



HPC Wireless Services
46 Mill Plain Rd
Floor 2
Danbury, CT 06811
P: 203.797.1112

July 1, 2014

VIA EMAIL AND OVERNIGHT DELIVERY

Ms. Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Sprint Spectrum, L.P. – Notice of Exempt Modification
88 Parsonage Hill Road, Northford, CT

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 network in order to implement updated technology. In order to do so, Sprint will modify antenna and equipment configurations at a number of existing 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 Town Manager of the Town of North Branford.

Sprint plans to modify the existing facility at 88 Parsonage Hill Road Road, owned by Ochenkowski Towers, LLC (coordinates 41°22’9.01”N, -72°48’37.75”W). Attached are drawings depicting the planned changes, and documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration. Also included is a power density calculation 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. The height of the overall structure will be unaffected. Sprint proposes to add three (3) antennas and three (3) remote radio heads, all at a centerline height of approximately 190’ above the tower base. Additionally, Sprint will install one (1) new hybrid cable along the existing ice bridge to the tower.

Boston

Albany

Buffalo

Danbury

Philadelphia

Raleigh

Atlanta

2. The proposed changes will not extend the site boundaries. Sprint will install additional batteries and new rectifiers in existing cabinets. Thus, there will be no effect on the site compound or Sprint's leased area.

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 in the attached power density calculations, Sprint's operations at the site will result in a power density of 1.88%; the combined site operations will result in a total power density of 39.77%.

Please feel free to call me with any questions or concerns regarding this matter. Thank you for your consideration.

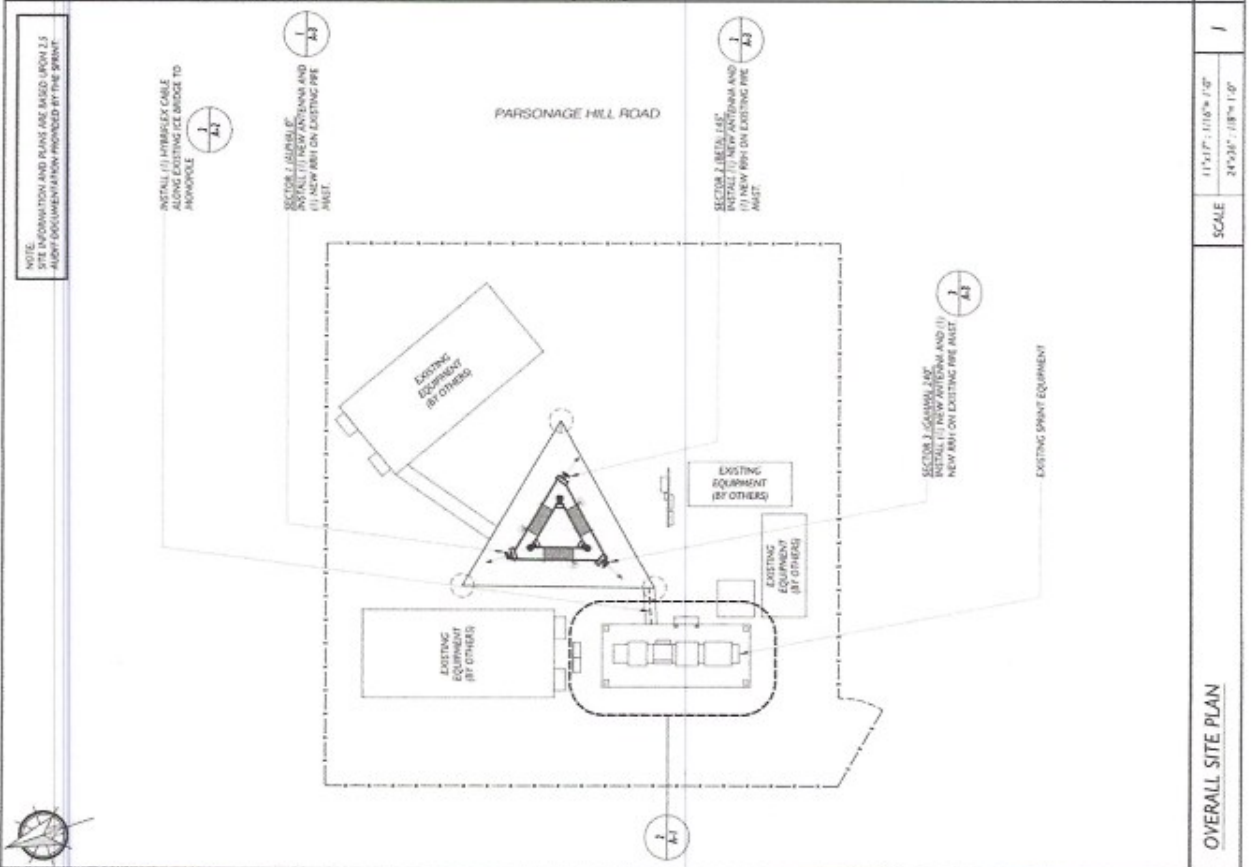
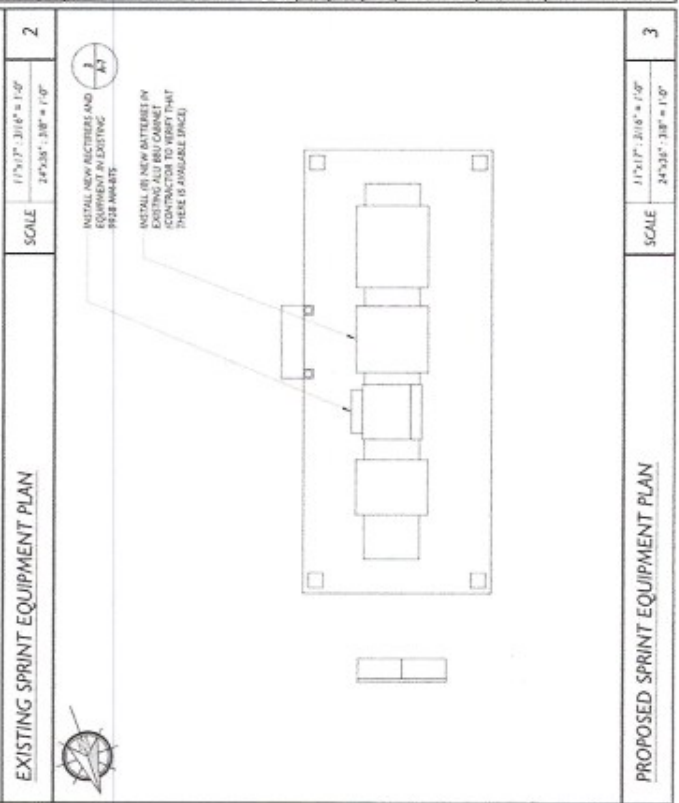
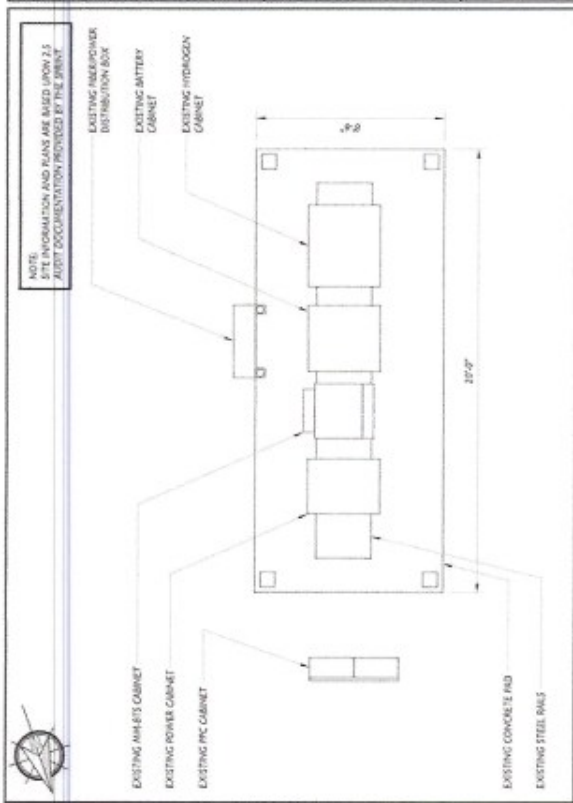
Respectfully submitted,

By: 
Eric Dahl, Consultant
edahl@comcast.net
860-227-1975

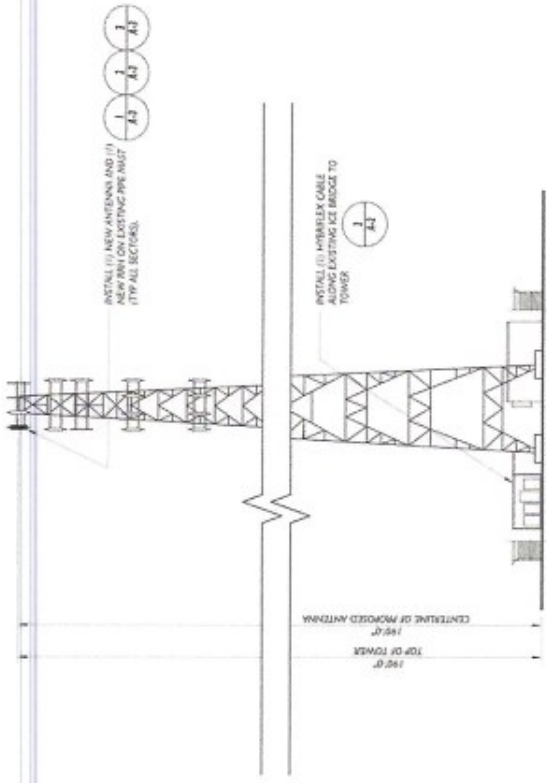
Attachments

cc: Mr. Michael T. Paulhus, Town Manager, Town of North Branford
Jean Szwabowski, J J Ochenwowski & K W Ochenkowski, Property Owners

<p>Sprint 8550 SPRINT PARKWAY OVERLAND PARK, KS 66205 (817) 436-7466</p>		<p>A SAATCHI DESIGN GROUP 1000 PARK AVENUE NEW YORK, NY 10022</p>		<p>ENGINEER'S LICENSE MICHAEL L. BOHLINGER</p>		<p>PROFESSIONAL ENGINEER CONNECTICUT LICENSE NO. 20905</p>		<p>PROJECT NO. A SDGSP30 DRAWING NO. CT03XC030 DATE: 2.5 GHz</p>		<p>PROJECT LOCATION: NORTHFORD / OSHENCOWSKI 88 PARSONAGE HILL ROAD NORTHFORD, CT 06472</p>		<p>SITE PLAN</p>		<p>DATE: 2.1.11 PROJECT NO.: 600376 DRAWING NO.: 03 SHEET NO.: A-1</p>	
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NOTE:
SITE INFORMATION AND PLANS ARE BASED UPON 2.5
AERIAL DOCUMENTATION PROVIDED BY THE DNR.



REV	DATE	BY	DESCRIPTION
01	11-14	ASD	ISSUE FOR PERMIT
02	11-14	ASD	ISSUE FOR PERMIT
03	11-14	ASD	ISSUE FOR PERMIT
04	11-14	ASD	ISSUE FOR PERMIT
05	11-14	ASD	ISSUE FOR PERMIT
06	11-14	ASD	ISSUE FOR PERMIT
07	11-14	ASD	ISSUE FOR PERMIT
08	11-14	ASD	ISSUE FOR PERMIT
09	11-14	ASD	ISSUE FOR PERMIT
10	11-14	ASD	ISSUE FOR PERMIT
11	11-14	ASD	ISSUE FOR PERMIT
12	11-14	ASD	ISSUE FOR PERMIT
13	11-14	ASD	ISSUE FOR PERMIT
14	11-14	ASD	ISSUE FOR PERMIT
15	11-14	ASD	ISSUE FOR PERMIT
16	11-14	ASD	ISSUE FOR PERMIT
17	11-14	ASD	ISSUE FOR PERMIT
18	11-14	ASD	ISSUE FOR PERMIT
19	11-14	ASD	ISSUE FOR PERMIT
20	11-14	ASD	ISSUE FOR PERMIT

Sprint
850 SPRING PARKWAY
OVERLAND PARK, MO 66207
(816) 435-7486



ENGINEER'S LICENSE
MICHAEL L. BOHLINGER



PROFESSIONAL ENGINEER
CONNECTICUT LICENSE NO. 10985
ASDGP30
CT03XC030
2.5 GHz

NORTHORD / GSHENCOWSKI
88 PARSONAGE HILL ROAD
NORTHFORD, CT 06412

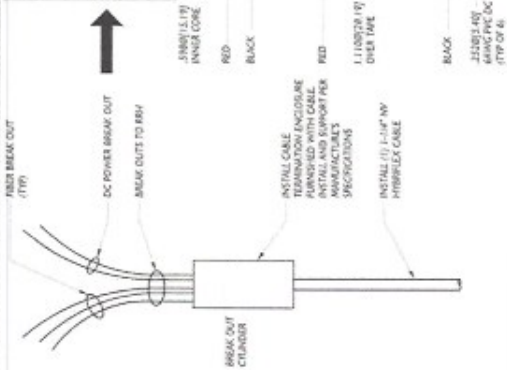
BUILDING ELEVATION
AND CABLE PLAN

PROJECT NO. 2014
DATE: 11-14
DRAWN BY: ASDGP
CHECKED BY: ASDGP
DATE: 11-14
SCALE: A-2

ELEVATION
SCALE: 1/8" = 1'-0" / 1/4" = 1'-0"

HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE

CABLE	LENGTH	DC CONDUCTOR	CABLE DIAMETER
FIBER ONLY	WIRE	USE NY HYBRILEX	3/8"
HYBRILEX	OVER 200'	8 AWG	1 1/4"
HYBRILEX	225'-300'	6 AWG	1 1/4"
HYBRILEX	325'-375'	4 AWG	1 1/4"



HYBRID BREAK OUT DETAIL
SCALE: 1/8" = 1'-0" / 1/4" = 1'-0"



Structural Analysis Report

Prepared for:

HPC Wireless
22 Shelter Rock Ln., Building C
Danbury, CT 06810

ATTN: Ms. Debra Overbey

Structure : 195 ft Central Tower Self Supported Tower
Proposed Carrier : Sprint
Site ID : CT03XC030
Site Location : Northford, CT
County : New Haven
Date : May 14, 2014
Usage : 63.0% Legs, 66.0% Diagonals, 6.0% Horizontals.





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May 14, 2014

Page 1

Introduction

The purpose of this report is to summarize results of the structural analysis performed on the 195 ft Central Tower Self Supported Tower located at Northford, CT, New Haven County (site # CT03XC030). The tower was originally designed and manufactured by Central Tower. Additional information of the tower from CENTEK Project No14048.001 dated February 25, 2014 and Armor Tower structural analysis dated December 17, 2012.

Analysis

The tower was analyzed using Semaan Engineering Solutions, Inc., Software. The analysis assumes that the tower is in good, undamaged, and non-corroded condition. The analysis was performed in conformance with **TIA/EIA-222 Rev F and local building codes for a basic wind speed of 90 mph no ice and 78 mph with 1/2" radial ice (fastest mile)**. This is in conformance with the IBC 2006: Section 1609.1.1, Exception (4) and Section 3108.4.

Basic Wind Speed: 90.0 mph
 Radial Ice: 78 mph w/ 0.50" ice
 Code: TIA/EIA-222 Rev F

Antenna Loads

The following antenna loads were used in the tower analysis.

Existing Antennas

Elev. (ft)	Qty	Antennas	Mount	Coax (in)	Carrier
190.0	6	FD-RRH-2X50-800	15-ft Triangular Mount	(3) 1-1/4" Hybriflex (1) 1/2"	Sprint
	3	APXVSP18-C-A20			
180.0	3	TMA's	(3) Sector Frames	(12) 1 5/8" (stacked 6 on 6) (1) 1 5/8" Hibriflex	T-Mobile
	6	AIR 21			
172.0	3	AM-X-CD-16-65-00T-RET	(3) Sector Frames	(6) 1 5/8" (stacked 3 on 3) (2) Copper Wire (1) RG6 Fiber	AT&T Wireless
	6	RRUS11			
	6	21401 TMA			
	3	800 10121			
	1	DC6-48-60-18-8F			
160.0	12	DB844H90E-XY	(3) Sector Frames	(12) 1 5/8" (stacked 6 on 6)	Nextel
145.0	6	FD9R6004-2C-3L	(3) Sector Frames	(12) 1 5/8" (12) 1/2" Fiber	Verizon
	3	BXA-70063/6CF			
	3	BXA-171085/8CF			
	6	LPA-80080/4CF			

Proposed Antennas

Elev. (ft)	Qty	Antennas	Mount	Coax (in)	Carrier
190.0	3	APXVTM14-C-I20	On existing	(1) Hybrid Cable	Sprint
	3	TD-RRH-8X20-25	15-ft Triangular Mount		

The transmission lines shall be distributed and/or stacked over the tower faces, such that no more than (14) lines are exposed to the wind on any one face.

May 14, 2014

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Results

The existing Self Supported Tower is structurally capable of supporting the existing and proposed antennas. The maximum structure usage is: 63.0% Legs, 66.0% Diagonals, and 6.0% Horizontals.

Leg Forces	Original Design Reactions	Current Analysis Reactions	% Of Design
Uplift (Kips)	463.50	313.28	67.6
Axial (Kips)	525.70	372.96	70.9
Shear (Kips)	50.90	38.06	74.8

The analysis reactions are less than the design reactions therefore no foundation modifications are required.

Conclusion

Based on the analysis results, the existing structure meets the requirements per the TIA/EIA-222 Rev F standards for a basic wind speed of 90 mph no ice and 78 mph with 1/2" radial ice.

If you have any questions or require additional information, please call 402-289-1888.

Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

- Information supplied by the client regarding the structure itself, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of Semaan Engineering Solutions, or generated by field inspections or measurements of the structure.

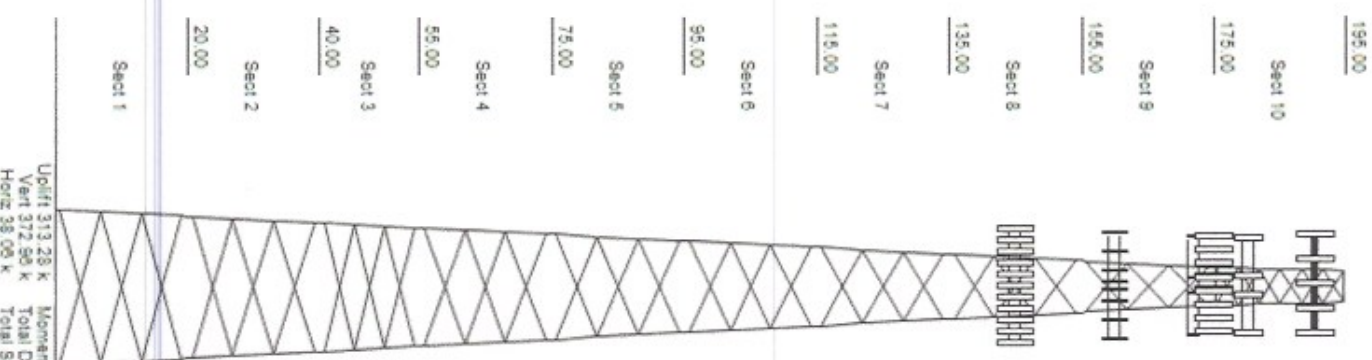
It is the responsibility of the client to ensure that the information provided to Semaan Engineering Solutions and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated; and we, therefore, assume that their capacity has not significantly changed from the "as new" condition.

All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/EIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Semaan Engineering Solutions is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

Job Information
 Tower : CT03XC030 Location : Northford, CT
 Code : TIA/EA-222 Rev F Shape : Triangle Base Width : 23.50 ft
 Client : HPC Wireless - CT Top Width : 5.00 ft

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 Loads: 90 mph no ice
 78 mph w / 1/2" radial ice
 50 mph no ice



Section		Leg Members		Diagonal Members		Horizontal Members	
1	SOL 50 ksi	5" SOLID	SAE 36 ksi 4X4X0.375	SAE 36 ksi	SAE 36 ksi	SAE 36 ksi	SAE 36 ksi
2	SOL 50 ksi	4 3/4" SOLID	SAE 36 ksi 4X4X0.3125	SAE 36 ksi	SAE 36 ksi	SAE 36 ksi	SAE 36 ksi
3	SOL 50 ksi	4 3/4" SOLID	SAE 36 ksi 4X4X0.25	SAE 36 ksi	SAE 36 ksi	SAE 36 ksi	SAE 36 ksi
4	SOL 50 ksi	4 1/2" SOLID	SAE 36 ksi 3.5X3.5X0.3125	SAE 36 ksi	SAE 36 ksi	SAE 36 ksi	SAE 36 ksi
5	SOL 50 ksi	4 1/2" SOLID	SAE 36 ksi 3X3X0.375	SAE 36 ksi	SAE 36 ksi	SAE 36 ksi	SAE 36 ksi
6	SOL 50 ksi	4 1/4" SOLID	SAE 36 ksi 3X3X0.25	SAE 36 ksi	SAE 36 ksi	SAE 36 ksi	SAE 36 ksi
7	SOL 50 ksi	4 1/4" SOLID	SAE 36 ksi 2.5X2.5X0.3125	SAE 36 ksi	SAE 36 ksi	SAE 36 ksi	SAE 36 ksi
8	SOL 50 ksi	4" SOLID	SAE 36 ksi 2.5X2.5X0.1875	SAE 36 ksi	SAE 36 ksi	SAE 36 ksi	SAE 36 ksi
9	SOL 50 ksi	3 3/4" SOLID	SAE 36 ksi 1 1/4" SOLID	SOL 36 ksi	SOL 36 ksi	SOL 36 ksi	SOL 36 ksi
10	SOL 50 ksi	3" SOLID	SOL 36 ksi 1 1/4" SOLID	SOL 36 ksi	SOL 36 ksi	SOL 36 ksi	SOL 36 ksi

Discrete Appurtenance

Elev (ft)	Type	Qty	Description
180.00	Panel	3	APXVTM4-C-120
190.00	Panel	3	TD-RRH-8X20-25
190.00	Panel	6	FD-RRH-2X50-800
190.00	Panel	3	APXVSP18-C-A20
180.00	Platform	1	15-ft Triangular Mount TMA
180.00	Panel	3	TMA
180.00	Panel	6	AIR 21
180.00	Mounting Frame	3	Sector Frames
172.00	Panel	3	AMX-CD-16-65-00T-RET
172.00	Panel	6	RRUS11
172.00	Panel	6	21401 TMA
172.00	Panel	3	800 10121
172.00	Mounting Frame	3	Sector Frames
172.00	Panel	1	DC6-48-60-18-8F
160.00	Panel	12	DB84H90E-XY
160.00	Mounting Frame	3	Sector Frames
145.00	Panel	6	FD9R8004-2C-3L
145.00	Panel	3	BXA-70063/6CF
145.00	Panel	3	BXA-171085/6CF
145.00	Panel	6	LPA-80090/4CF
145.00	Mounting Frame	3	Sector Frames
80.00	Straight Arm	1	2 ft Standoff
80.00	Other	1	GPS antenna
80.00	Straight Arm	1	2 ft Standoff
80.00	Other	1	GPS antenna

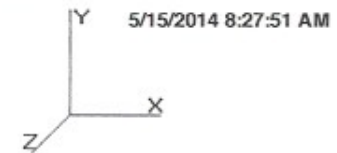
Linear Appurtenance

Elev (ft)	From	To	Qty	Description
0.000	190.00	190.00	3	W/G Ladder
0.000	190.00	190.00	1	Hybrid Cable
0.000	190.00	190.00	1	1/2" Coax
0.000	190.00	190.00	3	1-1/4" Hybridflex
0.000	180.00	180.00	1	1 5/8" Hybridflex
0.000	180.00	180.00	12	1 5/8" Coax
0.000	172.00	172.00	1	RG6 Fiber
0.000	172.00	172.00	2	Copper Wire
0.000	172.00	172.00	6	1 5/8" Coax
0.000	160.00	160.00	12	1 5/8" Coax
0.000	145.00	145.00	1	1/2" Fiber
0.000	145.00	145.00	12	1 5/8" Coax

Uplift 313.28 K Moment 7,195.39 ft-K
 Vert 372.90 K Total Down 71.49 K
 Horiz 38.08 K Total Shear 83.60 K

Site Number: CT03XC030
 Location: Northford, CT

Code: TIA/EIA-222 Rev F



Gh : 1.12

Section Forces

LoadCase Normal No Ice 90.00 mph Wind Normal To Face with No Ice

Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

Wind Sect Seq	Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face			
10	185.0	33.93	0.00	26.17	0.00	0.24	2.47	1.00	1.00	0.60	15.67	11.25	0.00	2,936.1	0.0	1,468.03	851.70	2,319.72	1			
9	165.0	32.84	11.67	36.55	0.00	0.34	2.18	1.00	1.00	0.63	34.71	15.00	0.00	3,657.0	0.0	2,778.32	1,099.0	3,877.39	1			
8	145.0	31.65	13.64	53.94	0.00	0.38	2.11	1.00	1.00	0.64	48.27	15.00	0.00	4,767.8	0.0	3,603.79	1,059.2	4,663.03	1			
7	125.0	30.34	18.92	54.87	0.00	0.34	2.21	1.00	1.00	0.63	53.35	15.00	0.00	5,355.5	0.0	3,982.77	1,015.2	4,998.03	2			
6	105.0	28.86	21.59	54.87	0.00	0.29	2.31	1.00	1.00	0.61	55.28	15.00	0.00	6,108.0	0.0	4,115.22	965.92	5,081.14	2			
5	85.00	27.17	28.39	55.71	0.00	0.28	2.35	1.00	1.00	0.61	62.37	15.00	0.00	6,696.7	0.0	4,442.21	909.33	5,351.54	2			
4	65.00	25.17	36.17	56.54	0.00	0.27	2.37	1.00	1.00	0.61	70.55	15.00	0.00	7,114.5	0.0	4,696.20	842.24	5,538.44	2			
3	47.50	23.01	38.57	42.41	0.00	0.29	2.33	1.00	1.00	0.61	64.53	11.25	0.00	6,015.3	0.0	3,857.19	577.53	4,434.72	2			
2	30.00	20.74	42.82	56.54	0.00	0.24	2.46	1.00	1.00	0.60	76.74	15.00	0.00	8,125.9	0.0	4,367.96	693.94	5,061.90	2			
1	10.00	20.74	46.66	57.38	0.00	0.23	2.50	1.00	1.00	0.60	80.93	15.00	0.00	9,472.8	0.0	4,670.95	693.94	5,364.89	2			
														60,249.5	0.0			46,690.80				

LoadCase 60 deg No Ice 90.00 mph Wind at 60 deg From Face with No Ice

Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

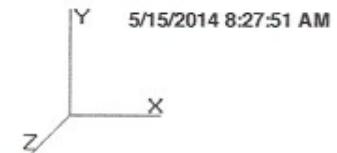
Wind Sect Seq	Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face			
10	185.0	33.93	0.00	26.17	0.00	0.24	2.47	0.80	1.00	0.60	15.67	11.25	0.00	2,936.1	0.0	1,468.03	851.70	2,319.72	1			
9	165.0	32.84	11.67	36.55	0.00	0.34	2.18	0.80	1.00	0.63	32.38	15.00	0.00	3,657.0	0.0	2,591.51	1,099.0	3,690.59	1			
8	145.0	31.65	13.64	53.94	0.00	0.38	2.11	0.80	1.00	0.64	45.54	15.00	0.00	4,767.8	0.0	3,400.05	1,059.2	4,459.29	1			
7	125.0	30.34	18.92	54.87	0.00	0.34	2.21	0.80	1.00	0.63	49.56	15.00	0.00	5,355.5	0.0	3,700.25	1,015.2	4,715.51	2			
6	105.0	28.86	21.59	54.87	0.00	0.29	2.31	0.80	1.00	0.61	50.97	15.00	0.00	6,108.0	0.0	3,793.85	965.92	4,759.77	2			
5	85.00	27.17	28.39	55.71	0.00	0.28	2.35	0.80	1.00	0.61	56.69	15.00	0.00	6,696.7	0.0	4,037.87	909.33	4,947.21	2			
4	65.00	25.17	36.17	56.54	0.00	0.27	2.37	0.80	1.00	0.61	63.31	15.00	0.00	7,114.5	0.0	4,214.61	842.24	5,056.85	2			
3	47.50	23.01	38.57	42.41	0.00	0.29	2.33	0.80	1.00	0.61	56.82	11.25	0.00	6,015.3	0.0	3,396.15	577.53	3,973.68	2			
2	30.00	20.74	42.82	56.54	0.00	0.24	2.46	0.80	1.00	0.60	68.18	15.00	0.00	8,125.9	0.0	3,880.54	693.94	4,574.48	2			
1	10.00	20.74	46.66	57.38	0.00	0.23	2.50	0.80	1.00	0.60	71.60	15.00	0.00	9,472.8	0.0	4,132.33	693.94	4,826.27	2			
														60,249.5	0.0			43,323.38				

LoadCase 90 deg No Ice 90.00 mph Wind at 90 deg From Face with No Ice

Allow Stress Inc: 1.333
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10	185.0	33.93	0.00	26.17	0.00	0.24	2.47	0.85	1.00	0.60	15.67	11.25	0.00	2,936.1	0.0	1,468.03	851.70	2,319.72	1

Site Number: CT03XC030
 Location: Northford, CT



Code: TIA/EIA-222 Rev F

Gh : 1.12

Section Forces

9	165.0	32.84	11.67	36.55	0.00	0.34	2.18	0.85	1.00	0.63	32.96	15.00	0.00	3,657.0	0.0	2,638.21	1,099.0	3,737.29	1		
8	145.0	31.65	13.64	53.94	0.00	0.38	2.11	0.85	1.00	0.64	46.22	15.00	0.00	4,767.8	0.0	3,450.98	1,059.2	4,510.22	1		
7	125.0	30.34	18.92	54.87	0.00	0.34	2.21	0.85	1.00	0.63	50.51	15.00	0.00	5,355.5	0.0	3,770.88	1,015.2	4,786.14	2		
6	105.0	28.86	21.59	54.87	0.00	0.29	2.31	0.85	1.00	0.61	52.05	15.00	0.00	6,108.0	0.0	3,874.19	965.92	4,840.11	2		
5	85.00	27.17	28.39	55.71	0.00	0.28	2.35	0.85	1.00	0.61	58.11	15.00	0.00	6,696.7	0.0	4,138.96	909.33	5,048.29	2		
4	65.00	25.17	36.17	56.54	0.00	0.27	2.37	0.85	1.00	0.61	65.12	15.00	0.00	7,114.5	0.0	4,335.01	842.24	5,177.25	2		
3	47.50	23.01	38.57	42.41	0.00	0.29	2.33	0.85	1.00	0.61	58.75	11.25	0.00	6,015.3	0.0	3,511.41	577.53	4,088.94	2		
2	30.00	20.74	42.82	56.54	0.00	0.24	2.46	0.85	1.00	0.60	70.32	15.00	0.00	8,125.9	0.0	4,002.39	693.94	4,696.33	2		
1	10.00	20.74	46.66	57.38	0.00	0.23	2.50	0.85	1.00	0.60	73.93	15.00	0.00	9,472.8	0.0	4,266.99	693.94	4,960.93	2		
													60,249.5	0.0			44,165.23				

LoadCase Normal Ice

77.94 mph Wind Normal To Face with Ice

Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

Wind Sect Seq	Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face		
10	185.0	25.45	0.00	43.04	16.87	0.39	2.08	1.00	1.00	0.65	27.90	11.25	1.25	3,616.8	680.6	1,648.39	681.32	2,329.71	1		
9	165.0	24.63	11.67	62.47	25.92	0.53	1.86	1.00	1.00	0.71	56.22	15.00	1.67	5,072.3	1,415.3	2,879.84	879.21	3,759.05	1		
8	145.0	23.74	13.64	89.40	35.46	0.57	1.82	1.00	1.00	0.74	79.55	15.00	1.67	6,747.0	1,979.2	3,841.19	847.34	4,688.54	1		
7	125.0	22.75	18.92	91.09	36.31	0.50	1.90	1.00	1.00	0.70	82.46	15.00	1.67	7,686.5	2,330.9	3,976.09	812.16	4,788.25	1		
6	105.0	21.65	21.59	91.97	37.20	0.44	2.00	1.00	1.00	0.67	82.96	15.00	1.67	8,519.8	2,411.8	3,998.02	772.69	4,770.72	1		
5	85.00	20.38	28.39	93.72	38.12	0.41	2.05	1.00	1.00	0.65	89.73	15.00	1.67	9,314.4	2,617.7	4,181.84	727.42	4,909.27	1		
4	65.00	18.87	36.17	95.49	39.05	0.39	2.09	1.00	1.00	0.65	97.90	15.00	1.67	9,965.9	2,851.4	4,307.84	673.75	4,981.59	1		
3	47.50	17.26	38.57	74.48	32.15	0.40	2.06	1.00	1.00	0.65	87.15	11.25	1.25	8,494.1	2,478.8	3,456.43	462.00	3,918.43	1		
2	30.00	15.55	42.82	97.15	40.71	0.34	2.19	1.00	1.00	0.63	103.97	15.00	1.67	11,175.0	3,049.2	3,953.00	555.12	4,508.12	1		
1	10.00	15.55	46.66	98.95	41.67	0.32	2.24	1.00	1.00	0.62	108.35	15.00	1.67	12,645.5	3,172.7	4,201.08	555.12	4,756.20	1		
													83,237.2	22,987.7			43,409.87				

LoadCase 60 deg Ice

77.94 mph Wind at 60 deg From Face with Ice

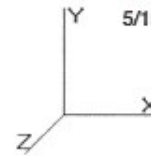
Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

Wind Sect Seq	Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face		
10	185.0	25.45	0.00	43.04	16.87	0.39	2.08	0.80	1.00	0.65	27.90	11.25	1.25	3,616.8	680.6	1,648.39	681.32	2,329.71	1		
9	165.0	24.63	11.67	62.47	25.92	0.53	1.86	0.80	1.00	0.71	53.88	15.00	1.67	5,072.3	1,415.3	2,760.27	879.21	3,639.48	1		
8	145.0	23.74	13.64	89.40	35.46	0.57	1.82	0.80	1.00	0.74	76.82	15.00	1.67	6,747.0	1,979.2	3,709.42	847.34	4,556.77	1		
7	125.0	22.75	18.92	91.09	36.31	0.50	1.90	0.80	1.00	0.70	78.67	15.00	1.67	7,686.5	2,330.9	3,793.61	812.16	4,605.77	1		
6	105.0	21.65	21.59	91.97	37.20	0.44	2.00	0.80	1.00	0.67	78.64	15.00	1.67	8,519.8	2,411.8	3,789.96	772.69	4,562.66	1		
5	85.00	20.38	28.39	93.72	38.12	0.41	2.05	0.80	1.00	0.65	84.05	15.00	1.67	9,314.4	2,617.7	3,917.26	727.42	4,644.68	1		
4	65.00	18.87	36.17	95.49	39.05	0.39	2.09	0.80	1.00	0.65	90.67	15.00	1.67	9,965.9	2,851.4	3,989.53	673.75	4,663.28	1		
3	47.50	17.26	38.57	74.48	32.15	0.40	2.06	0.80	1.00	0.65	79.44	11.25	1.25	8,494.1	2,478.8	3,150.54	462.00	3,612.54	1		
2	30.00	15.55	42.82	97.15	40.71	0.34	2.19	0.80	1.00	0.63	95.41	15.00	1.67	11,175.0	3,049.2	3,627.41	555.12	4,182.53	1		
1	10.00	15.55	46.66	98.95	41.67	0.32	2.24	0.80	1.00	0.62	99.01	15.00	1.67	12,645.5	3,172.7	3,839.22	555.12	4,394.34	1		
													83,237.2	22,987.7			41,191.74				

Site Number: CT03XC030
 Location: Northford, CT

5/15/2014 8:27:51 AM

Code: TIA/EIA-222 Rev F



Gh : 1.12

Section Forces

LoadCase 90 deg Ice

77.94 mph Wind at 90 deg From Face with Ice

Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

Sect Seq	Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice		Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face		
													Total Weight (lb)	Weight Ice (lb)						
10	185.0	25.45	0.00	43.04	16.87	0.39	2.08	0.85	1.00	0.65	27.90	11.25	1.25	3,616.8	680.6	1,648.39	681.32	2,329.71	1	
9	165.0	24.63	11.67	62.47	25.92	0.53	1.86	0.85	1.00	0.71	54.47	15.00	1.67	5,072.3	1,415.3	2,790.16	879.21	3,669.37	1	
8	145.0	23.74	13.64	89.40	35.46	0.57	1.82	0.85	1.00	0.74	77.50	15.00	1.67	6,747.0	1,979.2	3,742.36	847.34	4,589.71	1	
7	125.0	22.75	18.92	91.09	36.31	0.50	1.90	0.85	1.00	0.70	79.62	15.00	1.67	7,686.5	2,330.9	3,839.23	812.16	4,651.39	1	
6	105.0	21.65	21.59	91.97	37.20	0.44	2.00	0.85	1.00	0.67	79.72	15.00	1.67	8,519.8	2,411.8	3,841.98	772.69	4,614.67	1	
5	85.0	20.38	28.39	93.72	38.12	0.41	2.05	0.85	1.00	0.65	85.47	15.00	1.67	9,314.4	2,617.7	3,983.40	727.42	4,710.83	1	
4	65.0	18.87	36.17	95.49	39.05	0.39	2.09	0.85	1.00	0.65	92.48	15.00	1.67	9,965.9	2,851.4	4,069.11	673.75	4,742.86	1	
3	47.50	17.26	38.57	74.48	32.15	0.40	2.06	0.85	1.00	0.65	81.37	11.25	1.25	8,494.1	2,478.8	3,227.01	462.00	3,689.01	1	
2	30.00	15.55	42.82	97.15	40.71	0.34	2.19	0.85	1.00	0.63	97.55	15.00	1.67	11,175.0	3,049.2	3,708.81	555.12	4,263.93	1	
1	10.00	15.55	46.66	98.95	41.67	0.32	2.24	0.85	1.00	0.62	101.35	15.00	1.67	12,645.5	3,172.7	3,929.68	555.12	4,484.80	1	
													83,237.2	22,987.7			41,746.27			

LoadCase Normal

50.00 mph Wind Normal To Face with No Ice

Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

Sect Seq	Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice		Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face		
													Total Weight (lb)	Weight Ice (lb)						
10	185.0	10.47	0.00	26.17	0.00	0.24	2.47	1.00	1.00	0.60	15.67	11.25	0.00	2,936.1	0.0	453.09	262.87	715.96	1	
9	165.0	10.14	11.67	36.55	0.00	0.34	2.18	1.00	1.00	0.63	34.71	15.00	0.00	3,657.0	0.0	857.50	339.22	1,196.73	1	
8	145.0	9.77	13.64	53.94	0.00	0.38	2.11	1.00	1.00	0.64	48.27	15.00	0.00	4,767.8	0.0	1,112.28	326.93	1,439.21	1	
7	125.0	9.36	18.92	54.87	0.00	0.34	2.21	1.00	1.00	0.63	53.35	15.00	0.00	5,355.5	0.0	1,229.25	313.35	1,542.60	2	
6	105.0	8.91	21.59	54.87	0.00	0.29	2.31	1.00	1.00	0.61	55.28	15.00	0.00	6,108.0	0.0	1,270.13	298.12	1,568.25	2	
5	85.0	8.39	28.39	55.71	0.00	0.28	2.35	1.00	1.00	0.61	62.37	15.00	0.00	6,696.7	0.0	1,371.05	280.66	1,651.71	2	
4	65.0	7.77	36.17	56.54	0.00	0.27	2.37	1.00	1.00	0.61	70.55	15.00	0.00	7,114.5	0.0	1,449.44	259.95	1,709.39	2	
3	47.50	7.10	38.57	42.41	0.00	0.29	2.33	1.00	1.00	0.61	64.53	11.25	0.00	6,015.3	0.0	1,190.49	178.25	1,368.74	2	
2	30.00	6.40	42.82	56.54	0.00	0.24	2.46	1.00	1.00	0.60	76.74	15.00	0.00	8,125.9	0.0	1,348.14	214.18	1,562.31	2	
1	10.00	6.40	46.66	57.38	0.00	0.23	2.50	1.00	1.00	0.60	80.93	15.00	0.00	9,472.8	0.0	1,441.65	214.18	1,655.83	2	
													60,249.5	0.0			14,410.74			

LoadCase 60 deg

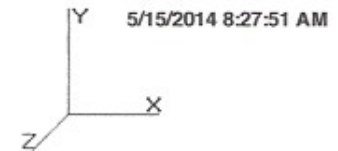
50.00 mph Wind at 60 deg From Face with No Ice

Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

Sect Seq	Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice		Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face	
													Total Weight (lb)	Weight Ice (lb)					
10	185.0	10.47	0.00	26.17	0.00	0.24	2.47	0.80	1.00	0.60	15.67	11.25	0.00	2,936.1	0.0	453.09	262.87	715.96	1
9	165.0	10.14	11.67	36.55	0.00	0.34	2.18	0.80	1.00	0.63	32.38	15.00	0.00	3,657.0	0.0	799.85	339.22	1,139.07	1

Site Number: CT03XC030
 Location: Northford, CT

Code: TIA/EIA-222 Rev F



Gh : 1.12

Section Forces

8	145.0	9.77	13.64	53.94	0.00	0.38	2.11	0.80	1.00	0.64	45.54	15.00	0.00	4,767.8	0.0	1,049.40	326.93	1,376.32	1
7	125.0	9.36	18.92	54.87	0.00	0.34	2.21	0.80	1.00	0.63	49.56	15.00	0.00	5,355.5	0.0	1,142.05	313.35	1,455.40	2
6	105.0	8.91	21.59	54.87	0.00	0.29	2.31	0.80	1.00	0.61	50.97	15.00	0.00	6,108.0	0.0	1,170.94	298.12	1,469.07	2
5	85.00	8.39	28.39	55.71	0.00	0.28	2.35	0.80	1.00	0.61	56.69	15.00	0.00	6,696.7	0.0	1,246.26	280.66	1,526.92	2
4	65.00	7.77	36.17	56.54	0.00	0.27	2.37	0.80	1.00	0.61	63.31	15.00	0.00	7,114.5	0.0	1,300.81	259.95	1,560.76	2
3	47.50	7.10	38.57	42.41	0.00	0.29	2.33	0.80	1.00	0.61	56.82	11.25	0.00	6,015.3	0.0	1,048.19	178.25	1,226.44	2
2	30.00	6.40	42.82	56.54	0.00	0.24	2.46	0.80	1.00	0.60	68.18	15.00	0.00	8,125.9	0.0	1,197.70	214.18	1,411.88	2
1	10.00	6.40	46.66	57.38	0.00	0.23	2.50	0.80	1.00	0.60	71.60	15.00	0.00	9,472.8	0.0	1,275.41	214.18	1,489.59	2
														60,249.5	0.0			13,371.41	

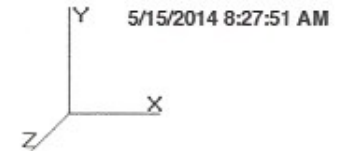
LoadCase 90 deg

50.00 mph Wind at 90 deg From Face with No Ice

Allow Stress Inc: 1.333
 Dead LF: 1.000
 Wind LF: 1.000

Sect Seq	Wind Height (ft)	qz (psf)	Total Area		Ice Area		Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Weight		Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face
			Flat (sqft)	Round (sqft)	Round (sqft)	Total (lb)								Ice (lb)					
10	185.0	10.47	0.00	26.17	0.00	0.24	2.47	0.85	1.00	0.60	15.67	11.25	0.00	2,936.1	0.0	453.09	262.87	715.96	1
9	165.0	10.14	11.67	36.55	0.00	0.34	2.18	0.85	1.00	0.63	32.96	15.00	0.00	3,657.0	0.0	814.26	339.22	1,153.48	1
8	145.0	9.77	13.64	53.94	0.00	0.38	2.11	0.85	1.00	0.64	46.22	15.00	0.00	4,767.8	0.0	1,065.12	326.93	1,392.04	1
7	125.0	9.36	18.92	54.87	0.00	0.34	2.21	0.85	1.00	0.63	50.51	15.00	0.00	5,355.5	0.0	1,163.85	313.35	1,477.20	2
6	105.0	8.91	21.59	54.87	0.00	0.29	2.31	0.85	1.00	0.61	52.05	15.00	0.00	6,108.0	0.0	1,195.74	298.12	1,493.86	2
5	85.00	8.39	28.39	55.71	0.00	0.28	2.35	0.85	1.00	0.61	58.11	15.00	0.00	6,696.7	0.0	1,277.46	280.66	1,558.11	2
4	65.00	7.77	36.17	56.54	0.00	0.27	2.37	0.85	1.00	0.61	65.12	15.00	0.00	7,114.5	0.0	1,337.97	259.95	1,597.92	2
3	47.50	7.10	38.57	42.41	0.00	0.29	2.33	0.85	1.00	0.61	58.75	11.25	0.00	6,015.3	0.0	1,083.77	178.25	1,262.02	2
2	30.00	6.40	42.82	56.54	0.00	0.24	2.46	0.85	1.00	0.60	70.32	15.00	0.00	8,125.9	0.0	1,235.31	214.18	1,449.49	2
1	10.00	6.40	46.66	57.38	0.00	0.23	2.50	0.85	1.00	0.60	73.93	15.00	0.00	9,472.8	0.0	1,316.97	214.18	1,531.15	2
														60,249.5	0.0			13,631.24	

Site Number: CT03XC030
 Location: Northford, CT



Code: TIA/EIA-222 Rev F

Tower Loading

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Weight (lb)	No Ice CaAa (sf)	CaAa Factor	Weight (lb)	Ice CaAa (sf)	CaAa Factor	Distance From Face (ft)	X Angle (deg)	Vert Ecc (ft)
190.0	APXVTM14-C-I20	3	54.90	6.430	0.76	92.44	7.090	0.76	0.000	0.00	0.000
190.0	TD-RRH-8X20-25	3	70.00	4.800	0.68	70.00	5.250	0.68	0.000	0.00	0.000
190.0	FD-RRH-2X50-800	6	64.00	2.480	1.00	89.94	2.810	1.00	0.000	0.00	0.000
190.0	APXVSP18-C-A20	3	57.00	8.260	0.80	99.52	9.080	0.80	0.000	0.00	0.000
190.0	15-ft Triangular Mount	1	2500.00	75.300	1.00	5130.00	66.400	1.00	0.000	0.00	0.000
180.0	TMA's	3	13.00	1.167	0.70	20.62	1.390	0.70	0.000	0.00	0.000
180.0	AIR 21	6	91.00	6.530	0.83	132.68	7.200	0.83	0.000	0.00	0.000
180.0	Sector Frames	3	500.00	15.000	0.75	650.00	20.600	0.75	0.000	0.00	0.000
172.0	AM-X-CD-16-65-00T-RET	3	48.50	8.260	0.75	95.00	9.080	0.75	0.000	0.00	1.000
172.0	RRUS11	6	51.00	3.256	0.73	72.85	3.623	0.73	0.000	0.00	1.000
172.0	21401 TMA	6	14.10	1.288	0.64	21.26	1.527	0.64	0.000	0.00	1.000
172.0	800 10121	3	44.10	5.460	0.79	77.01	6.100	0.79	0.000	0.00	1.000
172.0	Sector Frames	3	500.00	15.000	0.75	650.00	20.600	0.75	0.000	0.00	0.000
172.0	DC6-48-60-18-8F	1	32.80	2.560	1.00	50.52	2.910	1.00	0.000	0.00	3.000
160.0	DB844H90E-XY	12	14.00	3.733	0.91	40.30	4.520	0.91	0.000	0.00	0.000
160.0	Sector Frames	3	500.00	15.000	0.75	650.00	20.600	0.75	0.000	0.00	0.000
145.0	FD9R6004-2C-3L	6	3.10	0.367	0.61	5.40	0.496	0.61	0.000	0.00	0.000
145.0	BXA-70063/6CF	3	17.00	7.731	0.70	57.60	8.540	0.70	0.000	0.00	0.000
145.0	BXA-171085/8CF	3	10.50	2.941	0.84	29.28	3.417	0.84	0.000	0.00	0.000
145.0	LPA-80080/4CF	6	12.00	6.057	0.71	45.10	6.654	0.71	0.000	0.00	0.000
145.0	Sector Frames	3	500.00	15.000	0.75	650.00	20.600	0.75	0.000	0.00	0.000
80.00	2 ft Standoff	1	40.00	2.630	1.00	63.00	4.340	1.00	0.000	0.00	0.000
80.00	GPS antenna	1	50.00	2.000	1.00	100.00	3.000	1.00	0.000	0.00	0.000
80.00	2 ft Standoff	1	40.00	2.630	1.00	63.00	4.340	1.00	0.000	0.00	0.000
80.00	GPS antenna	1	50.00	2.000	1.00	100.00	3.000	1.00	0.000	0.00	0.000
Totals		90	11237.00			17617.91			Number of Appurtenances : 25		

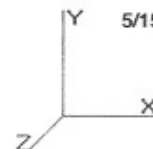
Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Wind	Spread On Faces	Bundling Arrangement
0.00	190.0	1-1/4" Hybriflex	3	1.25	0.95	100.00	1	Separate
0.00	190.0	1/2" Coax	1	0.65	0.16	100.00	1	Separate
0.00	190.0	Hibrid Cable	1	1.25	0.95	100.00	1	Separate
0.00	190.0	W/G Ladder	3	3.00	6.00	100.00	Lin App	Separate
0.00	180.0	1 5/8" Coax	12	1.98	1.04	50.00	3	Separate
0.00	180.0	1 5/8" Hibriflex	1	1.98	1.04	100.00	3	Separate
0.00	172.0	1 5/8" Coax	6	1.98	1.04	50.00	1	Separate
0.00	172.0	Copper Wire	2	0.44	0.08	50.00	1	Separate
0.00	172.0	RG6 Fiber	1	0.44	0.08	100.00	1	Separate
0.00	160.0	1 5/8" Coax	12	1.98	1.04	50.00	1	Separate
0.00	145.0	1 5/8" Coax	12	1.98	1.04	100.00	2	Separate
0.00	145.0	1/2" Fiber	1	0.65	0.16	100.00	2	Separate

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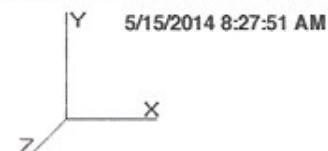


Force/Stress Summary

Section: 1		X-3B		Bot Elev (ft): 0.00				Height (ft): 20.000								
Max Compression Member		Force (kip)	Load Case	Len (ft)	Bracing %			KL/R	Fa (ksi)	Member Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG	SOL - 5" SOLID	-367.31	Normal No Ice	6.18	100	100	100	59.3	30.4	597.85	0	0	0.00	0.00	61	Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 4X4X0.375	-12.56	90 deg No Ice	22.73	50	75	50	173.1	6.6	19.00	1	1	21.99	34.80	66	Member Z
Max Tension Member		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls					
LEG	SOL - 5" SOLID	315.22	60 deg No Ice	50	785.38	0	0	0.00	0.00	40	Member					
HORIZ		0.00		0	0.00	0	0	0.00	0.00	0						
DIAG	SAE - 4X4X0.375	11.97	90 deg No Ice	36	71.38	1	1	21.99	34.80	54	Bolt Shear					
Section: 2		X-3B		Bot Elev (ft): 20.00				Height (ft): 20.000								
Max Compression Member		Force (kip)	Load Case	Len (ft)	Bracing %			KL/R	Fa (ksi)	Member Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG	SOL - 4 3/4" SOLID	-332.07	Normal No Ice	6.18	100	100	100	62.4	29.7	526.90	0	0	0.00	0.00	63	Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 4X4X0.3125	-11.34	90 deg No Ice	21.99	50	75	50	166.9	7.2	17.16	1	1	21.99	29.00	66	Member Z
Max Tension Member		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls					
LEG	SOL - 4 3/4" SOLID	288.11	60 deg No Ice	50	708.82	0	0	0.00	0.00	40	Member					
HORIZ		0.00		0	0.00	0	0	0.00	0.00	0						
DIAG	SAE - 4X4X0.3125	11.62	90 deg No Ice	36	59.97	1	1	21.99	29.00	52	Bolt Shear					
Section: 3		X-3B		Bot Elev (ft): 40.00				Height (ft): 15.000								
Max Compression Member		Force (kip)	Load Case	Len (ft)	Bracing %			KL/R	Fa (ksi)	Member Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG	SOL - 4 3/4" SOLID	-296.58	Normal No Ice	4.51	100	100	100	45.5	33.4	591.37	0	0	0.00	0.00	50	Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 4X4X0.25	-11.24	90 deg No Ice	19.72	50	75	50	148.8	9.0	17.44	1	1	21.99	23.20	64	Member Z
Max Tension Member		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls					
LEG	SOL - 4 3/4" SOLID	258.86	60 deg No Ice	50	708.82	0	0	0.00	0.00	36	Member					
HORIZ		0.00		0	0.00	0	0	0.00	0.00	0						
DIAG	SAE - 4X4X0.25	11.49	90 deg No Ice	36	48.56	1	1	21.99	23.20	52	Bolt Shear					

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Force/Stress Summary

Section: 4 X-3B Bot Elev (ft): 55.00 Height (ft): 20.000

		Force	Len	Bracing %				Member			Shear Bear		Use		
		(kip)	(ft)	X	Y	Z	KL/R	Fa (ksi)	Cap (kip)	Num Bolts	Num Holes	Cap (kip)	Cap (kip)	%	Controls
Max Compression Member															
LEG	SOL - 4 3/4" SOLID	-266.98	6.18	100	100	100	62.4	29.7	526.90	0	0	0.00	0.00	50	Member X
HORIZ		0.00	0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 4X4X0.25	-10.05	18.66	50	75	50	140.9	10.0	19.46	1	1	21.99	23.20	51	Member Z
Max Tension Member															
		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls				
LEG	SOL - 4 3/4" SOLID	236.07	60 deg No Ice	50	708.82	0	0	0.00	0.00	33	Member				
HORIZ		0.00		0	0.00	0	0	0.00	0.00	0					
DIAG	SAE - 4X4X0.25	10.34	90 deg No Ice	36	48.56	1	1	21.99	23.20	47	Bolt Shear				

Section: 5 X-3B Bot Elev (ft): 75.00 Height (ft): 20.000

		Force	Len	Bracing %				Member			Shear Bear		Use		
		(kip)	(ft)	X	Y	Z	KL/R	Fa (ksi)	Cap (kip)	Num Bolts	Num Holes	Cap (kip)	Cap (kip)	%	Controls
Max Compression Member															
LEG	SOL - 4 1/2" SOLID	-229.14	6.18	100	100	100	65.9	28.9	459.88	0	0	0.00	0.00	49	Member X
HORIZ		0.00	0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3.5X3.5X0.3125	-9.33	16.79	50	75	50	146.0	9.3	19.52	1	1	21.99	29.00	47	Member Z
Max Tension Member															
		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls				
LEG	SOL - 4 1/2" SOLID	204.74	60 deg No Ice	50	636.14	0	0	0.00	0.00	32	Member				
HORIZ		0.00		0	0.00	0	0	0.00	0.00	0					
DIAG	SAE - 3.5X3.5X0.3125	9.55	90 deg No Ice	36	50.98	1	1	21.99	29.00	43	Bolt Shear				

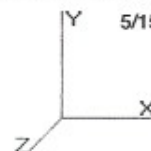
Section: 6 X-3B Bot Elev (ft): 95.00 Height (ft): 20.000

		Force	Len	Bracing %				Member			Shear Bear		Use		
		(kip)	(ft)	X	Y	Z	KL/R	Fa (ksi)	Cap (kip)	Num Bolts	Num Holes	Cap (kip)	Cap (kip)	%	Controls
Max Compression Member															
LEG	SOL - 4 1/4" SOLID	-190.67	6.18	100	100	100	69.8	28.0	396.85	0	0	0.00	0.00	48	Member X
HORIZ		0.00	0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3X3X0.375	-8.58	14.94	50	75	50	152.8	8.5	17.99	1	1	21.99	34.80	47	Member Z
Max Tension Member															
		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls				
LEG	SOL - 4 1/4" SOLID	172.29	60 deg No Ice	50	567.43	0	0	0.00	0.00	30	Member				
HORIZ		0.00		0	0.00	0	0	0.00	0.00	0					
DIAG	SAE - 3X3X0.375	8.79	90 deg No Ice	36	49.63	1	1	21.99	34.80	39	Bolt Shear				

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Force/Stress Summary

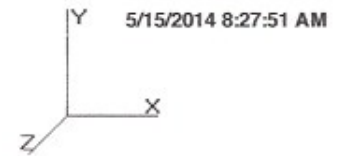
Section: 7		X-3B		Bot Elev (ft): 115.0				Height (ft): 20.000							
		Force (kip)		Len (ft)		Bracing %		Member Fa (ksi)		Shear Cap (kip)		Bear Cap (kip)		Use %	
		Load Case				X Y Z		KL/R		Num Bolts		Num Holes		Controls	
Max Compression Member															
LEG	SOL - 4 1/4" SOLID	-150.51	Normal No Ice	6.18	100	100	100	69.8	28.0	396.85	0	0	0.00	0.00	37 Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG	SAE - 3X3X0.25	-8.90	90 deg No Ice	12.07	50	75	50	122.4	13.2	19.07	1	1	16.84	20.30	52 Bolt Shear
Max Tension Member															
LEG	SOL - 4 1/4" SOLID	137.74	60 deg No Ice	50	567.43	0	0	0	0.00	0.00	24				Member
HORIZ		0.00		0	0.00	0	0	0	0.00	0.00	0				
DIAG	SAE - 3X3X0.25	8.64	90 deg No Ice	36	34.96	1	1	16.84	20.30	51					Bolt Shear

Section: 8		X-3B		Bot Elev (ft): 135.0				Height (ft): 20.000							
		Force (kip)		Len (ft)		Bracing %		Member Fa (ksi)		Shear Cap (kip)		Bear Cap (kip)		Use %	
		Load Case				X Y Z		KL/R		Num Bolts		Num Holes		Controls	
Max Compression Member															
LEG	SOL - 4" SOLID	-106.54	Normal No Ice	6.18	100	100	100	74.1	26.9	337.79	0	0	0.00	0.00	31 Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG	SAE - 2.5X2.5X0.3125	-8.03	90 deg No Ice	11.42	50	75	50	140.2	10.1	14.79	1	1	16.84	25.37	54 Member Z
Max Tension Member															
LEG	SOL - 4" SOLID	99.04	60 deg No Ice	50	502.63	0	0	0	0.00	0.00	19				Member
HORIZ		0.00		0	0.00	0	0	0	0.00	0.00	0				
DIAG	SAE - 2.5X2.5X0.3125	8.19	90 deg No Ice	36	33.84	1	1	16.84	25.37	48					Bolt Shear

Section: 9		X-3B		Bot Elev (ft): 155.0				Height (ft): 20.000							
		Force (kip)		Len (ft)		Bracing %		Member Fa (ksi)		Shear Cap (kip)		Bear Cap (kip)		Use %	
		Load Case				X Y Z		KL/R		Num Bolts		Num Holes		Controls	
Max Compression Member															
LEG	SOL - 3 3/4" SOLID	-62.45	Normal No Ice	6.18	100	100	100	79.1	25.6	282.73	0	0	0.00	0.00	22 Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG	SAE - 2.5X2.5X0.1875	-6.85	90 deg No Ice	9.802	50	75	50	119.1	13.9	12.52	1	1	16.84	15.22	54 Member Z
Max Tension Member															
LEG	SOL - 3 3/4" SOLID	59.59	60 deg No Ice	50	441.79	0	0	0	0.00	0.00	13				Member
HORIZ		0.00		0	0.00	0	0	0	0.00	0.00	0				
DIAG	SAE - 2.5X2.5X0.1875	6.91	90 deg No Ice	36	21.06	1	1	16.84	15.22	45					Bolt Bear

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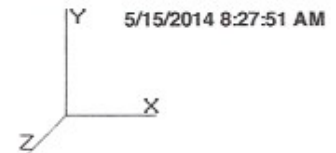


Force/Stress Summary

Section: 10		X-6BAY		Bot Elev (ft): 175.0		Height (ft): 20.000		Member				Shear Bear		Use		
Max Compression Member		Force (kip)	Load Case	Len (ft)	Bracing %			Fa (ksi)	Cap (kip)	Num Bolts	Num Holes	Cap (kip)	Cap (kip)	%	Controls	
LEG	SOL - 3" SOLID	-26.46	Normal No Ice	0.38	100	100	100	6.0	39.4	278.79	0	0	0.00	0.00	9 Member X	
HORIZ	SOL - 1 1/4" SOLID	-0.40	Normal No Ice	5.019	100	100	100	192.7	5.4	6.58	0	0	0.00	0.00	6 Member X	
DIAG	SOL - 1 1/4" SOLID	-3.97	90 deg No Ice	6.717	50	50	50	129.0	12.0	14.69	0	0	0.00	0.00	27 Member X	
Max Tension Member		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls					
LEG	SOL - 3" SOLID	20.68	60 deg No Ice	50	282.75	0	0	0.00	0.00	7	Member					
HORIZ	SOL - 1 1/4" SOLID	0.40	60 deg No Ice	36	35.34	0	0	0.00	0.00	1	Member					
DIAG	SOL - 1 1/4" SOLID	3.92	90 deg No Ice	36	35.34	0	0	0.00	0.00	11	Member					

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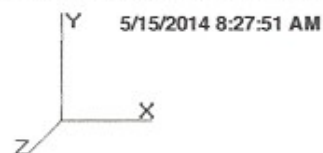
Support Forces Summary

Load Case	Node	FX (kip)	FY (kip)	FZ (kip)	(-) = Uplift (+) = Down
90 deg	1b	-7.42	-67.05	-3.34	
	1a	-9.81	114.71	4.74	
	1	-1.61	23.83	-1.40	
60 deg	1b	-8.16	-80.20	-4.71	
	1a	-6.57	75.82	2.22	
	1	-1.36	75.87	-6.80	
Normal	1b	-2.97	-30.04	-3.43	
	1a	2.97	-30.04	-3.43	
	1	0.00	131.56	-12.76	
90 deg Ice	1b	-28.09	-238.88	-13.40	
	1a	-23.70	306.12	11.03	
	1	-4.74	33.62	2.37	
60 deg Ice	1b	-30.47	-279.15	-17.59	
	1a	-14.04	189.93	3.52	
	1	-3.97	190.07	-13.92	
Normal Ice	1b	-14.57	-126.71	-13.44	
	1a	14.57	-126.71	-13.44	
	1	0.00	354.27	-31.31	
90 deg No Ice	1b	-26.87	-270.63	-12.39	
	1a	-28.97	318.29	13.81	
	1	-5.23	23.83	-1.41	
60 deg No Ice	1b	-29.28	-313.28	-16.90	
	1a	-18.53	192.30	5.66	
	1	-4.36	192.46	-18.88	
Normal No Ice	1b	-12.34	-150.74	-12.77	
	1a	12.34	-150.74	-12.77	
	1	0.00	372.96	-38.06	

Max Uplift:	313.28 (kip)	Moment:	7,105.30 (ft-kip)	Normal No Ice
Max Down:	372.96 (kip)	Total Down:	71.49 (kip)	
Max Shear:	38.06 (kip)	Total Shear:	63.60 (kip)	

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Deflections and Rotations

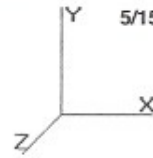
Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
50.00 mph Wind at 60 deg From Face with No Ice	81.92	0.0642	0.0030	0.0610
	141.92	0.1674	0.0069	0.1060
	161.92	0.2122	0.0088	0.1179
	174.25	0.2405	0.0098	0.1723
	178.58	0.2510	0.0089	0.1244
50.00 mph Wind at 90 deg From Face with No Ice	81.92	0.0648	0.0033	0.0625
	141.92	0.1687	0.0065	0.1079
	161.92	0.2136	0.0078	0.1195
	174.25	0.2421	0.0093	0.1633
	178.58	0.2524	0.0080	0.1267
50.00 mph Wind Normal To Face with No Ice	81.92	0.0666	0.0001	0.0628
	141.92	0.1723	0.0020	0.1087
	161.92	0.2179	0.0034	0.1214
	174.25	0.2468	0.0029	0.1877
	178.58	0.2577	0.0033	0.1252
77.94 mph Wind at 60 deg From Face with Ice	81.92	0.1945	0.0094	0.1824
	141.92	0.5021	0.0210	0.3133
	161.92	0.6343	0.0265	0.3464
	174.25	0.7172	0.0296	0.5012
	178.58	0.7489	0.0267	0.3650
77.94 mph Wind at 90 deg From Face with Ice	81.92	0.1960	0.0098	0.1870
	141.92	0.5051	0.0190	0.3188
	161.92	0.6378	0.0226	0.3514
	174.25	0.7213	0.0265	0.4760
	178.58	0.7520	0.0231	0.3708
77.94 mph Wind Normal To Face with Ice	81.92	0.1998	0.0000	0.1869
	141.92	0.5136	0.0049	0.3198
	161.92	0.6478	0.0087	0.3555
	174.25	0.7321	0.0072	0.5425
	178.58	0.7637	0.0083	0.3656
90.00 mph Wind at 60 deg From Face with No Ice	81.92	0.2077	0.0115	0.1975
	141.92	0.5422	0.0254	0.3433
	161.92	0.6872	0.0321	0.3816
	174.25	0.7791	0.0358	0.5578
	178.58	0.8131	0.0323	0.4034
90.00 mph Wind at 90 deg From Face with No Ice	81.92	0.2100	0.0111	0.2026
	141.92	0.5467	0.0219	0.3494
	161.92	0.6923	0.0262	0.3872
	174.25	0.7845	0.0308	0.5296
	178.58	0.8180	0.0268	0.4105
	191.42	0.9143	0.0182	0.4297

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90.00 mph Wind Normal To Face with No Ice

81.92	0.2162	0.0011	0.2038
141.92	0.5588	0.0073	0.3524
161.92	0.7067	0.0118	0.3939
174.25	0.8003	0.0102	0.6091
178.58	0.8356	0.0112	0.4058
191.42	0.9331	0.0063	0.4358
	0.0000	0.0000	0.0000

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

Sprint Existing Facility

Site ID: CT03XC030

Northford / Oshencowski

88 Parsonage Hill Road
Northford, CT 06472

July 1, 2014

EBI Project Number: 62143780

July 1, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT03XC030 - Northford / Oshencowski

Site Total: 39.77% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 88 Parsonage Hill Road, Northford, 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 97-01 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 (850 MHz Band) is approximately $567 \mu\text{W}/\text{cm}^2$, and the general population exposure limit for the 1900 MHz and 2500 MHz bands 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 88 Parsonage Hill Road, Northford, 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) 4 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 **190 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	CT03X0030 - Northford /Oshenocowsl
Site Address	88 Persimmon Hill Road, Northford, CT, 064172
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)	Antenna analysis height	Cable Size	Cable loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
13	RFS	APXVSP18-CA20	RSH	1900 MHz	CDMA /LTE	20	4	80	5.9	190	184	1/2"	0.5	0	277.39	0.29%
14	RFS	APXVSP18-CA20	RSH	850 MHz	CDMA /LTE	20	1	20	3.4	190	184	1/2"	0.5	0	39.00	0.07%
18	RFS	APXVTMM14-C-120	RSH	2500 MHz	CDMA /LTE	20	2	40	5.9	190	184	1/2"	0.5	0	138.69	0.26%
Sector total Power Density Value:													0.63%			

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)	Antenna analysis height	Cable Size	Cable loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
23	RFS	APXVSP18-CA20	RSH	1900 MHz	CDMA /LTE	20	4	80	5.9	190	184	1/2"	0.5	0	277.39	0.29%
24	RFS	APXVSP18-CA20	RSH	850 MHz	CDMA /LTE	20	1	20	3.4	190	184	1/2"	0.5	0	39.00	0.07%
28	RFS	APXVTMM14-C-120	RSH	2500 MHz	CDMA /LTE	20	2	40	5.9	190	184	1/2"	0.5	0	138.69	0.26%
Sector total Power Density Value:													0.63%			

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)	Antenna analysis height	Cable Size	Cable loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
31	RFS	APXVSP18-CA20	RSH	1900 MHz	CDMA /LTE	20	4	80	5.9	190	184	1/2"	0.5	0	277.39	0.29%
32	RFS	APXVSP18-CA20	RSH	850 MHz	CDMA /LTE	20	1	20	3.4	190	184	1/2"	0.5	0	39.00	0.07%
38	RFS	APXVTMM14-C-120	RSH	2500 MHz	CDMA /LTE	20	2	40	5.9	190	184	1/2"	0.5	0	138.69	0.26%
Sector total Power Density Value:													0.63%			

Site Competitive MPE %	
Carrier	MPE %
Sprint	1.88%
Norxal	2.23%
Mediant	4.90%
T-Mobile	2.42%
AT&T	11.81%
Verizon Wireless	16.53%
Total Site MPE %	39.77%

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 **1.88% (0.63% from sector 1, 0.63% from sector 2 and 0.63% 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 **39.77%** 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