HPC Wireless Services
22 Shelter Rock Lane.
Building C
Danbury, CT, 06810
P.: 203.797.1112

HPC
WIRELESS SERVICES

September 5, 2014

VIA OVERNIGHT COURIER

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051
Attn: Ms. Melanie Bachman, Acting Executive Director

Re: Sprint Spectrum, L.P. – Exempt Modification - 2.5 Equipment Deployment
2 Volunteer Road, a/k/a 2 Volunteer Drive, Windsor Locks, Connecticut

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Sprint Spectrum, L.P. ("Sprint"). Sprint is undertaking modifications to certain existing sites in its Connecticut system in order to implement updated technology. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction that 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 First Selectman of the Town of Windsor Locks.

Sprint plans to modify the existing wireless communications facility owned by Message Center Management, and located at 2 Volunteer Road, a/k/a 2 Volunteer Drive, Windsor Locks (coordinates 41°-55'-41.18" N, 72°-38'-48.42" W). Attached are plan and elevation drawings depicting the planned changes, and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration, subject to modifications detailed in the attached structural documentation. Also included is a power density report reflecting the modification to Sprint's operations at the site.

The changes to the facility do not constitute a modification 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. 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. By Structural Analysis prepared by Centek Engineering dated January 14, 2014, Sprint proposed the removal of six (6) CDMA antennas and the installation of three (3) LTE Antennas and six (6) RRHs (remote radio heads) on the existing T-frames, at a center line height of approximately 115' AGL for Sprint's Network Vision Project. In this

application for the 2.5 Antenna Project, Sprint will add three (3) new panel 2.5 antennas on existing pipe masts for a total of six (6) antennas, and three (3) more RRHs (remote radio heads) behind the new antennas for a total of nine (9) RRHs, all at a centerline height of approximately 115' AGL. Sprint will also install one new (1) hybrid cable along the existing coaxial cable run. The proposed modifications will not extend the height of the approximately 195' AGL structure.

2. Sprint will place associated equipment and new batteries in the three (3) existing cabinets on the 10' x 20' concrete pad with ice canopy. The power junction box on a unistrut frame, and the existing GPS antenna will also remain. These changes will have no effect on the site boundaries, and there will be no increase in the leased area, which exceeds approximately two hundred (200) square feet if the area just below the Tower is included.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more. The incremental effect of the proposed changes will be negligible.

4. The changes to the facility 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. As indicated on the attached report prepared by EBI Consulting, Sprint's operations at the site will result in a power density of approximately 4.73%; the combined site operations will result in a total power density of approximately 54.13%.

Please contact me by phone at (203) 610-1071 or by e-mail at mjhowlett@optonline.netwith questions concerning this matter. Thank you for your consideration.

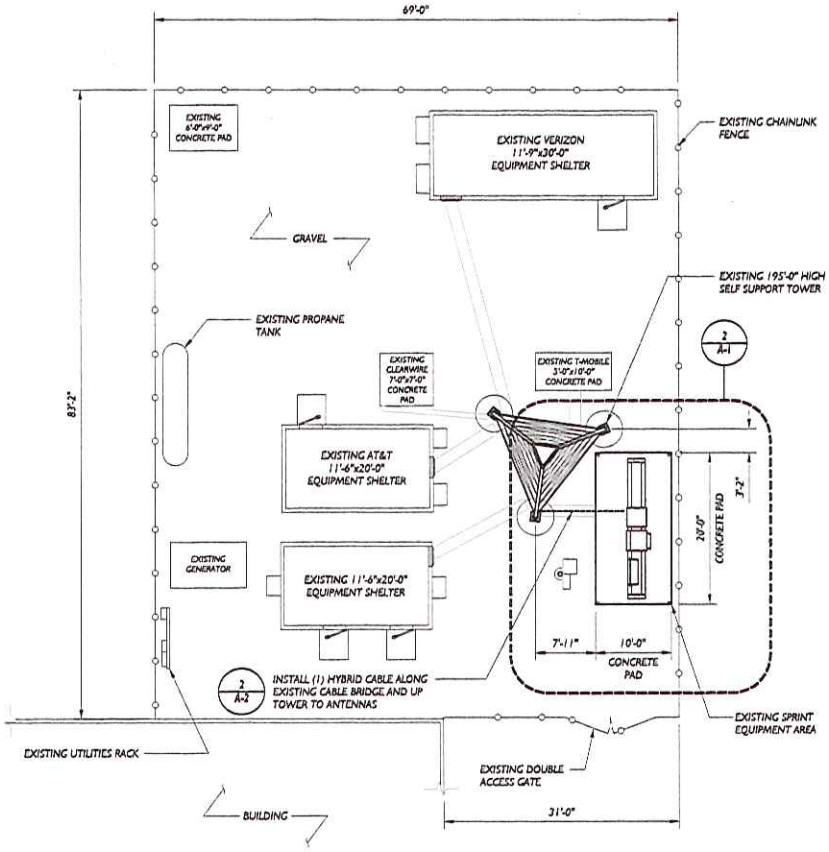
Respectfully yours,

Melanie J. Howlett

Attachments

cc: Honorable Steven N. Wawruck, Jr., First Selectman, Town of Windsor Locks
Town of Windsor Locks (underlying property owner)

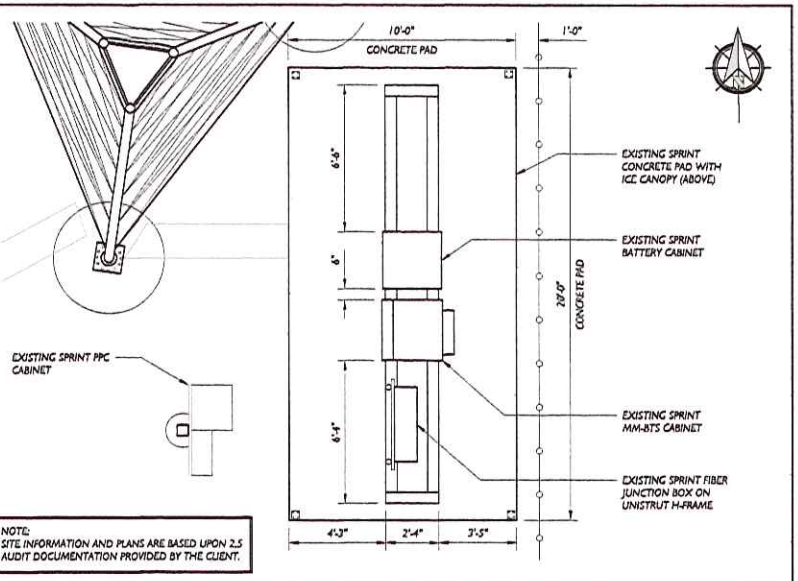
NOTE:
SITE INFORMATION AND PLANS ARE BASED UPON 2.5 AUDIT DOCUMENTATION PROVIDED BY THE CLIENT.



OVERALL SITE PLAN

SCALE	11"x17" : 1/16" = 1'-0"
	24"x36" : 1/8" = 1'-0"

1

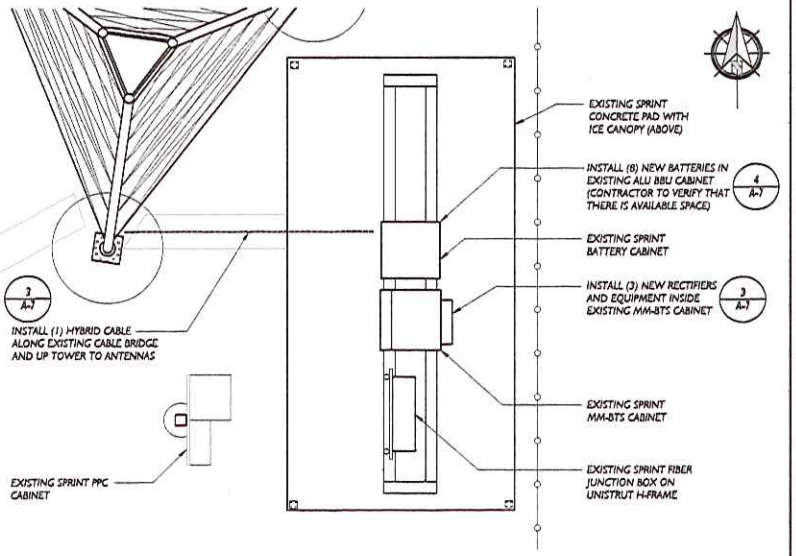


NOTE:
SITE INFORMATION AND PLANS ARE BASED UPON 2.5 AUDIT DOCUMENTATION PROVIDED BY THE CLIENT.

EXISTING SPRINT EQUIPMENT PLAN

SCALE	11"x17" : 3/16" = 1'-0"
	24"x36" : 3/8" = 1'-0"

2



FINAL SPRINT EQUIPMENT PLAN

SCALE	11"x17" : 3/16" = 1'-0"
	24"x36" : 3/8" = 1'-0"

3

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
00	07-11-14	INITIAL SUBMISSION	CD	MJB

Sprint

6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251
(517) 436-7466

A SAXON DESIGN GROUP
1356 HOOPER AVENUE, STE 205
TOMS RIVER, NJ 08753-2893
OFFICE # 732 674-0156 • FAX # 732 413-0607

ENGINEER'S LICENSE

MICHAEL L. BOHLINGER

SIGNATURE:

PROFESSIONAL ENGINEER
CONNECTICUT LICENSE No. 20405

ASDG PROJECT No: ASDGSP50

CLIENT ID No: CT43XC828

DESIGN TYPE: 2.5 GHz

SITE INFORMATION:
WINDSOR LOCKS / MCM
2-4 VOLUNTEER DRIVE
WINDSOR LOCKS, CT 06096
HARTFORD COUNTY

DRAWING TITLE:
SITE PLAN

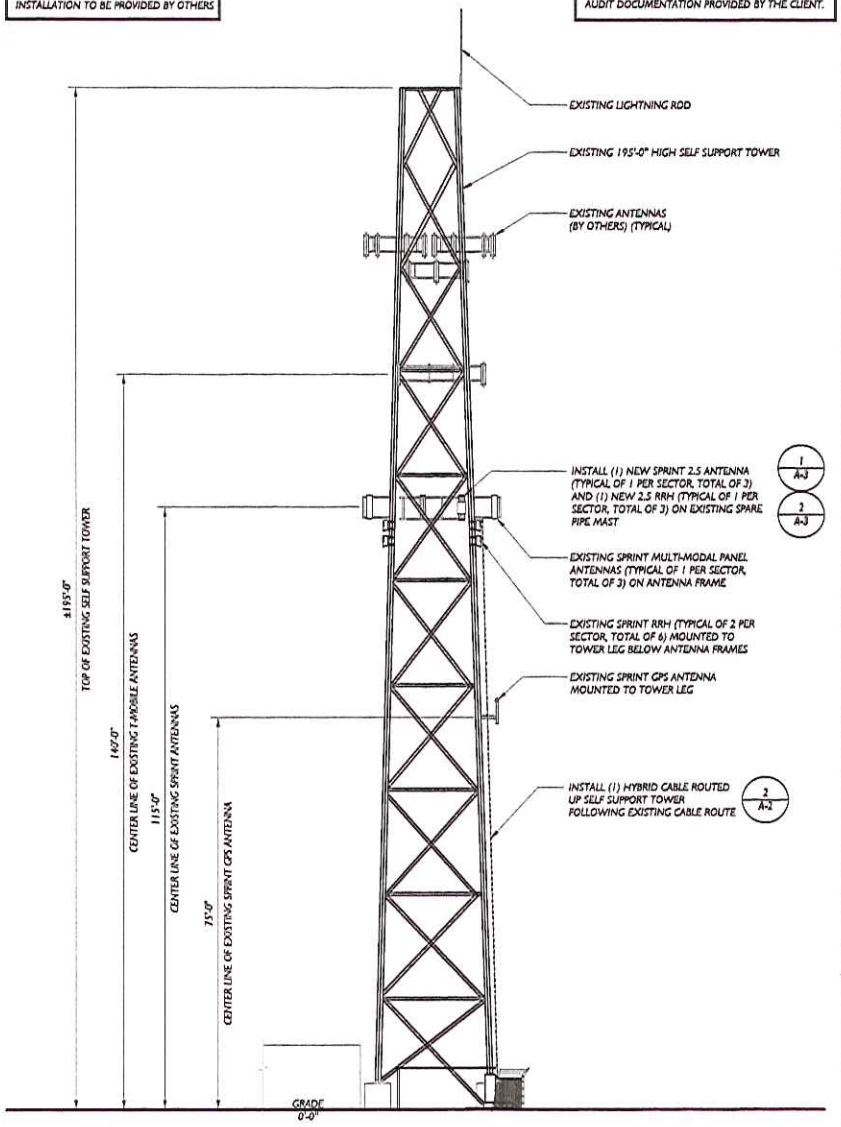
MICHAEL L. BOHLINGER
CT LICENSE No. 20405

DATE: 07-11-14
PROJECT No: ASDGSP50
DRAWING BY: CD
CHK BY:
DWG No: A-1

24"x36" SHEETS - SIGN & SEAL AREA

NOTE:
STRUCTURAL ANALYSIS FOR PROPOSED INSTALLATION TO BE PROVIDED BY OTHERS

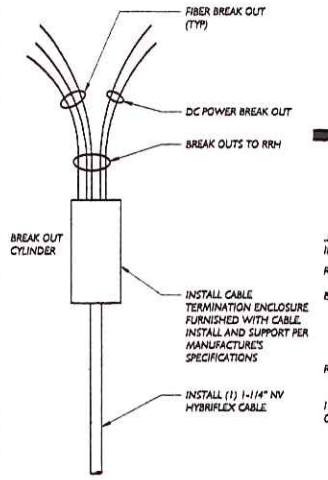
NOTE:
SITE INFORMATION AND PLANS ARE BASED UPON 2.5 AUDIT DOCUMENTATION PROVIDED BY THE CLIENT.



SITE ELEVATION

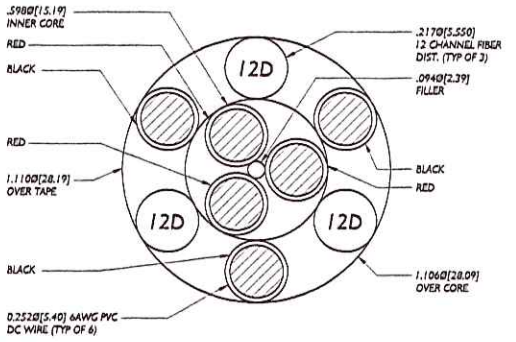
SCALE	11"x17" : NTS
	24"x36" : NTS

1



HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE

CABLE	LENGTH	DC CONDUCTOR	CABLE DIAMETER
FIBER ONLY	VARIES	USE NV HYBRIFLEX	5/8"
HYBRIFLEX	OVER 200'	8 AWG	1 1/4"
HYBRIFLEX	225'-300'	6 AWG	1 1/4"
HYBRIFLEX	325'-375'	4 AWG	1 1/4"



HYBRID BREAK OUT DETAIL

SCALE	11"x17" : NTS
	24"x36" : NTS

2

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
00	07-11-14	INITIAL SUBMISSION	CD	MJB

Sprint

6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251
(517) 436-7466

A SAXON DESIGN GROUP
1056 HOOPER AVENUE, STE 208
TOMS RIVER, NJ 08753-2832
OFFICE # 732 875-0188 • FAX # 732 473-0907

ENGINEER'S LICENSE

MICHAEL L. BOHLINGER

SIGNATURE:

PROFESSIONAL ENGINEER
CONNECTICUT LICENSE No. 20405

ASDG PROJECT No:
ASDGSP50

CLIENT ID No:
CT43XC828

DESIGN TYPE:
2.5 GHz

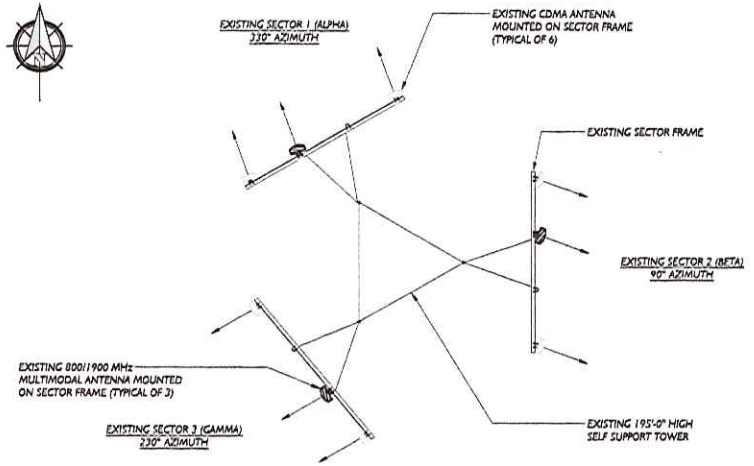
SITE INFORMATION:
WINDSOR LOCKS / MCM
2-4 VOLUNTEER DRIVE
WINDSOR LOCKS, CT 06096
HARTFORD COUNTY

DRAWING TITLE
SITE ELEVATION
AND CABLE PLAN

MICHAEL L. BOHLINGER
CT LICENSE No. 20405

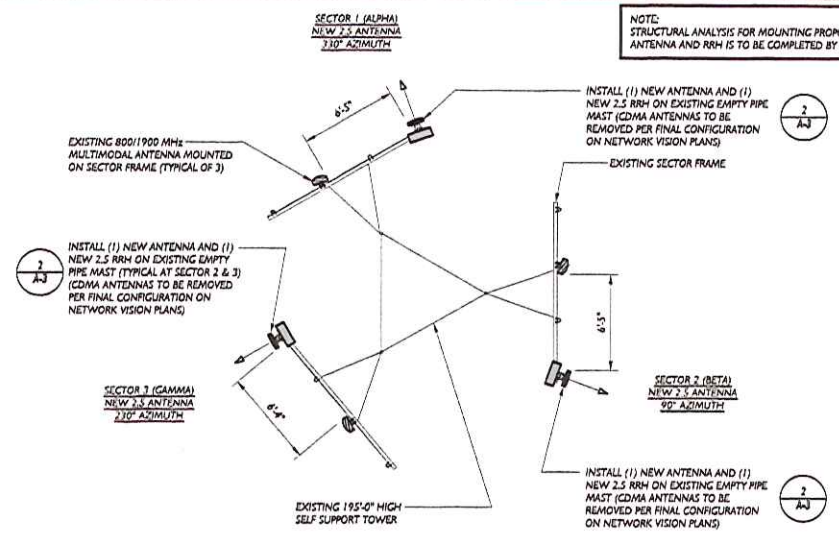
DATE:	07-11-14
PROJECT No:	ASDGSP50
DRAWING BY:	CD
CHK BY:	
DWG No:	A-2

24"x36" SHEETS - SHOWN @ 50% AREA



NOTE:
SITE INFORMATION AND PLANS ARE BASED UPON 2.5 AUDIT DOCUMENTATION PROVIDED BY THE CLIENT.

EXISTING



FINAL

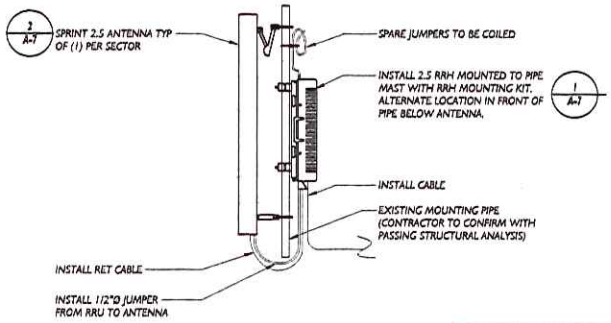
EXISTING AND FINAL ANTENNA PLAN @ ±115'-0"

SCALE: 11"x17" : 1/8" = 1'-0" | 24"x36" : 1/4" = 1'-0"

1

NOTE:
1. CUT DC CONDUCTORS TO LENGTH.
2. COIL FIBER CABLE AND SECURE TO SIDE OF RRU.
3. DO NOT EXCEED BEND RADIUS.
4. JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA CAN NOT EXCEED 15'. NOTIFY SPRINT CM OF ANY DISCREPANCY.

NOTE:
STRUCTURAL ANALYSIS FOR MOUNTING PROPOSED 2.5 ANTENNA AND RRH IS TO BE COMPLETED BY OTHERS



NOTE:
SITE INFORMATION AND PLANS ARE BASED UPON 2.5 AUDIT DOCUMENTATION PROVIDED BY THE SPRINT.

ANTENNA AND RRH MOUNTING DETAIL

SCALE: 11"x17" : NTS | 24"x36" : NTS

2

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
00	07-11-14	INITIAL SUBMISSION	CD	AJB

Sprint
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251
(517) 436-7486

A SAXON DESIGN GROUP
1356 HOOPER AVENUE, STE 268
TOMS RIVER, NJ 08753-2552
OFFICE # 732-874-0150 • FAX # 732-412-0907

ENGINEER'S LICENSE

MICHAEL L. BOHLINGER

SIGNATURE:

PROFESSIONAL ENGINEER
CONNECTICUT LICENSE No. 20405

ASDG PROJECT No: ASDGSP50

CLIENT ID No: CT43XC828

DESIGN TYPE: 2.5 GHz

SITE INFORMATION:
WINDSOR LOCKS / MCM
2-4 VOLUNTEER DRIVE
WINDSOR LOCKS, CT 06096
HARTFORD COUNTY

DRAWING TITLE:
ANTENNA PLAN
AND MOUNTING DETAILS

MICHAEL L. BOHLINGER
CT LICENSE No. 20405

DATE: 07-11-14
PROJECT No: ASDGSP50
DRAWING BY: CD
CHK BY:
DWG No: A-3

24"x36" SHEETS - WITH A SEAL AREA

ALL-POINTS TECHNOLOGY CORPORATION, P.C.

CONDITION ASSESSMENT REPORT
195' SELF-SUPPORTING TOWER
WINDSOR LOCKS, CONNECTICUT

Prepared for
HPC Wireless Services

Sprint Site: CT43XC828

August 20, 2014

APT Project #CT255850

□ 3 SADDLEBROOK DRIVE · KILLINGWORTH, CT 06419 · PHONE 860-663-1697 · FAX 860-663-0935
⊗ 116 GRANDVIEW ROAD · CONWAY, NH 03818 · PHONE 603-496-5853 · FAX 603-447-2124

STRUCTURAL ANALYSIS REPORT
195' SELF-SUPPORTING TOWER
WINDSOR LOCKS, CONNECTICUT
prepared for
HPC Wireless Services

EXECUTIVE SUMMARY:

All-Points Technology Corporation, P.C. (APT) performed a structural analysis of this 195-foot PiROD self-supporting tower. The analysis was performed for Sprint's installation of three RFS APXVTM14-C-120 panel antennas and three TD-RRH8x20-25 remote radio heads (RRHs) on existing mounts at 115' as detailed below. The equipment is to be fed by one 1.57" hybrid fiber-power cable in addition to the existing six 1-1/4" lines.

Our analysis indicates the tower and its foundation meet the requirements of the Connecticut State Building Code with the proposed equipment changes.

INTRODUCTION:

A structural analysis was performed on the above-mentioned communications tower by APT for HPC Wireless Services. The tower is located at 4 Volunteer Drive in Windsor Locks, Connecticut.

The structure is a 195-foot PiROD U-20 galvanized steel self-supporting tower. APT previously visited the tower site on November 20, 2006 and September 18, 2011 to perform a condition assessment of the structure and record inventory of appurtenances. This analysis also relied on PiROD tower drawings, File No. A-115761-1 dated October 6, 2000, a structural analysis from Centek Engineering, Project #13001.072 Rev. 1 dated January 14, 2014 and an equipment inventory provided by tower owner Message Center Management (MCM) dated February 27, 2014. Where conflicts were found between the Centek structural analysis report and MCM's inventory, APT used the more conservative loading.

The analysis was performed in accordance with the Connecticut State Building Code and EIA/TIA-222-F using the following antenna inventory (proposed equipment shown in **bold** text):

Carrier	Antenna	Elev. [1]	Leg	Mount	Coax.
	Beacon	195'	N.A.	Center plate	1" conduit
Town	20' 4-bay dipole	195'	SE	Leg	7/8"
Town	(2) 20' 4-bay dipoles, 20' omni whip	176'	N	15' sector mount	(3) 7/8"
Town	10' & 12' omnidirectional whips	176'	SE	15' sector mount	(2) 7/8"
Town	(2) 20' 4-bay dipoles, 20' omni whip	176'	SW	15' sector mount	(2) 7/8"
AT&T	(3) 800-10121, (6) SBNH-1D6565C panels, (6) RRHs, (6) TMAs, (1) Surge Suppressor	165'	All	(3) 15' sector mounts	(9) 1-5/8", (2) 5/8" fiber, (1) 5/16 power
Verizon	(3) BXA-171063/12, (5) BXA-70063/6, (1) LNX-6514DS, (3) BXA-185060/12 panels, (6) Diplexers, (3) RRHs, (1) D-box	146'	All	(3) 15' sector mounts	(12) 1-5/8", (1) 1.57" hybrid
T-Mobile	(3) RR90-17-02DP, (3) APXV18-506516, (3) APX16DWV-16DWVS panels, (9) TMAs	136'	All	(3) 15' sector mounts	(18) 1-5/8"
MetroPCS	(3) RFS APXV18-206517 panels	126'	All	Legs	(6) 1-5/8"
Sprint	(6) APXVSPP18-C-A20, **(3) APXVTM14-C-120** panels, **(9)** RRHs [2]	115'	All	(3) 14' sector mounts	(6) 1-5/8", (3) 1 ¼" hybrid, **(1) 1-5/8" hybrid**
Clearwire	(3) LLPX30R panels, (3) DAP heads, (3) 2' high-performance dishes	104'	All	(3) 1.5' sidearms	(2) 2" conduits (3) 1/2"
	(3) Obstruction lights	95'	All	Legs	(3) 1/2"
Sprint	GPS	74'	SW	1' standoff	1/2"

[1] Elevations listed are from base of tower steel, which is ~4' above grade.
[2] Six APXVSPP18-C-A20 panels and six RRHs currently installed.

STRUCTURAL ANALYSIS:

Methodology: The structural analysis was done in accordance with EIA/TIA-222-F (EIA), Structural Standards for Steel Antenna Towers and Antenna Supporting Structures; and the American Institute of Steel Construction (AISC), Manual of Steel Construction, Allowable Stress Design, Ninth Edition.

The analysis was conducted using a fastest mile wind speed of 80 miles per hour (equivalent to 95-mph 3-second gust) and ¾" of radial ice over the entire structure and all appurtenances. The EIA/TIA Standard requires a minimum wind speed of 80-mph for Hartford County, Connecticut.

Two loading conditions were evaluated in accordance with EIA to determine the tower's capacity. The more demanding of the two cases is used to calculate the tower capacity:

- Case 1 = Wind Load (without ice) + Tower Dead Load
- Case 2 = 0.75 Wind Load (with ice) + Ice Load + Tower Dead Load

In addition, the TIA/EIA standard permits a one-third increase in allowable stresses for towers less than 700-feet tall. Allowable stresses of tower members were increased by one-third when computing the load capacity values shown below.

Analysis: Analysis of the tower was conducted in accordance with the criteria outlined herein with equipment as previously described. The following table summarizes the results of the analysis based on stresses of individual leg and bracing members:

Elevation	Leg Capacity	Bracing Capacity
185'-195'	4%	12%
170'-185'	22%	32%
150'-170'	54%	32%
140'-150'	46%	68%
120'-140'	55%	78%
100'-120'	57%	64%
80'-100'	74%	49%
60'-80'	67%	60%
40'-60'	77%	73%
20'-40'	68%	53%
0'-20'	76%	77%

Splice, Bracing and Anchor Bolts:
Connection bolts were evaluated under the proposed loading. All bolts were found to be adequately sized.

Base Foundations:
Evaluation of the existing foundation was performed from original design drawings. Reactions imposed by the proposed additions are within the design capacity of the foundation. Base reactions imposed with the additional antennas were calculated as follows:

Compression:	337.9 kips
Uplift:	253.1 kips
Shear:	26.8 kips
Overturning Moment:	5236 ft-kips

CONCLUSIONS AND RECOMMENDATIONS:

Our structural analysis indicates the 195-foot PiROD tower and foundation located at 4 Volunteer Drive in Windsor Locks, Connecticut meets the requirements of the Connecticut State Building Code with Sprint's proposed equipment.

LIMITATIONS:

This report is based on the following:

1. Tower is properly installed and maintained.
2. All members are in a non-deteriorated condition.
3. All required members are in place.
4. All bolts are in place and are properly tightened.
5. Tower is in plumb condition.
6. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.

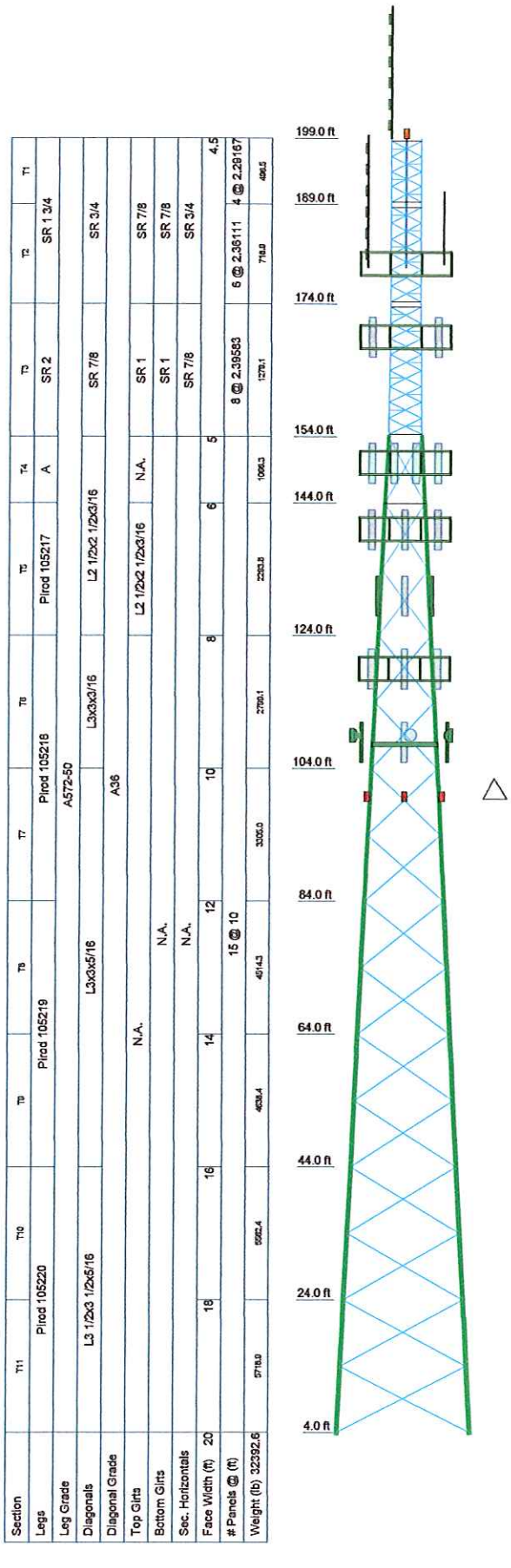
All-Points Technology Corporation, P.C. (APT) is not responsible for any modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

1. Replacing or reinforcing bracing members.
2. Reinforcing leg members in any manner.
3. Installing antenna mounts or side arms.
4. Extending tower.

APT hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which is contrary to that which is contained herein, or you are aware of any defects arising from the original design, material, fabrication and erection deficiencies, you should disregard this report and immediately contact APT. APT disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

Appendix A

Tower Schematic



Section	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Pirod 105220		Pirod 105219		Pirod 105218		Pirod 105217	A	SR 2	SR 1 3/4	
Leg Grade					A572-50						
Diagonals	L3 1/2x3 1/2x5/16		L3x3x5/16		L3x3x3/16		L2 1/2x2 1/2x3/16		SR 7/8	SR 3/4	
Diagonal Grade					A36						
Top Girts			N.A.				L2 1/2x2 1/2x3/16	N.A.	SR 1	SR 7/8	
Bottom Girts			N.A.						SR 1	SR 7/8	
Sec. Horizontals			N.A.						SR 7/8	SR 3/4	4.5
Face Width (ft)	20	18	16	14	12	10	8	6	5	8 @ 2.39583	6 @ 2.36111	4 @ 2.29167
# Panels @ (ft)					15 @ 10							
Weight (lb)	32392.6	5718.9	5562.4	4638.4	4571.43	3305.0	2799.1	2283.8	1066.3	1278.1	716.9	496.5

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Flash Beacon Lighting	199	APX16DWV-16DWVS	140
20' 4-Bay Dipole	199	APX16DWV-16DWVS	140
(2) 20' 4-Bay Dipole	199 - 180	APXV18-206516	140
20' x 2.5" omni whip	199 - 180	APXV18-206516	140
(2) 20' 4-Bay Dipole	199 - 180	APXV18-206516	140
20' x 2.5" omni whip	199 - 180	(2) KRY 112 7 1/2 TMA	140
12' x 1.5" omni whip	192 - 180	(2) KRY 112 7 1/2 TMA	140
10' x 1.5" omni whip	190 - 180	(2) KRY 112 7 1/2 TMA	140
15' T-frame sector mount	180	RFS ATMAA1412D-1A20 twin TMA	140
15' T-frame sector mount	180	RFS ATMAA1412D-1A20 twin TMA	140
15' T-frame sector mount	180	RFS ATMAA1412D-1A20 twin TMA	140
800-10121	169	15' T-frame sector mount	140
800-10121	169	15' T-frame sector mount	140
800-10121	169	15' T-frame sector mount	140
SBNH-1D6565C	169	APXV18-206517	130
SBNH-1D6565C	169	APXV18-206517	130
SBNH-1D6565C	169	APXV18-206517	130
(2) LGP2140X TMA	169	(2) APXVSPP18-C-A20	119
(2) LGP2140X TMA	169	(2) APXVSPP18-C-A20	119
(2) LGP2140X TMA	169	(2) APXVSPP18-C-A20	119
(2) Ericsson RRUS-11	169	APXVTM14-C-120	119
(2) Ericsson RRUS-11	169	APXVTM14-C-120	119
(2) Ericsson RRUS-11	169	APXVTM14-C-120	119
Raycap DC6-48-60-18-8F surge suppressor	169	TD-RRH8x20-25	119
		TD-RRH8x20-25	119
15' T-frame sector mount	169	TD-RRH8x20-25	119
15' T-frame sector mount	169	800 MHz RRH	119
15' T-frame sector mount	169	800 MHz RRH	119
BXA-185060/12	150	800 MHz RRH	119
BXA-185060/12	150	1900 MHz RRH	119
BXA-185060/12	150	1900 MHz RRH	119
(2) BXA-70063/6	150	1900 MHz RRH	119
(2) BXA-70063/6	150	15' T-frame sector mount	119
BXA-70063/6	150	15' T-frame sector mount	119
LNX-6514DS-VTM	150	15' T-frame sector mount	119
BXA-171063/12	150	2' HP dish	109
BXA-171063/12	150	2' HP dish	109
BXA-171063/12	150	2' HP dish	109
(2) RFS FD9R6004_2C-3L diplexer	150	Samsung U-RAS DAP unit	108
(2) RFS FD9R6004_2C-3L diplexer	150	Samsung U-RAS DAP unit	108
(2) RFS FD9R6004_2C-3L diplexer	150	Samsung U-RAS DAP unit	108
ALU RRH2x40 w/bracket	150	Valmont B1827 Dual Standoff Mount	108
ALU RRH2x40 w/bracket	150	Valmont B1827 Dual Standoff Mount	108
ALU RRH2x40 w/bracket	150	Valmont B1827 Dual Standoff Mount	108
RFS DB-T1-6Z-8AB-0Z D-box	150	LLPX310R panel	108
15' T-frame sector mount	150	LLPX310R panel	108
15' T-frame sector mount	150	LLPX310R panel	108
15' T-frame sector mount	150	Obstruction light	99
RR90-17-02DP	140	Obstruction light	99
RR90-17-02DP	140	Obstruction light	99
RR90-17-02DP	140	GPS on 3' standoff	78
APX16DWV-16DWVS	140		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Pirod 105244		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

All-Points Technology Corporation
116 Grandview Road
Conway, NH 03818
Phone: (603) 496-5853
FAX: (603) 447-2124

Job: *195' Self-Supporting Tower*			
Project: *CT255850 Windsor Locks*			
Client: HPC; Sprint Site #CT43XC828	Drawn by: Rob Adair	App'd:	
Code: TIA/EIA-222-F	Date: 08/20/14	Scale: NTS	
Path:		Dwg No. E-1	

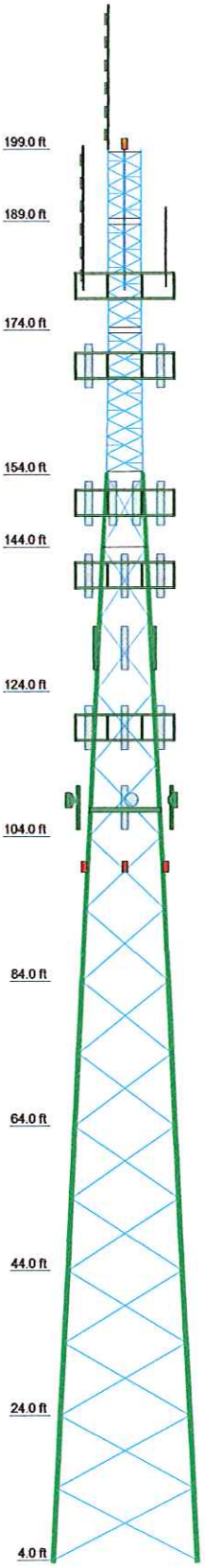
SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Pirod 105244		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

Section	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Pirod 105220		Pirod 105219		Pirod 105218		Pirod 105217	A	SR 2	SR 1 3/4	
Leg Grade	A572-50										
Diagonals	L3 1/2x3 1/2x5/16		L3x3x5/16		L3x3x3/16		L2 1/2x2 1/2x3/16		SR 7/8	SR 3/4	
Diagonal Grade	A36										
Top Girts			N.A.				L2 1/2x2 1/2x3/16	N.A.	SR 1	SR 7/8	
Bottom Girts				N.A.					SR 1	SR 7/8	
Sec. Horizontals				N.A.					SR 7/8	SR 3/4	4.5
Face Width (ft)	20	18	16	14	12	10	8	6	5	4 @ 2.29167	
# Panels @ (ft)				15 @ 10					8 @ 2.39583	6 @ 2.36111	
Weight (lb)	32392.6	5710.9	5362.4	4838.4	4514.3	3305.0	2783.1	2283.8	1279.1	716.9	496.5



MAX. CORNER REACTIONS AT BASE:
DOWN: 337924 lb
SHEAR: 26849 lb

UPLIFT: -253130 lb
SHEAR: 32550 lb

AXIAL
106804 lb

SHEAR
48392 lb

MOMENT
5236388 lb-ft

TORQUE 10800 lb-ft
69 mph WIND - 0.7500 in ICE

AXIAL
53765 lb

SHEAR
40042 lb

MOMENT
4313180 lb-ft

TORQUE 7382 lb-ft
REACTIONS - 80 mph WIND

All-Points Technology Corporation
116 Grandview Road
Conway, NH 03818
Phone: (603) 496-5853
FAX: (603) 447-2124

Job: *195' Self-Supporting Tower*			
Project: *CT255850 Windsor Locks*			
Client: HPC; Sprint Site #CT43XC828	Drawn by: Rob Adair	App'd:	
Code: TIA/EIA-222-F	Date: 08/20/14	Scale: NTS	
Path:		Dwg No. E-1	

Appendix B

Calculations

tnxTower	Job: 195' Self-Supporting Tower	Page: 1 of 9
All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	Project: CT255850 Windsor Locks	Date: 11:37:34 08/20/14
	Client: HPC; Sprint Site #CT43XC828	Designed by: Rob Adair

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 199.00 ft above the ground line.
The base of the tower is set at an elevation of 4.00 ft above the ground line.
The face width of the tower is 4.50 ft at the top and 20.00 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 0.7500 in.
Ice density of 56 pcf.
A wind speed of 69 mph is used in combination with ice.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Feed Line/Linear Appurtenances

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	A	No	Ar (CfAe)	199.00 - 4.00	0.0000	0.48	1	1	0.3750	0.3750		0.22
1" conduit	C	Yes	Ar (CfAe)	199.00 - 12.00	-4.0000	0.5	1	1	1.0000	1.0000		0.50
7/8	C	Yes	Ar (CfAe)	199.00 - 12.00	-5.0000	0.5	1	1	1.1100	1.1100		0.54
7/8	C	Yes	Ar (CfAe)	180.00 - 12.00	-5.0000	0.5	8	5	1.1100	1.1100		0.54
1 5/8	A	Yes	Ar (CfAe)	169.00 - 12.00	-8.0000	0.5	9	5	0.5000	1.9800		1.04
5/16" Fiberoptic cable	A	Yes	Ar (CfAe)	169.00 - 12.00	-8.0000	0.5	1	1	0.3125	0.3125		0.25
5/8 power	A	Yes	Ar (CfAe)	169.00 - 12.00	-8.0000	0.5	2	2	0.6450	0.6450		0.40
1 5/8	A	Yes	Ar (CfAe)	150.00 - 12.00	-16.0000	0.5	12	6	0.5000	1.9800		1.04
1.57" Hybrid fiber-power cable	A	Yes	Ar (CfAe)	150.00 - 12.00	-14.0000	0.5	1	1	0.5000	1.5700		0.66
1 5/8	B	Yes	Ar (CfAe)	140.00 - 12.00	-10.0000	0.5	12	6	0.5000	1.9800		1.04
1 5/8	B	Yes	Ar (CfAe)	140.00 - 12.00	-16.0000	0.5	6	4	0.5000	1.9800		1.04
1 5/8	C	Yes	Ar (CfAe)	130.00 - 12.00	-12.0000	0.5	6	3	0.5000	1.9800		1.04
1 5/8	C	Yes	Ar (CfAe)	119.00 - 12.00	-8.0000	0.5	6	3	1.9800	1.9800		1.04
1-1/4" Hybrid fiber-power cable	C	Yes	Ar (CfAe)	119.00 - 12.00	-8.0000	0.5	3	3	1.2500	1.2500		0.66
1.57" Hybrid fiber-power cable	C	Yes	Ar (CfAe)	119.00 - 12.00	-8.0000	0.5	1	1	0.5000	1.5700		0.66
2" conduit	A	Yes	Ar (CfAe)	108.00 - 12.00	-10.0000	0.5	2	2	2.0000	2.0000		2.00
1/2	A	Yes	Ar (CfAe)	108.00 - 12.00	-12.0000	0.5	3	2	0.5800	0.5800		0.25
1/2	B	Yes	Ar (CfAe)	99.00 - 12.00	-4.0000	0.5	3	2	0.5800	0.5800		0.25
1/2	C	Yes	Ar (CfAe)	78.00 - 12.00	-8.0000	0.5	1	1	0.5800	0.5800		0.25

tnxTower	Job: 195' Self-Supporting Tower	Page: 2 of 9
All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	Project: CT255850 Windsor Locks	Date: 11:37:34 08/20/14
	Client: HPC; Sprint Site #CT43XC828	Designed by: Rob Adair

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Flash Beacon Lighting	C	None		0.0000	199.00	No Ice	2.70	2.70	50.00
						1/2" Ice	3.10	3.10	70.00
						1" Ice	3.50	3.50	90.00
20' 4-Bay Dipole	C	From Leg	0.00	0.0000	199.00	No Ice	4.00	4.00	55.00
			0.00			1/2" Ice	6.00	6.00	100.00
			10.00			1" Ice	8.00	8.00	145.00
(2) 20' 4-Bay Dipole	A	From Leg	4.00	0.0000	199.00 - 180.00	No Ice	4.00	4.00	55.00
			0.00			1/2" Ice	6.00	6.00	100.00
			0.00			1" Ice	8.00	8.00	145.00
20' x 2.5" omni whip	A	From Leg	4.00	0.0000	199.00 - 180.00	No Ice	5.00	5.00	50.00
			0.00			1/2" Ice	7.03	7.03	86.96
			0.00			1" Ice	9.07	9.07	136.55
10' x 1.5" omni whip	B	From Leg	4.00	0.0000	190.00 - 180.00	No Ice	1.50	1.50	60.00
			0.00			1/2" Ice	2.52	2.52	72.38
			0.00			1" Ice	3.56	3.56	91.17
12' x 1.5" omni whip	B	From Leg	4.00	0.0000	192.00 - 180.00	No Ice	1.80	1.80	60.00
			0.00			1/2" Ice	3.02	3.02	74.82
			0.00			1" Ice	4.26	4.26	97.28
(2) 20' 4-Bay Dipole	C	From Leg	4.00	0.0000	199.00 - 180.00	No Ice	4.00	4.00	55.00
			0.00			1/2" Ice	6.00	6.00	100.00
			0.00			1" Ice	8.00	8.00	145.00
20' x 2.5" omni whip	C	From Leg	4.00	0.0000	199.00 - 180.00	No Ice	5.00	5.00	50.00
			0.00			1/2" Ice	7.03	7.03	86.96
			0.00			1" Ice	9.07	9.07	136.55
15' T-frame sector mount	A	None		0.0000	180.00	No Ice	15.00	7.50	500.00
						1/2" Ice	20.60	10.30	650.00
						1" Ice	26.20	13.10	800.00
15' T-frame sector mount	B	None		0.0000	180.00	No Ice	15.00	7.50	500.00
						1/2" Ice	20.60	10.30	650.00
						1" Ice	26.20	13.10	800.00
15' T-frame sector mount	C	None		0.0000	180.00	No Ice	15.00	7.50	500.00
						1/2" Ice	20.60	10.30	650.00
						1" Ice	26.20	13.10	800.00
800-10121	A	From Leg	5.00	0.0000	169.00	No Ice	5.46	3.29	50.00
			0.00			1/2" Ice	5.88	3.64	82.91
			0.00			1" Ice	6.31	3.99	120.59
800-10121	B	From Leg	5.00	0.0000	169.00	No Ice	5.46	3.29	50.00
			0.00			1/2" Ice	5.88	3.64	82.91
			0.00			1" Ice	6.31	3.99	120.59
800-10121	C	From Leg	5.00	0.0000	169.00	No Ice	5.46	3.29	50.00
			0.00			1/2" Ice	5.88	3.64	82.91
			0.00			1" Ice	6.31	3.99	120.59
SBNH-1D6565C	A	From Leg	5.00	0.0000	169.00	No Ice	11.45	7.70	65.00
			0.00			1/2" Ice	12.06	8.29	130.87
			0.00			1" Ice	12.69	8.89	204.41
SBNH-1D6565C	B	From Leg	5.00	0.0000	169.00	No Ice	11.45	7.70	65.00
			0.00			1/2" Ice	12.06	8.29	130.87
			0.00			1" Ice	12.69	8.89	204.41
SBNH-1D6565C	C	From Leg	5.00	0.0000	169.00	No Ice	11.45	7.70	65.00
			0.00			1/2" Ice	12.06	8.29	130.87
			0.00			1" Ice	12.69	8.89	204.41
(2) LGP2140X TMA	A	From Leg	5.00	0.0000	169.00	No Ice	1.26	0.38	20.00
			0.00			1/2" Ice	1.42	0.49	27.13
			0.00			1" Ice	1.58	0.62	36.14
(2) LGP2140X TMA	B	From Leg	5.00	0.0000	169.00	No Ice	1.26	0.38	20.00
			0.00			1/2" Ice	1.42	0.49	27.13

tnxTower	Job: 195' Self-Supporting Tower	Page: 3 of 9
All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	Project: CT255850 Windsor Locks	Date: 11:37:34 08/20/14
	Client: HPC; Sprint Site #CT43XC828	Designed by: Rob Adair

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	1.58	0.62	36.14
(2) LGP2140X TMA	C	From Leg	5.00	0.0000	169.00	No Ice	1.26	0.38	20.00
			0.00			1/2" Ice	1.42	0.49	27.13
			0.00			1" Ice	1.58	0.62	36.14
(2) Ericsson RRUS-11	A	From Leg	5.00	0.0000	169.00	No Ice	2.94	1.19	55.00
			0.00			1/2" Ice	3.17	1.35	74.32
			0.00			1" Ice	3.41	1.52	96.56
(2) Ericsson RRUS-11	B	From Leg	5.00	0.0000	169.00	No Ice	2.94	1.19	55.00
			0.00			1/2" Ice	3.17	1.35	74.32
			0.00			1" Ice	3.41	1.52	96.56
(2) Ericsson RRUS-11	C	From Leg	5.00	0.0000	169.00	No Ice	2.94	1.19	55.00
			0.00			1/2" Ice	3.17	1.35	74.32
			0.00			1" Ice	3.41	1.52	96.56
Raycap DC6-48-60-18-8F surge suppressor	C	None		0.0000	169.00	No Ice	1.19	1.19	30.00
						1/2" Ice	1.37	1.37	44.34
						1" Ice	1.56	1.56	60.93
15' T-frame sector mount	A	None		0.0000	169.00	No Ice	15.00	7.50	500.00
						1/2" Ice	20.60	10.30	650.00
						1" Ice	26.20	13.10	800.00
15' T-frame sector mount	B	None		0.0000	169.00	No Ice	15.00	7.50	500.00
						1/2" Ice	20.60	10.30	650.00
						1" Ice	26.20	13.10	800.00
15' T-frame sector mount	C	None		0.0000	169.00	No Ice	15.00	7.50	500.00
						1/2" Ice	20.60	10.30	650.00
						1" Ice	26.20	13.10	800.00
BXA-185060/12	A	From Leg	4.00	0.0000	150.00	No Ice	4.80	3.63	25.00
			0.00			1/2" Ice	5.25	4.06	52.49
			0.00			1" Ice	5.71	4.51	85.53
BXA-185060/12	B	From Leg	4.00	0.0000	150.00	No Ice	4.80	3.63	25.00
			0.00			1/2" Ice	5.25	4.06	52.49
			0.00			1" Ice	5.71	4.51	85.53
BXA-185060/12	C	From Leg	4.00	0.0000	150.00	No Ice	4.80	3.63	25.00
			0.00			1/2" Ice	5.25	4.06	52.49
			0.00			1" Ice	5.71	4.51	85.53
(2) BXA-70063/6	A	From Leg	4.00	0.0000	150.00	No Ice	7.73	3.76	25.00
			0.00			1/2" Ice	8.27	4.19	65.60
			0.00			1" Ice	8.81	4.63	112.01
(2) BXA-70063/6	B	From Leg	4.00	0.0000	150.00	No Ice	7.73	3.76	25.00
			0.00			1/2" Ice	8.27	4.19	65.60
			0.00			1" Ice	8.81	4.63	112.01
BXA-70063/6	C	From Leg	4.00	0.0000	150.00	No Ice	7.73	3.76	25.00
			0.00			1/2" Ice	8.27	4.19	65.60
			0.00			1" Ice	8.81	4.63	112.01
LNX-6514DS-VTM	C	From Leg	4.00	0.0000	150.00	No Ice	8.41	4.17	30.00
			0.00			1/2" Ice	8.96	4.61	74.68
			0.00			1" Ice	9.52	5.07	125.36
BXA-171063/12	A	From Leg	4.00	0.0000	150.00	No Ice	4.79	3.62	25.00
			0.00			1/2" Ice	5.24	4.06	52.45
			0.00			1" Ice	5.70	4.50	85.45
BXA-171063/12	B	From Leg	4.00	0.0000	150.00	No Ice	4.79	3.62	25.00
			0.00			1/2" Ice	5.24	4.06	52.45
			0.00			1" Ice	5.70	4.50	85.45
BXA-171063/12	C	From Leg	4.00	0.0000	150.00	No Ice	4.79	3.62	25.00
			0.00			1/2" Ice	5.24	4.06	52.45
			0.00			1" Ice	5.70	4.50	85.45
(2) RFS FD9R6004_2C-3L diplexer	A	From Leg	3.50	0.0000	150.00	No Ice	0.37	0.08	5.00
			0.00			1/2" Ice	0.45	0.14	7.30
			0.00			1" Ice	0.54	0.20	10.69
(2) RFS FD9R6004_2C-3L	B	From Leg	3.50	0.0000	150.00	No Ice	0.37	0.08	5.00

tnxTower	Job: 195' Self-Supporting Tower	Page: 4 of 9
All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	Project: CT255850 Windsor Locks	Date: 11:37:34 08/20/14
	Client: HPC; Sprint Site #CT43XC828	Designed by: Rob Adair

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
diplexer			0.00			1/2" Ice	0.45	0.14	7.30
			0.00			1" Ice	0.54	0.20	10.69
(2) RFS FD9R6004_2C-3L	C	From Leg	3.50	0.0000	150.00	No Ice	0.37	0.08	5.00
diplexer			0.00			1/2" Ice	0.45	0.14	7.30
			0.00			1" Ice	0.54	0.20	10.69
ALU RRH2x40 w/bracket	A	From Leg	3.50	0.0000	150.00	No Ice	3.32	1.59	131.00
			0.00			1/2" Ice	3.57	1.80	151.90
			0.00			1" Ice	3.84	2.01	175.92
ALU RRH2x40 w/bracket	B	From Leg	3.50	0.0000	150.00	No Ice	3.32	1.59	131.00
			0.00			1/2" Ice	3.57	1.80	151.90
			0.00			1" Ice	3.84	2.01	175.92
ALU RRH2x40 w/bracket	C	From Leg	3.50	0.0000	150.00	No Ice	3.32	1.59	131.00
			0.00			1/2" Ice	3.57	1.80	151.90
			0.00			1" Ice	3.84	2.01	175.92
RFS DB-T1-6Z-8AB-0Z	C	None		0.0000	150.00	No Ice	5.60	2.33	45.00
D-box						1/2" Ice	5.92	2.56	81.13
						1" Ice	6.24	2.79	121.22
15' T-frame sector mount	A	None		0.0000	150.00	No Ice	15.00	7.50	500.00
						1/2" Ice	20.60	10.30	650.00
						1" Ice	26.20	13.10	800.00
15' T-frame sector mount	B	None		0.0000	150.00	No Ice	15.00	7.50	500.00
						1/2" Ice	20.60	10.30	650.00
						1" Ice	26.20	13.10	800.00
15' T-frame sector mount	C	None		0.0000	150.00	No Ice	15.00	7.50	500.00
						1/2" Ice	20.60	10.30	650.00
						1" Ice	26.20	13.10	800.00
RR90-17-02DP	A	From Leg	5.00	0.0000	140.00	No Ice	4.36	1.97	18.00
			0.00			1/2" Ice	4.77	2.31	40.42
			0.00			1" Ice	5.20	2.66	67.36
RR90-17-02DP	B	From Leg	5.00	0.0000	140.00	No Ice	4.36	1.97	18.00
			0.00			1/2" Ice	4.77	2.31	40.42
			0.00			1" Ice	5.20	2.66	67.36
RR90-17-02DP	C	From Leg	5.00	0.0000	140.00	No Ice	4.36	1.97	18.00
			0.00			1/2" Ice	4.77	2.31	40.42
			0.00			1" Ice	5.20	2.66	67.36
APX16DWV-16DWVS	A	From Leg	5.00	0.0000	140.00	No Ice	6.70	2.00	25.00
			0.00			1/2" Ice	7.13	2.33	56.34
			0.00			1" Ice	7.57	2.66	92.36
APX16DWV-16DWVS	B	From Leg	5.00	0.0000	140.00	No Ice	6.70	2.00	25.00
			0.00			1/2" Ice	7.13	2.33	56.34
			0.00			1" Ice	7.57	2.66	92.36
APX16DWV-16DWVS	C	From Leg	5.00	0.0000	140.00	No Ice	6.70	2.00	25.00
			0.00			1/2" Ice	7.13	2.33	56.34
			0.00			1" Ice	7.57	2.66	92.36
APXV18-206516	A	From Leg	5.00	0.0000	140.00	No Ice	3.57	2.00	15.00
			0.00			1/2" Ice	3.91	2.33	34.86
			0.00			1" Ice	4.30	2.66	58.99
APXV18-206516	B	From Leg	5.00	0.0000	140.00	No Ice	3.57	2.00	15.00
			0.00			1/2" Ice	3.91	2.33	34.86
			0.00			1" Ice	4.30	2.66	58.99
APXV18-206516	C	From Leg	5.00	0.0000	140.00	No Ice	3.57	2.00	15.00
			0.00			1/2" Ice	3.91	2.33	34.86
			0.00			1" Ice	4.30	2.66	58.99
(2) KRY 112 7 1/2 TMA	A	From Leg	4.50	0.0000	140.00	No Ice	0.73	0.44	15.00
			0.00			1/2" Ice	0.86	0.55	20.32
			0.00			1" Ice	0.99	0.66	27.27
(2) KRY 112 7 1/2 TMA	B	From Leg	4.50	0.0000	140.00	No Ice	0.73	0.44	15.00
			0.00			1/2" Ice	0.86	0.55	20.32
			0.00			1" Ice	0.99	0.66	27.27

tnxTower	Job: 195' Self-Supporting Tower	Page: 5 of 9
All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	Project: CT255850 Windsor Locks	Date: 11:37:34 08/20/14
	Client: HPC; Sprint Site #CT43XC828	Designed by: Rob Adair

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft	°	ft		ft^2	ft^2	lb
(2) KRY 112 7 1/2 TMA	C	From Leg	4.50	0.0000	140.00	No Ice	0.73	0.44	15.00
			0.00			1/2" Ice	0.86	0.55	20.32
			0.00			1" Ice	0.99	0.66	27.27
RFS ATMAA1412D-1A20 twin TMA	A	From Leg	4.50	0.0000	140.00	No Ice	1.17	0.47	13.00
			0.00			1/2" Ice	1.31	0.57	20.62
			0.00			1" Ice	1.47	0.69	30.11
RFS ATMAA1412D-1A20 twin TMA	B	From Leg	4.50	0.0000	140.00	No Ice	1.17	0.47	13.00
			0.00			1/2" Ice	1.31	0.57	20.62
			0.00			1" Ice	1.47	0.69	30.11
RFS ATMAA1412D-1A20 twin TMA	C	From Leg	4.50	0.0000	140.00	No Ice	1.17	0.47	13.00
			0.00			1/2" Ice	1.31	0.57	20.62
			0.00			1" Ice	1.47	0.69	30.11
15' T-frame sector mount	A	None		0.0000	140.00	No Ice	15.00	7.50	500.00
						1/2" Ice	20.60	10.30	650.00
						1" Ice	26.20	13.10	800.00
15' T-frame sector mount	B	None		0.0000	140.00	No Ice	15.00	7.50	500.00
						1/2" Ice	20.60	10.30	650.00
						1" Ice	26.20	13.10	800.00
15' T-frame sector mount	C	None		0.0000	140.00	No Ice	15.00	7.50	500.00
						1/2" Ice	20.60	10.30	650.00
						1" Ice	26.20	13.10	800.00
APXV18-206517	A	From Leg	0.50	0.0000	130.00	No Ice	5.17	3.04	30.00
			0.00			1/2" Ice	5.62	3.47	56.60
			0.00			1" Ice	6.08	3.91	88.70
APXV18-206517	B	From Leg	0.50	0.0000	130.00	No Ice	5.17	3.04	30.00
			0.00			1/2" Ice	5.62	3.47	56.60
			0.00			1" Ice	6.08	3.91	88.70
APXV18-206517	C	From Leg	0.50	0.0000	130.00	No Ice	5.17	3.04	30.00
			0.00			1/2" Ice	5.62	3.47	56.60
			0.00			1" Ice	6.08	3.91	88.70
(2) APXVSPP18-C-A20	A	From Leg	5.00	0.0000	119.00	No Ice	8.26	5.28	107.00
			0.00			1/2" Ice	8.81	5.74	156.52
			0.00			1" Ice	9.36	6.20	212.12
(2) APXVSPP18-C-A20	B	From Leg	5.00	0.0000	119.00	No Ice	8.26	5.28	107.00
			0.00			1/2" Ice	8.81	5.74	156.52
			0.00			1" Ice	9.36	6.20	212.12
(2) APXVSPP18-C-A20	C	From Leg	5.00	0.0000	119.00	No Ice	8.26	5.28	107.00
			0.00			1/2" Ice	8.81	5.74	156.52
			0.00			1" Ice	9.36	6.20	212.12
APXVTM14-C-120	A	From Leg	5.00	0.0000	119.00	No Ice	6.90	3.61	60.00
			0.00			1/2" Ice	7.35	3.97	99.53
			0.00			1" Ice	7.81	4.33	144.12
APXVTM14-C-120	B	From Leg	5.00	0.0000	119.00	No Ice	6.90	3.61	60.00
			0.00			1/2" Ice	7.35	3.97	99.53
			0.00			1" Ice	7.81	4.33	144.12
APXVTM14-C-120	C	From Leg	5.00	0.0000	119.00	No Ice	6.90	3.61	60.00
			0.00			1/2" Ice	7.35	3.97	99.53
			0.00			1" Ice	7.81	4.33	144.12
TD-RRH8x20-25	A	From Leg	4.50	0.0000	119.00	No Ice	4.72	1.70	75.00
			0.00			1/2" Ice	5.01	1.92	102.14
			0.00			1" Ice	5.32	2.14	132.80
TD-RRH8x20-25	B	From Leg	4.50	0.0000	119.00	No Ice	4.72	1.70	75.00
			0.00			1/2" Ice	5.01	1.92	102.14
			0.00			1" Ice	5.32	2.14	132.80
TD-RRH8x20-25	C	From Leg	4.50	0.0000	119.00	No Ice	4.72	1.70	75.00
			0.00			1/2" Ice	5.01	1.92	102.14
			0.00			1" Ice	5.32	2.14	132.80
800 MHz RRH	A	From Leg	4.50	0.0000	119.00	No Ice	2.83	3.45	82.00
			0.00			1/2" Ice	3.06	3.70	112.15

tnxTower	Job: 195' Self-Supporting Tower	Page: 6 of 9
All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	Project: CT255850 Windsor Locks	Date: 11:37:34 08/20/14
	Client: HPC; Sprint Site #CT43XC828	Designed by: Rob Adair

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	3.30	3.95	145.84
800 MHz RRH	B	From Leg	4.50	0.0000	119.00	No Ice	2.83	3.45	82.00
			0.00			1/2" Ice	3.06	3.70	112.15
			0.00			1" Ice	3.30	3.95	145.84
800 MHz RRH	C	From Leg	4.50	0.0000	119.00	No Ice	2.83	3.45	82.00
			0.00			1/2" Ice	3.06	3.70	112.15
			0.00			1" Ice	3.30	3.95	145.84
1900 MHz RRH	A	From Leg	4.50	0.0000	119.00	No Ice	3.80	2.91	144.00
			0.00			1/2" Ice	4.06	3.14	175.27
			0.00			1" Ice	4.34	3.39	210.18
1900 MHz RRH	B	From Leg	4.50	0.0000	119.00	No Ice	3.80	2.91	144.00
			0.00			1/2" Ice	4.06	3.14	175.27
			0.00			1" Ice	4.34	3.39	210.18
1900 MHz RRH	C	From Leg	4.50	0.0000	119.00	No Ice	3.80	2.91	144.00
			0.00			1/2" Ice	4.06	3.14	175.27
			0.00			1" Ice	4.34	3.39	210.18
15' T-frame sector mount	A	None		0.0000	119.00	No Ice	15.00	7.50	500.00
						1/2" Ice	20.60	10.30	650.00
						1" Ice	26.20	13.10	800.00
15' T-frame sector mount	B	None		0.0000	119.00	No Ice	15.00	7.50	500.00
						1/2" Ice	20.60	10.30	650.00
						1" Ice	26.20	13.10	800.00
15' T-frame sector mount	C	None		0.0000	119.00	No Ice	15.00	7.50	500.00
						1/2" Ice	20.60	10.30	650.00
						1" Ice	26.20	13.10	800.00
LLPX310R panel	A	From Leg	2.00	0.0000	108.00	No Ice	4.84	1.96	28.60
			0.00			1/2" Ice	5.19	2.22	54.56
			0.00			1" Ice	5.55	2.50	84.51
LLPX310R panel	B	From Leg	2.00	0.0000	108.00	No Ice	4.84	1.96	28.60
			0.00			1/2" Ice	5.19	2.22	54.56
			0.00			1" Ice	5.55	2.50	84.51
LLPX310R panel	C	From Leg	2.00	0.0000	108.00	No Ice	4.84	1.96	28.60
			0.00			1/2" Ice	5.19	2.22	54.56
			0.00			1" Ice	5.55	2.50	84.51
Samsung U-RAS DAP unit	A	From Leg	2.00	0.0000	108.00	No Ice	1.82	0.83	15.00
			-1.00			1/2" Ice	2.01	0.97	26.95
			0.00			1" Ice	2.20	1.13	41.23
Samsung U-RAS DAP unit	B	From Leg	2.00	0.0000	108.00	No Ice	1.82	0.83	15.00
			-1.00			1/2" Ice	2.01	0.97	26.95
			0.00			1" Ice	2.20	1.13	41.23
Samsung U-RAS DAP unit	C	From Leg	2.00	0.0000	108.00	No Ice	1.82	0.83	15.00
			-1.00			1/2" Ice	2.01	0.97	26.95
			0.00			1" Ice	2.20	1.13	41.23
Valmont B1827 Dual Standoff Mount	A	None		0.0000	108.00	No Ice	1.52	1.05	75.00
						1/2" Ice	1.80	1.26	119.98
						1" Ice	2.09	1.47	169.69
Valmont B1827 Dual Standoff Mount	B	None		0.0000	108.00	No Ice	1.52	1.05	75.00
						1/2" Ice	1.80	1.26	119.98
						1" Ice	2.09	1.47	169.69
Valmont B1827 Dual Standoff Mount	C	None		0.0000	108.00	No Ice	1.52	1.05	75.00
						1/2" Ice	1.80	1.26	119.98
						1" Ice	2.09	1.47	169.69
Obstruction light	A	From Leg	0.50	0.0000	99.00	No Ice	0.18	0.18	8.00
			0.00			1/2" Ice	0.25	0.25	10.47
			0.00			1" Ice	0.33	0.33	13.91
Obstruction light	B	From Leg	0.50	0.0000	99.00	No Ice	0.18	0.18	8.00
			0.00			1/2" Ice	0.25	0.25	10.47
			0.00			1" Ice	0.33	0.33	13.91
Obstruction light	C	From Leg	0.50	0.0000	99.00	No Ice	0.18	0.18	8.00

tnxTower	Job: 195' Self-Supporting Tower	Page: 7 of 9
All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	Project: CT255850 Windsor Locks	Date: 11:37:34 08/20/14
	Client: HPC; Sprint Site #CT43XC828	Designed by: Rob Adair

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft	°	ft		ft^2	ft^2	lb
			0.00			1/2" Ice	0.25	0.25	10.47
			0.00			1" Ice	0.33	0.33	13.91
GPS on 3' standoff	B	From Leg	1.00	0.0000	78.00	No Ice	0.60	0.60	50.00
			0.00			1/2" Ice	0.79	0.79	55.81
			0.00			1" Ice	0.99	0.99	63.86

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter		Aperture Area	Weight
				ft	°	°	ft	ft		ft^2	lb
2' HP dish	A	Paraboloid w/Shroud (HP)	From Leg	2.00	0.0000		109.00	2.00	No Ice	3.14	50.00
				1.00					1/2" Ice	3.41	67.50
				0.00					1" Ice	3.68	85.00
2' HP dish	B	Paraboloid w/Shroud (HP)	From Leg	2.00	0.0000		109.00	2.00	No Ice	3.14	50.00
				1.00					1/2" Ice	3.41	67.50
				0.00					1" Ice	3.68	85.00
2' HP dish	C	Paraboloid w/Shroud (HP)	From Leg	2.00	0.0000		109.00	2.00	No Ice	3.14	50.00
				1.00					1/2" Ice	3.41	67.50
				0.00					1" Ice	3.68	85.00

Solution Summary

Maximum Tower Deflections - Service Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
T1	199 - 189	10.386	9	0.4779	0.0955
T2	189 - 174	9.379	9	0.4762	0.0847
T3	174 - 154	7.868	9	0.4623	0.0558
T4	154 - 144	5.975	9	0.4040	0.0284
T5	144 - 124	5.148	9	0.3661	0.0193
T6	124 - 104	3.683	9	0.3009	0.0115
T7	104 - 84	2.484	9	0.2444	0.0074
T8	84 - 64	1.559	9	0.1807	0.0055
T9	64 - 44	0.874	9	0.1304	0.0038
T10	44 - 24	0.399	9	0.0795	0.0023
T11	24 - 4	0.116	9	0.0395	0.0011

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
199.00	Flash Beacon Lighting	9	10.386	0.4779	0.0955	288734
192.67	(2) 20' 4-Bay Dipole	9	9.748	0.4771	0.0894	230004
192.00	12' x 1.5" omni whip	9	9.681	0.4770	0.0886	212028

tnxTower	Job: 195' Self-Supporting Tower	Page: 8 of 9
All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	Project: CT255850 Windsor Locks	Date: 11:37:34 08/20/14
	Client: HPC; Sprint Site #CT43XC828	Designed by: Rob Adair

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.00	10' x 1.5" omni whip	9	9.480	0.4765	0.0861	193237
186.33	(2) 20' 4-Bay Dipole	9	9.109	0.4751	0.0803	514369
186.00	12' x 1.5" omni whip	9	9.076	0.4750	0.0797	701540
185.00	10' x 1.5" omni whip	9	8.975	0.4744	0.0778	919322
180.00	(2) 20' 4-Bay Dipole	9	8.470	0.4706	0.0678	101437
169.00	800-10121	9	7.374	0.4517	0.0474	27424
150.00	BXA-185060/12	9	5.635	0.3888	0.0236	14464
140.00	RR90-17-02DP	9	4.836	0.3517	0.0173	20754
130.00	APXV18-206517	9	4.096	0.3188	0.0134	18661
119.00	(2) APXVSPP18-C-A20	9	3.357	0.2869	0.0102	17407
109.00	2' HP dish	9	2.757	0.2592	0.0082	17051
108.00	LLPX310R panel	9	2.701	0.2563	0.0080	17017
99.00	Obstruction light	9	2.228	0.2285	0.0068	17641
78.00	GPS on 3' standoff	9	1.330	0.1645	0.0050	21078

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	199	Leg	A325N	0.6250	4	488.38	12885.40	0.038 ✓	1.333	Bolt DS
T2	189	Leg	A325N	0.6250	5	2398.41	12885.40	0.186 ✓	1.333	Bolt DS
T3	174	Leg	A325N	1.0000	6	7262.14	34537.80	0.210 ✓	1.333	Bolt Tension
T4	154	Leg	A325N	1.0000	6	7922.51	34554.90	0.229 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	6146.28	8156.25	0.754 ✓	1.333	Member Bearing
T5	144	Leg	A325N	1.0000	6	13499.40	34557.00	0.391 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	6845.59	8156.25	0.839 ✓	1.333	Member Bearing
T6	124	Leg	A325N	1.0000	6	19170.60	34557.00	0.555 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	7606.03	8156.25	0.933 ✓	1.333	Member Bearing
T7	104	Leg	A325N	1.0000	6	24833.20	34557.30	0.719 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	7799.85	13593.80	0.574 ✓	1.333	Member Bearing
T8	84	Leg	A325N	1.2500	6	29694.90	53996.00	0.550 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.2500	1	7523.73	16992.20	0.443 ✓	1.333	Member Bearing
T9	64	Leg	A325N	1.2500	6	33972.40	53995.90	0.629 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.2500	1	7525.66	16992.20	0.443 ✓	1.333	Member Bearing
T10	44	Leg	A325N	1.2500	6	37688.70	53994.80	0.698 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.2500	1	8645.76	16992.20	0.509 ✓	1.333	Member Bearing
T11	24	Leg	A325N	1.2500	6	40784.30	53995.70	0.755 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.2500	1	11997.80	16992.20	0.706 ✓	1.333	Member Bearing

tnxTower	Job: 195' Self-Supporting Tower	Page: 9 of 9
All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	Project: CT255850 Windsor Locks	Date: 11:37:34 08/20/14
	Client: HPC; Sprint Site #CT43XC828	Designed by: Rob Adair

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
T1	**199 - 189**	**Leg**	**1 3/4**	**3**	**-3053.65**	**71254.98**	**4.3**	**Pass**
		Diagonal	3/4	14	-825.87	6916.94	11.9	Pass
		Secondary Horizontal	3/4	37	0.70	12720.27	0.9	Pass
		Top Girt	7/8	4	-56.69	4281.69	1.3	Pass
		Bottom Girt	7/8	7	-273.52	4281.69	6.4	Pass
T2	**189 - 174**	**Leg**	**1 3/4**	**40**	**-15748.50**	**70178.58**	**22.4**	**Pass**
		Diagonal	3/4	51	-2191.48	6862.18	31.9	Pass
		Secondary Horizontal	3/4	88	0.70	12720.27	0.9	Pass
		Top Girt	7/8	41	-269.12	4281.69	6.3	Pass
		Bottom Girt	7/8	44	-752.46	4281.69	17.6	Pass
T3	**174 - 154**	**Leg**	**2**	**91**	**-52394.60**	**96898.70**	**54.1**	**Pass**
		Diagonal	7/8	99	-3223.92	10111.88	31.9	Pass
		Secondary Horizontal	7/8	153	0.88	17313.67	0.9	Pass
		Top Girt	1	92	-1006.36	7339.44	13.7	Pass
		Bottom Girt	1	95	-1090.07	5953.51	18.3	Pass
T4	**154 - 144**	**Leg**	**Pirod 105244**	**156**	**-56568.00**	**122940.05**	**46.0**	**Pass**
		Diagonal	L2 1/2x2 1/2x3/16	161	-7725.42	11339.12	68.1	Pass
T5	**144 - 124**	**Leg**	**Pirod 105217**	**165**	**-101690.00**	**184672.48**	**55.1**	**Pass**
		Diagonal	L2 1/2x2 1/2x3/16	179	-7583.72	9773.30	77.6	Pass
		Top Girt	L2 1/2x2 1/2x3/16	166	-1752.95	12153.61	14.4	Pass
T6	**124 - 104**	**Leg**	**Pirod 105218**	**183**	**-146791.00**	**258238.08**	**56.8**	**Pass**
		Diagonal	L3x3x3/16	185	-7982.05	12531.43	63.7 70.0 (b)	Pass
T7	**104 - 84**	**Leg**	**Pirod 105218**	**198**	**-189789.00**	**258238.08**	**73.5**	**Pass**
		Diagonal	L3x3x5/16	200	-7894.69	16062.12	49.2	Pass
T8	**84 - 64**	**Leg**	**Pirod 105219**	**213**	**-228773.00**	**343622.06**	**66.6**	**Pass**
		Diagonal	L3x3x5/16	215	-7807.97	13041.66	59.9	Pass
T9	**64 - 44**	**Leg**	**Pirod 105219**	**228**	**-264764.00**	**343622.06**	**77.1**	**Pass**
		Diagonal	L3x3x5/16	230	-7814.73	10712.61	72.9	Pass
T10	**44 - 24**	**Leg**	**Pirod 105220**	**243**	**-299733.00**	**440811.08**	**68.0**	**Pass**
		Diagonal	L3 1/2x3 1/2x5/16	251	-8232.06	15685.41	52.5	Pass
T11	**24 - 4**	**Leg**	**Pirod 105220**	**258**	**-332942.00**	**440811.08**	**75.5**	**Pass**
		Diagonal	L3 1/2x3 1/2x5/16	266	-10050.10	13122.56	76.6	Pass
							Summary	
						Leg (T9)	77.1	Pass
						Diagonal (T5)	77.6	Pass
						Secondary Horizontal (T1)	0.9	Pass
						Top Girt (T5)	14.4	Pass
						Bottom Girt (T3)	18.3	Pass
						Bolt Checks	80.8	Pass
						RATING =	**80.8**	**Pass**

EBI Consulting
environmental | engineering | due diligence

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

Sprint Existing Facility

Site ID: CT43XC828

Windsor Locks / MCM Tower

2-4 Volunteer Drive
Windsor Locks, CT 06096

September 5, 2014

EBI Project Number: 62144519

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

EBI Consulting
environmental | engineering | due diligence

September 5, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT43XC828 - Windsor Locks / MCM Tower

Site Total: 54.13% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at **2-4 Volunteer Drive, Windsor Locks, 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 **2-4 Volunteer Drive, Windsor Locks, 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) 3 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 **115 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	CT43XC828 - Windsor Locks / MCM Tower
Site Addresss	2-4 Volunteer Drive, Windsor Locks, CT, 06096
Site Type	Self Support Tower

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	3	60	5.9	115	109	1/2 "	0.5	0	208.04	0.63%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	115	109	1/2 "	0.5	0	39.00	0.21%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	115	109	1/2 "	0.5	0	138.69	0.74%
														Sector total Power Density Value:		1.58%

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	3	60	5.9	115	109	1/2 "	0.5	0	208.04	0.63%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	115	109	1/2 "	0.5	0	39.00	0.21%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	115	109	1/2 "	0.5	0	138.69	0.74%
														Sector total Power Density Value:		1.58%

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	3	60	5.9	115	109	1/2 "	0.5	0	208.04	0.63%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	115	109	1/2 "	0.5	0	39.00	0.21%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	115	109	1/2 "	0.5	0	138.69	0.74%
														Sector total Power Density Value:		1.58%

Site Composite MPE %	
Carrier	MPE %
Sprint	4.73%
AT&T	9.17%
Verizon Wireless	22.93%
Clearwire	0.93%
Clearwire MW	1.98%
Windsor FD	14.39%
Total Site MPE %	**54.13%**

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 **4.73% (1.58% from sector 1, 1.58% from sector 2 and 1.58% 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 **54.13%** 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