



March 31, 2015

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

RE: Notice of Exempt Modification
1279 Long Hill Road, Middletown, CT 06457
N 41° 30' 40.43"
W 72° 40' 14.68"
T-Mobile #: CT11247E-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 1279 Long Hill Road, Middletown, CT 06457.

The 1279 Long Hill Road, Middletown facility consists of a 158' Monopole owned and operated by SBA Properties, 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 modernization 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**

1279 Long Hill Road, Middletown, CT 06457
Site number CT11247E

Tower Owner: SBA Properties, LLC

Equipment Configuration: Monopole

Current and/or approved:

- (6) EMS RR90-17-02DP
- (6) 1-5/8" Feed lines

Planned Modifications:

- (3) RFS APXV18-209014-02
- (3) Commscope LNX-6515DS
- (12) Allen Telecom FE15501P77/75
- (3) Kathrein 782-11056
- (12) 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 5.32% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 67.41% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE%	
Carrier	MPE%
T-Mobile	5.32
Nextel	3.65 %
Sprint	2.92 %
Clearwire	0.86 %
Verizon Wireless	16.79 %
MetroPCS	5.06 %
AT&T	32.81 %
Site Total MPE %:	67.41 %



March 31, 2015

Mayor Daniel T. Drew
City of Middletown
City Hall
245 deKoven Drive
Middletown, CT 06457

RE: Telecommunications Facility @ 1279 Long Hill Road, Middletown, CT 06457

Dear Mayor Drew,

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 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 black ink, appearing to read "Kri 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



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

158' Monopole Tower

**SBA Site Name: Long Hill #1
SBA Site ID: CT01080-S-03
T-Mobile Site ID: CT11247E**

FDH Project Number 15BFZB1400

Analysis Results

Tower Components	92.9%	Sufficient
Foundation	69.0%	Sufficient

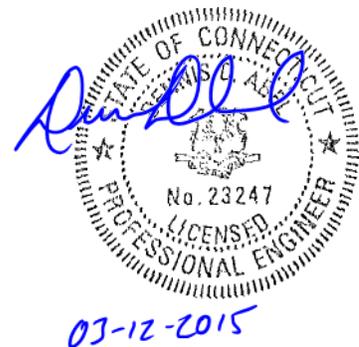
Prepared By:

Cary J. Webb, PE
Project Engineer II

Reviewed By:

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

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
(919) 755-1012
info@fdh-inc.com



March 12, 2015

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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 Middletown, 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 *2005 Connecticut State Building Code*. Information pertaining to the existing/proposed antenna loading, current tower geometry, foundation dimensions, geotechnical data, and member sizes was obtained from:

- Summit Manufacturing, Inc. (Job No. 5173) original design drawings dated November 8, 1999
- Paul J. Ford & Company (Job No. 29299-641) foundation design drawings dated October 22, 1999
- Jawarski Geotech, Inc. (Project No. C98590G) Geotechnical Evaluation dated February 4, 1999
- SBA Network Services, Inc.

The *basic design wind speed* per *TIA/EIA-222-F* standards and *2005 Connecticut State Building Code* is 85 mph without ice and 38 mph with 3/4" radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the existing and proposed antennas from T-Mobile in place at 137 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and *2005 Connecticut State Building Code* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (see Paul J. Ford & Company Job No. 29299-641), 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 *2005 Connecticut State Building Code* are met with the existing and proposed loading in place, we have the following recommendations:

1. The proposed feedlines should be installed inside the pole's shaft.
2. The existing TMA's 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	Feedlines ¹	Carrier	Mount Elevation (ft)	Mount Type
158	(3) Antel BXA-70063-6CF (2) Antel BXA-171063-8BF-2 (2) Antel LPA-80063-6CF-4 (4) RFS APL866513-42TO (1) Antel BXA-171063-12BF-2 (6) RFS FD9R6004/2C-3L Dplxers (1) GPS	(12) 1-5/8" (1) 1/2"	Verizon	156	(1) Low Profile Platform
151	(1) Andrew VHLP 2.5 Dish (1) ODU	(1) 1/2"	Clearwire	151	(1) Pipe Mount
146	(3) RFS APXVSP18-C-A20 w/ Mount Pipe (3) RFS APXVTM14-C-I20 w/ Mount Pipe (3) Alcatel Lucent TD-RRH8x20-25 RRHs (3) Alcatel Lucent 1900MHz RRHs (3) Alcatel Lucent 800MHz RRHs (3) Alcatel Lucent 800MHz Filters (4) RFS ACU-A20-N RETs (1) GPS	(3) 1-1/4" (1) 1-1/4" Power/Fiber	Sprint	144	(1) Low Profile Platform
	(3) Kathrein 840 10054 (3) RRU's	(2) 1/2" (6) 5/16"	Clearwire		
137	(6) EMS RR90-17-02DP	(6) 1-5/8"	T-Mobile	136	(1) Low Profile Platform
126	(12) Decibel DB844H90E-XY	(12) 1-1/4"	Nextel	126	(1) Low Profile Platform
116	(3) Kathrein 742 213	(6) 1-5/8"	Pocket	116	Direct Mount
107	(6) KMW AM-X-CD-16-65-00T (3) Powerwave 7770 (3) Powerwave LGP21401 TMAs (3) CCI DTMABP7819VG12A TMAs	(12) 1-5/8" (1) Rosenberger FB-L98-002-050 (3) WR- VG122ST- BRDA/12 Gage	AT&T	105	(1) Low Profile Platform
103	(6) Ericsson RRU-11 RRU's (1) Raycap DC6-48-60-18-8F Surge Arrestor			103	(1) Collar Mount

1. Feedlines installed inside monopole's shaft unless otherwise noted.

Proposed Loading:

Antenna Elevation (ft)	Description	Feedlines	Carrier	Mount Elevation (ft)	Mount Type
137	(3) RFS APXV18-209014-02 (3) Commscope LNX-6515DS (12) Allen Telecom FE15501P77/75 (3) Kathrein 782-11056	(12) 1-5/8"	T-Mobile	136	(1) Low Profile Platform w/ support kit (Site Pro1 P/N PRK 1245)

RESULTS

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

Table 2 - Material Strength

Member Type	Yield Strength
Tower Shaft Sections	65 ksi & 60 ksi
Base Plate	50 ksi
Anchor Bolts	75 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. **Table 4** displays the maximum foundation reactions. **Table 5** displays the maximum antenna rotations at service wind speed.

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
L1	158 - 132.75	Pole	TP28.88x23x0.25	28.5	Pass
L2	132.75 - 91.25	Pole	TP38.07x27.5067x0.25	92.9	Pass
L3	91.25 - 45	Pole	TP48.5x36.4028x0.375	87.4	Pass
L4	45 - 0	Pole	TP58.38x46.2865x0.4375	83.8	Pass
	0	Anchor Rods	(24) 2.25" \varnothing w/ BC = 66"	63.1	Pass
	0	Base Plate	67" Sq. PL x 2.75" Thick	72.6	Pass

*Capacities include a 1/3 allowable stress increase for wind.

Table 4 - Maximum Base Reactions

Base Reactions	Current Analysis (TIA/EIA-222-F)	Original Design (TIA/EIA-222-F)
Axial	47 k	46 k
Shear	35 k	34 k
Moment	4,121 k-ft	3,974 k-ft

*Foundations determined adequate per independent analysis.

Table 5 - Maximum Antenna Rotations at Service Wind Speed

Centerline Elevation (ft)	Antenna	Tilt (deg)*	Twist (deg)*
151	(1) Andrew VHLP 2.5 Dish	1.0055	0.0008

*Allowable tilt and twist values to be reviewed by the carrier.

GENERAL COMMENTS

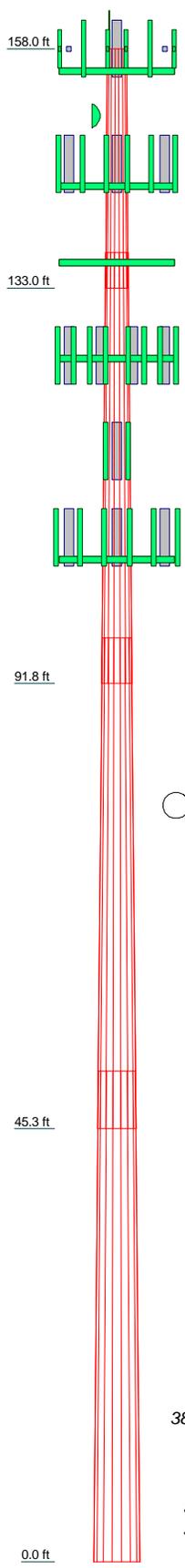
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading 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	1	2	3	4	
Length (ft)	25.00	45.00	51.25	51.25	
Number of Sides	18	18	18	18	
Thickness (in)	0.2500	0.2500	0.3750	0.4375	
Socket Length (ft)	3.75	4.75	6.00	46.3397	
Top Dia (in)	23.0000	27.4980	36.4541	58.3800	
Bot Dia (in)	28.8800	38.0700	48.5000		
Grade		A607-60	A607-65		
Weight (K)	1.7	4.0	8.7	12.6	27.0



DESIGNED APPURTENANCE LOADING

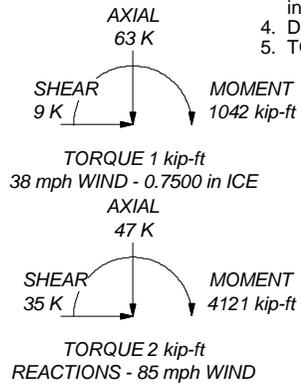
TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	158	APXVSP18-C-A20 w/Mount Pipe	144
GPS	156	(2) Mount Pipe	136
(1) Platform Mount	156	(2) Mount Pipe	136
BXA-70063/6CF W/Mount Pipe	156	(1) Platform Mount	136
BXA-70063/6CF W/Mount Pipe	156	Siet Pro1 PRK 1245	136
BXA-70063/6CF W/Mount Pipe	156	APXV18-209014-02 w/Mount Pipe	136
BXA-171063/12BF-2 w/Mount Pipe	156	APXV18-209014-02 w/Mount Pipe	136
BXA-171063/8BF-2 W/ Mount Pipe	156	APXV18-209014-02 w/Mount Pipe	136
BXA-171063/8BF-2 W/ Mount Pipe	156	LNx-6515DS w/ Mount Pipe	136
(2) LPA-80063/6CF-4 w/Mount Pipe	156	LNx-6515DS w/ Mount Pipe	136
(2) APL866513-42T0 w/ Mount Pipe	156	LNx-6515DS w/ Mount Pipe	136
(2) APL866513-42T0 w/ Mount Pipe	156	(4) FE15501P77/75	136
(2) FD9R6004 Diplexer	156	(4) FE15501P77/75	136
(2) FD9R6004 Diplexer	156	(4) FE15501P77/75	136
(2) FD9R6004 Diplexer	156	782 11056	136
ODU 300	151	782 11056	136
Pipe Mount	151	782 11056	136
VHLP2.5	151	(2) Mount Pipe	136
APXVSP18-C-A20 w/Mount Pipe	144	(1) Platform Mount	126
(2) ACU-A20-N RET	144	(4) DB844H90E-XY w/Mount Pipe	126
ACU-A20-N RET	144	(4) DB844H90E-XY w/Mount Pipe	126
ACU-A20-N RET	144	(4) DB844H90E-XY w/Mount Pipe	126
800MHZ RRH	144	742 213 W/Pipe Mount	116
800MHZ RRH	144	742 213 W/Pipe Mount	116
800MHZ RRH	144	742 213 W/Pipe Mount	116
800 MHz Filter	144	LGP21401 TMA	105
800 MHz Filter	144	LGP21401 TMA	105
800 MHz Filter	144	DTMABP7819VG12A TMA	105
1900 MHz RRH	144	DTMABP7819VG12A TMA	105
1900 MHz RRH	144	DTMABP7819VG12A TMA	105
1900 MHz RRH	144	(1) Platform Mount	105
GPS	144	7770.00 W/Mount Pipe	105
(1) Platform Mount	144	7770.00 W/Mount Pipe	105
TD-RRH8x20-25	144	7770.00 W/Mount Pipe	105
840 10054 W/Mount Pipe	144	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	105
840 10054 W/Mount Pipe	144	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	105
840 10054 W/Mount Pipe	144	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	105
RRU	144	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	105
RRU	144	LGP21401 TMA	105
RRU	144	(2) RRU-11	103
APXVSP18-C-A20 w/Mount Pipe	144	(2) RRU-11	103
APXVTM14-C-I20 w/ Mount Pipe	144	Collar Mount	103
APXVTM14-C-I20 w/ Mount Pipe	144	(2) RRU-11	103
APXVTM14-C-I20 w/ Mount Pipe	144	(2) RRU-11	103
TD-RRH8x20-25	144	DC6-48-60-18-8F Surge Arrestor	103
TD-RRH8x20-25	144		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi	A607-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for a 85 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: 92.9%



 FDH Engineering, Inc. 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Tower Analysis Phone: 9197551012 FAX: 9197551031	Job: Long Hill #1, CT01080-S-03 Project: 15BFZB1400		
	Client: SBA Network Services, Inc. Code: TIA/EIA-222-F Path:	Drawn by: Cary Webb Date: 03/12/15	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: CT11247E

**Middletown
1279 Long Hill Road
Middletown, CT 06457**

March 19, 2015

EBI Project Number: 6215001665

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	67.41 %

March 19, 2015

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

Emissions Analysis for Site: **CT11247E – Middletown**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **1279 Long Hill Road, Middletown, 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 and AWS bands 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 **1279 Long Hill Road, Middletown, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel
- 2) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.
- 5) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

- 6) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antennas used in this modeling are the **RFS APXV18-209014** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **RFS APXV18-209014** 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 **137 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 APXV18-209014	Make / Model:	RFS APXV18-209014	Make / Model:	RFS APXV18-209014
Gain:	14.4 dBd	Gain:	14.4 dBd	Gain:	14.4 dBd
Height (AGL):	137	Height (AGL):	137	Height (AGL):	137
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	# PCS Channels:	6
Total TX Power:	240	Total TX Power:	240	# AWS Channels:	240
ERP (W):	6,610.15	ERP (W):	6,610.15	ERP (W):	6,610.15
Antenna A1 MPE%	1.38	Antenna B1 MPE%	1.38	Antenna C1 MPE%	1.38
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	137	Height (AGL):	137	Height (AGL):	137
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 A2 MPE%	0.39	Antenna B2 MPE%	0.39	Antenna C2 MPE%	0.39

Site Composite MPE%	
Carrier	MPE%
T-Mobile	5.32
Nextel	3.65 %
Sprint	2.92 %
Clearwire	0.86 %
Verizon Wireless	16.79 %
MetroPCS	5.06 %
AT&T	32.81 %
Site Total MPE %:	67.41 %

T-Mobile Sector 1 Total:	1.77 %
T-Mobile Sector 2 Total:	1.77 %
T-Mobile Sector 3 Total:	1.77 %
Site Total:	67.41 %

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:	1.77 %
Sector 2:	1.77 %
Sector 3 :	1.77 %
T-Mobile Total:	5.32 %
Site Total:	67.41 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **67.41%** 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

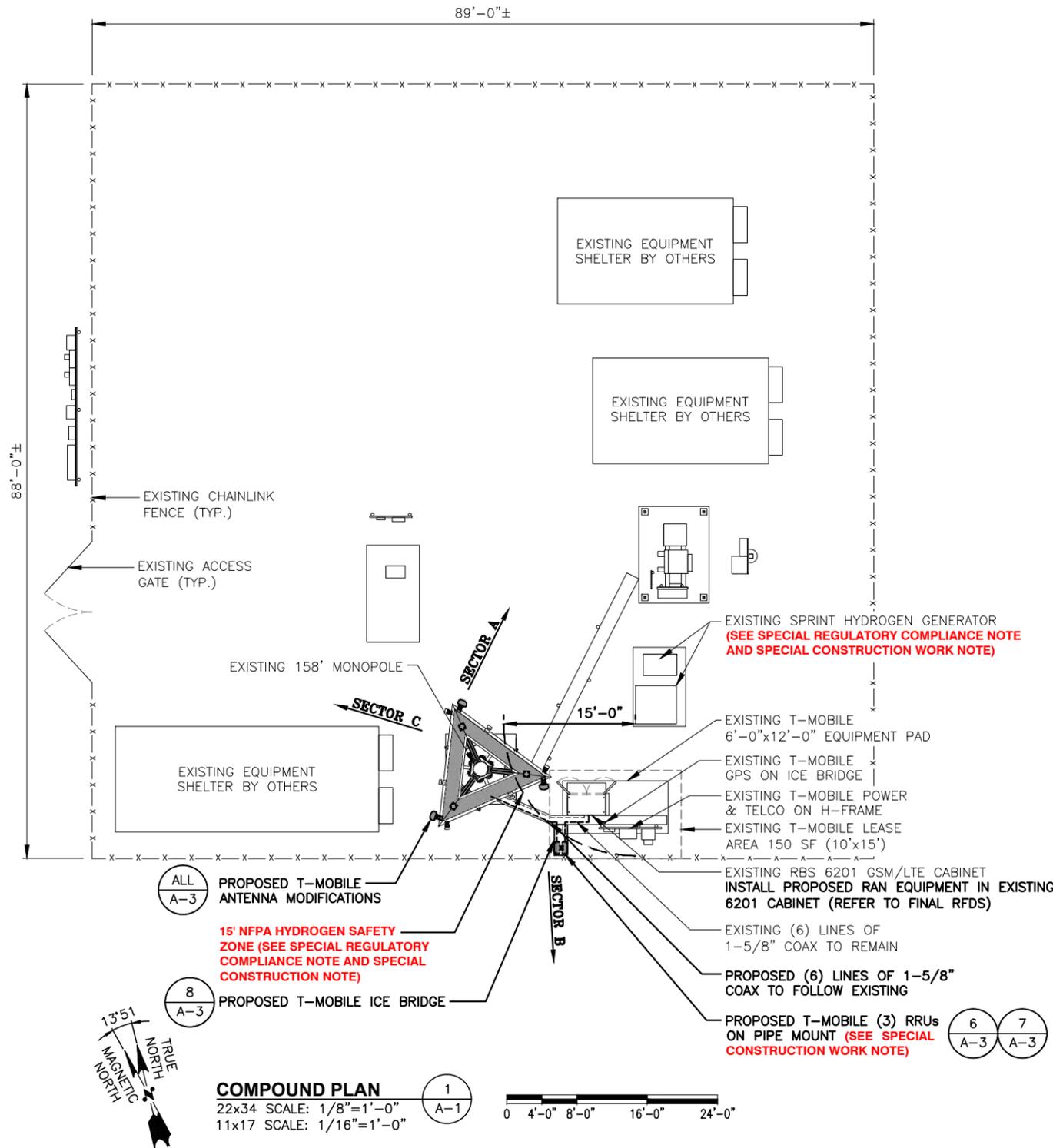
EBI Consulting
21 B Street
Burlington, MA 01803

SPECIAL CONSTRUCTION WORK NOTE:
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 INSTALLED A MINIMUM OF 15' FROM THE
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 MODULE. GC MUST FIELD VERIFY ALL
 DIMENSIONS BEFORE INSTALLING RRU

SPECIAL REGULATORY COMPLIANCE NOTE:
 SETBACK FROM THE EXISTING SPRINT
 HYDROGEN STORAGE MODULE TO EXISTING
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 TOWER OWNER HAS PROVIDED NOTICE TO
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 RELIEF FROM THE CT STATE FIRE MARSHALL.

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
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ANTENNA MOUNT STRUCTURAL ASSESSMENT REQUIREMENT:
 ENGINEER OF RECORD HAS MADE A VISUAL ASSESSMENT
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 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.



EXISTING T-MOBILE ANTENNA
 TO REMAIN (TYP.)

2
A-2 1,2
A-3 A-3

T-MOBILE PLATFORM
 ELEV. = 136.0'± A.G.L. (SBA*)

PROPOSED (6) LINES OF 1-5/8"
 COAX TO FOLLOW EXISTING
 INSIDE MONOPOLE

EXISTING (6) LINES OF 1-5/8"
 COAX TO REMAIN

PARTIAL ELEVATION PHOTO DETAIL (2)
 SCALE: N.T.S. A-1



6 7
A-3 A-3

PROPOSED T-MOBILE (3) RRUs ON PIPE MOUNT
 (SEE SPECIAL CONSTRUCTION WORK NOTE)

EXISTING T-MOBILE GPS ON ICE BRIDGE

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

EXISTING T-MOBILE POWER
 & TELCO ON H-FRAME

EQUIPMENT PHOTO DETAIL (3)
 SCALE: N.T.S. A-1

**T-MOBILE
 NORTHEAST LLC**

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

SBA

SBA COMMUNICATIONS CORP.
 33 BOSTON POST ROAD WEST, SUITE 320 TEL: (508) 251-0720
 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) 336-5866

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
1	03/09/15	ISSUED FOR CONSTRUCTION	JA
0	02/24/15	ISSUED FOR CONSTRUCTION	JA

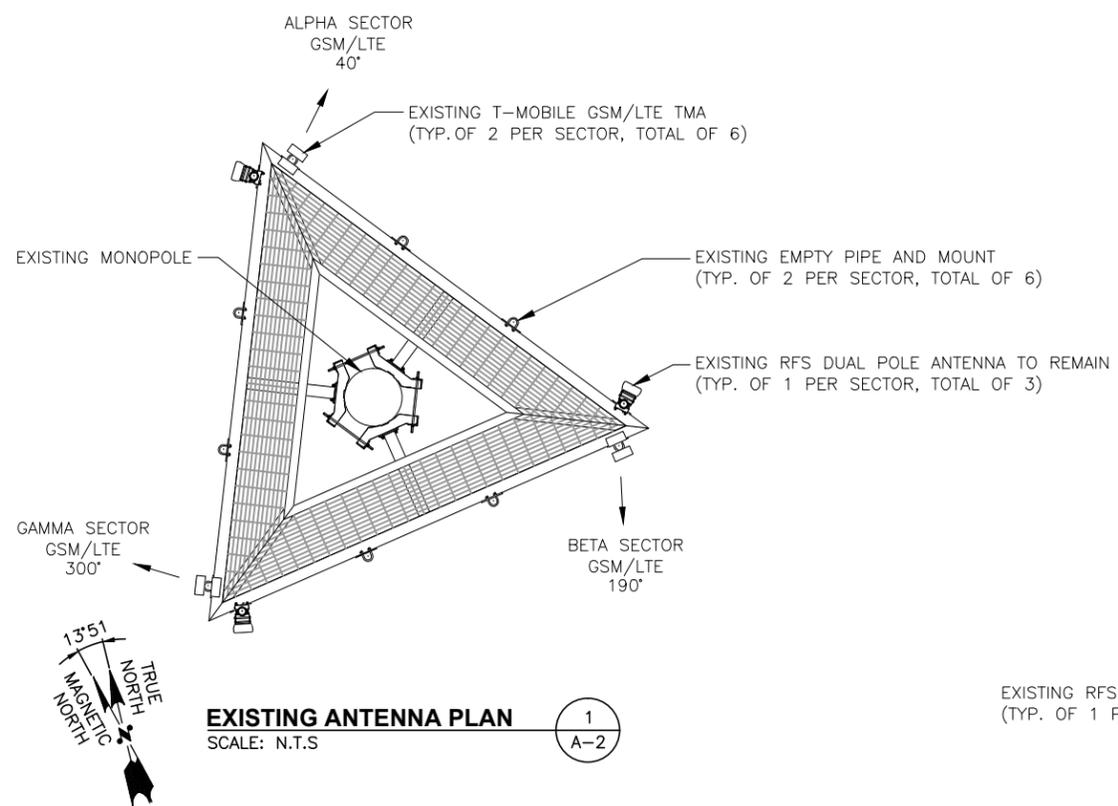
SITE NUMBER:
 CT11247E

SITE NAME:
 MIDDLETOWN

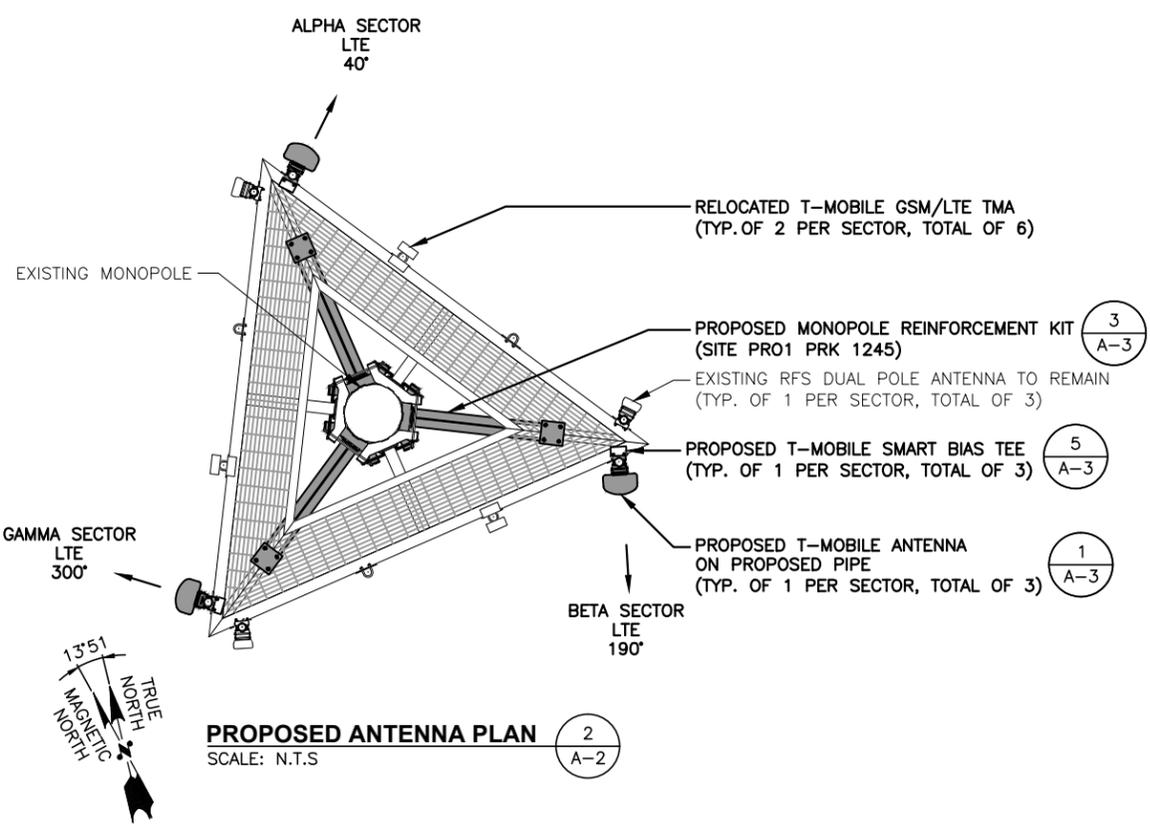
SITE ADDRESS:
 1279 LONG HILL ROAD
 MIDDLETOWN, CT 06457
 MIDDLESEX COUNTY

SHEET TITLE
 COMPOUND &
 ELEVATION PLAN

SHEET NUMBER
A-1



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



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

EXISTING RFS DUAL POLE ANTENNA TO REMAIN
(TYP. OF 1 PER SECTOR, TOTAL OF 3)



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

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

PROPOSED T-MOBILE ANTENNA ON PROPOSED PIPE
(TYP. OF 1 PER SECTOR, TOTAL OF 3) 1
A-3

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

PROPOSED MONOPOLE REINFORCEMENT KIT
(SITE PRO1 PRK 1245)

**T-MOBILE
NORTHEAST LLC**
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BLOOMFIELD, CT 06002
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Daniel P. Hamm

CHECKED BY: KB

APPROVED BY: DPH

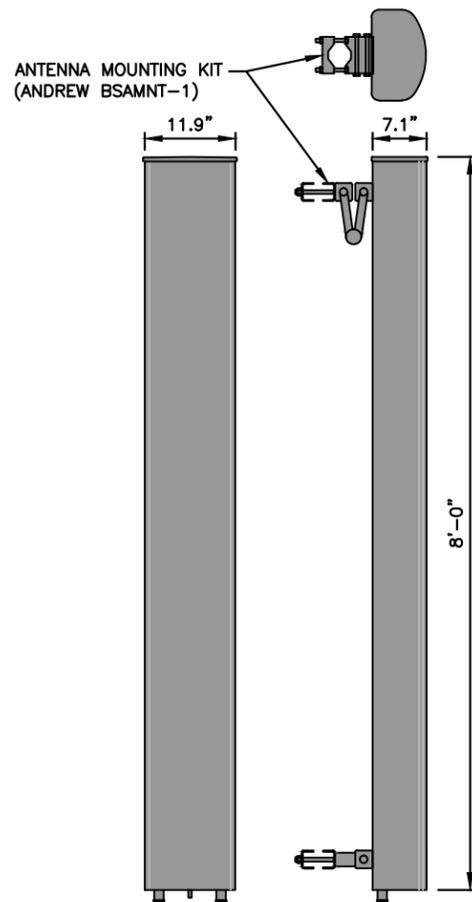
SUBMITTALS

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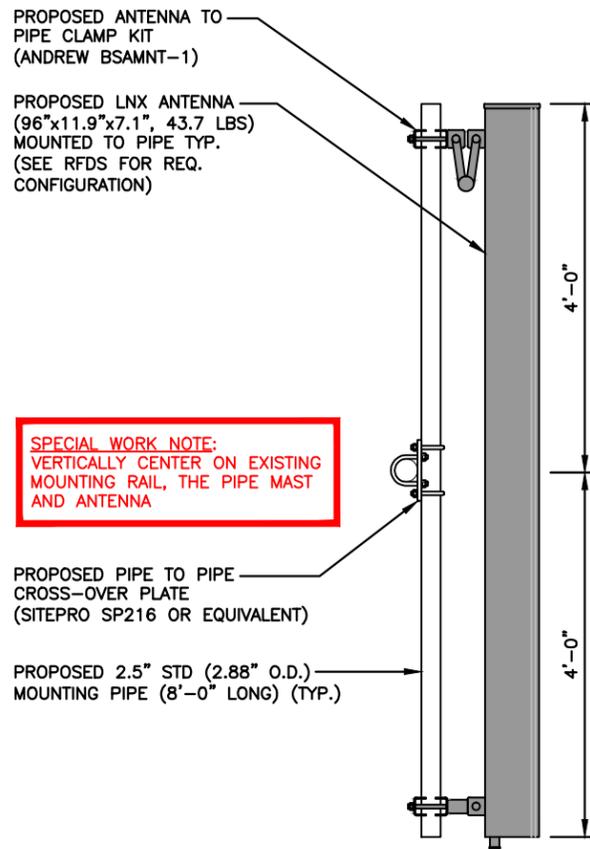
SITE NUMBER:
CT11247E
SITE NAME:
MIDDLETOWN
SITE ADDRESS:
1279 LONG HILL ROAD
MIDDLETOWN, CT 06457
MIDDLESEX COUNTY

SHEET TITLE
**EXISTING &
PROPOSED ANTENNA
PLANS**

SHEET NUMBER
A-2

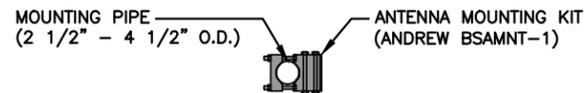
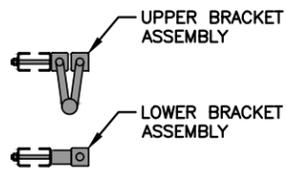


LNX ANTENNA DETAIL 1
SCALE: N.T.S. A-3

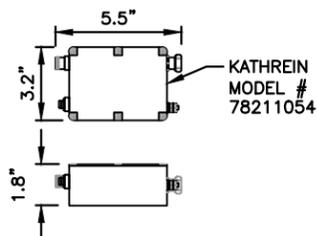


PROPOSED ANTENNA MOUNTING DETAIL 2
SCALE: N.T.S. A-3

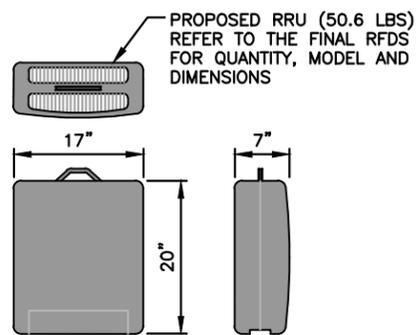
SPECIAL WORK NOTE:
VERTICALLY CENTER ON EXISTING MOUNTING RAIL, THE PIPE MAST AND ANTENNA



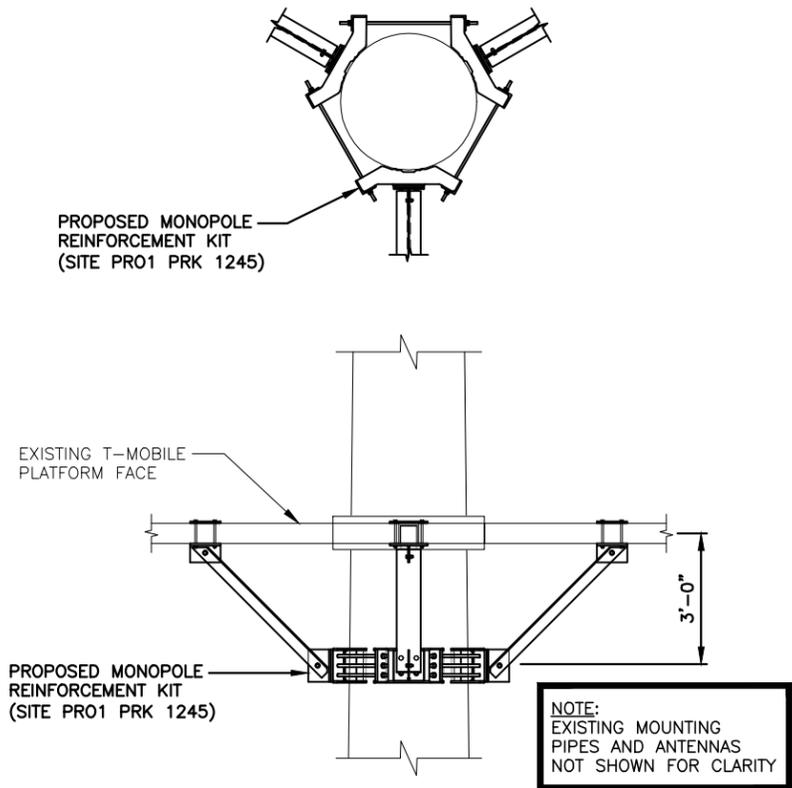
ANTENNA MOUNTING BRACKET 4
SCALE: N.T.S. A-3



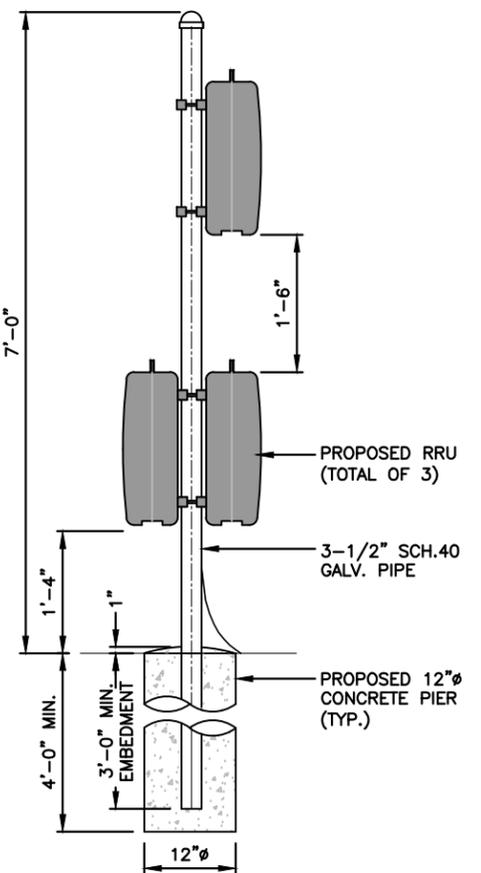
SMART BIAS TEE (SBT) 5
SCALE: N.T.S. A-3



PROPOSED RRU DETAIL 6
SCALE: N.T.S. A-3



MONOPOLE REINFORCEMENT KIT 3
SCALE: N.T.S. A-3



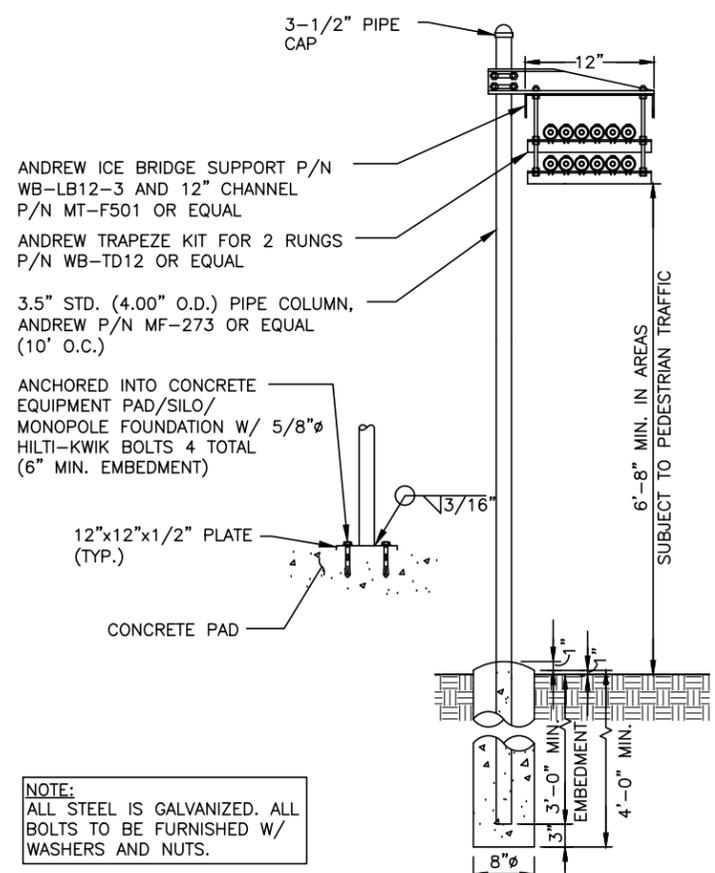
RRU MOUNTING DETAIL 7
SCALE: N.T.S. A-3

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COAX ICE BRIDGE DETAIL 8
SCALE: N.T.S. A-3

NOTE:
ALL STEEL IS GALVANIZED. ALL BOLTS TO BE FURNISHED W/ WASHERS AND NUTS.

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