EM-SPRINT-054-130717

[redacted]

SBA

ORIGINAL

July 15, 2013

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

RE: Notice of Exempt Modification
2577 Main Street
Glastonbury, CT 06033
N 41° 42' 51.76"
W 72° 36' 47.03"

Dear Mr. Martin and Members of the Siting Council:

On behalf of Sprint Spectrum, SBA Communications is submitting an exempt modification application to the Connecticut Siting council for modification of existing equipment at a tower facility located at 2577 Main Street, Glastonbury, CT.

The 2577 Main Street facility consists of a 130' LATTICE Tower owned and operated by SBA 2012 TC Assets, LLC. In order to accommodate technological changes and enhance system performance in the State of Connecticut, Sprint Spectrum plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of the municipality in which the affected cell site is located.

As part of Sprint's Network Vision modification project, Sprint desires to upgrade their equipment to meet the new standards of 4G technology. The new equipment will allow customers to download files and browse the internet at a high rate of speed while also allowing their phones to be compatible with the latest 4G technology.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in Sprint's operations at the site along with the required fee of $625.

The changes to the facility do not constitute modifications as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be

significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The overall height of the structure will be unaffected.

2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than the new equipment cabinets.

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

4. The changes in radio frequency power density will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, SBA Communications on behalf of Sprint Spectrum, respectfully submits that he proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at (508) 614-0389 with any questions you may have concerning this matter.

Thank you,

Rick Woods

Rick Woods
SBA Communications Corporation
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-1691 x 319 + T
508-251-1755 + F
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rwoods@sbasite.com

Sprint Spectrum
Equipment Modification

2577 Main Street, Glastonbury, CT
Site number CT43XC822

Tower Owner: SBA 2012 TC Assets, LLC

Equipment Configuration: LATTICE Tower

Current and/or approved:

- (3) existing CDMA Antennas and coax
- Existing Modcell 4.0 Cabinet
- Existing GPS Unit
- Existing Local Exchange Carrier landline backhaul facilities

Planned Modifications:

- Install (1) BBU Cabinet and Fiber Distribution Box within existing lease area
- Retrofit existing Modcell 4.0 Cabinet
- Replace (3) existing CDMA Antennas with (3) Network Vision Antenna and (6) RRHs
- Install (3) Hybriflex cables from fiber distribution box to antenna (remove existing CDMA Coax)
- Replace existing GPS Unit with new GPS Unit
- Replace existing Local Exchange Carrier landline backhaul facilities with proposed Alternative Access Vendor fiber optic facilities including overhead/underground conduits and NID

Structural Information:

The attached structural analysis demonstrates that the tower and foundation will have adequate structural capacity to accommodate the proposed modifications.

Power Density:

The anticipated Maximum Composite contributions from the Sprint facility are 29.763% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 60.803% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE %	
Carrier	MPE %
Sprint	29.763%
T-Mobile	14.330%
Pocket	6.810%
Clearwire	1.160%
Nextel	3.480%
AT&T	5.260%
Total Site MPE %	60.803%

July 15, 2013

COPY

Mr. Richard J. Johnson
Town Manager
Town of Glastonbury
2155 Main Street
Glastonbury, CT 06033

RE: Telecommunications Facility @ 2577 Main Street, Glastonbury, CT

Dear Mr. Johnson,

In order to accommodate technological changes and enhance system performance in the State of Connecticut, Sprint Spectrum will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies (R.C.S.A.) Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review Sprint's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes Sprint's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at (508) 614-0389.

Thank you,

Rick Woods

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

Structural Analysis for SBA Network Services, Inc.

130' Self-Support Tower

SBA Site Name: Glastonbury-Main St
SBA Site ID: CT46126-A-03
Sprint Site ID: CT43XC822
Sprint Site Name: Glastonbury Nextel

FDH Project Number 1338401400

Analysis Results

Tower Components	95.1%	Sufficient
Foundation	65.0%	Sufficient

Prepared By:

David Zambrano, EI
Project Engineer

Reviewed By:

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

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

STATE OF CONNECTICUT
Christopher Michael Murphy
No. 25842
LICENSED
PROFESSIONAL ENGINEER

7/15/13

July 15, 2013

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

TABLE OF CONTENTS

EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the existing self-supported tower located in Glastonbury, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads pursuant to the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA/EIA-222-F.* Information pertaining to the existing/proposed antenna loading, current tower geometry, the member sizes, geotechnical data, and foundation dimensions was obtained from:

- Fred A. Nudd Corporation (Project No. 6893) Design of 130' Lattice Tower dated September 12, 1999
- Vertical Solutions, Inc. (Project No. 121081 Rev 0) Rigorous Structural Analysis dated June 4, 2012
- Vertical Solutions, Inc. (Project No. 130126.01 Rev 0) Pre-Modification Installation Letter dated February 14, 2013
- Vertical Solutions, Inc. (Site No. CT46126-A) Modification Drawings for a 130' Self-Support Tower dated December 6, 2012
- Tectonic Engineering Consultants, P.C (W.O No. 1170.C057) Boring Logs and Results of Laboratory Testing dated August 26, 1999
- FDH Engineering, Inc. (Project No. 1338401400) Modification Drawings for a 130' Self-Support Tower dated June 14, 2013
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards & *2005 CTBC* is 80 mph without ice and 38 mph with 1" radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the existing and proposed antennas from Sprint in place at 118.5 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards & *2005 CTBC* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was constructed per the original design drawings (see Fred A. Nudd Corporation Project No. 6893), the foundation should have the necessary capacity to support both the proposed and existing loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

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

Recommendations

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

1. Coax lines must be installed as shown in **Figure 1.**
2. RRU/RRH Stipulation: The proposed equipment may be installed in any arrangement as determined by the client.
3. Modifications listed in FDH Engineering, Inc. (Project No. 1338401400) Modification Drawings for a 130' Self-Support Tower dated June 14, 2013 must be correctly installed in order for this analysis to be valid.

APPURTENANCE LISTING

The proposed and existing antennas with their corresponding cables/coax lines are shown in **Table 1**. *If the actual layout determined in the field deviates from the layout, FDH Engineering, Inc. should be contacted to perform a revised analysis.*

Table 1 - Appurtenance Loading

Existing Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
128	(12) Decibel DB844H90E-M (2) Argus technologies LLPX310R (1) Kathrein 840 10054 (3) 24"x14"x9" TMAs (1) Motorola TIMING 2000	(12) 1-1/4" (6) 5/16" (4) 1/2"	Sprint/Clearwire	128[1]	(3) T-Frames
124	(3) IDU Modem (3) Andrew VHLP2.5 Dishes				
118.5	(12) Swedcom ALP 9212-N	(12) 1-5/8"	Sprint	118.5	(3) T-Arms
110	(6) Allgon 7700.00 (2) KMW AM-X-CD-16-65-00T-RET (1) Andrew SBNH-1D6565C (6) Powerwave LGP13519 TMAs (6) Powerwave LGP21401 TMAs (6) Ericsson RRUS-11 1900MHz RRUs (1) Raycap DC6-48-60-18-8F Surge Arrestor	(12) 1-1/4" (1) 3/8"	AT&T	110[2]	(3) T-Frames
100	(3) RFS APXV18-206517S-C	(6) 1-5/8"	Pocket	100	(3) Standoffs
93	(6) EMS RR65-19-02DP (3) RFS APX16DWV-16WV-S-E-ACU (3) 6.3"x7.7"x3" TMAs	(18) 1-5/8"	T-Mobile	93	(3) T-Frames
55.5	(1) GPS	(1) 1/2"	---	55.5	(1) Standoff
50.5	(2) GPS	(2) 1/2"	---	50.5	(2) Standoffs

1. Sprint/Clearwire has (6) 5/16" and (3) ½" coax installed inside (2) 2" conduits.
2. AT&T has (1) 3/8" coax installed inside (1) 3" conduit.

Proposed Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
118.5	(2) RFS APXVSPP18-C-A20 (1) Powerwave P40-16-XLPP-RR-A (3) Alcatel Lucent 1900 MHz RRUs (3) Alcatel Lucent 800 MHz RRUs (4) RFS ACU-A20-N RETs (3) Alcatel Lucent 800 MHz Filters	(3) 1-1/4"	Sprint	118.5	(3) T-Arms

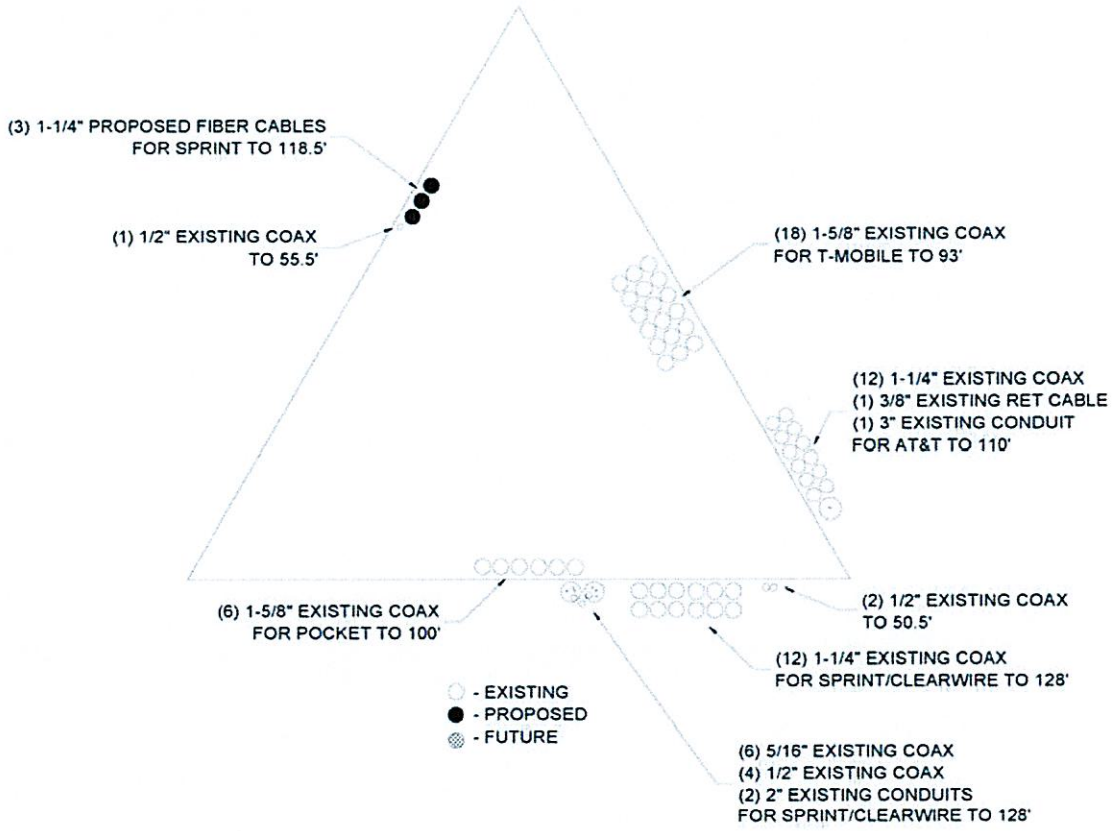


Figure 1 – Assumed Coax Layout

RESULTS

The following yield strength of steel for individual members was used for analysis:

Table 2 - Material Strength

Member Type	Yield Strength
Legs	54 ksi & 45 ksi
Bracing	36 ksi

Table 3 displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. *Note: Capacities up to 100% are considered acceptable.* **Table 4** displays the maximum foundation reactions. **Table 5** displays the maximum antennas rotations at service wind speeds.

If the assumptions outlined in this report differ from actual field conditions, FDH Engineering, Inc. should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the existing or proposed appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the **Appendix** for detailed modeling information.

Table 3 - Summary of Working Percentage of Structural Components

Section No.	Elevation ft	Component Type	Size	% Capacity	Pass Fail
T1	130 - 120	Leg	1 1/2	26.0	Pass
		Diagonal	1/2	65.0	Pass
		Horizontal	L1 1/4x1 1/4x3/16	7.5	Pass
		Top Girt	L1 1/4x1 1/4x3/16	0.7	Pass
T2	120 - 117.143	Leg	2	19.7	Pass
		Diagonal	3/4	28.1	Pass
		Horizontal	L1 1/4x1 1/4x3/16	3.9	Pass
T3	117.143 - 114.286	Leg	2	27.7	Pass
		Diagonal	3/4	36.2	Pass
		Horizontal	L1 1/4x1 1/4x3/16	5.9	Pass
T4	114.286 - 111.429	Leg	2	36.6	Pass
		Diagonal	3/4	36.0	Pass
		Horizontal	L1 1/4x1 1/4x3/16	13.5	Pass
T5	111.429 - 108.571	Leg	2	47.3	Pass
		Diagonal	3/4	45.5	Pass
		Horizontal	L1 1/4x1 1/4x3/16	12.7	Pass
T6	108.571 - 105.714	Leg	2	59.6	Pass
		Diagonal	3/4	56.4	Pass
		Horizontal	L1 1/4x1 1/4x3/16	17.3	Pass
T7	105.714 - 102.857	Leg	2	73.1	Pass
		Diagonal	3/4	57.2	Pass
		Horizontal	L1 1/4x1 1/4x3/16	26.7	Pass
T8	102.857 - 100	Leg	2	70.3	Pass
		Diagonal	3/4	77.5	Pass

Section No.	Elevation ft	Component Type	Size	% Capacity	Pass Fail
		Horizontal	L1 1/4x1 1/4x3/16	31.2	Pass
		Secondary Horizontal	L2x2x1/8	10.5 34.0 (b)	Pass
T9	100 - 96	Leg	P4x.237 (4.50 OD)	66.9	Pass
		Diagonal	L1 1/2x1 1/2x3/16	40.4 88.5 (b)	Pass
		Top Girt	L1 1/4x1 1/4x3/16	22.7 49.8 (b)	Pass
T10	96 - 92	Leg	P4x.237 (4.50 OD)	77.3	Pass
		Diagonal	L2x2x1/4	22.5 59.9 (b)	Pass
T11	92 - 88	Leg	P4x.237 (4.50 OD)	79.3	Pass
		Diagonal	2L1 1/2x1 1/2x3/16x3/8	34.4 70.0 (b)	Pass
		Secondary Horizontal	3/8x4	22.1 30.9 (b)	Pass
T12	88 - 84	Leg	P4.5x0.237 + P5.5625x0.375	59.4	Pass
		Diagonal	2L1 1/2x1 1/2x3/16x3/8	32.8 67.0 (b)	Pass
		Secondary Horizontal	3/8x4	26.5 32.9 (b)	Pass
T13	84 - 80	Leg	P4.5x0.237 + P5.5625x0.375	65.6	Pass
		Diagonal	2L1 1/2x1 1/2x3/16x3/8	29.4 57.7 (b)	Pass
		Secondary Horizontal	3/8x4	28.6 30.6 (b)	Pass
T14	80 - 75	Leg	P6x.28 (6.625 OD)	64.2	Pass
		Diagonal	L2x2x1/4	27.4 62.1 (b)	Pass
T15	75 - 70	Leg	P6x.28 (6.625 OD)	70.4	Pass
		Diagonal	2L1 3/4x1 3/4x3/16x3/8	21.2 50.6 (b)	Pass
T16	70 - 65	Leg	P6x.28 (6.625 OD)	76.2	Pass
		Diagonal	2L1 3/4x1 3/4x3/16x3/8	19.4 45.7 (b)	Pass
T17	65 - 60	Leg	P6x.28 (6.625 OD)	81.5	Pass
		Diagonal	2L1 3/4x1 3/4x3/16x3/8	19.9 46.6 (b)	Pass
T18	60 - 55	Leg	P6x.28 (6.625 OD)	81.7	Pass
		Diagonal	2L1 1/2x1 1/2x3/16x3/8	48.2 63.7 (b)	Pass
		Secondary Horizontal	L2x2x1/8	30.3 90.6 (b)	Pass
T19	55 - 50	Leg	P6.625x0.28 + P7.625x0.301	70.3	Pass
		Diagonal	2L1 1/2x1 1/2x3/16x3/8	38.2 51.6 (b)	Pass
T20	50 - 45	Leg	P6.625x0.28 + P7.625x0.301	73.8	Pass
		Diagonal	2L1 1/2x1 1/2x3/16x3/8	42.3 56.7 (b)	Pass
T21	45 - 40	Leg	P6.625x0.28 + P7.625x0.301	72.3	Pass

Section No.	Elevation ft	Component Type	Size	% Capacity	Pass Fail
		Diagonal	L2x2x1/4	31.7 63.5 (b)	Pass
		Secondary Horizontal	L3x3x5/16	8.8 70.4 (b)	Pass
T22	40 - 20	Leg	P6x.432 (6.625 OD)	82.5	Pass
		Diagonal	2L1 3/4x1 3/4x3/16x3/8	25.4 50.8 (b)	Pass
T23	20 - 13.3333	Leg	P6x.432 (6.625 OD)	86.3	Pass
		Diagonal	L2x2x3/16	64.1 95.1 (b)	Pass
T24	13.3333 - 6.66667	Leg	P6x.432 (6.625 OD)	89.9	Pass
		Diagonal	L2x2x3/16	63.7 89.2 (b)	Pass
T25	6.66667 - 0	Leg	P6.625x0432 + P7.625x0.301	76.6	Pass
		Diagonal	2L2x2x3/16x3/8	25.2 58.5 (b)	Pass

*Capacities include a 1/3 allowable stress increase for wind per *TIA/EIA-222-F* Standards.
** Diagonal sizes from 120' to 100' take from Vertical Solutions Rigorous Structural Analysis dated 6/4/12

Table 4 - Maximum Base Reactions

Load Type	Direction	Current Analysis* *(TIA/EIA-222-F)*	Original Design *(TIA/EIA-222-F)*
Individual Foundation	Horizontal	15 k	22 k
	Uplift	283 k	253 k
	Compression	302 k	---
Overturning Moment	---	1,906 k-ft	1,685 k-ft

* Foundation determined to be adequate per independent analysis.

Table 5 – Maximum Antenna Rotations at Service Wind Speeds

Centerline Elevation (ft)	Antenna	Tilt (deg)*	Twist (deg)*
124	(3) Andrew VHLP2.5 Dishes	0.9546	0.0719

*Allowable tilt and twist values to be determined by the carrier.

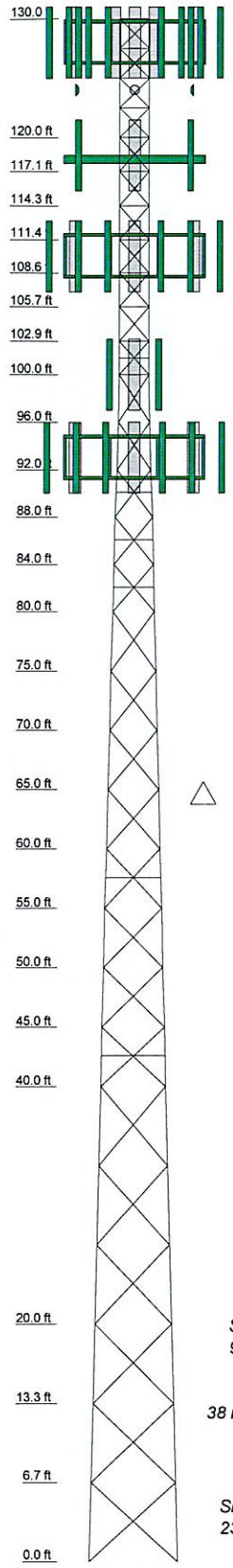
GENERAL COMMENTS

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

LIMITATIONS

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

APPENDIX



Section	T25	T24	T23	T22	T21	T20	T19	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	C		P6x.432 (6.625 OD)			B			P6x.28 (6.625 OD)				A		P4x.237 (4.50 OD)					SR 2				SR 1 1/2	
Leg Grade	A572-50		A500M-54			A572-50			A500M-54				A572-50		A500M-54					A570-45					
Diagonals	F		L2x2x3/16	2L1 3/4x1 3/4x3/16x3/8	L2x2x1/4	2L1 1/2x1 1/2x3/16x3/8			2L1 3/4x1 3/4x3/16x3/8			L2x2x1/4	2L1 1/2x1 1/2x3/16x3/8		E	D			SR 3/4				SR 1/2	
Diagonal Grade				A36												G					N.A.			L1 1/4x1 1/4x3/16	
Top Girts				N.A.																					
Horizontals				N.A.																	L1 1/4x1 1/4x3/16				
Sec. Horizontals			N.A.		I	N.A.		L2x2x1/8		N.A.			3/8x4			N.A.		H			N.A.				
Face Width (ft) 7.5	7.16667	6.83333	6.5	5.5	5.25	5	4.75	4.5	4.25	4	3.75	3.5	3.3	3.1	2.9	2.7									2.5
# Panels @ (ft)	6 @ 6.66667				8 @ 5								5 @ 4						7 @ 2.85714					4 @ 2.5	
Weight (K) 11.5	1.0	0.7	0.7	2.4	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(4) Decibel DB844H90E-M w/ Mount Pipe	128	AM-X-CD-16-65-00T-RET w/ Mount Pipe	110
(4) Decibel DB844H90E-M w/ Mount Pipe	128	SBNH-1D6565C w/ Mount Pipe	110
(4) Decibel DB844H90E-M w/ Mount Pipe	128	(2) LGP13519 TMA	110
LLPX310R w/ Mount Pipe	128	(2) LGP13519 TMA	110
LLPX310R w/ Mount Pipe	128	(2) LGP13519 TMA	110
840 10054 w/ Mount Pipe	128	(2) LGP21401 TMA	110
24"x14"x9" TMA	128	(2) LGP21401 TMA	110
24"x14"x9" TMA	128	(2) LGP21401 TMA	110
24"x14"x9" TMA	128	(2) RRUS-11 1900MHz	110
TIMING 2000	128	(2) RRUS-11 1900MHz	110
IDU Modem	128	(2) RRUS-11 1900MHz	110
IDU Modem	128	DC6-48-60-18-8F Surge Arrestor	110
IDU Modem	128	(3) T-Frames	110
(3) T-Frames	128	(2) 7700.00 w/Mount Pipe	110
VHLP2.5 Dish	128	(2) 7700.00 w/Mount Pipe	110
VHLP2.5 Dish	128	(2) 7700.00 w/Mount Pipe	110
VHLP2.5 Dish	128	APXV18-206517S-C w/Mount Pipe	100
APXVSPP18-C-A20 w/Mount Pipe	118.5	(3) Standoffs	100
APXVSPP18-C-A20 w/Mount Pipe	118.5	APXV18-206517S-C w/Mount Pipe	100
P40-16-XLPP-RR-A w/ Mount Pipe	118.5	APXV18-206517S-C w/Mount Pipe	100
1900 MHz RRH	118.5	(2) RR65-19-02DP w/Mount Pipe	93
1900 MHz RRH	118.5	(2) RR65-19-02DP w/Mount Pipe	93
1900 MHz RRH	118.5	RFS APX16DWV-16WV-S-E-ACU	93
800 MHz RRH	118.5	RFS APX16DWV-16WV-S-E-ACU	93
800 MHz RRH	118.5	RFS APX16DWV-16WV-S-E-ACU	93
(2) ACU-A20-N RET	118.5	6.3"x7.7"x3" TMA	93
ACU-A20-N RET	118.5	6.3"x7.7"x3" TMA	93
ACU-A20-N RET	118.5	6.3"x7.7"x3" TMA	93
800 MHz Filter	118.5	(3) T-Frames	93
800 MHz Filter	118.5	(2) RR65-19-02DP w/Mount Pipe	93
800 MHz Filter	118.5	(1) Standoff	55.5
(3) T-Arms	118.5	GPS	55.5
AM-X-CD-16-65-00T-RET w/ Mount Pipe	110	(1) Standoff	50.5
		GPS	50.5
		GPS	50.5
		(1) Standoff	50.5

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	P4.5x0.237 + P5.5625x0.375 (CT)	F	2L2x2x3/16x3/8
B	P6.625x0.28 + P7.625x0.301 (CT)	G	L1 1/4x1 1/4x3/16
C	P6.625x0432 + P7.625x0.301 (CT)	H	L2x2x1/8
D	L1 1/2x1 1/2x3/16	I	L3x3x5/16
E	L2x2x1/4		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A570-45	45 ksi	60 ksi	A500M-54	54 ksi	70 ksi
A36	36 ksi	58 ksi	A572-50	50 ksi	65 ksi

MAX. CORNER RE
DOWN: 302 K
SHEAR: 15 K

UPLIFT: -283 K
SHEAR: 14 K

AXIAL 71 K
SHEAR 9 K
MOMENT 761 kip-ft
TORQUE 2 kip-ft
38 mph WIND - 1.2500 in ICE

AXIAL 26 K
SHEAR 23 K
MOMENT 1906 kip-ft
TORQUE 6 kip-ft
REACTIONS - 80 mph WIND

TOWER DESIGN NOTES

1. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 38 mph basic wind with 1.25 in ice. Ice is considered to increase in thickness with height.
3. Deflections are based upon a 50 mph wind.
4. Tower is located in Hartford County, Connecticut.
5. TOWER RATING: 95.1%

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
Phone: 9197551012
FAX: 9197551031
Tower Analysis

Job: Glastonbury-Main St. - CT46126-A-03		
Project: 1338401400		
Client: SBA	Drawn by: David Zambrano	App'd:
Code: TIA/EIA-222-F	Date: 07/15/13	Scale: NTS
Path:		Dwg No. E-1

THE MODIFICATIONS DEPICTED ON THESE DRAWINGS ARE BASED ON THE RECOMMENDATIONS OUTLINED IN THE STRUCTURAL ANALYSIS COMPLETED BY FDH ENGINEERING, INC., PROJECT NO. 1320561400 DATED APRIL 15, 2013.

THIS REPORT WAS BASED ON A SPECIFIC ANTENNA AND COAX CONFIGURATION PROVIDED BY THE TOWER OWNER. ANY CHANGE TO THIS INFORMATION MUST BE REVIEWED BY FDH ENGINEERING, INC.

ALL DIMENSIONS, MEASUREMENTS, QUANTITIES, PART NUMBERS AND COAX/ANTENNA PLACEMENTS TO BE FIELD VERIFIED BY CONTRACTOR PRIOR TO MATERIAL ORDERS AND CONSTRUCTION.

FOR INQUIRIES REGARDING THE CONTENT OF THESE MODIFICATION DRAWINGS, PLEASE CONTACT STEVEN STRICKLAND WITH THE FDH CONSTRUCTION DEPARTMENT (919) 755-1012

PROJECT DESCRIPTION:

MODIFICATION DRAWINGS FOR A 130' SELF-SUPPORT TOWER

SBA

SITE NAME:

GLASTONBURY-MAIN ST

SITE NUMBER:

CT46126-A-03

SITE ADDRESS:

2577 MAIN STREET
GLASTONBURY, CT 06033

COORDINATES:

LATITUDE: 41.7144°
LONGITUDE: -72.6130°

SHEET INDEX	
SHT. NO.	DESCRIPTION
T-1	TITLE SHEET
N-1	POST CONSTRUCTION INSPECTION NOTES
N-2	GENERAL NOTES
S-1	MODIFICATION SCHEDULE
S-2	DIAGONAL REPLACEMENT DETAILS

PREPARED BY:

FDH ENGINEERING INNOVATION
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PHONE: 919-755-1012
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PREPARED FOR:

SBA
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BOCA RATON, FL 33487
(800) 487-SITE

STATE OF CONNECTICUT
Christopher Michael Murphy
No. 25842
LICENSED
PROFESSIONAL ENGINEER

06/17/13
CHRISTOPHER M. MURPHY, PE
CONNECTICUT LIC NO. 25842

DRAWN BY:	AI
CHECKED BY:	DZ
ENG APPV'D:	CMM
PROJECT NO:	1338401400

SUBMITTALS		
DATE	DESCRIPTION	REV
06/17/13	CONSTRUCTION	0

SITE NAME:
GLASTONBURY-MAIN ST

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GLASTONBURY, CT 06033

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

PCI CHECKLIST

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED	REPORT ITEM
PRE-CONSTRUCTION	
X	PCI CHECKLIST DRAWING
N/A	EOR APPROVED SHOP DRAWINGS
N/A	FABRICATION INSPECTION
N/A	FABRICATOR CERTIFIED WELD INSPECTION
X	MATERIAL TEST REPORT (MTR)
N/A	FABRICATOR NDE INSPECTION
N/A	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)
X	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS:	
CONSTRUCTION	
X	CONSTRUCTION INSPECTIONS
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH AND SLUMP TESTS
N/A	POST INSTALLED ANCHOR ROD VERIFICATION
N/A	BASE PLATE GROUT VERIFICATION
N/A	CONTRACTOR'S CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
X	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
X	GC AS-BUILT DOCUMENTS
ADDITIONAL TESTING AND INSPECTIONS:	
POST-CONSTRUCTION	
X	PCI INSPECTOR REDLINE OR RECORD DRAWING(S)
N/A	POST INSTALLED ANCHOR ROD PULL-OUT TESTING
X	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE PCI REPORT
N/A DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE PCI REPORT

POST CONSTRUCTION INSPECTION NOTES:

GENERAL

1. THE POST CONSTRUCTION INSPECTION (PCI) IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD (EOR).
2. THE PCI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE PCI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.
3. ALL PCI'S SHALL BE CONDUCTED BY A PCI INSPECTOR THAT IS APPROVED TO PERFORM ELEVATED WORK FOR FDH ENGINEERING, INC.
4. TO ENSURE THAT THE REQUIREMENTS OF THE PCI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE PCI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT YOUR FDH POINT OF CONTACT (POC).
5. REFER TO CCR-01 : CONTRACTOR CLOSEOUT REQUIREMENTS FOR FURTHER DETAILS AND REQUIREMENTS.

PCI INSPECTOR

1. THE PCI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE PCI TO, AT A MINIMUM:
   - REVIEW THE REQUIREMENTS OF THE PCI CHECKLIST
   - WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
2. THE PCI INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR (GC) INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE PCI REPORT TO FDH.

CORRECTION OF FAILING PCI'S

1. IF THE MODIFICATION INSTALLATION WOULD FAIL THE PCI ("FAILED PCI"), THE GC SHALL WORK WITH FDH TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:
   - CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT PCI.
   - OR, WITH FDH'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION.

REQUIRED PHOTOS

1. BETWEEN THE GC AND THE PCI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE PCI REPORT:
   - PRE-CONSTRUCTION GENERAL SITE CONDITION
   - PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
     - RAW MATERIALS
     - PHOTOS OF ALL CRITICAL DETAILS
     - FOUNDATION MODIFICATIONS
     - WELD PREPARATION
     - BOLT INSTALLATION AND TORQUE
     - FINAL INSTALLED CONDITION
     - SURFACE COATING REPAIR
   - POST CONSTRUCTION PHOTOGRAPHS
     - FINAL INFIELD CONDITION
2. PHOTOS OF ELEVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

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STATE OF CONNECTICUT
Christopher Michael Murphy
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06/17/13
CHRISTOPHER M. MURPHY, PE
CONNECTICUT LIC NO. 25842

DRAWN BY:	AI
CHECKED BY:	DZ
ENG APPV'D:	CMM
PROJECT NO:	1338401400

SUBMITTALS		
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SITE NUMBER:
CT46126-A-03

SITE ADDRESS:
2577 MAIN STREET
GLASTONBURY, CT 06033

SHEET TITLE
POST CONSTRUCTION INSPECTION NOTES

SHEET NUMBER
N-1

GENERAL NOTES:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND ORDINANCES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL PERMITS NECESSARY TO COMPLETE THE PROJECT AND ABIDE BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS, ELEVATIONS AND EXISTING CONDITIONS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO FDH ENGINEERING FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
3. INCORRECTLY FABRICATED, DAMAGED, OTHERWISE MISFITTING, OR NON-CONFORMING MATERIALS AND CONDITIONS SHALL BE REPORTED TO FDH ENGINEERING PRIOR TO ANY REMEDIAL OR CORRECTIVE ACTION. ALL ACTIONS SHALL REQUIRE FDH ENGINEERING APPROVAL.
4. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AFTER THE COMPLETION OF THE PROJECT.
5. CONTRACTOR SHALL PROMPTLY REMOVE ANY & ALL DEBRIS FROM SITE AND RESTORE AS BEST AS POSSIBLE TO PRECONSTRUCTION CONDITION.

CONTRACTOR QUALIFICATION NOTES:

1. ALL REPAIRS SHALL BE PERFORMED BY A TOWER CONTRACTOR WITH A MINIMUM 5 YEARS EXPERIENCE IN TOWER ERECTION AND RETROFIT AND WITH WORKING KNOWLEDGE OF THE TIA/EIA 222-F "STRUCTURAL STANDARD FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES".
2. CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MEANS AND METHODS. SHOULD THE CONTRACTOR REQUIRE DIRECT CONSULTATION, FDH ENGINEERING, INC. IS WILLING TO OFFER SERVICES BASED UPON AN AGREED FEE FOR THE WORK REQUIRED.
3. ALL SUBMITTAL INFORMATION MUST BE SENT TO FDH ENGINEERING, INC. 6521 MERIDIEN DRIVE, RALEIGH NC, 27616, TEL. (919) 755-1012, FAX. (919) 755-1031, E-MAIL INFO@FDH-INC.COM. ANY VARIATION OF THESE SPECIFICATIONS OR DRAWINGS WITHOUT CONSENT FROM FDH ENGINEERING, INC. WILL VOID ANY RESPONSIBILITY OR LIABILITY FOR DAMAGE (MATERIAL OR PHYSICAL) TOWARDS FDH ENGINEERING, INC.
4. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH THE TIA-1019-A STANDARD.

JOB SITE SAFETY & NOTES:

1. NEITHER THE PROFESSIONAL ACTIVITIES OF FDH ENGINEERING, INC. NOR THE PRESENCE OF FDH ENGINEERING, INC. OR EMPLOYEES AND SUB-CONSULTANTS AT THE CONSTRUCTION SITE, SHALL RELIEVE THE GENERAL CONTRACTOR AND OR SUBCONTRACTORS AND ANY OTHER ENTITY OF THEIR OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES. THE GENERAL CONTRACTOR AND OR SUBCONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SAFETY, AND WARRANTS THAT THIS INTENT IS EVIDENT BY ACCEPTING THIS WORK.

STEEL:

1. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC CODE AND ASTM SPECIFICATIONS.

   *ALL STEEL ANGLE SHALL BE ASTM A36 (Fy=36KSI) UNLESS OTHERWISE SPECIFIED.
2. ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED WELDS WITH WELDING ELECTRODES E-70XX OR SPECIFIED HIGH STRENGTH BOLTS TO BE ASTM A325X, THREAD INCLUDED WITH SHEAR PLANE (UNLESS OTHERWISE NOTED).
3. ALL BOLTED CONNECTIONS TO BE INSTALLED TO A SNUG-TIGHTENED CONDITION IN ACCORDANCE WITH AISC 13 PART 16.2, "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", SECTION 8.1, UNLESS OTHERWISE SPECIFIED. WHEN "X" TYPE BOLTS ARE USED, CONTRACTOR MAY BE REQUIRED TO STACK ADDITIONAL WASHERS TO OBTAIN PROPER SNUG TIGHT INSTALLATION. ALL NUTS SHALL BE HEAVY HEX UNLESS OTHERWISE NOTED.
4. ALL STEEL, AFTER FABRICATION, SHALL BE HOT DIPPED GALVANIZED PER ASTM A-123. ALL DAMAGED SURFACES, WELDED AREAS AND AUTHORIZED NON-GALVANIZED MEMBERS OR PARTS (EXISTING OR NEW) SHALL BE PAINTED WITH MULTIPLE COATS OF ZRC COLD GALVANIZING COMPOUND ACHEIVING A MINIMUM OF 4 MILS DRY FILM PER ASTM A 780.
5. ALL SHOP AND FIELD WELDING SHALL BE DONE BY WELDERS QUALIFIED AS DESCRIBED IN THE "AMERICAN WELDING SOCIETY'S STANDARD QUALIFICATION PROCEDURE" TO PERFORM THE TYPE OF WORK REQUIRED. CONTRACTOR IS REQUIRED TO PROVIDE FDH ENGINEERING, INC. WITH A PASSING CERTIFIED WELDING INSPECTION FOR ALL WELDS.
6. STRUCTURAL STEEL MAY NOT BE TORCH CUT FOR FABRICATION. ALL STEEL FABRICATION MUST FOLLOW AISC STANDARDS.

MISC. NOTES:

1. ALL MODIFICATIONS ARE ASSUMED TO BE MADE ON AN EMPTY TOWER. CONTRACTOR IS RESPONSIBLE TO MAKE PROVISIONS TO SUPPORT OR WORK AROUND EXISTING ANTENNAS AND TRANSMISSION LINES. MODIFICATIONS MUST BE CONTINUOUS THROUGH ALL AREAS SHOWN.
2. CONTRACTOR FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

FABRICATION NOTES:

1. ALL DIMENSIONS ARE PRELIMINARY UNTIL FIELD VERIFIED BY CONTRACTOR. ANY CHANGES MUST BE APPROVED BY ENGINEER OF RECORD IN WRITING PRIOR TO FABRICATION AND INSTALLATION.
2. NEW STEEL MEMBERS MUST HAVE SINGLE DRILLED HOLES. SLOTTED AND DOUBLE DRILLED HOLES ARE NOT ACCEPTABLE MEANS OF FABRICATION.

SUBSTITUTES AND/OR EQUALS:

1. IF CONTRACTOR WISHES TO FURNISH OR USE A SUBSTITUTE ITEM OF MATERIAL OR EQUIPMENT, CONTRACTOR SHALL FIRST MAKE WRITTEN APPLICATION TO ENGINEER OF RECORD FOR ACCEPTANCE THEREOF, CERTIFYING THAT THE PROPOSED SUBSTITUTE WILL PERFORM ADEQUATELY THE FUNCTIONS AND ACHIEVE THE RESULTS CALLED FOR BY THE GENERAL DESIGN, BE SIMILAR IN SUBSTANCE TO THAT SPECIFIED AND SUITED TO THE SAME USE AS THAT SPECIFIED. ALL VARIATIONS OF THE PROPOSED SUBSTITUTE FROM THAT SPECIFIED WILL BE IDENTIFIED IN THE APPLICATION AND AVAILABLE MAINTENANCE, REPAIR AND REPLACEMENT SERVICE WILL BE INDICATED. THE APPLICATION WILL ALSO CONTAIN AN ITEMIZED ESTIMATE OF ALL COSTS OR CREDITS THAT WILL RESULT DIRECTLY OR INDIRECTLY FROM ACCEPTANCE OF SUCH SUBSTITUTE INCLUDING COSTS OF REDESIGN AND CLAIMS OF OTHER CONTRACTORS AFFECTED BY THE RESULTING CHANGE, ALL OF WHICH WILL BE CONSIDERED BY ENGINEER OF RECORD IN EVALUATION OF THE PROPOSED SUBSTITUTE. ENGINEER OF RECORD MAY REQUIRE CONTRACTOR TO FURNISH ADDITIONAL DATA ABOUT THE PROPOSED SUBSTITUTE.

COLD GALVANIZATION/SURFACE PREPARATION NOTES:

1. CONTRACTOR TO USE ZINGA OR ZRC COLD GALVANIZATION COMPOUNDS OR APPROVED EQUIVALENT.
2. PREPARE RUSTED/CORRODED SURFACE FOR TREATMENT ACCORDING TO MANUFACTURE'S RECOMMENDATIONS.
3. CONTRACTOR TO APPLY (2) COATS OF COLD GALVANIZATION COMPOUND PER MANUFACTURER'S RECOMMENDATION. DRYING AND CURING TIMES MUST BE UTILIZED PER MANUFACTURER'S RECOMMENDATION.
4. APPLY ALL COATINGS BY BRUSH IN CALM WIND CONDITIONS. THE USE OF AEROSOL IS NOT PERMITTED.
5. IF THE TOWER IS PAINTED, BRUSH PAINT ALL TREATED AREAS TO MATCH TOWER AFTER COLD GALVANIZATION COMPOUND IS ALLOWED TO CURE.

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STATE OF CONNECTICUT
Christopher Michael Murphy
No. 25842
LICENSED PROFESSIONAL ENGINEER

06/17/13

CHRISTOPHER M. MURPHY, PE
CONNECTICUT LIC NO. 25842

DRAWN BY:	AI
CHECKED BY:	DZ
ENG APPV'D:	CMM
PROJECT NO:	1338401400

SUBMITTALS

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SITE NAME:
GLASTONBURY-MAIN ST

SITE NUMBER:
CT46126-A-03

SITE ADDRESS:
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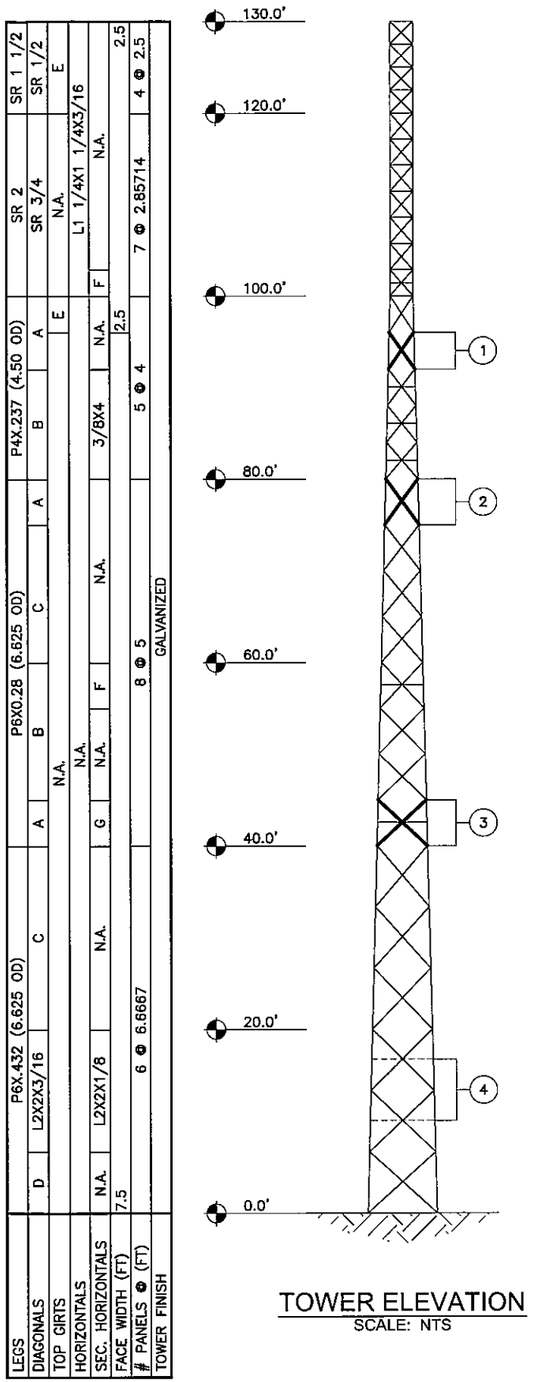
GLASTONBURY, CT 06033

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
N-2



TOWER ELEVATION
SCALE: NTS

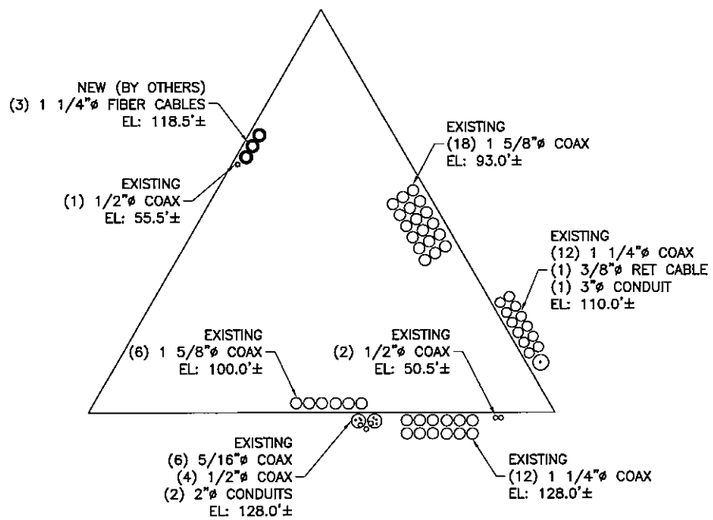
MEMBER SIZE KEY

MARK	SIZE
A	L1 1/2X1 1/2X3/16
B	2L1 1/2X1 1/2X3/16X3/8
C	2L1 3/4X1 3/4X3/16X3/8
D	2L2X2X3/16X3/8
E	L1 1/4X1 1/4X3/16
F	L2X2X1/8
G	L3X3X5/16

- APPURTENANCES MAY INTERFERE WITH PROPOSED MODIFICATIONS.
- ALL MODIFICATIONS TO BE INSTALLED CONTINUOUSLY THROUGH EXISTING EQUIPMENT. ALL EXISTING EQUIPMENT NOT TO BE DAMAGED OR TAKEN OFF AIR DURING INSTALLATION.
- ANTENNA GRAPHICS NOT SHOWN FOR CLARITY. SEE STRUCTURAL ANALYSIS REPORT FOR EXISTING ANTENNA LOADING.

TOWER MODIFICATION SCHEDULE

NO.	TYPE OF MODIFICATION	BOTTOM ELEV. (FT)	TOP ELEV. (FT)
1	INSTALLATION OF NEW REPLACEMENT DIAGONALS. SEE S-2 FOR DETAILS.	92.0±	96.0±
2	INSTALLATION OF NEW REPLACEMENT DIAGONALS. SEE S-2 FOR DETAILS.	75.0±	80.0±
3	INSTALLATION OF NEW REPLACEMENT DIAGONALS. SEE S-2 FOR DETAILS.	40.0±	45.0±
4	REMOVAL OF EXISTING SUBHORIZONTALS.	10.1±	16.8±



COAX LAYOUT
SCALE: NTS

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06/17/13
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SHEET TITLE
MODIFICATION SCHEDULE

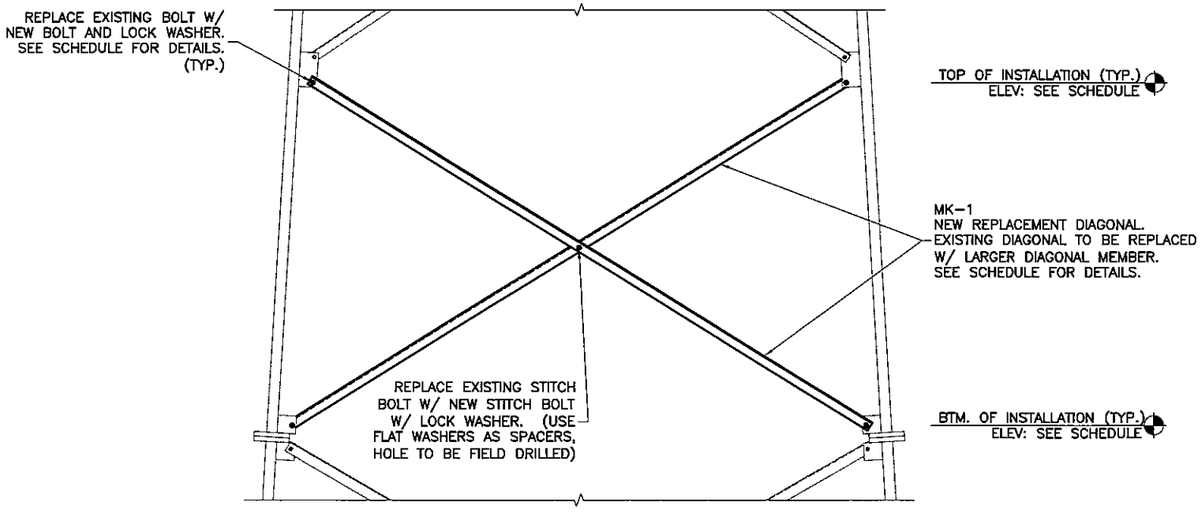
SHEET NUMBER
S-1

MK-1 REPLACEMENT DIAGONAL SCHEDULE

ELEVATION	EXISTING MEMBER	PROPOSED MEMBER	ESTIMATED LENGTH, A*	BOLT SIZE	HOLE SIZE	STITCH BOLT SIZE	HOLE SIZE	GAGE LINE**	EDGE DISTANCE***	BOLT GRADE
92.0'± TO 96.0'±	(6) L1 1/2X1 1/2X3/16	(6) L2X2X1/4	7'-4"±	(12) 1/2"ø X 1 1/2"	9/16"ø	(3) 1/2"ø X 1 3/4"	9/16"ø	1 1/8"	1"	A325X
75.0'± TO 80.0'±	(6) L1 1/2X1 1/2X3/16	(6) L2X2X1/4	6'-2"±	(12) 1/2"ø X 1 1/2"	9/16"ø	(3) 1/2"ø X 1 3/4"	9/16"ø	1 1/8"	1"	A325X
40.0'± TO 45.0'±	(6) L1 1/2X1 1/2X3/16	(6) L2X2X1/4	4'-11"±	(12) 1/2"ø X 1 1/2"	9/16"ø	(3) 1/2"ø X 1 3/4"	9/16"ø	1 1/8"	1"	A325X
3 BAYS REQUIRE DIAGONAL REPLACEMENT										

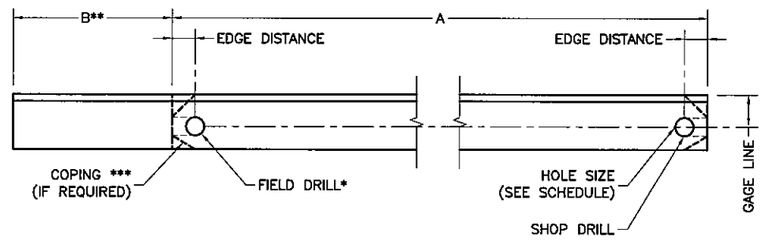
*CONTRACTOR TO FIELD VERIFY LENGTH PRIOR TO MATERIAL ORDERS.
**DISTANCE FROM HEEL OF ANGLE TO CENTER OF BOLT HOLE.
***EDGE DISTANCE FROM CENTER OF BOLT HOLE TO EDGE OF CONNECTED PART.

EXISTING FEEDLINE LADDERS TO BE RE-INSTALLED USING EXISTING HARDWARE TO NEW DIAGONALS WHERE POSSIBLE & REPLACED IN ALL OTHER LOCATIONS AS NECESSARY. CONTRACTOR RESPONSIBLE FOR ALL PARTS ASSOCIATED WITH TEMPORARY & FINAL COAX & CLIMBING LADDER SUPPORT.



DIAGONAL REPLACEMENT
ELEVATION VIEW

1 / S-2 ELEVATION
NTS



* ESTIMATED HOLE LOCATION. CONTRACTOR TO FIELD VERIFY LOCATION OF THIS HOLE PRIOR TO DRILLING HOLE TO ENSURE PROPER FIT. CONTRACTOR TO FIELD CUT EXCESS MATERIAL AFTER HOLE LOCATION IS VERIFIED.

** "B" WE SUGGEST THE PRELIMINARY CUT LENGTH IS 6" LONGER THAN OUR ESTIMATED LENGTH FOR MEMBERS 10' OR LESS, & 12" FOR MEMBERS GREATER THAN 10'.

*** COPING MAY BE REQUIRED; COPING NOT TO EXCEED "TEAR-OUT" PLANE OF BOLT HOLE AS SHOWN.

DIAGONAL
FRONT VIEW

MK-1 / S-2 DETAIL
NTS

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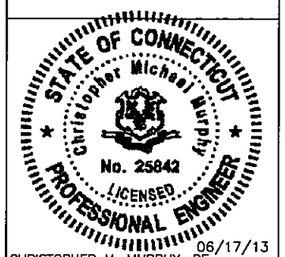

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CT46126-A-03

SITE ADDRESS:
2577 MAIN STREET
GLASTONBURY, CT 06033

SHEET TITLE
DIAGONAL REPLACEMENT DETAILS

SHEET NUMBER
S-2

EBI Consulting
environmental | engineering | due diligence

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

Sprint Existing Facility

Site ID: CT33XC822

Glastonbury Nextel
2577 Main Street
Glastonbury, CT 06033

November 3, 2012

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

EBI Consulting
environmental | engineering | due diligence

November 3, 2012

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

Re: Emissions Values for Site: **CT33XC822 – Glastonbury Nextel**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 2577 Main Street, Glastonbury, CT, for the purpose of determining whether the emissions from the proposed Sprint equipment upgrades on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of μW/cm2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the cellular band is approximately 567 $\mu W/cm^2$, and the general population exposure limit for the PCS band is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed upgrades to the existing Sprint Wireless antenna facility located at 2577 Main Street, Glastonbury, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario. Actual values seen from this site will be dramatically less than those shown in this report. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

1) 4 CDMA Carriers (1900 MHz) were considered for each sector of the proposed installation.
2) 1 CDMA Carrier (850 MHz) was considered for each sector of the proposed installation
3) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
4) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
5) The antenna used in this modeling is the APXVSPP18-C-A20. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 MHz. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario.

6) The antenna mounting height centerline of the proposed antennas is **118 feet** above ground level (AGL)
7) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT33XC822 - Glastonbury Nextel
Site Addresss	2577 Main Street, Glastonbury, CT, 06033
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 in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	118	112	1/2 "	0.5	0	2773.8948	79.49868	7.94987%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	118	112	1/2 "	0.5	0	389.96892	11.17635	1.97114%
														Sector total Power Density Value:		9.921%	

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	118	112	1/2 "	0.5	0	2773.8948	79.49868	7.94987%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	118	112	1/2 "	0.5	0	389.96892	11.17635	1.97114%
														Sector total Power Density Value:		9.921%	

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	118	112	1/2 "	0.5	0	2773.8948	79.49868	7.94987%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	118	112	1/2 "	0.5	0	389.96892	11.17635	1.97114%
														Sector total Power Density Value:		9.921%	

Site Composite MPE %	
Carrier	MPE %
Sprint	29.763%
T-Mobile	14.330%
Pocket	6.810%
Clearwire	1.160%
Nextel	3.480%
AT&T	5.260%
Total Site MPE %	60.803%

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Summary

All calculations performed for this analysis yielded results that were well within the allowable limits for general public exposure to RF Emissions.

The anticipated Maximum Composite contributions from the Sprint facility are **29.763% (9.921% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **60.803%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions

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

Scott Heffernan
RF Engineering Director

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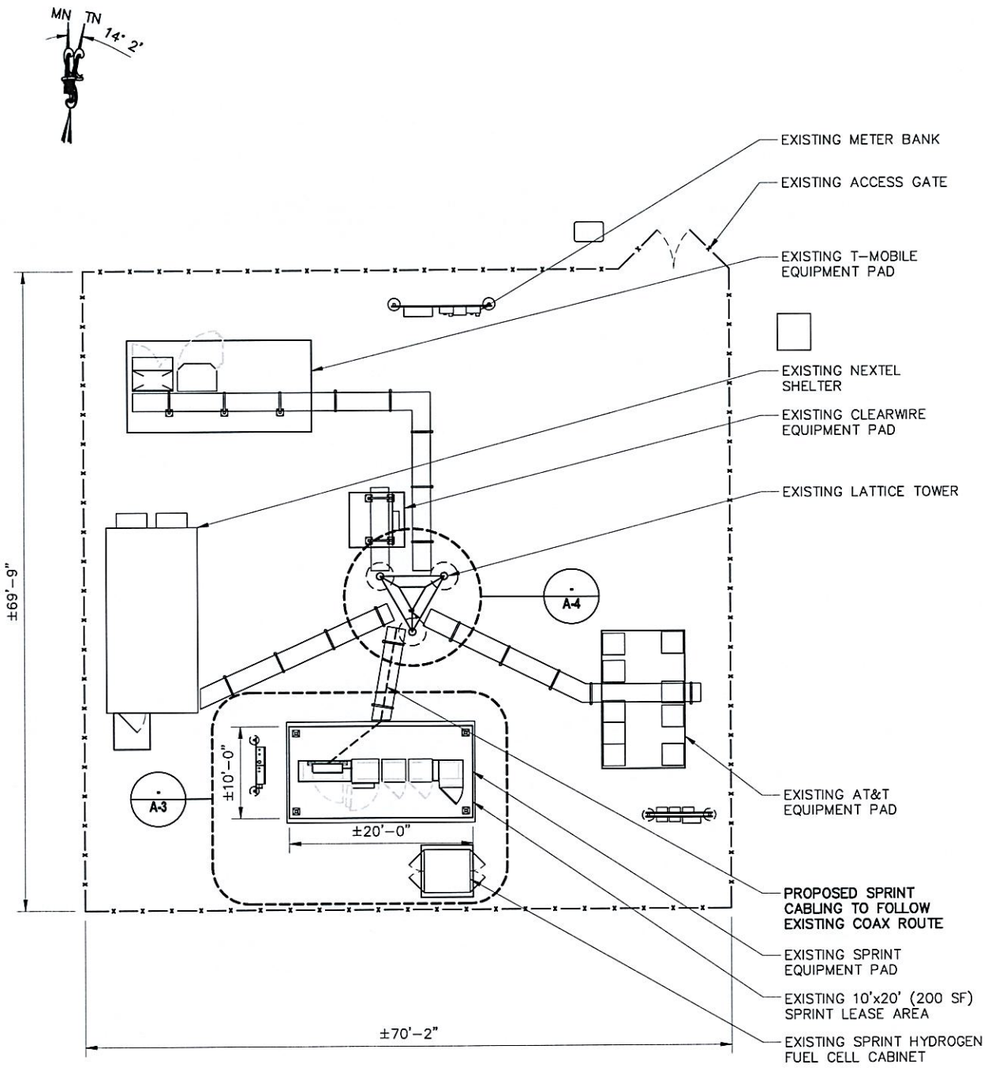
21 B Street
Burlington, MA 01803



CABLING NOTES:
1. PROPOSED CABLING TO FOLLOW EXISTING ROUTE AND METHOD OF ATTACHMENT AT INTERIM.
2. EXISTING COAXIAL CABLES TO BE REMOVED AT FINAL.
3. CONTRACTOR TO REPAIR/REPLACE ANY MISSING/DAMAGED CABLE TRAY AND ADD HURRICANE STRAPS AS REQUIRED IF APPLICABLE.

GENERAL NOTES:
1. FINAL ANTENNA & EQUIPMENT CONFIGURATION SHOWN ON THIS PLAN. SEE EQUIPMENT & ANTENNA PLAN SHEETS FOR EXISTING AND INTERIM CONFIGURATION.
2. CONTRACTOR TO REPLACE ALL MISSING GROUND BARS AND GROUNDING CONNECTIONS AS REQUIRED IN ACCORDANCE WITH SPRINT GROUNDING AND ANTI–THEFT GUIDELINES.
3. CONTRACTOR TO RESTORE ANY RUST AREA TO ORIGINAL CONDITION AND PROTECTIVE COATING TO BE APPLIED.
4. STRUCTURAL ANALYSIS PROVIDED UNDER SEPARATE COVER.

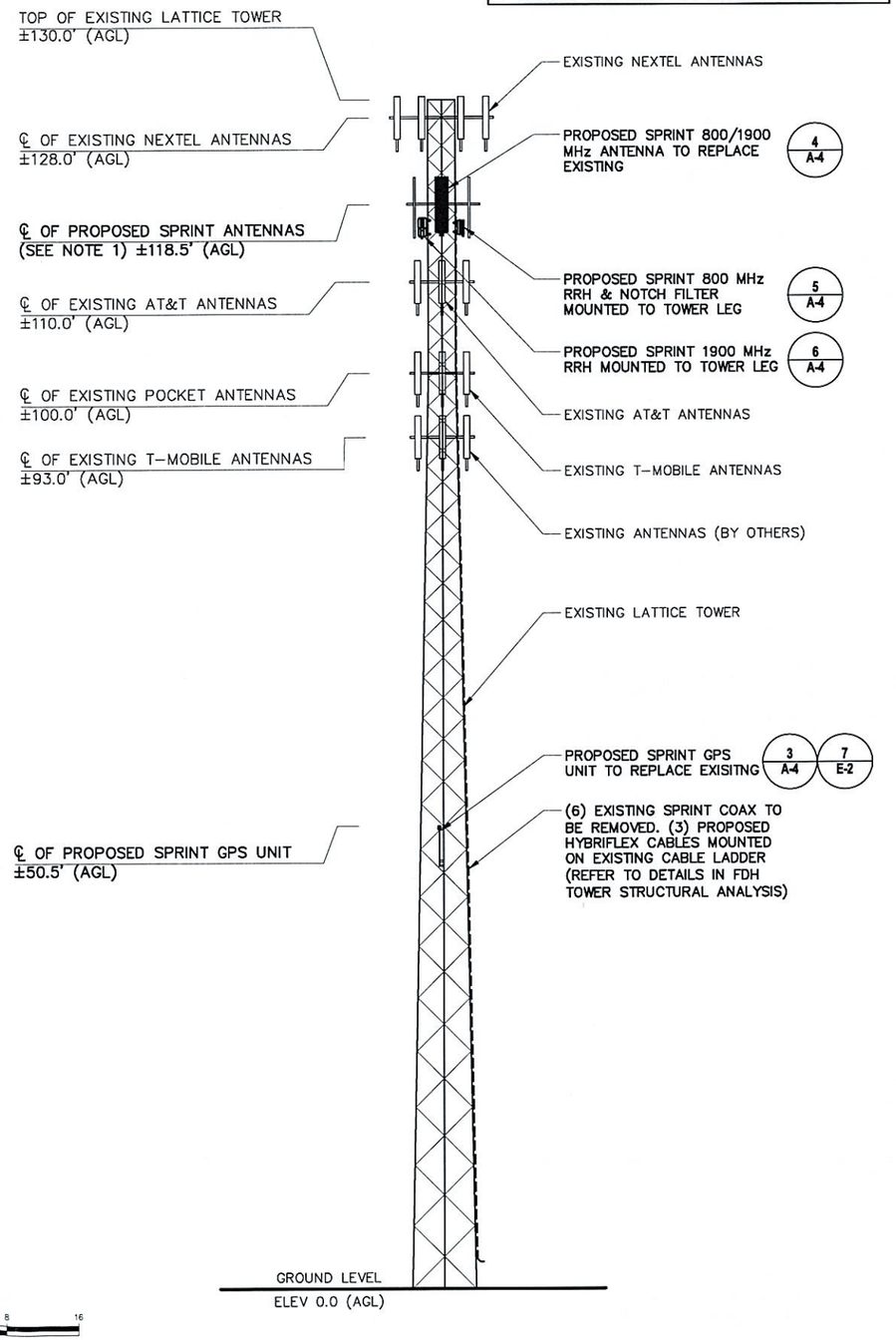
2 / A-1

4 0 2 4 8 16 (IN FEET)

1 EXISTING COMPOUND PLAN

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

NOTES:
1. NETWORK VISION ANTENNA RADIATION CENTERLINE AGL (FT) BASED ON SBA EQUIPMENT DATABASE AND SBA TOWER STRUCTURAL ANALYSIS AND WILL SUPERSEDE ANY CONFLICTING INFORMATION FROM ALU/SPRINT DATABASE.
2. GROUND EQUIPMENT NOT SHOWN FOR CLARITY.



4 0 2 4 8 16 (IN FEET)

2 SOUTHEAST ELEVATION

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

Sprint

SBA

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
C	06-17-13	REVISED PER CLIENT COMMENTS	DPC	NS
B	05-20-13	REVISED PER CLIENT COMMENTS	KMO	NS
A	03-25-13	INITIAL SUBMISSION NOT FOR CONSTRUCTION	COS	NS

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Stephen A. Bray
PROFESSIONAL ENGINEER
STATE OF CONNECTICUT · STEPHEN A. BRAY · No. 26657 · LICENSED PROFESSIONAL ENGINEER
CT LICENSE: 26657 6/18/13

PROJECT NUMBER: **332.6011**

SITE INFORMATION:
2577 MAIN STREET
GLASTONBURY, CT 06033
HARTFORD COUNTY

CT43XC822

PROJECT TYPE: NETWORK VISION

DRAWN BY:	CHECKED BY:	DATE:
COS	NS	03-18-13

SHEET TITLE: COMPOUND PLAN & ELEVATION

SHEET NUMBER: A-1 | REV.: C

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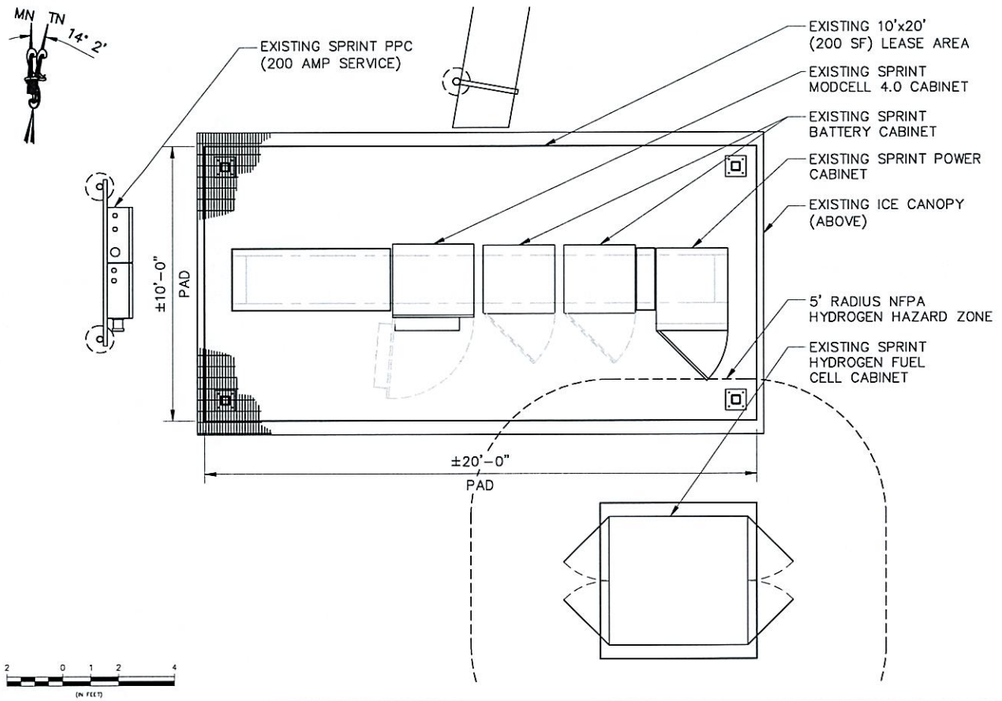
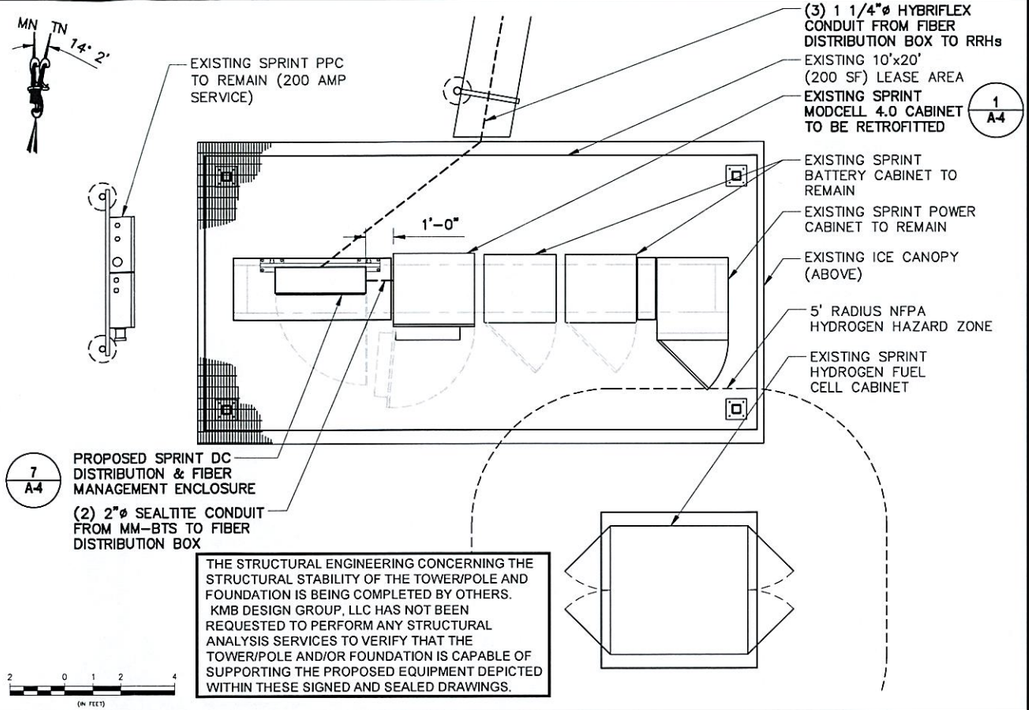


1 **EXISTING EQUIPMENT PLAN**

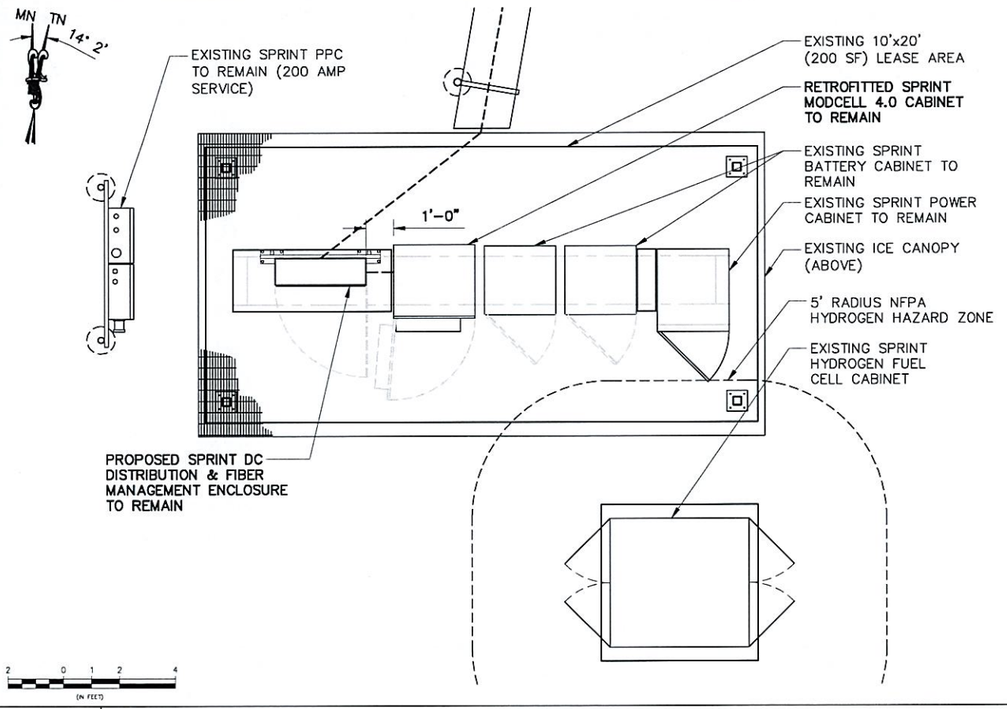
11x17 SCALE: 3/16" = 1'-0" | 24x36 SCALE: 3/8" = 1'-0"



THE STRUCTURAL ENGINEERING CONCERNING THE STRUCTURAL STABILITY OF THE TOWER/POLE AND FOUNDATION IS BEING COMPLETED BY OTHERS. KMB DESIGN GROUP, LLC HAS NOT BEEN REQUESTED TO PERFORM ANY STRUCTURAL ANALYSIS SERVICES TO VERIFY THAT THE TOWER/POLE AND/OR FOUNDATION IS CAPABLE OF SUPPORTING THE PROPOSED EQUIPMENT DEPICTED WITHIN THESE SIGNED AND SEALED DRAWINGS.

2 **INTERIM EQUIPMENT PLAN**

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



3 **FINAL EQUIPMENT PLAN**

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

4 **EXISTING EQUIPMENT PHOTO DETAIL**

SCALE: NTS

Sprint

SBA

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
C	06-17-13	REVISED PER CLIENT COMMENTS	DPC	NS
B	05-20-13	REVISED PER CLIENT COMMENTS	KMO	NS
A	03-25-13	INITIAL SUBMISSION NOT FOR CONSTRUCTION	COS	NS

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PROJECT NUMBER:
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HARTFORD COUNTY

CT43XC822

PROJECT TYPE:
NETWORK VISION

DRAWN BY:	CHECKED BY:	DATE:
COS	NS	03-18-13

SHEET TITLE:
EQUIPMENT
PLANS

SHEET NUMBER: **A-2** REV.: **C**

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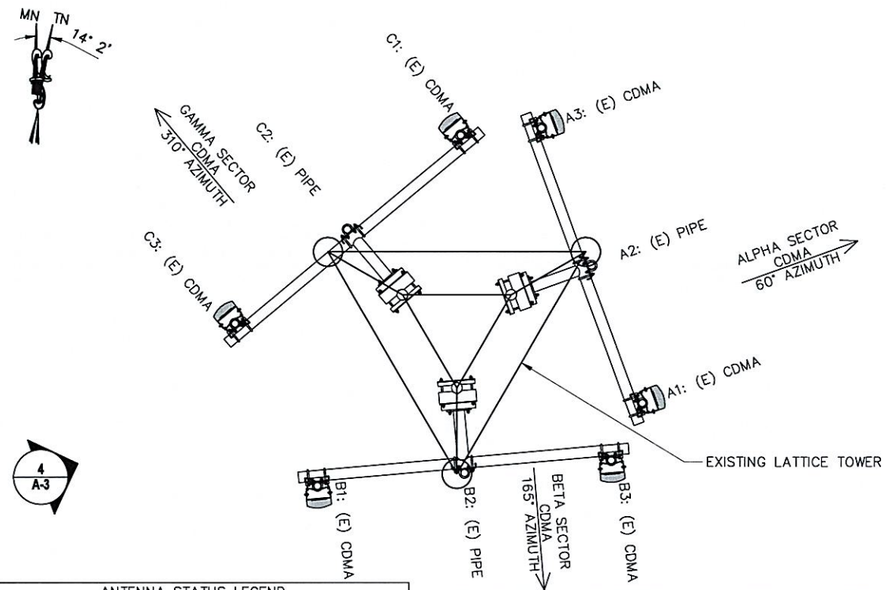
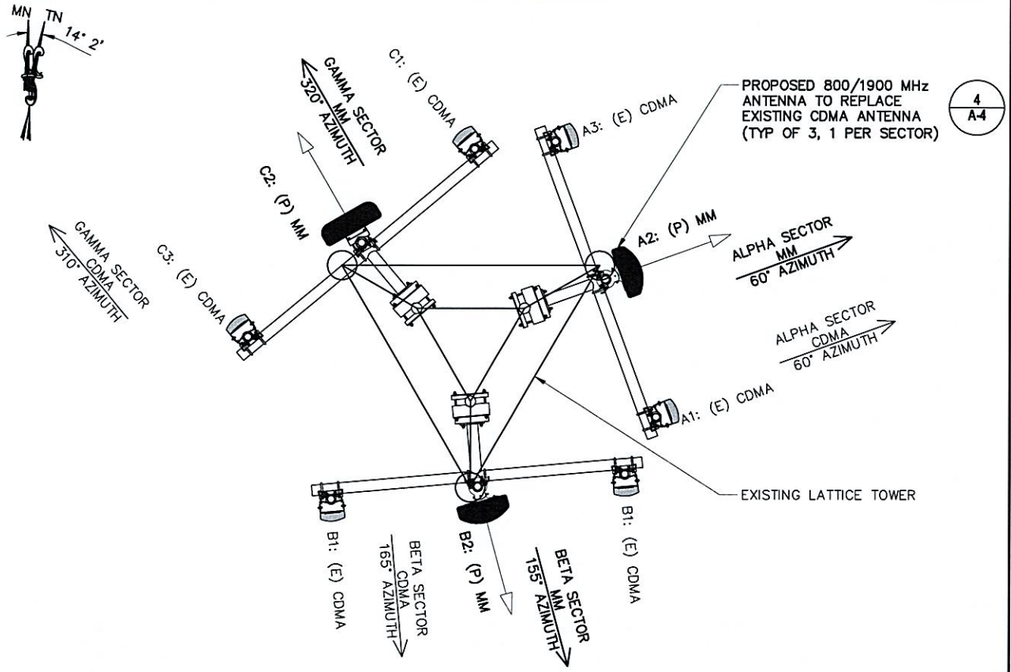


ANTENNA STATUS LEGEND			
(E)	EXISTING	IDEN	IDEN ANTENNA
(P)	PROPOSED	DP	DUAL POLE
CDMA	SPRINT ANTENNA	SP	SINGLE POLE
MM	MULTIMODAL ANTENNA		

NOTE:
EXISTING ANTENNA AND PLATFORM ORIENTATIONS HAS BEEN TAKEN FROM NETWORK VISION 3G RUN PLANNING PLAYBOOK. GC TO VERIFY EXISTING ORIENTATIONS PRIOR TO PROPOSED INSTALLATION.

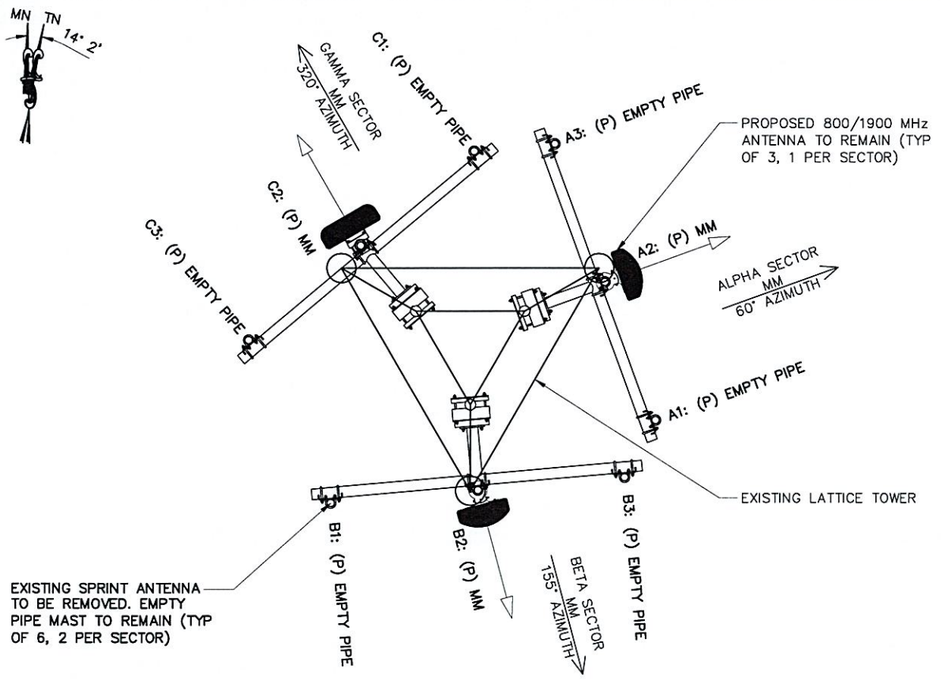
1 EXISTING ANTENNA PLAN

SCALE: NTS



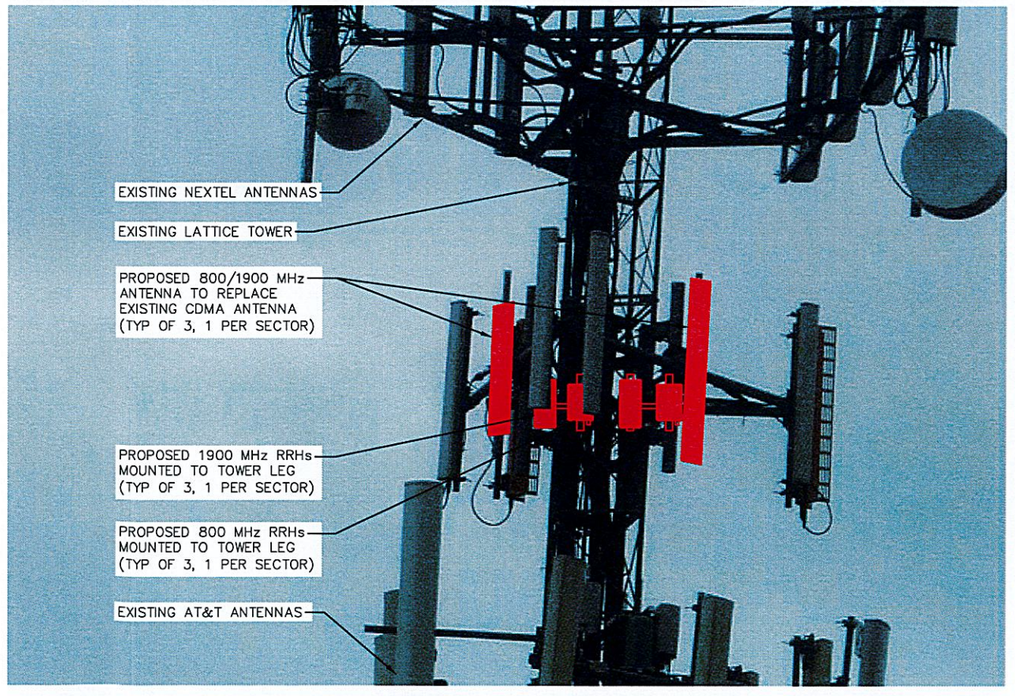
2 INTERIM ANTENNA PLAN

SCALE: NTS



3 FINAL ANTENNA PLAN

SCALE: NTS



4 EXISTING ANTENNA PHOTO DETAIL

SCALE: NTS

Sprint

SBA

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PROJECT TYPE: NETWORK VISION

DRAWN BY:	CHECKED BY:	DATE:
COS	NS	03-18-13

SHEET TITLE: ANTENNA PLANS

SHEET NUMBER: A-3 REV.: C

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