January 23, 2014

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

RE: Notice of Exempt Modification
1021 Blue Hills Avenue
Bloomfield, CT 06002
N 41° 49' 12.42"
W -72° 41' 47.46"
Sprint Site #: NV2.5_CT43XC848

Dear Mr. Martin and Members of the Siting Council:

On behalf of Sprint, SBA Communications is submitting an exempt modification application to the Connecticut Siting council for modification of existing equipment at a tower facility located at 1021 Blue Hills Avenue, Bloomfield, CT.

The 1021 Blue Hills Avenue facility consists of a 125' Self Support Tower owned and operated by SBA Properties, LLC. In order to accommodate technological changes and enhance system performance in the State of Connecticut, Sprint 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 Sprint's modernization project, Sprint 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 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 Sprint, 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 302 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 302 + T
508-251-1755 + F
203-446-7700 + C
kpelletier@sbasite.com

Sprint

Equipment Modification

1020 Blue Hills Avenue, Bloomfield, CT 06002
Site number CT43XC848

Tower Owner: SBA Properties, LLC

Equipment Configuration: Self Support Tower

Current and/or approved:

- (3) RFS APXVSPP18-C-A20
- (3) ALU 1900 MHz RRHs
- (3) ALU 800 MHz RRHs
- (3) ALU 800 MHz Filters
- (4) RFS ACU-A20-N RETs
- (3) 1-1/4" Fiber

Planned Modifications:

- (3) RFS APXVSPP18-C-A20
- (3) RFS APXVTM14-C-I20
- (3) Alcatel Lucent TD-RRH8x20-25 RRHs
- (3) ALU 1900 MHz RRHs
- (3) ALU 800 MHz RRHs
- (3) ALU 800 MHz Filters
- (4) RFS ACU-A20-N RETs
- (3) 1-1/4" Fiber
- (1) 0.7” 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 Sprint facility are 79.516% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 79.627% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE %	
Carrier	MPE %
Sprint	79.516%
On Site Measurement Readings (All Carriers)	0.111%
Total Site MPE %	79.627%

January 23, 2014

Philip K. Schenck, Jr.
Town Manager
The Town of Bloomfield
800 Bloomfield Avenue, 2nd Floor
Bloomfield CT 06002

RE: Telecommunications Facility @ 1021 Blue Hills Avenue, Bloomfield, CT 06002

Dear Mr. Schenck,

In order to accommodate technological changes and enhance system performance in the State of Connecticut, Sprint 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 Sprint'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 302.

Thank you,

Kri Pelletier
SBA Communications Company
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-0720 x 302 + T
508-251-1755 + F
203-446-7700 + C
kpelletier@sbasite.com

Structural Analysis for SBA Network Services, Inc.

125' Self-Support Tower

SBA Site Name: Bloomfield
SBA Site ID: CT01725-A-00
Sprint Site ID: CT43XC848

FDH Project Number 1421P61400

Analysis Results

Tower Components	99.1%	Sufficient
Foundation	84.0%	Sufficient

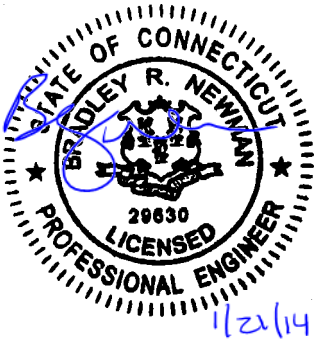
Prepared By:

Christopher B. Stryffeler, EI
Project Engineer

Reviewed By:

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

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



January 21, 2014

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

TABLE OF CONTENTS

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 Bloomfield, 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 Building Code (CBC)*. 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. 5566A) original design drawings dated March 11, 1998
- FDH Engineering, Inc. (Project No. 12-06690E G1) Geotechnical Evaluation of Subsurface Conditions dated August 10, 2012
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and *2005 CBC* is 80 mph without ice and 28 mph with 1" radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the existing and proposed antennas from Sprint in place at 87 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and *2005 CBC* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundations were constructed per the original design drawings (see Fred A. Nudd Corp. Project No. 5566A) and utilizing the existing geotechnical data (see FDH Engineering, Inc. Project No. 12-06690E G1), the foundations 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 CBC* are met with the existing and proposed loading in place, we have the following recommendations:

1. The feed lines must be installed as shown in **Figure 1**.
2. RRH/RRU stipulation: the proposed equipment may be installed in any arrangement determined by the client.

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
135	(3) Celwave PD455 Dipoles (2) 20' Omnis	(1) 1-1/4" (2) 1/2" (2) 7/8"	Blue Hills Fire & PD	125	(1) Platform with Handrails
125	(3) Ericsson AIR B2A/B4P (3) Ericsson AIR B4A/B2P (3) Ericsson KRY 112 144/1 TMDs	(12) 1-5/8" (1) 1-5/8" Fiber	T-Mobile		
120	(9) Decibel DB844H90E-XY	(9) 1-1/4"	Nextel[1]	120	(3) T-Frames
	(3) Kathrein 840 10054 (3) Samsung U-RAS RRUs (2) Andrew VHLP2.5 Dishes (2) Dragonwave Horizon Duo ODUs	(3) 1-1/4" (7) 5/16" (2) 1/2"	Clearwire		
110	(1) Antel BXA-70080/4CF (2) Swedcom SLCP 2x6014F (3) Antel BXA-70063/4CF (3) Antel BXA-171063/8CF (3) Antel BXA-171063/12CF (3) Alcatel Lucent RRH2x40WS RRUs (1) RFS DB-T1-6Z-8AB-C Distribution Box (2) GPS	(18) 1-5/8" (2) 1/2" (1) 1-5/8" Hybrid	Verizon	107	(3) T-Frames
98	(6) Powerwave 7770.00 (1) KMW AM-X-CD-16-65-00T-RET (2) Andrew SBNH-1D6565C (6) Powerwave LGP21401 TMAs (6) Ericsson RRUS-11 RRUs (6) Powerwave LGP21903 Diplexers	(12) 7/8" (1) 3" Flex Conduit (2) 3/4" DC Power (1) 3/8" Fiber	New Cingular	98	(3) T-Frames
96	(1) Raycap DC6-48-60-18-8F Surge Arrestor			96	Direct Mount
87	(3) RFS APXVSPP18-C-A20 (3) ALU 1900 MHz RRHs (3) ALU 800 MHz RRHs (3) ALU 800 MHz Filters (4) RFS ACU-A20-N RETs	(3) 1-1/4" Fiber	Sprint	87	(3) T-Frames
75	(3) RFS APXV18-206517S-C	(6) 1-5/8"	Pocket	75	Direct Mount
51	(1) 2' Omni	---	---	50	(1) Standoff

1. Nextel's equipment must be removed prior to the installation of the proposed loading. This equipment is not considered in this analysis.

Proposed Loading:

Antenna Elevation (ft)	Description	Feed Lines	Carrier	Mount Elevation (ft)	Mount Type
87	(3) RFS APXVSPP18-C-A20 (3) RFS APXVTM14-C-I20 (3) Alcatel Lucent TD-RRH8x20-25 RRHs (3) ALU 1900 MHz RRHs (3) ALU 800 MHz RRHs (3) ALU 800 MHz Filters (4) RFS ACU-A20-N RETs	(3) 1-1/4" Fiber (1) 0.7" Fiber	Sprint	87	(3) T-Frames

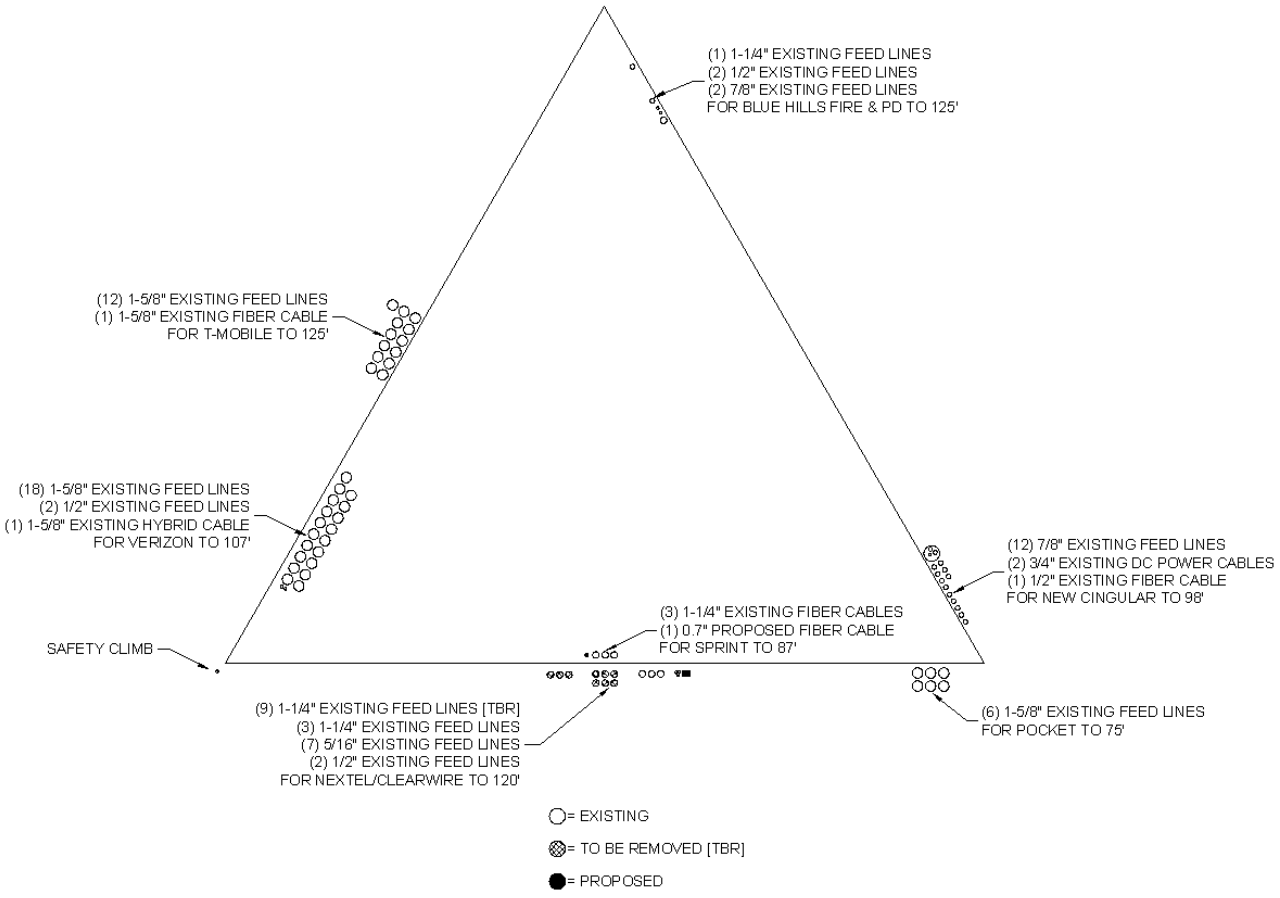


Figure 1 – Feed Line Layout

RESULTS

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

Table 2 - Material Strength

Member Type	Yield Strength
Legs	55 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 maximum tilt and twist 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
T1	125 - 120	Leg	P2.5x.203 (2.88 OD)	11.8	Pass
		Diagonal	5/8	38.2	Pass
		Horizontal	L1 1/2x1 1/2x3/16	36.8 45.6 (b)	Pass
		Top Girt	L1 1/2x1 1/2x3/16	18.1	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	21.5	Pass
T2	120 - 100	Leg	P2.5x.203 (2.88 OD)	64.2	Pass
		Diagonal	L1 1/2x1 1/2x3/16	57.9 78.0 (b)	Pass
		Top Girt	L1 1/2x1 1/2x3/16	6.9 11.9 (b)	Pass
T3	100 - 80	Leg	P3.5x.226 (4.00 OD)	77.6	Pass
		Diagonal	L2x2x3/16	53.4 89.0 (b)	Pass
T4	80 - 60	Leg	P5x.258 (5.563 OD)	72.2	Pass
		Diagonal	L2 1/2x2 1/2x3/16	46.2 99.1 (b)	**Fail**
T5	60 - 40	Leg	P6x.28 (6.625 OD)	69.5	Pass
		Diagonal	L2 1/2x2 1/2x3/16	53.5 71.8 (b)	Pass
T6	40 - 30	Leg	P6x.28 (6.625 OD)	80.2	Pass
		Diagonal	L3x3x3/16	51.3 73.6 (b)	Pass
T7	30 - 20	Leg	P6x.28 (6.625 OD)	91.8	Pass
		Diagonal	L3x3x3/16	53.3 72.5 (b)	Pass
T8	20 - 0	Leg	P8x.322 (8.625 OD)	65.7	Pass
		Diagonal	L3 1/2x3 1/2x1/4	31.3 58.9 (b)	Pass

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

Table 4 - Maximum Base Reactions

Load Type	Direction	Current Analysis *(TIA/EIA-222-F)**	Original Design *(EIA/TIA-222-E)*
Individual Foundation	Horizontal	17 k	---
	Uplift	186 k	193 k
	Compression	208 k	216 k
Overturning Moment	---	2,156 k-ft	---

* Foundation determined to be adequate per independent analysis.

Table 5 - Maximum Antenna Rotations at Service Wind Speeds

Centerline Elevation (ft)	Antenna	Tilt (deg)*	Twist (deg)*
120	(2) Andrew VHLP2.5 Dishes	0.4164	0.0383

* Tilt and Twist to be reviewed by the carrier.

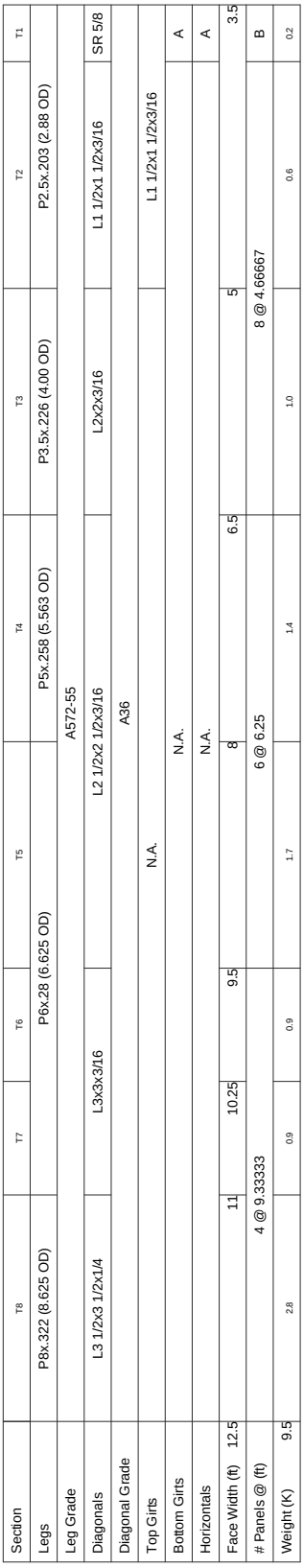
GENERAL COMMENTS

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



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 1/2"x4'	125	BXA-171063/8CF w/ Mount Pipe	107
Beacon	125	(2) 7770.00 w/Mount Pipe	98
PD455 Dipole	125	AM-X-CD-16-65-00T-RET w/ Mount Pipe	98
PD455 Dipole	125		
PD455 Dipole	125	SBNH-1D6565C w/Mount Pipe	98
20' Omni	125	SBNH-1D6565C w/Mount Pipe	98
20' Omni	125	(2) LGP21401 TMA	98
AIR 21 B2A/B4P w/Mount Pipe	125	(2) LGP21401 TMA	98
AIR 21 B2A/B4P w/Mount Pipe	125	(2) LGP21401 TMA	98
AIR 21 B2A/B4P w/Mount Pipe	125	(2) RRUS-11	98
AIR 21 B4A/B2P w/Mount Pipe	125	(2) RRUS-11	98
AIR 21 B4A/B2P w/Mount Pipe	125	(2) RRUS-11	98
AIR 21 B4A/B2P w/Mount Pipe	125	(2) LGP21903 Diplexer	98
KRY 112 144/1	125	(2) LGP21903 Diplexer	98
KRY 112 144/1	125	(2) LGP21903 Diplexer	98
KRY 112 144/1	125	DC6-48-60-18-8F Surge Arrestor	98
(1) Platform w/ Handrails	125	(3) T-Frames MNT	98
840 10054 w/ Mount Pipe	120	(2) 7770.00 w/Mount Pipe	98
840 10054 w/ Mount Pipe	120	(2) 7770.00 w/Mount Pipe	98
840 10054 w/ Mount Pipe	120	APXVSPP18-C-A20 w/Mount Pipe	87
Horizon Duo	120	APXVTM14-C-I20 w/ Mount Pipe	87
Horizon Duo	120	APXVTM14-C-I20 w/ Mount Pipe	87
URAS-FLEXIBLE	120	APXVTM14-C-I20 w/ Mount Pipe	87
URAS-FLEXIBLE	120	TD-RRH8x20-25	87
URAS-FLEXIBLE	120	TD-RRH8x20-25	87
(3) T-Frames MNT	120	TD-RRH8x20-25	87
VHLP2.5 Dish	120	1900 MHz RRH	87
VHLP2.5 Dish	120	1900 MHz RRH	87
BXA-171063/8CF w/ Mount Pipe	107	1900 MHz RRH	87
BXA-70080/4CF w/ Mount Pipe	107	800 MHz RRH	87
SLCP 2x6014F w/ Mount Pipe	107	800 MHz RRH	87
SLCP 2x6014F w/ Mount Pipe	107	800 MHz RRH	87
GPS	107	800 MHz Filter	87
GPS	107	800 MHz Filter	87
BXA-70063/4CF w/ Mount Pipe	107	800 MHz Filter	87
BXA-70063/4CF w/ Mount Pipe	107	ACU-A20-N RET	87
BXA-70063/4CF w/ Mount Pipe	107	(2) ACU-A20-N RET	87
BXA-171063/12CF w/ Mount Pipe	107	ACU-A20-N RET	87
BXA-171063/12CF w/ Mount Pipe	107	(3) T-Frames MNT	87
BXA-171063/12CF w/ Mount Pipe	107	APXVSPP18-C-A20 w/Mount Pipe	87
RRH2X40-AWS	107	APXVSPP18-C-A20 w/Mount Pipe	87
RRH2X40-AWS	107	APXV18-206517S-C w/Mount Pipe	75
RRH2X40-AWS	107	APXV18-206517S-C w/Mount Pipe	75
DB-T1-6Z-8AB-Z	107	APXV18-206517S-C w/Mount Pipe	75
(3) T-Frames MNT	107	2' Omni	50
BXA-171063/8CF w/ Mount Pipe	107	(1) Standoff MNT	50

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L1 1/2x1 1/2x3/16	B	2 @ 2.33333

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-55	55 ksi	70 ksi	A36	36 ksi	58 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 28 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: 99.1%

AXIAL 70 K
SHEAR 5 K
MOMENT 448 kip-ft
TORQUE 0 kip
28 mph WIND - 1.0000 in ICE

AXIAL 28 K
SHEAR 27 K
MOMENT 2156 kip-ft
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
Tower Analysis

Job: **Bloomfield, CT01725-A-00**			
Project: **1421P61400**			
Client: SBA Network Services, Inc.	Drawn by: Christopher B. Stryffeler, EI		App'd:
Code: TIA/EIA-222-F	Date: 01/21/14		Scale: NTS
Path:			Dwg No. E-1

EBI Consulting
environmental | engineering | due diligence

RADIO FREQUENCY FCC REGULATORY COMPLIANCE MAXIMUM PERMISSIBLE EXPOSURE (MPE) ASSESSMENT

Sprint Existing Facility

Site ID: CT43XC848

Cottage Grove
1021 Blue Hills Avenue
Bloomfield, Connecticut 06002

January 14, 2014

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

January 14, 2014

Sprint
Attn: RF Engineering Manager
1 International Boulevard, Suite 800
Mahwah, NJ 07495

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT43XC848 – Cottage Grove

Site Total: 79.627% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 1021 Blue Hills Avenue, Bloomfield, CT, for the purpose of determining whether the radio frequency (RF) exposure levels from the proposed Sprint equipment upgrades on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (µW/cm2). The number of µW/cm2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the cellular band is approximately 567 $\mu W/cm^2$, and the general population exposure limit for the 1900 MHz and 2500 MHz bands band is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

MEASUREMENT METHODOLOGY

Frequencies from 300 KHz to 50 GHz were measured using the Narda EA5091 probe in conjunction with the NBM 550 survey meter. The EA5091 probe is “shaped” such that in a mixed signal environment (i.e.: more than one frequency band is used in a particular location) it accurately measures the percent of MPE.

FCC OET Bulletin No. 65 - Edition 97-01 states “A useful characteristic of broadband probes used in multiple-frequency RF environments is a frequency-dependent response that corresponds to the variation in MPE limits with frequency. Broadband probes having such a "shaped" response permit direct assessment of compliance at sites where RF fields result from antennas transmitting over a wide range of frequencies. Such probes can express the composite RF field as a percentage of the applicable MPEs”.

Probe Description – As suggested in FCC OET Bulletin No. 65 - Edition 97-01, the response of the measurement instrument should be essentially isotropic, (i.e., independent of orientation or rotation angle of the probe). For this reason, the Narda EA5091 Isotropic probe was used for these measurements.

Sampling Method: At each measurement location, a spatially averaged measurement is collected over the height of an average human body. The NBM 550 survey meter performs a time average measurement while the user slowly moves the probe over a distance range of 0 cm to 200 cm (about 6 feet) above ground level. The results recorded at each measurement location include both average and peak values over the spatial distance.

A summary of equipment specifications for the probe and meter are listed in Table 1below.

Manufacturer:	NARDA Microwave
Probe Model:	NARDA EA5091
Probe Calibration date:	September 25, 2012
Survey Meter Model:	NARDA NBM 550
Survey Meter calibration Date:	July 04, 2012
Calibration Interval:	24 Months
Probe Specifics	
Frequency Range:	300 KHz to 50 GHz
Field(s) Measured:	E Field
Measurement Range (% of Controlled Environment standard):	0.3 to 600%
Specification Standards:	FCC 1997

Table 1: Measurement Equipment Information

Instrument Measurement Uncertainty: The total measurement uncertainty of the NARDA measurement probe and meter is no greater than ±3 dB. The factors which contribute to this include the probe's frequency response deviation, calibration uncertainty, ellipse ratio, and isotropic response. Every effort is taken to reduce the overall uncertainty during measurement collection including rotating the probe about the axis of the handle and pointing the probe directly at the likely highest source of emissions.

A summary of all sample points taken on site are displayed in Appendix A

CALCULATIONS

Calculations were done for the proposed upgrades to the existing Sprint Wireless antenna facility located at 1021 Blue Hills Avenue, Bloomfield, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario. Actual values seen from this site will be dramatically less than those shown in this report. 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 emissions were calculated using the following assumptions:

1) 4 channels in the 1900 MHz Band were considered for each sector of the proposed installation.
2) 1 channel in the 800 MHz Band was considered for each sector of the proposed installation
3) 2 channels in the 2500 MHz Band 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 maximum gain of the antenna per the antenna manufactures supplied specifications was used in this direction.
6) The antennas used in this modeling are the RFS APXVSPP18-C-A20 and the RFS APXVTMM-C-120. This is based on feedback from the carrier with regards to anticipated antenna selection. The RFS APXVSPP18-C-A20 has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 MHz. The RFS APXVTMM-C-120 has a 15.9 dBd gain value at its main lobe at 2500 MHz. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario.
7) The antenna mounting height centerline for the existing and proposed antennas is **87 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	CT43XC848 - Cottage Grove
Site Addresss	1021 Blue Hills Avenue, Bloomfield, Connecticut, 06002
Site Type	Self Support Tower

Sector 1

Antenna Number	Antenna Make	Antenna Model	Radio Type	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	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	87	81	1/2 "	0.5	0	2773.8948	151.9938	15.19938%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	87	81	1/2 "	0.5	0	389.96892	21.3681	3.76862%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	40	1	40	13.4	87	81	1/2 "	0.5	0	779.93784	42.7362	7.53725%
														Sector total Power Density Value:		26.505%	

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	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
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	87	81	1/2 "	0.5	0	2773.8948	151.9938	15.19938%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	87	81	1/2 "	0.5	0	389.96892	21.3681	3.76862%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	40	1	40	13.4	87	81	1/2 "	0.5	0	779.93784	42.7362	7.53725%
														Sector total Power Density Value:		26.505%	

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	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
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	87	81	1/2 "	0.5	0	2773.8948	151.9938	15.19938%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	87	81	1/2 "	0.5	0	389.96892	21.3681	3.76862%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	40	1	40	13.4	87	81	1/2 "	0.5	0	779.93784	42.7362	7.53725%
														Sector total Power Density Value:		26.505%	

Site Composite MPE %	
Carrier	MPE %
Sprint	79.516%
On Site Measurement Readings	
(All Carriers)	0.111%
Total Site MPE %	**79.627%**

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Summary

All calculations and measurements taken on site for this analysis yielded results that were well within the allowable limits for general public Maximum Permissible Exposure (MPE) to radio frequency energy.

The anticipated Maximum Composite contributions from the Sprint facility are **79.516% (26.505% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The largest value observed while conducting the on site measurements was **0.111**% of the allowable limits for general public exposure to RF Emissions.

The anticipated composite MPE value for this site assuming all carriers present is **79.627%** of the allowable FCC established general public limit sampled at 6 feet above ground level.

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

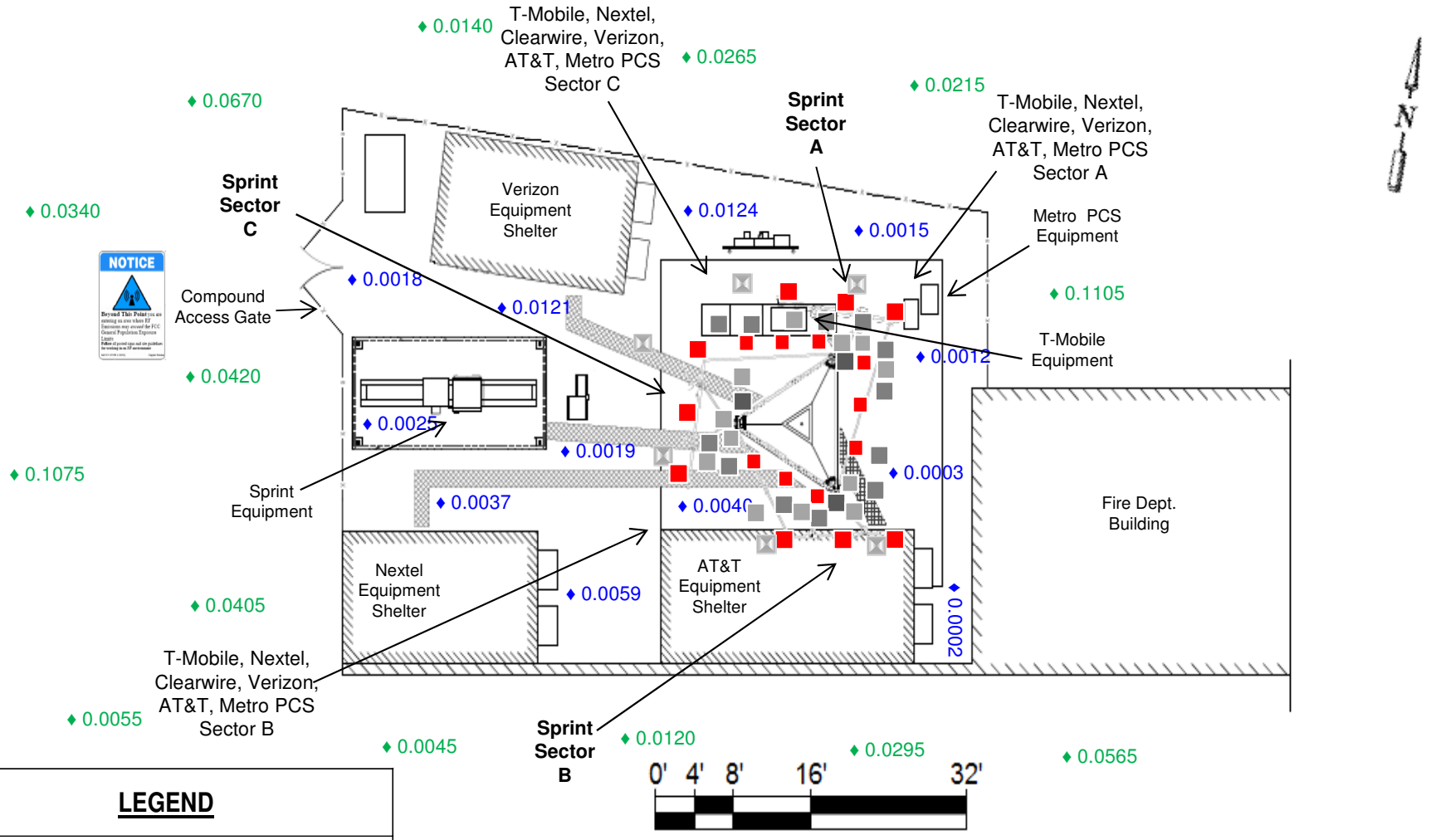
EBI Consulting
21 B Street
Burlington, MA 01803

APPENDIX A

On Site Measurements

Inside Tower Compound / Perimeter % FCC Occupational MPE Spatial Averages			
Location No.	**Location Reference**	**% Occupational MPE**	**% General Population MPE**
example	*10' W of tower in cmpd*	*2.02*	*10.1*
A	1 - from access gate every 10-15 ft clockwise	0.0018	0.0090
B	2	0.0121	0.0605
C	3	0.0124	0.0620
D	4	0.0015	0.0075
E	5	0.0012	0.0060
F	6	0.0003	0.0015
G	7	0.0002	0.0010
H	8	0.0040	0.0200
I	9	0.0059	0.0295
J	10	0.0037	0.0185
K	11	0.0019	0.0095
L	12	0.0025	0.0125

Transmitting Direction of Antennas up to 200' % FCC Occupational MPE Spatial Averages			
Location No.	**Location Reference**	**% Occupational MPE**	**% General Population MPE**
example	*10' from tower - Sector A*	*2.02*	*10.1*
M	1 - 15 ft in front of the access gate and counterclockwise around the compound, every 15-30 ft	0.0084	0.0420
N	2	0.0134	0.0670
O	3	0.0068	0.0340
P	4	0.0215	0.1075
Q	5	0.0081	0.0405
R	6	0.0011	0.0055
S	7	0.0009	0.0045
T	8	0.0024	0.0120
U	9	0.0104	0.0520
V	10	0.0059	0.0295
W	11	0.0097	0.0485
X	12	0.0113	0.0565
Y	13	0.0221	0.1105
Z	14	0.0043	0.0215
AA	15	0.0053	0.0265
BB	16	0.0028	0.0140



LEGEND

- Sprint Nextel antennas
- Other Carrier antennas
- ♦ Blue numbers are Spatially-Averaged Measurements
- % FCC Occupational Limit
- ♦ Green numbers are Spatially-Averaged Measurements
- % FCC General Public Limit

♦ 0.0520

♦ 0.0485

Site Plan with Monitoring Results

Facility Operator: Sprint

Site Number: CT43XC848

Site Name: COTTAGE GROVE

Site Visit Date: 12-04-12

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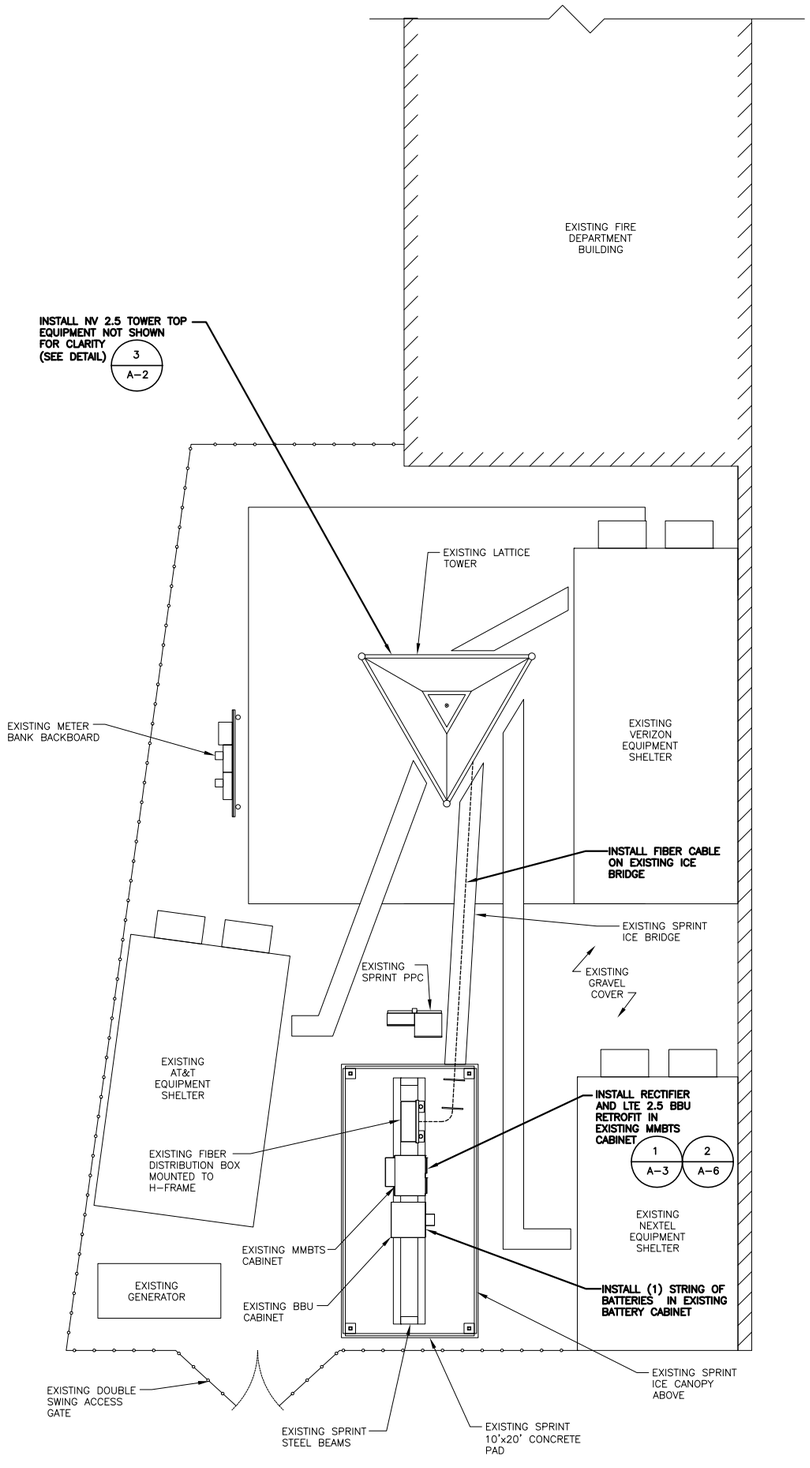


COMPOUND PLAN 1 A-1
SCALE: 3/16"=1'-0"

GRAPHIC SCALE
0 2'-8" 5'-4" 10'-8" 16'-0"

RAN EQUIPMENT PHOTO DETAIL 2 A-1
SCALE: N.T.S.

Sprint
1 INTERNATIONAL BLVD. SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

SBA
SBA COMMUNICATIONS CORP.
33 BOSTON POST ROAD WEST, SUITE 320
MARLBOROUGH, MA 01752 TEL: (508) 251-1807

PLANS PREPARED BY:
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

STATE OF CONNECTICUT MARC R. CHRETIEN NO. 28507 LICENSED PROFESSIONAL ENGINEER

CHECKED BY: MRC

APPROVED BY: MRC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	12/29/13	ISSUED FOR BP	AL

SITE NUMBER:
CT43XC848
SITE NAME:
BLOOMFIELD

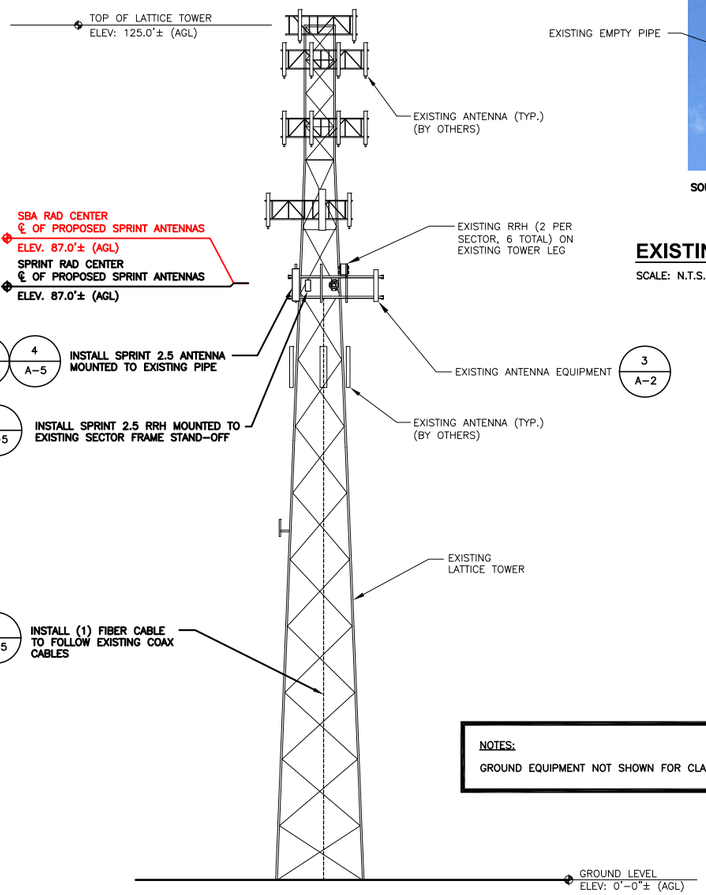
SITE ADDRESS:
1021 BLUE HILLS AVENUE
BLOOMFIELD, CT 06002

SHEET TITLE
COMPOUND PLAN

SHEET NUMBER
A-1

SPECIAL CONSTRUCTION NOTE:
SPRINT TOWER TOP WORK IS CONTINGENT ON THE FOLLOWING:
* COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS (PROVIDED BY TOWER OWNER).
* COMPLETION OF AN ANTENNA/RRH MOUNT STRUCTURAL ASSESSMENT (PROVIDED BY A&E VENDOR).
* GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED ANALYSIS AND ASSESSMENT.
* SBA COMMUNICATIONS CORPORATION SHALL PROVIDE WRITTEN ACCEPTANCE/APPROVAL FOR THE COMPLETION OF ALL TOWER/FOUNDATION STRUCTURAL MODIFICATIONS INCLUDING (AS NECESSARY) CONTROLLED CONSTRUCTION INSPECTIONS, SHOP-DRAWING APPROVALS, MATERIALS TEST RESULTS, AND FINAL ENGINEER'S AFFIDAVIT.

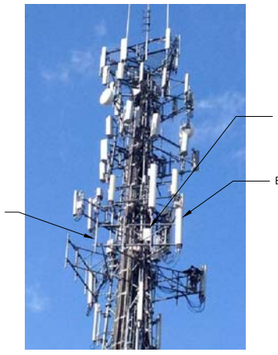
NOTE:
SPRINT RAD CENTER SHOWN IN TEXT BASED ON SBA-PROVIDED COLLOCATION APPLICATION, EQUIPMENT DATABASE, AND STRUCTURAL ANALYSIS. THE SBA-PROVIDED ANTENNA RAD CENTER SHALL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM THE SPRINT NV 2.5 RFDS.



ELEVATION
SCALE: 3/32"=1'-0" (1 A-2)

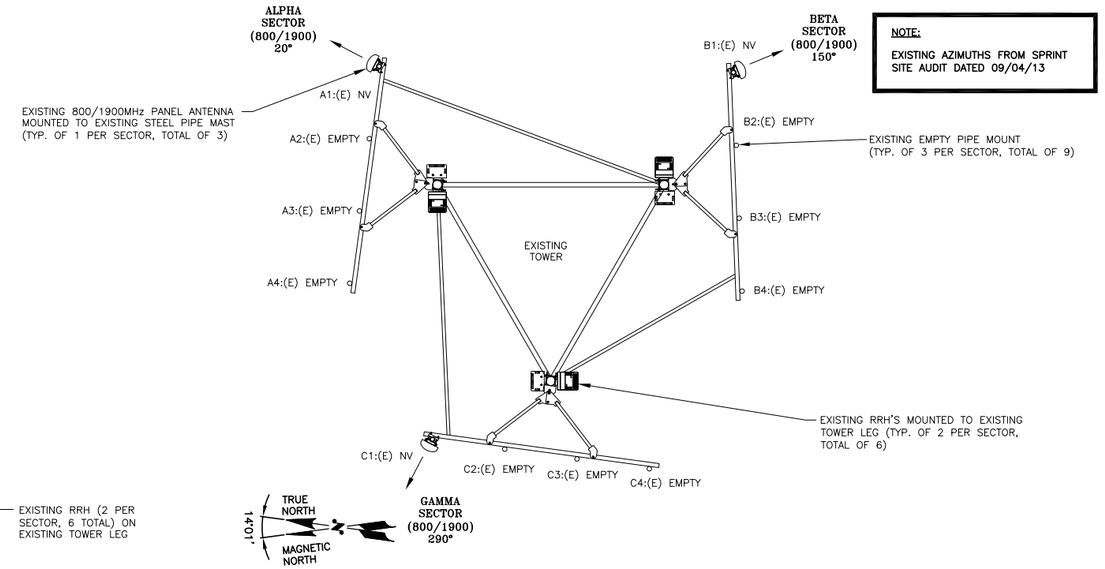
GRAPHIC SCALE
0 5'-4" 10'-8" 21'-6" 32'-0"

NOTES:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY



SOURCE: SPRINT SITE AUDIT 10.21.13

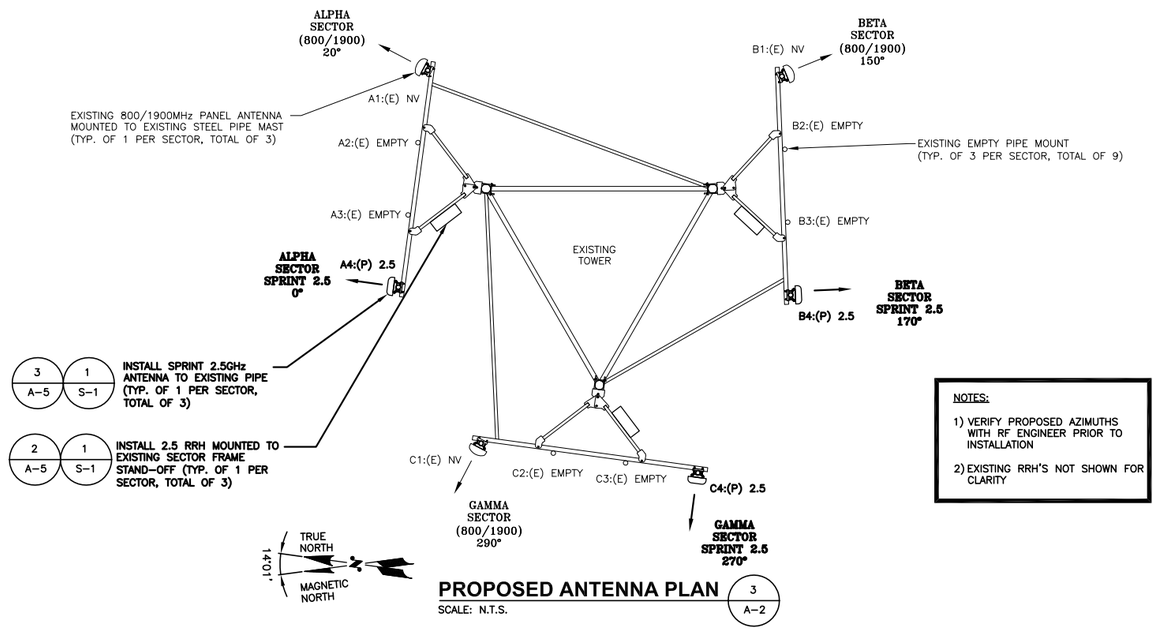
EXISTING PARTIAL ELEVATION PHOTO DETAIL
SCALE: N.T.S.



NOTE:
EXISTING AZIMUTHS FROM SPRINT SITE AUDIT DATED 09/04/13

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

ANTENNA STATUS LEGEND:
EMPTY – EMPTY PIPE
(E) – EXISTING
(P) – INSTALL
NV – SPRINT ANTENNA
2.5 – SPRINT ANTENNA



PROPOSED ANTENNA PLAN
SCALE: N.T.S. (3 A-2)

NOTES:
1) VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION
2) EXISTING RRH'S NOT SHOWN FOR CLARITY

Sprint
1 INTERNATIONAL BLVD. SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

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STATE OF CONNECTICUT · MARC R. CHRETIEN · No. 28507 · LICENSED PROFESSIONAL ENGINEER

CHECKED BY: MRC

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SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	12/29/13	ISSUED FOR BP	AL

SITE NUMBER:
CT43XC848
SITE NAME:
BLOOMFIELD
SITE ADDRESS:
1021 BLUE HILLS AVENUE
BLOOMFIELD, CT 06002

SHEET TITLE
ELEVATION AND ANTENNA PLANS

SHEET NUMBER
A-2