EM-CING-023-130201

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

HPC WIRELESS SERVICES

ORIGINAL

January 31, 2013

RECEIVED
FEB - 1 2013
CONNECTICUT
SITING COUNCIL

VIA OVERNIGHT COURIER

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051
Attn: Ms. Linda Roberts, Executive Director

Re: New Cingular Wireless PCS, LLC – Exempt Modification
96 Powder Mill Road, Canton

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of New Cingular Wireless PCS, LLC ("AT&T"). AT&T is making modifications to certain existing sites in its Connecticut system in order to implement LTE technology. Please accept this letter and attachments as notification, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies ("R.S.C.A."), of construction that constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the First Selectman of the Town of Canton

AT&T plans to modify the existing wireless communications facility owned by SBA Communications, Inc. and located at 96 Powder Mill Road, Canton (coordinates 41°-50'-02.93" N, 72°-55'-59.24" W). Attached are a compound plan and elevation depicting the planned changes, and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration, subject to modifications detailed in the attached structural documentation. Also included is a power density report reflecting the modification to AT&T'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. AT&T will add three (3) LTE panel antennas on new pipe mounts attached to the existing T-arms at a centerline height of approximately 137'. Six (6) RRHs (remote radio units) will be placed on new mounts attached to the pole, and a Surge Arrestor on a new

mounting pipe will be attached to the existing support arm, all also at a centerline height of approximately 137'. AT&T will also place DC power and fiber runs along the existing coaxial cable run. These changes will not extend the height of the approximately 180'structure.

2. AT&T will place related equipment in an existing Equipment Shelter and mount a new GPS antenna on the existing Ice Bridge. These changes will be within the existing compound and will have no effect on the site boundaries.

3. The proposed changes will not increase the noise level at the existing facility by six (6) decibels or more. The incremental effect of the proposed changes will be negligible.

4. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated on the attached report prepared by C Squared Systems, LLC, AT&T's operations at the site will result in a power density of approximately .1.83%; the combined site operations will result in a total power density of approximately 12.32%.

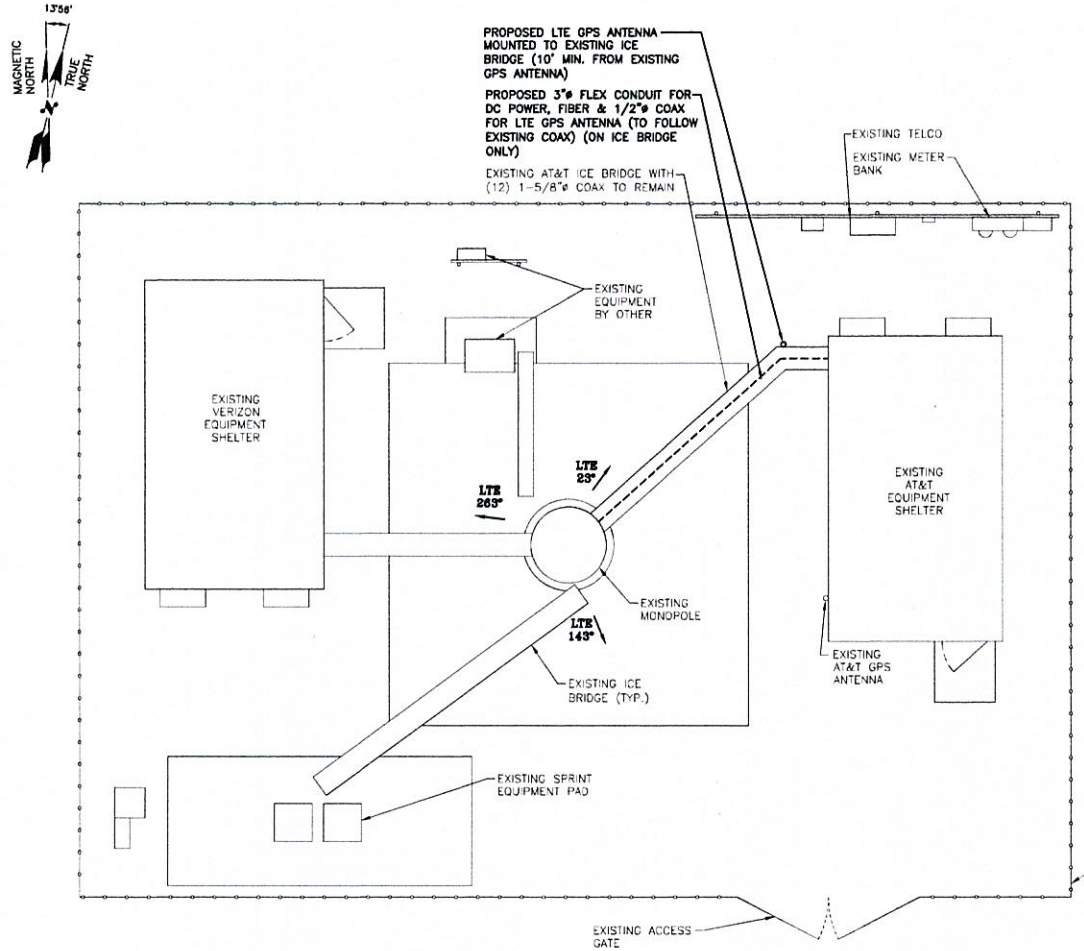
Please contact me by phone at (203) 610-1071, or by e-mail at mjhowlett@optonline.net, if there are any questions concerning this matter. Thank you for your consideration.

Respectfully yours,

Melanie J. Howlett

Attachments

cc: Honorable Richard J. Barlow, First Selectman, Town of Canton
Property One, LLC (underlying property owner)



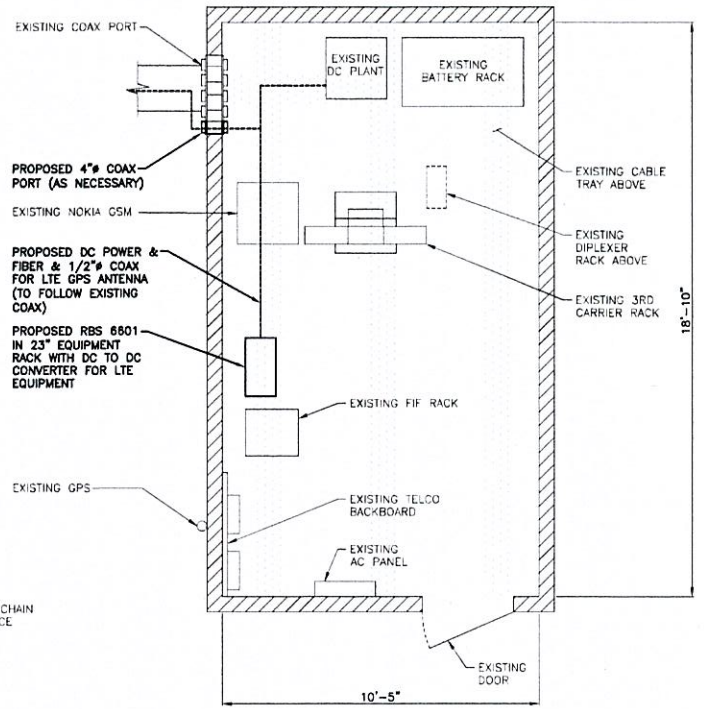
COMPOUND PLAN
SCALE: 1/4"=1'-0"

0 2'-0" 4'-0" 8'-0" 12'-0"

13°58'
MAGNETIC NORTH
TRUE NORTH

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
REFER TO STRUCTURAL ANALYSIS & MODIFICATION DESIGN BY: FDH ENGINEERING, INC. DATED: SEPTEMBER 27, 2012 FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



EQUIPMENT PLAN
SCALE: 1/2"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

Pinnacle Wireless
a UniTek GLOBAL SERVICES company
800 MARSHALL PHELPS ROAD UNIT# 2A
WINDSOR, CT 06095

SITE NUMBER: CT1114
SITE NAME: CANTON 2
96 POWDER MILL ROAD
CANTON, CT 06022
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	01/15/13	ISSUED FOR CONSTRUCTION	MJS	DC	DPH
0	07/19/12	ISSUED FOR REVIEW	CG	DC	DPH

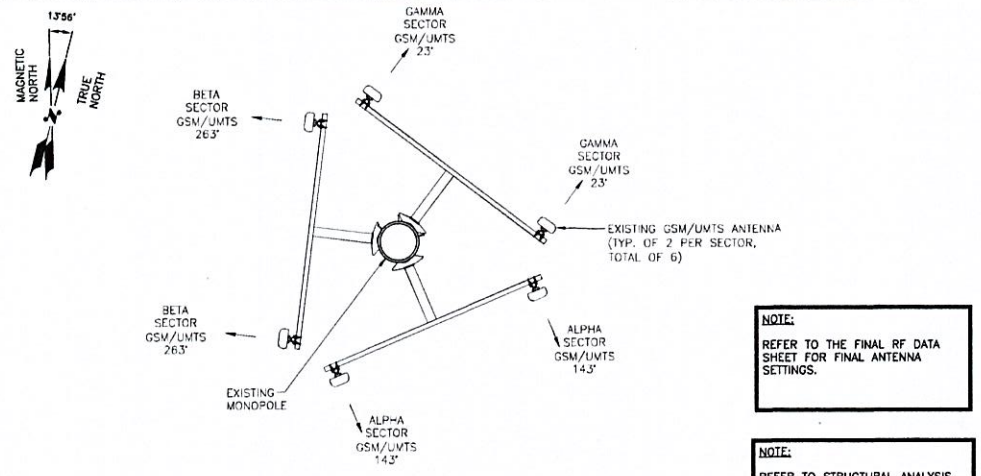
SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: CG

Daniel P. Hamm
No. 21170
LICENSED PROFESSIONAL ENGINEER
STATE OF CONNECTICUT

AT&T

COMPOUND PLAN & EQUIPMENT PLAN (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1114.01	A-1	1



EXISTING GSM/UMTS ANTENNA PLAN

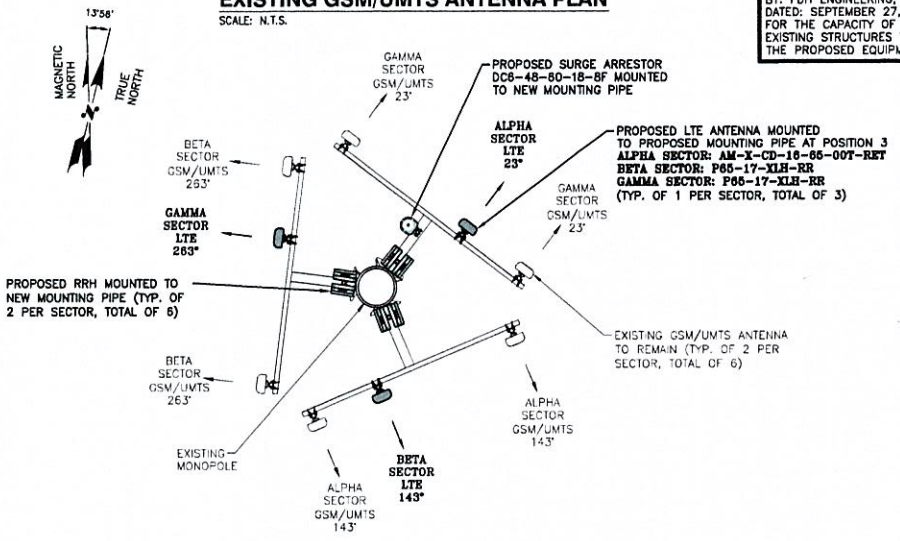
SCALE: N.T.S.

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

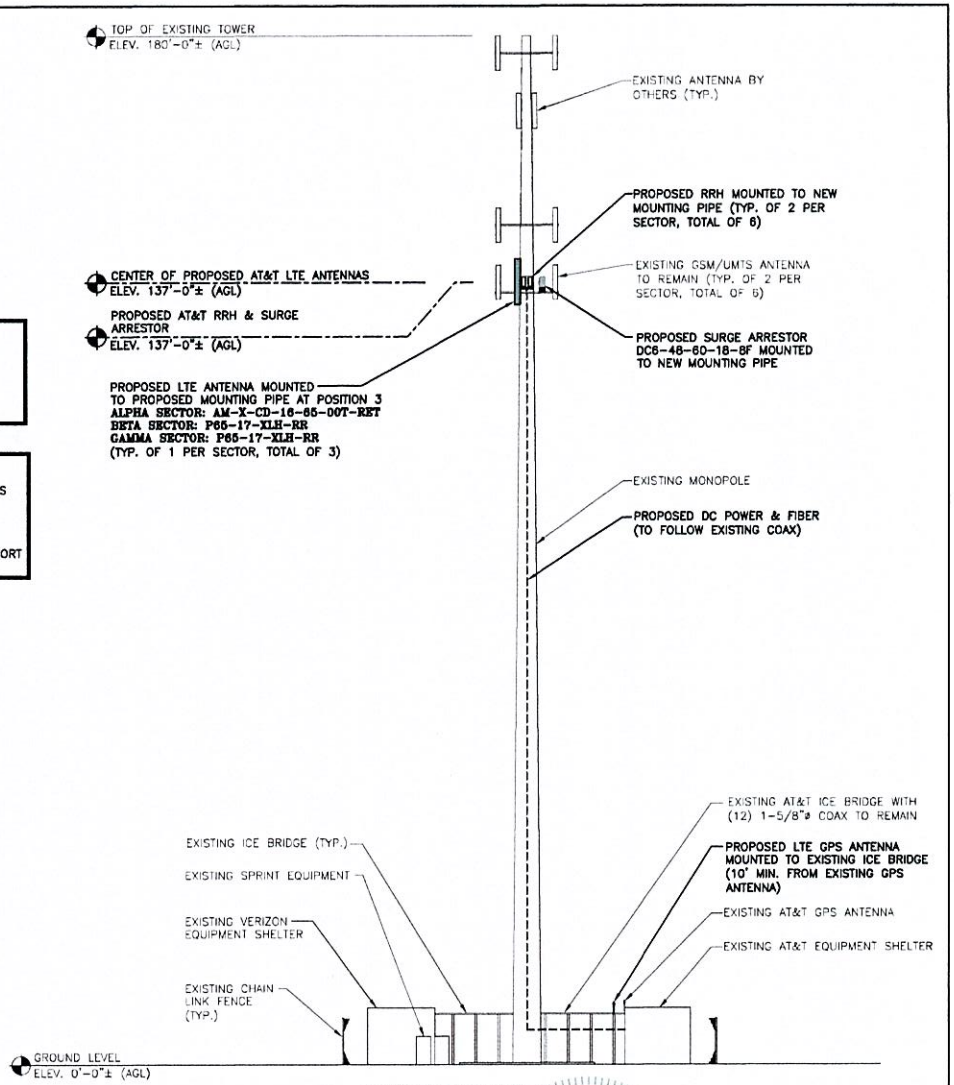
NOTE:

REFER TO STRUCTURAL ANALYSIS & MODIFICATION DESIGN BY: FDH ENGINEERING, INC. DATED: SEPTEMBER 27, 2012 FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



PROPOSED LTE ANTENNA PLAN

SCALE: N.T.S.



SOUTH ELEVATION

SCALE: 3/32"=1'-0"

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

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
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SITE NUMBER: CT1114
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500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APV'D
1	01/15/13	ISSUED FOR CONSTRUCTION	MJS	DC	DPH
0	07/19/12	ISSUED FOR REVIEW	CG	DC	DPH

SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: CG

Diane R. Hamm
LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA PLAN & ELEVATION (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1114.01	A-2	1

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

Structural Analysis for SBA Network Services, Inc.

180' Monopole Tower

SBA Site Name: South Canton
SBA Site ID: CT01722-S
AT&T Site ID: CT1114
AT&T Site Name: Canton 2

FDH Project Number 12-06272E S2

Analysis Results

Tower Components	58.2%	Sufficient
Foundation	**117.8%**	**Insufficient**

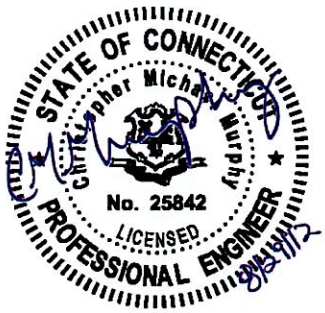
Prepared By:

Daniel Chang, 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



August 29, 2012

Prepared pursuant to ANSI/TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas and 2005 Connecticut Building Code

TABLE OF CONTENTS

EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the monopole located in Canton, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads pursuant to the *Structural Standard for Antenna Supporting Structures and Antennas, ANSI/TIA-222-G* and *2005 Connecticut Building Code*. Information pertaining to the existing/proposed antenna loading, current tower geometry, geotechnical data, foundation dimensions, and member sizes was obtained from:

- Valmont Microflect (Order No. 12156-00) Communication Pole Design Calculations dated August 3, 2000
- Valmont Microflect (Order No. 12156-00) Communication Pole Record Drawings dated August 3, 2000
- FDH Engineering, Inc. (Project No. 12-06272E G1) Geotechnical Evaluation of Subsurface Conditions dated August 6, 2012
- FDH Engineering, Inc. (Project No. 12-06272E N1) Dispersive Wave Propagation Testing and Rebar Investigation of an Existing Tower Foundation dated August 1, 2012
- SBA Network Services, Inc.

The *basic design wind speed* per the *ANSI/TIA-222-G* standard and *2005 Connecticut Building Code* is 100 mph without ice and 50 mph with 1" radial ice. Ice is considered to increase in thickness with height. Furthermore, this structure was analyzed as a Class II structure in Exposure Category C with a topographical factor of 1.

Conclusions

With the existing and proposed antennas from AT&T in place at 137 ft, the tower meets the requirements of the *ANSI/TIA-222-G* standard and *2005 Connecticut Building Code* provided the **Recommendations** listed below are satisfied. However, given the foundation dimensions listed in the FDH Engineering, Inc. Dispersive Wave Propagation Testing and Rebar Investigation of an Existing Tower Foundation dated August 1, 2012 (see FDH Project No. 12-06272E N1) and the given soil parameters (see FDH Engineering, Inc. Project No. 12-06272E G1), the foundation does not 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 *ANSI/TIA-222-G* standard and *2005 Connecticut Building Code* are met with the existing and proposed loading in place, we have the following recommendations:

1. The proposed coax should be installed inside the pole's shaft.
2. The existing TMAs and diplexers should be installed directly behind the proposed and existing panel antennas.
3. Modifications to the tower's foundation are needed to support the proposed and existing loading.

We would anticipate the construction cost for a turnkey design/build modification project of this nature to range in price from approximately $15,000 to $25,000 (which should include the engineering design fees, inspection fees, and construction fees).

APPURTENANCE LISTING

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

Table 1 - Appurtenance Loading

Existing Loading:

Antenna Elevation (ft)	Description	Coax and Lines[1]	Carrier	Mount Elevation (ft)	Mount Type
177	(6) Decibel DB980H90E-M w/ Mount Pipe	(6) 1 5/8	Sprint	177	(1) Platform w/ Handrails
167	(3) Kathrein 742 213	(6) 1 5/8	Pocket	167	(3) Pipe Mounts
147	(3) Antel BXA-70063/6CF w/ Mount Pipe (4) Antel LPA-80080/4CF-EDIN w/ Mount Pipe (2) Antel BXA 171085-8CF-2 w/ Mount Pipe (1) Antel BXA-171063/8CF-2 w/ Mount Pipe (2) Antel LPA-80063/4CF w/ Mount Pipe (6) RFS FD9R6004/2C-3 Diplexers	(12) 1 5/8	Verizon	147	(1) Low Profile Platform
137	(6) Powerwave 7770 w/ Mount Pipe (3) CSS DUO1417-8686-40 w/ Mount Pipe (6) Powerwave LGP 21401 TMAs (6) Powerwave LGP 21903 Diplexers	(12) 1 5/8	AT&T	137	(3) T-Arms
70	(1) GPS	(1) 1/2	Sprint	70	(1) Standoff

1. Coax installed inside the monopole's shaft unless otherwise noted.

Proposed Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
137	(6) Powerwave 7770 w/ Mount Pipe (3) CSS DUO1417-8686-40 w/ Mount Pipe (2) Powerwave P65-17-XLH-RR w/ Mount Pipe (1) KMW AM-X-CD-16-65-001-RET w/ Mount Pipe (6) Powerwave LGP 21401 TMAs (6) Powerwave LGP 21903 Diplexers (6) Ericsson RRUS-11 RRUs (1) Andrew ABT-DF-DMADBH Surge Arrestor (1) Raycap DC6-48-60-18-8F Surge Arrestor	(12) 1 5/8 (1) 7/16" Fiber[1] (2) 3/4" DC Power[1]	AT&T	137	(3) T-Arms

1. Coax installed inside 3" Flex Conduit inside the monopole's shaft.

RESULTS

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

Table 2 - Material Strength

Member Type	Yield Strength
Tower Shaft Sections	65 ksi
Base Plate	60 ksi
Anchor Bolts	75 ksi

Table 3 displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. **Table 4** displays the maximum foundation reactions.

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

See the **Appendix** for detailed modeling information

Table 3 - Summary of Working Percentage of Structural Components

Section No.	Elevation ft	Component Type	Size	% Capacity	Pass Fail
L1	180 - 131.75	Pole	TP36.25x26.84x0.25	25.3	Pass
L2	131.75 - 91.6667	Pole	TP43.56x34.7261x0.2813	58.2	Pass
L3	91.6667 - 45.4167	Pole	TP52.02x41.7634x0.4375	49.3	Pass
L4	45.4167 - 0	Pole	TP60x49.7146x0.5	54.5	Pass
		Anchor Bolts	(28) 2.25" Ø on 68.62" Ø BC	43.5	Pass
		Base Plate	74.62" Ø x 2.75" thk PL	41.2	Pass

Table 4 - Maximum Base Reactions

Base Reactions	Current Analysis *(ANSI/TIA-222-G)*	Original Design *(TIA/EIA-222-F)*
Axial	58 k	53 k
Shear	38 k	39 k
Moment	4,337 k-ft	4,924 k-ft

GENERAL COMMENTS

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

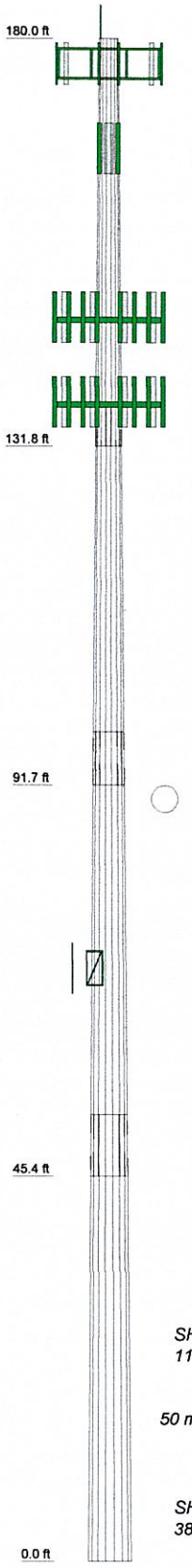
LIMITATIONS

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

APPENDIX

Section	1	2	3	4
Length (ft)	48.25	45.33	52.58	52.75
Number of Sides	16	16	16	16
Thickness (in)	0.2500	0.2813	0.4375	0.5000
Socket Length (ft)	5.25	6.33	7.33	
Top Dia (in)	26.8400	34.7261	41.7634	49.7146
Bot Dia (in)	38.2500	43.5600	52.0200	60.0000
Grade	A572-65			
Weight (K)	4.1	5.4	11.6	15.6

Total Weight (K): 36.6



ALL REACTIONS ARE FACTORED

AXIAL 101 K

SHEAR 11 K — *MOMENT 1272 kip-ft*

TORQUE 0 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 58 K

SHEAR 38 K — *MOMENT 4337 kip-ft*

TORQUE 1 kip-ft
REACTIONS - 100 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	180	(2) RFS FD9R6004/2C-3 Diplexer	147
(2) DB980H90E-M w/Mount Pipe	177	Low Profile Platform	147
(2) DB980H90E-M w/Mount Pipe	177	(2) Powerwave 7770 w/ Mount Pipe	137
(2) DB980H90E-M w/Mount Pipe	177	(2) Powerwave 7770 w/ Mount Pipe	137
(2) Empty Mount Pipe	177	(2) Powerwave 7770 w/ Mount Pipe	137
(2) Empty Mount Pipe	177	CSS DUO1417-8686-40 w/ Mount Pipe	137
(2) Empty Mount Pipe	177		
Platform w/ Handrails	177	CSS DUO1417-8686-40 w/ Mount Pipe	137
742 213 W/Pipe Mount	167		
742 213 W/Pipe Mount	167	CSS DUO1417-8686-40 w/ Mount Pipe	137
742 213 W/Pipe Mount	167		
BXA-70063/6CF w/ Mount Pipe	147	P65-17-XLH-RR w/Mount Pipe	137
BXA-70063/6CF w/ Mount Pipe	147	P65-17-XLH-RR w/Mount Pipe	137
BXA-70063/6CF w/ Mount Pipe	147	KMW AM-X-CD-16-65-001-RET w/ Mount Pipe	137
(2) Antel LPA-80080/4CF-EDIN w/ Mount Pipe	147	(2) Powerwave LGP 21401 TMA	137
Antel LPA-80080/4CF-EDIN w/ Mount Pipe	147	(2) Powerwave LGP 21401 TMA	137
		(2) Powerwave LGP 21401 TMA	137
Antel LPA-80080/4CF-EDIN w/ Mount Pipe	147	(2) Powerwave LGP 21903 Diplexer	137
		(2) Powerwave LGP 21903 Diplexer	137
Antel BXA 171085-8CF-2 w/Mount Pipe	147	(2) Powerwave LGP 21903 Diplexer	137
		(2) RRUS-11	137
Antel BXA 171085-8CF-2 w/Mount Pipe	147	(2) RRUS-11	137
		(2) RRUS-11	137
Antel BXA-171063/8CF-2 w/ Mount Pipe	147	Andrew ABT-DF-DMADBH Surge Arrestor	137
LPA-80063/4CF w/ Mount Pipe	147	DC6-48-60-18-8F Surge Arrestor	137
LPA-80063/4CF w/ Mount Pipe	147	(3) T-Arms	137
(2) RFS FD9R6004/2C-3 Diplexer	147	GPS	70
(2) RFS FD9R6004/2C-3 Diplexer	147	Standoff	70

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 100 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 58.2%

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

Job: South Canton, CT01722-S			
Project: 12-06272E S2			
Client: SBA Network Services, Inc.	Drawn by: Daniel Chang		App'd:
Code: TIA-222-G	Date: 08/29/12		Scale: NTS
Path: \FDH-SERVER\Projects\2012 Projects\6 - June\12-06272E\South Canton, CT02- SA, ATI\Analysis\South Canton, CT01722-S.eri			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. 12-06272E S2 DATED AUGUST 29, 2012.

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.

MODIFICATION DRAWINGS FOR A 180' MONOPOLE

SBA

SITE NAME:
SOUTH CANTON

SITE NUMBER:
CT01722-S

SITE ADDRESS:
96 POWDER MILL ROAD
CANTON, CT 06019

COORDINATES:
LATITUDE: 41.8342°
LONGITUDE: -72.9327°

SHEET INDEX

SHT. NO.	DESCRIPTION
T-1	TITLE SHEET
N-1	POST CONSTRUCTION INSPECTION NOTES
N-2	GENERAL & FOUNDATION NOTES
S-1	MODIFICATION SCHEDULE
S-2	NEW CONCRETE BLOCK DETAILS

PREPARED BY:
FDH
8521 LEESBURG DRIVE
RALEIGH, NC 27615
PHONE: 919-755-1012
FAX: 919-755-1031
ENGINEERING INNOVATION

PREPARED FOR:
SBA
5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800) 487-SITE

FOR BID ONLY

CHRISTOPHER M. MURPHY, P.E.
CONNECTICUT LIC. NO. 25842

DRAWN BY:	PF
CHECKED BY:	DMC
ENG APPV'D:	CMM
PROJECT NO:	12-06272E S3

SUBMITTALS

DATE	DESCRIPTION	REV
09/27/12	PRELIMINARY/REVIEW	A

SITE NAME:
SOUTH CANTON

SITE NUMBER:
CT01722-S

SITE ADDRESS:
96 POWDER MILL ROAD
CANTON, CT 06019

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
X	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
N/A	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.

PREPARED BY:
FDH
6521 MERIDIAN DRIVE
RALEIGH, NC 27616
PHONE: 919-755-1012
FAX: 919-755-1031
ENGINEERING INNOVATION

PREPARED FOR:
SBA
5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800) 487-SITE

FOR BID ONLY

CHRISTOPHER M. MURPHY, P.E.
CONNECTICUT LIC. NO. 25842

DRAWN BY:	PF
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ENG APPV'D:	CMM
PROJECT NO:	12-06272E S3

SUBMITTALS		
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09/27/12	PRELIMINARY/REVIEW	A

SITE NAME:
SOUTH CANTON

SITE NUMBER:
CT01722-S

SITE ADDRESS:
98 POWDER MILL ROAD
CANTON, CT 06019

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 ANSI/TIA-222-G "STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS".
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.

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.

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.

STEEL:

1. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC CODE AND ASTM SPECIFICATIONS.
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 A325N, 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 18.2, "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.

FOUNDATION NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL CODES AND ORDINANCES.
2. PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION AND UTILITIES SHALL BE ESTABLISHED PRIOR TO FOUNDATION INSTALLATION.
3. ALL WORK PRESENTED ON THESE DRAWINGS IS TO BE COMPLETED BY THE CONTRACTOR UNLESS OTHERWISE NOTED AND/OR AGREED TO WITH FDH ENGINEERING.
4. THE CONTRACTOR MUST HAVE EXPERIENCE IN PERFORMANCE OF WORK DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT THEY HAVE SUFFICIENT EXPERIENCE, ABILITY, AND KNOWLEDGE OF WORK TO BE PERFORMED AND THAT THEY ARE PROPERLY LICENSED, REGISTERED, AND/OR ENSURED TO PERFORM THIS WORK.
5. CONTRACTOR IS REQUIRED TO HAVE ALL NECESSARY INSPECTIONS PERFORMED BY THE LOCAL BUILDING CODE OFFICIAL OR AN APPROVED AGENCY.
6. FOUNDATION DESIGN ASSUMES FIELD INSPECTIONS WILL BE PERFORMED TO VERIFY THAT CONSTRUCTION MATERIALS, INSTALLATION METHODS AND ANY ASSUMED DESIGN PARAMETERS ARE ACCEPTABLE BASED UPON CONDITIONS EXISTING AT THE SITE.
7. ALL HARDWARE ASSEMBLY AND MANUFACTURER'S INSTRUCTIONS SHALL BE FOLLOWED; ANY CONTRADICTION BETWEEN THE MANUFACTURER'S RECOMMENDATIONS AND THESE DRAWINGS ARE TO BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER AND OWNER.
8. ANY CONTRACTOR INSTALLING ADHESIVE ANCHORING SYSTEMS SHALL BE TRAINED, IN PERSON BY A MANUFACTURER'S REPRESENTATIVE, ON THE PROPER INSTALLATION TECHNIQUES. THIS TRAINING SHALL INCLUDE PROPER DRILLING, HOLE CLEANING, AND INSTALLATION METHODS FOR THE ADHESIVE ANCHORING SYSTEM AND CONSTRUCTION CONDITIONS ON THIS PROJECT. ALL TRAINING TO BE CONDUCTED PRIOR TO CREWS STEPPING ON SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT MANUFACTURER REPRESENTATIVE TO SET UP TRAINING. FDH IS NOT RESPONSIBLE FOR ANY COST OCCURRED FOR OR DURING ADHESIVE ANCHORING SYSTEM TRAINING.
9. CONTRACTOR IS SOLELY RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION, INCLUDING BUT NOT LIMITED TO, INITIATING, MAINTAINING, LAYOUT, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. CONTRACTOR IS SOLELY RESPONSIBLE FOR ENSURING THE WORK COMPLIES WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS.
10. ALL DIMENSIONS AND/OR ELEVATIONS, OR SIMILAR EXISTING CONDITIONS SHOWN ON THE DRAWING ARE TO BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING ANY MATERIAL ORDERING, FABRICATION, OR CONSTRUCTION WORK. ANY DISCREPANCIES ARE TO BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER/OWNER. DISCREPANCIES MUST BE RESOLVED BEFORE CONTRACTOR IS TO PROCEED WITH THE WORK.
11. FOUNDATION DESIGN HAS BEEN DEVELOPED IN ACCORDANCE WITH THE LIMITS OF THE SUBSURFACE DATA PROVIDED. APPLICABLE CODES ARE ACI-318. SHOULD SUBSURFACE CONDITIONS VARY FROM THOSE VALUES USED IN THE DESIGN, THEN FDH ENGINEERING, INC. SHOULD BE NOTIFIED IMMEDIATELY.
12. FOUNDATION BACKFILL SHALL BE PLACED IN 8-INCH MAXIMUM LAYERS AND COMPACTED TO 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-698 (STANDARD PROCTOR). ADDITIONALLY, STRUCTURAL BACKFILL MUST HAVE A MINIMUM COMPACTED UNIT WEIGHT OF 120 LBS PER CUBIC FOOT.
13. ANY EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" X 3/4" MINIMUM.
14. CONTRACTOR TO PROVIDE A "SAFE WORKING" SOIL SLOPE FOR EXCAVATIONS DEEPER THAN 4 FT. (I.E. FOR EVERY FOOT OF DEPTH, TRENCH MUST BE EXCAVATED BACK 1-1/2FT). IF "SAFE WORKING" SLOPE CANNOT BE ATTAINED, CONTRACTOR SHALL PROVIDE TEMPORARY SOIL SHORING PER ALL APPLICABLE SAFETY CODES & REGULATIONS DURING CONSTRUCTION.

FOUNDATION CONCRETE:

1. WORK SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF ACI 318 - BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.
2. PROPORTIONS OF CONCRETE MATERIALS SHALL BE SUITABLE FOR THE INSTALLATION METHOD UTILIZED AND SHALL RESULT IN DURABLE CONCRETE FOR RESISTANCE TO LOCAL ANTICIPATED AGGRESSIVE ACTIONS. THE DURABILITY REQUIREMENTS OF ACI 318 CHAPTER 4 SHALL BE SATISFIED BASED ON THE CONDITIONS EXPECTED AT THE SITE. AS A MINIMUM, CONCRETE SHALL DEVELOP A COMPRESSIVE STRENGTH OF 4000 PSI IN 28 DAYS.
3. CONCRETE SHALL BE PLACED IN A MANNER THAT WILL PREVENT SEGREGATION OF CONCRETE MATERIALS, INFILTRATION OF WATER OR SOIL, AND OTHER OCCURRENCES THAT MAY DECREASE THE STRENGTH OR DURABILITY OF THE CONCRETE.
4. LOOSE MATERIAL SHALL BE REMOVED FROM BOTTOM OF EXCAVATION PRIOR TO CONCRETE PLACEMENT. CONCRETE SHALL BE PLACED ON UNDISTURBED SOIL, AND LOOSE CUTTINGS SHALL BE REMOVED FROM SIDES OF EXCAVATION PRIOR TO CONCRETE PLACEMENT. UNDER NO CIRCUMSTANCES SHALL CONCRETE FALL THROUGH WATER.
5. IN COLD WEATHER CONDITIONS, WORK SHALL BE IN ACCORDANCE WITH ACI 305.1-90 (REAPPROVED 2002). SEE ACI 306 FOR DESCRIPTION OF COLD WEATHER CONDITIONS.
6. SULFATE RESISTANT CEMENT SHALL BE USED IN AREAS WHICH ARE KNOWN TO HAVE HIGH SULFATES IN SOIL AND GROUND WATER.

CONCRETE TESTING:

1. SLUMP TEST SHALL BE PERFORMED ON-SITE TO ENSURE WORKABILITY OF CONCRETE.
2. ALL TEST CYLINDERS SHALL BE MADE AND CURED IN ACCORDANCE WITH ASTM C31. COMPRESSION TESTING SHALL BE DONE IN ACCORDANCE WITH ASTM C39.
3. CYLINDERS TO BE BROKEN ON DAYS 7 AND 28. (2) ADDITIONAL CYLINDERS SHOULD BE AVAILABLE FOR ANY ADDITIONAL TESTING.
4. A SUFFICIENT SAMPLING OF CONCRETE SHALL BE TAKEN TO ENSURE A FAIR REPRESENTATION OF THE CONCRETE USED FOR ALL SLUMP AND COMPRESSION TESTS. NON-CONFORMING MATERIAL SHALL NOT BE ACCEPTED BY CONTRACTOR.

FOUNDATION REINFORCEMENT:

1. REINFORCEMENT SHALL BE DEFORMED AND CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60 UNLESS OTHERWISE NOTED. SPLICES IN REINFORCEMENT SHALL NOT BE ALLOWED UNLESS OTHERWISE NOTED.
2. REINFORCEMENT SHALL BE PROPERLY PLACED PRIOR TO ANY CONCRETE PLACEMENT. REINFORCING SHALL BE BRACED TO RETAIN PROPER DIMENSIONS DURING HANDLING AND THROUGHOUT PLACEMENT OF CONCRETE.
3. WELDING IS PROHIBITED ON REINFORCING STEEL AND EMBEDMENTS.
4. MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE 3 INCHES. REBAR CHAIRS MUST BE USED TO ENSURE THE 3 INCH MINIMUM COVER. CONCRETE BLOCKS ARE NOT TO BE USED TO OBTAIN MINIMUM COVER.

PREPARED BY:

FDH
6521 MERIDIEN DRIVE
RALEIGH, NC 27616
PHONE: 919-755-1012
FAX: 919-755-1031
ENGINEERING INNOVATION

PREPARED FOR:

SBA
8000 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800) 487-SITE

FOR BID ONLY

CHRISTOPHER M. MURPHY, P.E.
CONNECTICUT LIC. NO. 25842

DRAWN BY:	PF
CHECKED BY:	DMC
ENG APPV'D:	CMM
PROJECT NO:	12-06272E S3

SUBMITTALS

DATE	DESCRIPTION	REV
09/27/12	PRELIMINARY/REVIEW	A

SITE NAME:
SOUTH CANTON

SITE NUMBER:
CT01722-S

SITE ADDRESS:
96 POWDER MILL ROAD
CANTON, CT 06019

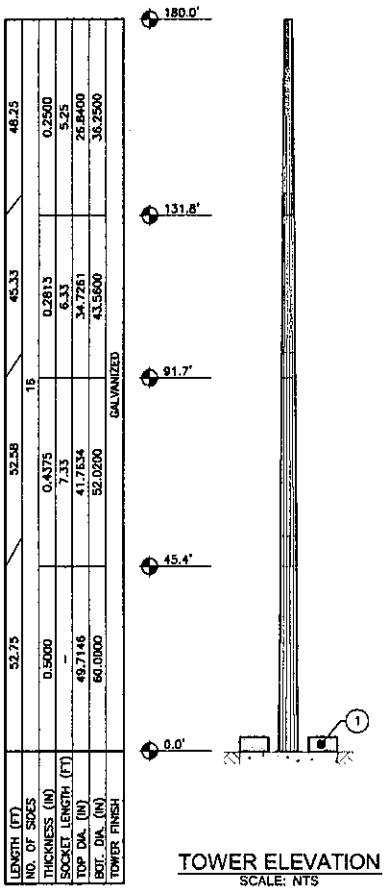
SHEET TITLE
GENERAL & FOUNDATION NOTES

SHEET NUMBER
N-2

- 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 CONCRETE BLOCKS. SEE S-2 FOR DETAILS.	0.0±	3.5±



TOWER ELEVATION
SCALE: NTS

PREPARED BY:
FDH ENGINEERING INNOVATION
8521 LEESBURG DRIVE
RALEIGH, NC 27615
PHONE: 919-755-1012
FAX: 919-755-1031

PREPARED FOR:
SBA
5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800) 487-SITE

FOR BID ONLY

CHRISTOPHER M. MURPHY, P.E.
CONNECTICUT LIC. NO. 25842

DRAWN BY:	PF
CHECKED BY:	DMC
ENG APPVD:	CMM
PROJECT NO:	12-08272E S3

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SOUTH CANTON

SITE NUMBER:
CT01722-S

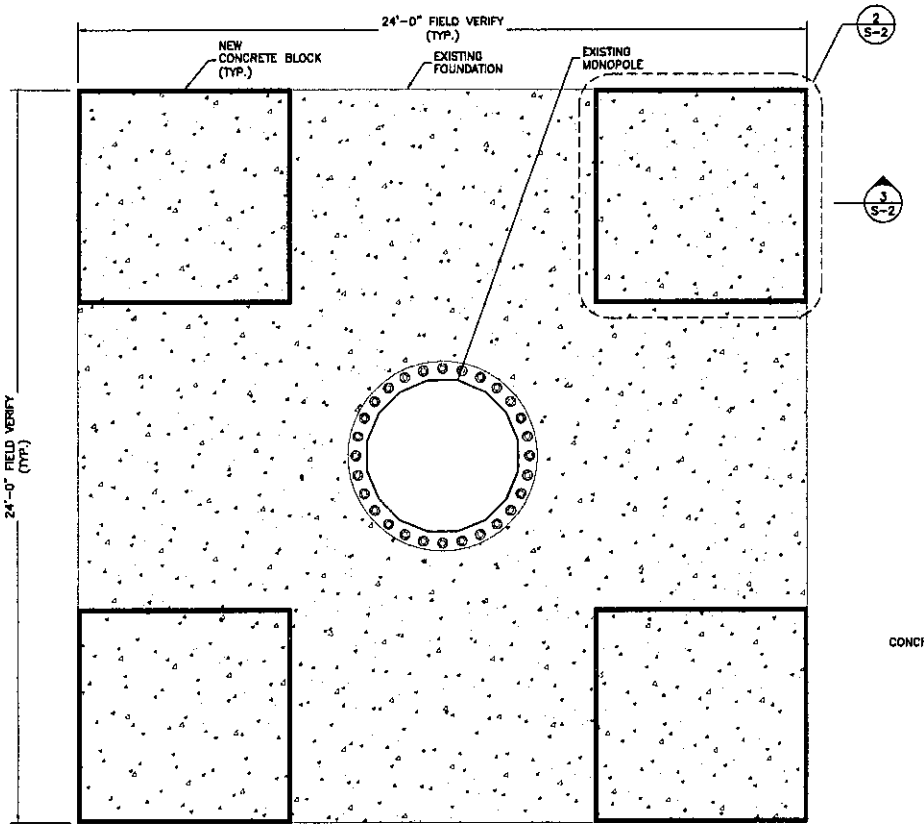
SITE ADDRESS:
96 POWDER MILL ROAD
CANTON, CT 06019

SHEET TITLE
MODIFICATION SCHEDULE

SHEET NUMBER
S-1

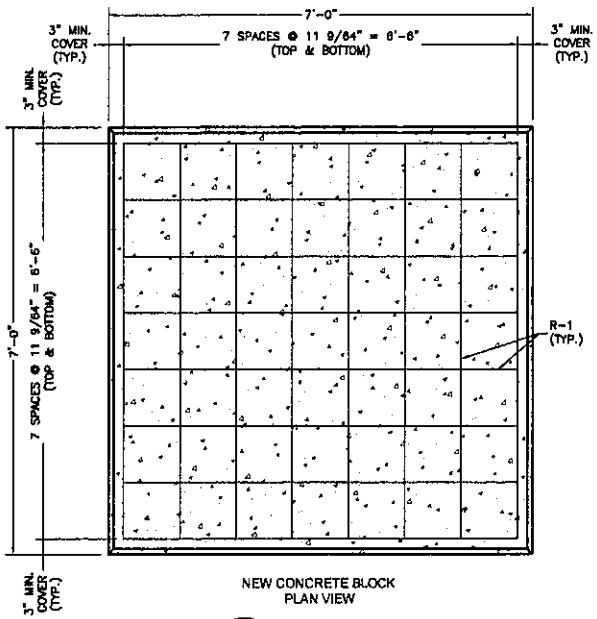
NEW CONCRETE BLOCK MATERIAL LIST

PART NO.	SHAPE	QTY.	LENGTH	DESCRIPTION
R-1	———	128	6'-6"±	#5 REBAR
–		1	25.5± CU. YD.	4000 PSI CONCRETE



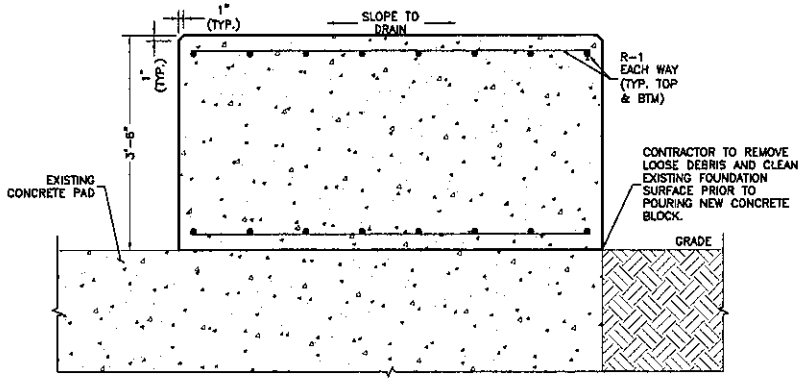
NEW CONCRETE BLOCK LAYOUT PLAN VIEW

1 / S-2 DETAIL SCALE: 1/4" = 1'-0"



NEW CONCRETE BLOCK PLAN VIEW

2 / S-2 DETAIL SCALE: 1/2" = 1'-0"



NEW CONCRETE BLOCK ELEVATION VIEW

3 / S-2 SECTION SCALE: 1/2" = 1'-0"

PREPARED BY:
FDH ENGINEERING INNOVATION
6521 MERIDIEN DRIVE
RALEIGH, NC 27616
PHONE: 919-755-1012
FAX: 919-755-1031

PREPARED FOR:
SBA
5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800) 487-SITE

FOR BID ONLY

CHRISTOPHER M. MURPHY, P.E.
CONNECTICUT LIC. NO. 25642

DRAWN BY:	PF
CHECKED BY:	CMC
ENG APPVD:	CMM
PROJECT NO:	12-06272E S3

SUBMITTALS		
DATE	DESCRIPTION	REV
09/27/12	PRELIMINARY/REVIEW	A

SITE NAME:
SOUTH CANTON

SITE NUMBER:
CT01722-S

SITE ADDRESS:
96 POWDER MILL ROAD
CANTON, CT 06019

SHEET TITLE
NEW CONCRETE BLOCK DETAILS

SHEET NUMBER
S-2

C Squared Systems, LLC
65 Dartmouth Drive, Unit A3
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions

at&t

CT1114

(Canton 2)

96 Powder Mill Road, Canton, CT 06022

January 14, 2013

Table of Contents

List of Tables

List of Figures

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the monopole tower located at 96 Powder Mill Road in Canton, CT. The coordinates of the tower are 41° 50' 3.3" N, 72° 55' 57.6" W.

AT&T is proposing the following modifications:

1) Install three multi-band (700/850/1900/2100 MHz) antennas for their LTE network (one per sector).

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \times EIRP}{4\pi \times R^2} \right) \text{x Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the finished modifications.

4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical patterns of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	%MPE
Cingular UMTS	*137*	*880*	*1*	*500*	*0.0096*	*0.5867*	*1.63%*
Cingular GSM	*137*	*880*	*4*	*296*	*0.0227*	*0.5867*	*3.87%*
Cingular GSM	*137*	*1900*	*2*	*427*	*0.0164*	*1.0000*	*1.64%*
Sprint	180	1962.5	11	122	0.0149	1.0000	1.49%
Pocket	167	2130	3	631	0.0244	1.0000	2.44%
Verizon	147	875	9	200	0.0300	0.5833	5.13%
Verizon	147	1900	3	285	0.0142	1.0000	1.42%
AT&T UMTS	137	880	2	565	0.0022	0.5867	0.37%
AT&T UMTS	137	1900	2	875	0.0034	1.0000	0.34%
AT&T LTE	137	734	1	1615	0.0031	0.4893	0.63%
AT&T GSM	137	880	1	283	0.0005	0.5867	0.09%
AT&T GSM	137	1900	4	525	0.0040	1.0000	0.40%
						Total	**12.32%**

Table 1: Carrier Information[1] [2] [3]

[1] The existing CSC filing for Cingular should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for carriers other than AT&T was taken directly from the CSC database dated 7/26/2012. Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

[2] In the case where antenna models are not uniform across all 3 sectors for the same frequency band, the antenna model with the highest gain was used for the calculations to present a worse-case scenario.

[3] Antenna height listed for AT&T is in reference to the FDH Engineering Inc. Structural Analysis dated August 29, 2012.

5. Conclusion

The above analysis verifies that emissions from the existing site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **12.32% of the FCC limit**.

As noted previously, obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.

Daniel L. Goulet
C Squared Systems, LLC

January 14, 2013
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[4]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $|E|^2$, $|H|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[5]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $|E|^2$, $|H|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

[4] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

[5] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

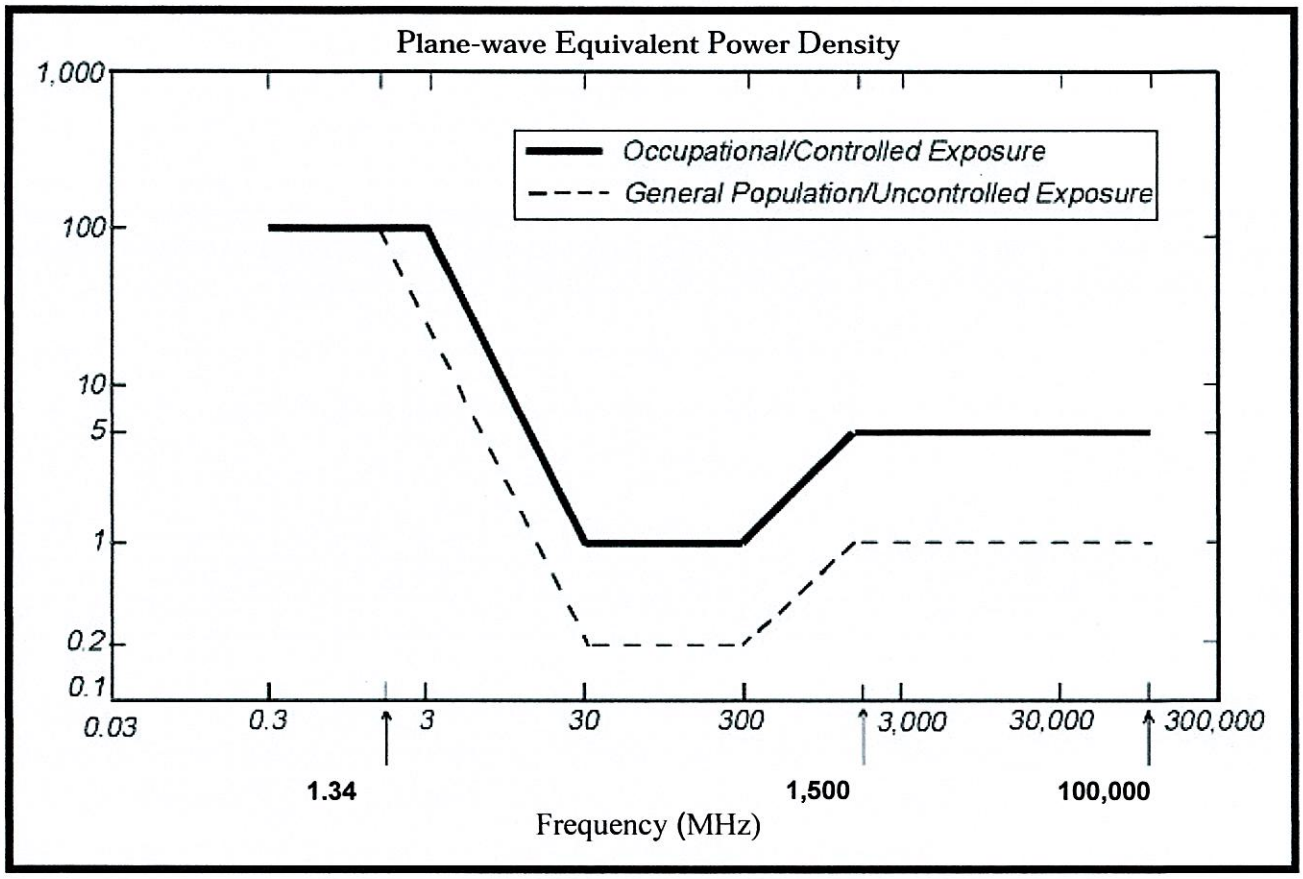
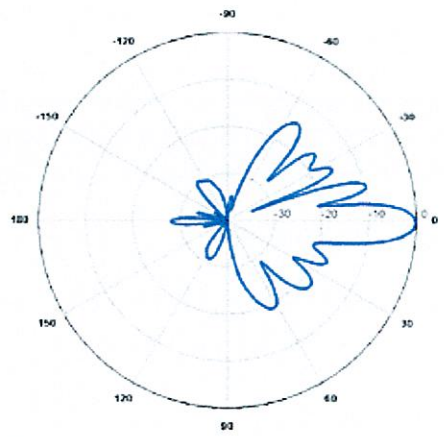


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Data Sheets and Electrical Patterns

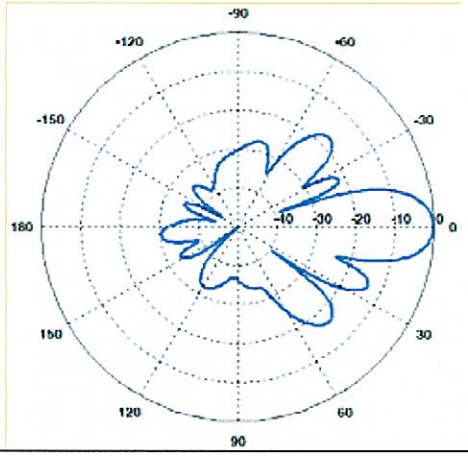
700 MHz

Manufacturer:	Powerwave
Model #:	P65-17-XLH-RR
Frequency Band:	698-806 MHz
Gain:	14.3 dBd
Vertical Beamwidth:	8.4°
Horizontal Beamwidth:	70°
Polarization:	Dual Linear ± 45°
Size L x W x D:	96.0" x 12.0" x 6.0"



850 MHz

Manufacturer:	Powerwave
Model #:	7770.00
Frequency Band:	824-896 MHz
Gain:	11.5 dBd
Vertical Beamwidth:	15°
Horizontal Beamwidth:	82°
Polarization:	Dual Linear ± 45°
Size L x W x D:	55.0" x 11.0" x 5.0"



1900 MHz

Manufacturer:	Powerwave
Model #:	7770.00
Frequency Band:	1850-1990 MHz
Gain:	13.4 dBd
Vertical Beamwidth:	7°
Horizontal Beamwidth:	86°
Polarization:	Dual Linear ± 45°
Size L x W x D:	55.0" x 11.0" x 5.0"