NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Denise Sabo
199 Brickyard Rd Farmington, CT 06032
860-209-4690
denise@northeastsitesolutions.com

April 21, 2017

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
344 Firetown Road, Simsbury CT 06070
Latitude: 41.89470600
Longitude: -72.82653100
T-Mobile Site#: CTHA152A_L700

Dear Ms. Bachman:

T-Mobile currently maintains three (3) antennas at the 77-foot level of the existing 80-foot monopole at 344 Firetown Road, Simsbury CT 06070. The tower is owned by Simsbury Fire District. The property is owned by Simsbury Fire District. T-Mobile now intends to add three (3) new 700 MHz antenna and three (3) Bias Tees on new sector mounts. The new antennas would be installed at the 77-foot level of the tower.

Planned Modifications:

Remove: NONE

Remove and Replace: Flush mounts **(Remove)** - (1) Valmont RMQP-NP Sector Mount **(Replace)**

Install New: (3) Commscope LNX-6515DS-VTM Antenna
(3) Bias Tee

Existing to Remain:
(3)APX16DWV-16DW-S-E-A20 Antenna
(3) TMA
(12) 7/8" Coax

This facility was approved by the Town of Simsbury PZC in 2003. T-Mobile has an approved Tower Share from 2006. Please see attached.

NORTHEAST SITE SOLUTIONS

Turnkey Wireless Development

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to First Selectman Lisa L. Heavner, Elected Official and James D. Rabbitt, Director of Planning for the Town of Simsbury, as well as the property owner and the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site. ·

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Denise Sabo
Mobile: 860-209-4690
Fax: 413-521-0558
Office: 199 Brickyard Rd, Farmington, CT 06032
Email: denise@northeastsitesolutions.com

Attachments
cc: Lisa L. Heavner- First Selectman - as elected official
James D. Rabbitt- Director of Planning and Community Development
Simsbury Fire District - as tower owner and property owner

Exhibit A

Town of Simsbury

933 HOPMEADOW STREET P.O. BOX 495 SIMSBURY, CONNECTICUT 06070

Office of Community Planning and Development

October 24, 2003

RECEIVED
OCT 30 2003
TOWN OF SIMSBURY CT
TOWN CLERKS OFFICE

Mr. Kevin Kowalski, Fire Marshal
Simsbury Fire District
871 Hopmeadow Street
Simsbury, CT 06070

REFERENCE: 344 Firetown Road

Dear Mr. Kowalski:

The Simsbury Zoning Commission, at a regular meeting held on October 20, 2003, approved your application to change the size of the foundation for a public safety antenna tower and to reduce the height of a public safety antenna tower on property at 344 Firetown Road.

If you have any questions, please call at your convenience.

Very Truly Yours,

William S. Voelker, AICP
Director of Community Planning

cc: Department File
Building Department
Town Clerk
Engineering Department

CERTIFIED MAIL NO: 70

SENDER: COMPLETE THIS SEC

- Complete items 1, 2, and 3. Als item 4 if Restricted Delivery is d
- Print your name and address or so that we can return the card t
- Attach this card to the back of t or on the front if space permits.

1. Article Addressed to:

Mr. Kevin Kowalski
Fire Marshal
Simsbury Fire Dist
871 Hopmeadow Stree
Simsbury, CT 06070

2. Article Number
(Transfer from service label)

7002 0460 0001 4535 2791

PS Form 3811, August 2001 344

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

OFFICIAL USE

Postage	$ .37
Certified Fee	2.30
Return Receipt Fee (Endorsement Required)	1.75
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 4.42

Postmark Here

Sent To: Kevin Kowalski, Fire Marshal
Street, Apt. No.; or PO Box No.: ~~Simsbury Fire District~~ 871 Hopmeadow Street
City, State, ZIP+4: Simsbury, CT 06070

PS Form 3800, January 2001 See Reverse for Instructions

Road tower/pad

Telephone (860) 658-3245
Facsimile (860) 658-3217

www.town.simsbury.ct.us

8:30 - 7:00 Monday
8:30 - 4:30 Tuesday through Friday

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@po.state.ct.us
www.ct.gov/csc

June 29, 2006

Karina Fournier
Zoning Department
T-Mobile
30 Cold Spring Road
Rocky Hill, CT 06067

RE: **TS-T-MOBILE-128-060606** - Omnipoint Communications, Inc. request for an order to approve tower sharing at an existing telecommunications facility located at 344 Firetown Road, Simsbury, Connecticut.

Dear Ms. Fournier:

At a public meeting held June 27, 2006, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures. 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. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or 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.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction. Please be advised that the validity of this action shall expire one year from the date of this letter.

The proposed shared use is to be implemented as specified in your letter dated June 6, 2006, including the placement of all necessary equipment and shelters within the tower compound.

Thank you for your attention and cooperation.

Very truly yours,

Pamela B. Katz

Pamela B. Katz, P.E.
Chairman

PBK/laf

c: The Honorable Thomas E. Vincent, First Selectman, Town of Simsbury
John Loomis, Chairman of the Planning Commission, Town of Simsbury
Simsbury Fire Department

G:\EM\T-MOBILE\Simsbury\dc062706.DOC

CSC
CONNECTICUT SITING COUNCIL

ORIGINAL

RECEIVED
JUN - 6 2006
CONNECTICUT
SITING COUNCIL

T-Mobile
Get more from life®

30 Cold Spring Road, Rocky Hill, CT 06067
Karina.Fournier@T-mobile.com
860-796-3988

TS-T-MOBILE-128-060606

June 6, 2006

BY HAND

Pamela B. Katz, Chairman and
Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: **Tower Sharing Request by T-Mobile**
344 Firetown Road Simsbury, CT
Latitude: 41 54 11 / Longitude: 72 49 16

Dear Ms. Katz and Members of the Siting Council:

Pursuant to Connecticut General Statutes (C.G.S.) § 16-50aa, Omnipoint Communications, Inc. a.k.a. T-Mobile (formerly Voicestream Wireless Corp.) hereby requests an order from the Connecticut Siting Council ("Council") to approve the proposed ("Firetown FireS_MP"), in Simsbury, CT owned by the Simsbury Fire Department. T-Mobile and the Simsbury Fire Deaprtment have agreed to the shared use of the Firetown FireS_MP Tower, as detailed below.

Firetown FireS_MP

The Firetown FireS_MP Tower facility consists of an eighty foot (80') monopole ("Tower") owned and operated by the Simsbury Fire Department. T-Mobile proposes to locate antennas at a centerline mounting height of seventy seven (77') feet. The equipment will be located within a compound at the base of the tower.

FiretownFireS_MP

As shown on the enclosed plans prepared by Clough Harbour, & Associates including a site plan and tower elevation of the May 24, 2006, drawings annexed hereto as Exhibit 1, T-Mobile proposes a shared use of the Facility by placing antennas on the tower and equipment needed to provide personal communications services ("PCS") within the existing site plan. T-Mobile will install three (3) antennas at the seventy seven (77') foot level of the Tower. Three (3) associated unmanned equipment cabinets will be located at the base of the tower.

Connecticut General Statutes § 16-50aa provides that, upon written request for shared use approval, an order approving such use shall be issued, "if the council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns." (C.G.S. § 16-50aa(c)(1).) Further, upon approval of such shared use, it is exclusive and no local zoning or land use approvals are required C.G.S. §16-50x. Shared use of the FiretownFireS_MP Tower satisfies the approval criteria set forth in C.G.S. § 16-50aa as follows:

A. Technical Feasibility The existing Tower and compound were designed to accommodate multiple carriers. A structural analysis of the Tower with the proposed T-Mobile installation has been performed and is attached as Exhibit 2. The structural analysis concludes that, the tower can safely accommodate the proposed T-Mobile antennas. The proposed shared use of this Tower is technically feasible. Further there is sufficient room at the base of the facility, thus the site plan will not have to be altered.

B. Legal Feasibility Pursuant to C.G.S. § 16-50aa, the Council has been authorized to issue an order approving shared use of the existing Cingular FiretownFireS_MP. (C.G.S. § 16-50aa (C)(1)). Under the authority vested in the Council by C.G.S. § 16-50aa, an order by the Council approving the shared use of a tower would permit the Applicant to obtain a building permit for the proposed installation.

C. Environmental Feasibility The proposed shared use would have a minimal environmental effect, for the following reasons:

1.) The proposed installation would have a de minimis visual impact, and would not cause any significant change or alteration in the physical or environmental characteristics of the existing facility,

2.) The proposed installation by T-Mobile would not increase the height of the tower nor expand the site plan at the FiretownFireS_MP Tower and will be of minimal impact to the facility;

3.) The proposed installation would not increase the noise levels at the existing facility boundaries by six decibels or more;

4.) Operation of T-Mobile's antennas at this site would not exceed the total radio frequency electromagnetic radiation power density level adopted by the FCC and Connecticut Department of Health. The "worst case" exposure calculated for the operation of this facility for T-Mobile would be approximately 11.455% of the standard. See Radio Frequency Memo dated June 1, 2006, annexed hereto as Exhibit 3.

5.) The proposed shared use of the FiretownFireS_MP Tower will not require any water or sanitary facilities, or generate any air emissions or discharges to water bodies. Further, the installation will not generate any traffic other than for periodic maintenance visits.

D. Economic Feasibility The Applicant and the tower owner have agreed to share use of the FiretownFireS_MP Tower on terms agreeable to both parties. The proposed tower sharing is therefore economically feasible.

E. Public Safety As stated above and evidenced in the Radio Frequency Field Survey annexed hereto as Exhibit 3, the operation of T-Mobile's antennas at this site would not exceed the total radio frequency electromagnetic radiation power density level adopted by the FCC and Connecticut Department of Health. Further, the addition of T-Mobile's telecommunications service in the Simsbury area through shared use of the FiretownFire_MP Tower is expected to enhance the safety and welfare of local residents and travelers through the area resulting in an improvement to public safety in this area.

Conclusion

FiretownFire_MP Tower satisfies the criteria set forth in C.G.S. § 16-50aa, and advances the General Assembly's and the Siting Council's goal of preventing the proliferation of tower in the State of Connecticut. T-Mobile therefore requests the Siting Council issue an order approving the proposed shared use of the FiretownFireS_MP Tower.

Respectfully submitted,

Karina Fournier
Zoning Dept.
T-Mobile
30 Cold Spring Road
Rocky Hill, CT 06067
(860) 796-3988

cc: First Selectmen, Thomas E. Vincent

Exhibit B

Town of Simsbury
Property Listing Report

Parcel ID F05 302 001

Account 04007603

Property Information

Owner	SIMSBURY FIRE DISTRICT
Address	344 FIRETOWN ROAD
Mailing Address	869 HOPMEADOW STREET SIMSBURY , CT 06070
Land Use	- Fire Station - Volunteer
Land Class	Public Utility

Census Tract	4662010
Neighborhood	0215
Zoning	R-40
Acreage	1.29
Utilities	
Lot Setting/ Desc	/

Photo

F05-302-001-2L 03/15/2012

PARCEL VALUATIONS (Assessed value = 70% of Appraised Value)

	Appraised	Assessed
Buildings		
Outbuildings		
Improvements		
Extras		
Land		
Total	1056916	739840
Previous		

Construction Details

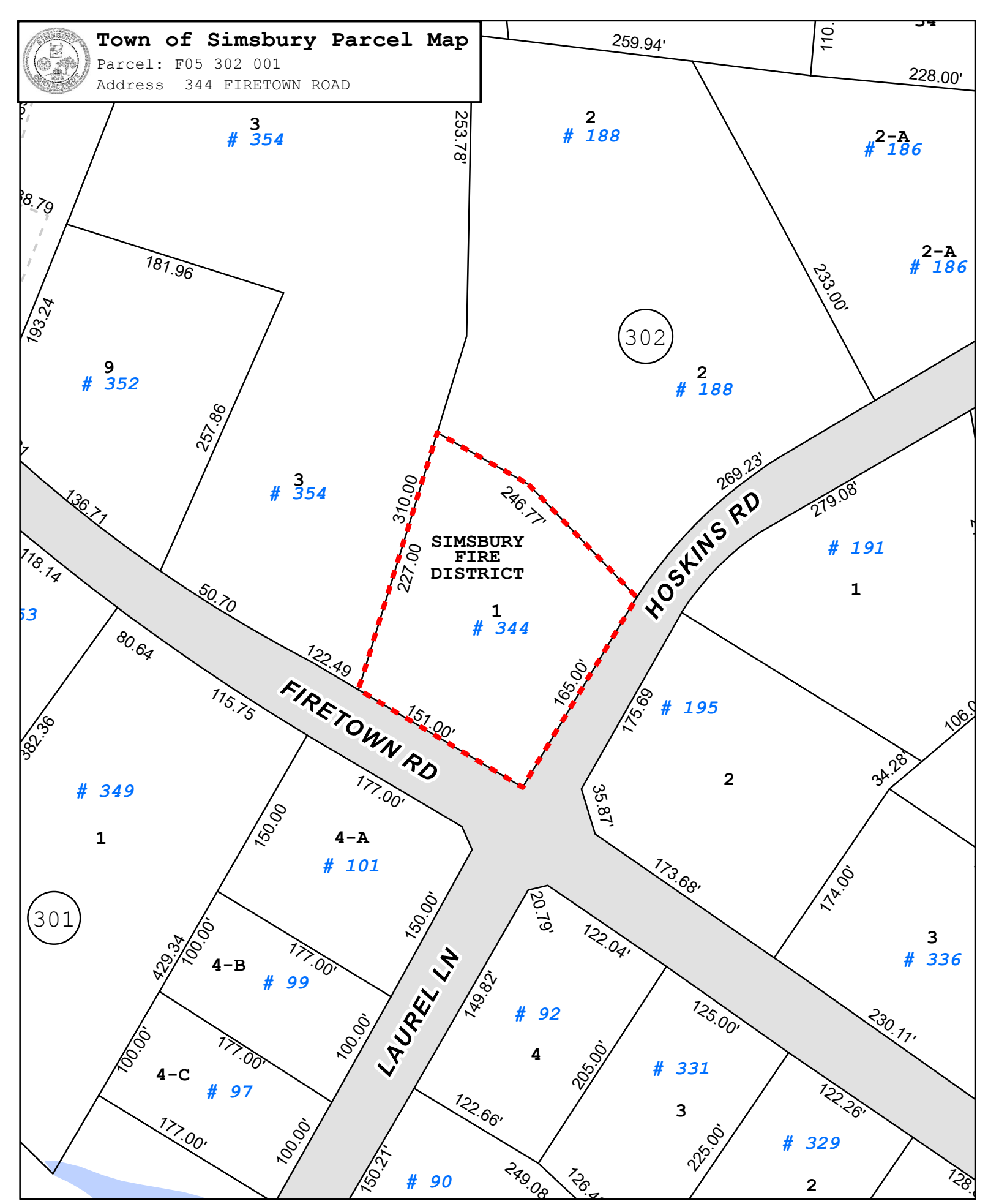
Year Built	
Stories	1
Building Style	
Building Use	
Building Condition	Very Good
Total Rooms	0
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	
Roof Cover	Asphalt

EXTERIOR WALLS:	
Primary	B. V. Solid
Secondary	
INTERIOR WALLS:	
Primary	Dry Wall
Secondary	
FLOORS:	
Primary	Hardwood
Secondary	
HEATING/AC:	
Heating Type	Hot Water
Heating Fuel	Gas
AC Type	Central

BUILDING AREA:	
Effective Building Area	
Gross Building Area	
Total Living Area	3618

SALES HISTORY:	
Sale Date	05/03/1963
Sale Price	0
Book/ Page	0142/0236

Report Created On 4/5/2017



Disclaimer: This map is for informational purposes only All information is subject to verification by any user. The Town of Simsbury and its mapping contractors assume no legal responsibility for the information contained herein.

Map Produced: April 2016

Exhibit C

ANTENNA UPGRADES
BY

T··Mobile·

T-MOBILE NORTHEAST LLC

SITE NUMBER: CTHA152A
SITE NAME: HA152/FiretownFireS_MP
SITE ADDRESS: 344 Firetown Road
Simsbury, CT 06070
(704G CONFIGURATION)

PROJECT SCOPE:

T-MOBILE, A WIRELESS TELECOMMUNICATIONS PROVIDER PROPOSES TO UPGRADE THEIR EXISTING FACILITY AS FOLLOWS:
ADD: (3) NEW ANTENNAS AND (3) SMART BIAS TEE ON A NEW ANTENNA MOUNTING PLATFORM
ADD: (1) BATTERY BACKUP CABINET ON EXISTING CONCRETE PAD.

PROJECT NOTES:

1. THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION: HANDICAPPED ACCESS IS NOT REQUIRED. POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED.
   NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.
2. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACES THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
3. DEVELOPMENT AND USE OF THE SITE WILL CONFORM TO ALL APPLICABLE CODES, ORDINANCES AND SPECIFICATIONS.

APPLICABLE STATE ADOPTION CODES:

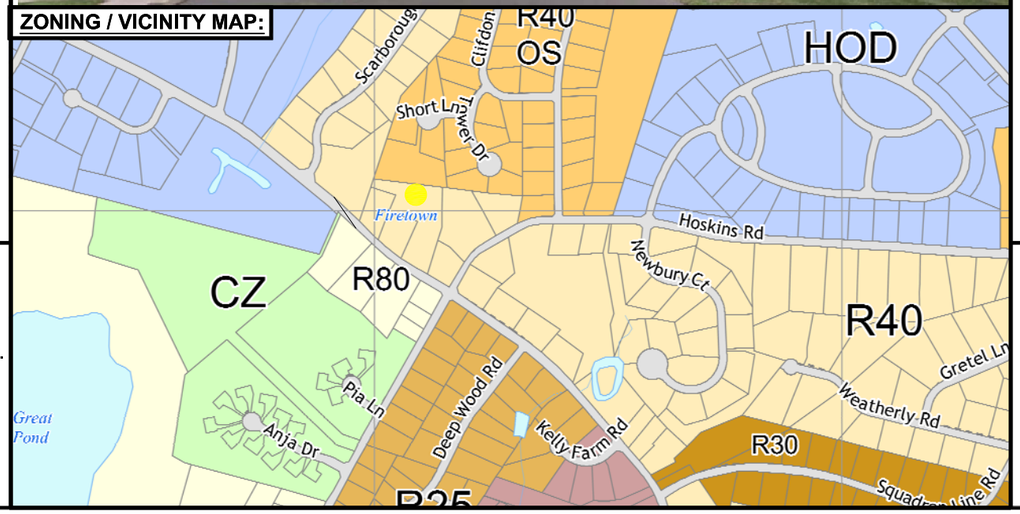
2016 CONNECTICUT STATE BUILDING CODE (CSBC).

ANSI/TIA-222-G-2005 STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

2014 NATIONAL ELECTRICAL CODE (NFPA 70) FOR POWER AND GROUNDING REQUIREMENTS.

SATELLITE IMAGE:

ZONING / VICINITY MAP:



PROJECT INFORMATION:

ADDRESS:	344 Firetown Road Simsbury, CT 06070
STRUCTURE TYPE:	Monopole
ZONING DISTRICT:	R-40
COORDINATES:	N 41° 53' 40.94" & W 72° 49' 35.51"
ANTENNA HEIGHT:	77' AGL

PROJECT TEAM:

APPLICANT:	T-MOBILE NORTHEAST, LLC. 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 860-692-7100
LANDLORD:	TOWN OF SIMSBURY CT 933 HOPMEADOW STREET SIMSBURY, CT 06070
PROJECT MANGER:	NORTHEAST SITE SOLUTIONS 420 MAIN STREET, BLDG 4 STURBRIDGE, MA 01566 SHELDON FREINCLE SHELDON@NORTHEASTSITE SOLUTIONS.COM 201-776-8521
CONSULTANTS:	FORESITE LLC 462 WALNUT ST NEWTON, MA 02460 SAEED MOSSAVAT SMOSSAVAT@FORESITELLC.COM 617-212-3123

SHEET INDEX:

APPLICANT:

T··Mobile·

T-MOBILE NORTHEAST LLC

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

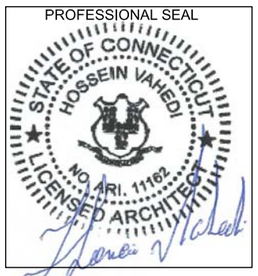
PROJECT MANGER

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development
420 Main Street, Bldg 4
Sturbridge, MA 01566
203-275-6669

CONSULTANT:

FORESITE LLC
Architects . Engineers . Surveyors
462 Walnut street
Newton, MA 02460
617-212-3123

PROFESSIONAL SEAL



REV	DESCRIPTION	DATE
A	PRELIMINARY	03/24/17
0	FINAL ISSUED FOR PERMITTING	03/24/17

SITE NUMBER: CTHA152A
SITE NAME: HA152/FiretownFireS_MP
SITE ADDRESS: 344 Firetown Road
SIMSBURY, CT 06070

SHEET TITLE:
T-1: TITLE SHEET

NOTES AND DISCLAIMERS:

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.

2. THE ARCHITECT/ENGINEER HAS MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.

3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE CLIENT'S REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK.

5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS.

6. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S / VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.

7. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS DURING CONSTRUCTION.

8. THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT SECTIONS OF THE BASIC STATE BUILDING CODE, LATEST EDITION, AND ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJEC

9. THE CONTRACTOR SHALL NOTIFY THE CLIENT'S REPRESENTATIVE IN WRITING WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE CLIENT'S REPRESENTATIVE.

10. THE WORK SHALL CONFORM TO THE CODES AND STANDARDS OF THE FOLLOWING AGENCIES AS FURTHER CITED HEREIN:

A. ASTM: AMERICAN SOCIETY FOR TESTING AND MATERIALS, AS PUBLISHED IN "COMPILATION OF ASTM STANDARDS BUILDING CODES" OR LATEST EDITION.

B. AWS: AMERICAN WELDING SOCIETY INC. AS PUBLISHED IN "STANDARD D1.1–08, STRUCTURAL WELDING CODE" OR LATEST EDITION.

C. AISC: AMERICAN INSTITUTE FOR STEEL CONSTRUCTION AS PUBLISHED IN "CODE FOR STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"; "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" (LATEST EDITION).

11. BOLTING:

A. BOLTS SHALL BE CONFORMING TO ASTM A325 HIGH STRENGTH, HOT DIP GALVANIZED WITH ASTM A153 HEAVY HEX TYPE NUTS.

B. BOLTS SHALL BE 3/4"ø MINIMUM (UNLESS OTHERWISE NOTED)

C. ALL CONNECTIONS SHALL BE 2 BOLTS MINIMUM.

12. FABRICATION:

A. FABRICATION OF STEEL SHALL CONFORM TO THE AISC AND AWS STANDARDS AND CODES (LATEST EDITION).

B. ALL STRUCTURAL STEEL SHALL BE HOT–DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 (LATEST EDITION), UNLESS OTHERWISE NOTED.

13. ERECTION OF STEEL:

A. PROVIDE ALL ERECTION EQUIPMENT, BRACING, PLANKING, FIELD BOLTS, NUTS, WASHERS, DRIFT PINS, AND SIMILAR MATERIALS WHICH DO NOT FORM A PART OF THE COMPLETED CONSTRUCTION BUT ARE NECESSARY FOR ITS PROPER ERECTION.

B. ERECT AND ANCHOR ALL STRUCTURAL STEEL IN ACCORDANCE WITH AISC REFERENCE STANDARDS. ALL WORK SHALL BE ACCURATELY SET TO ESTABLISHED LINES AND ELEVATIONS AND RIGIDLY FASTENED IN PLACE WITH SUITABLE ATTACHMENTS TO THE CONSTRUCTION OF THE BUILDING.

C. TEMPORARY BRACING, GUYING AND SUPPORT SHALL BE PROVIDED TO KEEP THE STRUCTURE SAFE AND ALIGNED AT ALL TIMES DURING CONSTRUCTION, AND TO PREVENT DANGER TO PERSONS AND PROPERTY. CHECK ALL TEMPORARY LOADS AND STAY WITHIN SAFE CAPACITY OF ALL BUILDING COMPONENTS.

14. ANTENNA INSTALLATION:

A. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND CLIENT'S REPRESENTATIVE SPECIFICATIONS.

B. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.

C. INSTALL COAXIAL / FIBER CABLES AND TERMINATIONS BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTORS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS.

15. ANTENNA AND COAXIAL / FIBER CABLE GROUNDING:

A. ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH ANDREWS CONNECTOR/SPLICE WEATHERPROOFING KIT TYPE #221213 OR EQUAL.

B. ALL COAXIAL / FIBER CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL / FIBER CABLE (NOT WITHIN BENDS).

16. RELATED WORK, FURNISH THE FOLLOWING WORK AS SPECIFIED UNDER CONSTRUCTION DOCUMENTS, BUT COORDINATE WITH OTHER TRADES PRIOR TO BID:

A. FLASHING OF OPENING INTO OUTSIDE WALLS

B. SEALING AND CAULKING ALL OPENINGS

C. PAINTING

D. CUTTING AND PATCHING

17. REQUIREMENTS OF REGULATORY AGENCIES:

A. FURNISH U.L. LISTED EQUIPMENT WHERE SUCH LABEL IS AVAILABLE. INSTALL IN CONFORMANCE WITH U.L. STANDARDS WHERE APPLICABLE.

B. INSTALL ANTENNA, ANTENNA CABLES, GROUNDING SYSTEM IN ACCORDANCE WITH DRAWINGS AND SPECIFICATION IN EFFECT AT PROJECT LOCATION AND RECOMMENDATIONS OF STATE AND LOCAL BUILDING CODES, AND SPECIAL CODES HAVING JURISDICTION OVER SPECIFIC PORTIONS OF WORK. THIS WORK INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:

C. TIA–EIA – 222 (LATEST EDITION). STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.

D. FAA – FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR AC 70/7460–IH, OBSTRUCTION MARKING AND LIGHTING.

E. FCC – FEDERAL COMMUNICATIONS COMMISSION RULES AND REGULATIONS FORM 715, OBSTRUCTION MARKING AND LIGHTING SPECIFICATION FOR ANTENNA STRUCTURES AND FORM 715A, HIGH INTENSITY OBSTRUCTION LIGHTING SPECIFICATIONS FOR ANTENNA STRUCTURES.

F. AISC – AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS (LATEST EDITION).

G. NEC – NATIONAL ELECTRICAL CODE – ON TOWER LIGHTING KITS.

H. UL – UNDERWRITER'S LABORATORIES APPROVED ELECTRICAL PRODUCTS.

I. IN ALL CASES, PART 77 OF THE FAA RULES AND PARTS 17 AND 22 OF THE FCC RULES ARE APPLICABLE AND IN THE EVENT OF CONFLICT, SUPERSEDE ANY OTHER STANDARDS OR SPECIFICATIONS.

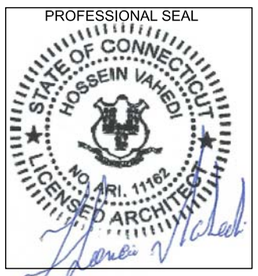
J. 2009 LIFE SAFETY CODE NFPA – 101.

APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

PROJECT MANGER
NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development
420 Main Street, Bldg 4
Sturbridge, MA 01566
203-275-6669

CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
462 Walnut street
Newton, MA 02460
617-212-3123

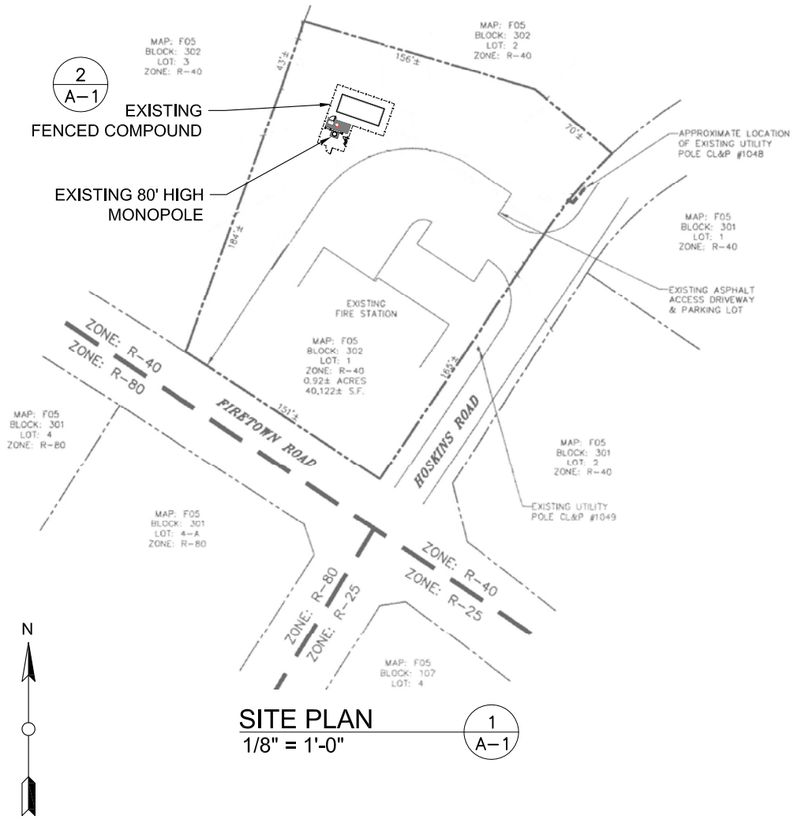
PROFESSIONAL SEAL

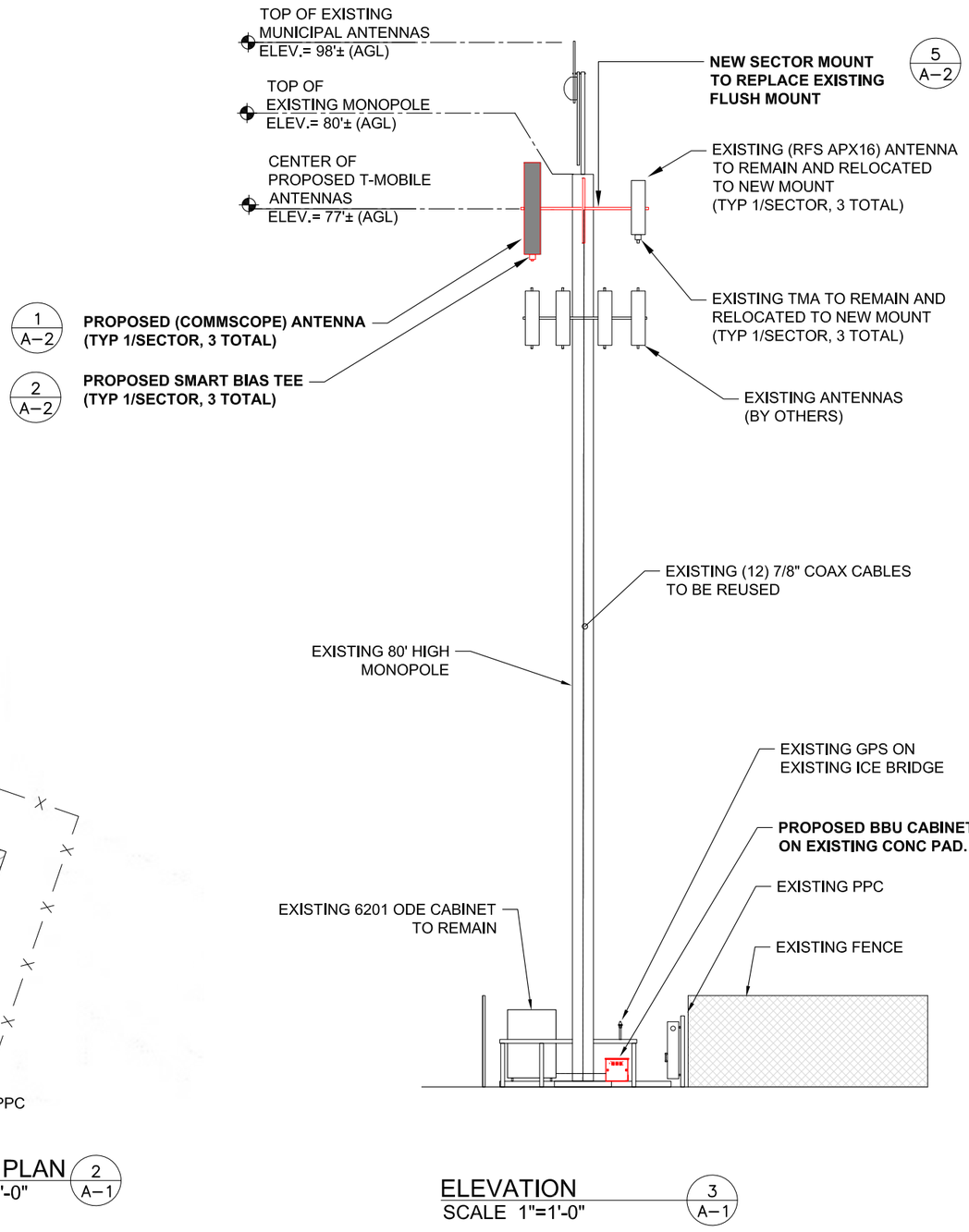


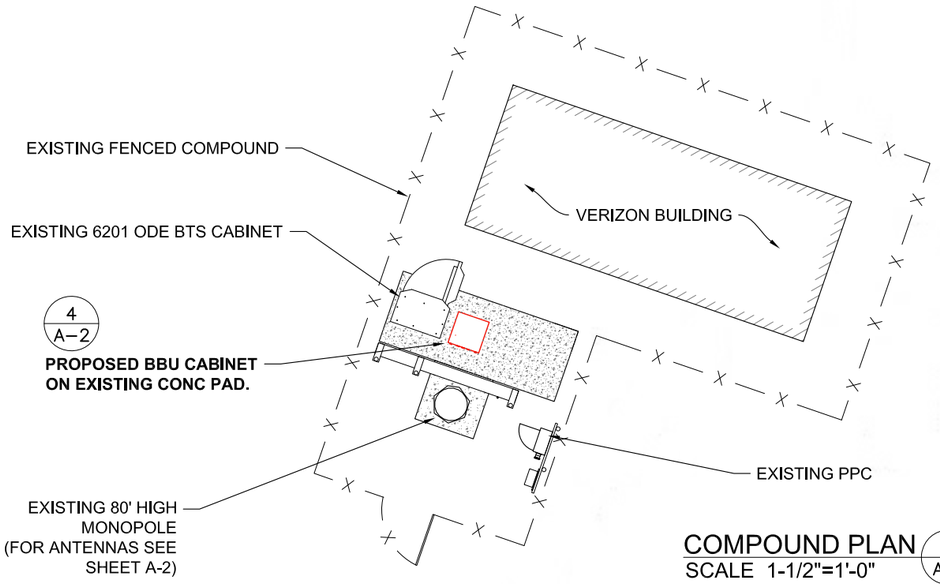
REV	DESCRIPTION	DATE
A	PRELIMINARY	03/24/17
0	FINAL ISSUED FOR PERMITTING	03/24/17

SITE NUMBER: CTHA152A
SITE NAME: HA152/FiretownFireS_MP
SITE ADDRESS: 344 Firetown Road
SIMSBURY, CT 06070

SHEET TITLE:
N-1: NOTES AND DISCLAIMERS





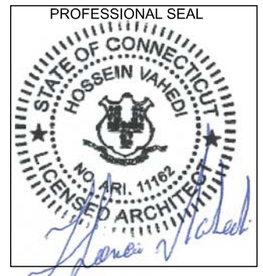


APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

PROJECT MANGER
NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development
420 Main Street, Bldg 4
Sturbridge, MA 01566
203-275-6669

CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
462 Walnut street
Newton, MA 02460
617-212-3123

PROFESSIONAL SEAL



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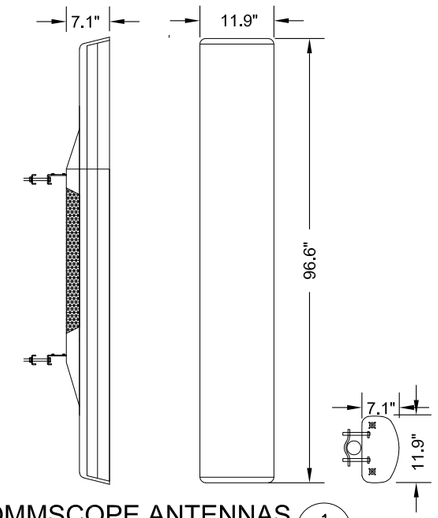
SITE NUMBER: CTHA152A
SITE NAME: HA152/FiretownFireS_MP
SITE ADDRESS: 344 Firetown Road
SIMSBURY, CT 06070

SHEET TITLE:
A-1: PLANS AND ELEVATION

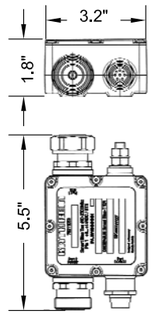
ADD:
(3) ANTENNAS

Manufacturer:	COMMSCOPE
Model:	LNX-6515DS-VTM
Footprint:	96.6"Hx11.9"Wx7.1"D
Weight:	43.7 lbs

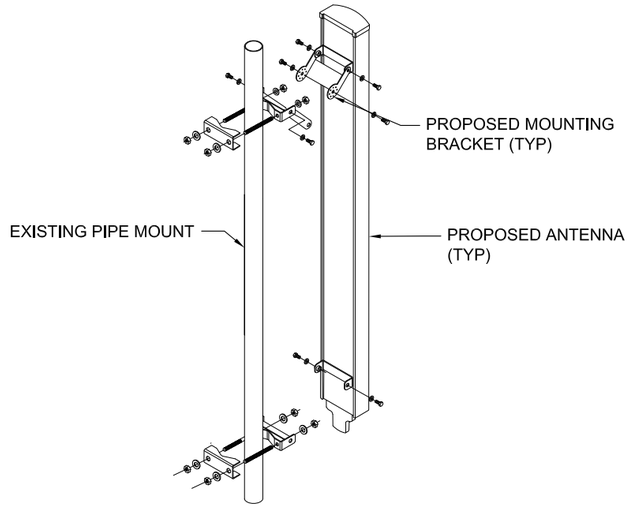


COMMSCOPE ANTENNAS 1/A–2
N.T.S

ADD:
(3) SMART BIAS TEES



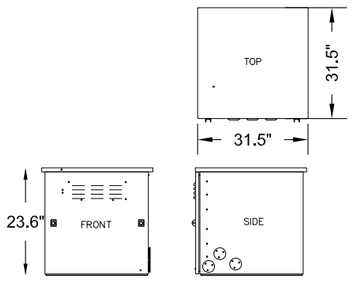
SMART BIAS TEES 2/A–2
N.T.S



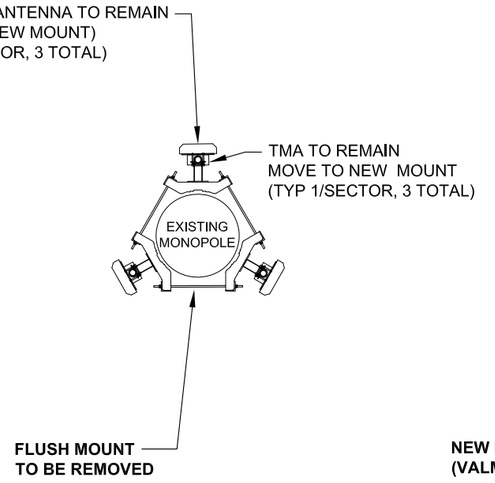
ANTENNA MOUNTING DETAIL 3/A–2
N.T.S

ADD:
(1) BATTERY BACKUP UNIT
ON EXISTING CONC PAD

Manufacturer:	ALCATEL LUCENT
Footprint:	30.55"Hx30.55"Wx29.67"D
weight:	100 lbs



BATTERY BACKUP UNIT 4/A–2
N.T.S



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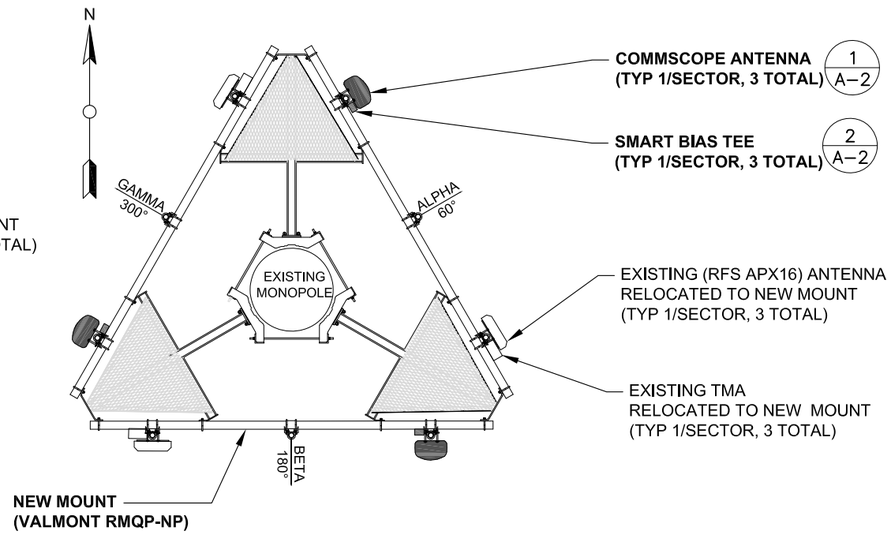


FINAL

ANTENNA PLAN 5/A–2
N.T.S

APPLICANT:
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

PROJECT MANGER
NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development
420 Main Street, Bldg 4
Sturbridge, MA 01566
203-275-6669

CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
462 Walnut street
Newton, MA 02460
617-212-3123

PROFESSIONAL SEAL
STATE OF CONNECTICUT
HOSSEIN VAHEDI
NO. ARI. 11162
LICENSED ARCHITECT

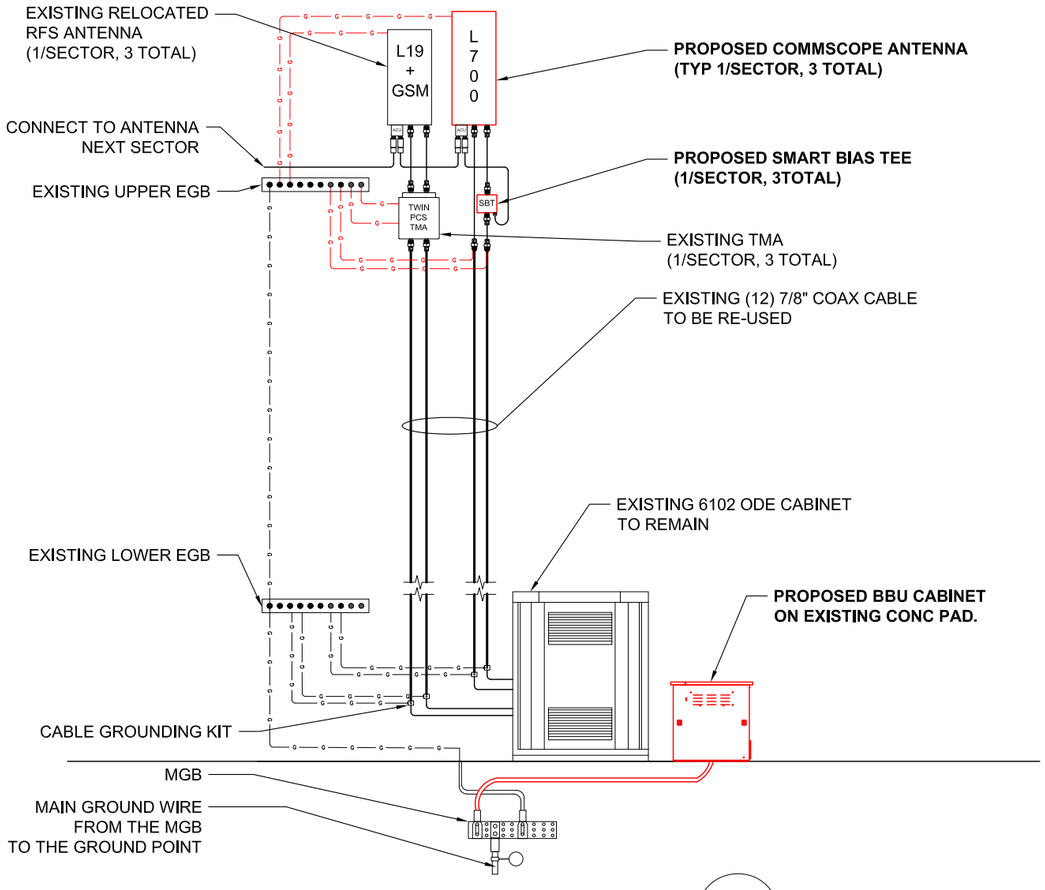
REV	DESCRIPTION	DATE
A	PRELIMINARY	03/24/17
0	FINAL ISSUED FOR PERMITTING	03/24/17

SITE NUMBER: CTHA152A
SITE NAME: HA152/FiretownFireS_MP
SITE ADDRESS: 344 Firetown Road
SIMSBURY, CT 06070

SHEET TITLE:
A-2: ANTENNAS AND EQUIPMENT

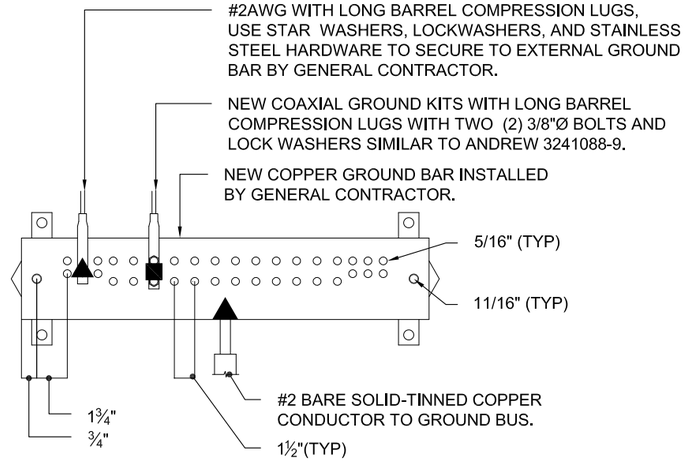
NOTES TO CONTRACTOR

1. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.
2. ALL GROUNDING WORK SHALL BE IN ACCORDANCE WITH T-MOBILE STANDARD PRACTICE.
3. ALL BUS CONNECTORS SHALL BE TWO-HOLE, LONG-BARREL TYPE COMPRESSION LUGS, T&B OR EQUAL, UNLESS OTHERWISE NOTED ON DRAWINGS. ALL LUGS SHALL BE ATTACHED TO BUSSES USING BOLTS, NUTS, AND LOCK WASHERS. NO WASHERS ARE ALLOWED BETWEEN THE ITEMS BEING GROUNDED.
4. ALL CONNECTORS SHALL BE CRIMPED USING HYDRAULIC CRIMPING TOOLS, T&B #TBM 8 OR EQUIVALENT.
5. ALL CONNECTIONS SHALL BE MADE TO BARE METAL. ALL PAINTED SURFACES SHALL BE FILED TO ENSURE PROPER CONTACT . NO WASHERS ARE ALLOWED BETWEEN THE ITEMS BEING GROUNDED. ALL CONNECTIONS ARE TO HAVE A NON-OXIDIZING AGENT APPLIED PRIOR TO INSTALLAT ION.
6. ALL COPPER BUSSES SHALL BE CLEANED, POLISHED, AND A NON-OXIDIZING AGENT APPLIED. NO FINGERPRINTS OR DISCOLORED COPPER WILL BE PERMITTED.
7. ALL BENDS SHALL BE AS SHALLOW AS POSSIBLE, WITH NO TURN SHORTER THAN AN 8-INCH NOMINAL
8. GROUNDING CONDUCTORS SHALL BE SOLID TINNED COPPER AND ANNEALED #2. ALL GROUNDING CONDUCTORS SHALL RUN THROUGH PVC SLEEVES WHEREVER CONDUCTORS RUN THROUGH WALLS, FLOORS, OR CEILINGS. IF CONDUCTORS MUST RUN THROUGH EMT, BOTH ENDS OF CONDUIT SHALL BE GROUNDED. SEAL BOTH ENDS OF CONDUIT WITH SILICONE CAULK.
9. GROUNDING SYSTEM RESISTANCE SHALL NOT EXCEED 10 OHMS. IF THE RESISTANCE VALUE IS EXCEEDED, NOTIFY THE PROJECT MANAGER FOR FURTHER INSTRUCTION ON METHODS FOR REDUCING THE RESISTANCE
10. ALL ROOF TOP ANTENNA MOUNTS SHALL BE GROUNDED WITH A #2 GROUND WIRE CONNECTED TO THE NEAREST GROUND BUS. ALL CONNECTIONS ARE TO BE CAD-WELDED IF POSSIBLE.
11. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO THE PROJECT MANAGER.
12. GROUNDING CONNECTION TO TRAVEL IN A DOWNWARD DIRECTION.
13. ALL EXPOSED #2 WIRE MUST BE TINN NOT BTW.



GROUNDING DIAGRAM
SCALE: N.T.S

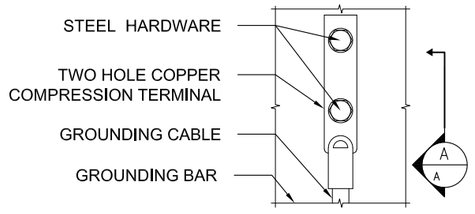
1
E–1



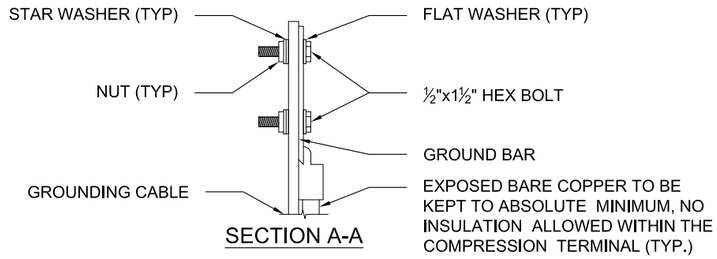
NOTES:
1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
3. ALL HOLES ARE COUNTERSUNK 1/16".

GROUND BAR DETAILS
SCALE: N.T.S

2
E–1



ELEVATION



SECTION A-A

NOTES:
1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

TYPICAL GROUND BAR CONNECTIOS DETAIL
SCALE: N.T.S

3
E–1

APPLICANT:
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

PROJECT MANGER
NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development
420 Main Street, Bldg 4
Sturbridge, MA 01566
203-275-6669

CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
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PROFESSIONAL SEAL
STATE OF CONNECTICUT
HOSSEIN VAHEDI
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LICENSED ARCHITECT

REV	DESCRIPTION	DATE
A	PRELIMINARY	03/24/17
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SITE NUMBER: CTHA152A
SITE NAME: HA152/FiretownFireS_MP
SITE ADDRESS: 344 Firetown Road
SIMSBURY, CT 06070

SHEET TITLE:
E-1: GROUNDING DETAILS

Exhibit D

Structural Analysis report

Date: March 17, 2017

Site Number: CTHA152A
Site Name: HA152/FiretownFireS_MP

Site Address:
344 Firetown Road
Simsbury, CT 06070

PREPARED FOR:

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

CONSULTANT:

FORESITE LLC
Architects . Engineers . Surveyors
462 Walnut street
Newton, MA 02460
Contact: Saeed Mossavat
email:smossavat@Foresitellc.com
617-527-3031

PROJECT MANAGER:

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development
420 Main Street, Bldg 4
Sturbridge MA 01566
Contact: Sheldon Freincle
sheldon@northeastsitesolution.com
203-275-6669

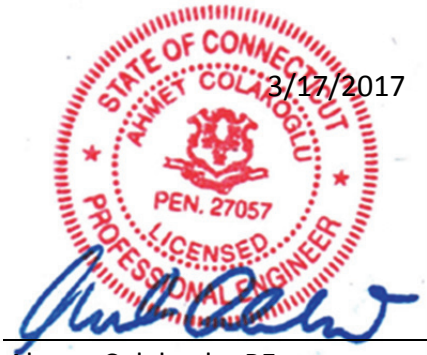
STRUCTURAL ANALYSIS REPORT
MONOPOLE

Prepared For:

T-Mobile Northeast, LLC
35 Griffin Road South
Bloomfield, CT 06002

Structure Rating	
Monopole:	**Pass (61.1%)**
Anchor Rods:	**Pass (45.6%)**
Foundation	**Pass (53.1%)**

Sincerely,
Destek Engineering, LLC
License No: PEC0001429



3/17/2017

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057

Site ID: CTHA152A
Site Name: HA152/FiretownFireS_MP
344 Firetown Road
Simsbury, CT 06070

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Suite 100, Marietta, GA 30066 -Tel: (770) 693-0835

CONTENTS

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Suite 100, Marietta, GA 30066 -Tel: (770) 693-0835

1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the wireless telecommunication installation on the existing monopole located at 344 Firetown Road, Simsbury, CT 06070 for additions and alterations proposed by T-Mobile.

The structural analysis is based on the following documentation provided to Destek Engineering, LLC (Destek):

- Tower Design Drawings prepared by PJF, dated 02/17/2004.
- RFDS provided by T-Mobile, dated 02/15/2017.
- Structural Analysis Report prepared by Centek Engineering, dated 3/6/2014.

1.1 STRUCTURE

The structure is a 80'-0" (18) sided monopole, which is attached to the foundation with anchor bolts and a base plate. Please refer to the software output in Appendix A, for tower geometry, member sizes, and other details.

ELEVATION (FEET)	SECTION LENGTH (FEET)	LAP SPLICE (FT)	SHAFT THICKNESS (IN)	TOP DIAMETER (IN)	BOTTOM DIAMETER (IN)	YIELD STRENGTH (KSI)
45.00-80.00	38.50	3.5	0.1875	22.000	27.700	65
0.00-45.00	45.00	-	0.2500	26.807	33.470	65

2.0 EXISTING AND PROPOSED APPURTENANCES

Existing Configuration of T-Mobile Appurtenances:

Sector	RAD Center (ft.)	Antennas and Equipment	Cables	Mount
Alpha, Beta, & Gamma	77	(3) APX16DWV-16DWV-S-E-A20 (3) Twin PCS TMA	(12) 7/8"	(3) Pipe Mounts

Proposed and Final Configuration of T-Mobile Appurtenances:

Sector	RAD Center (ft.)	Antennas and Equipment	Cables*	Mount
Alpha, Beta, & Gamma	77	(3) APX16DWV-16DWV-S-E-A20 (3) LDX-6515DS-VTM (3) Twin PCS TMA (3) Smart Bias T	(12) 7/8"	(1) New Valmont Platform w/ Hand Rail

*** Installed inside monopole**

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Suite 100, Marietta, GA 30066 -Tel: (770) 693-0835

Existing and Reserved Appurtenances by Others:

CARRIER	RAD CENTER (FT)	ANTENNA & TMA	COAX	MOUNT
Unknown	90	Omni	-	-
Unknown	89	2' dish	7/8"	(1) Pipe Mount
Unknown	84	(2) Unknown Equipment	-	(1) Pipe Mount
VERIZON WIRELESS	67	(6) LNX-6514DS-VTM (6) HBX-6517DS-VTM (3) RRH2X40-07-U (3) RRH2X40 AWS (3) RRH2X40 PCS (1) DB-T1-6Z-8AB-0Z	(2) 1 5/8"	(1) Platform

3.0 CODES AND LOADING

The monopole was analyzed per *TIA/EIA-222-G* as referenced by the *2016 Connecticut State Building Code* with all of the adopted Addendums and Supplements. The following wind loading was used in compliance with the standard for Fairfield, CT:

- Ultimate wind speed 120 mph converted to a Basic wind speed 93 mph without ice (W_0)
- Basic wind speed 50 mph with 1.00" escalating ice (W_i)
- Exposure Category C
- Topographic Category 1
- Structure Class II (I_w = 1.0)

The following load combinations were used with wind blowing at 0°, 30°, 45°, 60°, and 90° measured from a line normal to the face of the monopole.

- 1.2 D + 1.6 W_0
- 0.9 D + 1.6 W_0
- 1.2 D + 1.0 D_i + 1.0 W_i

D: Dead Load of structure and appurtenances
W_0: Wind Load, without ice
W_i: Wind Load, with ice
D_i: Weight of Ice

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Suite 100, Marietta, GA 30066 -Tel: (770) 693-0835

4.0 STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING STRUCTURES

The analysis is based on the information provided to Destek and is assumed to be current and correct. Unless otherwise noted, the structure and the foundation system are assumed to be in good condition, free of defects and can achieve theoretical strength.

It is assumed that the structure has been maintained and shall be maintained during its service. The superstructure and the foundation system are assumed to be designed with proper engineering practice and fabricated, constructed and erected in accordance with the design documents. Destek will accept no liability which may arise due to any existing deficiency in design, material, fabrication, erection, construction, etc. or lack of maintenance.

The analysis results presented in this report are only applicable for the previously mentioned existing and proposed additions and alterations. Any deviation of the proposed equipment and placement, etc., will require Destek to generate an additional structural analysis.

5.0 ANALYSIS AND ASSUMPTIONS

The Monopole was analyzed by utilizing tnxTower, a non-linear, three-dimensional, finite element-analysis software package, a product of Tower Numerics, Inc. Software output for this analysis is provided in Appendix A of this report.

6.0 RESULTS AND CONCLUSION

Based on analysis, per TIA-222-G, the existing monopole **has adequate** structural capacity for the proposed changes by T-Mobile. The existing mount should be replaced with new Valmont platform (part # RMQP-NP) w/ hand rail (part # HRK-12). As a maximum, the monopole shaft between 0 feet and 45.0 feet is stressed to **61.1%** of its capacity. The anchor rods also **have adequate** structural capacity for the proposed changes by T-Mobile. As a maximum, the anchor rods are stressed to **45.6%** of its capacity.

The existing tower foundation **has adequate** structural capacity to support the proposed installation by T-Mobile. As a maximum, the foundation is stressed to **53.1%** of its capacity.

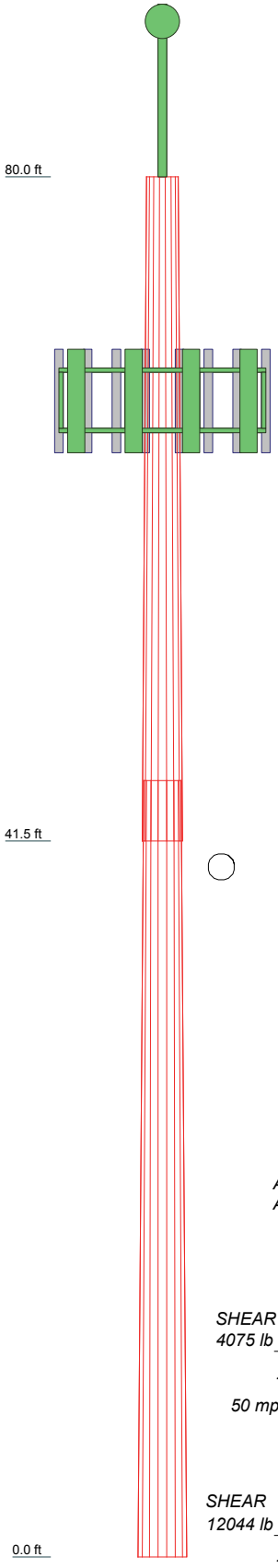
Therefore, the proposed additions by T-Mobile **can** be implemented and as intended and with the conditions outlined in this report.

Should you have any questions about this report, please contact us at (770) 693-0835.

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Suite 100, Marietta, GA 30066 -Tel: (770) 693-0835

APPENDIX A
CALCULATIONS

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	38.50	18	0.1875	3.50	22.0000	27.7000	A607-65	1922.8
2	45.00	18	0.2500		26.8068	33.4700		3631.6
								5554.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
8'X3" Dia Omni	90	Platform Mount [LP 303-1]	77
Dish Mount Pipe	89	LDX-6515DS-VTM w/ Mount Pipe	77
VHP2-370A	89	(2) LNX-6514DS-VTM w/ Mount Pipe	67
Broadcating	86	(2) LNX-6514DS-VTM w/ Mount Pipe	67
10' x 6" Mount Pipe	85	(2) HBX-6517DS-VTM w/ Mount Pipe	67
10'x2.5" Broadcating mount	84	(2) HBX-6517DS-VTM w/ Mount Pipe	67
Broadcating	84	(2) HBX-6517DS-VTM w/ Mount Pipe	67
LDX-6515DS-VTM w/ Mount Pipe	77	RRH2x40-07U	67
LDX-6515DS-VTM w/ Mount Pipe	77	RRH2x40-07U	67
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	77	RRH2x40-07U	67
		RRH2x40-AWS	67
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	77	RRH2x40-AWS	67
		RRH2x40-AWS	67
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	77	RRH2x40-PCS	67
		RRH2x40-PCS	67
Generic Style 1A - Twin PCS	77	RRH2x40-PCS	67
Generic Style 1A - Twin PCS	77	DB-T1-6Z-8AB-0Z	67
Generic Style 1A - Twin PCS	77	Valmont 13' Low Profile	67
Miscellaneous [NA 507-1]	77	(2) LNX-6514DS-VTM w/ Mount Pipe	67

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 61.1%

ALL REACTIONS ARE FACTORED

AXIAL 28218 lb

SHEAR 4075 lb *MOMENT 256766 lb-ft*

TORQUE 189 lb-ft
50 mph WIND - 1.0000 in ICE

AXIAL 12109 lb

SHEAR 12044 lb *MOMENT 741467 lb-ft*

TORQUE 519 lb-ft
REACTIONS - 93 mph WIND

Destek Engineering, LLC
1281 Kennestone Circle, Suite 100
Marietta, GA 30066
Phone: (770) 693-0835
FAX:

Job: *17750015*			
Project: *CTHA152A*			
Client:	Drawn by: Ahmet Coakoglu		App'd:
Code: TIA-222-G	Date: 03/17/17		Scale: NTS
Path: Z:\Projects\2017\75 - Foresite LLC\015 - CTHA152A\TNX\CTHA152A.eri			Dwg No. E-1

Tower Input Data

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

Basic wind speed of 93 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
√ Use Code Stress Ratios	Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	√ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-G Bracing Resist. Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G Tension Splice Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric		

Tapered Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	80.00-41.50	38.50	3.50	18	22.0000	27.7000	0.1875	0.7500	A607-65 (65 ksi)
L2	41.50-0.00	45.00		18	26.8068	33.4700	0.2500	1.0000	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	22.3394	12.9812	780.3007	7.7434	11.1760	69.8193	1561.6281	6.4918	3.5420	18.891
	28.1273	16.3734	1565.7983	9.7669	14.0716	111.2736	3133.6569	8.1882	4.5452	24.241
L2	27.7466	21.0728	1877.6407	9.4277	13.6179	137.8807	3757.7521	10.5384	4.2780	17.112
	33.9863	26.3601	3675.2194	11.7931	17.0028	216.1543	7355.2747	13.1825	5.4507	21.803

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 80.00-41.50				1	1	1			
L2 41.50-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	A	Surface Ar (CaAa)	80.00 - 0.00	1	1	0.000 0.000	0.3750		0.22
Step Pegs (Surface Ar)	A	Surface Ar (CaAa)	80.00 - 0.00	1	1	0.000 0.000	0.8000		2.72

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
****								
AVA7-50(1-5/8")	B	No	Inside Pole	77.00 - 0.00	12	No Ice	0.00	0.70
						1/2" Ice	0.00	0.70
						1" Ice	0.00	0.70
AL5-50(7/8")	B	No	Inside Pole	80.00 - 0.00	1	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
						1" Ice	0.00	0.54
HYBRIFLEX (1-5/8")	B	No	Inside Pole	67.00 - 0.00	2	No Ice	0.00	1.90
						1/2" Ice	0.00	1.90
						1" Ice	0.00	1.90

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	80.00-41.50	A	0.000	0.000	4.524	0.000	113.19
		B	0.000	0.000	0.000	0.000	415.89

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		C	0.000	0.000	0.000	0.000	0.00
L2	41.50-0.00	A	0.000	0.000	4.876	0.000	122.01
		B	0.000	0.000	0.000	0.000	528.71
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	80.00-41.50	A	2.124	0.000	0.000	37.240	0.000	655.16
		B		0.000	0.000	0.000	0.000	415.89
		C		0.000	0.000	0.000	0.000	0.00
L2	41.50-0.00	A	1.910	0.000	0.000	40.141	0.000	706.22
		B		0.000	0.000	0.000	0.000	528.71
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	80.00-41.50	-0.1462	-0.0844	-0.7782	-0.4493
L2	41.50-0.00	-0.1469	-0.0848	-0.8335	-0.4812

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Safety Line 3/8	41.50 - 80.00	1.0000	1.0000
L1	2	Step Pegs (Surface Ar)	41.50 - 80.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
10' x 6" Mount Pipe	C	None		0.0000	85.00	No Ice	3.61	3.61	125.00
						1/2" Ice	6.05	6.05	165.95
						1" Ice	6.66	6.66	213.78
****									
8'X3" Dia Omni	A	From Face	0.00	0.0000	90.00	No Ice	2.40	2.40	30.00
			0.00			1/2" Ice	3.19	3.19	40.00
			0.00			1" Ice	3.98	3.98	50.00
Dish Mount Pipe	C	From Face	0.00	0.0000	89.00	No Ice	1.02	1.02	1.65
			0.00			1/2" Ice	1.30	1.30	9.84
			0.00			1" Ice	1.58	1.58	21.18
Broadcating	A	From Face	0.00	0.0000	86.00	No Ice	2.87	2.87	12.00
			0.00			1/2" Ice	3.33	3.33	36.00
			0.00			1" Ice	3.79	3.79	60.00
Broadcating	A	From Face	0.00	0.0000	84.00	No Ice	2.87	2.87	12.00
			0.00			1/2" Ice	3.33	3.33	36.00
			0.00			1" Ice	3.79	3.79	60.00
10'x2.5" Broadcating mount	A	From Face	0.00	0.0000	84.00	No Ice	2.88	2.88	60.00
			0.00			1/2" Ice	3.91	3.91	80.00
			0.00			1" Ice	4.94	4.94	100.00
*****									
LDX-6515DS-VTM w/ Mount Pipe	A	From Face	2.00	0.0000	77.00	No Ice	8.83	6.88	62.30
			0.00			1/2" Ice	9.49	8.20	130.16
			0.00			1" Ice	10.12	9.38	206.60
LDX-6515DS-VTM w/ Mount Pipe	B	From Face	2.00	0.0000	77.00	No Ice	8.83	6.88	62.30
			0.00			1/2" Ice	9.49	8.20	130.16
			0.00			1" Ice	10.12	9.38	206.60
LDX-6515DS-VTM w/ Mount Pipe	C	From Face	2.00	0.0000	77.00	No Ice	8.83	6.88	62.30
			0.00			1/2" Ice	9.49	8.20	130.16
			0.00			1" Ice	10.12	9.38	206.60
APX16DWV-16DWVS-E-A 20 w/ Mount Pipe	A	From Face	2.00	0.0000	77.00	No Ice	7.23	3.78	63.67
			0.00			1/2" Ice	7.71	4.64	114.71
			0.00			1" Ice	8.18	5.38	172.55
APX16DWV-16DWVS-E-A 20 w/ Mount Pipe	B	From Face	2.00	0.0000	77.00	No Ice	7.23	3.78	63.67
			0.00			1/2" Ice	7.71	4.64	114.71
			0.00			1" Ice	8.18	5.38	172.55
APX16DWV-16DWVS-E-A 20 w/ Mount Pipe	C	From Face	2.00	0.0000	77.00	No Ice	7.23	3.78	63.67
			0.00			1/2" Ice	7.71	4.64	114.71
			0.00			1" Ice	8.18	5.38	172.55
Generic Style 1A - Twin PCS	A	From Face	2.00	0.0000	77.00	No Ice	0.57	0.32	15.00
			0.00			1/2" Ice	0.67	0.40	19.94
			0.00			1" Ice	0.77	0.48	26.41
Generic Style 1A - Twin PCS	B	From Face	2.00	0.0000	77.00	No Ice	0.57	0.32	15.00
			0.00			1/2" Ice	0.67	0.40	19.94
			0.00			1" Ice	0.77	0.48	26.41
Generic Style 1A - Twin PCS	C	From Face	2.00	0.0000	77.00	No Ice	0.57	0.32	15.00
			0.00			1/2" Ice	0.67	0.40	19.94
			0.00			1" Ice	0.77	0.48	26.41
Miscellaneous [NA 507-1]	C	None		0.0000	77.00	No Ice	4.80	4.80	245.00
						1/2" Ice	6.70	6.70	294.00
						1" Ice	8.60	8.60	343.00
Platform Mount [LP 303-1]	C	None		0.0000	77.00	No Ice	14.66	14.66	1250.00
						1/2" Ice	18.87	18.87	1481.33
						1" Ice	23.08	23.08	1712.66
****									
(2) LNX-6514DS-VTM w/ Mount Pipe	A	From Face	3.00	0.0000	67.00	No Ice	8.41	7.08	64.56
			0.00			1/2" Ice	8.97	8.27	133.71
			0.00			1" Ice	9.50	9.18	210.90

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(2) LNX-6514DS-VTM w/ Mount Pipe	B	From Face	3.00 0.00 0.00	0.0000	67.00	No Ice 1/2" Ice 1" Ice	8.41 8.97 9.50	7.08 8.27 9.18	64.56 133.71 210.90
(2) LNX-6514DS-VTM w/ Mount Pipe	C	From Face	3.00 0.00 0.00	0.0000	67.00	No Ice 1/2" Ice 1" Ice	8.41 8.97 9.50	7.08 8.27 9.18	64.56 133.71 210.90
(2) HBX-6517DS-VTM w/ Mount Pipe	A	From Face	3.00 0.00 0.00	0.0000	67.00	No Ice 1/2" Ice 1" Ice	5.54 6.11 6.65	5.02 6.22 7.17	45.13 91.77 146.03
(2) HBX-6517DS-VTM w/ Mount Pipe	B	From Face	3.00 0.00 0.00	0.0000	67.00	No Ice 1/2" Ice 1" Ice	5.54 6.11 6.65	5.02 6.22 7.17	45.13 91.77 146.03
(2) HBX-6517DS-VTM w/ Mount Pipe	C	From Face	3.00 0.00 0.00	0.0000	67.00	No Ice 1/2" Ice 1" Ice	5.54 6.11 6.65	5.02 6.22 7.17	45.13 91.77 146.03
RRH2x40-07U	A	From Face	3.00 0.00 0.00	0.0000	67.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.03 1.17 1.31	50.00 66.78 86.25
RRH2x40-07U	B	From Face	3.00 0.00 0.00	0.0000	67.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.03 1.17 1.31	50.00 66.78 86.25
RRH2x40-07U	C	From Face	3.00 0.00 0.00	0.0000	67.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.03 1.17 1.31	50.00 66.78 86.25
RRH2x40-AWS	A	From Face	3.00 0.00 0.00	0.0000	67.00	No Ice 1/2" Ice 1" Ice	2.16 2.36 2.57	1.42 1.59 1.77	44.00 61.40 81.69
RRH2x40-AWS	B	From Face	3.00 0.00 0.00	0.0000	67.00	No Ice 1/2" Ice 1" Ice	2.16 2.36 2.57	1.42 1.59 1.77	44.00 61.40 81.69
RRH2x40-AWS	C	From Face	3.00 0.00 0.00	0.0000	67.00	No Ice 1/2" Ice 1" Ice	2.16 2.36 2.57	1.42 1.59 1.77	44.00 61.40 81.69
RRH2x40-PCS	A	From Face	0.00 0.00 0.00	0.0000	67.00	No Ice 1/2" Ice 1" Ice	2.58 2.80 3.02	2.03 2.24 2.45	60.00 80.00 100.00
RRH2x40-PCS	B	From Face	0.00 0.00 0.00	0.0000	67.00	No Ice 1/2" Ice 1" Ice	2.58 2.80 3.02	2.03 2.24 2.45	60.00 80.00 100.00
RRH2x40-PCS	C	From Face	0.00 0.00 0.00	0.0000	67.00	No Ice 1/2" Ice 1" Ice	2.58 2.80 3.02	2.03 2.24 2.45	60.00 80.00 100.00
DB-T1-6Z-8AB-0Z	A	From Face	0.00 0.00 0.00	0.0000	67.00	No Ice 1/2" Ice 1" Ice	4.80 5.07 5.35	2.00 2.19 2.39	44.00 80.13 120.22
Valmont 13' Low Profile	C	None		0.0000	67.00	No Ice 1/2" Ice 1" Ice	15.70 20.10 24.50	15.70 20.10 24.50	1.30 1.76 2.22

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter		Aperture Area	Weight
				ft	°	°	ft	ft		ft^2	lb
VHP2-370A	C	Paraboloid w/Shroud (HP)	From Face	0.00 0.00 0.00	0.0000		89.00	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.68	33.00 50.00 70.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service

Comb. No.	Description
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	80 - 41.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18481.38	1240.87	541.03
			Max. Mx	20	-6313.72	245122.29	356.19
			Max. My	2	-6308.97	1215.41	247995.09
			Max. Vy	20	-9652.13	245122.29	356.19
			Max. Vx	2	-9697.27	1215.41	247995.09
			Max. Torque	4			519.88
L2	41.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28218.44	2154.31	1064.46
			Max. Mx	20	-12096.47	734425.32	1649.13
			Max. My	2	-12096.33	3313.01	739223.42
			Max. Vy	20	-11979.73	734425.32	1649.13
			Max. Vx	2	-12022.99	3313.01	739223.42
			Max. Torque	4			519.44

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	27	28218.44	8.45	4068.92
	Max. H_x	20	12109.48	11966.58	26.07
	Max. H_z	2	12109.48	41.77	12009.75
	Max. M_x	2	739223.42	41.77	12009.75
	Max. M_z	8	733513.30	-11966.58	-57.47
	Max. Torsion	4	518.77	-5935.90	10396.84
	Min. Vert	19	9082.11	10327.58	-5980.19
	Min. H_x	8	12109.48	-11966.58	-57.47
	Min. H_z	14	12109.48	-41.77	-11974.42
	Min. M_x	14	-735557.72	-41.77	-11974.42
	Min. M_z	20	-734425.32	11966.58	26.07
	Min. Torsion	14	-462.81	-41.77	-11974.42

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	10091.23	0.00	0.00	-182.05	370.33	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	12109.48	-41.77	-12009.75	-739223.42	3312.86	-460.35
0.9 Dead+1.6 Wind 0 deg - No Ice	9082.11	-41.77	-12009.75	-735215.77	3181.30	-458.62

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.6 Wind 30 deg - No Ice	12109.48	5935.90	-10396.84	-640338.85	-363029.74	-518.77
0.9 Dead+1.6 Wind 30 deg - No Ice	9082.11	5935.90	-10396.84	-636858.16	-361207.78	-516.84
1.2 Dead+1.6 Wind 60 deg - No Ice	12109.48	10317.48	-6013.84	-371370.25	-631472.94	-416.29
0.9 Dead+1.6 Wind 60 deg - No Ice	9082.11	10317.48	-6013.84	-369325.03	-628219.97	-414.70
1.2 Dead+1.6 Wind 90 deg - No Ice	12109.48	11966.58	57.47	4065.74	-733513.30	-106.35
0.9 Dead+1.6 Wind 90 deg - No Ice	9082.11	11966.58	57.47	4098.41	-729713.90	-105.88
1.2 Dead+1.6 Wind 120 deg - No Ice	12109.48	10369.35	6052.54	372800.87	-635247.27	149.68
0.9 Dead+1.6 Wind 120 deg - No Ice	9082.11	10369.35	6052.54	370862.62	-631973.26	149.08
1.2 Dead+1.6 Wind 150 deg - No Ice	12109.48	5999.84	10402.16	639423.23	-367211.08	350.31
0.9 Dead+1.6 Wind 150 deg - No Ice	9082.11	5999.84	10402.16	636062.33	-365367.47	348.91
1.2 Dead+1.6 Wind 180 deg - No Ice	12109.48	41.77	11974.42	735557.72	-2401.92	462.81
0.9 Dead+1.6 Wind 180 deg - No Ice	9082.11	41.77	11974.42	731684.44	-2502.84	461.08
1.2 Dead+1.6 Wind 210 deg - No Ice	12109.48	-5927.49	10360.39	636570.81	363175.73	450.56
0.9 Dead+1.6 Wind 210 deg - No Ice	9082.11	-5927.49	10360.39	633225.02	361126.05	448.96
1.2 Dead+1.6 Wind 240 deg - No Ice	12109.48	-10327.58	5980.19	367854.78	633306.14	311.02
0.9 Dead+1.6 Wind 240 deg - No Ice	9082.11	-10327.58	5980.19	365942.91	629814.67	309.89
1.2 Dead+1.6 Wind 270 deg - No Ice	12109.48	-11966.58	-26.07	-1649.10	734425.32	104.15
0.9 Dead+1.6 Wind 270 deg - No Ice	9082.11	-11966.58	-26.07	-1585.77	730393.18	103.70
1.2 Dead+1.6 Wind 300 deg - No Ice	12109.48	-10359.26	-6086.19	-376317.16	635237.54	-46.31
0.9 Dead+1.6 Wind 300 deg - No Ice	9082.11	-10359.26	-6086.19	-374245.34	631736.68	-46.13
1.2 Dead+1.6 Wind 330 deg - No Ice	12109.48	-6008.25	-10438.61	-643192.08	368887.47	-279.39
0.9 Dead+1.6 Wind 330 deg - No Ice	9082.11	-6008.25	-10438.61	-639696.05	366806.49	-278.32
1.2 Dead+1.0 Ice+1.0 Temp	28218.44	-0.00	-0.00	-1064.46	2154.31	-0.02
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	28218.44	-8.45	-4068.92	-255446.19	2784.29	-174.40
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	28218.44	2017.84	-3523.73	-221474.13	-123478.78	-189.39
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	28218.44	3502.06	-2038.34	-128815.86	-215938.73	-148.80
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	28218.44	4055.94	12.35	-106.91	-250708.49	-52.44
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	28218.44	3513.02	2044.60	126898.94	-216777.94	41.40
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	28218.44	2030.38	3523.12	219051.61	-124318.49	122.81
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	28218.44	8.45	4060.13	252450.52	1584.42	174.52
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	28218.44	-2015.75	3514.67	218451.83	127648.26	179.41

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	28218.44	-3504.57	2029.97	125859.91	220547.02	132.96
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	28218.44	-4055.94	-4.54	-1306.79	255077.33	52.24
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	28218.44	-3510.51	-2052.97	-129854.98	220907.48	-25.85
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	28218.44	-2032.47	-3532.18	-222074.01	128886.70	-112.77
Dead+Wind 0 deg - Service	10091.23	-9.72	-2795.41	-171668.94	1041.93	-107.47
Dead+Wind 30 deg - Service	10091.23	1381.65	-2419.99	-148722.18	-83967.22	-116.58
Dead+Wind 60 deg - Service	10091.23	2401.52	-1399.79	-86308.16	-146258.24	-90.01
Dead+Wind 90 deg - Service	10091.23	2785.36	13.38	809.15	-169936.26	-25.73
Dead+Wind 120 deg - Service	10091.23	2413.59	1408.80	86372.83	-147134.75	30.61
Dead+Wind 150 deg - Service	10091.23	1396.53	2421.23	148242.17	-84937.71	77.89
Dead+Wind 180 deg - Service	10091.23	9.72	2787.19	170549.67	-284.15	107.60
Dead+Wind 210 deg - Service	10091.23	-1379.69	2411.50	147579.21	84547.12	108.43
Dead+Wind 240 deg - Service	10091.23	-2403.87	1391.96	85224.46	147229.58	76.88
Dead+Wind 270 deg - Service	10091.23	-2785.36	-6.07	-516.94	170694.09	25.62
Dead+Wind 300 deg - Service	10091.23	-2411.24	-1416.63	-87456.57	147679.05	-17.59
Dead+Wind 330 deg - Service	10091.23	-1398.49	-2429.71	-149385.19	85873.41	-69.61

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0.00	-10091.23	0.00	0.00	10091.23	0.00	0.000%
2	-41.77	-12109.48	-12009.75	41.77	12109.48	12009.75	0.000%
3	-41.77	-9082.11	-12009.75	41.77	9082.11	12009.75	0.000%
4	5935.90	-12109.48	-10396.84	-5935.90	12109.48	10396.84	0.000%
5	5935.90	-9082.11	-10396.84	-5935.90	9082.11	10396.84	0.000%
6	10317.48	-12109.48	-6013.84	-10317.48	12109.48	6013.84	0.000%
7	10317.48	-9082.11	-6013.84	-10317.48	9082.11	6013.84	0.000%
8	11966.58	-12109.48	57.47	-11966.58	12109.48	-57.47	0.000%
9	11966.58	-9082.11	57.47	-11966.58	9082.11	-57.47	0.000%
10	10369.35	-12109.48	6052.54	-10369.35	12109.48	-6052.54	0.000%
11	10369.35	-9082.11	6052.54	-10369.35	9082.11	-6052.54	0.000%
12	5999.84	-12109.48	10402.16	-5999.84	12109.48	-10402.16	0.000%
13	5999.84	-9082.11	10402.16	-5999.84	9082.11	-10402.16	0.000%
14	41.77	-12109.48	11974.42	-41.77	12109.48	-11974.42	0.000%
15	41.77	-9082.11	11974.42	-41.77	9082.11	-11974.42	0.000%
16	-5927.49	-12109.48	10360.39	5927.49	12109.48	-10360.39	0.000%
17	-5927.49	-9082.11	10360.39	5927.49	9082.11	-10360.39	0.000%
18	-10327.58	-12109.48	5980.19	10327.58	12109.48	-5980.19	0.000%
19	-10327.58	-9082.11	5980.19	10327.58	9082.11	-5980.19	0.000%
20	-11966.58	-12109.48	-26.07	11966.58	12109.48	26.07	0.000%
21	-11966.58	-9082.11	-26.07	11966.58	9082.11	26.07	0.000%
22	-10359.26	-12109.48	-6086.19	10359.26	12109.48	6086.19	0.000%
23	-10359.26	-9082.11	-6086.19	10359.26	9082.11	6086.19	0.000%
24	-6008.25	-12109.48	-10438.61	6008.25	12109.48	10438.61	0.000%
25	-6008.25	-9082.11	-10438.61	6008.25	9082.11	10438.61	0.000%
26	0.00	-28218.44	0.00	0.00	28218.44	0.00	0.000%
27	-8.45	-28218.44	-4068.85	8.45	28218.44	4068.92	0.000%
28	2017.84	-28218.44	-3523.73	-2017.84	28218.44	3523.73	0.000%
29	3502.06	-28218.44	-2038.34	-3502.06	28218.44	2038.34	0.000%
30	4055.88	-28218.44	12.35	-4055.94	28218.44	-12.35	0.000%
31	3513.02	-28218.44	2044.60	-3513.02	28218.44	-2044.60	0.000%
32	2030.38	-28218.44	3523.11	-2030.38	28218.44	-3523.12	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
33	8.45	-28218.44	4060.07	-8.45	28218.44	-4060.13	0.000%
34	-2015.75	-28218.44	3514.67	2015.75	28218.44	-3514.67	0.000%
35	-3504.57	-28218.44	2029.97	3504.57	28218.44	-2029.97	0.000%
36	-4055.88	-28218.44	-4.54	4055.94	28218.44	4.54	0.000%
37	-3510.51	-28218.44	-2052.97	3510.51	28218.44	2052.97	0.000%
38	-2032.47	-28218.44	-3532.18	2032.47	28218.44	3532.18	0.000%
39	-9.72	-10091.23	-2795.41	9.72	10091.23	2795.41	0.000%
40	1381.65	-10091.23	-2419.99	-1381.65	10091.23	2419.99	0.000%
41	2401.52	-10091.23	-1399.79	-2401.52	10091.23	1399.79	0.000%
42	2785.36	-10091.23	13.38	-2785.36	10091.23	-13.38	0.000%
43	2413.59	-10091.23	1408.80	-2413.59	10091.23	-1408.80	0.000%
44	1396.53	-10091.23	2421.23	-1396.53	10091.23	-2421.23	0.000%
45	9.72	-10091.23	2787.19	-9.72	10091.23	-2787.19	0.000%
46	-1379.69	-10091.23	2411.50	1379.69	10091.23	-2411.50	0.000%
47	-2403.87	-10091.23	1391.96	2403.87	10091.23	-1391.96	0.000%
48	-2785.36	-10091.23	-6.07	2785.36	10091.23	6.07	0.000%
49	-2411.24	-10091.23	-1416.63	2411.24	10091.23	1416.63	0.000%
50	-1398.49	-10091.23	-2429.71	1398.49	10091.23	2429.71	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00014464
3	Yes	4	0.00000001	0.00008758
4	Yes	5	0.00000001	0.00003065
5	Yes	4	0.00000001	0.00075174
6	Yes	5	0.00000001	0.00003407
7	Yes	4	0.00000001	0.00083483
8	Yes	4	0.00000001	0.00001589
9	Yes	4	0.00000001	0.00000001
10	Yes	5	0.00000001	0.00003331
11	Yes	4	0.00000001	0.00081659
12	Yes	5	0.00000001	0.00003136
13	Yes	4	0.00000001	0.00076923
14	Yes	4	0.00000001	0.00011978
15	Yes	4	0.00000001	0.00007268
16	Yes	5	0.00000001	0.00003397
17	Yes	4	0.00000001	0.00083172
18	Yes	5	0.00000001	0.00003127
19	Yes	4	0.00000001	0.00076655
20	Yes	4	0.00000001	0.00003694
21	Yes	4	0.00000001	0.00002233
22	Yes	5	0.00000001	0.00003301
23	Yes	4	0.00000001	0.00080861
24	Yes	5	0.00000001	0.00003422
25	Yes	4	0.00000001	0.00083773
26	Yes	4	0.00000001	0.00001196
27	Yes	4	0.00000001	0.00085000
28	Yes	5	0.00000001	0.00007360
29	Yes	5	0.00000001	0.00007469
30	Yes	4	0.00000001	0.00082581
31	Yes	5	0.00000001	0.00007368
32	Yes	5	0.00000001	0.00007305
33	Yes	4	0.00000001	0.00083742

34	Yes	5	0.00000001	0.00007552
35	Yes	5	0.00000001	0.00007443
36	Yes	4	0.00000001	0.00084507
37	Yes	5	0.00000001	0.00007628
38	Yes	5	0.00000001	0.00007692
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00002145
41	Yes	4	0.00000001	0.00002867
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00002594
44	Yes	4	0.00000001	0.00002213
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00002976
47	Yes	4	0.00000001	0.00002222
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00002475
50	Yes	4	0.00000001	0.00002866

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		*ft*	*ft*		in^2	*lb*	*lb*	
L1	80 - 41.5 (1)	TP27.7x22x0.1875	38.50	0.00	0.0	16.0650	-6306.53	1062140.00	0.006
L2	41.5 - 0 (2)	TP33.47x26.8068x0.25	45.00	0.00	0.0	26.3601	-12096.30	1797250.00	0.007

Pole Bending Design Data

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		*lb-ft*	*lb-ft*		*lb-ft*	*lb-ft*	
L1	80 - 41.5 (1)	TP27.7x22x0.1875	248591.67	590117.50	0.421	0.00	590117.50	0.000
L2	41.5 - 0 (2)	TP33.47x26.8068x0.25	741467.50	1228133.33	0.604	0.00	1228133.33	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual V_u	ϕV_n	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u	ϕT_n	Ratio $\frac{T_u}{\phi T_n}$
	ft		*lb*	*lb*		*lb-ft*	*lb-ft*	
L1	80 - 41.5 (1)	TP27.7x22x0.1875	9732.45	531068.00	0.018	279.86	1181675.00	0.000
L2	41.5 - 0 (2)	TP33.47x26.8068x0.25	12057.50	898627.00	0.013	279.41	2459275.00	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	80 - 41.5 (1)	0.006	0.421	0.000	0.018	0.000	0.428 ✔	1.000	4.8.2 ✔
L2	41.5 - 0 (2)	0.007	0.604	0.000	0.013	0.000	0.611 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	80 - 41.5	Pole	TP27.7x22x0.1875	1	-6306.53	1062140.00	42.8	Pass
L2	41.5 - 0	Pole	TP33.47x26.8068x0.25	2	-12096.30	1797250.00	61.1	Pass
							Summary	
							Pole (L2) 61.1	Pass
							RATING = **61.1**	**Pass**

Monopole Pier and Pad Foundation

BU # : -
Site Name: CTHA152A
App. Number: -

TIA-222 Revision: G

Design Reactions		
Shear, **S**:	12	kips
Moment, **M**:	741.5	ft-kips
Tower Height, **H**:	80	ft
Tower Weight, **Wt**:	12.1	kips
Base Diameter, **BD**:	2.79	ft

Foundation Dimensions		
Depth, **D**:	6	ft
Pad Width, **W**:	17	ft
Neglected Depth, **N**:	3.333	ft
Thickness, **T**:	3.00	ft
Pier Diameter, **Pd**:	5.00	ft
Ext. Above Grade, **E**:	0.50	ft
BP Dist. Above Pier:	3	in.
Clear Cover, **Cc**:	3.0	in

Soil Properties		
Soil Unit Weight, **γ**:	0.075	kcf
Ult. Bearing Capacity, Bc:	6.0	ksf
Angle of Friction, **Φ**:	34	deg
Cohesion, **Co**:	0.000	ksf
Passive Pressure, **Pp**:	0.000	ksf
Base Friction, **μ**:	0.30	

Material Properties		
Rebar Yield Strength, **Fy**:	60000	psi
Concrete Strength, **F'c**:	3000	psi
Concrete Unit Weight, **δc**:	0.150	kcf
Seismic Zone, **z**:	1	

Rebar Properties		
Pier Rebar Size, **Sp**:	11	
Pier Rebar Quanity, **mp**:	12	10
Pad Rebar Size, **Spad**:	8	
Pad Rebar Quanity, **mpad**:	17	9
Pier Tie Size, **St**:	5	4
Tie Quanity, **mt**:	10	5

Design Checks	Capacity/ Availability	Demand/ Limits	Check
Req'd Pier Diam.(ft)	5	4.289167	**OK**
Overturning (ft-kips)	1397.68	741.50	**53.1%**
Shear Capacity (kips)	51.70	12.00	**23.2%**
Bearing (ksf)	4.50	1.62	**36.0%**
Pad Shear - 1-way (kips)	544.71	90.84	**16.7%**
Pad Shear - 2-way (kips)	1551.88	31.24	**2.0%**
Pad Moment Capacity (k-ft)	1917.33	252.89	**13.2%**
Pier Moment Capacity (k-ft)	9815.92	783.50	**8.0%**

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#:
Site Name: *CTHA151A*
App #:

Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	8	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	39	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	38	in
Thick:	2	in
Grade:	60	ksi
Clip Distance:	6	in

Stiffener Data (Welding at both sides)		
Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	33.47	in
Thick:	0.25	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Base Reactions		
TIA Revision:	G	
Factored Moment, Mu:	741.5	ft-kips
Factored Axial, Pu:	12.1	kips
Factored Shear, Vu:	12	kips

Anchor Rod Results

TIA G --> Max Rod (Cu+ Vu/η):	118.6	Kips
Axial Design Strength, Φ*Fu*Anet:	260.0	Kips
Anchor Rod Stress Ratio:	45.6%	**Pass**

Base Plate Results Flexural Check

Base Plate Stress:	28.5	ksi
PL Design Bending Strength, Φ*Fy:	54.0	ksi
Base Plate Stress Ratio:	52.9%	**Pass**

PL Ref. Data
Yield Line (in):
20.27
Max PL Length:
20.27

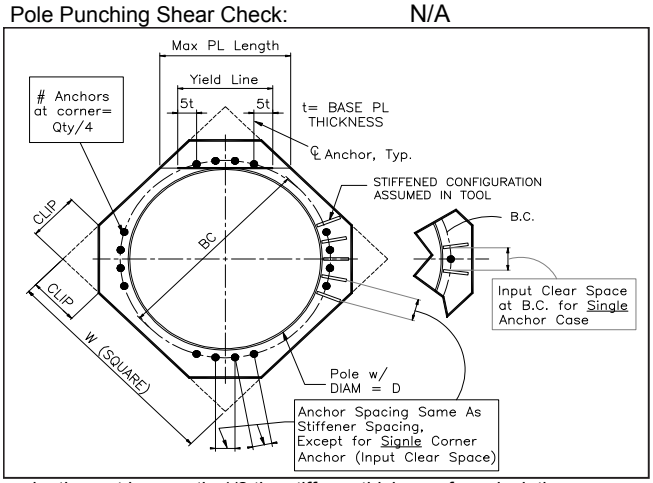
N/A - Unstiffened

Stiffener Results

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check:	N/A



** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Exhibit E

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: CTHA152A

HA 152/FiretownFireS_MP
344 Firetown Road
Simsbury, CT 06070

March 30, 2017

EBI Project Number: 6217001252

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	20.72 %

EBI Consulting
environmental | engineering | due diligence

March 30, 2017

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

Emissions Analysis for Site: **CTHA152A – HA 152/FiretownFireS_MP**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **344 Firetown Road, Simsbury, 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 approximately 467 $\mu W/cm^2$, and the general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (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 **344 Firetown Road, Simsbury, 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 (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 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.

4) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 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

6) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

7) Since all radios are ground mounted there are additional cabling losses accounted for. For each ground mounted RF path the following losses were calculated. 1.12 dB of additional cable loss for all ground mounted 700 MHz Channels and 1.95 dB of additional cable loss for all ground mounted 1900 MHz channels were factored into the calculations used for this analysis. This is based on manufacturers Specifications for 160 feet of 1-1/4" coax cable on each path.

8) 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.

9) For the following calculations the sample point was the top of a 6-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.

10) The antennas used in this modeling are the **RFS APX16DWV-16DWVS-E-A20** for 1900 MHz (PCS) channels and the **Commscope LNX-6515DS-A1M** 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 at 1900 MHz. The **Commscope LNX-6515DS-A1M** has a maximum gain of **14.6 dBd** at its main lobe at 700 MHz. 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.

11) The antenna mounting height centerline of the proposed antennas is **77 feet** above ground level (AGL).

12) 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.

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

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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):	77	Height (AGL):	77	Height (AGL):	77
Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	4,900.86	ERP (W):	4,900.86	ERP (W):	4,900.86
Antenna A1 MPE%	3.50	Antenna B1 MPE%	3.50	Antenna C1 MPE%	3.50
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope LNX-6515DS-A1M	Make / Model:	Commscope LNX-6515DS-A1M	Make / Model:	Commscope LNX-6515DS-A1M
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	77	Height (AGL):	77	Height (AGL):	77
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	668.53	ERP (W):	668.53	ERP (W):	668.53
Antenna A2 MPE%	1.02	Antenna B2 MPE%	1.02	Antenna C2 MPE%	1.02

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**4.52 %**
Simsbury FD	0.65 %
Verizon Wireless	15.55 %
Site Total MPE %:	**20.72 %**

T-Mobile Sector A Total:	4.52 %
T-Mobile Sector B Total:	4.52 %
T-Mobile Sector C Total:	4.52 %
Site Total:	20.72 %

T-Mobile _Max Values per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile PCS - 1950 MHz LTE	2	1,633.62	77	23.30	PCS - 1950 MHz	1000	2.33%
T-Mobile PCS - 1950 MHz GSM	2	816.81	77	11.65	PCS - 1950 MHz	1000	1.17%
T-Mobile 700 MHz LTE	1	668.53	77	4.77	700 MHz	467	1.02%
						Total:	**4.52%**

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 A:	4.52 %
Sector B:	4.52 %
Sector C:	4.52 %
T-Mobile Per Sector Maximum:	4.52 %
Site Total:	20.72 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **20.72%** 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.