May 30, 2014

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

RE: Notice of Exempt Modification
383 Torrington Road
Litchfield, CT 06759
Sprint Site #: NV2.5_CT33XC607-C
N 41° 45' 58.83"
W -73° 10' 42.95"

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 383 Torrington Road, Litchfield, CT.

The 383 Torrington Road facility consists of a 139' MONOPOLE Tower owned and operated by SBA Towers IV, 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

383 Torrington Road, Litchfield, CT
Site number CT33XC607-C

Tower Owner: SBA Towers IV, LLC

Equipment Configuration: MONOPOLE Tower

Current and/or approved:

- (6) Decibel 958F85T2E-M
- (3) RFS APXVSPP18-C-A20
- (3) Alcatel Lucent 1900 MHz RRUs
- (3) Alcatel Lucent 800 MHz RRUs
- (3) Alcatel Lucent 800 MHz Filters
- (4) RFS ACU-A20-N RET
- (3) ALU800 MHz External Notch Filters
- (6) 1900 ACU-A20-N
- (3) 800 ACU-A20-N
- (6) 1-5/8" Feedlines
- (3) 1-1/4" Feedlines

Planned Modifications:

- (3) RFS APXVSPP18-C-A20
- (3) Alcatel Lucent 1900 MHz RRHs
- (3) Alcatel Lucent 800 MHz RRHs
- (3) Alcatel Lucent 800 MHz Filters
- (4) RFS ACU-A20-N RETs
- (3) RFS APXVTM14-C-I20 w/ Mount Pipe
- (3) Alcatel Lucent TD-RRH8x20-25
- (4) 1-1/4" Feedlines

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 0.68% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 47.04% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE %	
Carrier	MPE %
Sprint	0.68%
AT&T	23.09%
Verizon Wireless	20.16%
T-Mobile	3.11%
Total Site MPE %	47.04%

May 30, 2014

Mr. Leo Paul, Jr.
First Selectman
Town of Litchfield
74 West Street
Litchfield, CT 06759

RE: Telecommunications Facility @ 383 Torrington Road, Litchfield, CT 06759

Dear Mr. Paul,

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

May 30, 2014

Old Toll Gate Hill, LLC
387 Torrington Road
Litchfield, CT 06759

RE: Telecommunications Facility @ 383 Torrington Road, Litchfield, CT

To Whom It May Concern:

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,

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

Sprint Existing Facility

Site ID: CT33XC607

Litchfield - Personatti

383 Torrington Road
Litchfield, CT 06759

May 28, 2014

EBI Project Number: 62143102

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

EBI Consulting
environmental | engineering | due diligence

May 28, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT33XC607 - Litchfield - Personatti

Site Total: 47.04% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 383 Torrington Road, Litchfield, 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 383 Torrington Road, Litchfield, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. 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 minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

6) The antennas used in this modeling are the RFS APXVSPP18-C-A20 and the RFS APXVTM14-C-I20. 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 APXVTM14-C-I20 has a 15.9 dBd gain value at its main lobe at 2500 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
7) The antenna mounting height centerline for the proposed antennas is **127 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	CT33XC607 - Litchfield - Personatti
Site Addresss	383 Torrington Road, Litchfield, CT, 06759
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 (10 db reduction)	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	2	40	1.59	127	121	1/2 "	0.5	3	25.77	0.06%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	1.34	127	121	1/2 "	0.5	3	12.16	0.05%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	1.59	127	121	1/2 "	0.5	3	25.77	0.11%
														Sector total Power Density Value:		0.23%

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 (10 db reduction)	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	2	40	1.59	127	121	1/2 "	0.5	3	25.77	0.06%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	1.34	127	121	1/2 "	0.5	3	12.16	0.05%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	1.59	127	121	1/2 "	0.5	3	25.77	0.11%
														Sector total Power Density Value:		0.23%

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 (10 db reduction)	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	2	40	1.59	127	121	1/2 "	0.5	3	25.77	0.06%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	1.34	127	121	1/2 "	0.5	3	12.16	0.05%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	1.59	127	121	1/2 "	0.5	3	25.77	0.11%
														Sector total Power Density Value:		0.23%

Site Composite MPE %	
Carrier	MPE %
Sprint	0.68%
AT&T	23.09%
Verizon Wireless	20.16%
T-Mobile	3.11%
Total Site MPE %	**47.04%**

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 **0.68% (0.23% from sector 1, 0.23% from sector 2 and 0.23% from sector 3)** 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 **47.04%** 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.

139' Monopole Tower

SBA Site Name: Litchfield
SBA Site ID: CT46123-A-04
Sprint Site ID: CT33XC607

FDH Project Number 1462HC1400 (R1)

Analysis Results

Tower Components	65.6%	Sufficient
Foundation	76.1%	Sufficient

Prepared By:

Diana Tang, EIT
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 4/21/14

April 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 monopole located in Litchfield, 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*. Information pertaining to the existing/proposed antenna loading, current tower geometry, foundation dimensions, geotechnical data, and member sizes was obtained from:

- Vertical Solutions (Project No. 121427.01, Rev. 0) Rigorous Structural Analysis dated August 17, 2012
- Engineered Endeavors, Inc. (Project No. 14854) foundation design drawing dated April 8, 2008
- Dewberry-Goodkind, Inc. Geotechnical Study for Proposed Sprint Tower Site CT33XC607 dated August 19, 2005
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and *2005 Connecticut Building Code* is 80 mph without ice and 28 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 127 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and *2005 Connecticut Building Code* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (see Engineered Endeavors, Inc. Project No. 14854), 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 *2005 Connecticut Building Code* 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.
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
140	(3) Antel BXA-70063/6CF-2 (6) Antel LPA-80063/4CF (3) Antel BXA-171063-8BF-2 (6) RFS FD9R6004/2C-3L Diplexers	(12) 1-5/8"	Verizon	139	(3) T-Arms
128	(6) Decibel 958F85T2E-M	(6) 1-5/8"	Sprint	128	(3) T-Arms
127	(3) RFS APXVSPP18-C-A20 (3) Alcatel Lucent 1900 MHz RRUs (3) Alcatel Lucent 800 MHz RRUs (3) Alcatel Lucent 800 MHz Filters (4) RFS ACU-A20-N RETs				
126	(3) Alcatel Lucent 800 MHz External Notch Filters (6) 1900 ACU-A20-N (3) 800 ACU-A20-N	(3) 1-1/4"		126	(3) Collar Mounts
118	(6) Powerwave 7770.00 (12) TMAs	(12) 1-5/8"	AT&T	118	(3) T-Arms
108	(9) RFS APX16PV-16VL-E (12) TMAs	(18) 1-5/8"	T-Mobile	108	(1) Low-Profile Platform

1. Feed lines installed inside pole's shaft unless otherwise noted.

Proposed Loading:

Antenna Elevation (ft)	Description	Feed Lines	Carrier	Mount Elevation (ft)	Mount Type
127	(3) RFS APXVSPP18-C-A20 (3) Alcatel Lucent 1900 MHz RRHs (3) Alcatel Lucent 800 MHz RRHs (3) Alcatel Lucent 800 MHz Filters (4) RFS ACU-A20-N RETs (3) RFS APXVTM14-C-I20 w/ Mount Pipe (3) Alcatel Lucent TD-RRH8x20-25	(4) 1-1/4"	Sprint	128	(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
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	139 - 94.5	Pole	TP31.46x20.5x0.25	52.4	Pass
L2	94.5 - 46.58	Pole	TP42.65x29.8517x0.375	58.0	Pass
L3	46.58 - 0	Pole	TP53.25x40.4766x0.375	65.6	Pass
		Anchor Bolts	(16) 2.25" Ø w/ BC = 62"	56.0	Pass
		Base Plate	PL 72" Ø x 2.75" Thick	38.2	Pass

Table 4 - Maximum Base Reactions

Base Reactions	Current Analysis *(TIA/EIA-222-F)*	Original Design *(TIA/EIA-222-F)*
Axial	32 k*	27 k
Shear	22 k	29 k
Moment	2,299 k-ft	3,022 k-ft

* Per our experience with foundations of similar type, the axial loading should not control the foundation analysis.

GENERAL COMMENTS

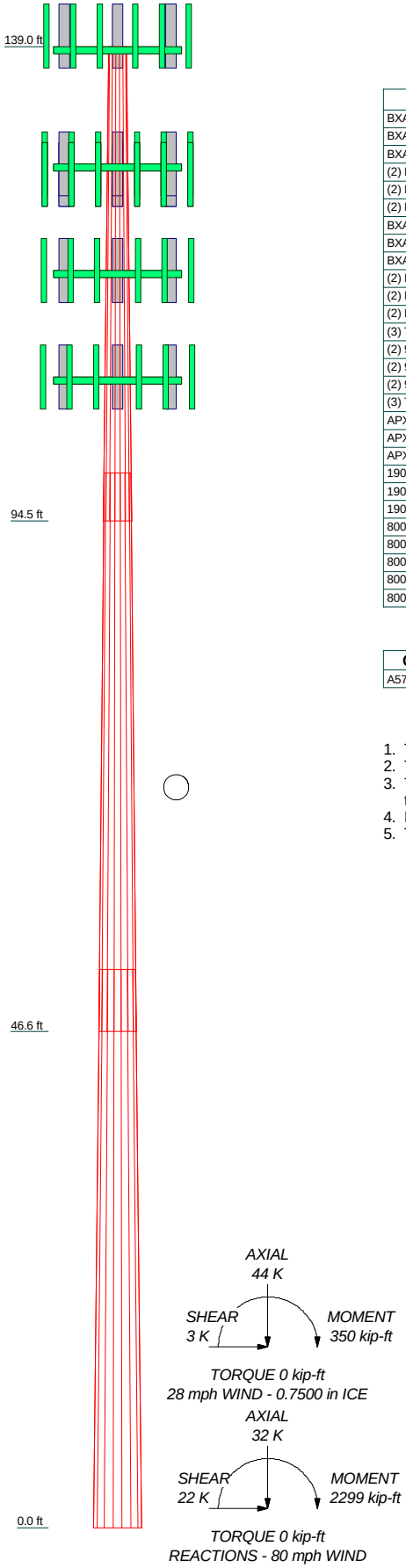
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading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

LIMITATIONS

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

APPENDIX

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	44.50	18	0.2500	4.50	20.5000	31.4600		3.1
2	52.42	18	0.3750	5.83	29.8517	42.6500	A572-65	7.6
3	52.41	18	0.3750		40.4766	53.2500		9.9
								20.6



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
BXA-70063/6CF-2 w/ Mount Pipe	139	800 MHz Filter	128
BXA-70063/6CF-2 w/ Mount Pipe	139	ACU-A20-N RET	128
BXA-70063/6CF-2 w/ Mount Pipe	139	ACU-A20-N RET	128
(2) LPA-80063/4CF w/ Mount Pipe	139	(2) ACU-A20-N RET	128
(2) LPA-80063/4CF w/ Mount Pipe	139	APXVTM14-C-I20 w/ Mount Pipe	128
(2) LPA-80063/4CF w/ Mount Pipe	139	APXVTM14-C-I20 w/ Mount Pipe	128
BXA-171063-8BF-2 w/ Mount Pipe	139	APXVTM14-C-I20 w/ Mount Pipe	128
BXA-171063-8BF-2 w/ Mount Pipe	139	TD-RRH8x20-25	128
BXA-171063-8BF-2 w/ Mount Pipe	139	TD-RRH8x20-25	128
(2) FD9R6004/2C-3L Diplexer	139	TD-RRH8x20-25	128
(2) FD9R6004/2C-3L Diplexer	139	(3) Collar Mounts	126
(2) FD9R6004/2C-3L Diplexer	139	800 MHz External Notch Filter	126
(3) T-Arms	139	800 MHz External Notch Filter	126
(2) 958F85T2E-M w/ Mount Pipe	128	800 MHz External Notch Filter	126
(2) 958F85T2E-M w/ Mount Pipe	128	(4) (TMA)	118
(2) 958F85T2E-M w/ Mount Pipe	128	(4) (TMA)	118
(3) T-Arms	128	(4) (TMA)	118
APXVSPP18-C-A20 w/Mount Pipe	128	(3) T-Arms	118
APXVSPP18-C-A20 w/Mount Pipe	128	(2) 7770.00 w/Mount Pipe	118
APXVSPP18-C-A20 w/Mount Pipe	128	(2) 7770.00 w/Mount Pipe	118
1900 MHz RRH	128	(2) 7770.00 w/Mount Pipe	118
1900 MHz RRH	128	(4) (TMA)	108
1900 MHz RRH	128	(4) (TMA)	108
800 MHz RRH	128	(4) (TMA)	108
800 MHz RRH	128	(1) Low-Profile Platform	108
800 MHz RRH	128	(3) APX16PV-16VL-E w/ Mount Pipe	108
800 MHz Filter	128	(3) APX16PV-16VL-E w/ Mount Pipe	108
800 MHz Filter	128	(3) APX16PV-16VL-E w/ Mount Pipe	108

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Litchfield 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 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: 65.6%

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

Job: Litchfield, CT46123-A-04			
Project: 1462HC1400 (R1)			
Client: SBA Network Services, Inc.	Drawn by: DTang	App'd:	
Code: TIA/EIA-222-F	Date: 04/21/14	Scale: NTS	
Path:		Dwg No. E-1	

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

Project No.	*1462HC1400*
Site Name:	*Litchfield*
Site ID:	*CT46123-A-04*
Pole Manufacturer:	*Other*

Reactions		
Moment:	2299	ft-kips
Axial:	32	kips
Shear:	22	kips

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	62	in

Plate Data		
Diam:	72	in
Thick:	2.75	in
Grade:	60	ksi
Single-Rod B-eff:	10.56	in

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	53.25	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

If No stiffeners, Criteria:	AISC ASD	<-Only Applcable to Unstiffened Cases

Anchor Rod Results

Maximum Rod Tension:	109.2 Kips	Rigid
Allowable Tension:	195.0 Kips	Service, ASD
Anchor Rod Stress Ratio:	56.0% **Pass**	Fty*ASIF

Base Plate Results

Base Plate Stress:	22.9 ksi	Rigid
Allowable Plate Stress:	60.0 ksi	Service ASD
Base Plate Stress Ratio:	38.2% **Pass**	0.75*Fy*ASIF
		Y.L. Length: 31.76

Flexural Check

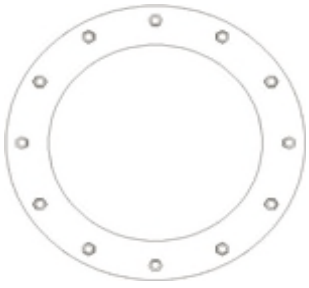
n/a

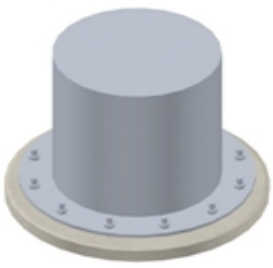
Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a





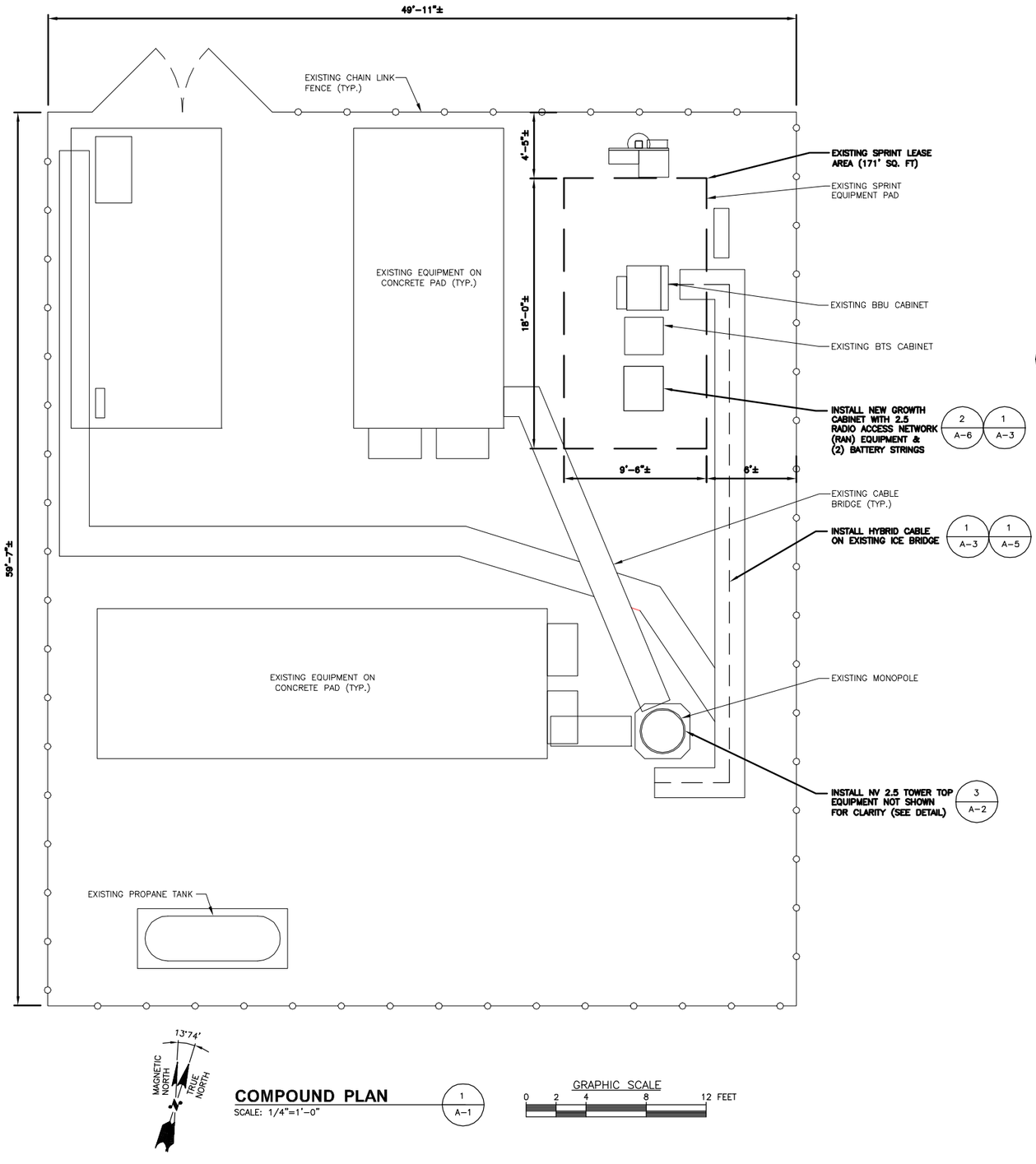
* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

FOUNDATION REACTION COMPARISON

REACTIONS PER ANCHOR	DESIGN REACTIONS	CURRENT REACTION	% CAPACITY
AXIAL (kips)	27.0	32.0	118.5%
SHEAR (kips)	29.0	22.0	75.9%
MOMENT (kip-ft)	3022.0	2299.0	76.1%

Design loads from: Engineered Endeavors, Inc. Project No. 14854



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

1 A-1

GRAPHIC SCALE
0 2 4 8 12 FEET

SOURCE: SPRINT SITE AUDIT PHOTO 09-11-13

RAN EQUIPMENT PHOTO DETAIL
SCALE: N.T.S.

2 A-1

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
N. ANDOVER, MA 01845 TEL: (978) 557-5553
FAX: (978) 336-5586

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

Daniel P. Hamm

CHECKED BY: KB

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	05/23/14	ISSUED FOR CONSTRUCTION	SF

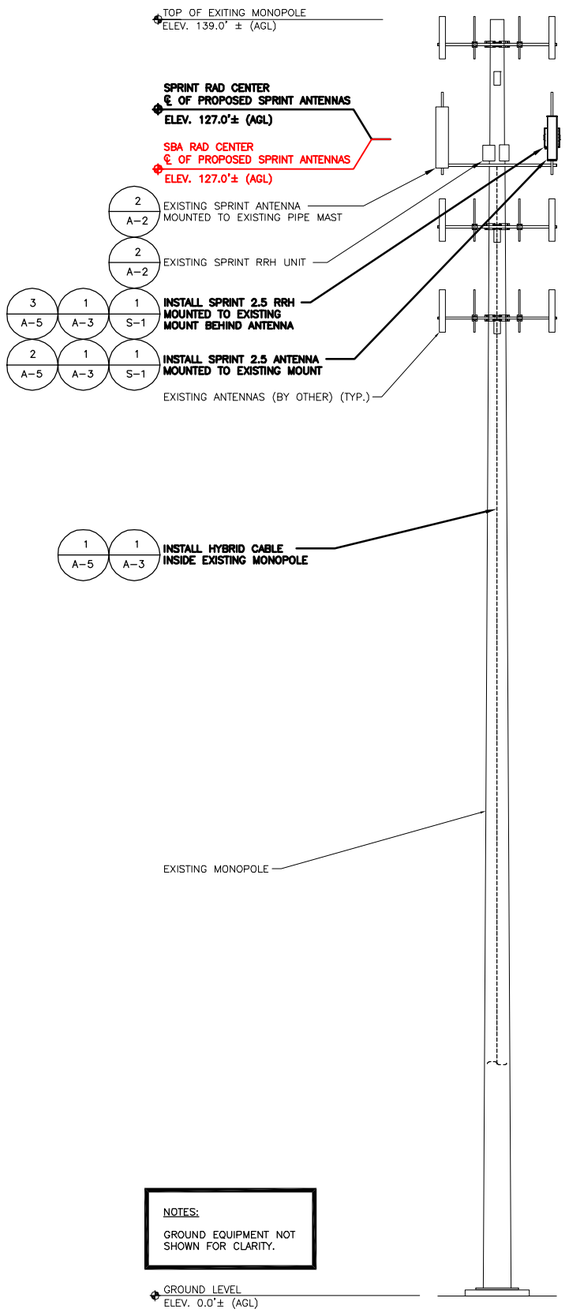
SITE NUMBER:
CT33XC607-C

SITE NAME:
LITCHFIELD-PERSONATTI

SITE ADDRESS:
383 TORRINGTON ROAD
LITCHFIELD, CT 06759

SHEET TITLE
COMPOUND PLAN

SHEET NUMBER
A-1



NOTES:

GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

ELEVATION

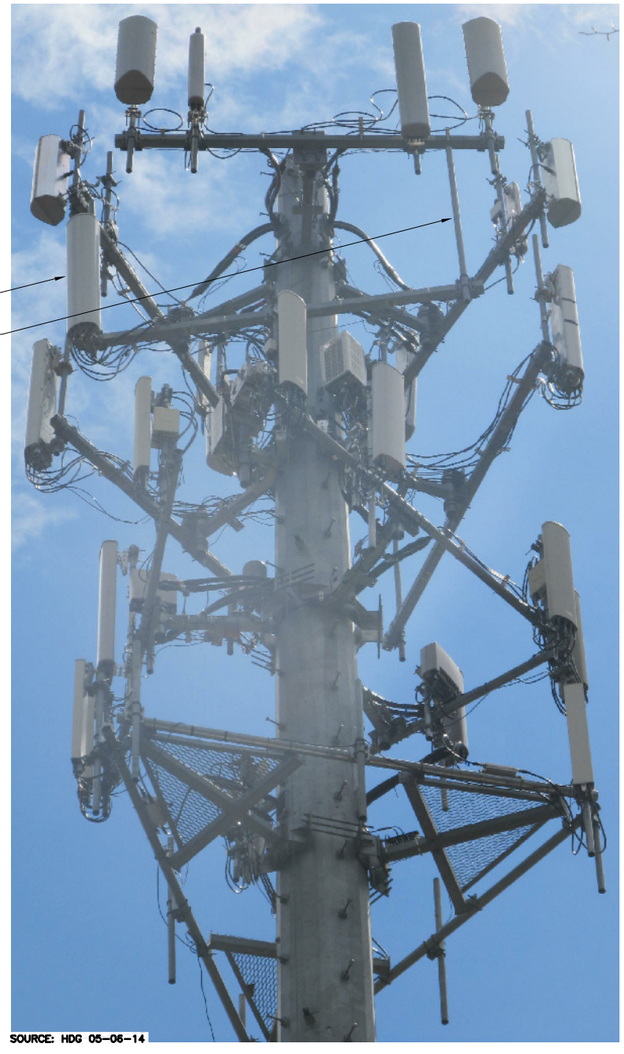
SCALE: 1/8"=1'-0" (1 / A-2)

GRAPHIC SCALE

0 4 8 16 24 FEET

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.

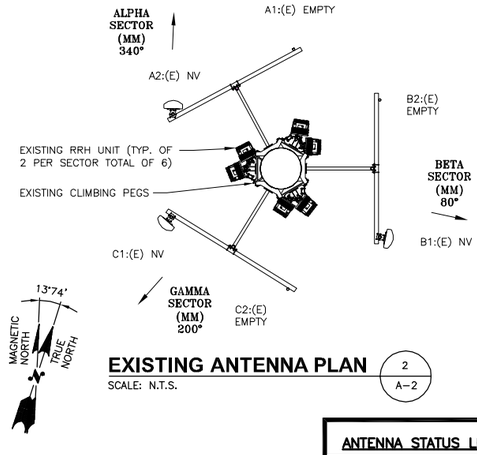
NOTE:
SPRINT RAD CENTER SHOWN IN RED TEXT BASED ON SBA-PROVIDED COLLOCATION APPLICATION, EQUIPMENT DATABASE, AND STRUCTURAL ANALYSIS. THE SBA-PROVIDED ANTENNA RAD CENTER SHALL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM THE SPRINT NV 2.5 RFDS.



SOURCE: HDG 05-06-14

EXISTING PARTIAL ELEVATION PHOTO DETAIL

SCALE: N.T.S.



EXISTING ANTENNA PLAN

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

NOTE:

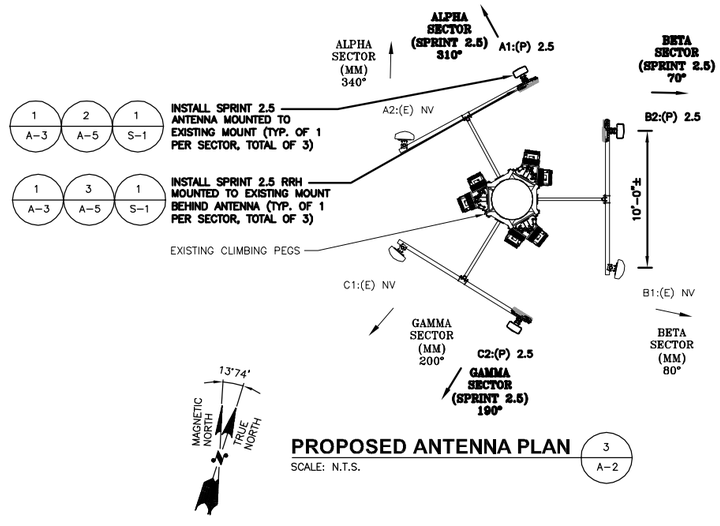
EXISTING AZIMUTHS FROM SPRINT SITE AUDIT DATED 09/11/13

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
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SUBMITTALS

REV.	DATE	DESCRIPTION	BY
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SITE NUMBER:
CT33XC607-C

SITE NAME:
LITCHFIELD-PERSONATTI

SITE ADDRESS:
383 TORRINGTON ROAD
LITCHFIELD, CT 06759

SHEET TITLE
ELEVATION AND ANTENNA PLANS

SHEET NUMBER
A-2