's flush mounted on the existing pipe mast with a RAD center elevation of 155-ft above tower base plate to be relocated to 161-ft above tower base plate.

- T-MOBILE (Existing to Remove):

  Antennas: Three (3) RFS APX16DWV-16DWVS-E-A20 panel antennas flush mounted on the existing pipe mast with a RAD center elevation of 155-ft above tower base plate.

- **T-MOBILE (Proposed):**

  **Antennas: Three (3) Andrew LNX-6515DS panel antennas flush mounted on the existing pipe mast with a RAD center elevation of 155-ft above tower base plate.**

## *Primary assumptions used in the analysis*

- Allowable steel stresses are defined by AISC-ASD 9th edition for design of the PCS Mast and antenna supporting elements.
- ASCE Manual No. 72, "Design of Steel Transmission Pole Structures Second Edition", defines allowable steel stresses for evaluation of the CL&P utility pole.
- All utility pole members are adequately protected to prevent corrosion of steel members.
- All proposed antenna mounts are modeled as listed above.
- Pipe mast will be properly installed and maintained.
- No residual stresses exist due to incorrect pole erection.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds conform to the requirements of AWS D1.1.
- Pipe mast and utility pole will be in plumb condition.
- Utility pole was properly installed and maintained and all members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
- Any deviation from the analyzed loading will require a new analysis for verification of structural adequacy.

## Analysis

Structural analysis of the existing antenna mast was independently completed using the current version of RISA-3D computer program licensed to CENTEK Engineering, Inc.

The existing mast consisting of a 10-in SCH. 40 x 12.5-ft long pipe flange connected to a 12-in SCH. 40 x 38.5-ft long pipe connected at two points to the existing tower was analyzed for its ability to resist loads prescribed by the TIA/EIA standard. Section 5 of this report details these gravity and lateral wind loads. NESC prescribed loads were also applied to the mast structure in order to obtain reactions needed for analyzing the CL&P pole structure. These loads are developed in Section 7 of this report. Load cases and combinations used in RISA-3D for TIA/EIA loading and for NESC/NU loading are listed in report Sections 6 and 8, respectively.

An envelope solution was first made to determine maximum and minimum forces, stresses, and deflections to confirm the selected section as adequate. Additional analyses were then made to determine the NESC forces to be applied to the CL&P pole structure.

The RISA-3D program contains a library of all AISC shapes and corresponding section properties are computed and applied directly within the program. The program's Steel Code Check option was also utilized.The forces calculated in RISA-3D using NESC guidelines were then applied to the CL&P pole using PLS-Pole. Maximum usage for the pole was calculated considering the additional forces from the mast and associated appurtenances.

## Design Basis

Our analysis was performed in accordance with TIA/EIA-222-F-1996, ASCE Manual No. 72 – "Design of Steel Transmission Pole Structures Second Edition", NESC C2-2007 and Northeast Utilities Design Criteria.

The CL&P pole structure, considering existing and future conductor and shield wire loading, with the proposed antenna mast was analyzed under two conditions:

- UTILITY POLE ANALYSIS

  The purpose of this analysis is to determine the adequacy of the existing utility pole to support the proposed antenna loads. The loading and design requirements were analyzed in accordance with the NU Design Criteria Table, NESC C2-2007 ~ Construction Grade B, and ASCE Manual No. 72.

  Load cases considered:

  Load Case 1: NESC Heavy

  | | |
  |---|---|
  | Wind Pressure..... | 4.0 psf |
  | Radial Ice Thickness..... | 0.5" |
  | Vertical Overload Capacity Factor..... | 1.50 |
  | Wind Overload Capacity Factor..... | 2.50 |
  | Wire Tension Overload Capacity Factor..... | 1.65 |

  Load Case 2: NESC Extreme

  | | |
  |---|---|
  | Wind Speed..... | 110 mph [1] |
  | Radial Ice Thickness..... | 0" |

  *Note 1: NESC C2-2007, Section25, Rule 250C: Extreme Wind Loading, 1.25 x Gust Response Factor (wind speed: 3-second gust)*

- MAST ASSEMBLY ANALYSIS

Mast, appurtenances and connections to the utility pole were analyzed and designed in accordance with the NU Design Criteria Table, TIA/EIA-222-F, and AISC-ASD standards.

Load cases considered:

Load Case 1:
Wind Speed..... 85 mph [2]
Radial Ice Thickness..... 0"

Load Case 2:
Wind Pressure..... 75% of 85 mph wind pressure
Radial Ice Thickness..... 0.5"

*Note 2: Per NU Mast Design Criteria Exception 1.*

## *Results*

- MAST ASSEMBLY

The existing pipe mast was determined to be structurally adequate.

| Component | Size | Stress Ratio (percentage of capacity) | Result |
|---|---|---|---|
| 10" Sch. 40 Pipe | 12.5' | 57.7% | **PASS** |
| 12" Sch. 40 Pipe | 38.5' | 32.4% | **PASS** |

- UTILITY POLE

This analysis finds that the subject utility pole is adequate to support the proposed antenna mast and related appurtenances. The pole stresses meet the requirements set forth by the ASCE Manual No. 72, "Design of Steel Transmission Pole Structures Second Edition", for the applied NESC Heavy and Hi-Wind load cases. The detailed analysis results are provided in Section 9 of this report. The analysis results are summarized as follows:

A maximum usage of **98.02%** occurs in the utility pole under the **NESC Extreme** loading condition.

POLE SECTION:

The utility pole was found to be within allowable limits.

| Tower Section | Elevation | Stress Ratio (% of capacity) | Result |
|---|---|---|---|
| Tube Number 2 | 88.00' -108.00' (AGL) | 98.02% | **PASS** |

BASE PLATE:

The base plate was found to be within allowable limits from the PLS output based on 24 bend lines.

| Tower Component | Design Limit | Stress Ratio (percentage of capacity) | Result |
|---|---|---|---|
| Base Plate | Bending | 55.98% | **PASS** |

- FOUNDATION AND ANCHORS

The existing foundation consists of a 10-ft ∅ x 23.0-ft long reinforced concrete caisson. The base of the tower is connected to the foundation by means of (28) 2.25"∅, ASTM A615-75 anchor bolts embedded approximately 8-ft into the concrete foundation structure. Foundation information was obtained from NUSCO drawing # 01139-60000. The existing foundation was reinforced with a 26-ft square by 4-ft thick reinforced concrete mat installed at the periphery of the existing caisson per the structural analysis report prepared by Centek Engineering job no. 09045.CO2 dated June 15, 2010.

BASE REACTIONS:

From PLS-Pole analysis of CL&P pole based on NESC/NU prescribed loads.

| Load Case | Shear | Axial | Moment |
|---|---|---|---|
| NESC Heavy Wind | 62.26 kips | 105.89 kips | 6582.43 ft-kips |
| NESC Extreme Wind | 77.02 kips | 58.71 kips | 7480.85 ft-kips |

Note 1 – 10% increase applied to tower base reactions per OTRM 051

ANCHOR BOLTS:

The anchor bolts were found to be within allowable limits.

| Tower Component | Design Limit | Stress Ratio (% of capacity) | Result |
|---|---|---|---|
| Anchor Bolts | Tension | 77.6% | **PASS** |

FOUNDATION:

The foundation was found to be within allowable limits.

| Foundation | Design Limit | Allowable Limit | Proposed Loading (2) | Result |
|---|---|---|---|---|
| Reinforced Conc. Pad and Pier | Overturning | 1.0 FS (1) | 1.61 FS (1) | **PASS** |

*Note 1: FS denotes Factor of Safety*
*Note 2: 10% increase to PLS base reactions used in foundation analysis per OTRM 051.*

## *Conclusion*

This analysis shows that the subject tower **is adequate** to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by Northeast Utilities and T-Mobile. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:


Timothy J. Lynn, PE
Structural Engineer

# EXHIBIT F

## CERTIFICATION OF SERVICE

I hereby certify that on the 9th day of December, 2014, a copy of the foregoing letter and notice was mailed by certified mail, return receipt requested to each of the abutting properties owners on the accompanying list.

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

Attorney for:
T-Mobile Northeast, LLC
("T-Mobile")

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

December 9, 2014

**VIA CERTIFIED MAIL**
**RETURN RECEIPT REQUESTED**

**Re: T-Mobile Northeast LLC**
**Proposed Modifications to an Existing Telecommunications Facility**
**Off of Rood Road, Northeast Utilities Transmission Structure #20073,**
**Windsor Connecticut**
**Petition to the Connecticut Siting Council**

To Whom It May Concern:

We are writing you on behalf of our client T-Mobile Northeast LLC ("T-Mobile") with respect to the above referenced matter. T-Mobile is currently collocated on the telecommunications facility located Off of Rood Road on Northeast Utilities Transmission Structure #20073 in Windsor, Connecticut and seeks to modify its existing installation to improve its coverage and service from this location.

The attached notice is being sent to you pursuant to the Regulations of Connecticut State Agencies, which require that owners of property that abut a parcel on which the facility is located be sent notice of an applicant's intent to file a Petition with the Connecticut Siting Council.

If you have any question regarding this notice or the Petition, please don't hesitate to contact the Connecticut Siting Council or the undersigned.

Sincerely,

Julie D. Kohler

Enclosure

**NOTICE**

Pursuant to Section 16-50j-40(a) of the Regulations of Connecticut State Agencies, notice is hereby given that T-Mobile Northeast LLC ("T-Mobile") will file a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") on or after December 9, 2014. T-Mobile will seek a ruling that no Certificate of Environmental Compatibility and Public Need is required to modify its antenna site at the existing telecommunication facility Off of Rood Avenue, Northeast Utilities Transmission Structure #20073, Line #1779 Windsor Connecticut ("Facility").

T-Mobile has an existing wireless telecommunications site at this Facility and antenna arrays at the 155 and 161 foot centerlines. It seeks to upgrade its equipment and replace three (3) antennas at a centerline of 155 feet; relocate three (3) existing TMAs (tower mounted amplifiers) from a centerline of 155 feet to a centerline of 161 feet; add three (3) RRUS (remote radio units) on a proposed H-frame; and expand the chain link fenced area by a dimension of 12 feet x 20 feet, 3 inches to enclose the existing transmission structure and ice bridge.

The modifications to this Facility are being proposed to allow T-Mobile to provide improved wireless service to the Town of Windsor.

The Petition will set forth the need, purpose and benefits of the modifications to the Facility. The Petition provides plans, details of the proposed modifications and explains why T-Mobile submits that these modifications present no significant adverse environmental effect.

Copies of the Petition will be available for review during normal business hours on or after December 9, 2014 at the Connecticut Siting Council:

Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

or at the offices of T-Mobile's legal counsel:

Julie D. Kohler, Esq.
Cohen and Wolf, P.C.
1115 Broad Street
Bridgeport, CT 06604
Tel. (203) 368-0211
Fax (203) 394-9901

All inquiries should be addressed to the Council or to T-Mobile's legal counsel as listed above.

# ADJACENT PROPERTY OWNERS
## 301T Rood Avenue, Windsor

Rita Baylor
263 Rood Avenue
Windsor, CT 06095

Theresa A. Macbeth and Robert B. Macbeth
273 Rood Avenue
Windsor, CT 06095

State of Connecticut
165 Capital Avenue
Hartford, CT 06106

Thomas H. Bowley and Brenda JW Bowley
255 Rood Avenue,
Windsor, CT 06095

Stacy Bentil
303 Rood Avenue
Windsor, CT 06095

Mary Armstrong
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Windsor, CT 06095

Sylvia Buckley
77 Pine Lane Extension
Windsor, CT 06095

Nancy E. Hellmann
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Windsor, CT 06095

Dennis J. Harris
89 Pine Lane Extension,
Windsor, CT 06095

Household Realty Corp.
961 Weigel Drive
Elmburst IL 60126

# ADJACENT PROPERTY OWNERS
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76 Grande Avenue
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Terry A. Mulder and Cheryl J. Mulder
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P.O. Box 270
Hartford, CT 06141

Luis Thuillard and Peggy Thuillard
86 Grande Avenue
Windsor, CT 06095

Norma Sullivan Hughes
Timothy P. Hughes
288 Rood Avenue
Windsor, CT 06095

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All inquiries should be addressed to the Council or to T-Mobile's legal counsel as listed above.

## CERTIFICATION OF SERVICE

I hereby certify that on the 9th day of December, 2014, copies of the attached notice of filing a Petition with the Connecticut Siting Council for a declaratory ruling was sent by certified mail, return receipt requested to the following:

Mayor Donald Trinks
Town of Windsor
275 Broad Street
Windsor, CT 06095

Julie D. Kohler, Esq.