STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

September 19, 2012

Rick Woods
SBA Communications Corporation
One Research Dr. Suite 200C
Westborough, MA 01581

RE: **EM-SPRINT-085-120821B** – Sprint Spectrum notice of intent to modify an existing telecommunications facility located at 550 Moose Hill Road, Monroe, Connecticut.

Dear Mr. Woods:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- The coax lines and accessory equipment be installed in accordance with the recommendations made in the Structural Analysis Report prepared by FDH Engineering dated May 9, 2012 and stamped by Christopher Murphy;
- Following the installation of the proposed equipment, Sprint shall provide documentation certifying that the installation complied with the engineer's recommendation;
- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated August 20, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Linda Roberts
Executive Director

LR/CDM/jbw

c: The Honorable Stephen Vavrek, First Selectman, Town of Monroe
David Killeen, Planning Administrator, Town of Monroe
Sean Gormley, SBA

August 23, 2012

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

RE: Notice of Exempt Modification
550 Moose Hill Road
Monroe, CT 06468
Site # CT03XC364
N 41 ° 19' 15.53"
W 73 ° 12' 05.12"

Dear Mr. Martin and Members of the Siting Council:

Pursuant to the exempt modification previously submitted for the above mentioned site I would like to add the following information:

1. The proposed changes will not increase the noise level at the existing facility by six decibels or more.

Thank you,

Rick Woods
SBA Communications Corporation
One Research Dr. Suite 200C
Westborough, MA 01581
508-366-5505 x 319 + T
508-366-5507 + F
508-614-0389 + C
rwoods@sbasite.com

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

August 22, 2012

The Honorable Stephen Vavrek
First Selectman
Town of Monroe
Town Hall
7 Fan Hill Road
Monroe, CT 06468-1800

RE: **EM-SPRINT-085-120821B** – Sprint Spectrum notice of intent to modify an existing telecommunications facility located at 550 Moose Hill Road, Monroe, Connecticut.

Dear First Selectman Vavrek:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by September 5, 2012.

Thank you for your cooperation and consideration.

Very truly yours,

LRoberts

Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: David Killeen, Planning Administrator, Town of Monroe

EM-SPRINT-085-120821B

August 20, 2012

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

ORIGINAL

RE: Notice of Exempt Modification
550 Moose Hill Road
Monroe, CT 06468
N 41 ° 19' 15.53"
W 73 ° 12' 05.12"

RECEIVED
AUG 21 2012
CONNECTICUT
SITING COUNCIL

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 550 Moose Hill Road Monroe, CT.

The 550 Moose Hill Road facility consists of a 149' Monopole Tower owned and operated by SBA Communications. 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 antennas and associated 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. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna and equipment configuration 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 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 cal me at (508) 614-0389 with any questions you may have concerning this matter.

Thank you,

Rick Woods
SBA Communications Corporation
One Research Dr. Suite 200C
Westborough, MA 01581
508-366-5505 x 319 + T
508-366-5507 + F
508-614-0389 + C
rwoods@sbasite.com

Sprint Spectrum
Equipment Modification

550 Moose Hill Road Monroe, CT
Site number CT03XC364

Tower Owner: SBA Communications Corporation

Equipment Configuration: Monopole Tower

Current and/or approved:
Six (6) CDMA Antennas @ 147'
Three (3) Clearwire Antennas @ 147
Two (2) Clearwire Microwave Dishes @ 147'
Three (3) Clearwire RRHs
Six (6) lines of 1-5/8" coax
Six (6) lines of 5/16"
Two (2) lines of ½"
Three (3) equipment cabinets

Planned Modifications:
Remove Six (6) CDMA antennas & Six (6) lines of 1-5/8"
Install Three (3) Network Vision antennas & Six (6) RRHs @ 138'
Install Three (3) Hybriflex fiber cables
Install Three (3) Filters
Install Four (4) RETs
Install One (1) Fiber Distribution Box
Install One (1) new equipment cabinet

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 15.017% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 87.177% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE %	
Carrier	MPE %
Sprint	15.017%
Verizon Wireless	48.080%
AT&T	9.890%
Nextel	6.580%
T-Mobile	6.750%
Clearwire	0.860%
Total Site MPE %	87.177%

August 20, 2012

Honorable Steve Vavrek
1st Selectman
Town of Monroe
7 Fan Hill Road
Monroe, CT 06468

RE: Telecommunications Facility-550 Moose Hill Road Monroe, CT 06468

Dear Mr. Vavrek,

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) 614-0389.

Thank you,

Rick Woods
SBA Communications Company
One Research Dr. Suite 200C
Westborough, MA 01581
508-366-5505 x 319 + T
508-366-5507 + F
508-614-0389 + C
rwoods@sbasite.com

EBI Consulting
environmental | engineering | due diligence

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

Sprint Existing Facility

Site ID: CT03XC364

Monroe - Dwyer
500 Moose Hill Road
Monroe, CT 06468

August 11, 2012

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

EBI Consulting
environmental | engineering | due diligence

August 11, 2012

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

Re: Emissions Values for Site **CT03XC364 – Monroe - Dwyer**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 500 Moose Hill Road, Monroe, CT, for the purpose of determining whether the emissions 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 PCS 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 500 Moose Hill Road, Monroe, 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) 3 CDMA Carriers (1900 MHz) were considered for each sector of the proposed installation.
2) 1 CDMA Carrier (850 MHz) was considered for each sector of the proposed installation
3) 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.
4) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
5) The antenna used in this modeling is the RFS APXVSPP18-C-A20. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna 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. 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.

6) The antenna mounting height centerline of the proposed antennas is **147 feet** above ground level (AGL)
7) 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	CT03XCC364 - Monroe - Dwyer
Site Addresss	500 Moose Hill Road, Monroe, CT 06468
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	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	15.9	147	141	1/2 "	0.5	0	2080.4211	37.62002	3.76200%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	147	141	1/2 "	0.5	0	389.96892	7.051764	1.24370%
														Sector total Power Density Value:		5.006%	

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	15.9	147	141	1/2 "	0.5	0	2080.4211	37.62002	3.76200%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	147	141	1/2 "	0.5	0	389.96892	7.051764	1.24370%
														Sector total Power Density Value:		5.006%	

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	15.9	147	141	1/2 "	0.5	0	2080.4211	37.62002	3.76200%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	147	141	1/2 "	0.5	0	389.96892	7.051764	1.24370%
														Sector total Power Density Value:		5.006%	

Site Composite MPE %	
Carrier	MPE %
Sprint	15.017%
Verizon Wireless	48.080%
AT&T	9.890%
Nextel	6.580%
T-Mobile	6.750%
Clearwire	0.860%
Total Site MPE %	**87.177%**

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 exposure to RF Emissions.

The anticipated Maximum Composite contributions from the Sprint facility are **15.017% (5.006% 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 **87.177%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions

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

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803

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

Structural Analysis for SBA Network Services, Inc.

149' Monopole Tower

SBA Site Name: Moosehill
SBA Site ID: CT13056-A
Sprint Site ID: CT03XC364
Sprint Site Name: Monroe-Dwyer

FDH Project Number 12-01211E S2

Analysis Results

Tower Components	90.3%	Sufficient
Foundation	95.6%	Sufficient

Prepared By:

Tyler Hall, EI
Project Engineer

Reviewed By:

Christopher M. Murphy, PE
President
CT PE License No. 25842

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

May 9, 2012

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

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

- Sabre Communications Corporation (Job No. 02-03107 Revision A) Structural Design Report dated April 3, 2002
- FDH, Inc. (Job No. 08-07121T Revised) TIA Inspection Report dated November 10, 2008
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and *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 147 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and *2005 CBC* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundations were designed and constructed to support the original design reactions (see Sabre Job No.02-03107 Revision A), the foundation should have the necessary capacity to support both the existing and proposed loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

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

Recommendations

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

1. The proposed coax should be installed inside the pole's shaft. If necessary, the proposed coax may be installed on the outside of the pole shaft in a single row.
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	Coax and Lines[1]	Carrier	Mount Elevation (ft)	Mount Type
152.5	(1) Decibel DB404-B Dipole	(1) 7/8"	Town of Monroe	149	(1) Pipe Mount
147[2]	(6) Decibel 948F85T2E-M (3) Argus LLPX310R (1) Andrew VHLP2-11 Dish (1) Andrew VHLP800-11-DW1 Dish (3) Samsung U-RAS Flexible RRHs	(6) 1-5/8" (6) 5/16" (2) 1/2"	Sprint/ Clearwire	147	(1) 12.5' Low Profile Platform
139	(6) Powerwave 7770 (3) Powerwave P65-16 (6) Powerwave LGP 21401 TMAs (6) Powerwave LGP 13519 Diplexers (6) Ericsson RRUS-11 RRHs (1) Raycap DC6-48-60-18-8F Surge Suppressor	(12) 1-1/4" (1) 0.393" (2) 0.645"	AT&T	139	(1) 13' Low Profile Platform
---	---	---	---	128	(1) 12.5' Low Profile Platform
121	(9) EMS RR90-17-02DP (3) RFS APX16DWV-16DWVS-A20 (6) Powerwave LGP13901 TMAs (3) RFS ATMAA1412D-1A20 TMAs	(18) 1-5/8" (6) 7/8"	T-Mobile	121	(1) 13' Low Profile Platform
109	(12) Decibel DB844H90E-XY	(12) 7/8"	Nextel	109	(1) 14' Low Profile Platform
99[3]	(1) Antel BXA-70063/4CF (1) Swedcom SLCP 2x6014F (2) Antel LPA-80063/6CF (4) Celwave APL866513-42TO (1) Antel BXA-171063/12BF (2) Antel BXA-171063/8BF (1) Antel BXA-70063/6CF (6) RFS FD9R6004/2C-3L Diplexers	(12) 1-5/8"	Verizon	99	(1) 12.5' Low Profile Platform
65.5[4]	(1) Decibel 26OB GPS	(1) 1/2"	Sprint	64	(1) 3' Standoff

1. Coax installed inside the pole's shaft unless otherwise noted.
2. The (6) 1-5/8" coax for Sprint/Clearwire is installed on the outside of the pole's shaft in a single row.
3. The coax for Verizon at 99 ft is installed on the outside of the pole's shaft double stacked.
4. The coax for Sprint at 64 ft is installed on the outside of the pole's shaft.

Proposed Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
147	(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) Argus LLPX310R (1) Andrew VHLP2-11 Dish (1) Andrew VHLP800-11-DW1 Dish (3) U-RAS Flexible RRH ODUs	(3) 1-1/4" (2) 1/2 (6) 5/16	Sprint\Clearwire	147	(1) 12.5' Low Profile Platform

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
Flange Plate	60 ksi
Flange Bolts	Fu = 120 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	149 - 129	Pole	TP28.82x24x0.1875	28.9	Pass
	129	Flange Bolts	(8) 1" Ø w/ BC = 32.5"	57.0	Pass
	129	Flange Plate	36.25" Ø PL x 1" thk.	51.0	Pass
L2	129 - 96	Pole	TP36.9x28.82x0.25	61.8	Pass
L3	96 - 47.25	Pole	TP48.15x35.237x0.3125	89.0	Pass
L4	47.25 - 0	Pole	TP58.91x46.0768x0.375	90.3	Pass
		Anchor Bolts	(16) 2.25" Ø w/ BC = 66"	87.2	Pass
		Base Plate	64" Square PL x 3" Thk.	69.5	Pass

Table 4 - Maximum Base Reactions

Base Reactions	Current Analysis *(TIA/EIA-222-F)*	Original Design *(TIA/EIA-222-F)*
Axial	43 k	45 k
Shear	36 k	39 k
Moment	3,800 k-ft	4,184 k-ft

GENERAL COMMENTS

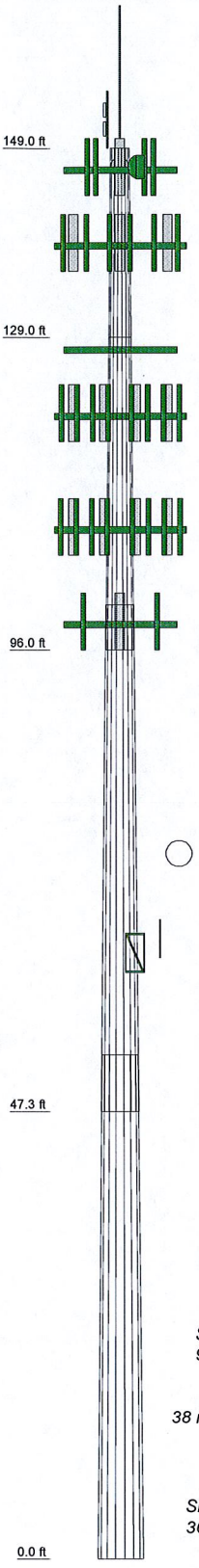
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading 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	1	2	3	4
Length (ft)	20.00	33.00	53.50	53.25
Number of Sides	18	18	18	18
Thickness (in)	0.1875	0.2500	0.3125	0.3750
Socket Length (ft)		4.75	6.00	
Top Dia (in)	24.0000	28.8200	35.2370	46.0768
Bot Dia (in)	28.8200	36.9000	48.1500	58.9100
Grade			A572-65	
Weight (K)	1.1	2.9	7.5	11.2



AXIAL 65 K
SHEAR 9 K
MOMENT 1006 kip-ft
TORQUE 1 kip-ft
38 mph WIND - 0.7500 in ICE
AXIAL 43 K
SHEAR 36 K
MOMENT 3800 kip-ft
TORQUE 3 kip-ft
REACTIONS - 85 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	149	Pipe Mount	139
Pipe Mount	149	Pipe Mount	139
Decibel - DB404-B Dipole	149	13' Low Profile Platform	139
Pipe Mount	149	(4) Pipe Mount	128
Argus LLPX310R w/ Mount Pipe	147	(4) Pipe Mount	128
Argus LLPX310R w/ Mount Pipe	147	(4) Pipe Mount	128
Argus LLPX310R w/ Mount Pipe	147	12.5' Low Profile Platform	128
U-RAS Flexible RRH ODU	147	RFS - APX16DWV-16DWVS-A20 w/ mount pipe	121
U-RAS Flexible RRH ODU	147	RFS - APX16DWV-16DWVS-A20 w/ mount pipe	121
U-RAS Flexible RRH ODU	147	RFS - APX16DWV-16DWVS-A20 w/ mount pipe	121
12.5' Low Profile Platform	147	RFS - ATMAA1412D-1A20 TMA	121
APXVSPP18-C-A20 w/Mount Pipe	147	RFS - ATMAA1412D-1A20 TMA	121
APXVSPP18-C-A20 w/Mount Pipe	147	RFS - ATMAA1412D-1A20 TMA	121
APXVSPP18-C-A20 w/Mount Pipe	147	(3) RR90-17-02DP w/Mount Pipe	121
1900 MHz RRH	147	(3) RR90-17-02DP w/Mount Pipe	121
1900 MHz RRH	147	(2) LGP13901 TMA	121
1900 MHz RRH	147	(2) LGP13901 TMA	121
800 MHz RRH	147	(2) LGP13901 TMA	121
800 MHz RRH	147	13' Low Profile Platform	121
800 MHz RRH	147	(3) RR90-17-02DP w/Mount Pipe	121
800 MHz Filter	147	(4) DB844H90E-XY w/Mount Pipe	109
800 MHz Filter	147	(4) DB844H90E-XY w/Mount Pipe	109
800 MHz Filter	147	14' Low Profile Platform	109
(2) ACU-A20-N RET	147	(4) DB844H90E-XY w/Mount Pipe	109
ACU-A20-N RET	147	(2) FD9R6004/2C-3L Diplexer	99
ACU-A20-N RET	147	(2) FD9R6004/2C-3L Diplexer	99
VHLP2-11	147	(2) FD9R6004/2C-3L Diplexer	99
VHLP800-11-DW1	147	12.5' Low Profile Platform	99
Powerwave - P65-16 w/ mount pipe	139	BXA-70063/4CF w/ Mount Pipe	99
Powerwave - P65-16 w/ mount pipe	139	SLCP 2x6014F w/ Mount Pipe	99
Powerwave - P65-16 w/ mount pipe	139	LPA-80063/6CF w/ Mount Pipe	99
(2) Ericsson RRUS-11 RRH	139	LPA-80063/6CF w/ Mount Pipe	99
(2) Ericsson RRUS-11	139	APL866513-42TO w/ Mount Pipe	99
(2) Ericsson RRUS-11	139	(2) APL866513-42TO w/ Mount Pipe	99
Raycap - DC6-48-60-18-8F Surge Protection	139	APL866513-42TO w/ Mount Pipe	99
(2) Powerwave - 7770 w/ mount pipe	139	Antel BXA-171063/12BF w/ Mount Pipe	99
(2) Powerwave - 7770 w/ mount pipe	139	BXA-171063/8BF w/ Mount Pipe	99
(2) Powerwave - 7770 w/ mount pipe	139	BXA-171063/8BF w/ Mount Pipe	99
(2) Powerwave - LGP21401 TMAs	139	BXA-70063/6CF W/Mount Pipe	99
(2) Powerwave - LGP21401 TMAs	139	3' Standoff	64
(2) Powerwave - LGP21401 TMAs	139	Decibel - 26OB GPS	64
(2) Powerwave - LGP13519 Diplexers	139		
(2) Powerwave - LGP13519 Diplexers	139		
(2) Powerwave - LGP13519 Diplexers	139		
Pipe Mount	139		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield 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 60 mph wind.
5. TOWER RATING: 90.3%

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

Job: Moosehill, CT13056-A			
Project: 12-01211E S2			
Client: SBA Network	Drawn by: Tyler Hall	App'd:	
Code: TIA/EIA-222-F	Date: 05/09/12	Scale: NTS	
Path: \\fdh-server\Projects\2012 Projects\1-January\12-01211E\Moosehill, CT\S2_SA_SNX\Analysis\Moosehill, CT13056-A.eri		Dwg No. E-1	

STRUCTURAL NOTE:

STRUCTURAL DESIGNS AND DETAILS FOR ANTENNA MOUNTS AND RRH MOUNTS COMPLETED BY HUDSON DESIGN GROUP LLC ON BEHALF OF ALCATEL-LUCENT ARE INCLUSIVE OF THE ENTIRE ANTENNA FRAME/PLATFORM/ANTENNA/RRH MOUNTS SECURED TO THE TOWER STRUCTURE.

STRUCTURAL NOTE:

G.C. TO REFER TO SPECIAL INSTALLATION REQUIREMENTS AND/OR MODIFICATIONS RECOMMENDED IN STRUCTURAL ANALYSIS REPORT PREPARED BY FDH ENGINEERING, INC. DATED: MAY 9, 2012

SBA SITE #: CT13056-A
SBA SITE NAME: MOOSEHILL

Sprint® VISION™

SITE NUMBER:
CT03XC364

SITE NAME:
MONROE-DWYER

SITE ADDRESS:
500 MOOSE HILL ROAD
MONROE, CT 06468

NOTE:

OWNER AND TENANT MAY, FROM TIME TO TIME AT TENANT'S OPTION, REPLACE THIS EXHIBIT WITH AN EXHIBIT SETTING FORTH THE LEGAL DESCRIPTION OF THE SITE, OR WITH ENGINEERED OR AS-BUILT DRAWING DEPICTING THE SITE OR ILLUSTRATING STRUCTURAL MODIFICATIONS OR CONSTRUCTION PLANS OF THE SITE. ANY VISUAL OR TEXTUAL REPRESENTATION OF THE EQUIPMENT LOCATED WITHIN THE SITE CONTAINED IN THESE OTHER DOCUMENTS IS ILLUSTRATIVE ONLY, AND DOES NOT LIMIT THE RIGHTS OF SPRINT AS PROVIDED FOR IN THE AGREEMENT. THE LOCATIONS OF ANY ACCESS AND UTILITY EASEMENTS ARE ILLUSTRATIVE ONLY. ACTUAL LOCATIONS MAY BE DETERMINED BY TENANT AND/OR THE SERVICING UTILITY COMPANY IN COMPLIANCE WITH LOCAL LAWS AND REGULATIONS.

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

SBA
SBA COMMUNICATIONS CORP.
5900 BROKEN SOUND PARKWAY
BOCA RATON, FL 33487-2797
TEL: (561) 226-9523
FAX:(561) 226-3572

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
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

SITE INFORMATION

SITE NUMBER:	CT03XC364
SITE NAME:	MONROE-DWYER
SITE ADDRESS:	500 MOOSE HILL ROAD MONROE, CT 06468
COUNTY:	FAIRFIELD
ZONING:	RC - RESIDENTIAL
PARCEL ID:	MAP: 051 BLOCK: 067: LOT OC
COORDINATES(*):	N 41° 19' 15.53" W 73° 12' 05.12"
GROUND ELEV.(*):	590'± (AMSL)
STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	149'-0" (AGL)
ANTENNA RAD CENTER(**):	147'-0" (AGL)
PROPERTY OWNER:	ST. JOHN THE BAPIST 50 PARADISE GREEN PL STRATFORD, CT 06414
STRUCTURE OWNER:	SBA INFRASTRUCTURE, LLC 5900 BROKEN SOUND PKWY BOCA RATON, FL 33487

(*) SOURCE OF COORDINATES/ELEVATION - SBA AND SPRINT SITERRA DATABASE.

LOCAL POWER COMPANY:	CONNECTICUT LIGHT & POWER
LOCAL TELCO COMPANY:	VERIZON
APPLICANT:	SPRINT 1 INTERNATIONAL BLVD, SUITE 800 MAHWAH, NJ 07495
APPLICANT REPRESENTATIVE:	ALCATEL-LUCENT TODD AMANN 600 MOUNTAIN AVENUE MURRAY HILL, NJ 07974
SITE ACQUISITION CONSULTANT:	SBA COMMUNICATIONS CORP. ONE RESEARCH DRIVE SUITE 200C WESTBOROUGH, MA 01581
A&E CONSULTANT:	HUDSON DESIGN GROUP LLC 1600 OSGOOD STREET BLDG 20 NORTH, SUITE 2-101 NORTH ANDOVER, MA 01845 TEL: (978) 557-5553 FAX: (978) 336-5586

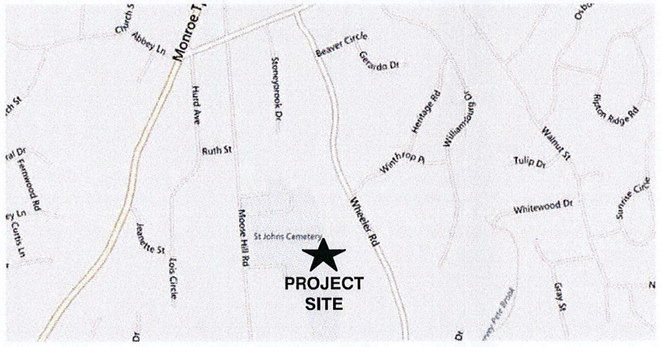
(**) NOTE: NETWORK VISION ANTENNA RADIATION CENTERLINE AGL (FEET) BASED ON SBA EQUIPMENT DATABASE AND SBA TOWER STRUCTURAL ANALYSIS AND WILL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM ALU/SPRINT DATABASE.

GENERAL NOTES

1. THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION:
   -HANDICAPPED ACCESS NOT REQUIRED
   - POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED
   - NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED
2. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACE THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
3. DEVELOPMENT AND USE OF THE SITE WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
   BUILDING CODE: 2003 IBC WITH 2005 CT SUPPLEMENT & 2009 CT AMENDMENT
   ELECTRICAL CODE: 2005 NATIONAL ELECTRICAL CODE
   STRUCTURAL CODE: TIA/EIA-222-F STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS

VICINITY MAP

TRUE NORTH
SCALE: N.T.S.



DIRECTIONS FROM 1 INTERNATIONAL BLVD, MAHWAH, NJ 07495:

HEAD NORTH ON INTERNATIONAL BLVD TOWARD QUEENSLAND RD TURN RIGHT ONTO PARK LN 197 CONTINUE STRAIGHT ONTO LEISURE LN SLIGHT RIGHT ONTO NJ-17 N MERGE ONTO I-287 N/NJ-17 N VIA THE RAMP ON THE LEFT TO I-87/N Y. THRUWAY ENTERING NEW YORK KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR I-87 S/I-287/TAPPAN ZEE BR/NEW YORK CITY/NEW YORK THRUWAY AND MERGE ONTO I-287 E/I-87 N CONTINUE TO FOLLOW I-287 E PARTIAL TOLL ROAD TAKE EXIT 9N-9S FOR HUTCHINSON PKWY TOWARD WHITESTONE BRIDGE/MERRITT PKWY MERGE ONTO WESTCHESTER AVE E TAKE THE HUTCHINSON PKWY N RAMP TO MERRITT PKWY MERGE ONTO HUTCHINSON RIVER PKWY N ENTERING CONNECTICUT CONTINUE ONTO CT-15 N TAKE EXIT 49N TO MERGE ONTO CT-25 N TOWARD DANBURY TURN RIGHT ONTO CT-111 N/MONROE TURNPIKE TURN RIGHT ONTO CROSS HILL RD TURN LEFT ONTO MOOSE HILL RD DESTINATION WILL BE ON THE RIGHT 500 MOOSE HILL RD MONROE, CT 06468

SCOPE OF WORK

1. RETROFIT EXISTING BTS CABINET WITH RETRO FIT KIT & INSTALL FIBER DISTRIBUTION BOX WITHIN EXISTING LEASE AREA. EXISTING BATTERY CABINET TO REMAIN AND ADD (1) BBU CABINET.
2. REMOVE (6) EXISTING CDMA ANTENNAS AND REPLACE WITH (3) NETWORK VISION ANTENNAS & (6) RRH'S.
3. REMOVE EXISTING CDMA COAX CABLES & INSTALL (3) HYBRIFLEX CABLES FROM EQUIPMENT CABINET TO ANTENNA
4. REMOVE EXISTING GPS ANTENNA AND REPLACE WITH NEW GPS ANTENNA

CALL BEFORE YOU DIG
1-800-922-4455 OR DIAL 811

SHEET INDEX

SHEET NO.	DESCRIPTION
T-1	TITLE SHEET
GN-1	GENERAL NOTES
A-1	COMPOUND PLAN AND ELEVATION
A-2	ANTENNA SCENARIO & EQUIPMENT LAYOUT
A-3	DETAILS
A-4	RF DATA SHEET
A-5	CABINET & ANTENNA WIRING DIAGRAM
S-1	STRUCTURAL DETAILS
E-1	TYPICAL POWER & GROUNDING ONE LINE DIAGRAM

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR MODIFICATIONS.

CONSTRUCTION: _____ DATE: _____

LEASING/
SITE ACQUISITION: _____ DATE: _____

RF ENGINEER: _____ DATE: _____

LANDLORD/
PROPERTY OWNER: **APPROVED** DATE:
By Bryan Bakis, P.E. for SBA Communications Corp. at 2:34 pm, Jul 18, 2012

CHECKED BY: KB

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	06/08/12	FOR CONSTRUCTION	SF
1	03/29/12	ISSUED FOR REVIEW	DR

SITE NUMBER:
CT03XC364
SITE NAME:
MONROE-DWYER
SITE ADDRESS:
500 MOOSEHILL ROAD
MONROE, CT 06486

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

(**) NOTE: NETWORK VISION ANTENNA RADIATION CENTERLINE AGL (FEET) BASED ON SBA EQUIPMENT DATABASE AND SBA TOWER STRUCTURAL ANALYSIS AND WILL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM ALU/SPRINT DATABASE.

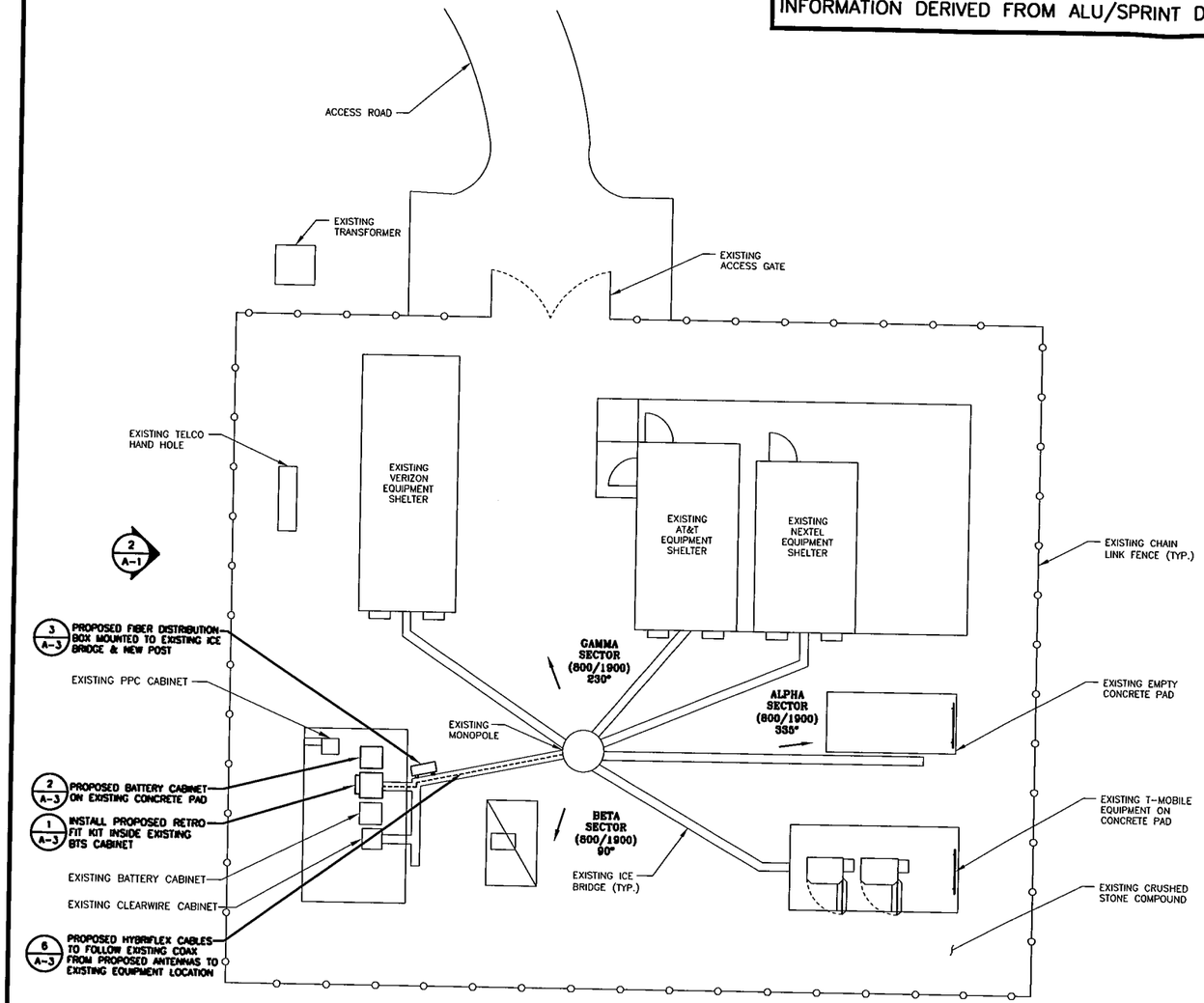
STRUCTURAL NOTE:

G.C. TO REFER TO SPECIAL INSTALLATION REQUIREMENTS AND/OR MODIFICATIONS RECOMMENDED IN STRUCTURAL ANALYSIS REPORT PREPARED BY FDH ENGINEERING, INC. DATED: MAY 9, 2012

NOTES:

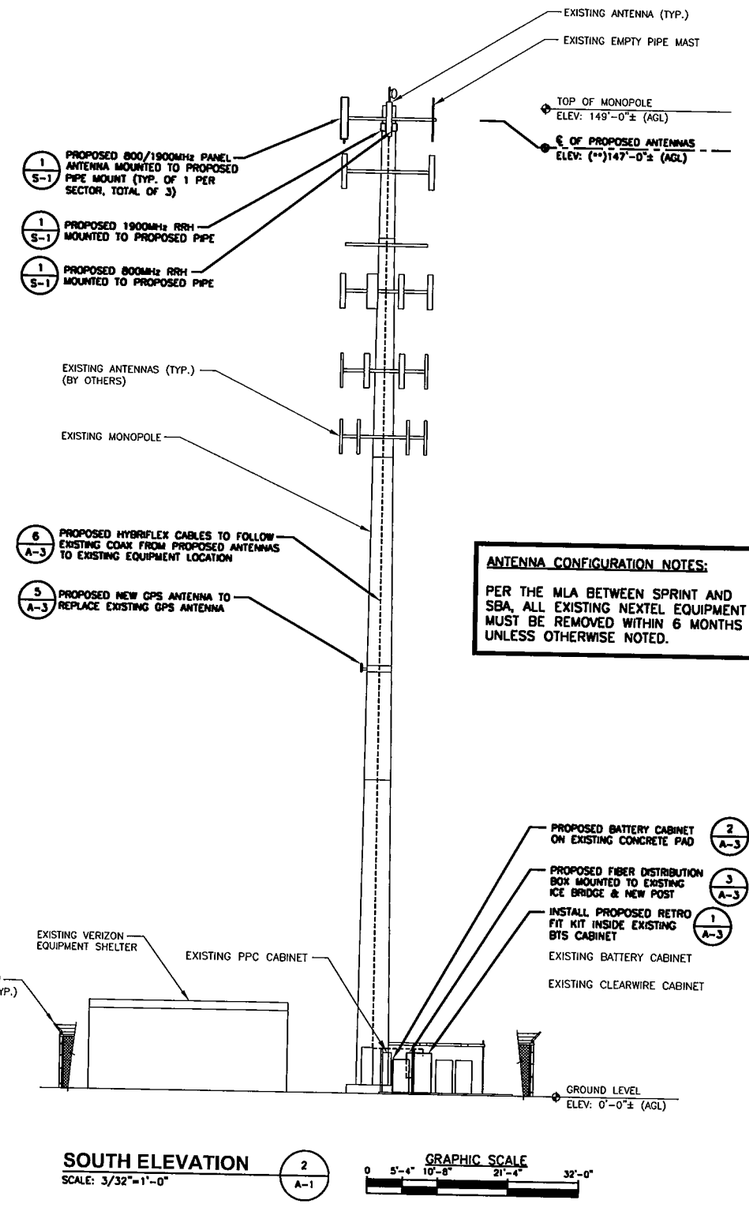
1) VERIFY EXACT ANTENNA MODEL & AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.

2) REMOVE EXISTING GPS ANTENNA AND REPLACE WITH NEW GPS ANTENNA.



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

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



ANTENNA CONFIGURATION NOTES:

PER THE MLA BETWEEN SPRINT AND SBA, ALL EXISTING NEXTEL EQUIPMENT MUST BE REMOVED WITHIN 6 MONTHS UNLESS OTHERWISE NOTED.

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

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

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

SBA
SBA COMMUNICATIONS CORP.
5900 BROKEN SOUND PARKWAY
BOCA RATON, FL 33487-2797
TEL: (561) 226-9523
FAX: (561) 226-3572

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
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
2	06/08/12	FOR CONSTRUCTION	SF
1	03/29/12	ISSUED FOR REVIEW	DR

SITE NUMBER:
CT03XC364

SITE NAME:
MONROE-DWYER

SITE ADDRESS:
500 MOOSEHILL ROAD
MONROE, CT 06486

SHEET TITLE
COMPOUND PLAN AND ELEVATION

SHEET NUMBER
A-1