June 10, 2014

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

RE: Notice of Exempt Modification
370 Rockland Road
Guilford, CT 06437
Sprint Site #: NV2.5_CT33XC087
N 41° 23' 48.6"
W -72° 41' 19.7"

Dear Mr. Martin and Members of the Siting Council:

On behalf of Sprint Spectrum, SBA Communications is submitting an exempt modification application to the Connecticut Siting council for modification of existing equipment at a tower facility located at 370 Rockland Road, Guilford CT.

The 370 Rockland Road facility consists of a 158.5' MONOPOLE 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, Sprint Spectrum 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 Network Vision modification 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 Spectrum, 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@sbasite.com

Sprint Spectrum
Equipment Modification

370 Rockland Road, Guilford CT
Site number CT33XC087

Tower Owner: SBA 2012 TC Assets, LLC

Equipment Configuration: MONOPOLE Tower

Current and/or approved:

Sprint Equipment at 147':
- (6) Andrew 980F90T4E-M
- (3) RFS APXVSPP18-C-A20

Sprint Equipment at 145':
- (3) 1900 RRH (25 MHz)
- (3) 800 RRH
- (3) External Notch Filters
- (6) 1900 ACU-A20-N RETs
- (3) 800 ACU-A20-N RETs
- (6) 1-5/8" Feeds
- (3) 1-1/4" Feeds

Planned Modifications:

Sprint Equipment at 147':
- (6) Andrew 980F90T4E-M
- (3) RFS APXVSPP18-C-A20
- (3) RFS APXVTM14-C-I20

Sprint Equipment at 145':
- (3) ALU TD-RRH8x20-25 RRUs
- (3) 1900 RRH (25 MHz)
- (3) 800 RRH
- (3) External Notch Filters
- (6) 1900 ACU-A20-N RETs
- (3) 800 ACU-A20-N RETs
- (6) 1-5/8" Feeds
- (4) 1-1/4" Feeds

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 11.266% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 43.816% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE %	
Carrier	MPE %
Sprint	11.266%
AT&T	17.130%
Verizon Wireless	15.420%
Total Site MPE %	43.816%

June 10, 2014

Joe Mazza
First Selectman
Town of Guilford
Town Hall
31 Park Street
Guilford, CT 06437

RE: Telecommunications Facility @ 370 Rockland Road, Guilford CT

Dear Mr. Mazza,

In order to accommodate technological changes and enhance system performance in the State of Connecticut, Sprint Spectrum 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 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@sbasite.com

June 10, 2014

Allan F. Chagnon
405 W Shepard Avenue
Hamden CT 06514-1012

Woodbridge Sportsmen Club, Inc.
39 Rockefeller Avenue
West Haven CT 06516

RE: Telecommunications Facility @ 370 Rockland Road, Guilford CT

Dear Mr. Chagnon and Woodbridge Sportsmen Club Representative,

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

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EBI Consulting
environmental | engineering | due diligence

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

Sprint Existing Facility

Site ID: CT33XC087

West Haven / Route 15 Woodbridge

370 Rockland Road
Guilford, CT 06437

May 21, 2014

EBI Project Number: 62143086

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

EBI Consulting
environmental | engineering | due diligence

May 21, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT33XC087 - West Haven / Route 15 Woodbridge

Site Total: 41.931% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 370 Rockland Road, Guilford, 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 (850 MHz Band) is approximately 567 $\mu W/cm^2$, and the general population exposure limit for the 1900 MHz and 2500 MHz bands 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 370 Rockland Road, Guilford, 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) 2 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 proposed antennas is**147 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	CT33XC087 - West Haven / Route 15 Woodbridge
Site Addresss	370 Rockland Road, Guilford, CT 06437
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 (dB)	ERP	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	15.9	147	141	1/2 "	0.5	3	1042.6805	1.88547%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	147	141	1/2 "	0.5	3	195.44744	0.62333%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	147	141	1/2 "	0.5	3	390.89489	1.24665%
														Sector total Power Density Value:		3.755%

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 (dB)	ERP	Power Density Percentage
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	15.9	147	141	1/2 "	0.5	3	1042.6805	1.88547%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	147	141	1/2 "	0.5	3	195.44744	0.62333%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	147	141	1/2 "	0.5	3	390.89489	1.24665%
														Sector total Power Density Value:		3.755%

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 (dB)	ERP	Power Density Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	15.9	147	141	1/2 "	0.5	3	1042.6805	1.88547%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	147	141	1/2 "	0.5	3	195.44744	0.62333%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	147	141	1/2 "	0.5	3	390.89489	1.24665%
														Sector total Power Density Value:		3.755%

Site Composite MPE %	
Carrier	MPE %
Sprint	11.266%
AT&T	17.130%
Verizon Wireless	15.420%
Total Site MPE %	**43.816%**

EBI Consulting
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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 **9.381% (3.127% 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 **41.931%** 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

Structural Analysis for SBA Network Services, Inc.

158.5' Monopole Tower

SBA Site Name: West Haven-Rt 15
SBA Site ID: CT46139-A-02
Sprint Site ID: CT33XC087

FDH Project Number 1462GV1400

Analysis Results

Tower Components	96.7%	Sufficient
Foundation	71.5%	Sufficient

Prepared By:

Blake A. Wilson, 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

STATE OF CONNECTICUT BRADLEY R. NEWMAN 29630 LICENSED PROFESSIONAL ENGINEER

9/9/14

April 9, 2014

Prepared pursuant to TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and 2005 Connecticut State 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 Guilford, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads pursuant to the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA/EIA-222-F* and *2005 Connecticut State Building Code*. Information pertaining to the existing/proposed antenna loading, current tower geometry, geotechnical data, foundation dimensions, and member sizes was obtained from:

- Engineered Endeavors Incorporated (Job No. 12806-E01) original design drawings dated July 30, 2004
- Jaworski Geotech, Inc. (Project No. 04197G) Geotechnical Evaluation dated March 24, 2004
- Vertical Solutions, Inc. (Job No. 090845.04) tower extension design drawings dated August 11, 2009
- Vertical Solutions, Inc. (Job No. 122449) tower modification design drawings dated January 30, 2013
- SBA Network Services, Inc.

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

Conclusions

With the existing and proposed antennas from Sprint in place at 147 ft & 145 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and *2005 Connecticut State Building Code* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was constructed per the original design drawings (see EEI Job No. 12806-E01), and utilizing the existing soil parameters (see JGI Project No. 04197G), the foundation should have the necessary capacity to support the existing and proposed loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH Engineering, Inc. is accurate (i.e., the steel data, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been properly erected and maintained per the original design drawings.

Recommendations

To ensure the requirements of the *TIA/EIA-222-F* standards and *2005 Connecticut State Building Code* are met with the existing and proposed loading in place, we have the following recommendations:

1. The proposed feedlines should be installed as shown **Figure 1**.
2. RRU/RRH Stipulation: The equipment may be installed in any arrangement as determined by the client.
3. Modifications must be installed per the tower modification design drawings dated January 30, 2013 in order for this analysis to be valid (see VSI Job No. 122449).

APPURTENANCE LISTING

The proposed and existing antennas with their corresponding cables/coax lines are shown in **Table 1**. *If the actual layout determined in the field deviates from the layout, FDH Engineering, Inc. should be contacted to perform a revised analysis.*

Table 1 - Appurtenance Loading

Existing Loading:

Antenna Elevation (ft)	Description	Feedlines[1]	Carrier	Mount Elevation (ft)	Mount Type
157 [2]	(6) Decibel DB846F65ZAXY (3) Antel BXA-70063/6CF (4) Antel BXA-171063/8BF (2) Antel BXA-171063/12BF	(18) 1-5/8"	Verizon	157	(3) T-Arms
147 [3]	(6) Andrew 980F90T4E-M (3) RFS APXVSPP18-C-A20	(6) 1-5/8" (3) 1-1/4"	Sprint	146.5	(3) T-Arms
145	(3) 1900 RRH (25 MHz) (3) 800 RRH (3) External Notch Filters (6) 1900 ACU-A20-N RETs (3) 800 ACU-A20-N RETs			145	(1) Collar Mount
137	(6) Powerwave 7770 (3) KMW AM-X-CD-16-65-00T-RET (12) Powerwave LGP21401 TMAs (6) Ericsson RRUS 11 RRUs	(12) 1-5/8" (1) 3" Conduit (1) 1/2" Fiber (2) 3/4" DC Power	AT&T	137	(3) T-Arms
72 [4]	(1) GPS	(1) 1/2"	Sprint	72	(1) Standoff

1. Feedlines installed inside the pole's shaft unless otherwise noted.
2. Verizon has (6) 1-5/8" coax installed outside the pole's shaft in a single row to 157'.
3. Sprint has (3) 1-1/4" coax installed outside the pole's shaft in a single row to 147'.
4. Sprint has (1) 1/2" coax installed outside the pole's shaft to 72'.

Proposed Loading:

Antenna Elevation (ft)	Description	Feedlines	Carrier	Mount Elevation (ft)	Mount Type
147	(6) Andrew 980F90T4E-M (3) RFS APXVSPP18-C-A20 (3) RFS APXVTM14-C-I20	(6) 1-5/8" (4) 1-1/4"	Sprint	146.5	(3) T-Arms
145	(3) ALU TD-RRH8x20-25 RRUs (3) 1900 RRH (25 MHz) (3) 800 RRH (3) External Notch Filters (6) 1900 ACU-A20-N RETs (3) 800 ACU-A20-N RETs			145	(1) Collar Mount

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 & 42 ksi
Flange Plate	50 ksi
Flange Bolts	Fu = 120 ksi
Bypass Stiffener	36 ksi
Flat Plate Reinforcement	50 ksi
Base Plate Stiffeners	50 ksi
Base Plate	60 ksi
Anchor Bolts	75 ksi

Table 3 displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. *Note: Capacities up to 105% are considered acceptable.* **Table 4** displays the maximum foundation reactions.

If the assumptions outlined in this report differ from actual field conditions, FDH Engineering, Inc. should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the existing or proposed appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the **Appendix** for detailed modeling information

Table 3 - Summary of Working Percentage of Structural Components

Section No.	Elevation ft	Component Type	Size	% Capacity*	Pass Fail
L1	158.5 - 149	Pole	TP20x20x0.375	12.7	Pass
L2	149 - 148.5	Pole	TP20.5x20x0.375	12.9	Pass
	148.5	Flange Bolts	(18) 1"Ø on a 25" B.C.	10.4	Pass
	148.5	Flange Plate	PL 1.25" x 30"Ø	15.2	Pass
L3	148.5 - 119	Pole	TP28.2x20.5x0.1875	96.7	Pass
	119 - 94.58	Modified Pole	TP34.57x28.2x0.1875 w/ (3) PL 1.5" x 5"	82.0	Pass
L4	94.58 - 53	Pole	TP44.33x32.9338x0.3125	84.3	Pass
	53 - 46.5833	Modified Pole	TP46.59x44.33x0.3125 w/ (3) PL 1.5" x 6.5"	73.6	Pass
L5	46.5833 - 0	Modified Pole	TP58x44.3279x0.3125 w/ (3) PL 1.5" x 7.25"	79.0	Pass
		Anchor Bolts	(16) 2.25"Ø on a 66" B.C.	70.4	Pass
		Base Plate	PL 1.75" x 72"Ø w/ Stiffeners	76.6	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	37 k	25 k
Shear	27 k	24 k
Moment	3,070 k-ft	2,485 k-ft

*Foundation determined adequate per independent analysis.

GENERAL COMMENTS

This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If there are substantial modifications to be made or the assumptions made in this analysis are not accurate, FDH Engineering, Inc. should be notified immediately to perform a revised analysis.

LIMITATIONS

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of FDH Engineering, Inc.

APPENDIX

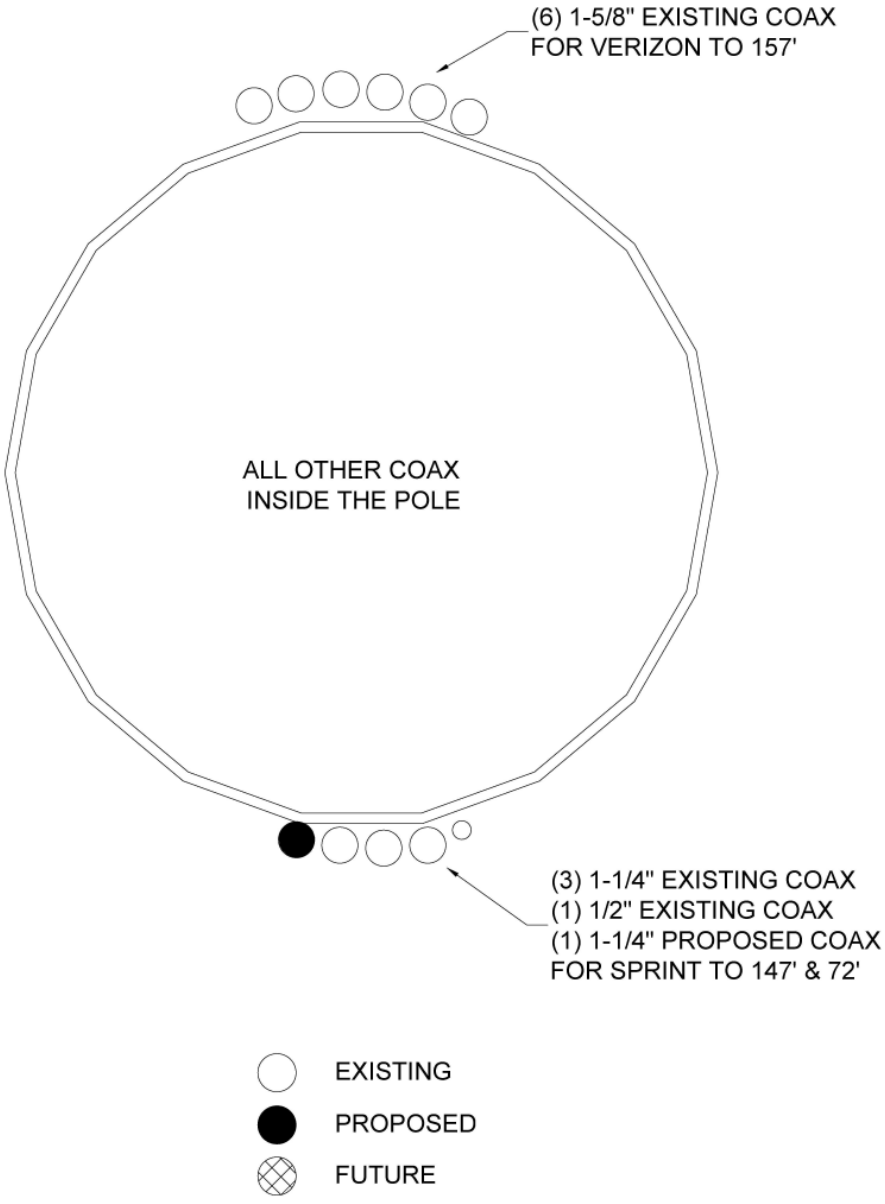
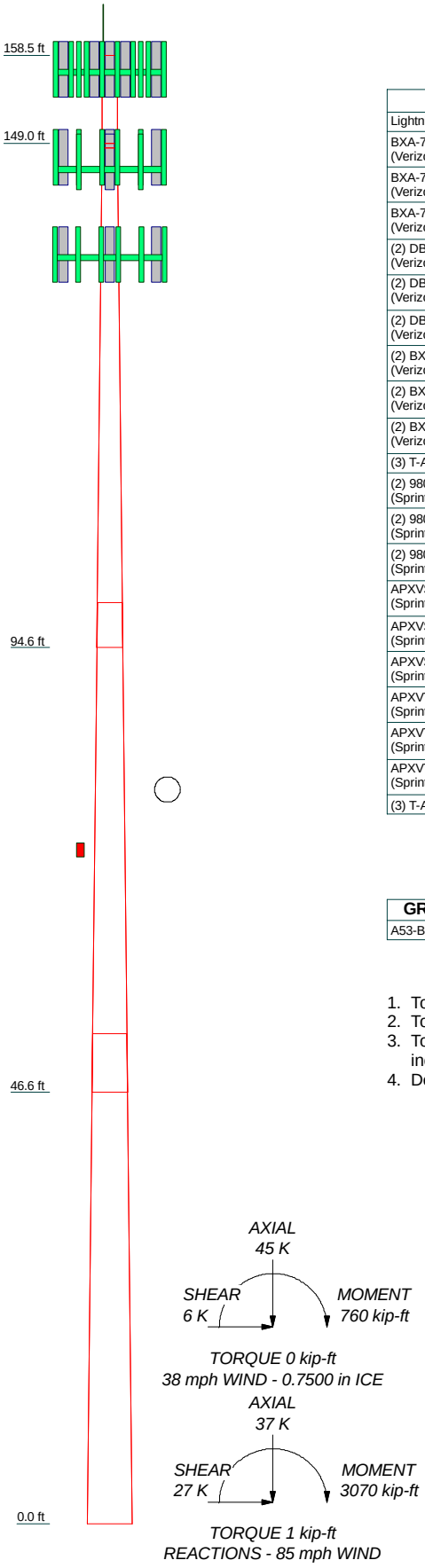


Figure 1 – Feedline Layout

Section	1	2	3	4	5
Length (ft)	9.50	0.50	53.92	52.83	52.92
Number of Sides	1	1	18	18	18
Thickness (in)	0.3750	0.3750	0.1875	0.3125	0.3125
Socket Length (ft)			4.83	6.33	
Top Dia (in)	20.0000	20.0000	20.5000	32.9338	44.3279
Bot Dia (in)	20.5000	20.0000	34.5700	46.5900	58.0000
Grade	A53-B-42			A572-65	
Weight (K)	0.7	0.0	3.0	7.0	9.1



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	160	(1) Collar Mount (Sprint)	145
BXA-70063-6CF-2 w/ Mount Pipe (Verizon)	157	1900MHz RRH (25MHz) (Sprint)	145
BXA-70063-6CF-2 w/ Mount Pipe (Verizon)	157	1900MHz RRH (25MHz) (Sprint)	145
BXA-70063-6CF-2 w/ Mount Pipe (Verizon)	157	1900MHz RRH (25MHz) (Sprint)	145
(2) DB846F65ZAXY w/ Mount Pipe (Verizon)	157	800 MHz RRH (Sprint)	145
(2) DB846F65ZAXY w/ Mount Pipe (Verizon)	157	800 MHz RRH (Sprint)	145
(2) DB846F65ZAXY w/ Mount Pipe (Verizon)	157	800 MHz RRH (Sprint)	145
(2) BXA-171063/8BF w/ Mount Pipe (Verizon)	157	EXTERNAL NOTCH FILTER (Sprint)	145
(2) BXA-171063/8BF w/ Mount Pipe (Verizon)	157	EXTERNAL NOTCH FILTER (Sprint)	145
(2) BXA-171063/12BF w/ Mount Pipe (Verizon)	157	EXTERNAL NOTCH FILTER (Sprint)	145
(3) T-Arms (Verizon)	157	(2) 1900 ACU-A20-N RET (Sprint)	145
(2) 980F90T4E-M w/ Mount Pipe (Sprint)	147	(2) 1900 ACU-A20-N RET (Sprint)	145
(2) 980F90T4E-M w/ Mount Pipe (Sprint)	147	(2) 1900 ACU-A20-N RET (Sprint)	145
(2) 980F90T4E-M w/ Mount Pipe (Sprint)	147	800 ACU-A20-N RET (Sprint)	145
APXVSPP18-C-A20 w/Mount Pipe (Sprint)	147	800 ACU-A20-N RET (Sprint)	145
APXVSPP18-C-A20 w/Mount Pipe (Sprint)	147	800 ACU-A20-N RET (Sprint)	145
APXVSPP18-C-A20 w/Mount Pipe (Sprint)	147	TD-RRH8x20-25 (Sprint)	145
APXVTM14-C-I20 w/Mount Pipe (Sprint)	147	TD-RRH8x20-25 (Sprint)	145
APXVTM14-C-I20 w/Mount Pipe (Sprint)	147	TD-RRH8x20-25 (Sprint)	145
APXVTM14-C-I20 w/Mount Pipe (Sprint)	147	(4) LGP21401 TMA (ATI)	137
(3) T-Arms (Sprint)	146.5	(4) LGP21401 TMA (ATI)	137
		(2) 7770.00 w/Mount Pipe (ATI)	137
		(2) 7770.00 w/Mount Pipe (ATI)	137
		(2) 7770.00 w/Mount Pipe (ATI)	137
		AM-X-CD-16-65-00T-RET w/ Mount Pipe (ATI)	137
		(2) RRUS 11 (ATI)	137
		(2) RRUS 11 (ATI)	137
		AM-X-CD-16-65-00T-RET w/ Mount Pipe (ATI)	137
		AM-X-CD-16-65-00T-RET w/ Mount Pipe (ATI)	137
		(4) LGP21401 TMA (ATI)	137
		(2) RRUS 11 (ATI)	137
		DC6-48-60-18-8F Surge Arrestor	137
		(3) T-Arms (ATI)	137
		GPS (Sprint)	72
		(1) Standoff (Sprint)	72

MATERIAL STRENGTH

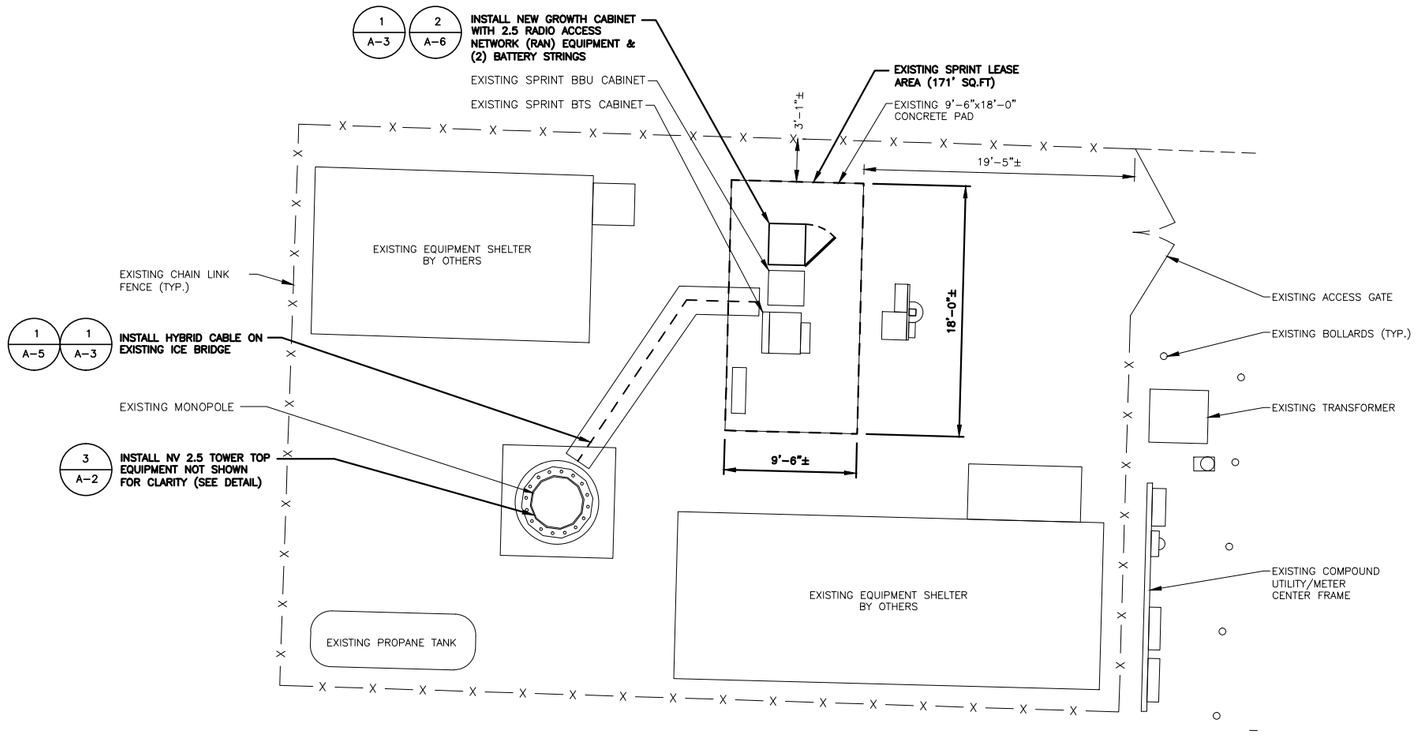
GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi	A572-65	65 ksi	80 ksi

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.

FDH Engineering, Inc.
6521 Meridien Drive, Suite 107
Raleigh, North Carolina
Phone: 9197551012
FAX: 9197551031
Tower Analysis

Job: West Haven - Rt15, CT46139-A-00			
Project: 1462GV1400			
Client: SBA Network Services, Inc.	Drawn by: Blake Wilson	App'd:	
Code: TIA/EIA-222-F	Date: 04/09/14	Scale: NTS	
Path: C:\Users\BWilson\Desktop\CT46139-A_West Haven, Rt 15 - CT\1462GV1400\Analysis\Coax Calc (Used)\CT46139-A.eri		Dwg No. E-1	



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

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

SOURCE: HDG 4-1-14

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) 251-0720

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090 TEL: (978) 557-5553
N. ANDOVER, MA 01845 FAX: (978) 336-5586

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: KB

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	06/09/14	ISSUED FOR CONSTRUCTION	SF
0	05/06/14	ISSUED FOR CONSTRUCTION	SF

SITE NUMBER:
CT33XC087-B

SITE NAME:
WOODBRIDGE SPORTSMENS CLUB

SITE ADDRESS:
370 ROCKLAND ROAD
GUILFORD, CT 06437

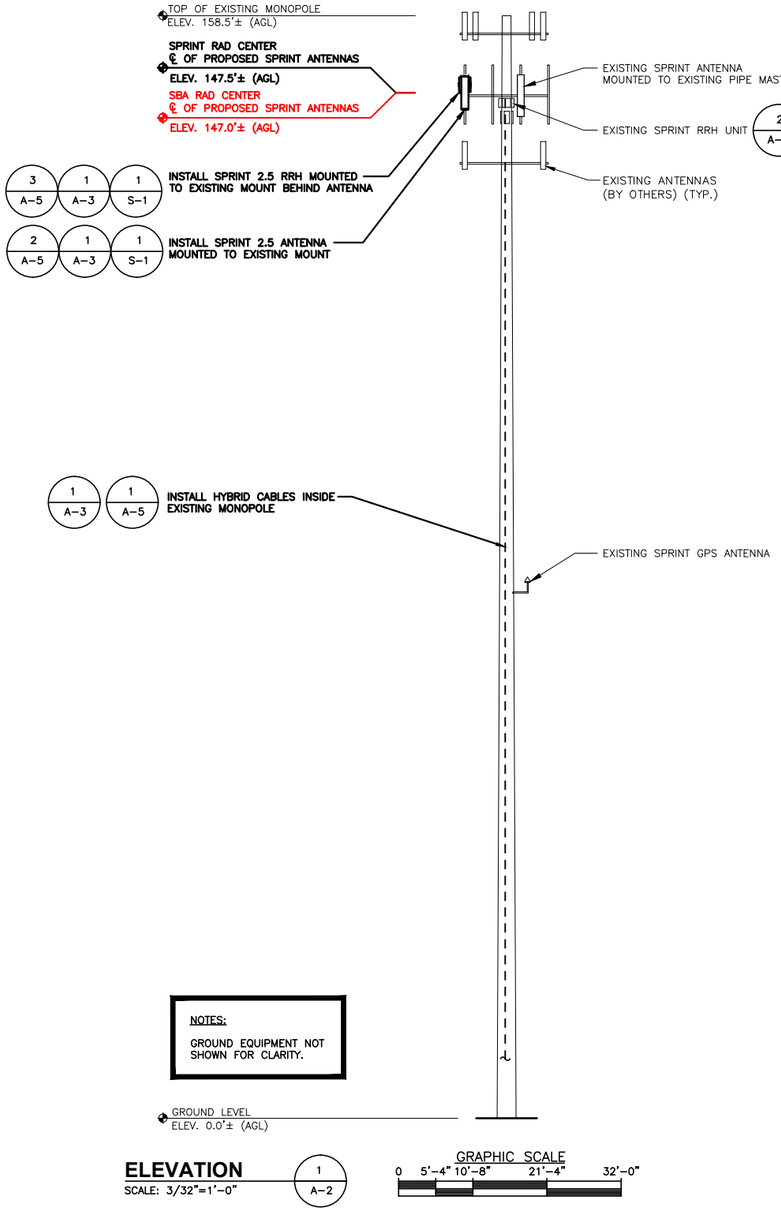
SHEET TITLE
COMPOUND PLAN

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:
EXISTING AZIMUTHS FROM SPRINT SITE AUDIT DATED 09/21/13

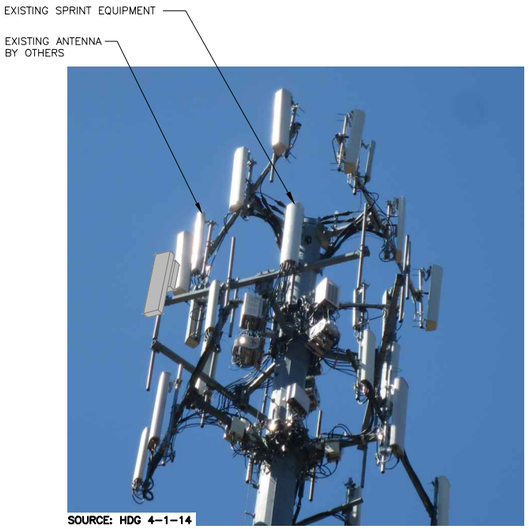
NOTE:
SPRINT RAD CENTER SHOWN IN RED TEXT BASED ON SBA-PROVIDED COLLOCATION APPLICATION, EQUIPMENT DATABASE, AND STRUCTURAL ANALYSIS. THE SBA-PROVIDED ANTENNA RAD CENTER SHALL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM THE SPRINT NV 2.5 RFDS.



NOTES:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

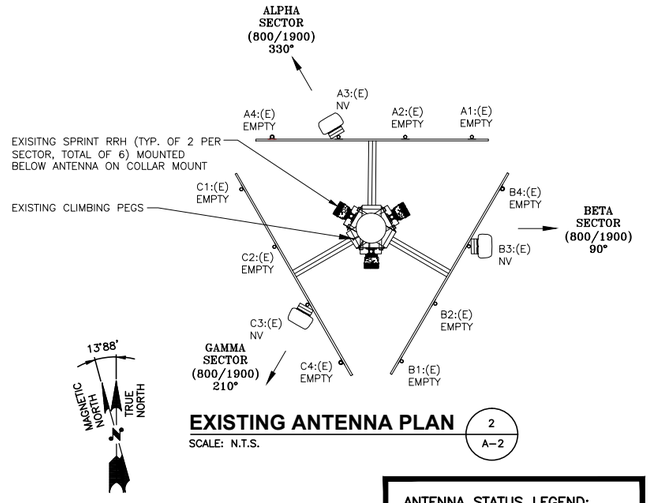
ELEVATION
SCALE: 3/32"=1'-0" (1 / A-2)

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



SOURCE: HDG 4-1-14

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

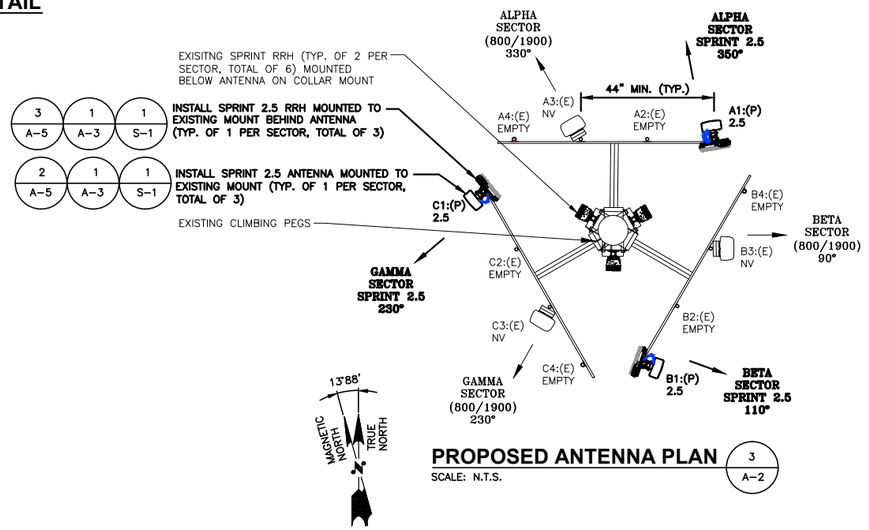


EXISTING ANTENNA PLAN
SCALE: N.T.S. (2 / A-2)

SPECIAL WORK NOTE:
JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA CAN NOT EXCEED 15'. NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY DISCREPANCY.

NOTES:
1) VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.

ANTENNA STATUS LEGEND:
- EMPTY - EMPTY PIPE
- (E) - EXISTING
- (P) - INSTALL
- NV - SPRINT ANTENNA MODEL #APXVSPP18-C-A20
- 2.5 - SPRINT ANTENNA



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

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

SBA
SBA COMMUNICATIONS CORP.
33 BOSTON POST ROAD WEST, SUITE 320
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STATE OF CONNECTICUT
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SITE NAME:
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SITE ADDRESS:
370 ROCKLAND ROAD
GUILFORD, CT 06437

SHEET TITLE
ELEVATION AND ANTENNA PLANS

SHEET NUMBER
A-2