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
389 Forbes Avenue
New Haven, CT 06512
N 41° 17' 24.60"
W -72° 53' 42.98"

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 389 Forbes Avenue, New Haven, CT.

The 389 Forbes Avenue facility consists of a 86.5' Monopole 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

389 Forbes Avenue, New Haven, CT 06512
Site number CT59XC929

Tower Owner: SBA Properties, LLC

Equipment Configuration: Monopole

Current and/or approved:

- (3) Powerwave P40-16-XLPP-RR-A
- (3) Alcatel Lucent 800 MHz RRHs
- (3) Alcatel Lucent 1900 MHz RRHs
- (3) Alcatel Lucent 800 MHz External Notch Filters
- (4) RFS ACU-A20-N RETs
- (3) 1-1/4” feed lines

Planned Modifications:

- (3) RFS APXVTM14-C-I20
- (3) Powerwave P40-16-XLPP-RR-A
- (3) Alcatel Lucent TD-RRH8x20-25 RRHs
- (3) Alcatel Lucent 800 MHz RRHs
- (3) Alcatel Lucent 1900 MHz RRHs
- (3) RF Filters
- (3) Alcatel Lucent 800 MHz External Notch Filters
- (4) RFS ACU-A20-N RETs
- (3) 1-1/4" feed lines
- (1) 1-5/8" hybrid

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 0.013% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 27.063% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE %	
Carrier	MPE %
Sprint	0.013%
Clearwire	2.570%
MetroPCS	23.450%
T-Mobile	1.030%
Total Site MPE %	27.063%

January 23, 2014

Mayor Toni Harp
City of New Haven
165 Church Street
New Haven, CT 06510

RE: Telecommunications Facility @ 389 Forbes Avenue, New Haven, CT

Dear Mayor Harp,

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

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

Structural Analysis for SBA Network Services, Inc.

86.5' Monopole Tower

SBA Site Name: Hennessy Property
SBA Site ID: CT46149-A-00
Sprint Site ID: CT59XC929

FDH Project Number 13TFX41400 (R1)

Analysis Results

Tower Components	87.2%	Sufficient
Foundation	68.9%	Sufficient

Prepared By:

Mark S. Girgis, EI
Project Engineer

Reviewed By:

J. Darrin Holt, PhD, PE
Principal
CT PE License No. 22988

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

STATE OF CONNECTICUT
J. DARRIN HOLT
No. 22988
LICENSED PROFESSIONAL ENGINEER
12/11/13

December 11, 2013

Prepared pursuant to TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and the 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 monopole located in New Haven, 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 (CBC)*. Information pertaining to the existing/proposed antenna loading, current tower geometry, foundation dimensions, geotechnical data, and member sizes was obtained from:

- Clarence Welti Associates, Inc. (Proposed Sprint Site: CT59XC929) Geotechnical Study dated March 29, 2004
- Engineered Endeavors, Inc. (Project No. 12546) original tower drawings dated June 30, 2005
- Engineered Endeavors, Inc. (Project No. 12546-M01) Structure & Foundation Design Calculations dated June 30, 2005
- Vertical Solutions, Inc. (VSI No. 090665.04) extension drawings dated August 5, 2009
- Vertical Solutions, Inc. (VSI No. 100722.05) extension drawings dated July 15, 2010
- SBA Network Services, Inc.

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

Conclusions

With the existing and proposed antennas from Sprint in place at 62.5 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and the *2005 CBC* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was constructed per the original design drawings (see Engineered Endeavors, Inc. Project No. 12546), and using the given soil parameters (see Clarence Welti Associates, Inc. Proposed Sprint Site: CT59XC929), 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 CBC* are met with the existing and proposed loading in place, we have the following recommendations:

1. The proposed feed lines should be installed inside the pole's shaft unless otherwise noted.
2. RRU/RRH Stipulation: The equipment may be installed in any arrangement as 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[1]	Carrier	Mount Elevation (ft)	Mount Type
85	(3) Argus LLPX310R (3) Samsung FDD R6 RRHs (2) Dragonwave A-ANT-23G-1-C Dishes (1) Dragonwave A-ANT-11G-2-C Dish (1) Dragonwave A-ANT-18G-2-C Dish	(6) 5/16" (6) 1/2"	Clear Wireless	85	(3) T-Arms
72	(3) RFS APXV18-206517S-C	(6) 1-5/8"	Pocket Communications	72	Direct Mount
62.5	(3) Powerwave P40-16-XLPP-RR-A (3) Alcatel Lucent 800 MHz RRHs (3) Alcatel Lucent 1900 MHz RRHs (3) Alcatel Lucent 800 MHz External Notch Filters (4) RFS ACU-A20-N RETs	(3) 1-1/4"	Sprint	62.5	(3) T-Arms
58	(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" Hybrid	T-Mobile[2]	58	(3) T-Arms

1. Feed lines installed inside the pole shaft unless otherwise noted.
2. Currently, T-Mobile has (1) 1-5/8" Hybrid cable installed outside the pole shaft in a single row.

Proposed Loading:

Antenna Elevation (ft)	Description	Feed Lines	Carrier	Mount Elevation (ft)	Mount Type
62.5	(3) RFS APXVTM14-C-I20 (3) Powerwave P40-16-XLPP-RR-A (3) Alcatel Lucent TD-RRH8x20-25 RRHs (3) Alcatel Lucent 800 MHz RRHs (3) Alcatel Lucent 1900 MHz RRHs (3) RF Filters (3) Alcatel Lucent 800 MHz External Notch Filters (4) RFS ACU-A20-N RETs	(3) 1-1/4" (1) 1-5/8" Hybrid	Sprint	62.5	(3) T-Arms

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 & 35 ksi
Flange Plate	50 ksi
Flange Bolts	Fu = 120 ksi & 105 ksi
Base Plate	60 ksi
Anchor Bolts	Fu = 100 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 antenna 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
L1	88 - 78	Pole	P14x0.375	8.9	Pass
	78	Flange Bolts	(8) 0.75" Ø on a 17" BC	15.7	Pass
		Flange Plate	PL 1"x20" Ø	8.5	Pass
		Extension Connection	(24) 0.75" Ø Bolts	2.4	Pass
L2	78 - 68	Pole	P14x0.375	24.9	Pass
	68	Flange Bolts	(12) 1.125" Ø on a 25.75" BC	8.7	Pass
		Flange Plate	PL 1.25"x28.375" Ø	19.3	Pass
L3	68 - 38.542	Pole	TP20.6689x16x0.1875	87.2	Pass
L4	38.542 - 1.5	Pole	TP26x19.8053x0.375	74.0	Pass
	1.5	Anchor Bolts	(6) 2.25" Ø on a 33.5"	73.5	Pass
	1.5	Base Plate	PL 2"x39.5" Ø	68.9	Pass

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

Table 4 - Maximum Base Reactions

Base Reactions	Current Analysis* *(TIA/EIA-222-F)*	Original Design *(TIA/EIA-222-F)*
Axial	11 k	10 k
Shear	10 k	11 k
Moment	608 k-ft	587 k-ft

*Foundation determined to be adequate per independent analysis.

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

Centerline Elevation (ft)	Antenna	Tilt* (deg)	Twist* (deg)
85	(2) Dragonwave A-ANT-23G-1-C Dish (1) Dragonwave A-ANT-11G-2-C Dish (1) Dragonwave A-ANT-18G-2-C Dish	1.6271	0.0041

*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

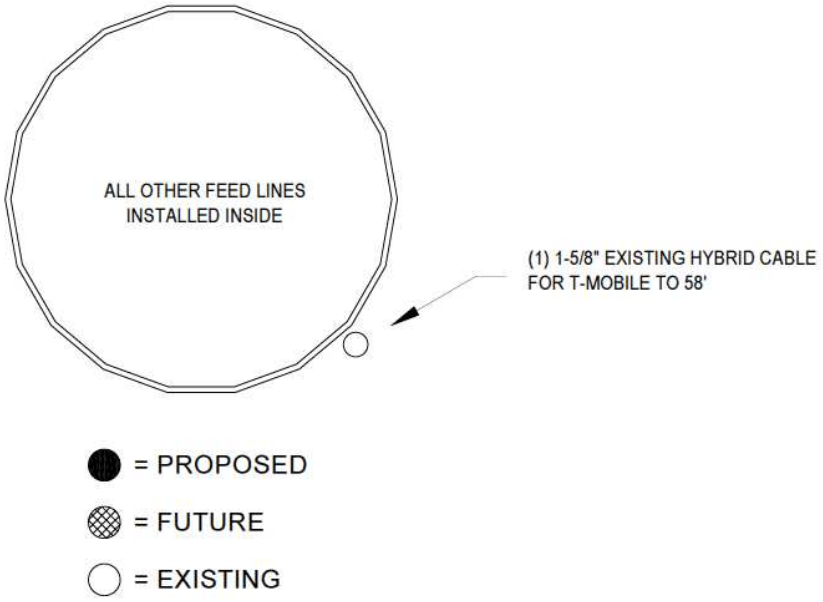
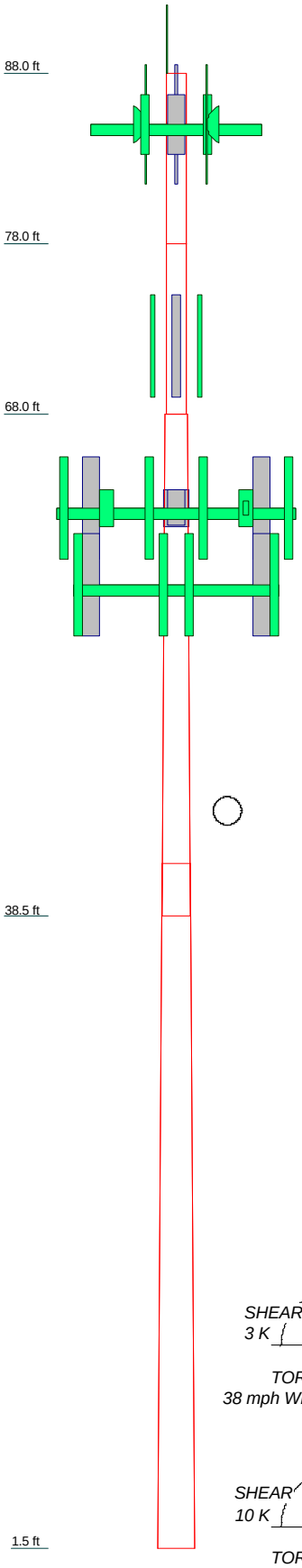


Figure 1 – Assumed Coax Layout

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	10.00	1	0.3750		14.0000	14.0000	A53-B-35	0.5
2	10.00	1	0.3750		14.0000	14.0000		0.5
3	29.46	18	0.1875	3.08	16.0000	20.6689		1.1
4	40.13	18	0.3750		19.8053	26.0000	A572-65	3.7
								5.8



AXIAL 17 K
SHEAR 3 K
MOMENT 159 kip-ft
TORQUE 0 kip-ft
38 mph WIND - 0.7500 in ICE

AXIAL 11 K
SHEAR 10 K
MOMENT 608 kip-ft
TORQUE 0 kip-ft
REACTIONS - 85 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	88	ACU-A20-N RET	62.5
LLPX310R w/Mount Pipe	85	(2) ACU-A20-N RET	62.5
LLPX310R w/Mount Pipe	85	ACU-A20-N RET	62.5
LLPX310R w/Mount Pipe	85	(3) T-Arms	62.5
Samsung FDD R6 RRH	85	APXVTM14-C-I20 w/ Mount Pipe	62.5
Samsung FDD R6 RRH	85	APXVTM14-C-I20 w/ Mount Pipe	62.5
Samsung FDD R6 RRH	85	APXVTM14-C-I20 w/ Mount Pipe	62.5
Empty Mount Pipe	85	TD-RRH8x20-25	62.5
Empty Mount Pipe	85	TD-RRH8x20-25	62.5
Empty Mount Pipe	85	TD-RRH8x20-25	62.5
(3) T-Arms	85	RF Filter	62.5
(2) Dragonwave A-ANT-23G-1-C Dish	85	RF Filter	62.5
Dragonwave A-ANT-11G-2-C Dish	85	RF Filter	62.5
Dragonwave A-ANT-18G-2-C Dish	85	P40-16-XLPP-RR-A w/ Mount Pipe	62.5
APXV18-206517S-C w/Mount Pipe	72	P40-16-XLPP-RR-A w/ Mount Pipe	62.5
APXV18-206517S-C w/Mount Pipe	72	P40-16-XLPP-RR-A w/ Mount Pipe	62.5
APXV18-206517S-C w/Mount Pipe	72	AIR 21 B2A/B4P w/Mount Pipe	58
800 MHz RRH	62.5	AIR 21 B4A/B2P w/Mount Pipe	58
800 MHz RRH	62.5	AIR 21 B4A/B2P w/Mount Pipe	58
800 MHz RRH	62.5	AIR 21 B4A/B2P w/Mount Pipe	58
1900 MHz RRH	62.5	Ericsson KRY 112 144/1 TMA	58
1900 MHz RRH	62.5	Ericsson KRY 112 144/1 TMA	58
1900 MHz RRH	62.5	Ericsson KRY 112 144/1 TMA	58
800 MHz External Notch Filter	62.5	(3) T-Arms	58
800 MHz External Notch Filter	62.5	AIR 21 B2A/B4P w/Mount Pipe	58
800 MHz External Notch Filter	62.5	AIR 21 B2A/B4P w/Mount Pipe	58

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 87.2%

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

Job:	***Hennessy Property, CT46149-A-00***		
Project:	***13TFX41400 (R1)***		
Client: SBA Network Services, Inc.	Drawn by: Mark S. Girgis	App'd:	
Code: TIA/EIA-222-F	Date: 12/11/13	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: CT59XC929

Hennessey Property
389 Forbes Avenue
New Haven, CT 06511

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:
CT59XC929– Hennessey Property

Site Total: 27.063% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 389 Forbes Avenue, New Haven, 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.

CALCULATIONS

Calculations were done for the proposed upgrades to the existing Sprint Wireless antenna facility located at 389 Forbes Avenue, New Haven, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. For this report the sample point is the top of a 6 foot person standing at the base of the tower. The actual gain value of the antenna vertical broadcast pattern, per the antenna manufactures supplied specifications, was used in this direction. This value will be much lower than the maximum gain value for these antennas in this direction based upon their directivity.

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) 1 channel in the 2500 MHz Band was 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 value of the antenna vertical broadcast pattern, per the antenna manufactures supplied specifications, was used in this direction. This value will be much lower than the maximum gain value for these antennas in this direction based upon their directivity.

6) The antennas used in this modeling are the Powerwave P40-16-XLPP-RR-A and the RFS APXVTMM-C-120. This is based on feedback from the carrier with regards to anticipated antenna selection. The Powerwave P40-16-XLPP-RR-A has a 15.9 dBd gain value at its main lobe at 1900 MHz and 14.2 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 proposed and existing antennas is **62.5 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	CT59XC929 - Hennessey Property
Site Addresss	389 Forbes Avenue, New Haven, CT 06511
Site Type	Monopole

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	Powerwave	P40-16-XLPP-RR-A	RRH	1900 MHz	CDMA / LTE	20	4	80	-26.01	62.5	56.5	1/2 "	0.5	0	0.1786858	0.020123	0.00201%
1a	Powerwave	P40-16-XLPP-RR-A	RRH	850 MHz	CDMA / LTE	20	1	20	-27.89	62.5	56.5	1/2 "	0.5	0	0.0289754	0.003263	0.00058%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	40	1	40	-26.21	62.5	56.5	1/2 "	0.5	0	0.0853218	0.009609	0.00169%
														Sector total Power Density Value:			0.004%

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	Powerwave	P40-16-XLPP-RR-A	RRH	1900 MHz	CDMA / LTE	20	4	80	-26.01	62.5	56.5	1/2 "	0.5	0	0.1786858	0.020123	0.00201%
2a	Powerwave	P40-16-XLPP-RR-A	RRH	850 MHz	CDMA / LTE	20	1	20	-27.89	62.5	56.5	1/2 "	0.5	0	0.0289754	0.003263	0.00058%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	40	1	40	-26.21	62.5	56.5	1/2 "	0.5	0	0.0853218	0.009609	0.00169%
														Sector total Power Density Value:			0.004%

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	Powerwave	P40-16-XLPP-RR-A	RRH	1900 MHz	CDMA / LTE	20	4	80	-26.01	62.5	56.5	1/2 "	0.5	0	0.1786858	0.020123	0.00201%
3a	Powerwave	P40-16-XLPP-RR-A	RRH	850 MHz	CDMA / LTE	20	1	20	-27.89	62.5	56.5	1/2 "	0.5	0	0.0289754	0.003263	0.00058%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	40	1	40	-26.21	62.5	56.5	1/2 "	0.5	0	0.0853218	0.009609	0.00169%
														Sector total Power Density Value:			0.004%

Site Composite MPE %	
Carrier	MPE %
Sprint	0.013%
Clearwire	2.570%
MetroPCS	23.450%
T-Mobile	1.030%
Total Site MPE %	**27.063%**

EBI Consulting
environmental | engineering | due diligence

Summary

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

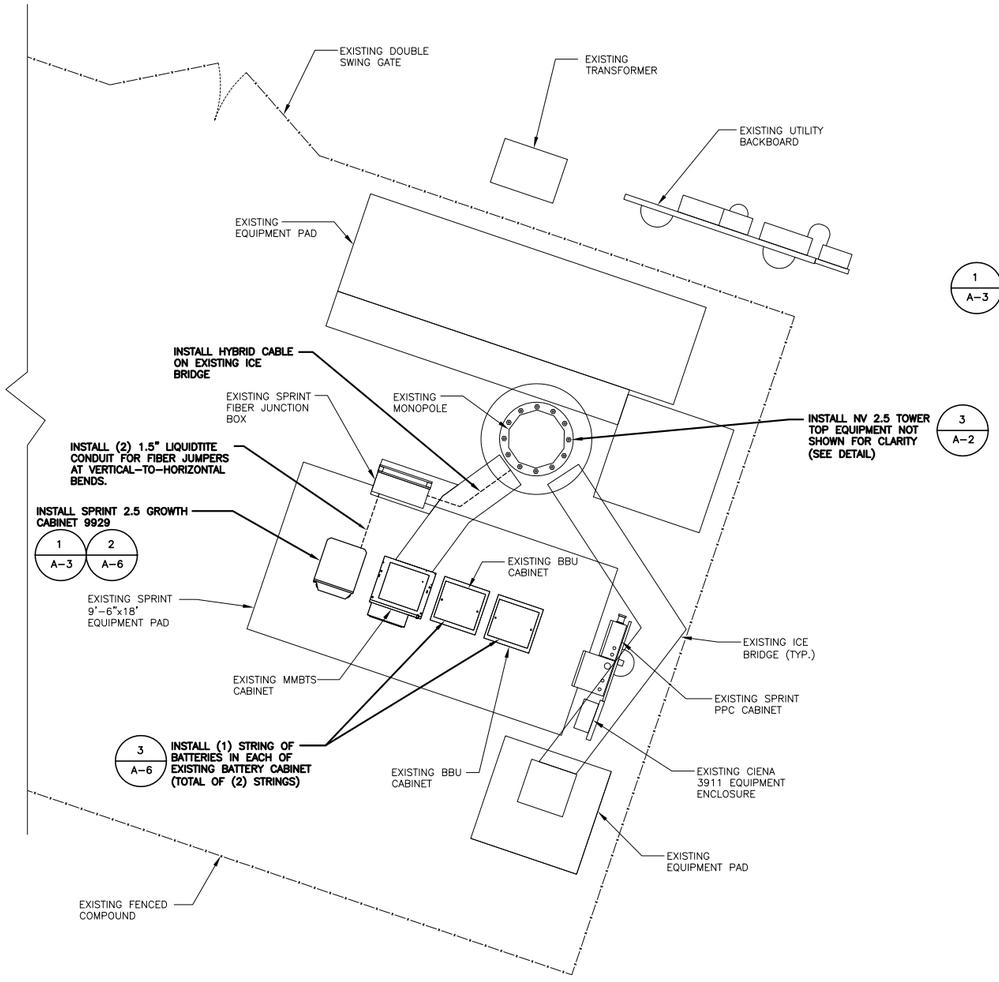
The anticipated Maximum Composite contributions from the Sprint facility are **0.013% (0.004% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **27.063%** of the allowable FCC established general public limit sampled at 6 feet above ground level. This total composite site value is based upon MPE values listed in the Connecticut Siting Council database for existing carrier emissions.

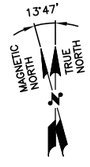
FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803



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



COMPOUND PLAN 1 A-1
SCALE: 1/4"=1'-0"

GRAPHIC SCALE
0 2'-0" 4'-0" 8'-0" 12'-0"

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 PH: (401) 354-2403
EAST PROVIDENCE, RI 02914 FAX: (401) 633-6354

STATE OF CONNECTICUT MARC R. CHRETIEN NO. 29507 LICENSED PROFESSIONAL ENGINEER

CHECKED BY: MRC

APPROVED BY: MRC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	12/24/13	ISSUED FOR BP	AL

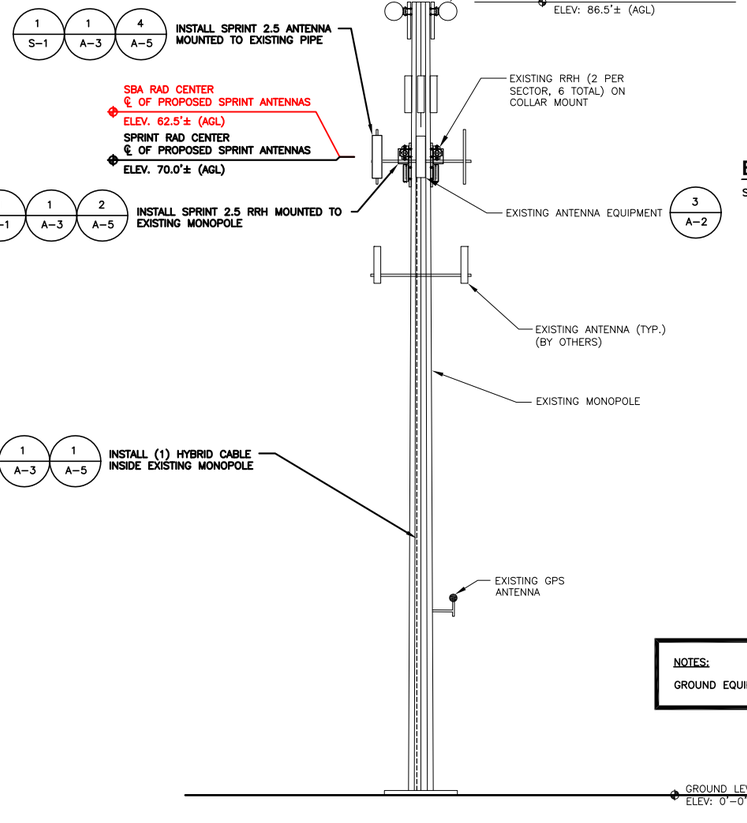
SITE NUMBER:
CT59XC929
SITE NAME:
HENNESSY PROPERTY
SITE ADDRESS:
389 FORBES AVENUE
NEW HAVEN, CT 06512

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.

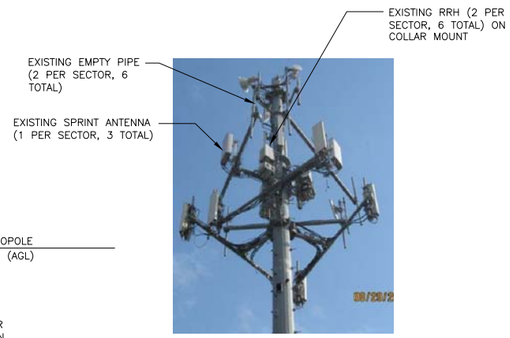
NOTE:
SPRINT RAD CENTER SHOWN IN TEXT BASED ON SBA-PROVIDED COLLOCATION APPLICATION, EQUIPMENT DATABASE, AND STRUCTURAL ANALYSIS. THE SBA-PROVIDED ANTENNA RAD CENTER SHALL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM THE SPRINT NV 2.5 RFDS.



ELEVATION
SCALE: 1/8"=1'-0" (1 / A-2)

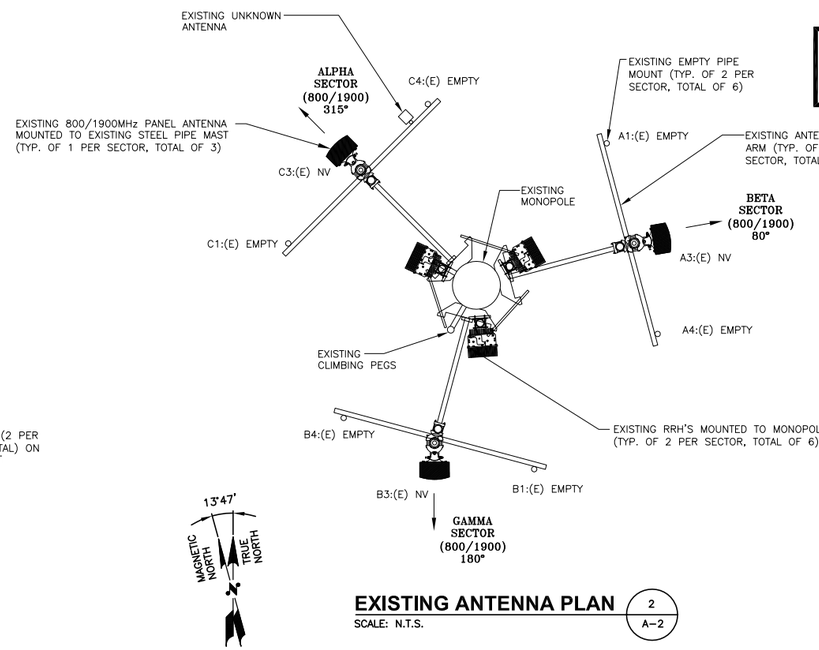
GRAPHIC SCALE
0 4'-0" 8'-0" 16'-0" 24'-0"

NOTES:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY



SOURCE: SPRINT SITE AUDIT 08.29.13

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

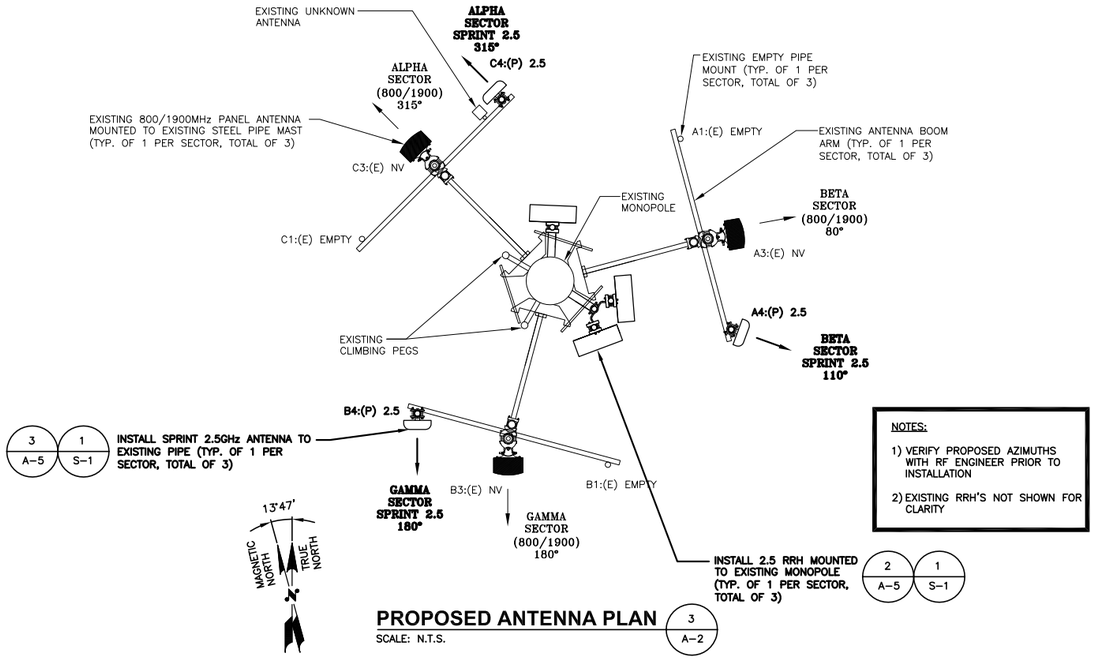


NOTE:
EXISTING AZIMUTHS FROM SPRINT SITE AUDIT DATED 09/04/13

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



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

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

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1 INTERNATIONAL BLVD. SUITE 800
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STATE OF CONNECTICUT · MARC R. CHRETIEN · NO. 28057 · LICENSED PROFESSIONAL ENGINEER

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SUBMITTALS

REV.	DATE	DESCRIPTION	BY
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HENNESSY PROPERTY
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389 FORBES AVENUE
NEW HAVEN, CT 06512

SHEET TITLE
ELEVATION AND ANTENNA PLANS

SHEET NUMBER
A-2