



CT11786D

February 28, 2014

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

RE: Notice of Exempt Modification
2577 Main Street, Glastonbury, CT
N 41° 42' 52"
W -72° 36' 47"

Dear Mr. Martin and 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 2577 Main Street, Glastonbury, CT.

The 2577 Main Street, Glastonbury, CT facility consists of a 130' Lattice Tower owned and operated by SBA 2012 TC Assets, 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 he 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**

2577 Main Street, Glastonbury, CT
Site number CT11786D

Tower Owner: SBA 2012 TC Assets, LLC

Equipment Configuration: Lattice Tower

Current and/or approved:

- (6) EMS RR65-19-02DP
- (3) RFS APX16DWV-16WV-S-E-ACU
- (3) 6.3"x7.7"x3" TMAs
- (18) 1-5/8" Hybrid Feed lines

Planned Modifications:

- (3) Ericsson AIR 21 B2A/B4P
- (3) Ericsson AIR 21 B4A/B2P
- (3) Ericsson KRY 112 144/1 TMAs
- (12) 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 1.377% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 56.767% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE %	
Carrier	MPE %
T-Mobile	1.377%
Clearwire	1.160%
Sprint	8.940%
AT&T	29.550%
MetroPCS	12.260%
Nextel	3.480%
Total Site MPE %	56.767%



February 28, 2014

Mr. Richard J. Johnson
Town Manager
Town of Glastonbury
Glastonbury Town Hall
2155 Main Street
Glastonbury, CT 06033

RE: Telecommunications Facility @ 2577 Main Street, Glastonbury, CT

Dear Mr. Johnson,

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,

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

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

T-Mobile Existing Facility

Site ID: CT11786D

Nextel Glastonbury
2577 Main Street
Glastonbury, CT 06033

February 26, 2014

EBI Project Number: 62141021

February 26, 2014

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

Re: Emissions Values for Site: **CT11786D - Nextel Glastonbury**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 2577 Main Street, Glastonbury, 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 cellular band is $567 \mu\text{W}/\text{cm}^2$, 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 2577 Main Street, Glastonbury, 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, 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 **93 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 calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT11786D - Nextel Glastonbury
Site Address	2577 Main Street, Glastonbury, CT 06033
Site Type	Self Support Tower

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	93	87	None	0	0	48.326044	2.295349	0.22953%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	93	87	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	93	87	1-5/8"	0	0	24.163022	1.147674	0.11477%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	93	87	1-5/8"	0	0	24.163022	1.147674	0.11477%

Sector total Power Density Value: 0.459%

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	93	87	None	0	0	48.326044	2.295349	0.22953%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	93	87	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	93	87	1-5/8"	0	0	24.163022	1.147674	0.11477%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	93	87	1-5/8"	0	0	24.163022	1.147674	0.11477%

Sector total Power Density Value: 0.459%

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	93	87	None	0	0	48.326044	2.295349	0.22953%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	93	87	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	93	87	1-5/8"	0	0	24.163022	1.147674	0.11477%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	93	87	1-5/8"	0	0	24.163022	1.147674	0.11477%

Sector total Power Density Value: 0.459%

Site Composite MPE %	
Carrier	MPE %
T-Mobile	1.377%
Clearwire	1.160%
Sprint	8.940%
AT&T	29.550%
MetroPCS	12.260%
Nextel	3.480%
Total Site MPE %	56.767%

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 T-Mobile facility are **1.377% (0.459% 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 **56.767%** 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



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

130' Self-Support Tower

**SBA Site Name: Glastonbury-Main St
SBA Site ID: CT46126-A-00
T-Mobile Site Name: CT11786D**

FDH Project Number 1422P51400

Analysis Results

Tower Components	98.7%	Sufficient
Foundation	75.0%	Sufficient

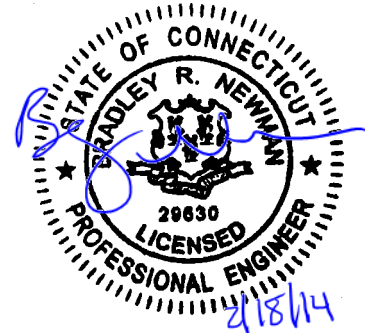
Prepared By:

Mark S. Girgis, EI
Project Engineer

Reviewed By:

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

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



February 18, 2014

TABLE OF CONTENTS

EXECUTIVE SUMMARY3

 Conclusions.....3

 Recommendations3

APPURTENANCE LISTING4

RESULTS8

LIMITATIONS8

APPENDIX9

EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the existing self-supported tower located in Glastonbury, 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 Building Code (CTBC)*. Information pertaining to the existing/proposed antenna loading, current tower geometry, the member sizes, geotechnical data, and foundation dimensions was obtained from:

- Fred A. Nudd Corporation (Project No. 6893) Design of 130' Lattice Tower dated September 12, 1999
- Vertical Solutions, Inc. (Site No. CT46126-A) Modification Drawings for a 130' Self-Support Tower dated December 6, 2012
- Tectonic Engineering Consultants, P.C. (W.O. No. 1170.C057) Boring Logs and Results of Laboratory Testing dated August 26, 1999
- FDH Engineering, Inc. (Project No. 1338401400) Modification Drawings for a 130' Self-Support Tower dated June 17, 2013
- FDH Engineering, Inc. (Project No. 13SB5C1400) Modification Drawings for a 130' Self-Support Tower dated September 10, 2013
- FDH, Inc. (Job No. 1304001700) Modification Inspection Report dated November 1, 2013
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and the *2005 CTBC* is 80 mph without ice and 38 mph with 1" radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the existing and proposed antennas from T-Mobile in place at 93 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and the *2005 CTBC* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was constructed per the original design drawings (see Fred A. Nudd Corporation Project No. 6893), and using the given geotechnical data (see Tectonic Engineering Consultants, P.C. W.O. No. 1170.C057), the foundation 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 *TIA/EIA-222-F* standards and the *2005 CTBC* are met with the existing and proposed loading in place, we have the following recommendations:

1. Feed lines must be installed double stacked as shown in the Feed Line Plan in the appendix.
2. The proposed TMAs should be installed directly behind the proposed panel antennas.
3. Modifications listed in FDH Engineering, Inc. (Project No. 13SB5C1400) Modification Drawings for a 130' Self-Support Tower dated September 10, 2013 must be completed 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
128	(12) Decibel DB844H90E-M (2) Argus technologies LLPX310R (1) Kathrein 840 10054 (3) 24"x14"x9" TMAs (1) Motorola TIMING 2000	(12) 1-1/4" (6) 5/16" (4) 1/2"	Sprint/Clearwire	128 ¹	(3) T-Frames
124	(3) IDU Modem (3) Andrew VHLP2.5 Dishes				
118.5	(2) RFS APXVSP18-C-A20 (1) Powerwave P40-16-XLPP-RR-A (3) Alcatel Lucent 1900 MHz RRUs (3) Alcatel Lucent 800 MHz RRUs (4) RFS ACU-A20-N RETs (3) Alcatel Lucent 800 MHz Filters	(3) 1-1/4"	Sprint	118.5	(3) T-Arms
110	(6) Allgon 7700.00 (2) KMW AM-X-CD-16-65-00T-RET (1) Andrew SBNH-1D6565C (6) Powerwave LGP13519 TMAs (6) Powerwave LGP21401 TMAs (6) Ericsson RRUS-11 1900MHz RRUs (1) Raycap DC6-48-60-18-8F Surge Arrestor	(12) 1-1/4" (1) 3/8"	AT&T	110 ²	(3) T-Frames
100	(3) RFS APXV18-206517S-C	(6) 1-5/8"	Pocket	100	(3) Standoffs
93	(6) EMS RR65-19-02DP (3) RFS APX16DWV-16WV-S-E-ACU (3) 6.3"x7.7"x3" TMAs	(18) 1-5/8"	T-Mobile	93	(3) T-Frames
80	(6) Amphenol BXA-70063/6CF (6) Amphenol BXA-171062/12CF (3) Alcatel Lucent RRH2x40-700-U RRUs (3) Alcatel Lucent RRH2x40-AWS RRUs (1) RFS DB-T1-6Z-8AB-0Z Distribution Box	(2) 1-5/8" Hybrid	Verizon	80	(3) T-Frames (C _{AA} = 18.81 ft ² each)
55.5	(1) GPS	(1) 1/2"	---	55.5	(1) Standoff
50.5	(2) GPS	(2) 1/2"	---	50.5	(2) Standoffs

1. Sprint/Clearwire has (6) 5/16" and (2) 1/2" coax installed inside (2) 2" conduits.

2. AT&T has (1) 3/8" coax installed inside (1) 3" conduit.

Proposed Loading:

Antenna Elevation (ft)	Description	Feed Lines	Carrier	Mount Elevation (ft)	Mount Type
93	(3) Ericsson AIR 21 B2A/B4P (3) Ericsson AIR 21 B4A/B2P (3) Ericsson KRY 112 144/1 TMAs	(12) 1-5/8" (1) 1-5/8" Fiber	T-Mobile	93	(3) T-Frames

RESULTS

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

Table 2 - Material Strength

Member Type	Yield Strength
Legs	45, 50, & 54 ksi
Bracing	36 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. **Table 5** displays the maximum antennas rotations at service wind speeds (dishes only).

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	130 - 120	Leg	1 1/2	26.2	Pass
		Diagonal	1/2	94.5	Pass
		Horizontal	L1 1/4x1 1/4x3/16	7.5	Pass
		Top Girt	L1 1/4x1 1/4x3/16	0.7	Pass
T2	120 - 117.143	Leg	2	23.8	Pass
		Diagonal	3/4	33.4	Pass
		Top Girt	L1 1/4x1 1/4x3/16	3.7	Pass
		Bottom Girt	L1 1/4x1 1/4x3/16	6.3	Pass
T3	117.143 - 114.286	Leg	2	27.7	Pass
		Diagonal	3/4	42.4	Pass
		Top Girt	L1 1/4x1 1/4x3/16	1.1	Pass
T4	114.286 - 111.429	Leg	2	37.1	Pass
		Diagonal	3/4	41.5	Pass
		Top Girt	L1 1/4x1 1/4x3/16	14.3	Pass
T5	111.429 - 108.571	Leg	2	47.8	Pass
		Diagonal	3/4	53.6	Pass
		Top Girt	L1 1/4x1 1/4x3/16	12.8	Pass
T6	108.571 - 105.714	Leg	2	60.2	Pass
		Diagonal	3/4	67.2	Pass
		Top Girt	L1 1/4x1 1/4x3/16	17.6	Pass
T7	105.714 - 102.857	Leg	2	73.7	Pass
		Diagonal	3/4	68.2	Pass
		Top Girt	L1 1/4x1 1/4x3/16	27.1	Pass
T8	102.857 - 100	Leg	2	71.3	Pass
		Diagonal	3/4	79.5	Pass
		Secondary Horizontal	L2x2x1/8	10.6 26.6 (b)	Pass
		Top Girt	L1 1/4x1 1/4x3/16	31.7	Pass

Structural Analysis Report

SBA Network Services, Inc.

SBA Site ID: CT46126-A-00

February 18, 2014

Section No.	Elevation (ft)	Component Type	Size	% Capacity*	Pass Fail
		Bottom Girt	L1 1/4x1 1/4x3/16	23.8	Pass
T9	100 - 96	Leg	P4x.237 (4.50 OD)	67.4	Pass
		Diagonal	L1 1/2x1 1/2x3/16	41.8 80.9 (b)	Pass
T10	96 - 92	Leg	P4x.237 (4.50 OD)	77.9	Pass
		Diagonal	L2x2x1/4	22.6 60.2 (b)	Pass
T11	92 - 88	Leg	P4x.237 (4.50 OD)	80.3	Pass
		Diagonal	2L1 1/2x1 1/2x3/16x3/8	26.5 62.8 (b)	Pass
		Secondary Horizontal	4x3/8	22.2 31.1 (b)	Pass
T12	88 - 84	Leg	P4.5x0.237 + P5.5625x0.375 [129°] - 12B	58.1	Pass
		Diagonal	2L1 1/2x1 1/2x3/16x3/8	24.4 58.9 (b)	Pass
		Secondary Horizontal	4x3/8	27.0 33.7 (b)	Pass
T13	84 - 80	Leg	P4.5x0.237 + P5.5625x0.375 [129°] - 12B	64.2	Pass
		Diagonal	2L1 1/2x1 1/2x3/16x3/8	22.3 53.7 (b)	Pass
		Secondary Horizontal	4x3/8	27.3 29.4 (b)	Pass
T14	80 - 75	Leg	P6x.28 (6.625 OD)	66.3	Pass
		Diagonal	L2x2x1/4	37.2 84.3 (b)	Pass
T15	75 - 70	Leg	P6x.28 (6.625 OD)	74.7	Pass
		Diagonal	2L1 3/4x1 3/4x3/16x3/8	27.8 66.4 (b)	Pass
T16	70 - 65	Leg	P6x.28 (6.625 OD)	82.5	Pass
		Diagonal	2L1 3/4x1 3/4x3/16x3/8	25.3 59.8 (b)	Pass
T17	65 - 60	Leg	P6x.28 (6.625 OD)	89.6	Pass
		Diagonal	2L1 3/4x1 3/4x3/16x3/8	25.5 59.6 (b)	Pass
T18	60 - 55	Leg	P6x.28 (6.625 OD)	91.3	Pass
		Diagonal	2L1 1/2x1 1/2x3/16x3/8	32.9 68.3 (b)	Pass
		Secondary Horizontal	L2x2x1/8	33.9 78.1 (b)	Pass
T19	55 - 50	Leg	P6.625x0.28 + P7.625x0.301 [136°] - 12B	75.1	Pass
		Diagonal	2L1 1/2x1 1/2x3/16x3/8	29.2 57.1 (b)	Pass
T20	50 - 45	Leg	P6.625x0.28 + P7.625x0.301 [136°] - 12B	79.4	Pass
		Diagonal	2L1 1/2x1 1/2x3/16x3/8	31.7 61.4 (b)	Pass
T21	45 - 40	Leg	P6.625x0.28 + P7.625x0.301 [136°] - 12B	80.3	Pass
		Diagonal	L2x2x1/4	36.9 74.1 (b)	Pass
		Secondary Horizontal	L3x3x5/16	10.1 80.5 (b)	Pass
T22	40 - 20	Leg	P6x.432 (6.625 OD)	94.3	Pass
		Diagonal	2L1 3/4x1 3/4x3/16x3/8	34.7 60.2 (b)	Pass
T23	20 - 13.3333	Leg	P6x.432 (6.625 OD)	98.7	Pass
		Diagonal	L2x2x3/16	75.0 87.2 (b)	Pass
T24	13.3333 - 6.66667	Leg	P6x.432 (6.625 OD)	95.3	Pass

Section No.	Elevation (ft)	Component Type	Size	% Capacity*	Pass Fail
		Diagonal	L2x2x3/16	74.9 78.8 (b)	Pass
		Secondary Horizontal	L2x2x1/4	34.7 57.5 (b)	Pass
T25	6.66667 - 0	Leg	P6.625x0.432 + P7.625x0.301 [136°] - 12B	86.4	Pass
		Diagonal	2L2x2x3/16x3/8	30.2 70.3 (b)	Pass

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

**Diagonal sizes from 120' to 100' taken from Vertical Solutions, Inc. (Project No. 121081 Rev 0) Rigorous Structural Analysis dated June 4, 2012

Table 4 - Maximum Base Reactions

Load Type	Direction	Current Analysis* (TIA/EIA-222-F)	Original Design (TIA/EIA-222-F)
Individual Foundation	Horizontal	19 k	22 k
	Uplift	328 k	253 k
	Compression	351 k	---
Overturing Moment	---	2,216 k-ft	1,685 k-ft

* Foundation determined to be adequate per independent analysis.

Table 5 - Maximum Antenna Rotations at Service Wind Speeds (Dishes Only)

Centerline Elevation (ft)	Antenna	Tilt* (deg)	Twist* (deg)
124	(3) Andrew VHLP2.5 Dishes	1.0285	0.0580

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

GENERAL COMMENTS

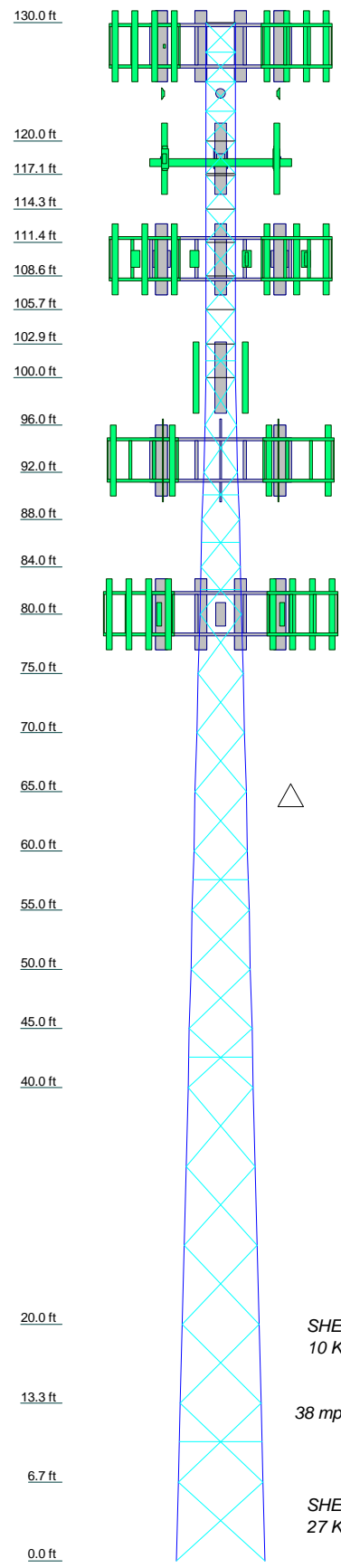
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading 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	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	T20	T21	T22	T23	T24	T25
Legs	SR 1 1/2				SR 2																				
Leg Grade					A570-45																				
Diagonals					SR 3/4																				
Diagonal Grade																									
Top Girts																									
Bottom Girts																									
Horizontals																									
Sec. Horizontals																									
Face Width (ft)																									
# Panels @ (ft)																									
Weight (K)																									



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	P4.5x0.237 + P5.5625x0.375 [129°] - 12B	F	2L2x2x3/16x3/8
B	P6.625x0.28 + P7.625x0.301 [136°] - 12B	G	L1 1/4x1 1/4x3/16
C	P6.625x0.432 + P7.625x0.301 [136°] - 12B	H	L2x2x1/8
D	L1 1/2x1 1/2x3/16	I	L3x3x5/16
E	L2x2x1/4		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A570-45	45 ksi	60 ksi	A500M-54	54 ksi	70 ksi
A36	36 ksi	58 ksi	A572-50	50 ksi	65 ksi

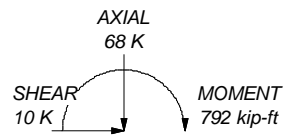
TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 98.7%

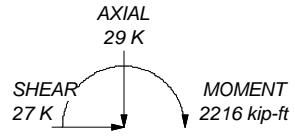
MAX. CORNER REACTIONS AT BASE:

DOWN: 351 K
SHEAR: 19 K

UPLIFT: -328 K
SHEAR: 18 K



TORQUE 1 kip-ft
38 mph WIND - 1.0000 in ICE



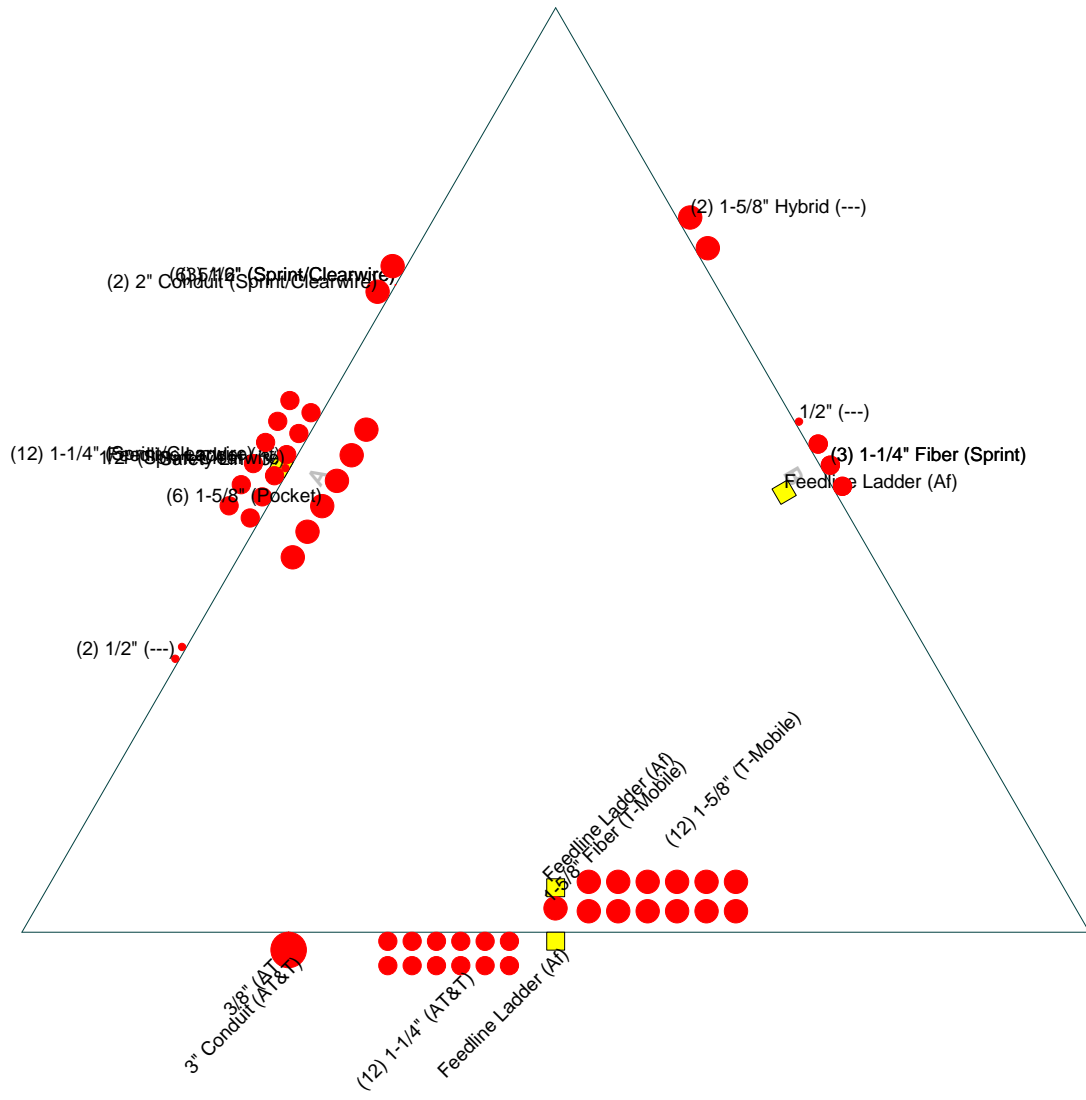
TORQUE 3 kip-ft
REACTIONS - 80 mph WIND

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
Phone: (919) 755-1012
FAX: (919) 755-1031

Job: Glastonbury-Main St, CT46126-A-00		
Project: 1422P51400		
Client: SBA Network Services, Inc.	Drawn by: Mark S. Girgis	App'd:
Code: TIA/EIA-222-F	Date: 02/18/14	Scale: NTS
Path:		Dwg No. E-1

Feed Line Plan

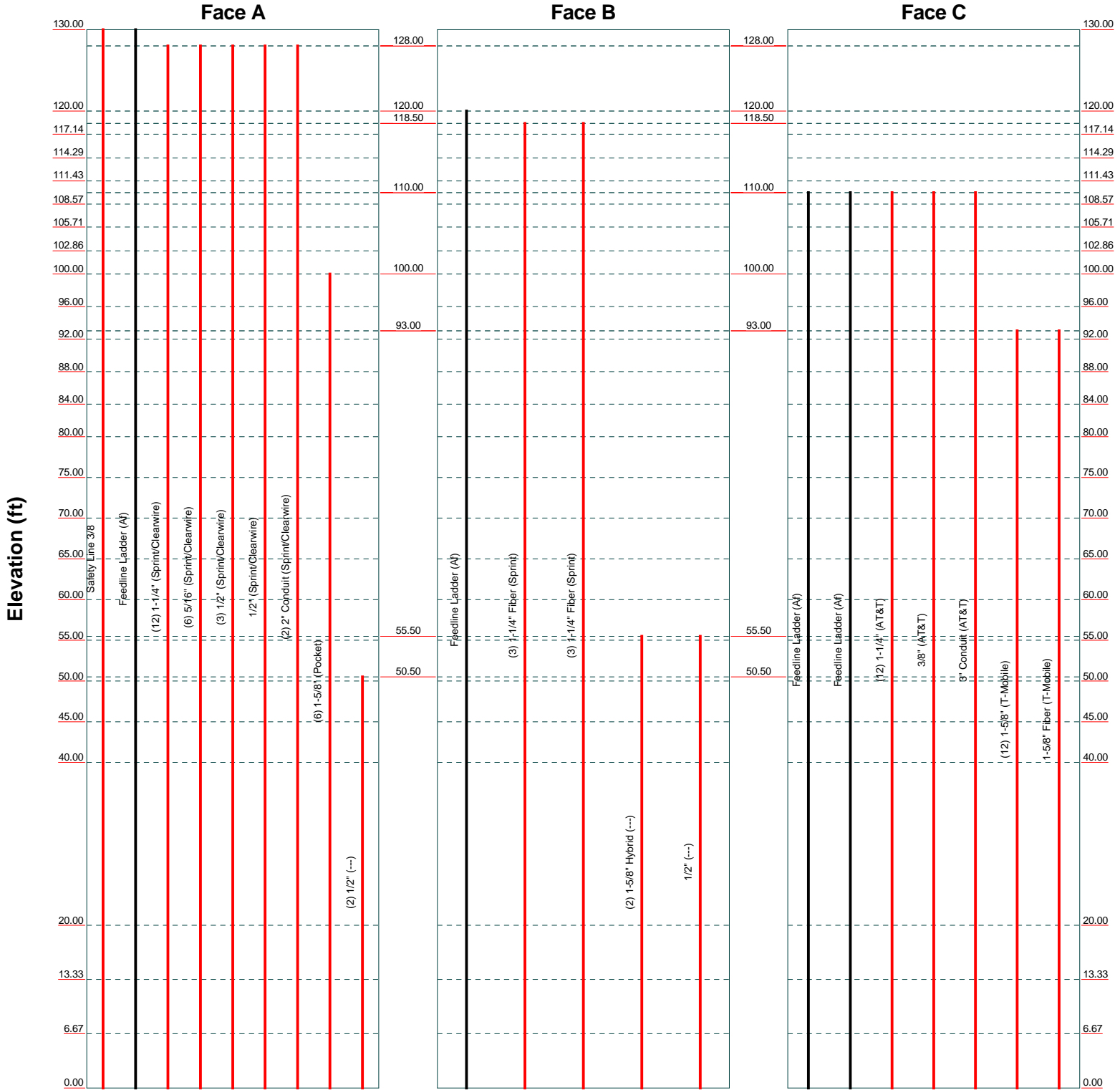
— Round
 — Flat
 — App In Face
 — App Out Face



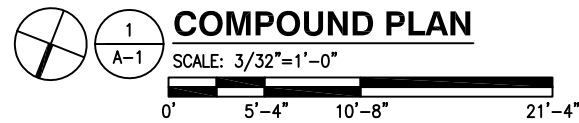
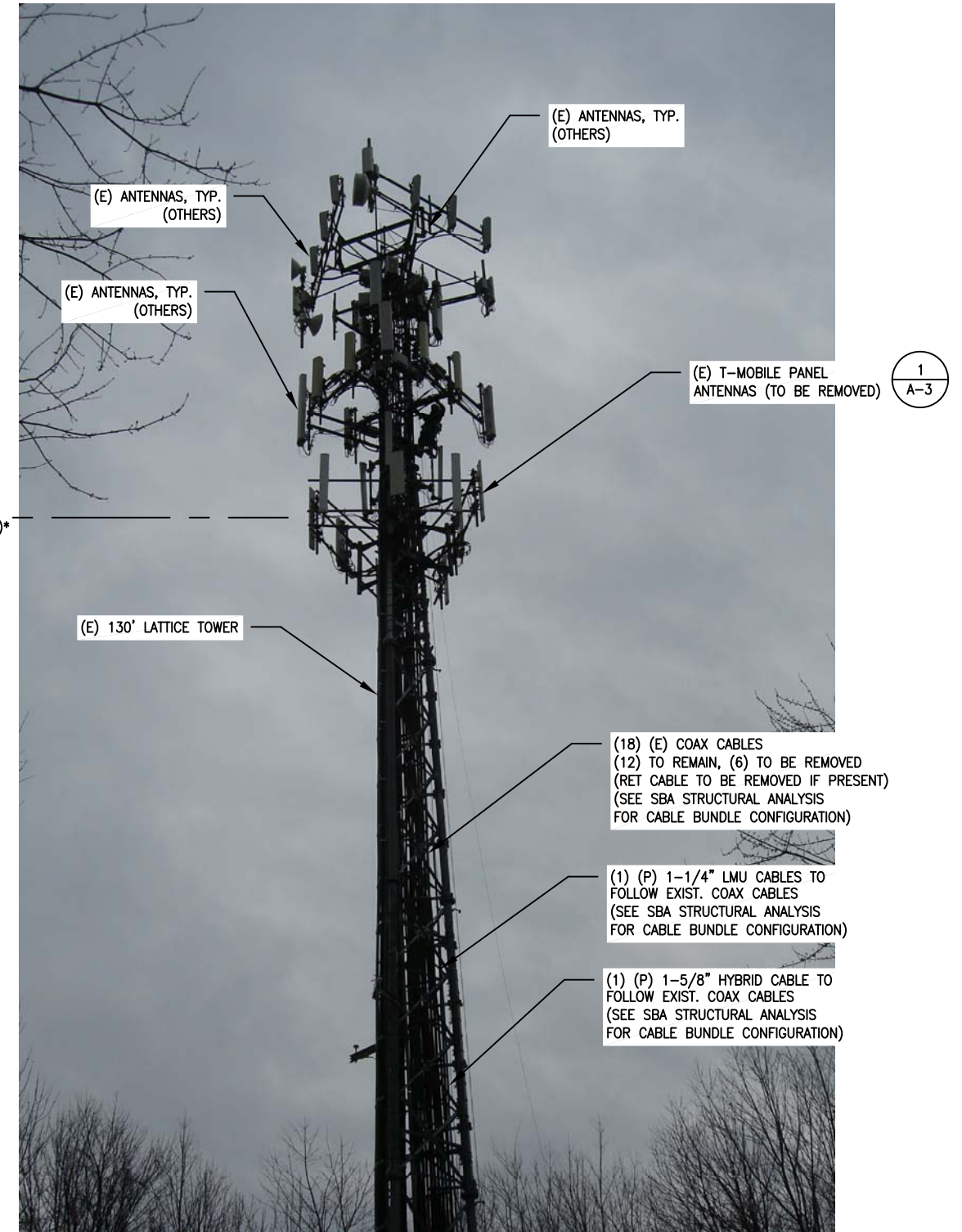
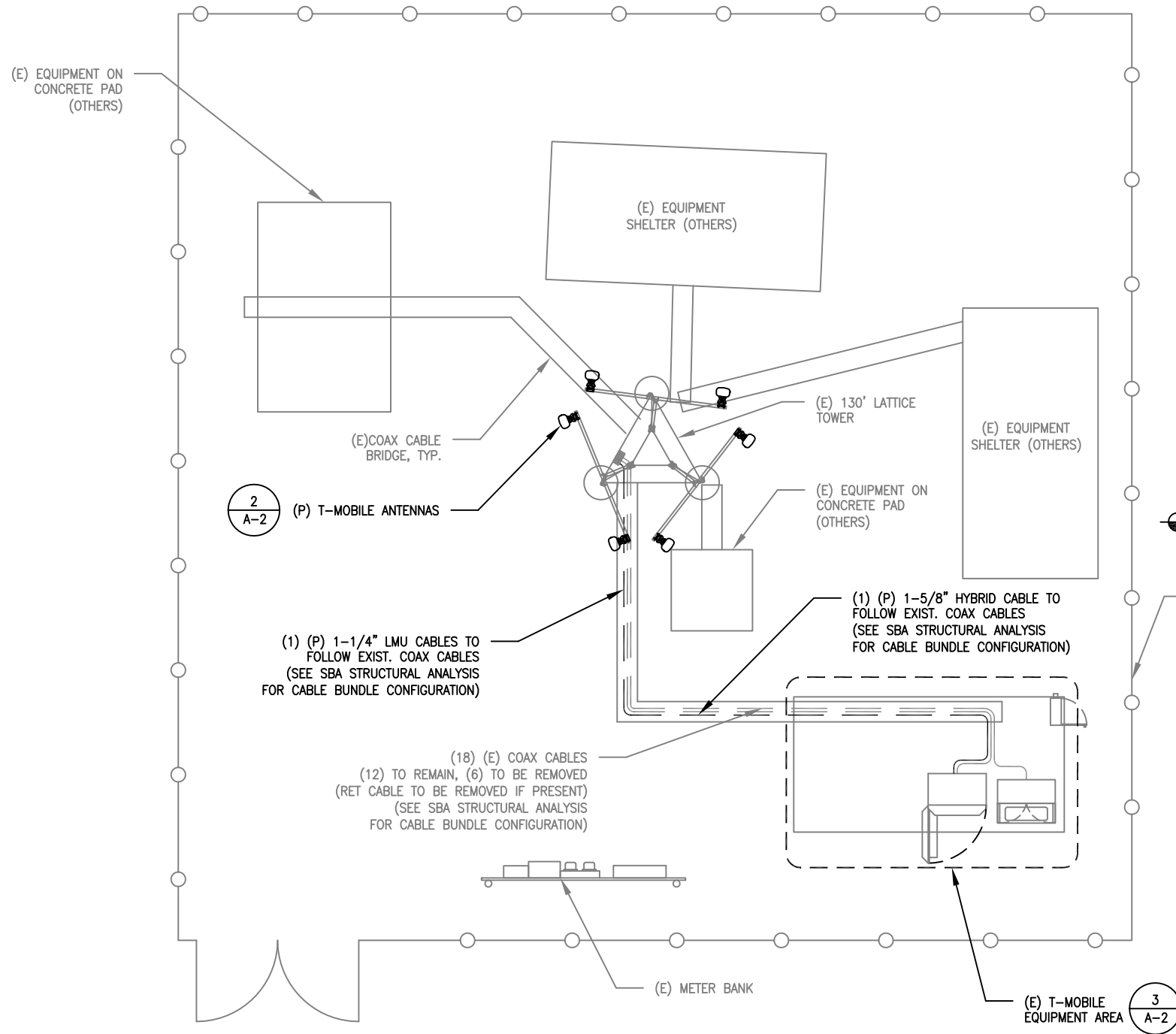
	FDH Engineering, Inc.		Job: Glastonbury-Main St, CT46126-A-00		
	6521 Meriden Drive		Project: 1422P51400		
	Raleigh, NC 27616		Client: SBA Network Services, Inc.	Drawn by: Mark S. Girgis	App'd:
	Phone: (919) 755-1012		Code: TIA/EIA-222-F	Date: 02/18/14	Scale: NTS
	FAX: (919) 755-1031		Path:		

Feed Line Distribution Chart 0' - 130'

— Round
 — Flat
 — App In Face
 — App Out Face
 — Truss Leg



<p>FDH Engineering, Inc. 6521 Meriden Drive Raleigh, NC 27616 Phone: (919) 755-1012 FAX: (919) 755-1031</p>	Job: Glastonbury-Main St, CT46126-A-00		
	Project: 1422P51400		
	Client: SBA Network Services, Inc.	Drawn by: Mark S. Girgis	App'd:
	Code: TIA/EIA-222-F	Date: 02/18/14	Scale: NTS
	Path:		Dwg No. E-7



NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

2
A-1

EXISTING ELEVATION

SCALE: NTS

*NOTE:
ANTENNA ELEVATION BASED ON CLIENT-PROVIDED INFORMATION



ADVANCED ENGINEERING GROUP, P.C.
Civil Engineering - Site Development Surveying - Telecommunications
500 NORTH BROADWAY
EAST PROVIDENCE, RI 02914
PH: (401) 354-2403
FAX: (401) 633-6354

SBA

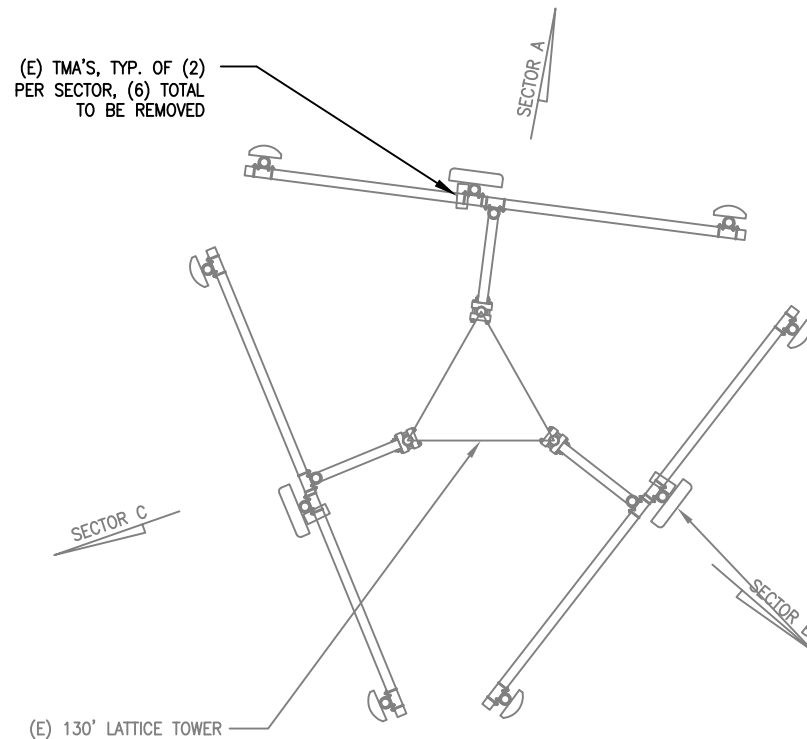
SBA COMMUNICATIONS CORPORATION
33 BOSTON POST ROAD WEST, SUITE 320
MARLBOROUGH, MA 01752
PHONE: 508-251-0720

SITE NUMBER: CT11786D
SITE NAME: SBA GLASTONBURY-MAIN
2577 MAIN STREET
GLASTONBURY, CT 06033

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	02/18/14	FINAL	SOS	MRC	MRC
0	02/06/14	CONSTRUCTION	SOS	MRC	MRC
SCALE: AS SHOWN					
DESIGNED BY: MRC			DRAWN BY: SOS		

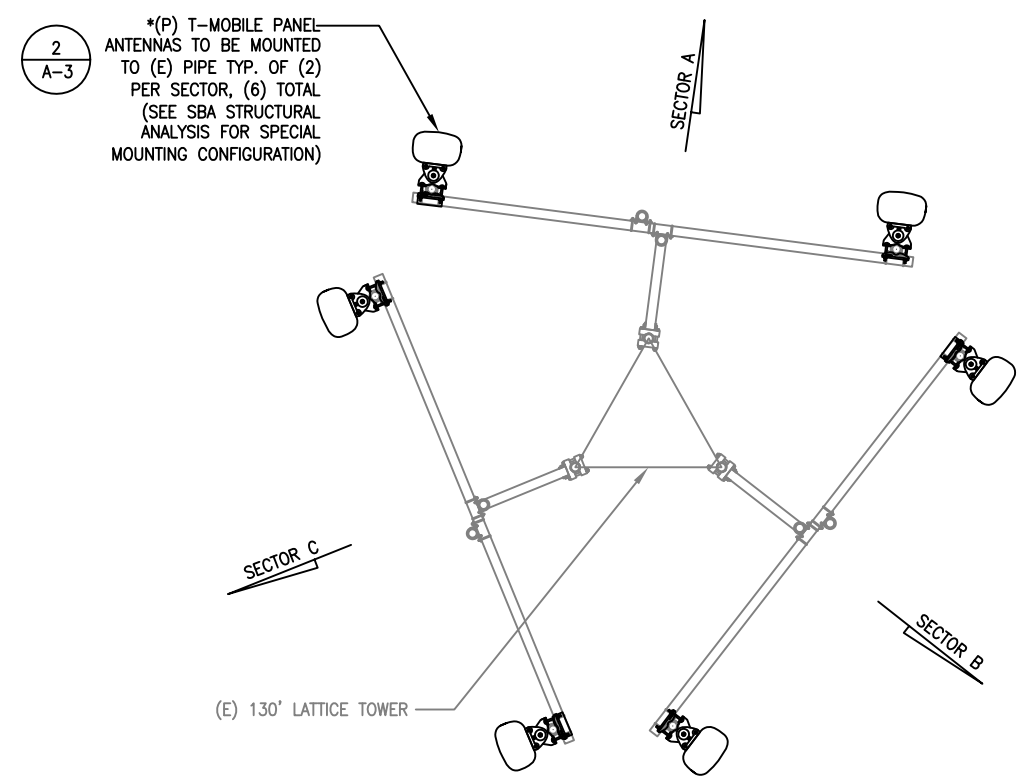
T-MOBILE		
COMPOUND PLAN AND ELEVATION		
JOB NUMBER	DRAWING NUMBER	REV
CT11786D	A-1	1



EXISTING ANTENNA SCHEDULE			
SECTOR	MAKE	MODEL#	SIZE (INCHES)
SECTOR A:	EMS	RR90-18-XXDP	8x2.75x72
	RFS	APX16DWV-16DWV-S	13x3.15x59.9
	EMS	RR90-18-XXDP	8x2.75x72
SECTOR B:	EMS	RR90-18-XXDP	8x2.75x72
	RFS	APX16DWV-16DWV-S	13x3.15x59.9
	EMS	RR90-18-XXDP	8x2.75x72
SECTOR C:	EMS	RR90-18-XXDP	8x2.75x72
	RFS	APX16DWV-16DWV-S	13x3.15x59.9
	EMS	RR90-18-XXDP	8x2.75x72

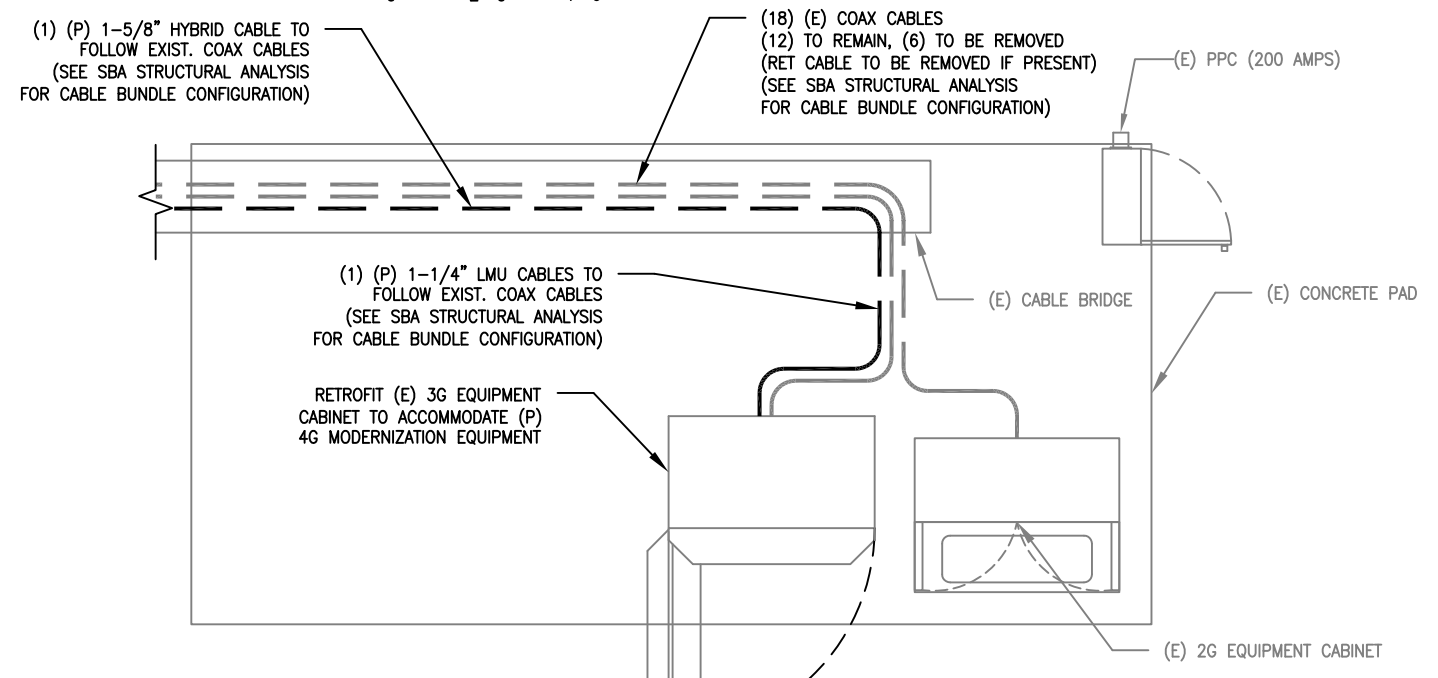
PROPOSED ANTENNA SCHEDULE			
SECTOR	MAKE	MODEL#	SIZE (INCHES)
SECTOR A:	ERICSSON	AIR21 B2A/B4P	12x8x56
	ERICSSON	AIR21 B4A/B2P	12x8x56
SECTOR B:	ERICSSON	AIR21 B2A/B4P	12x8x56
	ERICSSON	AIR21 B4A/B2P	12x8x56
SECTOR C:	ERICSSON	AIR21 B2A/B4P	12x8x56
	ERICSSON	AIR21 B4A/B2P	12x8x56

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



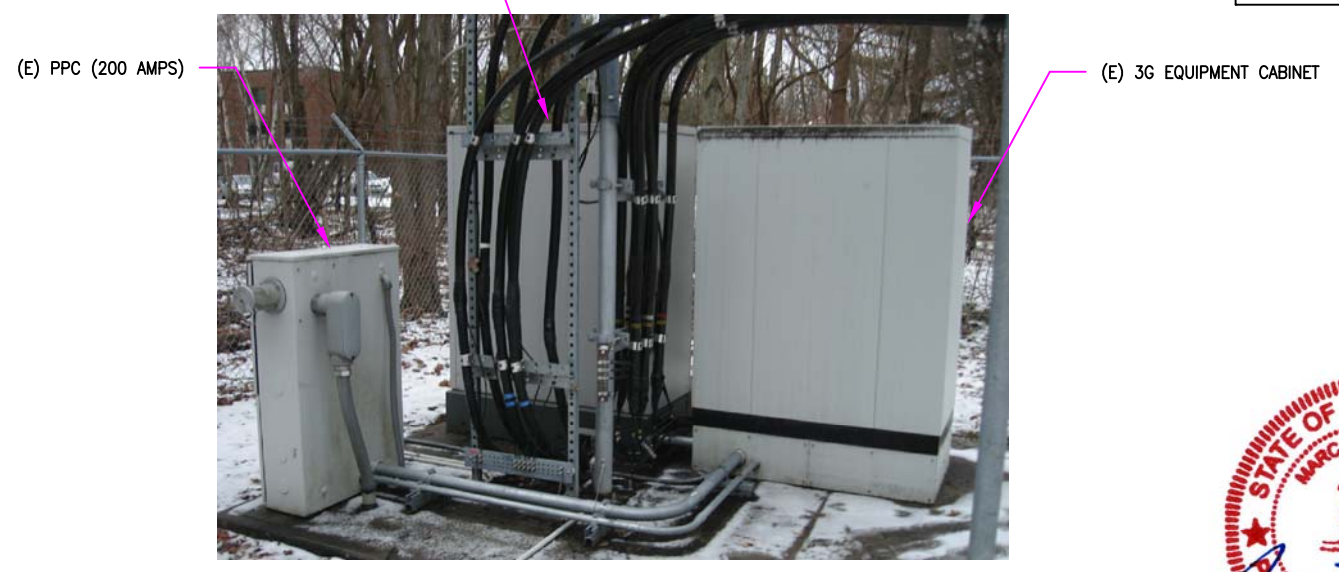
EXISTING ANTENNA PLAN
SCALE: 1/4"=1'-0"

PROPOSED ANTENNA PLAN
SCALE: 1/4"=1'-0"



EXISTING EQUIPMENT PLAN
SCALE: 1/4"=1'-0"

*** SPECIAL INSTALLATION NOTE:**
PROPOSED ANTENNAS SHALL BE VERTICALLY CENTERED ON EXISTING PLATFORM RAIL. ADJUST ANTENNA MOUNTING PIPE AS REQUIRED.

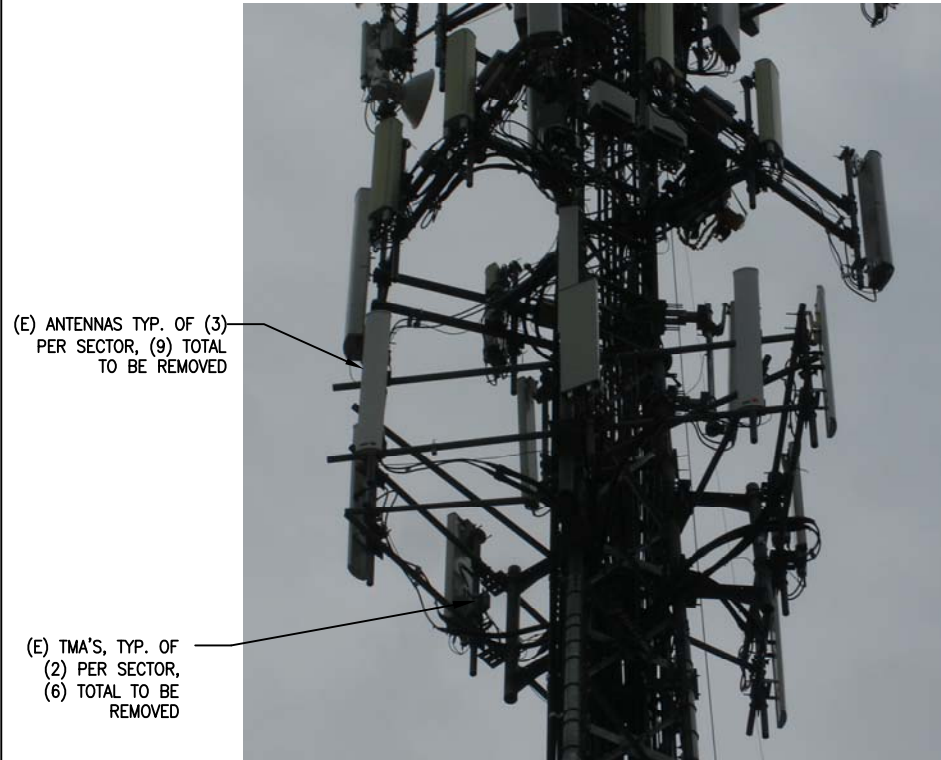


EXISTING EQUIPMENT AREA.
N.T.S.



NO.	DATE	REVISIONS	BY	CHK	APP'D
1	02/18/14	FINAL	SOS	MRC	MRC
0	02/06/14	CONSTRUCTION	SOS	MRC	MRC

SCALE: AS SHOWN DESIGNED BY: MRC DRAWN BY: SOS



(E) ANTENNAS TYP. OF (3) PER SECTOR, (9) TOTAL TO BE REMOVED

(E) TMA'S, TYP. OF (2) PER SECTOR, (6) TOTAL TO BE REMOVED

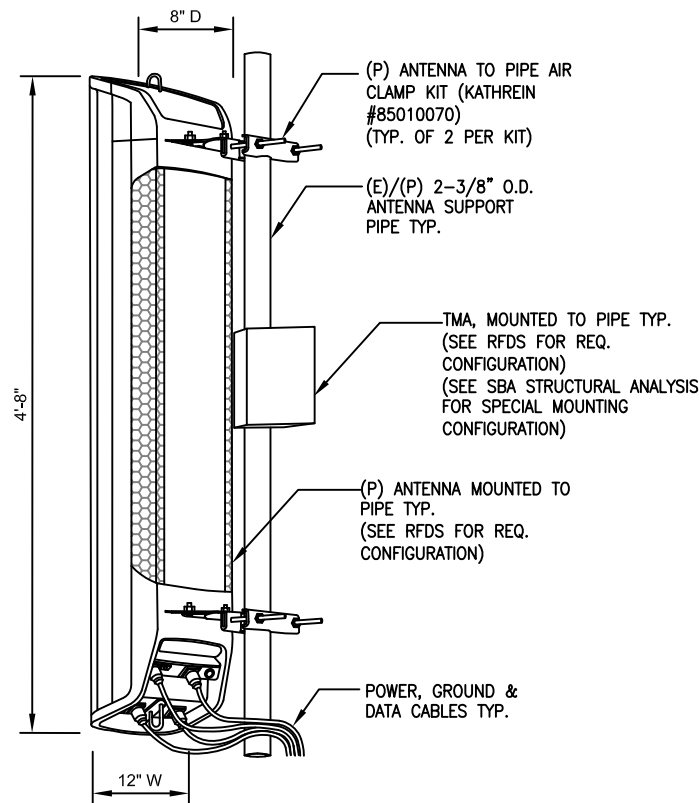
1
A-3 **EXISTING ANTENNA MOUNT TYP.**
N.T.S.



3
A-3 *(P) ANTENNA TYP. OF (2) PER SECTOR, (6) TOTAL (SEE SBA STRUCTURAL ANALYSIS FOR SPECIAL MOUNTING CONFIGURATION)

*** SPECIAL INSTALLATION NOTE:**
PROPOSED ANTENNAS SHALL BE VERTICALLY CENTERED ON EXISTING PLATFORM RAIL. ADJUST ANTENNA MOUNTING PIPE AS REQUIRED.

2
A-3 **PROPOSED ANTENNA MOUNT TYP.**
N.T.S.



3
A-3 **ANTENNA MOUNT TYP.**
SCALE: NTS



				T-MOBILE		
				DETAILS		
1	02/18/14	FINAL	SOS	MRC	MRC	
0	02/06/14	CONSTRUCTION	SOS	MRC	MRC	
NO.	DATE	REVISIONS	BY	CHK	APP'D	REV
SCALE: AS SHOWN			DESIGNED BY: MRC	DRAWN BY: SOS		
JOB NUMBER			DRAWING NUMBER			
CT11786D			A-3			1