



March 24, 2015

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

RE: Notice of Exempt Modification
2172 Glasgo Road, Griswold, CT 06351
N 41° 32' 14.63"
W 71° 52' 24.45"
T-Mobile Site #: CTNL082B_L700

Members of the Siting Council:

On behalf of T-Mobile, SBA Communications is submitting an exempt modification application to the Connecticut Siting Council for modification of existing equipment at a tower facility located at 2172 Glasgo Road, Griswold, CT 06351.

The 2172 Glasgo Road, Griswold, CT facility consists of a 195' Guyed Tower owned and operated by SBA Towers II, LLC. In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of the municipality in which the affected cell site is located.

As part of T-Mobile's L700 project, T-Mobile desires to upgrade their equipment to meet the new standards of 4G technology. The new equipment will allow customers to download files and browse the internet at a high rate of speed while also allowing their phones to be compatible with the latest 4G technology.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in T-Mobile's operations at the site along with the required fee of \$625.

The changes to the facility do not constitute modifications as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be

significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The overall height of the structure will be unaffected.
2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than the new equipment cabinets.
3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.
4. The changes in radio frequency power density will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, SBA Communications on behalf of T-Mobile, respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at 508.251.0720 x 3804 with any questions you may have concerning this matter.

Thank you,



Kri Pelletier
SBA Communications Corporation
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-0720 x 3804 + T
508-251-1755 + F
203-446-7700 + C
kpelletier@sbsite.com



T-Mobile Equipment Modification

2172 Glasgo Road, Griswold, CT 06351
Site number CTNL082B_L700

Tower Owner: SBA Towers II, LLC

Equipment Configuration: Guyed Tower

Current and/or approved:

- (9) RFS APX16PV-16VL-E
- (18) 1-5/8" feed lines

Planned Modifications:

- (3) RFS APX16PV-16VL-E
- (3) EMS RR90-17-02DP
- (3) Commscope LNX-6515DS-VTM
- (3) Ericsson KRY 112 489/2
- (3) Kathrein 782 11056
- (18) 1-5/8" feed lines

Structural Information:

The attached structural analysis demonstrates that the tower and foundation will have adequate structural capacity to accommodate the proposed modifications.

Power Density:

The anticipated Maximum Composite contributions from the T-Mobile facility are 3.46% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 5.10% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE%	
Carrier	MPE%
T-Mobile	3.46
Sprint	1.64 %
Site Total MPE %:	5.10 %



March 24, 2015

Mr. Kevin Skulczyck
First Selectman
Town of Griswold
28 Main Street
Griswold, CT 06351

RE: Telecommunications Facility @ 2172 Glasgow Road, Griswold, CT 06351

Dear Mr. Skulczyck,

In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies (R.C.S.A.) Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review T-Mobile's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes T-Mobile's proposal for the above referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at 508.251.0720 x 3804.

Thank you,

A handwritten signature in blue ink, appearing to read "K Pelletier", is positioned below the "Thank you," text.

Kri Pelletier
SBA Communications Company
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-0720 x 3804 + T
508-251-1755 + F
203-446-7700 + C
kpelletier@sbsite.com



March 24, 2015

Courtland and Bridget Kinnie
2139 Glasgo Road
Griswold, CT 06351

RE: Telecommunications Facility @ 2172 Glasgo Road, Griswold, CT 06351

Dear Mr. and Mrs. Kinnie:

In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies (R.C.S.A.) Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review T-Mobile's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes T-Mobile's proposal for the above referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at 508.251.0720 x 3804.

Thank you,

Kri Pelletier
SBA Communications Company
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-0720 x 3804 + T
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kpelletier@sbsite.com



FDH Engineering, Inc., 6521 Meriden Drive Raleigh, NC 27616, Ph. 919.755.1012

**Structural Analysis for
SBA Network Services, Inc.**

195' Guyed Tower

**SBA Site Name: Griswold Glasgo
SBA Site ID: CT10013-A-02
T-Mobile Site ID: CTNL082B
Site Address: 2172 Glasgo Road, Griswold, CT 06351**

FDH Project Number 15BFGB1400

Analysis Results

Tower Components	65.1%	Sufficient
Foundation	40.3%	Sufficient

Prepared By:

Phylcia D. Hicks
Project Engineer

Reviewed By:

Dennis D. Abel, PE
Director of Structural Engineering
CT PE License No. 23247

FDH Engineering, Inc.

6521 Meriden Drive
Raleigh, NC 27616
(919) 755-1012
info@fdh-inc.com



03-13-2015

March 13, 2015

Prepared pursuant to TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and the 2005 Connecticut State Building Code

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EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the monopole located in Griswold, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads pursuant to the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA/EIA-222-F* and the *2005 Connecticut State Building Code*. Information pertaining to the existing/proposed antenna loading, current tower geometry, foundation dimensions, and member sizes was obtained from:

- Pirod Inc. (Drawing No. 204648-B) Original Tower Drawings dated February 17, 1999
- FDH Engineering, Inc. (Project No. 1400011800) Modification Inspection Report dated March 30, 2014
- FDH Engineering, Inc. (Project No. 12-08024T T1) TIA Inspection Report dated August 13, 2012
- FDH Engineering, Inc. (Project No. 1207122EG1) Geotechnical Evaluation of Subsurface Conditions dated August 15, 2012
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and the *2005 Connecticut State Building Code* is 100 mph without ice and 38 mph with 0.75" radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the existing and proposed antennas from T-Mobile in place at 185 ft., the tower meets the requirements of the *TIA/EIA-222-F* standards and the *2005 Connecticut State Building Code* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was constructed per the original design drawings (see Pirod Drawing No. 204648-B) and utilizing the existing soil parameters (see FDH Project No. 1207122EG1), the foundation should have the necessary capacity to support the existing and proposed loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH Engineering, Inc. is accurate (i.e., the steel data, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been properly erected and maintained per the original design drawings.

Recommendations

To ensure the requirements of the *TIA/EIA-222-F* standards and the *2005 Connecticut State Building Code* are met with the existing and proposed loading in place, we have the following recommendations:

1. Coax lines must be installed as shown in **Figure 1**.
2. The proposed TMAs should be installed directly behind the proposed panel antennas.

APPURTENANCE LISTING

The proposed and existing antennas with their corresponding cables/coax lines are shown in **Table 1**. *If the actual layout determined in the field deviates from the layout, FDH Engineering, Inc. should be contacted to perform a revised analysis.*

Table 1 - Appurtenance Loading

Existing Loading:

Antenna Elevation (ft)	Description	Feed Lines	Carrier	Mount Elevation (ft)	Mount Type
185	(9) RFS APX16PV-16VL-E	(18) 1-5/8"	T-Mobile	187	(3) T-Frames
167	(9) Decibel DB898H90-M	(6) 1-5/8"	Sprint	165	(3) T-Frames

Proposed Carrier Final Loading:

Antenna Elevation (ft)	Description	Feed Lines	Carrier	Mount Elevation (ft)	Mount Type
185	(3) RFS APX16PV-16VL-E (3) EMS RR90-17-02DP (3) Commscope LNX-6515DS-VTM (3) Ericsson KRY 112 489/2 (3) Kathrein 782 11056	(18) 1-5/8"	T-Mobile	187	(3) T-Frames

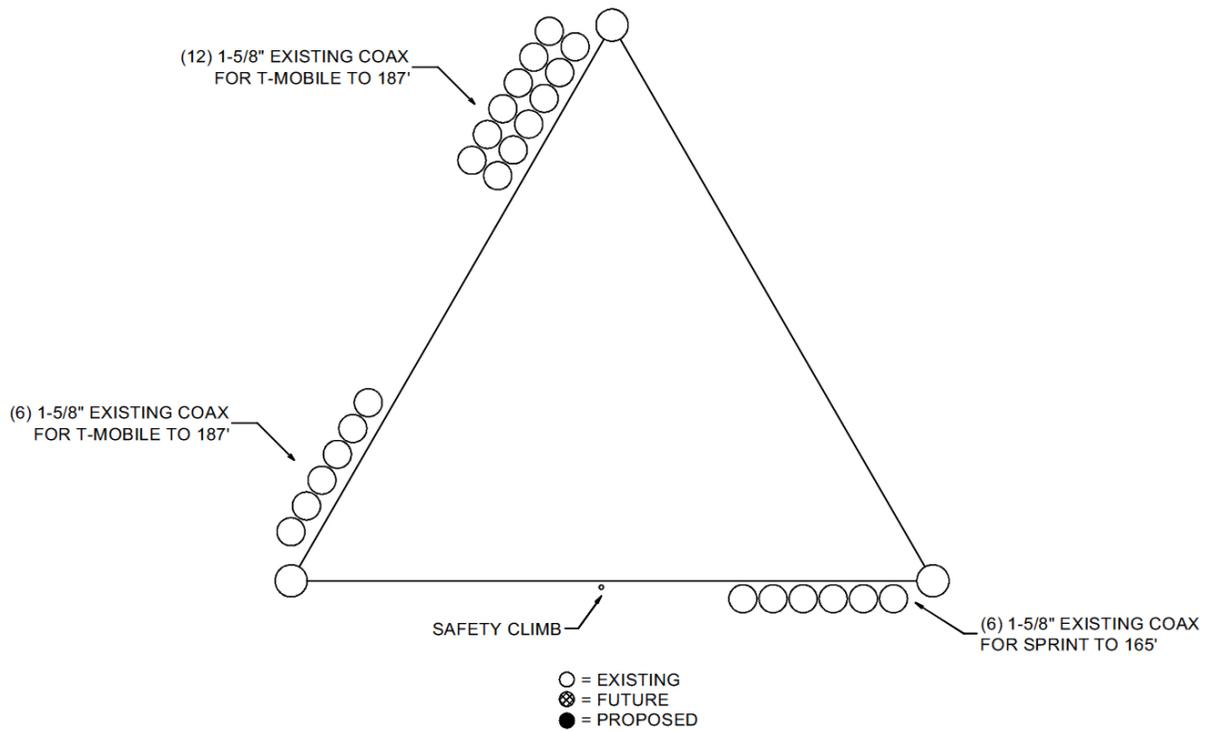


Figure 1 – Coax Layout

RESULTS

The following yield strength of steel for individual members was used for analysis:

Table 2 - Material Strength

Member Type	Yield Strength
Legs	50 ksi
Bracing	50 ksi

Table 3 displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. *Note: Capacities up to 100% are considered acceptable.* **Table 4** displays the maximum foundation reactions.

If the assumptions outlined in this report differ from actual field conditions, FDH Engineering, Inc. should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the existing or proposed appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the **Appendix** for detailed modeling information

Table 3 - Summary of Working Percentage of Structural Components

Section No.	Elevation ft	Component Type	Size	% Capacity*	Pass Fail
T1	195 - 180	Leg	1 3/4	22.4	Pass
T2	180 - 160	Leg	1 3/4	55.0	Pass
T3	160 - 140	Leg	1 3/4	46.8	Pass
T4	140 - 120	Leg	2	41.6	Pass
T5	120 - 100	Leg	2	42.5	Pass
T6	100 - 80	Leg	2	43.5	Pass
T7	80 - 60	Leg	2	46.6	Pass
T8	60 - 40	Leg	2	51.5	Pass
T9	40 - 20	Leg	2	52.5	Pass
T10	20 - 4.625	Leg	2	54.1	Pass
T11	4.625 - 0	Leg	2	65.1	Pass
T1	195 - 180	Diagonal	1	8.4	Pass
T2	180 - 160	Diagonal	1	22.8	Pass
T3	160 - 140	Diagonal	1	8.7	Pass
T4	140 - 120	Diagonal	7/8	11.1	Pass
T5	120 - 100	Diagonal	7/8	7.6	Pass
T6	100 - 80	Diagonal	7/8	14.1	Pass
T7	80 - 60	Diagonal	7/8	16.3	Pass
T8	60 - 40	Diagonal	7/8	10.1	Pass
T9	40 - 20	Diagonal	7/8	4.3	Pass
T10	20 - 4.625	Diagonal	7/8	11.8	Pass
T11	4.625 - 0	Diagonal	7/8	16.8	Pass
T1	195 - 180	Top Girt	1	0.9	Pass
T2	180 - 160	Top Girt	1	27.4	Pass
T3	160 - 140	Top Girt	1	6.1	Pass
T4	140 - 120	Top Girt	7/8	5.9	Pass
T5	120 - 100	Top Girt	7/8	1.0	Pass
T6	100 - 80	Top Girt	7/8	3.9	Pass
T7	80 - 60	Top Girt	7/8	8.3	Pass

Section No.	Elevation ft	Component Type	Size	% Capacity*	Pass Fail
T8	60 - 40	Top Girt	7/8	5.9	Pass
T9	40 - 20	Top Girt	7/8	1.4	Pass
T10	20 - 4.625	Top Girt	7/8	3.2	Pass
T1	195 - 180	Bottom Girt	1	3.9	Pass
T2	180 - 160	Bottom Girt	1	7.5	Pass
T3	160 - 140	Bottom Girt	1	14.8	Pass
T4	140 - 120	Bottom Girt	7/8	1.2	Pass
T5	120 - 100	Bottom Girt	7/8	3.2	Pass
T6	100 - 80	Bottom Girt	7/8	10.6	Pass
T7	80 - 60	Bottom Girt	7/8	5.5	Pass
T8	60 - 40	Bottom Girt	7/8	1.8	Pass
T9	40 - 20	Bottom Girt	7/8	1.5	Pass
T10	20 - 4.625	Bottom Girt	7/8	50.3	Pass
T1	195 - 180	Guy A@189.833	3/4	38.6	Pass
T2	180 - 160	Guy A@170.042	3/4	39.4	Pass
T3	160 - 140	Guy A@140.667	3/4	42.0	Pass
T7	80 - 60	Guy A@74.6667	11/16	39.8	Pass
T1	195 - 180	Guy B@189.833	3/4	38.0	Pass
T2	180 - 160	Guy B@170.042	3/4	38.6	Pass
T3	160 - 140	Guy B@140.667	3/4	41.0	Pass
T7	80 - 60	Guy B@74.6667	11/16	38.8	Pass
T1	195 - 180	Guy C@189.833	3/4	39.2	Pass
T2	180 - 160	Guy C@170.042	3/4	40.3	Pass
T3	160 - 140	Guy C@140.667	3/4	43.0	Pass
T7	80 - 60	Guy C@74.6667	11/16	40.7	Pass
T1	195 - 180	Top Guy Pull-Off@189.833	1	7.7	Pass
T7	80 - 60	Top Guy Pull-Off@74.6667	7/8	16.6	Pass
T2	180 - 160	Torque Arm Top@170.042	2L2x2x3/8x3/8	17.5 19.9 (b)	Pass
T2	180 - 160	Torque Arm Bottom@170.042	2L2x2x3/8x3/8	43.3	Pass

*Capacities include a 1/3 allowable stress increase for wind per TIA/EIA-222-F standards.

Table 4 - Maximum Base Reactions

Reaction	Current Analysis* (TIA/EIA-222-F)		Original Design (TIA/EIA-222-F)	
	Horizontal	Vertical	Horizontal	Vertical
Tower Base	2 k	120 k	6 k	203 k
Anchor	42 k	50 k	86 k	101 k

*Foundation determined adequate per independent analysis.

GENERAL COMMENTS

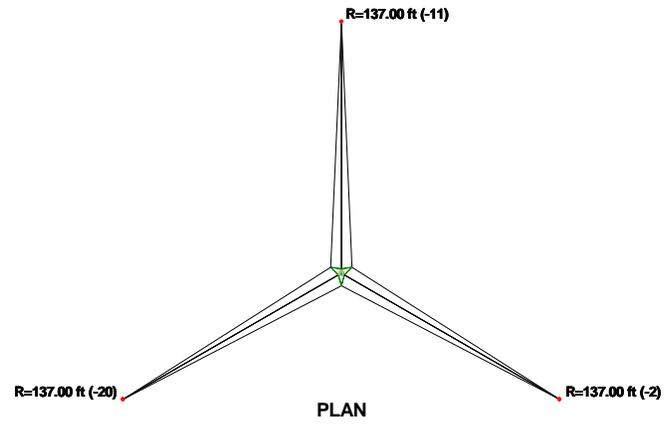
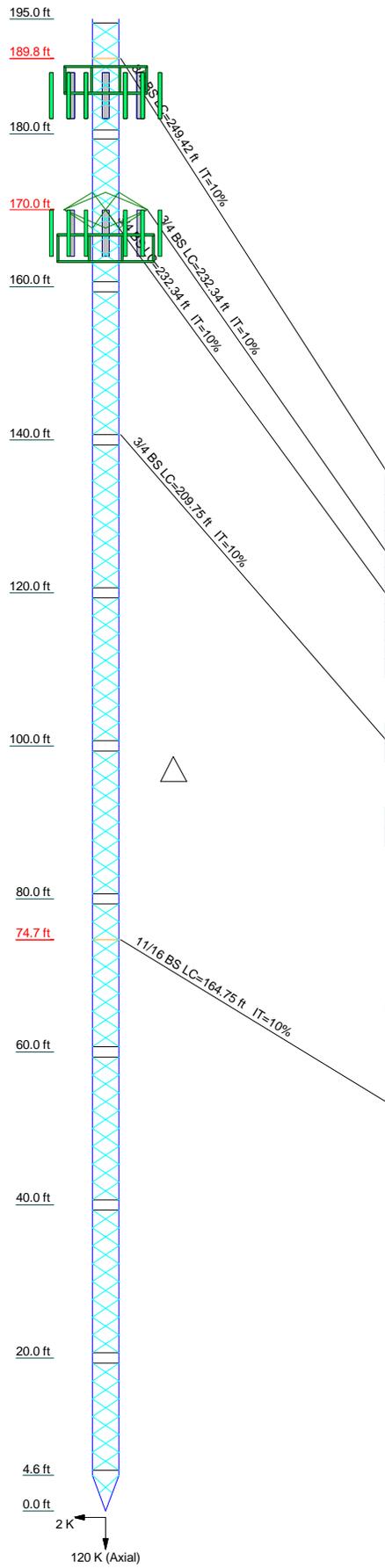
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If there are substantial modifications to be made or the assumptions made in this analysis are not accurate, FDH Engineering, Inc. should be notified immediately to perform a revised analysis.

LIMITATIONS

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of FDH Engineering, Inc.

APPENDIX

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	
Legs	SR 1 3/4											
Leg Grade	SR 1											
Diagonals	SR 1											
Diagonal Grade	SR 1											
Top Girts	SR 1											
Bottom Girts	SR 1											
Top Guy Pull-Offs	N.A.											
Face Width (ft)	3.75											
# Panels @ (ft)	85 @ 2.33333											
Weight (K)	11.7	0.2	0.9	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.9	



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
APX16PV-16VL-E w/ Mount Pipe	187	KRY 112 489/2	187
APX16PV-16VL-E w/ Mount Pipe	187	KRY 112 489/2	187
APX16PV-16VL-E w/ Mount Pipe	187	782 11056	187
RR90-17-02DP w/Mount Pipe	187	782 11056	187
RR90-17-02DP w/Mount Pipe	187	782 11056	187
RR90-17-02DP w/Mount Pipe	187	(3) T-Frames	187
LNX-6515DS-VTM w/ Mount Pipe	187	(3) DB898H90-M w/Mount Pipe	165
LNX-6515DS-VTM w/ Mount Pipe	187	(3) DB898H90-M w/Mount Pipe	165
LNX-6515DS-VTM w/ Mount Pipe	187	(3) DB898H90-M w/Mount Pipe	165
KRY 112 489/2	187	(3) T-Frames	165

SYMBOL LIST

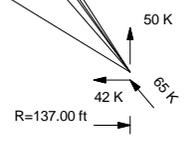
MARK	SIZE	MARK	SIZE
A	2 @ 2.3125		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for a 100 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 65.1%



FDH Engineering, Inc.
 6521 Meridian Drive, Suite 107
 Raleigh, North Carolina 27616
 Phone: 9197551012
 FAX: 9197551031

Job: Griswold Glasgo, CT10013-A-02
 Project: 15BFG1400
 Client: SBA Network Services, Inc.
 Code: TIA/EIA-222-F
 Path:
 Drawn by: PHicks
 Date: 03/13/15
 App'd:
 Scale: NTS
 Dwg No. E-1

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

T-Mobile Existing Facility

Site ID: CTNL082B

NL082/ Wireless Solutions
2172 Glasgo Road
Griswold, CT 06351

March 23, 2015

EBI Project Number: 6215001707

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	5.10 %

March 23, 2015

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

Emissions Analysis for Site: **CTNL082B – NL082/ Wireless Solutions**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **2172 Glasgo Road, Griswold, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ 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 ($\mu\text{W}/\text{cm}^2$). The general population exposure limit for the 700 MHz Band is $467 \mu\text{W}/\text{cm}^2$, and the general population exposure limit for the PCS band is $1000 \mu\text{W}/\text{cm}^2$. 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 **2172 Glasgo Road, Griswold, 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 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.
- 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 APX16PV-16VL-E** and the **EMS RR90-17-02DP** for 1900 MHz (PCS) 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 APX16PV-16VL-E** has a maximum gain of **16.3 dBd** at its main lobe. The **EMS RR90-17-02DP** has a maximum gain of **14.4 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 centerline of the proposed antennas is **185 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.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APX16PV-16VL-E	Make / Model:	RFS APX16PV-16VL-E	Make / Model:	RFS APX16PV-16VL-E
Gain:	16.3 dBd	Gain:	16.3 dBd	Gain:	16.3 dBd
Height (AGL):	185	Height (AGL):	185	Height (AGL):	185
Frequency Bands	1900 MHz(PCS)	Frequency Bands	1900 MHz(PCS)	Frequency Bands	1900 MHz(PCS)
Channel Count	2	Channel Count	2	# PCS Channels:	2
Total TX Power:	120	Total TX Power:	120	# AWS Channels:	120
ERP (W):	5,118.95	ERP (W):	5,118.95	ERP (W):	5,118.95
Antenna A1 MPE%	0.57	Antenna B1 MPE%	0.57	Antenna C1 MPE%	0.57
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	EMS RR90-17-02DP	Make / Model:	EMS RR90-17-02DP	Make / Model:	EMS RR90-17-02DP
Gain:	14.4 dBd	Gain:	14.4 dBd	Gain:	14.4 dBd
Height (AGL):	185	Height (AGL):	185	Height (AGL):	185
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:	120	Total TX Power:	120	Total TX Power:	120
ERP (W):	3,305.07	ERP (W):	3,305.07	ERP (W):	3,305.07
Antenna A2 MPE%	0.37	Antenna B2 MPE%	0.37	Antenna C2 MPE%	0.37
Antenna #:	3	Antenna #:	3	Antenna #:	3
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):	185	Height (AGL):	185	Height (AGL):	185
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):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.21	Antenna B3 MPE%	0.21	Antenna C3 MPE%	0.21

Site Composite MPE%	
Carrier	MPE%
T-Mobile	3.46
Sprint	1.64 %
Site Total MPE %:	5.10 %

T-Mobile Sector 1 Total:	1.15 %
T-Mobile Sector 2 Total:	1.15 %
T-Mobile Sector 3 Total:	1.15 %
Site Total:	5.10 %

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:	1.15 %
Sector 2:	1.15 %
Sector 3 :	1.15 %
T-Mobile Total:	3.46 %
Site Total:	5.10 %
Site Compliance Status:	COMPLIANT

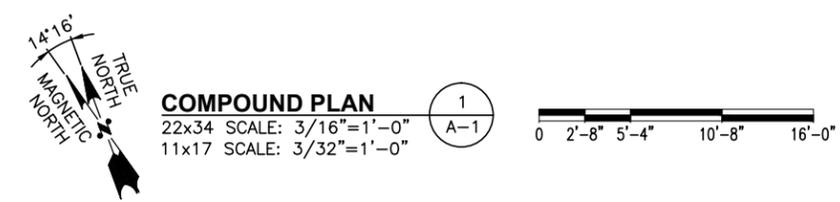
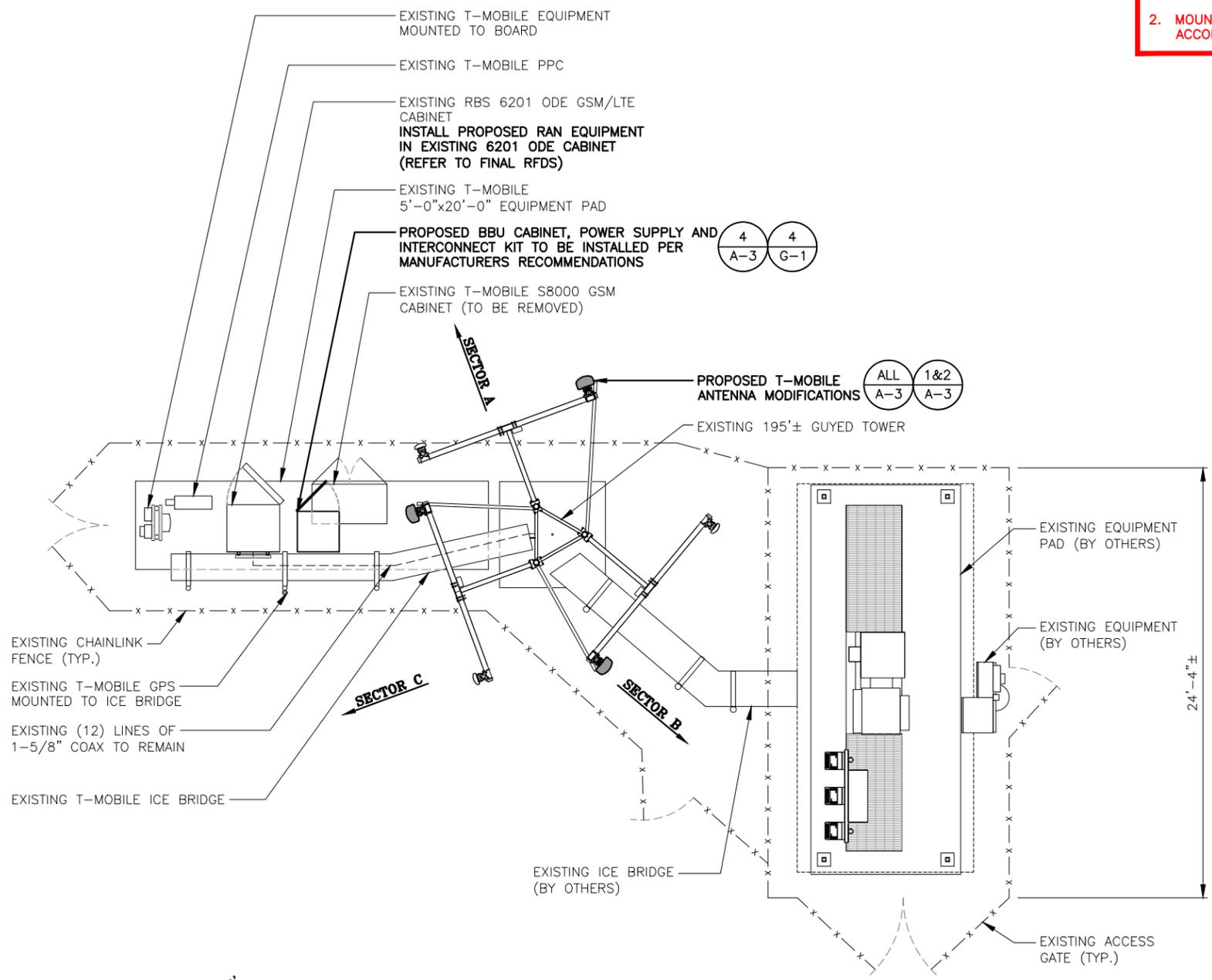
The anticipated composite MPE value for this site assuming all carriers present is **5.10%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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



COMPOUND PLAN
 22x34 SCALE: 3/16"=1'-0"
 11x17 SCALE: 3/32"=1'-0"

STRUCTURAL NOTES:
 1. ADDITIONAL TOWER MAPPING AND STRUCTURAL ANALYSIS ARE REQUIRED PRIOR TO CONSTRUCTION. DRAWINGS ARE SUBJECT TO CHANGE PENDING OUTCOME OF STRUCTURAL ANALYSIS.
 2. MOUNT ALL ANTENNAS, COAX, ETC. IN ACCORDANCE WITH STRUCTURAL ANALYSIS.

ANTENNA MOUNT STRUCTURAL ASSESSMENT REQUIREMENT:
 ENGINEER OF RECORD HAS MADE A VISUAL ASSESSMENT ONLY AND DETERMINED THAT THE EXISTING ANTENNA MOUNT IS ADEQUATE TO ACCOMMODATE ADDITIONAL EQUIPMENT LOADS. STRUCTURAL DESIGNS AND DETAILS AS SHOWN HEREIN FOR STRUCTURAL MODIFICATIONS OF THE EXISTING ANTENNA MOUNT ARE PRELIMINARY ONLY AND FINAL CONSTRUCTION DETAILS ARE SUBJECT TO CHANGE PENDING THE COMPLETION OF AN ANTENNA MOUNT STRUCTURAL ASSESSMENT.

2 A-2 1&2 A-3 T-MOBILE T-ARMS
 ELEV. = 185.0'± A.G.L.



SOURCE: HDG 02-18-2015

PARTIAL ELEVATION PHOTO DETAIL
 SCALE: N.T.S.

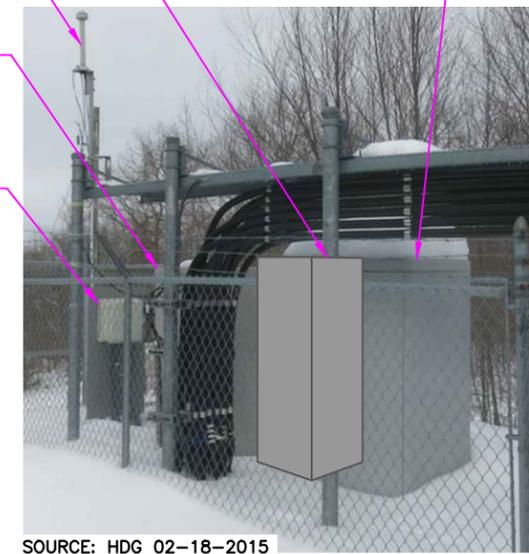
PROPOSED BBU CABINET, POWER SUPPLY AND INTERCONNECT KIT TO BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS

EXISTING T-MOBILE GPS MOUNTED TO ICE BRIDGE

EXISTING RBS 6201 ODE GSM/LTE CABINET
 INSTALL PROPOSED RAN EQUIPMENT IN EXISTING 6201 ODE CABINET (REFER TO FINAL RFDS)

EXISTING T-MOBILE EQUIPMENT MOUNTED TO BOARD

EXISTING T-MOBILE S8000 GSM CABINET (TO BE REMOVED)



SOURCE: HDG 02-18-2015

EQUIPMENT PHOTO DETAIL
 SCALE: N.T.S.

EXISTING T-MOBILE ANTENNA TO REMAIN (TYP.)

T-MOBILE NORTHEAST LLC
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002
 OFFICE: (860) 648-1116

SBA

SBA COMMUNICATIONS CORP.
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 MARLBOROUGH, MA 01752 FAX: (508) 251-1755

Hudson Design Group

1600 OSGOOD STREET
 BUILDING 20 NORTH, SUITE 3090 TEL: (978) 557-5553
 N. ANDOVER, MA 01845 FAX: (978) 336-5586

STATE OF CONNECTICUT
 DANIEL P. HAMM
 No. 24178
 LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

CHECKED BY: KB

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	03/11/15	ISSUED FOR CONSTRUCTION	KMS

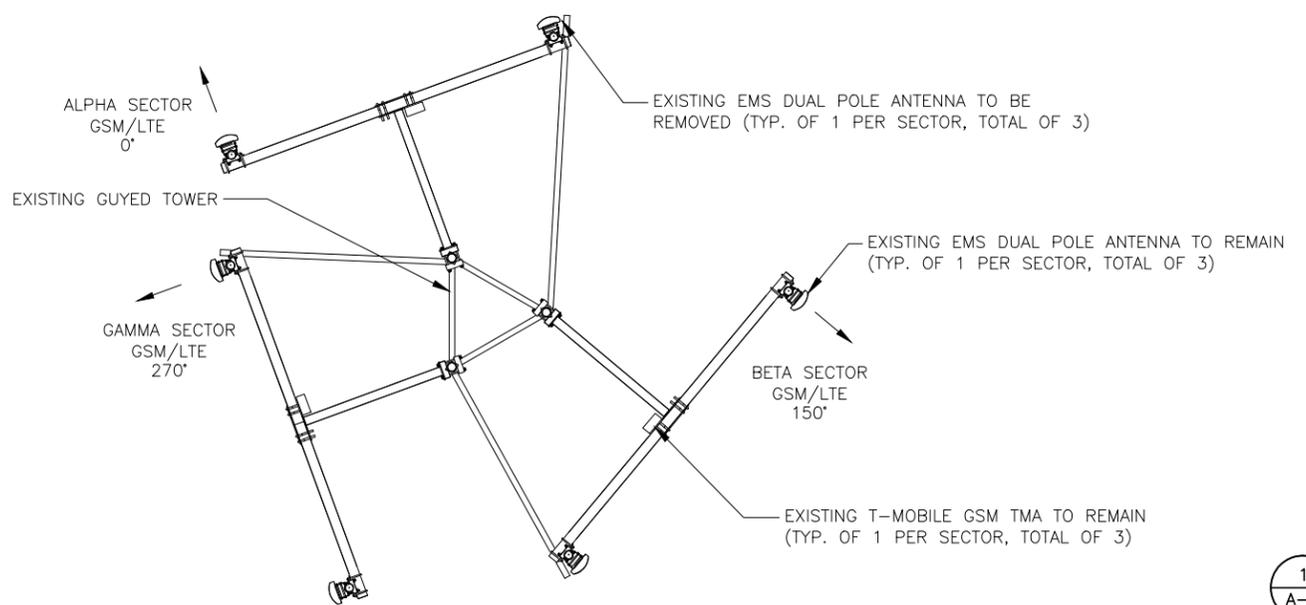
SITE NUMBER:
 CTNL082B
 SITE NAME:
 NL082/WIRELESS SOLUTIONS
 SITE ADDRESS:
 2172 GLASGO ROAD
 GRISWOLD, CT 06351
 NEW LONDON COUNTY

SHEET TITLE
 COMPOUND PLAN & ELEVATION

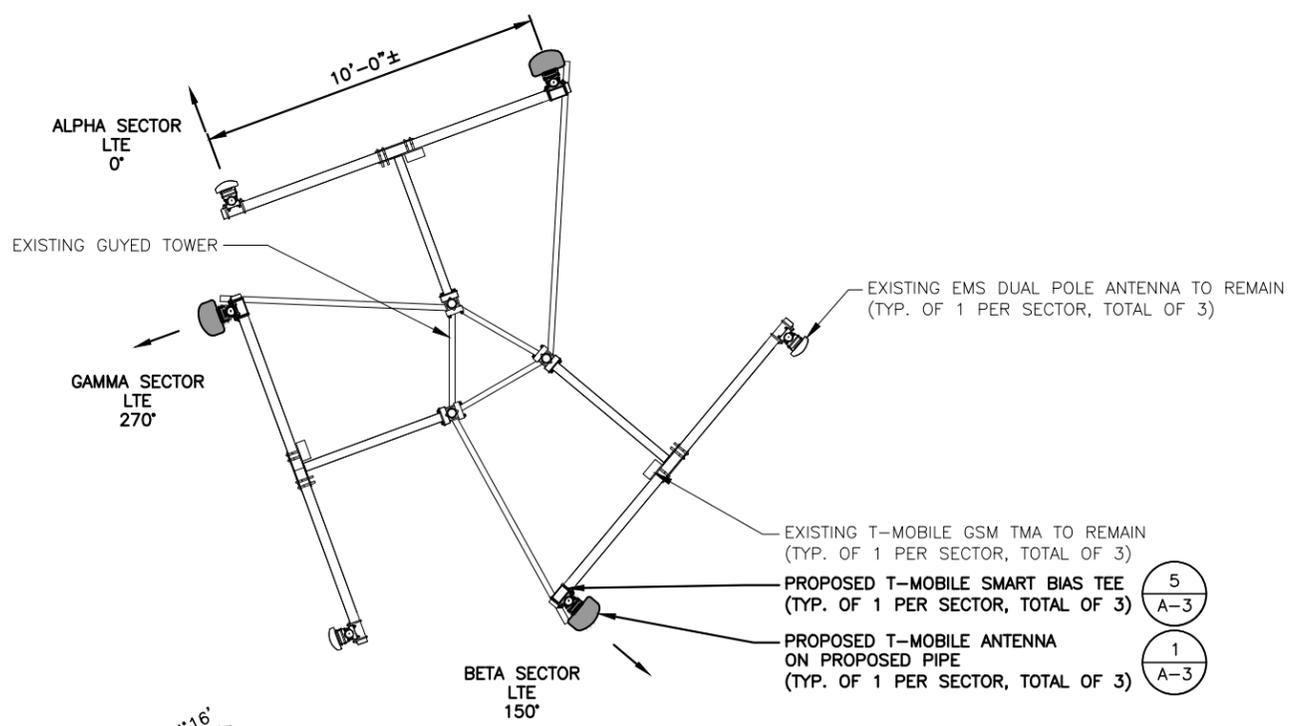
SHEET NUMBER
A-1

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EXISTING ANTENNA PLAN
 SCALE: N.T.S. (1/A-2)



PROPOSED ANTENNA PLAN
 SCALE: N.T.S. (2/A-2)

SPECIAL WORK NOTE:
 VERTICALLY CENTER ON EXISTING MOUNTING RAIL, THE PIPE MAST AND ANTENNA

- (1/A-3) PROPOSED T-MOBILE ANTENNA ON PROPOSED PIPE (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- (5/A-3) PROPOSED T-MOBILE SMART BIAS TEE (TYP. OF 1 PER SECTOR, TOTAL OF 3)



PROPOSED ANTENNA PHOTO DETAIL
 SCALE: N.T.S. (3/A-2)

T-MOBILE NORTHEAST LLC
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002
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 1600 OSGOOD STREET
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Daniel P. Hamm

CHECKED BY: KB
 APPROVED BY: DPH

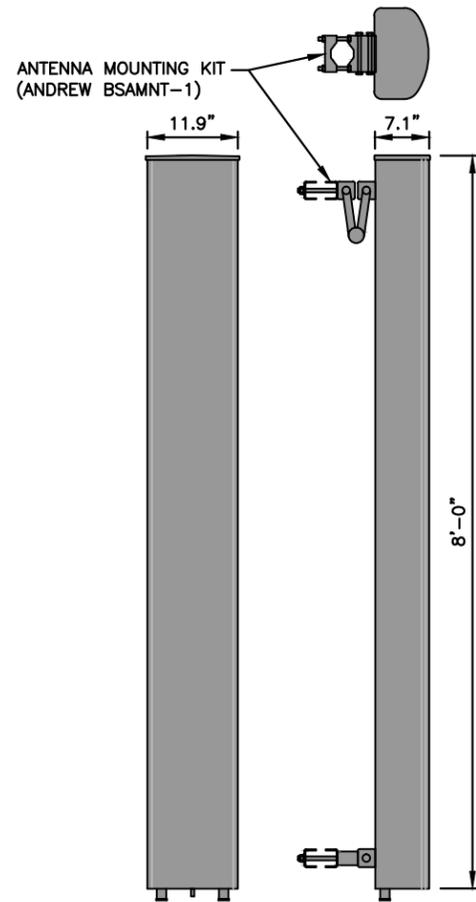
SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	03/11/15	ISSUED FOR CONSTRUCTION	KMS

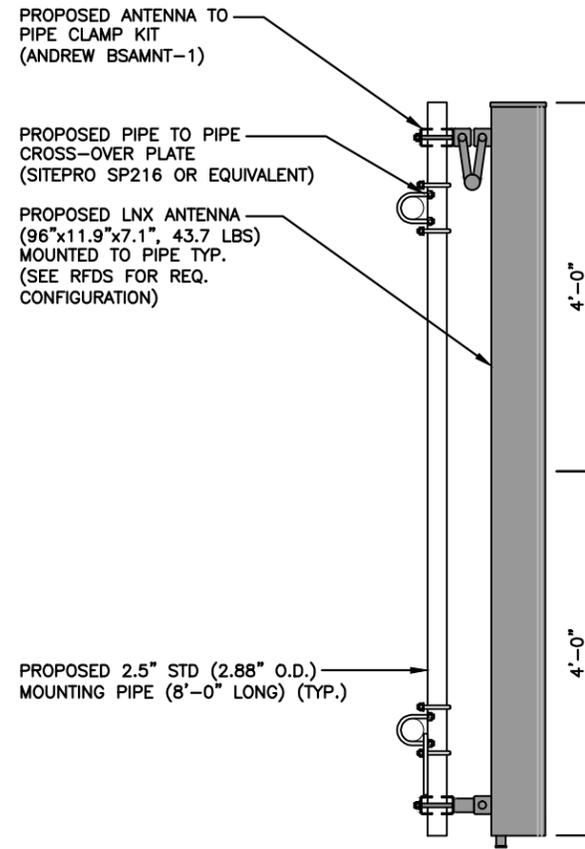
SITE NUMBER: CTNL082B
 SITE NAME: NL082/WIRELESS SOLUTIONS
 SITE ADDRESS: 2172 GLASGO ROAD
 GRISWOLD, CT 06351
 NEW LONDON COUNTY

SHEET TITLE
 EXISTING & PROPOSED ANTENNA PLANS

SHEET NUMBER
A-2



LNx ANTENNA DETAIL 1
SCALE: N.T.S. A-3

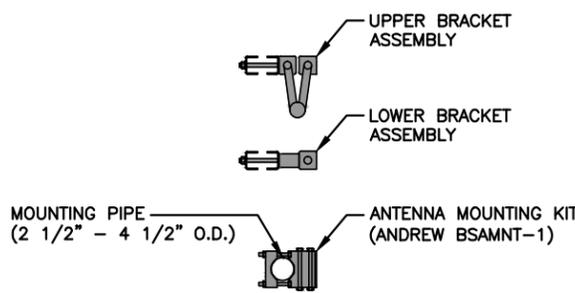


PROPOSED ANTENNA MOUNTING DETAIL 2
SCALE: N.T.S. A-3

ANTENNA MOUNT STRUCTURAL ASSESSMENT REQUIREMENT:
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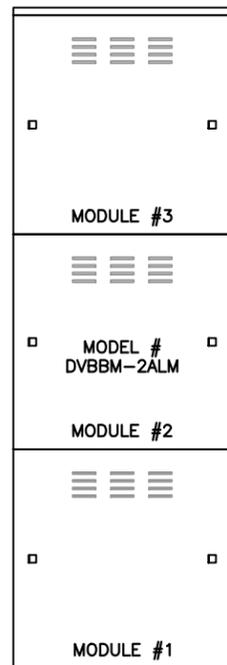
STRUCTURAL NOTES:
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SPECIAL WORK NOTE:
VERTICALLY CENTER ON EXISTING MOUNTING RAIL, THE PIPE MAST AND ANTENNA

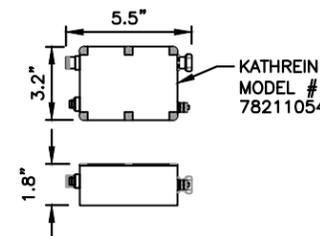


ANTENNA MOUNTING BRACKET 3
SCALE: N.T.S. A-3

BBU DIMENSIONS	
MODEL #	DVBBM-2ALM
MANUF.	MSF DATA SERVICES
WIDTH	28.45"
DEPTH	28.45"
HEIGHT	29.67"
WEIGHT	1,264 LBS
MOUNT BASE WITH (4) 1/2" DROP IN ANCHOR'S WITH 2" MINIMUM EMBEDMENT (INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES)	



BATTERY CABINET (BBU) 4
SCALE: N.T.S. A-3



SMART BIAS TEE (SBT) 5
SCALE: N.T.S. A-3

T-MOBILE NORTHEAST LLC

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Daniel P. Hamm

CHECKED BY: KB

APPROVED BY: DPH

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
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SITE NAME:
NL082/WIRELESS SOLUTIONS
SITE ADDRESS:
2172 GLASGO ROAD
GRISWOLD, CT 06351
NEW LONDON COUNTY

SHEET TITLE
DETAILS

SHEET NUMBER
A-3