



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 18, 2012

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

RE: **EM-SPRINT-009-120817** – Sprint Spectrum notice of intent to modify an existing telecommunications facility located at 11 Francis J. Clarke Circle, Bethel, 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 10, 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 16, 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 Matthew S. Knickerbocker, First Selectman, Town of Bethel
Steve Palmer, Planning & Zoning Official, Town of Bethel
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
11 Francis J. Clarke Circle
Bethel, CT 06801
Site # CT33XC521
N 41 ° 21' 36.27"
W 73 ° 25' 30.06"

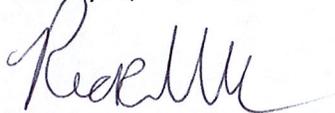
RECEIVED
AUG 24 2012
CONNECTICUT
SITING COUNCIL

Dear Mr. Martin and Members of the Siting Council:

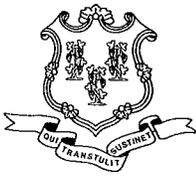
Pursuant to the exempt modification previously submitted for the above mentioned site I would like to add the following information:

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@sbsite.com



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August 22, 2012

The Honorable Matthew S. Knickerbocker
First Selectman
Town of Bethel
1 School Street
Bethel Municipal Center
Bethel, CT 06801-2105

RE: **EM-SPRINT-009-120817** – Sprint Spectrum notice of intent to modify an existing telecommunications facility located at 11 Francis J. Clarke Circle, Bethel, Connecticut.

Dear First Selectman Knickerbocker:

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,

Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: Steve Palmer, Planning & Zoning Official, Town of Bethel



SBA Communications Corporation
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sbasite.com

August 16, 2012

David Martin
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RECEIVED
AUG 17 2012

CONNECTICUT
SITING COUNCIL

RE: 8 Exempt Modification Packages

Dear Mr. Martin:

On behalf of Sprint Spectrum, SBA Communications is submitting 8 exempt modification applications to the Connecticut Siting council for the sites listed below. In each application package you will find five (5) copies of a passing Structural Analysis, five (5) EME studies, five (5) sets of drawings, and a check in the amount of \$625.

CT33XC604-297 North St. Plymouth, CT
CT03XC068-331 Killingworth Road Guilford, CT
CT33XC521-11 Francis J. Clarke Circle Bethel, CT
CT54XC770-151 Berkshire Road Newtown, CT
CT43XC865-39 Ciro Road North Branford, CT
CT43XC809-500 Highland Ave. Cheshire, CT
CT03XC033-108 Foxon Road North Branford, CT
CT54XC717-459 Burr Road Southbury, CT

Please let me know if you require any additional materials in order to process these applications.

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

EM-SPRINT-009-120817

August 16, 2012

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

RECEIVED
AUG 17 2012**CONNECTICUT
SITING COUNCIL**

RE: Notice of Exempt Modification
11 Francis J. Clarke Circle
Bethel, CT 06801
N 41 ° 21' 36.27"
W 73 ° 25' 30.06"

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 11 Francis J. Clarke Circle Bethel, CT.

The 11 Francis J. Clarke Circle facility consists of a 155' 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 call 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@sbsite.com

Sprint Spectrum Equipment Modification

11 Francis J. Clarke Circle Bethel, CT
Site number CT33XC521

Tower Owner: SBA Communications Corporation

Equipment Configuration: Monopole Tower

Current and/or approved: Six (6) CDMA Antennas @ 155'
Three (3) Argus Antennas @ 155'
Three (3) RRUs
One (1) TMA
Six (6) lines of 1-5/8" coax
Six (6) lines of 5/16"
Two (2) lines of 1/2"
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
Replace Two (2) existing equipment cabinets with Two (2) new cabinets

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 16.817% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 33.227% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE %	
Carrier	MPE %
Sprint	16.817%
T-Mobile	1.210%
Nextel	1.670%
Verizon Wireless	13.530%
Total Site MPE %	33.227%



August 16, 2012

Honorable Matt Knickerbocker
1st Selectman
Town of Bethel
1 School Street
Bethel, CT 06801

RE: Telecommunications Facility-11 Francis J. Clarke Circle Bethel, CT 06801

Dear Mr. Knickerbocker,

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@sbsite.com

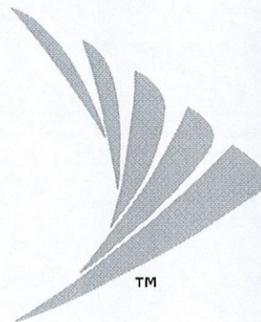
STRUCTURAL NOTE:

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 10, 2012

SBA SITE #: CT00248-S
SBA SITE NAME: NORTH BETHEL



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.

SITE NUMBER:
CT33XC521

SITE NAME:

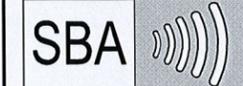
BETHEL SBA TOWERS

SITE ADDRESS:

**11 FRANCIS J. CLARKE CIRCLE
 BETHEL, CT 06801**



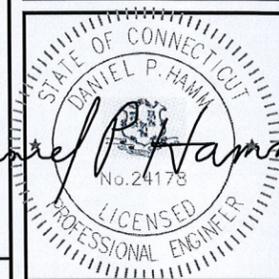
1 INTERNATIONAL BLVD, SUITE 800
 MAHWAH, NJ 07495
 TEL: (800) 357-7641



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



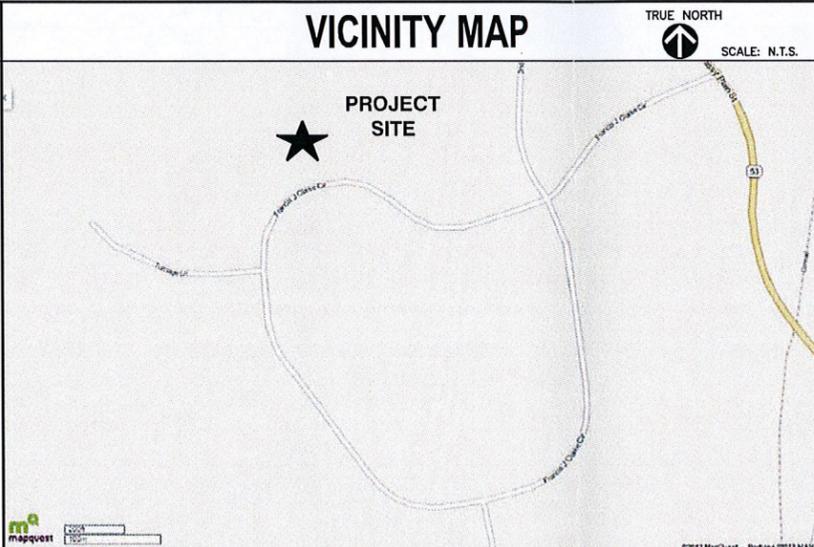
1600 OSGOOD STREET
 BUILDING 20 NORTH, SUITE 2-101
 N. ANDOVER, MA 01845 TEL: (978) 557-5553
 FAX: (978) 336-5586



SITE INFORMATION

SITE NUMBER:	CT33XC521	LOCAL POWER COMPANY:	NORTHEAST UTILITIES SERVICE COMPANY
SITE NAME:	BETHEL SBA TOWERS	LOCAL TELCO COMPANY:	VERIZON
SITE ADDRESS:	11 FRANCIS J. CLARKE CIRCLE BETHEL, CT 06801	APPLICANT:	SPRINT 1 INTERNATIONAL BLVD, SUITE 800 MAHWAH, NJ 07495
COUNTY:	FAIRFIELD	APPLICANT REPRESENTATIVE:	ALCATEL-LUCENT TODD AMANN 600 MOUNTAIN AVENUE MURRAY HILL, NJ 07974
ZONING:	IP - INDUSTRIAL PARK	SITE ACQUISITION CONSULTANT:	SBA COMMUNICATIONS CORP. ONE RESEARCH DRIVE SUITE 200C WESTBOROUGH, MA 01581
PARCEL ID:	09 23 150-05	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
COORDINATES(*):	N 41° 21' 36.27" W 73° 25' 30.0606"	(**) 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.	
GROUND ELEV.(*):	412± (AMSL)		
STRUCTURE TYPE:	MONOPOLE		
STRUCTURE HEIGHT:	155' (AGL)		
ANTENNA RAD CENTER: (**)	155' (AGL)		
PROPERTY OWNER:	STERGUE COSTA 562 REDDING ROAD WEST REDDING, CT 06896		
STRUCTURE OWNER:	SBA TOWERS, LLC 5900 BROKEN SOUND PKWY BOCA RATON, FL 33487		

VICINITY MAP



DIRECTIONS FROM 1 INTERNATIONAL BLVD. MAHWAH, NJ 07495:
 TAKE I-287 N/NJ-17 N TO I-87. THEN TAKE I-287 E/I-87 N CONTINUE TO FOLLOW I-87 N (PARTIAL TOLL ROAD.) TAKE EXIT 8A FOR NY-119/SAW MILL PKWY N TOWARD ELMSFORD. KEEP LEFT AT THE FORK AND MERGE ONTO SAW MILL PKWY N. TAKE THE EXIT TOWARD I-684 N. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR I-684 AND MERGE ONTO I-684 N. TAKE EXIT 9E FOR INTERSTATE 84 E TOWARD DANBURY. TAKE EXIT 5 TO MERGE ONTO DOWNS ST. TURN RIGHT ONTO MAIN ST. TURN LEFT ONTO SOUTH ST. CONTINUE ONTO GRASSY PLAIN ST. TURN RIGHT ONTO FRANCIS J CLARKE CIR. DESTINATION WILL BE ON THE RIGHT. END AT 11 FRANCIS J CLARKE CIR. BETHEL, CT 06801.

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: _____ DATE: _____

APPROVED
 By Bryan Bakis, P.E. for SBA Communications Corp. at 7:51 am, Jul 27, 2012

GENERAL NOTES

- 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
- 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.
- 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

SCOPE OF WORK

- RETROFIT EXISTING BTS CABINEY WITH RETRO FIT KIT & INSTALL FIBER DISTRIBUTION BOX WITHIN EXISTING LEASE AREA. REPLACE EXISTING BATTERY CABINET WITH (2) BBU CABINETS.
 - REMOVE (6) EXISTING CDMA ANTENNAS AND REPLACE WITH (3) NETWORK VISION ANTENNAS & (6) RRH'S.
 - REMOVE EXISTING CDMA COAX CABLES & INSTALL (3) HYBRIFLEX CABLES FROM EQUIPMENT CABINET TO ANTENNA
 - REMOVE EXISTING GPS ANTENNA AND REPLACE WITH NEW GPS ANTENNA
- CALL BEFORE YOU DIG
 1-800-922-4455 OR DIAL 811



CHECKED BY: **KB**

APPROVED BY: **DPH**

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
2	06/06/12	FOR CONSTRUCTION	SB
1	04/09/12	ISSUED FOR REVIEW	DD

SITE NUMBER:
CT33XC521
 SITE NAME:
BETHEL SBA TOWERS
 SITE ADDRESS:
**11 FRANCIS J. CLARKE CIRCLE
 BETHEL, CT 06801**

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



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

**Structural Analysis for
SBA Network Services, Inc.**

155' Monopole Tower

**SBA Site Name: North Bethel
SBA Site ID: CT00248-S
Sprint Site ID: CT33XC521
Sprint Site Name: Bethel SBA Towers, Inc.**

FDH Project Number 12-01208E S2

Analysis Results

Tower Components	86.5 %	Sufficient
Foundation	80.3 %	Sufficient

Prepared By:

Stephanie Neal, 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 10, 2012

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

TABLE OF CONTENTS

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LIMITATIONS 6
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EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the monopole located in Bethel, 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, geotechnical data, and member sizes was obtained from:

- Summit Manufacturing LLC. (Job No. 4071) original design drawings dated October 22, 1998
- Paul J. Ford and Company (Job No. 29200-1210) Pad and Pier Foundation design drawings dated August 17, 2000
- Jaworski Geotech, Inc. (Project No. C98342E) Geotechnical Evaluation dated December 5, 2002
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and *2005 CT 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 157 ft, the tower meets the requirements of the *TIA/EIA-222-F* and *2005 Connecticut State Building Code* standards provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundations were designed and constructed to support the original design reactions (see Paul J. Ford and Company Job No. 29200-1210), the foundations should have the necessary capacity to support the existing and proposed loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

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

Recommendations

To ensure the requirements of the *TIA/EIA-222-F* standards and *2005 CT Building Code* 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 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	Coax and Lines ¹	Carrier	Mount Elevation (ft)	Mount Type
157	(2) Decibel DB948F85T2E-M (1) Decibel DB980H90E-M (1) Andrew HBX-6516DS-R2M (2) Andrew HBX-9014DS-R2M (3) Argus LLPX310R (2) Dragonwave AIRPAIR ODU (3) Samsung URAS-FLEXIBLE (1) OS-1991-222W TMA	(6) 1-5/8" (6) 5/16" (2) 1/2"	Sprint	155 ²	(1) Low Profile Platform
147	(9) Decibel DB844H90-XY	(9) 1-1/4"	Nextel	147	(1) Low Profile Platform
137	(2) Antel LPA-80080/6CF (2) Antel LPA-80063/6CF (2) Antel BXA-70063/4CF (2) Antel LPA-80080/4CF (3) Antel BXA-171063-8BF-2 (1) Swedcom SLCP 2x6014F (6) RFS FD9R6004/2CL-3CL Diplexer (1) GPS	(12) 1-5/8" (1) 1/2"	Verizon	137	(1) Low Profile Platform
127	(3) Powerwave 7770.00 (3) Powerwave P65-16-XL-2 (6) Powerwave LGP21401 TMA (6) Ericsson RRUS-11 RRUs (1) Raycap DC6-48-60-18-8F Surge Arrestor	(9) 1-1/4" (1) Fiber (2) DC Power Cables	AT&T	127	(1) Low Profile Platform
117	(3) Kathrein 800 10504 (3) Kathrein 742 351 (6) RETs	(12) 1-5/8" (1) 1/2"	Metro PCS	117 ³	(3) T-Arm Mounts

1. Coax installed inside the monopole shaft unless noted otherwise.
2. Sprint's (6) 1-5/8" and (2) 1/2" existing coax are installed outside the monopole shaft in a single row.
3. Metro PCS's (12) 1-5/8" coax are installed double stacked (6-on-6) outside the monopole shaft.

Proposed Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
157	(3) RFS APXVSP18-C-A20 (3) Alcatel Lucent 1900 MHz RRH (3) Alcatel Lucent 800 MHz RRH (3) Alcatel Lucent 800 MHz Filter (4) RFS ACU-A20-N RET	(3) 1-1/4"	Sprint	155	(1) 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
Base Plate	50 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	155 - 120	Pole	TP26x16.5x0.1875	70.9	Pass
L2	120 - 89.5	Pole	TP33.91x24.7429x0.3125	76.0	Pass
L3	89.5 - 44	Pole	TP45.64x32.1306x0.375	76.4	Pass
L4	44 - 0	Pole	TP56.83x43.3286x0.375	79.7	Pass
		Anchor Bolts	(20) 2.25" Ø w/ BC = 64"	60.0	Pass
		Base Plate	64" Square PL x 2.75" Thk.	86.5	Pass

*Capacities include 1/3 allowable wind increase.

Table 4 - Maximum Base Reactions

Base Reactions	Current Analysis (TIA/EIA-222-F)	Original Design (TIA/EIA-222-F)
Axial	37 k	54 k
Shear	29 k	33 k
Moment	3,166 k-ft	3,938 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.

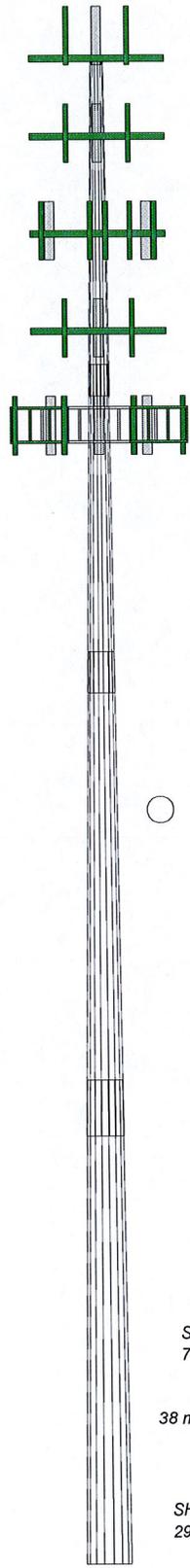
LIMITATIONS

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)	35.00	33.75	49.75	49.75	
Number of Sides	18	18	18	18	
Thickness (in)	0.1875	0.3125	0.3750	0.3750	
Socket Length (ft)	3.25	4.25	5.75	43.3286	
Top Dia (in)	16.5000	24.7429	32.1306	56.8300	
Bot Dia (in)	26.0000	33.9100	45.6400	10.0	
Grade					A607-65
Weight (K)	1.5	3.3	7.8	10.0	22.6

155.0 ft
120.0 ft
89.5 ft
44.0 ft
0.0 ft



DESIGNED APPURTENANCE LOADING

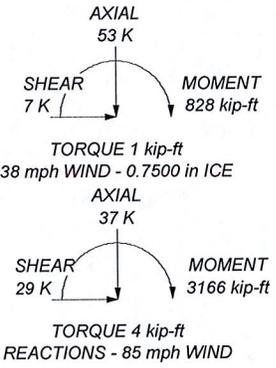
TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 403-1]	155	SLCP 2x6014F w/ Mount Pipe	137
APXVSP18-C-A20 w/Mount Pipe	155	(2) FD9R6004/2CL-3CL Diplexer	137
APXVSP18-C-A20 w/Mount Pipe	155	(2) FD9R6004/2CL-3CL Diplexer	137
APXVSP18-C-A20 w/Mount Pipe	155	(2) FD9R6004/2CL-3CL Diplexer	137
1900 MHz RRH	155	Platform Mount [LP 403-1]	127
1900 MHz RRH	155	7770.00 w/Mount Pipe	127
1900 MHz RRH	155	7770.00 w/Mount Pipe	127
800 MHz RRH	155	7770.00 w/Mount Pipe	127
800 MHz RRH	155	P65-16-XL-2 w/Mount Pipe	127
800 MHz RRH	155	P65-16-XL-2 w/Mount Pipe	127
800 MHz Filter	155	P65-16-XL-2 w/Mount Pipe	127
800 MHz Filter	155	(2) LGP21401 TMA	127
800 MHz Filter	155	(2) LGP21401 TMA	127
ACU-A20-N RET	155	(2) LGP21401 TMA	127
ACU-A20-N RET	155	(2) RRUS-11	127
(2) ACU-A20-N RET	155	(2) RRUS-11	127
Platform Mount [LP 403-1]	147	(2) RRUS-11	127
(3) DB844H90-XY w/ Mount Pipe	147	DC6-48-60-18-8F Surge Arrestor	127
(3) DB844H90-XY w/ Mount Pipe	147	(3) T-Arms MNT	117
(3) DB844H90-XY w/ Mount Pipe	147	800 10504 w/ Mount Pipe	117
Platform Mount [LP 403-1]	137	800 10504 w/ Mount Pipe	117
(2) LPA-80080/6CF w/ Mount Pipe	137	800 10504 w/ Mount Pipe	117
(2) LPA-80063/6CF w/ Mount Pipe	137	742 351 w/ Mount Pipe	117
GPS	137	742 351 w/ Mount Pipe	117
(2) BXA-70063/4CF w/ Mount Pipe	137	742 351 w/ Mount Pipe	117
(2) LPA-80080/4CF W/Mount Pipe	137	(2) RET	117
(2) BXA-171063-8BF-2	137	(2) RET	117
BXA-171063-8BF-2	137	(2) RET	117

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	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: 79.7%



 FDH Engineering, Inc. Tower Analysis	6521 Meridien Drive Raleigh, NC 27616 Phone: (919) 755-1012 FAX: (919) 755-1031	Job: North Bethel, CT00248-S Project: 12-01208E S2 Client: SBA Code: TIA/EIA-222-F Path:	Drawn by: SMN Date: 05/10/12 App'd: Scale: NTS Dwg No. E-1
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RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL
TO NON-IONIZING EMISSIONS

Sprint Existing Facility

Site ID: CT33XC521

Bethel SBA
11 Francis J. Clarke Circle
Bethel, CT 06801

August 08, 2012



August 8, 2012

Sprint

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

Re: Emissions Values for Site CT33XC521– Bethel SBA

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 11 Francis J. Clarke Circle, Bethel, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ 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 ($\mu\text{W}/\text{cm}^2$). The general population exposure limit for the cellular band is approximately $567 \mu\text{W}/\text{cm}^2$, and the general population exposure limit for the PCS band is $1000 \mu\text{W}/\text{cm}^2$. 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 11 Francis J. Clarke Circle, Bethel, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario. Actual values seen from this site will be dramatically less than those shown in this report. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all emissions were calculated using the following assumptions:

- 1) 4 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 APXVSP18-C-A20 and the RFS APXV9ERR18-C-A20. This is based on feedback from the carrier with regards to anticipated antenna selection. The antenna pattern 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 for the RFS APXVSP18-C-A20 and a 14.9 dBd gain value at its main lobe at 1900 MHz and 11.9 dBd at its main lobe for 850



EBI Consulting

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MHz for the APXV9ERR18-C-A20. 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 **155 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

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 **16.817% (5.606% 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 **33.227%** 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
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