



August 05, 2014

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

RE: Notice of Exempt Modification
50 Fairchild Road
Middletown CT 06457
T-Mobile #: CTHA537A
N 41° 32' 42.0"
W -72° 37' 14.8"

Dear Mr. Martin and Members of the Siting Council:

On behalf of T-Mobile Northeast LLC, SBA Communications is submitting an exempt modification application to the Connecticut Siting Council for modification of existing equipment at a tower facility located at 50 Fairchild Road, Middletown CT 06457.

The 50 Fairchild Road facility consists of a 130' MONOPOLE Tower owned and operated by SBA Infrastructure, LLC. In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile Northeast LLC 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.

T-Mobile Northeast LLC wishes 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 Sprint'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 Northeast LLC, 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 3807 with any questions you may have concerning this matter.

Thank you,

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

Peter Nute
SBA Communications Corporation
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-0720 x 3807 + T
508-251-1755 + F
Pnute@sbsite.com



**T-Mobile Northeast LLC
Equipment Modification**

50 Fairchild Road, Middletown CT 06457
Site number CTHA537

Tower Owner: SBA Infrastructure, LLC

Equipment Configuration: MONOPOLE Tower

Current and/or approved:

- (3) APXV18-206517S
- (6) 1-5/8" Feed Lines

Planned Modifications:

- (3) Ericsson Air 21 B2A/B4P
- (3) Ericsson Air 21 B4A/B2P
- (6) 1-5/8" Feed Lines
- (1) 1-5/8" Fiber

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 1.180% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 45.180% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE %	
Carrier	MPE %
Metro MobilePCS	1.180%
Nextel	4.400%
AT&T	9.100%
Clearwire	2.300%
Verizon Wireless	28.200%
Total Site MPE %	45.180%



August 05, 2014

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

RE: Telecommunications Facility @ 50 Fairchild Road, Middletown CT 06457

Dear Mayor Drew,

In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile Northeast LLC 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 Sprint'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 3807.

Thank you,

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

Peter Nute
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Marlborough, MA 01752
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Pnute@sbsite.com

August 05, 2014

Stephen G. & Barbara L. Borrelli
67 Fairchild Road
Middletown CT 06457

RE: Telecommunications Facility @ 50 Fairchild Road, Middletown CT 06457

Dear Mr. & Mrs. Borrelli,

In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile Northeast LLC 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 Sprint'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 3807.

Thank you,



Peter Nute
SBA Communications Corporation
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-0720 x 3807 + T
508-251-1755 + F
Pnute@sbsite.com

PRINT SOLUTIONS (770) 416-6099

4539

DATE 08/06/14

TO CSC

DEPOSITS

FOR ZOWING - CSC

TOTAL

CTHAS37A

THIS CHECK

625 00

535031

OTHER

TAX DEDUCTIBLE

BALANCE

SBA NETWORK SERVICES, LLC (MASSACHUSETTS)
900 CUMMINGS CENTER, SUITE 316U
BEVERLY, MA 01915-6181
(561) 995-7670

4539

DATE 08/06/14

63-2-630

PAY TO THE ORDER OF

CONNECTICUT SITING COUNCIL

\$ 625.00

SIX HUNDRED TWENTY FIVE AND 00/100

DOLLARS



Security Features
Included
Details on Back

OVER \$5,000 REQUIRES TWO SIGNATURES

Wells Fargo, N.A.

[Signature]

FOR CSC - CTHAS37A - 535031

⑈00004539⑈ ⑆063000021⑆ 2000017262525⑈

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

Metro MobilePCS Existing Facility

Site ID: CTHA537A

SBA Middletown Monopole
50 Fairchild Road
Middletown, CT 06457

July 24, 2014

EBI Project Number: 62144002

July 24, 2014

Metro MobilePCS USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Re: Emissions Values for Site: **CTHA537A - SBA Middletown Monopole**

EBI Consulting was directed to analyze the proposed Metro MobilePCS facility located at 50 Fairchild Road, Middletown, CT, for the purpose of determining whether the emissions from the Proposed Metro MobilePCS 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 cellular band is $567 \mu\text{W}/\text{cm}^2$, 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 Metro MobilePCS Wireless antenna facility located at 50 Fairchild Road, Middletown, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Metro MobilePCS is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, the actual antenna pattern gain value in the direction of the sample area was used. For this report the sample point is a 6 foot person standing at the base of the tower

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

- 1) 2 GSM channels (1935.000 MHz—to 1945.000 MHz) were considered for each sector of the proposed installation.
- 2) 2 UMTS channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation.
- 3) 2 LTE channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation.
- 4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
- 6) The antenna used in this modeling is the Ericsson AIR21 for LTE, UMTS and GSM. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.6 dBd gain value at its main lobe. Actual antenna gain values were used for all calculations as per the manufacturers specifications.

- 7) The antenna mounting height centerline of the proposed antennas is **100 feet** above ground level (AGL).
- 8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

Site ID	CTHA537A SBA Middletown Monopole
Site Address	50 Fairchild Road, Middletown, CT 06457
Site Type	Monopole

Sector 1

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBD)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	100	94	None	0	0	48.326044	1.966217	0.19662%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-	-	-	0	-3.95	100	94	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	100	94	1-5/8"	0	0	24.163022	0.983109	0.09831%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	100	94	1-5/8"	0	0	24.163022	0.983109	0.09831%

Sector total Power Density Value: 0.393%

Sector 2

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBD)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	100	94	None	0	0	48.326044	1.966217	0.19662%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-	-	-	0	-3.95	100	94	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	100	94	1-5/8"	0	0	24.163022	0.983109	0.09831%
2b	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	100	94	1-5/8"	0	0	24.163022	0.983109	0.09831%

Sector total Power Density Value: 0.393%

Sector 3

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBD)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	100	94	None	0	0	48.326044	1.966217	0.19662%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-	-	-	0	-3.95	100	94	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	100	94	1-5/8"	0	0	24.163022	0.983109	0.09831%
2b	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	100	94	1-5/8"	0	0	24.163022	0.983109	0.09831%

Sector total Power Density Value: 0.393%

Site Composite MPE %	
Carrier	MPE %
Metro MobilePCS	1.180%
Nextel	4.400%
AT&T	9.100%
Clearwire	2.300%
Verizon Wireless	28.200%
Total Site MPE %	45.180%

Summary

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

The anticipated Maximum Composite contributions from the Metro MobilePCS facility are **1.180%** (**0.393% from each sector**) of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **45.180%** 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



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

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

130' Monopole Tower

**SBA Site Name: Middletown 2
SBA Site ID: CT13064-A-03
T-Mobile Site Name: CTHA537A**

FDH Project Number 1466BX1400

Analysis Results

Tower Components	99.5 %	Sufficient
Foundation	60.0 %	Sufficient

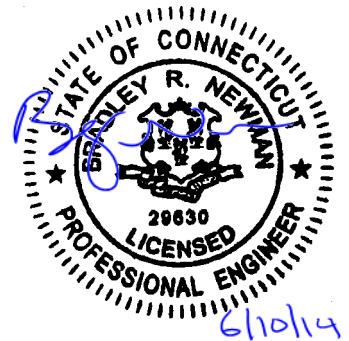
Prepared By:

Daniel Falconi, EI
Project Engineer

Reviewed By:

Bradley R. Newman, PE
Senior Project Engineer
CT PE License No. 29630

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



June 10, 2014

Prepared pursuant to ANSI/TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas and 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 Middletown, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads pursuant to the *Structural Standard for Antenna Supporting Structures and Antennas, ANSI/TIA-222-G* and *2005 Connecticut State Building Code (CSBC)*. Information pertaining to the existing/proposed antenna loading, current tower geometry, geotechnical data, and member sizes was obtained from:

- Radian Communication Services (File No. 060-3494) original design drawings dated December 15, 2006
- Gemini Geotechnical Associates, Inc. (Site No. 999-0049) Geotechnical Engineering Report dated November 30, 2006
- FDH Engineering, Inc. (Project No. 11-01248E S1) Modification & 10' Extension Drawings for a 120' Monopole dated September 21, 2011
- FDH Engineering, Inc. (Project No. 11-01248E S1) Post Construction Inspection Report dated December 14, 2011
- FDH Engineering, Inc. (Job No. 12-08192E S2) Modification Drawings for a 130' Monopole dated November 14, 2012
- FDH Engineering, Inc. (Project No. 12-11103T C1) TIA Inspection Report dated February 18, 2013
- FDH Engineering, Inc. (Project No. 1423HD1400) Modification Drawings for a 130' Monopole dated April 4, 2014
- SBA Network Services, Inc.

The *basic design wind speed* per the *ANSI/TIA-222-G* standard and *2005 CSBC* is 110 mph without ice and 50 mph with 3/4" radial ice. Ice is considered to increase in thickness with height. Furthermore, this structure was analyzed as a Class II structure with Exposure Category C, Topographical Factor of 1, and Spectral Response Accelerations of $S_S = 0.236$ and $S_1 = 0.062$.

Note: Per Section 2.7.3 of the *ANSI/TIA-222-G* standard, the seismic/earthquake loading effects can be ignored if spectral response acceleration at short periods (S_S) is less than or equal to 1.00. The tower's location mandates a design S_S of less than 1.00, thus seismic loading was not considered as part of the analysis of this structure.

Conclusions

With the existing and proposed antennas from T-Mobile in place at 100 ft, the tower meets the requirements of the *ANSI/TIA-222-G* standard and *2005 CSBC* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (see Radian File No. 060-3494) and the proposed modifications have been correctly installed (see FDH Engineering, Inc. Project No. 1423HD1400), the foundations should have the necessary capacity to support both the proposed and existing 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 *ANSI/TIA-222-G* standard and *2005 CSBC* are met with the existing and proposed loading in place, we have the following recommendations:

1. The proposed feed lines must be installed inside the monopole shaft.
2. Modifications outlined in FDH Engineering, Inc. (Project No. 1423HD1400) Modification Drawings for a 130' Monopole dated April 4, 2014 must be correctly installed in order for this analysis to be valid.

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
130	(3) Powerwave P65-16-XLH-RR (9) CCI HPA-65R-BUU-H6 (3) CCI DTMAPB7819VG12A-BP TMAs (6) Ericsson RRUS-11 RRUs (6) Ericsson RRUS-12 RRUs (3) Ericsson RRUS-32 RRUs (3) Ericsson RRUS-E2 RRUs (6) Ericsson A2 Modules (3) Raycap DC6-48-60-18-8F Surge Arrestors	(6) 1-5/8" (1) 1.496" Fiber (6) 0.645" Power	AT&T	129	(1) 12.5' Platform w/ Handrails [Commscope P/N MTC3607R]
120	(6) RFS APXV86-906515	(12) 1-5/8"	Nextel	120	(6) Pipe Mounts
111	(3) Andrew CBC721-DF Diplexers	(12) 1-5/8" (1) 1-5/8" Hybriflex	Verizon	110	(3) T-Arms
110	(3) Antel BXD-63606380CF (3) Commscope SBNH-1D6565B (3) Alcatel Lucent RRH2x40-AWS RRUs (1) RFS DB-T1-6Z-8AB-0Z Distribution Box				
109	(3) Andrew CBC721-DF Diplexers				
99.5	(3) APXV18-206517S	(6) 1-5/8"	T-Mobile	99.5	(3) Pipe Mounts
94	(1) 1'4" x 6.5" x 6" Surge Protector	(3) 5/16 (2) 1/2 (3) 5/8 (3) 1/4	Clearwire	94	Direct Mount
91	(3) Kathrein 840 10054 (3) Samsung RASSPI-2213-RRH			89.5	(3) T-Arms
90.8	(1) Andrew VHLP2-18-DW1				
90.7	(1) VHLP800-11-DW1				

Proposed Carrier Final Loading:

Antenna Elevation (ft)	Description	Feed Lines ¹	Carrier	Mount Elevation (ft)	Mount Type
100	(3) Ericsson Air 21 B2A/B4P (3) Ericsson Air 21 B4A/B2P	(6) 1-5/8" (1) 1-5/8" Fiber	T-Mobile	100	(3) Site Prol RMV12-3xx T-Arms

1. Coax installed inside the pole's shaft unless otherwise noted.

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
Upper Flange Plate	50 ksi
Guy Lugs	65 ksi
Flange Bolts	$F_u = 150$ ksi
Lower Flange Plate	36 ksi
Inner Anchor Bolts	$F_u = 125$ ksi
Outer Anchor Rods	$F_u = 100$ ksi
Base Plate	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
L1	130 - 120	Pole	TP18x18x0.25	48.7	Pass
	120	Upper Flange Plate	PL 31.5"Ø x 1" thick	67.0	Pass
		Flange Bolts	(6) 1" Ø on a 28.25"Ø BC	68.6	Pass
		Lower Flange Plate	PL 31.5"Ø x 1" thick	67.0	Pass
L2	120 - 87.42	Pole	TP29.89x21.74x0.1875	71.4	Pass
	107.25	Guy Wire Connection	(3) 42" Lugs, (6) 7/8" Wires	99.5	Pass
L3	87.42 - 43.3367	Pole	TP36.31x28.5352x0.25	40.9	Pass
L4	43.3367 - 8.0833	Pole	TP42.5x35.0541x0.312	33.8	Pass
	8.0833 - 0	Modified Pole	TP42.5x35.0541x0.3125 w/ Flat Plate Modifications	24.21	Pass
	0	Inner Anchor Bolts	(14) 1.5"Ø on a 47.25"Ø BC	44.4	Pass
		Outer Anchor Rods	(4) 2.25"Ø on a 56.75"Ø BC	19.67	Pass
		Base Plate	PL 51.75"Ø x 1.5" thick	41.3	Pass

Table 4 - Maximum Base Reactions

Base Reactions	Current Analysis* (ANSI/TIA-222-G)		
	Horizontal	Vertical	Moment
Base	6 k	179 k	675 k-ft
Anchors	37 k	87 k	-

* Foundations determined to be adequate per independent analysis.

GENERAL COMMENTS

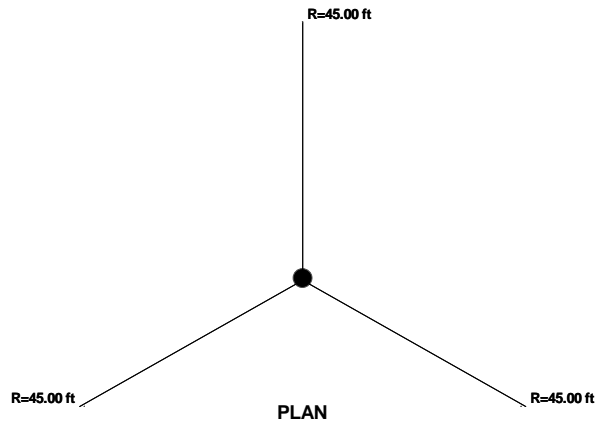
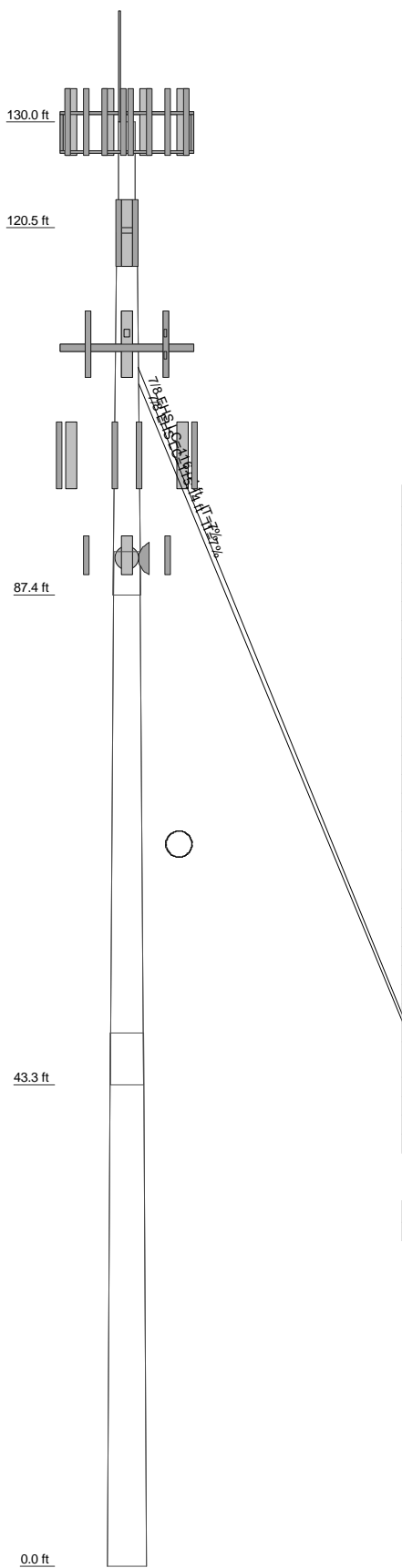
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading 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	1	2	3	4	5
Length (ft)	9.50	0.50	32.58	48.00	48.00
Number of Sides	1	1	18	18	18
Thickness (in)	0.2500	0.2500	0.1875	0.2500	0.3125
Socket Length (ft)	0.2500	0.2500	3.92	4.67	35.0541
Top Dia (in)	18.0000	18.0000	21.7400	28.5352	42.5000
Bot Dia (in)	18.0000	21.7400	29.8900	36.3100	6.2
Grade	A500-50	A500-50	A500-50	A572-65	A572-65
Weight (K)	0.5	0.0	1.7	4.2	6.2



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	130	BXD-63606380CF W/ Mount Pipe	110
P65-16-XLH-RR W/ Mount Pipe	129	BXD-63606380CF W/ Mount Pipe	110
P65-16-XLH-RR W/ Mount Pipe	129	CBC721-DF	110
P65-16-XLH-RR W/ Mount Pipe	129	CBC721-DF	110
(3) HPA-65R-BUU-H6 w/ Mount Pipe	129	CBC721-DF	110
(3) HPA-65R-BUU-H6 w/ Mount Pipe	129	CBC721-DF	110
DTMABP7819VG12A TMA	129	CBC721-DF	110
DTMABP7819VG12A TMA	129	SBNH-1D6565B w/ Mount Pipe	110
DTMABP7819VG12A TMA	129	SBNH-1D6565B w/ Mount Pipe	110
(2) RRUS-11	129	SBNH-1D6565B w/ Mount Pipe	110
(2) RRUS-11	129	RRH2X40-AWS	110
(2) RRUS-11	129	RRH2X40-AWS	110
(2) RRUS-12	129	RRH2X40-AWS	110
(2) RRUS-12	129	DB-T1-6Z-8AB-0Z	110
(2) RRUS-12	129	(3) T-Arms	110
RRUS-32	129	AIR 21 B2A/B4P w/Mount Pipe	100
RRUS-32	129	AIR 21 B2A/B4P w/Mount Pipe	100
RRUS-32	129	AIR 21 B2A/B4P w/Mount Pipe	100
RRUS-E2	129	AIR 21 B4A/B2P w/Mount Pipe	100
RRUS-E2	129	AIR 21 B4A/B2P w/Mount Pipe	100
RRUS-E2	129	AIR 21 B4A/B2P w/Mount Pipe	100
(2) RRUS A2 MODULE	129	Site Prol RMV12-3xx	100
(2) RRUS A2 MODULE	129	1'4" x 6.5" x 6" Surge Protector	94
(2) RRUS A2 MODULE	129	VHLP2-18-DW1	90
DC6-48-60-18-8F	129	VHLP800-11-DW1	90
DC6-48-60-18-8F	129	840 10054 w/ Mount Pipe	89.5
DC6-48-60-18-8F	129	RASSPI-2213-RRH	89.5
(1) Platform w/ Handrails MNT [Commscope P/N MTC3607R]	129	RASSPI-2213-RRH	89.5
(2) APXV86-906515 W/ Mount Pipe	120	(3) T-Arms	89.5
(2) APXV86-906515 W/ Mount Pipe	120	840 10054 w/ Mount Pipe	89.5
(2) APXV86-906515 W/ Mount Pipe	120	840 10054 w/ Mount Pipe	89.5
BXD-63606380CF W/ Mount Pipe	110		

MATERIAL STRENGTH

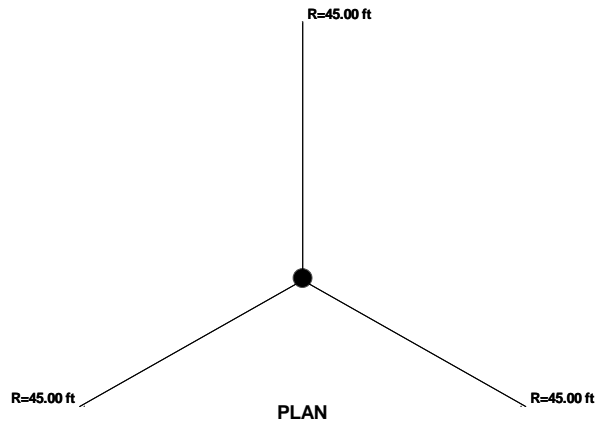
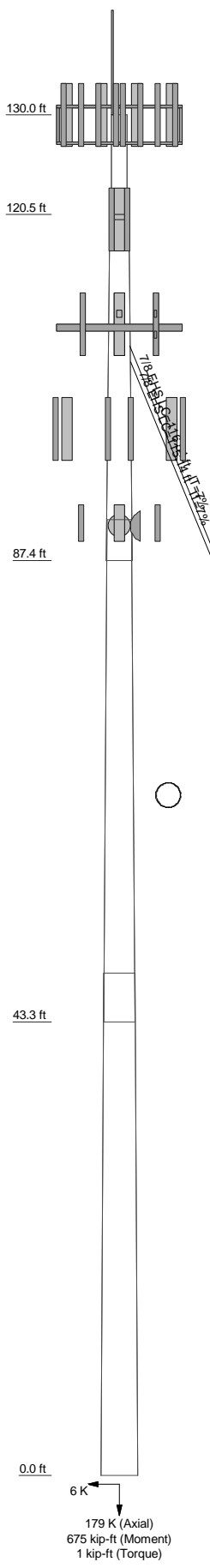
GRADE	Fy	Fu	GRADE	Fy	Fu
A500-50	50 ksi	62 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 110 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

<p>FDH Engineering, Inc. 6521 Meridian Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031</p>	<p>Job: Middletown - CT13064-A-05</p>
	<p>Project: 1466BX1400</p>
	<p>Client: SBA Network Services, Inc. Drawn by: DFalconi App'd:</p>
	<p>Code: TIA-222-G Date: 06/10/14 Scale: NTS</p>
	<p>Path: _____ Dwg No. E-1</p>

Section	1	2	3	4	5
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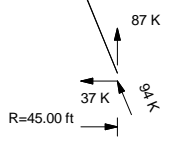
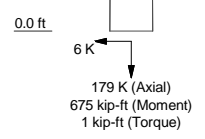


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5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 99.5%



ALL REACTIONS ARE FACTORED

 <p>FDH Engineering, Inc. 6521 Meriden Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031</p>	Job: Middletown - CT13064-A-05		
	Project: 1466BX1400		
	Client: SBA Network Services, Inc.	Drawn by: DFalconi	App'd:
	Code: TIA-222-G	Date: 06/10/14	Scale: NTS
	Path:	Dwg No. E-1	

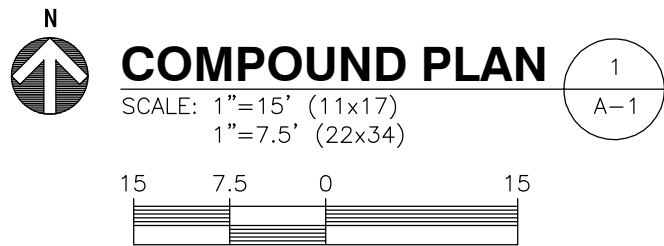
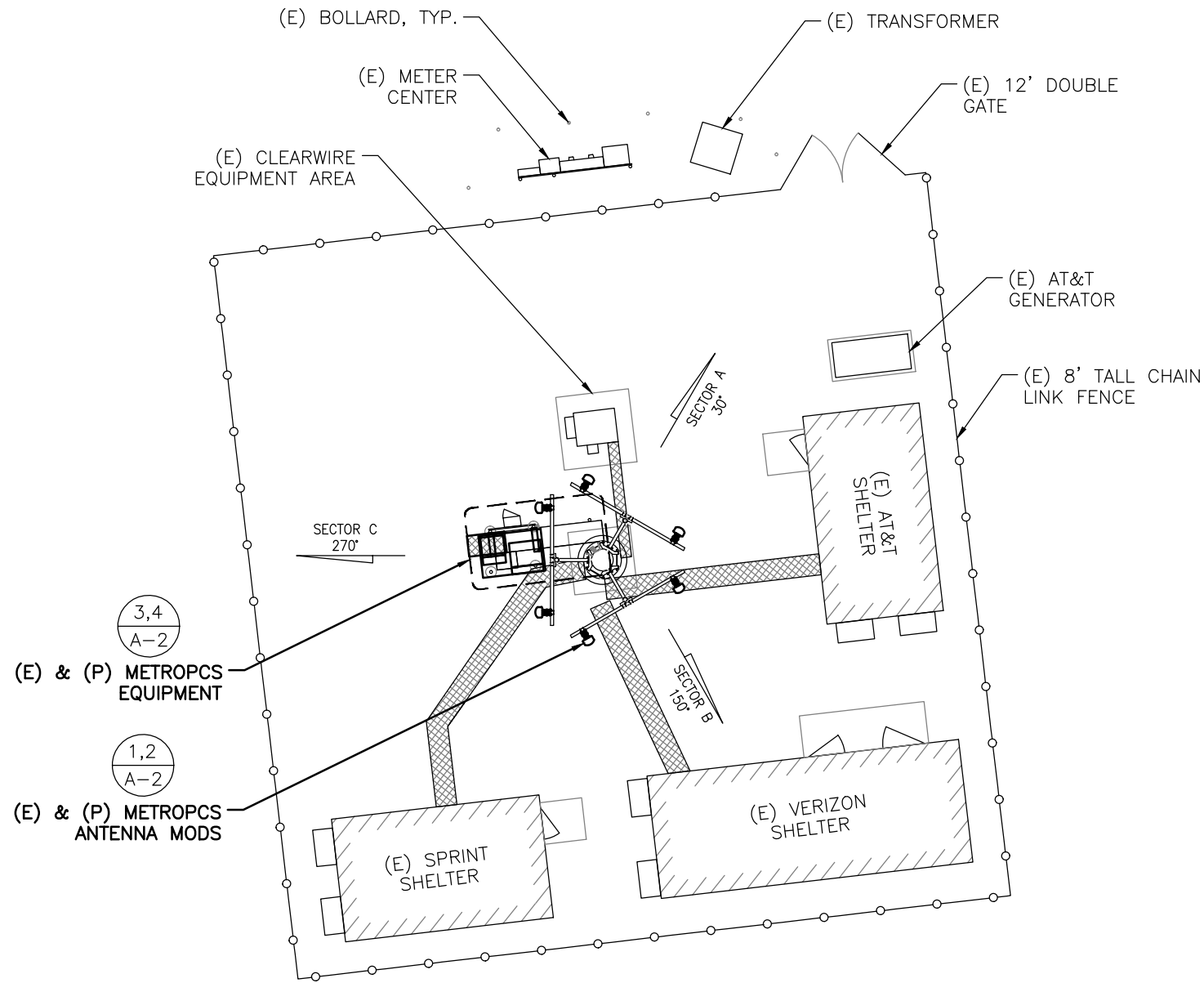


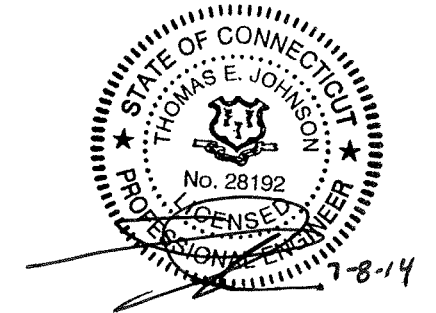
IMAGE SOURCE: PROTERRA 5/30/14

EXISTING ELEVATION 2
SCALE: N.T.S. A-1

- (E) ANTENNAS, TYP. (OTHERS)
- ⊕ OF METROPCS ANTENNAS
ELEV.= 100'± A.G.L. (METROPCS)*
- (E) MONOPOLE
- (E) (6) 1-5/8" COAX TO BE CAPPED AND WRAPPED
- (P) (1) 1-5/8" HYBRID CABLE TO FOLLOW EXIST. COAX CABLES UP INTERIOR MONOPOLE

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

* NOTE:
ANTENNA ELEVATION BASED ON CLIENT-PROVIDED INFORMATION



ProTerra
DESIGN GROUP, LLC
1 Short Street
Suite 3
Northampton, MA 01060
Ph: (413)320-4918
Fax: (413)320-4917

SBA
SBA COMMUNICATIONS CORPORATION
33 BOSTON POST ROAD WEST, SUITE 320
MARLBOROUGH, MA 01752
PHONE: 508-251-0720

SITE NUMBER: CTHA537A
SITE NAME: SBA MIDDLETOWN MONOPOLE
50 FAIRCHILD ROAD
MIDDLETOWN, CT 06457

metroPCS
Unlimit Yourself.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

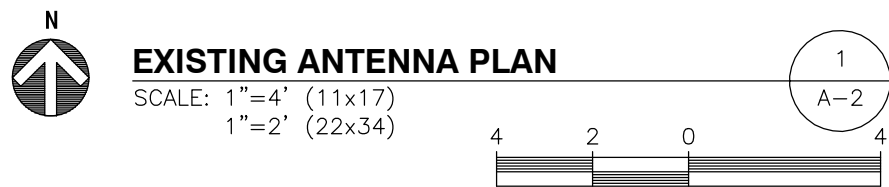
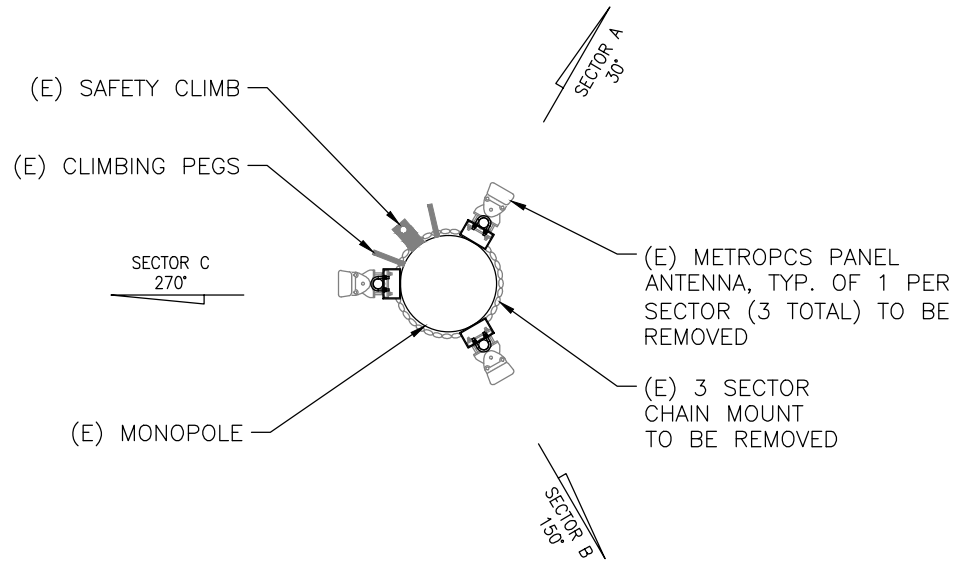
NO.	DATE	REVISIONS	BY	CHK	APP'D
2	7/08/14	CONSTRUCTION FINAL	TBD	TEJ	TEJ
1	6/19/14	CONSTRUCTION	TBD	TEJ	JMM
0	6/16/14	CONSTRUCTION	TBD	TEJ	JMM

SCALE: AS SHOWN DESIGNED BY: JMM/TEJ DRAWN BY: TBD

METROPCS

COMPOUND PLAN AND ELEVATION

JOB NUMBER	SHEET	REV
#13-062	A-1	1



EXISTING ANTENNA SCHEDULE			
SECTOR	MAKE	MODEL#	SIZE (INCHES)
SECTOR A:	RFS	APXV18-206517S-C	6.8x3.2x72.0
SECTOR B:	RFS	APXV18-206517S-C	6.8x3.2x72.0
SECTOR C:	RFS	APXV18-206517S-C	6.8x3.2x72.0

PROPOSED ANTENNA SCHEDULE			
SECTOR	MAKE	MODEL#	SIZE (INCHES)
SECTOR A:	ERICSSON	AIR21 B2A/B4P	12x8x56
	ERICSSON	AIR21 B4A/B2P	12x8x56
SECTOR B:	ERICSSON	AIR21 B2A/B4P	12x8x56
	ERICSSON	AIR21 B4A/B2P	12x8x56
SECTOR C:	ERICSSON	AIR21 B2A/B4P	12x8x56
	ERICSSON	AIR21 B4A/B2P	12x8x56

NOTE:
1. REFER TO FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

ROTATE AND PAN PROPOSED MOUNT AS REQUIRED TO CLEAR CLIMBING PEGS/CABLE

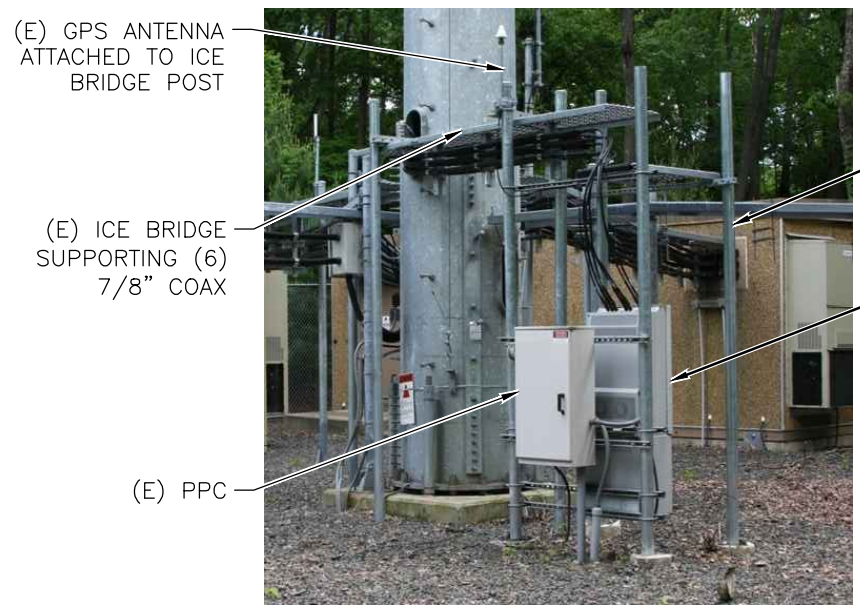
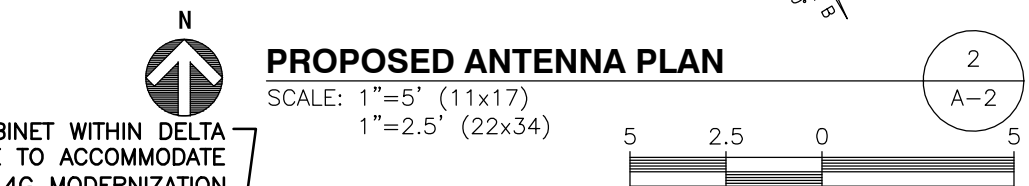
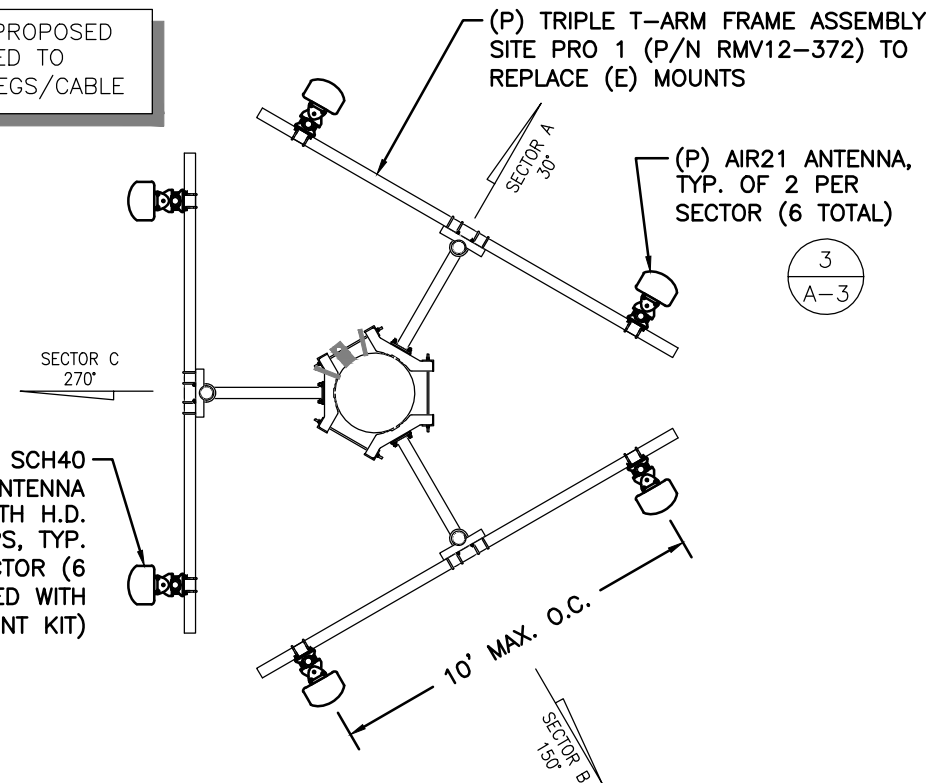
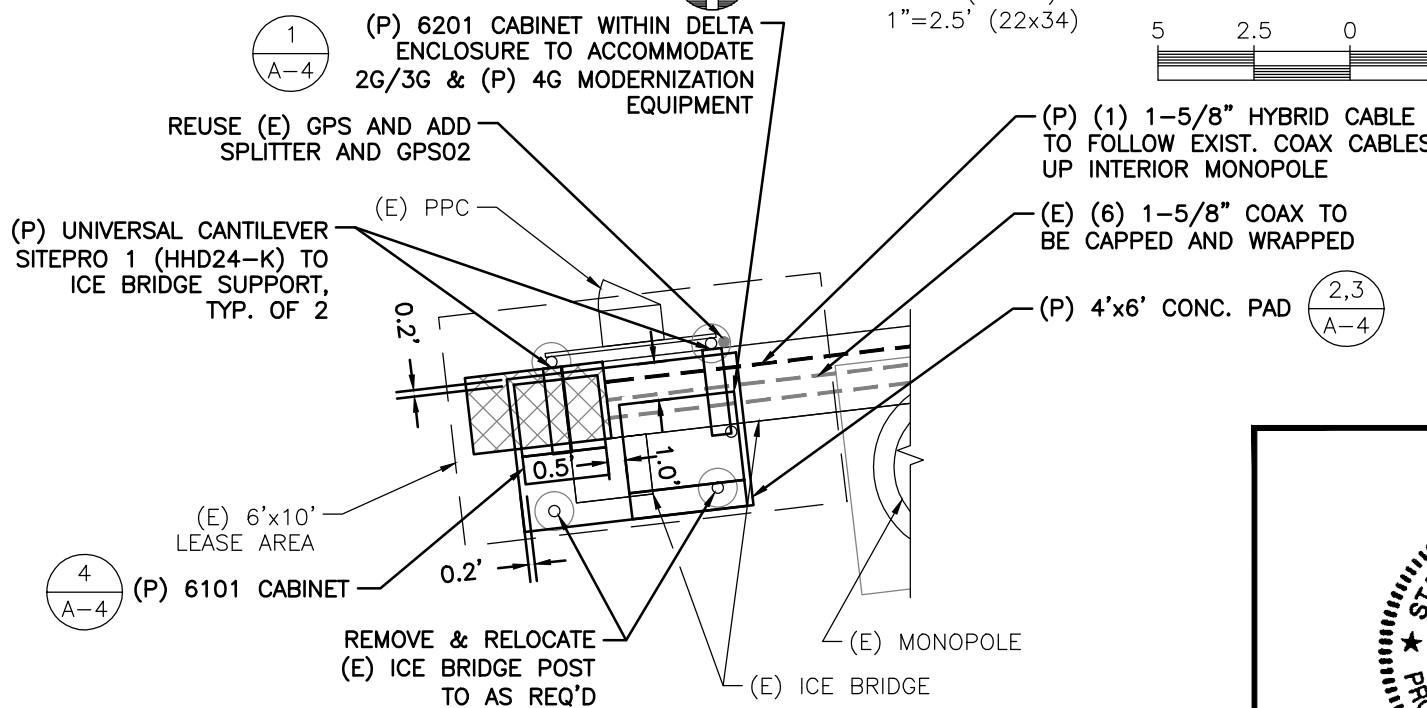
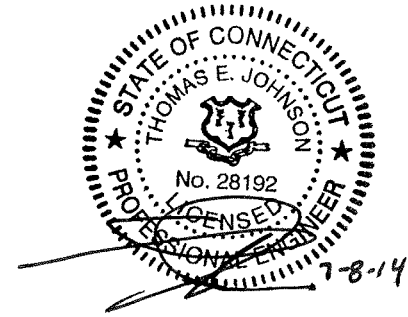


IMAGE SOURCE: PROTERRA 5/30/14

EXISTING EQUIPMENT AREA
SCALE: N.T.S. 3 A-2



PROPOSED EQUIPMENT AREA
SCALE: 1"=5' (11x17) 1"=2.5' (22x34) 4 A-2



NO.	DATE	REVISIONS	BY	CHK	APP'D
2	7/08/14	CONSTRUCTION FINAL	TBD	TEJ	TEJ
1	6/19/14	CONSTRUCTION	TBD	TEJ	JMM
0	6/16/14	CONSTRUCTION	TBD	TEJ	JMM

SCALE: AS SHOWN DESIGNED BY: JMM/TEJ DRAWN BY: TBD