COHEN and WOLF P.C.
ATTORNEYS AT LAW

JULIE D. KOHLER

PLEASE REPLY TO: Bridgeport
WRITER'S DIRECT DIAL: (203) 337-4157
E-Mail Address: jkohler@cohenandwolf.com

November 18, 2014

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

Re: Notice of Exempt Modification
AT&T Towers/T-Mobile co-location
Site ID CT11056J
290 Preston Avenue, Middletown CT

Dear Attorney Bachman:

This office represents T-Mobile Northeast LLC ("T-Mobile") and has been retained to file exempt modification filings with the Connecticut Siting Council on its behalf.

In this case, AT&T Towers owns the existing monopole telecommunications tower and related facility at 290 Preston Avenue, Middletown Connecticut (longitude -72.7429/ latitude 41.5573). T-Mobile intends to add three (3) antennas and related equipment at this existing telecommunications facility in Middletown ("Middletown Facility"). Please accept this letter as notification, pursuant to R.C.S.A. § 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mayor, Daniel T. Drew, and the property owners Ernest and Brenda Trumpold.

The existing Middletown Facility consists of a 148 foot tall monopole structure. T-Mobile plans to add three (3) antennas and three (3) RRUs (remote radio units) on pipe mounts at a centerline of 140 feet. T-Mobile will also use implement a spare fiber run along the length of the tower. See the plans revised to November 7, 2014 attached hereto as Exhibit A. The existing Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated October 13, 2014 and stamped November 6, 2014 attached hereto as Exhibit B.

The planned modifications to the Middletown Facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modification will not increase the height of the tower. T-Mobile's proposed antennas will be installed at the 140 foot level of the 148 foot monopole tower. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

2. T-Mobile does not proposed to alter the existing compound, and therefore will not require an extension of the site boundaries.

3. The proposed modification to the Facility will not increase the noise levels at the existing facility by six decibels or more.

4. The operation of the proposed antennas will not increase the total radio frequency (RF) power density, measured at the base of the tower, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated November 14, 2014 T-Mobile's operations would add 6.72% of the FCC Standard. Therefore, the calculated "worst case" power density for the planned combined operation at the site including all of the proposed antennas would be 64.40% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit C.

For the foregoing reasons, T-Mobile respectfully submits that the proposed antennas and equipment at the Middletown Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement by the Council of this proposed exempt modification, T-Mobile shall commence construction approximately sixty days from the date of the Council's notice of acknowledgement.

Sincerely,

Julie D. Kohler, Esq.

cc: City of Middletown, Mayor Daniel T. Drew
AT&T Towers
Ernest and Brenda Trumpold
Sheldon Freincle, NSS

EXHIBIT A

SITE NAME: ATT MIDDLETOW

290 PRESTON AVE
MIDDLETOWN, CT 06457
MIDDLESEX COUNTY
SITE NUMBER: CT11056J
L700 - 702CU CONFIGURATION

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T–MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T–MOBILE NORTHEAST, LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SPECIAL STRUCTURAL NOTES

1. STRUCTURAL DESIGNS AND DETAILS FOR ANTENNA MOUNTS COMPLETED BY HUDSON DESIGN ON BEHALF OF T–MOBILE ARE INCLUSIVE OF THE ENTIRE ANTENNA SUPPORT STRUCTURE (GLOBAL STRUCTURAL STABILITY ANALYSIS BY OTHERS), EXISTING TOWER PLATFORM, EXISTING ANTENNA MOUNTS AND ALL OTHER ASPECTS OF THE STRUCTURE THAT WILL SUPPORT THE T–MOBILE MODERNIZATION EQUIPMENT DEPLOYMENT AS DEPICTED HEREIN.
2. HUDSON DESIGN ASSUMES THAT THE TOWER IS PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTION ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES

PROJECT INFORMATION

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY T–MOBILE EQUIPMENT MODERNIZATION
ZONING JURISDICTION:	BASED ON INFORMATION PROVIDED BY T–MOBILE, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE–EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW).
SITE ADDRESS:	290 PRESTON AVE MIDDLETOWN, CT 06457
LATITUDE:	41° 33' 26.2794" N
LONGITUDE:	72° 44' 34.44" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

T-MOBILE TECHNICIAN SITE SAFETY NOTES

LOCATION	SPECIAL RESTRICTIONS
SECTOR A:	ACCESS NOT PERMITTED
SECTOR B:	ACCESS NOT PERMITTED
SECTOR C:	ACCESS NOT PERMITTED
GPS/LMU:	UNRESTRICTED
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

CALL
BEFORE YOU DIG
CALL TOLL FREE 800–922–4455
OR CALL 811
UNDERGROUND SERVICE ALERT

DRAWING INDEX

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T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
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FAX:(201) 684-0066

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

STATE OF CONNECTICUT
DANIEL HAMM
24478
REGISTERED
PROFESSIONAL ENGINEER

APPROVALS

CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING/SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE
PROJECT NO:	CT11056J
DRAWN BY:	AS
CHECKED BY:	DR

1	11/07/14	ISSUED FOR REVIEW
0	08/19/14	ISSUED FOR REVIEW

SITE NUMBER: CT11056J
SITE NAME:
ATT MIDDLETOWN
290 PRESTON AVE
MIDDLETOWN, CT 06457
MIDDLESEX COUNTY

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T–1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR – TRANSCEND WIRELESS
SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
OWNER – T-MOBILE

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH UMTS SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:
SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE: IBC 2003 W/ 2005 CT SUPPLEMENT + 2009 AMENDMENT
ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-F, STRUCTURAL STANDARDS FOR STEEL

ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
AWG	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS		
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBD	TO BE DETERMINED
BTS	BASE TRANSCEIVER STATION	PROPOSED	NEW	TBR	TO BE REMOVED
EXISTING	EXISTING	N.T.S.	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED
EG	EQUIPMENT GROUND	REF	REFERENCE	TYP	TYPICAL
EGR	EQUIPMENT GROUND RING	REQ	REQUIRED		

T-MOBILE NORTHEAST LLC
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TEL: (978) 557-5553
FAX: (978) 336-5586

STATE OF CONNECTICUT ★ DANIEL HAMM ★ 21710 LICENSED PROFESSIONAL ENGINEER

APPROVALS

CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING/SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE

PROJECT NO:	CT11056J
DRAWN BY:	AS
CHECKED BY:	DR

1	11/07/14	ISSUED FOR REVIEW
0	08/19/14	ISSUED FOR REVIEW

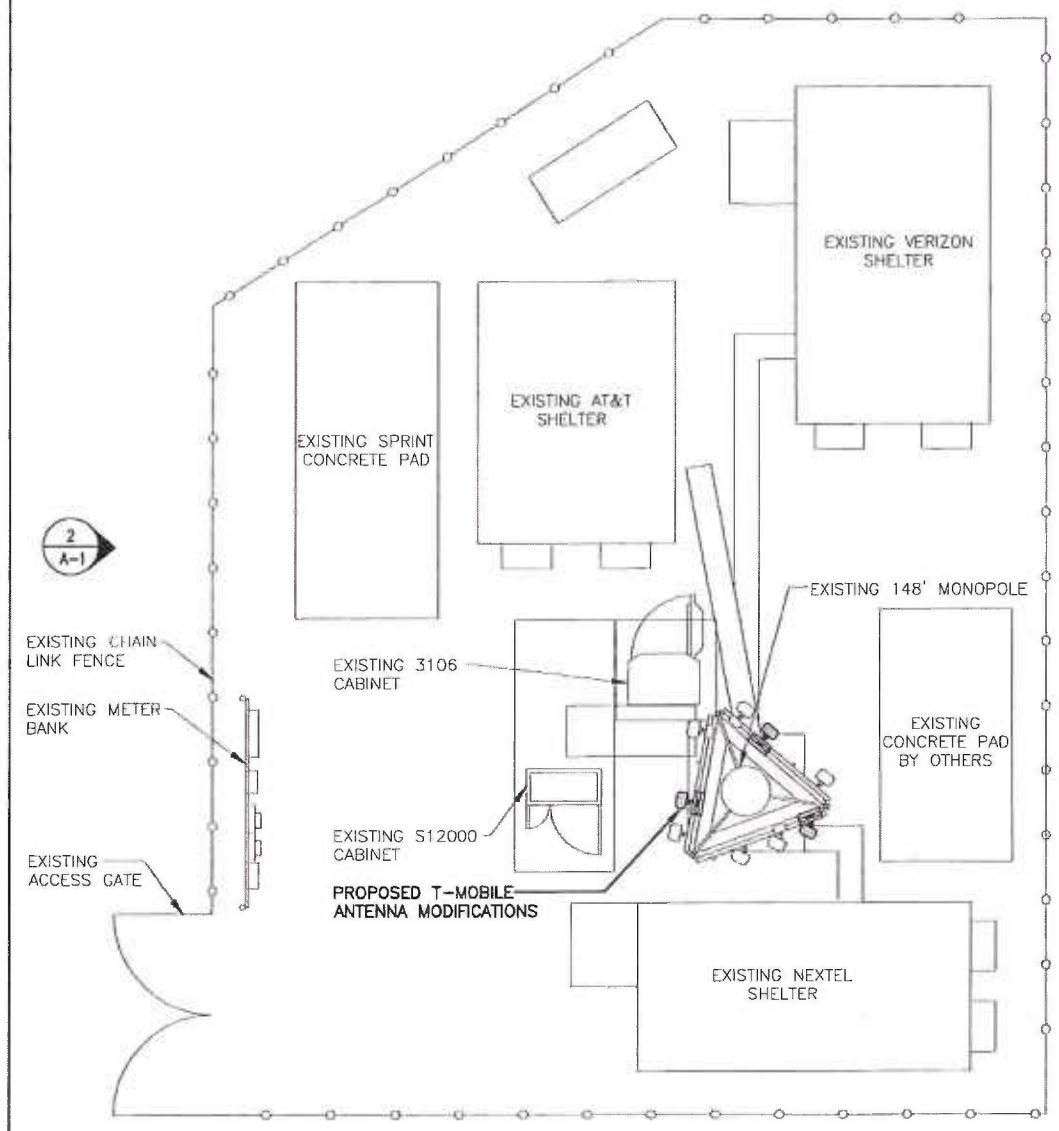
SITE NUMBER: CT11056J
SITE NAME:
ATT MIDDLETOWN
290 PRESTON AVE
MIDDLETOWN, CT 06457
MIDDLESEX COUNTY

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-1

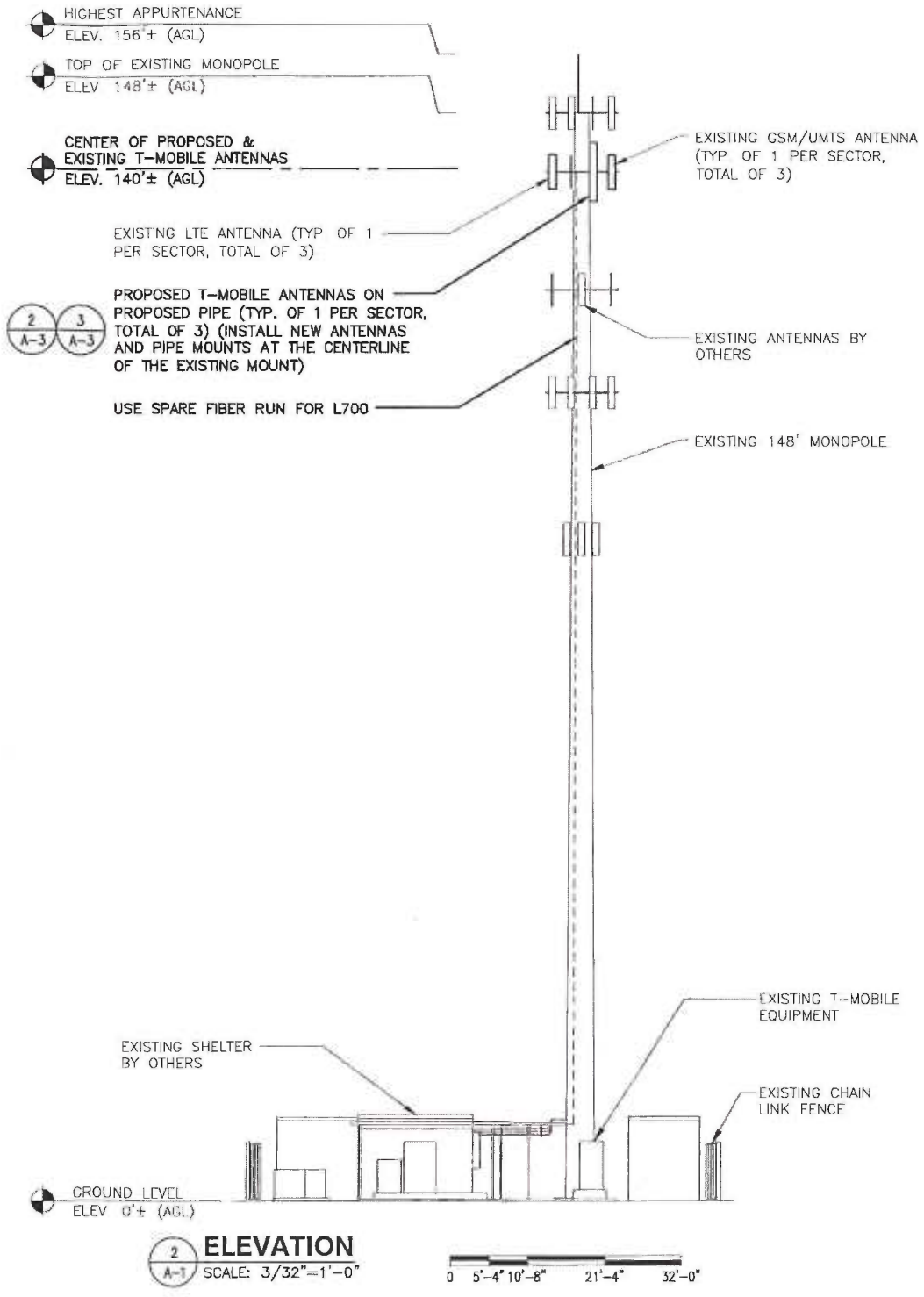
NOTE:

GENERAL CONTRACTOR TO REFER TO THE STRUCTURAL ANALYSIS BY: BLACK & VEATCH CORP. DATED: OCTOBER 11, 2014 AND EQUIPMENT INSTALLATION RECOMMENDATIONS PRIOR TO COMMENCING CONSTRUCTION



1 A-1 **COMPOUND PLAN**
SCALE: 3/16"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-0"



2 A-1 **ELEVATION**
SCALE: 3/32"=1'-0"

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

L700 - 702CU CONFIGURATION

T-MOBILE NORTHEAST LLC

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STATE OF CONNECTICUT
DANIEL HAMM
12
LICENSED
PROFESSIONAL ENGINEER

APPROVALS

CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING/SITE ACQ.	DATE
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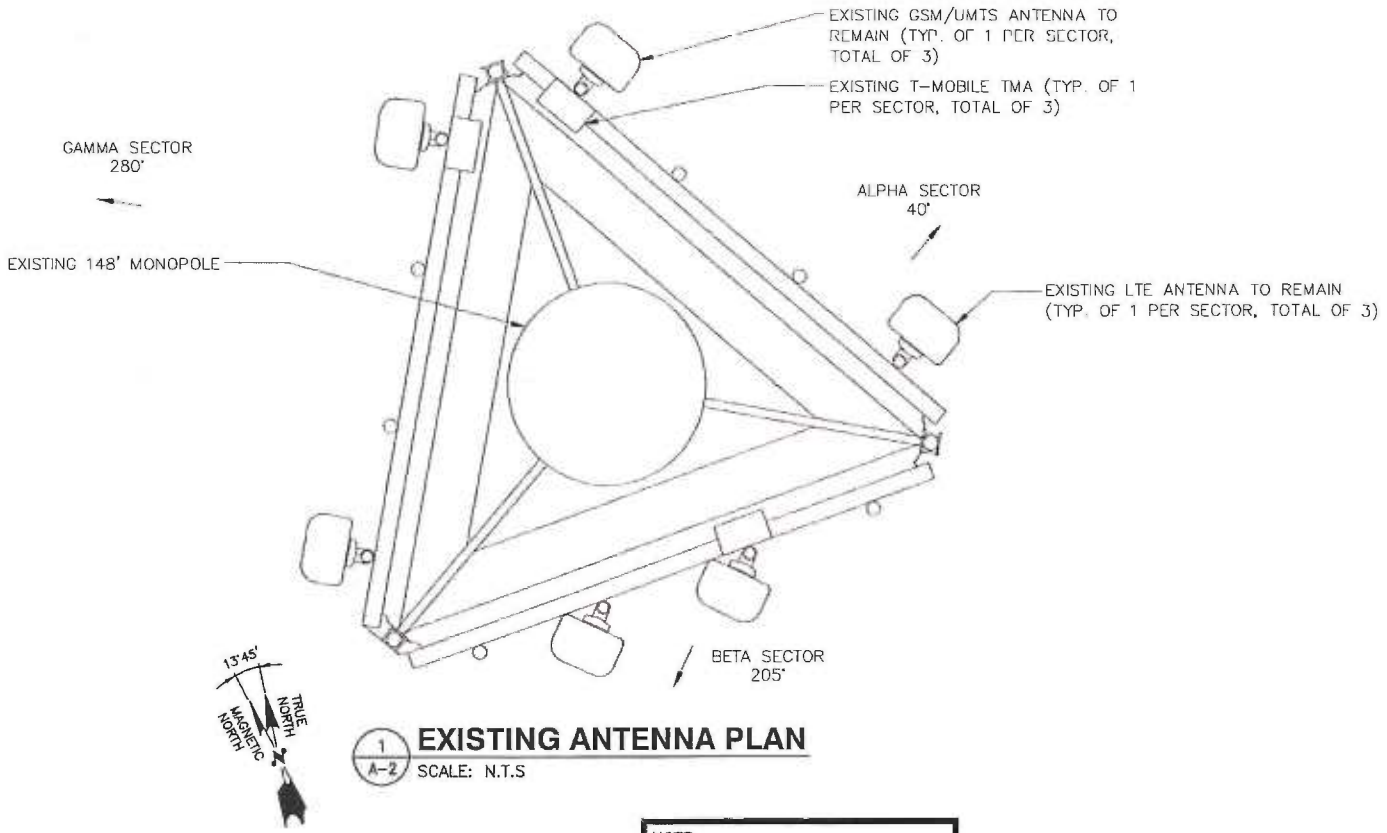
SHEET TITLE

COMPOUND PLAN & ELEVATION

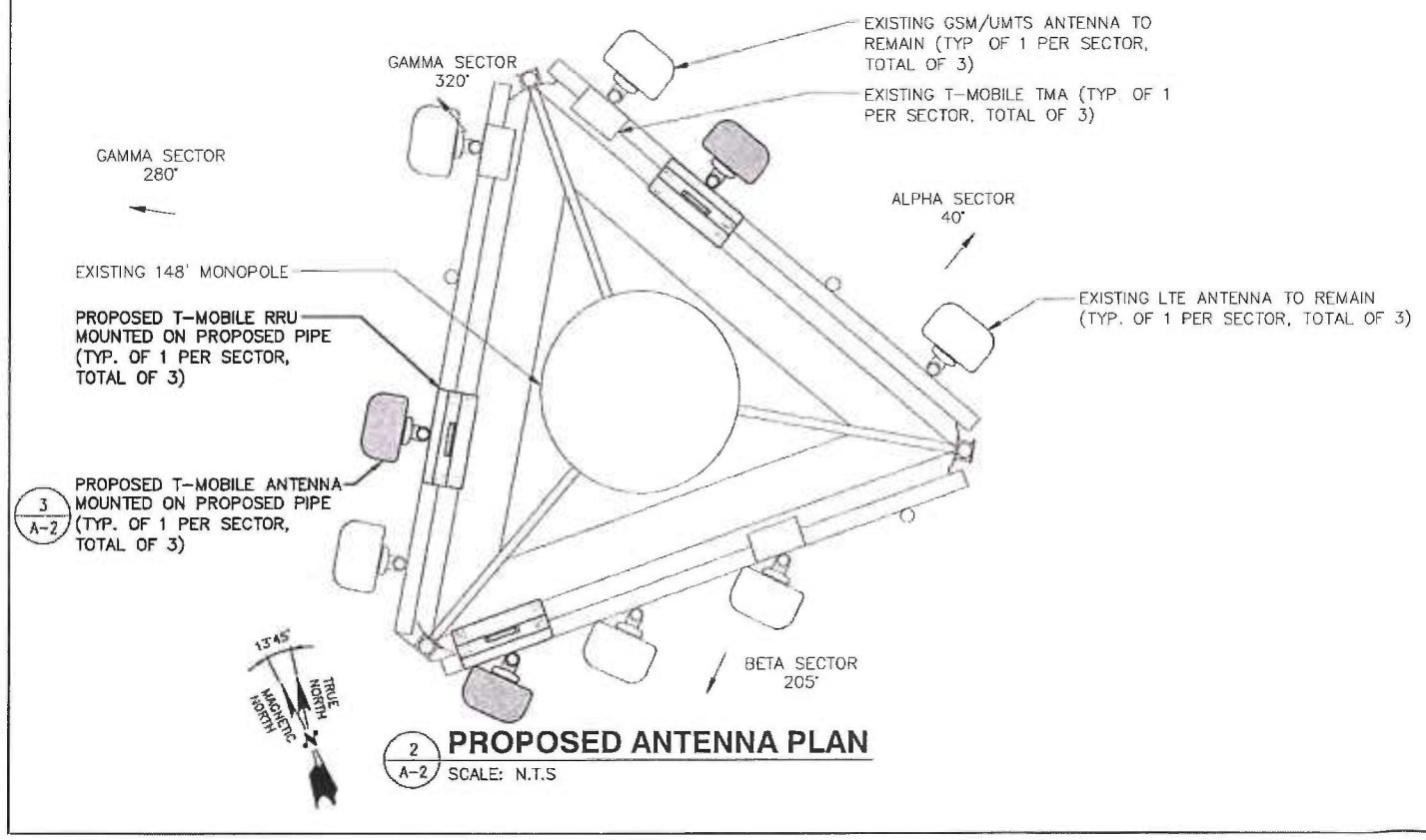
SHEET NUMBER

A-1



1 A-2 **EXISTING ANTENNA PLAN**
SCALE: N.T.S

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

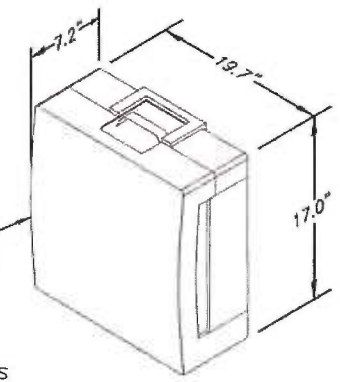


2 A-2 **PROPOSED ANTENNA PLAN**
SCALE: N.T.S

NOTE:
GENERAL CONTRACTOR TO REFER TO THE STRUCTURAL ANALYSIS BY: BLACK & VEATCH CORP. DATED: OCTOBER 11, 2014 AND EQUIPMENT INSTALLATION RECOMMENDATIONS PRIOR TO COMMENCING CONSTRUCTION

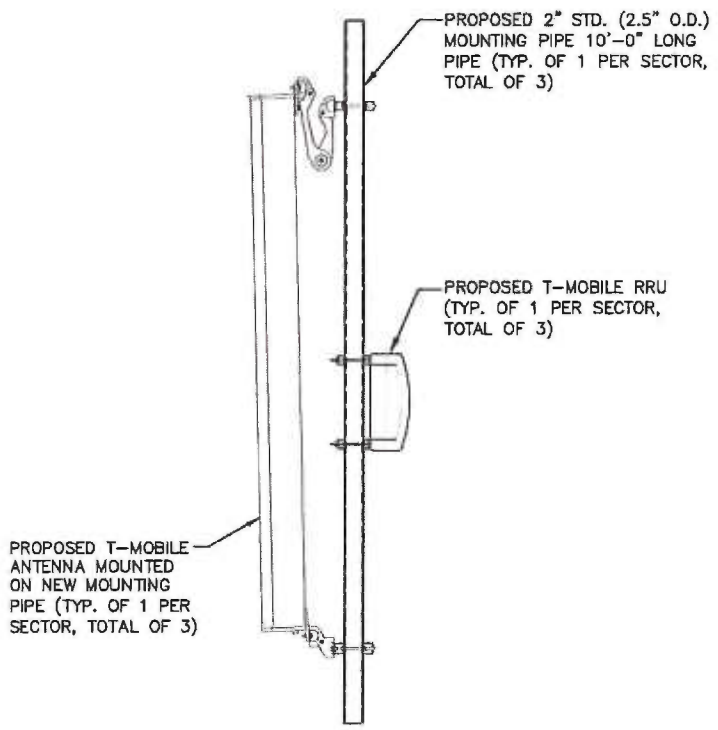
PROPOSED ANTENNA SCHEDULE

SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	COMMSCOPE	LNX-6515DS-VTM	96.4x11.9x7.1
BETA:	COMMSCOPE	LNX-6515DS-VTM	96.4X11.9X7.1
GAMMA:	COMMSCOPE	LNX-6515DS-VTM	96.4X11.9X7.1



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

RRU DETAIL
SCALE: N.T.S.



3 A-2 **ANTENNA MOUNT (TYP.)**
SCALE: N.T.S.

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STATE OF CONNECTICUT
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PROFESSIONAL ENGINEER

APPROVALS

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MIDDLESEX COUNTY

SHEET TITLE
ANTENNA PLAN & DETAILS

SHEET NUMBER
A-2

EXHIBIT B

AT&T Towers
2300 Northlake Center Drive Suite 405
Tucker, GA 30084
770-708-6100

Ping Jiang
Black & Veatch Corp.
10950 Grandview Drive
Overland Park, KS 66210
(913) 458-7245
JiangP@bv.com

Monday, October 13, 2014

STRUCTURAL ANALYSIS
148' Monopole

AT&T DESIGNATION:	Site ID:	14635
	Site FA:	10035088
	Site Name:	MIDDLETOWN SW
	AT&T Project:	T-Mobile Modification 9/5/2014
	BV Project:	176850 (14635TMOCT-S)
ANALYSIS CRITERIA:	Codes:	TIA/EIA-222-F 85 mph Fastest-Mile
		IBC 2003
		Connecticut State Building Code 2005

SITE DATA: 290 Preston Avenue, Middletown, CT ,06457, Middlesex County
Latitude 41.557353, Longitude -72.743277
Market: MA/RI/VT/NH/ME/CT
148' Monopole

Black & Veatch Corp. is pleased to submit this Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

Tower Stress Level with Proposed Equipment:	94.50%	Pass
Connection Stress Level with Proposed Equipment:	90.50%	Pass
Foundation Ratio with Proposed Equipment:	98.10%	Pass

We at Black & Veatch Corp. appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully Submitted by: Black & Veatch Corp.

Analysis Prepared by: Brennan J. Sedlacek, E.I.T.

Analysis Reviewed by: Chris A. Krafft, P.E.

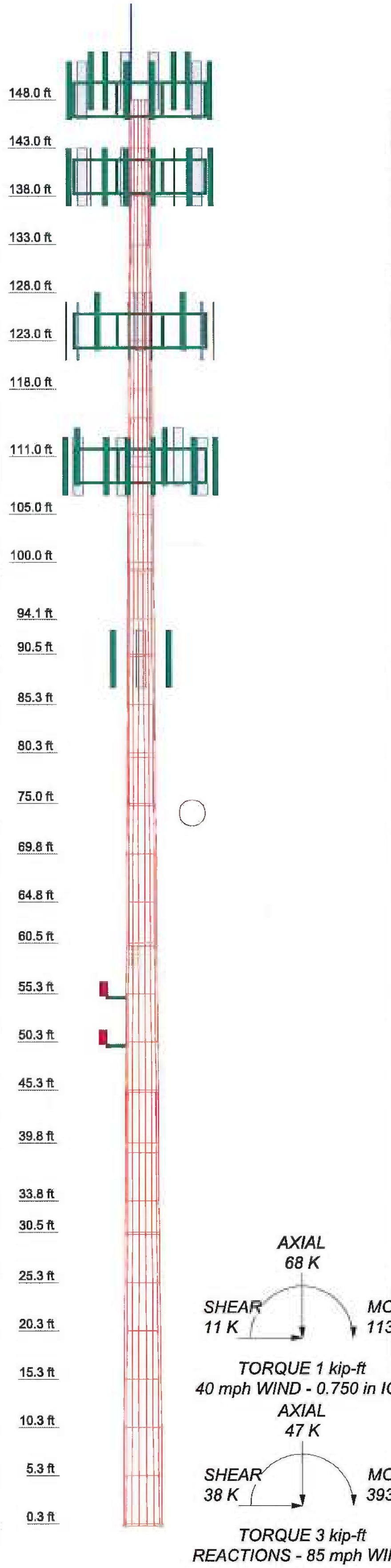
This analysis was prepared by me or under my direct supervision and to the best of my knowledge and ability complies with the applicable provisions of the governing codes and ordinances.

Black & Veatch Corp.
10950 Grandview Drive
Overland Park, KS 66210
B&V: 176850 (14635TMOCT-S)

Assumptions, Disclaimers, and Notes

1. This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, existing/proposed appurtenance loading, tower/foundation details, and geotechnical data. If this information is not current and correct, this report should be considered obsolete and further analysis will be required.
2. This analysis assumes that the tower structural components and mounts, including all steel sections and attachment hardware, are in good working order and in their original state, free of rust or other forms of corrosion. Furthermore, it is assumed that the tower and the tower foundation have been properly maintained and monitored since the time of construction. This report should be considered obsolete and further analysis will be required if the tower and/or foundation does not meet all of the above specifications.
3. This analysis assumes that all existing and/or proposed equipment mounts on the tower will have adequate capacity to support the existing and proposed equipment loading.
4. Capacity of the structural members is based on theoretical values as shown in the attached TAS form.
5. When applicable, this structural analysis is only valid if the proposed coax cables are stacked as shown in the attached feedline sketch.
6. Although there is grout present between the tower's foundation and base plate, the effect of grout has not been considered in this analysis. This is due to the difficult installation circumstances associated with relatively large base plates with narrow flanges used for the pole structures. This also matches industry standards/practice and TIA recommendations.

Section	1	2	3	4	5	6	7	8–16	17	18–19	20	21	22–24	25	26	27	28–32	33	34	35	36	37–38
Length (ft)	5.000	5.000	5.000	5.000	5.000	5.000	5.000	[illegible]	5.000	[illegible]	5.000	5.000	[illegible]	5.000	5.000	[illegible]	[illegible]	5.000	5.000	5.000	5.000	[illegible]
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.250	0.250	0.250	0.250	0.250	0.250	0.250	[illegible]	0.425	[illegible]	0.478	0.475	[illegible]	0.537	0.537	0.537	[illegible]	0.625	0.613	0.613	0.613	[illegible]
Socket Length (ft)							4.000			4.750						5.250						
Top Dia (in)	24.000	24.900	25.800	26.700	27.601	28.501	29.401	[illegible]	34.797	[illegible]	36.188	37.088	[illegible]	39.699	40.599	41.499	[illegible]	44.474	45.374	46.275	47.175	[illegible]
Bot Dia (in)	24.900	25.800	26.700	27.601	28.501	29.401	30.861	[illegible]	35.698	[illegible]	37.088	37.988	[illegible]	40.599	41.499	42.489	[illegible]	45.374	46.275	47.175	48.075	[illegible]
Grade	A607-65																					
Weight (K)	0.3	0.3	0.4	0.4	0.4	0.4	0.6	[illegible]	0.8	0.8	0.9	0.9	[illegible]	1.1	1.1	1.3	[illegible]	1.4	1.4	1.5	1.5	1.5; 28.0



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lighting Rod 5/8" x 8' (Existing)	148	APXVSPP18-C-A20 w/ Mount Pipe (Sprint - Existing)	124
AM-X-CD-16-65-00T-RET w/ Mount Pipe (ATT - Existing)	148	1900MHz RRH (Sprint - Existing)	124
AM-X-CD-16-65-00T-RET w/ Mount Pipe (ATT - Existing)	148	1900MHz RRH (Sprint - Existing)	124
AM-X-CD-16-65-00T-RET w/ Mount Pipe (ATT - Existing)	148	1900MHz RRH (Sprint - Existing)	124
AM-X-CD-16-65-00T-RET w/ Mount Pipe (ATT - Future)	148	800MHz RRH (Sprint - Existing)	124
AM-X-CD-16-65-00T-RET w/ Mount Pipe (ATT - Future)	148	800MHz RRH (Sprint - Existing)	124
AM-X-CD-16-65-00T-RET w/ Mount Pipe (ATT - Future)	148	800MHz RRH (Sprint - Existing)	124
RA21.7770.00 w/ Mount Pipe (ATT - Existing)	148	6' x 2" Mount Pipe (Sprint - Existing)	124
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RA21.7770.00 w/ Mount Pipe (ATT - Existing)	148	6' x 2" Mount Pipe (Sprint - Existing)	124
(2) LGP21401 : TMA (ATT - Existing)	148	Platform Mount [LP 1201-1] (Sprint - Existing)	124
(2) LGP21401 : TMA (ATT - Existing)	148	LNX-6514DS-T4M w/ Mount Pipe (Verizon - Existing)	110
(2) LGP21401 : TMA (ATT - Existing)	148	BXA-70063-6CF w/ Mount Pipe (Verizon - Existing)	110
(2) LGP21401 : TMA (ATT - Existing)	148	BXA-70063-6CF w/ Mount Pipe (Verizon - Existing)	110
(2) LGP21401 : TMA (ATT - Existing)	148	(2) FD9R6004/2C-3L (Verizon - Existing)	110
(2) LGP21401 : TMA (ATT - Existing)	148	(2) FD9R6004/2C-3L (Verizon - Existing)	110
(2) RBS6601 (ATT - Existing)	148	(2) FD9R6004/2C-3L (Verizon - Existing)	110
(2) RBS6601 (ATT - Existing)	148	HBX-6517DS-VTM w/ Mount Pipe (Verizon - Existing)	110
(2) RBS6601 (ATT - Existing)	148	HBX-6517DS-VTM w/ Mount Pipe (Verizon - Existing)	110
DC6-48-60-18-8F (ATT - Existing)	148	HBX-6517DS-VTM w/ Mount Pipe (Verizon - Existing)	110
Platform Mount [LP 1201-1] (ATT - Existing)	148	LNX-6513DS-VTM w/ Mount Pipe (Verizon - Existing)	110
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (T-Mobile - Existing)	140	LNX-6513DS-VTM w/ Mount Pipe (Verizon - Existing)	110
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (T-Mobile - Existing)	140	LNX-6513DS-VTM w/ Mount Pipe (Verizon - Existing)	110
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (T-Mobile - Existing)	140	HBX-6516DS-VTM w/ Mount Pipe (Verizon - Existing)	110
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (T-Mobile - Existing)	140	HBX-6516DS-VTM w/ Mount Pipe (Verizon - Existing)	110
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (T-Mobile - Existing)	140	HBX-6516DS-VTM w/ Mount Pipe (Verizon - Existing)	110
ERICSSON AIR 21 B2A B4P w/ Mount Pipe (T-Mobile - Existing)	140	RRH2X40-AWS (Verizon - Existing)	110
SBNHH-1D65C w/ Mount Pipe (T-Mobile - Proposed)	140	RRH2X40-AWS (Verizon - Existing)	110
SBNHH-1D65C w/ Mount Pipe (T-Mobile - Proposed)	140	RRH2X40-AWS (Verizon - Existing)	110
SBNHH-1D65C w/ Mount Pipe (T-Mobile - Proposed)	140	DB-T1-6Z-8AB-0Z : Distribution Box (Verizon - Existing)	110
T-19-A-V : TMA (T-Mobile - Existing)	140	Side Arm Mount [SO 104-1] (Verizon - Existing)	110
T-19-A-V : TMA (T-Mobile - Existing)	140	Platform Mount [LP 1201-1] (Verizon - Existing)	110
T-19-A-V : TMA (T-Mobile - Existing)	140	6' x 6" x 4" Panel (Metro PCS - Existing)	90
RRUS 11 B12 (T-Mobile - Proposed)	140	6' x 6" x 4" Panel (Metro PCS - Existing)	90
RRUS 11 B12 (T-Mobile - Proposed)	140	6' x 6" x 4" Panel (Metro PCS - Existing)	90
RRUS 11 B12 (T-Mobile - Proposed)	140	Pipe Mount [PM 601-3] (Metro PCS - Existing)	90
6' x 2" Mount Pipe (T-Mobile - Existing)	140	GPS (Metro PCS - Existing)	55
6' x 2" Mount Pipe (T-Mobile - Existing)	140	Side Arm Mount [SO 702-1] (Metro PCS - Existing)	55
6' x 2" Mount Pipe (T-Mobile - Existing)	140	GPS (Unknown - Existing)	50
Platform Mount [LP 1201-1] (T-Mobile - Existing)	140	Side Arm Mount [SO 702-1] (Unknown - Existing)	50
APXVSPP18-C-A20 w/ Mount Pipe (Sprint - Existing)	124		
APXVSPP18-C-A20 w/ Mount Pipe (Sprint - Existing)	124		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 40 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 94.5%

BLACK & VEATCH
Building a world of difference.

Black & Veatch Corp.
10950 Grandview Drive
Overland Park, KS 66210
Phone: (913) 458-7245
FAX: (913) 458-8136

Job: ***14635 Middletown SW***		
Project: ***176850 (14635TMOCT-S)***		
Client: AT&T	Drawn by: Brennan J. Sedlacek, E.I.T.	App'd:
Code: TIA/EIA-222-F	Date: 10/13/14	Scale: N
Path:		Dwg No.

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF7-50A(1-5/8") (T-Mobile - Existing)	B	No	Inside Pole	140.000 - 5.000	18	No Ice	0.000	0.820
						1/2" Ice	0.000	0.820
						1" Ice	0.000	0.820
						2" Ice	0.000	0.820
						4" Ice	0.000	0.820
3/8" RET cable (T-Mobile - Existing)	B	No	Inside Pole	140.000 - 5.000	1	No Ice	0.000	0.067
						1/2" Ice	0.000	0.067
						1" Ice	0.000	0.067
						2" Ice	0.000	0.067
						4" Ice	0.000	0.067
*****								
LDF6-50A(1-1/4") (Sprint - Existing)	A	No	Inside Pole	124.000 - 5.000	3	No Ice	0.000	0.660
						1/2" Ice	0.000	0.660
						1" Ice	0.000	0.660
						2" Ice	0.000	0.660
						4" Ice	0.000	0.660
*****								
LDF7-50A(1-5/8") (Verizon - Existing)	A	No	Inside Pole	110.000 - 5.000	13	No Ice	0.000	0.820
						1/2" Ice	0.000	0.820
						1" Ice	0.000	0.820
						2" Ice	0.000	0.820
						4" Ice	0.000	0.820
*****								
LDF7-50A(1-5/8") (Metro PCS - Existing)	B	No	CaAa (Out Of Face)	90.000 - 5.000	1	No Ice	0.198	0.820
						1/2" Ice	0.298	2.335
						1" Ice	0.398	4.461
						2" Ice	0.598	10.545
						4" Ice	0.998	30.044
LDF7-50A(1-5/8") (Metro PCS - Existing)	B	No	CaAa (Out Of Face)	90.000 - 5.000	5	No Ice	0.000	0.820
						1/2" Ice	0.000	2.335
						1" Ice	0.000	4.461
						2" Ice	0.000	10.545
						4" Ice	0.000	30.044
*****								
FLC38-50J (3/8 FOAM) (Metro PCS - Existing)	C	No	CaAa (Out Of Face)	55.000 - 5.000	1	No Ice	0.000	0.080
						1/2" Ice	0.000	0.654
						1" Ice	0.000	1.839
						2" Ice	0.000	6.042
						4" Ice	0.000	21.778
*****								
LDF4-50A(1/2") (Unknown - Existing)	C	No	CaAa (Out Of Face)	50.000 - 5.000	1	No Ice	0.000	0.150
						1/2" Ice	0.000	0.840
						1" Ice	0.000	2.141
						2" Ice	0.000	6.576
						4" Ice	0.000	22.776
*****								
Aero Channel MP308 (reinforcement)	A	No	CaAa (Out Of Face)	30.500 - 0.000	1	No Ice	0.467	0.000
						1/2" Ice	0.578	0.000
						1" Ice	0.689	0.000
						2" Ice	0.911	0.000
						4" Ice	1.356	0.000
Aero Channel MP308 (reinforcement)	B	No	CaAa (Out Of Face)	30.500 - 0.000	1	No Ice	0.467	0.000
						1/2" Ice	0.578	0.000
						1" Ice	0.689	0.000
						2" Ice	0.911	0.000
						4" Ice	1.356	0.000
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						1/2" Ice	0.578	0.000
						1" Ice	0.689	0.000
						2" Ice	0.911	0.000
						4" Ice	1.356	0.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	3.613	3.613	0.08
						4" Ice	5.683	5.683	0.23
*****									
AM-X-CD-16-65-00T-RET w/ Mount Pipe (AT&T - Existing)	A	From Leg	4.000 1.500 2.000	35.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.304 7.479 8.368 10.179 14.024	0.07 0.14 0.21 0.38 0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe (AT&T - Existing)	B	From Leg	4.000 1.500 2.000	70.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.304 7.479 8.368 10.179 14.024	0.07 0.14 0.21 0.38 0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe (AT&T - Existing)	C	From Leg	4.000 1.500 2.000	75.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.304 7.479 8.368 10.179 14.024	0.07 0.14 0.21 0.38 0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe (AT&T - Future)	A	From Leg	4.000 -1.500 2.000	35.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.304 7.479 8.368 10.179 14.024	0.07 0.14 0.21 0.38 0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe (AT&T - Future)	B	From Leg	4.000 -1.500 2.000	70.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.304 7.479 8.368 10.179 14.024	0.07 0.14 0.21 0.38 0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe (AT&T - Future)	C	From Leg	4.000 -1.500 2.000	75.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.304 7.479 8.368 10.179 14.024	0.07 0.14 0.21 0.38 0.87
RA21.7770.00 w/ Mount Pipe (AT&T - Existing)	A	From Leg	4.000 6.000 1.000	35.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.031 7.608 8.165 9.310 11.721	5.002 5.960 6.747 8.370 11.872	0.06 0.11 0.18 0.32 0.75
RA21.7770.00 w/ Mount Pipe (AT&T - Existing)	A	From Leg	4.000 -6.000 1.000	35.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.031 7.608 8.165 9.310 11.721	5.002 5.960 6.747 8.370 11.872	0.06 0.11 0.18 0.32 0.75
RA21.7770.00 w/ Mount Pipe (AT&T - Existing)	B	From Leg	4.000 6.000 1.000	70.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.031 7.608 8.165 9.310 11.721	5.002 5.960 6.747 8.370 11.872	0.06 0.11 0.18 0.32 0.75
RA21.7770.00 w/ Mount Pipe (AT&T - Existing)	B	From Leg	4.000 -6.000 1.000	70.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.031 7.608 8.165 9.310 11.721	5.002 5.960 6.747 8.370 11.872	0.06 0.11 0.18 0.32 0.75
RA21.7770.00 w/ Mount Pipe (AT&T - Existing)	C	From Leg	4.000 6.000 1.000	75.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.031 7.608 8.165 9.310	5.002 5.960 6.747 8.370	0.06 0.11 0.18 0.32

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(AT&T - Existing)						1/2" Ice	26.800	26.800	2.50
						1" Ice	30.500	30.500	2.90
						2" Ice	37.900	37.900	3.70
						4" Ice	52.700	52.700	5.30
*****									
ERICSSON AIR 21 B2A	A	From Leg	4.000	0.000	140.000	No Ice	6.825	5.642	0.11
B4P w/ Mount Pipe			6.000			1/2" Ice	7.347	6.480	0.17
(T-Mobile - Existing)			0.000			1" Ice	7.863	7.257	0.23
						2" Ice	8.926	8.864	0.38
						4" Ice	11.175	12.293	0.81
ERICSSON AIR 21 B2A	A	From Leg	4.000	0.000	140.000	No Ice	6.825	5.642	0.11
B4P w/ Mount Pipe			-6.000			1/2" Ice	7.347	6.480	0.17
(T-Mobile - Existing)			0.000			1" Ice	7.863	7.257	0.23
						2" Ice	8.926	8.864	0.38
						4" Ice	11.175	12.293	0.81
ERICSSON AIR 21 B2A	B	From Leg	4.000	0.000	140.000	No Ice	6.825	5.642	0.11
B4P w/ Mount Pipe			6.000			1/2" Ice	7.347	6.480	0.17
(T-Mobile - Existing)			0.000			1" Ice	7.863	7.257	0.23
						2" Ice	8.926	8.864	0.38
						4" Ice	11.175	12.293	0.81
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B4P w/ Mount Pipe			-6.000			1/2" Ice	7.347	6.480	0.17
(T-Mobile - Existing)			0.000			1" Ice	7.863	7.257	0.23
						2" Ice	8.926	8.864	0.38
						4" Ice	11.175	12.293	0.81
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B4P w/ Mount Pipe			-6.000			1/2" Ice	7.347	6.480	0.17
(T-Mobile - Existing)			0.000			1" Ice	7.863	7.257	0.23
						2" Ice	8.926	8.864	0.38
						4" Ice	11.175	12.293	0.81
SBNHH-1D65C w/ Mount	A	From Leg	4.000	40.000	140.000	No Ice	11.626	9.793	0.08
Pipe			-1.500			1/2" Ice	12.346	11.311	0.17
(T-Mobile - Proposed)			0.000			1" Ice	13.074	12.854	0.27
						2" Ice	14.543	15.192	0.50
						4" Ice	17.807	20.047	1.15
SBNHH-1D65C w/ Mount	B	From Leg	4.000	85.000	140.000	No Ice	11.626	9.793	0.08
Pipe			-1.500			1/2" Ice	12.346	11.311	0.17
(T-Mobile - Proposed)			0.000			1" Ice	13.074	12.854	0.27
						2" Ice	14.543	15.192	0.50
						4" Ice	17.807	20.047	1.15
SBNHH-1D65C w/ Mount	C	From Leg	4.000	40.000	140.000	No Ice	11.626	9.793	0.08
Pipe			-1.500			1/2" Ice	12.346	11.311	0.17
(T-Mobile - Proposed)			0.000			1" Ice	13.074	12.854	0.27
						2" Ice	14.543	15.192	0.50
						4" Ice	17.807	20.047	1.15
T-19-A-V : TMA	A	From Leg	4.000	0.000	140.000	No Ice	0.664	0.367	0.01
(T-Mobile - Existing)			-1.500			1/2" Ice	0.778	0.461	0.02
			0.000			1" Ice	0.901	0.564	0.03
						2" Ice	1.172	0.796	0.04
						4" Ice	1.817	1.364	0.11
T-19-A-V : TMA	B	From Leg	4.000	0.000	140.000	No Ice	0.664	0.367	0.01
(T-Mobile - Existing)			-1.500			1/2" Ice	0.778	0.461	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	11.031	10.844	0.41
						4" Ice	13.679	14.851	0.91
1900MHz RRH (Sprint - Existing)	A	From Leg	4.000 0.000 1.000	0.000	124.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.907 3.145 3.383 3.859 4.811	3.801 4.065 4.329 4.857 5.913	0.04 0.07 0.11 0.17 0.29
1900MHz RRH (Sprint - Existing)	B	From Leg	4.000 0.000 1.000	0.000	124.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.907 3.145 3.383 3.859 4.811	3.801 4.065 4.329 4.857 5.913	0.04 0.07 0.11 0.17 0.29
1900MHz RRH (Sprint - Existing)	C	From Leg	4.000 0.000 1.000	0.000	124.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.907 3.145 3.383 3.859 4.811	3.801 4.065 4.329 4.857 5.913	0.04 0.07 0.11 0.17 0.29
800MHz RRH (Sprint - Existing)	A	From Leg	4.000 0.000 1.000	0.000	124.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.490 2.706 2.922 3.354 4.218	2.068 2.271 2.474 2.880 3.692	0.05 0.07 0.10 0.14 0.22
800MHz RRH (Sprint - Existing)	B	From Leg	4.000 0.000 1.000	0.000	124.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.490 2.706 2.922 3.354 4.218	2.068 2.271 2.474 2.880 3.692	0.05 0.07 0.10 0.14 0.22
800MHz RRH (Sprint - Existing)	C	From Leg	4.000 0.000 1.000	0.000	124.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.490 2.706 2.922 3.354 4.218	2.068 2.271 2.474 2.880 3.692	0.05 0.07 0.10 0.14 0.22
6' x 2" Mount Pipe (Sprint - Existing)	A	From Leg	4.000 6.500 0.000	0.000	124.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.02 0.03 0.05 0.09 0.23
6' x 2" Mount Pipe (Sprint - Existing)	A	From Leg	4.000 -6.500 0.000	0.000	124.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.02 0.03 0.05 0.09 0.23
6' x 2" Mount Pipe (Sprint - Existing)	B	From Leg	4.000 6.500 0.000	0.000	124.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.02 0.03 0.05 0.09 0.23
6' x 2" Mount Pipe (Sprint - Existing)	B	From Leg	4.000 -6.500 0.000	0.000	124.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.02 0.03 0.05 0.09 0.23
6' x 2" Mount Pipe (Sprint - Existing)	C	From Leg	4.000 6.500 0.000	0.000	124.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.02 0.03 0.05 0.09 0.23

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			6.500			1/2" Ice	7.051	5.926	0.11
(Verizon - Existing)			0.000			1" Ice	7.557	6.670	0.17
						2" Ice	8.601	8.239	0.31
						4" Ice	10.811	11.590	0.71
LNX-6513DS-VTM w/	B	From Leg	4.000	30.000	110.000	No Ice	6.542	5.161	0.05
Mount Pipe			6.500			1/2" Ice	7.051	5.926	0.11
(Verizon - Existing)			0.000			1" Ice	7.557	6.670	0.17
						2" Ice	8.601	8.239	0.31
						4" Ice	10.811	11.590	0.71
LNX-6513DS-VTM w/	C	From Leg	4.000	30.000	110.000	No Ice	6.542	5.161	0.05
Mount Pipe			6.500			1/2" Ice	7.051	5.926	0.11
(Verizon - Existing)			0.000			1" Ice	7.557	6.670	0.17
						2" Ice	8.601	8.239	0.31
						4" Ice	10.811	11.590	0.71
HBX-6516DS-VTM w/	A	From Leg	4.000	30.000	110.000	No Ice	3.598	3.241	0.03
Mount Pipe			-6.500			1/2" Ice	3.998	3.914	0.06
(Verizon - Existing)			0.000			1" Ice	4.435	4.564	0.10
						2" Ice	5.368	5.914	0.20
						4" Ice	7.361	8.877	0.50
HBX-6516DS-VTM w/	B	From Leg	4.000	30.000	110.000	No Ice	3.598	3.241	0.03
Mount Pipe			-6.500			1/2" Ice	3.998	3.914	0.06
(Verizon - Existing)			0.000			1" Ice	4.435	4.564	0.10
						2" Ice	5.368	5.914	0.20
						4" Ice	7.361	8.877	0.50
HBX-6516DS-VTM w/	C	From Leg	4.000	30.000	110.000	No Ice	3.598	3.241	0.03
Mount Pipe			-6.500			1/2" Ice	3.998	3.914	0.06
(Verizon - Existing)			0.000			1" Ice	4.435	4.564	0.10
						2" Ice	5.368	5.914	0.20
						4" Ice	7.361	8.877	0.50
RRH2X40-AWS	A	From Leg	4.000	0.000	110.000	No Ice	2.522	1.589	0.04
(Verizon - Existing)			0.000			1/2" Ice	2.753	1.795	0.06
			0.000			1" Ice	2.993	2.010	0.08
						2" Ice	3.499	2.465	0.13
						4" Ice	4.615	3.479	0.28
RRH2X40-AWS	B	From Leg	4.000	0.000	110.000	No Ice	2.522	1.589	0.04
(Verizon - Existing)			0.000			1/2" Ice	2.753	1.795	0.06
			0.000			1" Ice	2.993	2.010	0.08
						2" Ice	3.499	2.465	0.13
						4" Ice	4.615	3.479	0.28
RRH2X40-AWS	C	From Leg	4.000	0.000	110.000	No Ice	2.522	1.589	0.04
(Verizon - Existing)			0.000			1/2" Ice	2.753	1.795	0.06
			0.000			1" Ice	2.993	2.010	0.08
						2" Ice	3.499	2.465	0.13
						4" Ice	4.615	3.479	0.28
DB-T1-6Z-8AB-0Z :	C	From Leg	1.000	0.000	110.000	No Ice	5.600	2.333	0.04
Distribution Box			0.000			1/2" Ice	5.915	2.558	0.08
(Verizon - Existing)			0.000			1" Ice	6.240	2.791	0.12
						2" Ice	6.914	3.284	0.21
						4" Ice	8.365	4.373	0.45
Side Arm Mount [SO 104-1]	A	None		0.000	110.000	No Ice	1.510	0.670	0.10
(Verizon - Existing)						1/2" Ice	1.820	0.930	0.14
						1" Ice	2.130	1.190	0.18
						2" Ice	2.750	1.710	0.26
						4" Ice	3.990	2.750	0.42
Platform Mount [LP 1201-1]	A	None		0.000	110.000	No Ice	23.100	23.100	2.10
(Verizon - Existing)						1/2" Ice	26.800	26.800	2.50
						1" Ice	30.500	30.500	2.90

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L4	133 - 128	Pole	TP27.601x26.7x0.25	4	-7.33	129.12	39.9	Pass
L5	128 - 123	Pole	TP28.501x27.601x0.25	5	-10.28	142.29	50.4	Pass
L6	123 - 118	Pole	TP29.401x28.501x0.25	6	-10.85	156.33	59.8	Pass
L7	118 - 111	Pole	TP30.661x29.401x0.25	7	-11.20	165.18	65.0	Pass
L8	111 - 110	Pole	TP30.341x29.441x0.25	8	-12.10	171.96	75.8	Pass
L9	110 - 105	Pole	TP31.241x30.341x0.25	9	-15.33	187.86	87.7	Pass
L10	105 - 100	Pole	TP32.142x31.241x0.25	10	-16.06	204.71	97.0	Pass
L11	100 - 99.3333	Pole	TP32.262x32.142x0.25	11	-16.16	207.03	98.1	Pass
L12	99.3333 - 99.0833	Pole	TP32.307x32.262x0.344	12	-16.21	283.36	72.3	Pass
L13	99.0833 - 94.0833	Pole	TP33.207x32.307x0.344	13	-17.07	307.99	78.4	Pass
L14	94.0833 - 90.5	Pole	TP33.852x33.207x0.344	14	-17.70	326.49	82.4	Pass
L15	90.5 - 90.25	Pole	TP33.897x33.852x0.431	15	-17.77	408.04	66.4	Pass
L16	90.25 - 85.25	Pole	TP34.797x33.897x0.425	16	-19.03	435.69	71.9	Pass
L17	85.25 - 80.25	Pole	TP35.698x34.797x0.425	17	-20.09	470.83	76.0	Pass
L18	80.25 - 75	Pole	TP36.643x35.698x0.425	18	-20.21	474.45	76.4	Pass
L19	75 - 74.75	Pole	TP36.188x35.288x0.488	19	-22.09	559.95	72.5	Pass
L20	74.75 - 69.75	Pole	TP37.088x36.188x0.475	20	-23.30	588.52	77.5	Pass
L21	69.75 - 64.75	Pole	TP37.988x37.088x0.475	21	-24.54	633.00	80.5	Pass
L22	64.75 - 60.5	Pole	TP38.753x37.988x0.469	22	-25.61	664.01	83.9	Pass
L23	60.5 - 60.25	Pole	TP38.798x38.753x0.55	23	-25.70	776.89	72.0	Pass
L24	60.25 - 55.25	Pole	TP39.699x38.798x0.55	24	-27.10	833.04	74.3	Pass
L25	55.25 - 50.25	Pole	TP40.599x39.699x0.538	25	-28.56	872.39	78.0	Pass
L26	50.25 - 45.25	Pole	TP41.499x40.599x0.538	26	-30.05	932.52	80.0	Pass
L27	45.25 - 39.75	Pole	TP42.489x41.499x0.538	27	-30.14	935.60	80.1	Pass
L28	39.75 - 38.75	Pole	TP42.044x40.919x0.6	28	-33.26	1078.19	76.6	Pass
L29	38.75 - 33.75	Pole	TP42.944x42.044x0.588	29	-34.90	1127.02	79.7	Pass
L30	33.75 - 30.5	Pole	TP43.529x42.944x0.588	30	-35.97	1174.37	80.6	Pass
L31	30.5 - 30.25	Pole	TP43.574x43.529x0.638	31	-36.07	1273.87	74.6	Pass
L32	30.25 - 25.25	Pole	TP44.474x43.574x0.625	32	-37.81	1330.24	77.3	Pass
L33	25.25 - 20.25	Pole	TP45.374x44.474x0.625	33	-39.59	1413.85	78.4	Pass
L34	20.25 - 15.25	Pole	TP46.275x45.374x0.613	34	-41.39	1472.09	81.1	Pass
L35	15.25 - 10.25	Pole	TP47.175x46.275x0.613	35	-43.22	1560.86	82.1	Pass
L36	10.25 - 5.25	Pole	TP48.075x47.175x0.613	36	-45.07	1653.16	83.0	Pass
L37	5.25 - 0.25	Pole	TP48.975x48.075x0.6	37	-46.71	1714.64	85.6	Pass
L38	0.25 - 0	Pole	TP49.02x48.975x0.6	38	-46.81	1719.44	85.6	Pass
							Summary	
						Pole (L11)	98.1	Pass
						RATING =	**98.1**	**Pass**

**Reinforced Tower Stresses are as follows:

Pole Section	Pole Stress	Plate Stress	Governing Stress
L1	59.1%	-	59.1%
L2	91.4%	94.5%	94.5%
L3	80.3%	93.8%	93.8%
L4	82.4%	94.2%	94.2%

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	148 - 143	5		18	24.000	24.900	0.25	A607-65	1.000
2	143 - 138	5		18	24.900	25.800	0.25	A607-65	1.000
3	138 - 133	5		18	25.800	26.700	0.25	A607-65	1.000
4	133 - 128	5		18	26.700	27.601	0.25	A607-65	1.000
5	128 - 123	5		18	27.601	28.501	0.25	A607-65	1.000
6	123 - 118	5		18	28.501	29.401	0.25	A607-65	1.000
7	118 - 115	7	4	18	29.401	30.661	0.25	A607-65	1.000
8	115 - 110	5		18	29.441	30.341	0.25	A607-65	1.000
9	110 - 105	5		18	30.341	31.241	0.25	A607-65	1.000
10	105 - 100	5		18	31.241	32.142	0.25	A607-65	1.000
11	100 - 99.3333	0.6667		18	32.142	32.262	0.25	A607-65	1.000
12	99.3333 - 99.0833	0.25		18	32.262	32.307	0.34375	A607-65	0.981
13	99.0833 - 94.0833	5		18	32.307	33.207	0.34375	A607-65	0.974
14	94.0833 - 90.5	3.5833		18	33.207	33.852	0.34375	A607-65	0.969
15	90.5 - 90.25	0.25		18	33.852	33.897	0.43125	A607-65	0.953
16	90.25 - 85.25	5		18	33.897	34.797	0.425	A607-65	0.957
17	85.25 - 80.25	5		18	34.797	35.698	0.425	A607-65	0.947
18	80.25 - 79.75	5.25	4.75	18	35.698	36.643	0.425	A607-65	0.946
19	79.75 - 74.75	5		18	35.288	36.188	0.4875	A607-65	0.951
20	74.75 - 69.75	5		18	36.188	37.088	0.475	A607-65	0.968
21	69.75 - 64.75	5		18	37.088	37.988	0.475	A607-65	0.960
22	64.75 - 60.5	4.25		18	37.988	38.753	0.46875	A607-65	0.967
23	60.5 - 60.25	0.25		18	38.753	38.798	0.55	A607-65	0.952
24	60.25 - 55.25	5		18	38.798	39.699	0.55	A607-65	0.943
25	55.25 - 50.25	5		18	39.699	40.599	0.5375	A607-65	0.956
26	50.25 - 45.25	5		18	40.599	41.499	0.5375	A607-65	0.948
27	45.25 - 45	5.5	5.25	18	41.499	42.489	0.5375	A607-65	0.948
28	45 - 38.75	6.25		18	40.919	42.044	0.6	A607-65	0.950
29	38.75 - 33.75	5		18	42.044	42.944	0.5875	A607-65	0.963
30	33.75 - 30.5	3.25		18	42.944	43.529	0.5875	A607-65	0.959
31	30.5 - 30.25	0.25		18	43.529	43.574	0.6375	A607-65	0.948
32	30.25 - 25.25	5		18	43.574	44.474	0.625	A607-65	0.959
33	25.25 - 20.25	5		18	44.474	45.374	0.625	A607-65	0.952
34	20.25 - 15.25	5		18	45.374	46.275	0.6125	A607-65	0.964
35	15.25 - 10.25	5		18	46.275	47.175	0.6125	A607-65	0.957
36	10.25 - 5.25	5		18	47.175	48.075	0.6125	A607-65	0.951
37	5.25 - 0.25	5		18	48.075	48.975	0.6	A607-65	0.964
38	0.25 - 0	0.25		18	48.975	49.020	0.6	A607-65	0.964

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
148 - 143	Pole	TP24.9x24x0.25	Pole	8.0%	Pass
143 - 138	Pole	TP25.8x24.9x0.25	Pole	16.1%	Pass
138 - 133	Pole	TP26.7x25.8x0.25	Pole	26.0%	Pass
133 - 128	Pole	TP27.601x26.7x0.25	Pole	34.8%	Pass
128 - 123	Pole	TP28.501x27.601x0.25	Pole	43.9%	Pass
123 - 118	Pole	TP29.401x28.501x0.25	Pole	53.7%	Pass
118 - 115	Pole	TP30.661x29.401x0.25	Pole	59.1%	Pass
115 - 110	Pole	TP30.341x29.441x0.25	Pole	69.7%	Pass
110 - 105	Pole	TP31.241x30.341x0.25	Pole	80.6%	Pass
105 - 100	Pole	TP32.142x31.241x0.25	Pole	90.2%	Pass
100 - 99.33	Pole	TP32.262x32.142x0.25	Pole	91.4%	Pass
99.33 - 99.08	Pole + Reinf.	TP32.307x32.262x0.3438	Reinf. 4 Tension Rupture	80.8%	Pass
99.08 - 94.08	Pole + Reinf.	TP33.207x32.307x0.3438	Reinf. 4 Tension Rupture	89.0%	Pass
94.08 - 90.5	Pole + Reinf.	TP33.852x33.207x0.3438	Reinf. 4 Tension Rupture	94.5%	Pass
90.5 - 90.25	Pole + Reinf.	TP33.897x33.852x0.4313	Reinf. 3 Tension Rupture	73.3%	Pass
90.25 - 85.25	Pole + Reinf.	TP34.797x33.897x0.425	Reinf. 3 Tension Rupture	79.4%	Pass
85.25 - 80.25	Pole + Reinf.	TP35.698x34.797x0.425	Reinf. 3 Tension Rupture	85.0%	Pass
80.25 - 79.75	Pole + Reinf.	TP36.643x35.698x0.425	Reinf. 3 Tension Rupture	85.9%	Pass
79.75 - 74.75	Pole + Reinf.	TP36.188x35.288x0.4875	Reinf. 3 Tension Rupture	81.2%	Pass
74.75 - 69.75	Pole + Reinf.	TP37.088x36.188x0.475	Reinf. 3 Tension Rupture	85.7%	Pass
69.75 - 64.75	Pole + Reinf.	TP37.988x37.088x0.475	Reinf. 3 Tension Rupture	90.3%	Pass
64.75 - 60.5	Pole + Reinf.	TP38.753x37.988x0.4688	Reinf. 3 Tension Rupture	93.4%	Pass
60.5 - 60.25	Pole + Reinf.	TP38.798x38.753x0.55	Reinf. 2 Tension Rupture	77.7%	Pass
60.25 - 55.25	Pole + Reinf.	TP39.699x38.798x0.55	Reinf. 2 Tension Rupture	82.0%	Pass
55.25 - 50.25	Pole + Reinf.	TP40.599x39.699x0.5375	Reinf. 2 Tension Rupture	85.6%	Pass
50.25 - 45.25	Pole + Reinf.	TP41.499x40.599x0.5375	Reinf. 2 Tension Rupture	88.8%	Pass
45.25 - 45	Pole + Reinf.	TP42.489x41.499x0.5375	Reinf. 2 Tension Rupture	89.0%	Pass
45 - 38.75	Pole + Reinf.	TP42.044x40.919x0.6	Reinf. 2 Tension Rupture	85.1%	Pass
38.75 - 33.75	Pole + Reinf.	TP42.944x42.044x0.5875	Reinf. 2 Tension Rupture	87.6%	Pass
33.75 - 30.5	Pole + Reinf.	TP43.529x42.944x0.5875	Reinf. 2 Tension Rupture	89.1%	Pass
30.5 - 30.25	Pole + Reinf.	TP43.574x43.529x0.6375	Reinf. 1 Tension Rupture	82.4%	Pass
30.25 - 25.25	Pole + Reinf.	TP44.474x43.574x0.625	Reinf. 1 Tension Rupture	84.6%	Pass
25.25 - 20.25	Pole + Reinf.	TP45.374x44.474x0.625	Reinf. 1 Tension Rupture	86.7%	Pass
20.25 - 15.25	Pole + Reinf.	TP46.275x45.374x0.6125	Reinf. 1 Tension Rupture	88.7%	Pass
15.25 - 10.25	Pole + Reinf.	TP47.175x46.275x0.6125	Reinf. 1 Tension Rupture	90.6%	Pass
10.25 - 5.25	Pole + Reinf.	TP48.075x47.175x0.6125	Reinf. 1 Tension Rupture	91.0%	Pass
5.25 - 0.25	Pole + Reinf.	TP48.975x48.075x0.6	Reinf. 1 Tension Rupture	94.2%	Pass
0.25 - 0	Pole + Reinf.	TP49.02x48.975x0.6	Reinf. 1 Tension Rupture	94.2%	Pass
				Summary	
			Pole	91.4%	Pass
			Reinforcement	94.5%	Pass
			Overall	94.5%	Pass

Anchor Rod Information for TIA/EIA-222-F and TIA-222-G-2

Site Information	
ID:	176850
Name:	Middletown SW
App. #:	N/A

AeroSolutions LLC
Optimizing Your Tower Infrastructure

Base Reactions		
Moment:	3938.478	ft-kip
Axial:	46.806	kip
Shear:	37.905	kip
Base Plate Type:	Square	

Design Information	
TIA Code:	F
ASIF:	1.333
Failure:	100%
eta Factor:	0.50

Original Anchor Rod Data		
Quantity:	16	
Diameter:	2.25	in
Material:	#18J	
Bolt Circle:	56.0	in
Bolt Spacing:	6	in
Bolt Group Area:	63.62	in^2
Bolt Group MOIx:	24941	in^4

Reactions Seen by Original AR Group		
Moment:	3485.301	kip-ft
Axial:	46.806	kip
Shear:	37.905	kip

Original AR Capacity Check		
Tension Load:	176.3	kip
Allowable load:	194.8	kip
AR Capacity:	90.5%	Pass

First Added Anchor Rod Data		
Quantity:	3	
Diameter:	1.75	in
Material:	Dywidag	
Bolt Circle:	64.5	in
Bolt Group Area:	7.22	in^2
Bolt Group MOIx:	3243	in^4

Reactions Seen by First Added AR Group		
Moment:	453.177	kip-ft
Axial:	0	kip
Shear:	0	kip

First Added AR Capacity Check		
Tension Load:	49.9	kip
Allowable load:	158.7	kip
AR Capacity:	31.5%	Pass

Second Added Anchor Rod Data		
Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Second Added AR Group		
Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Second Added AR Capacity Check		
Tension Load:	0.0	kip
Allowable load:	0.0	kip
AR Capacity:	0.0%	

Third Added Anchor Rod Data		
Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Second Added AR Group		
Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Second Added AR Capacity Check		
Tension Load:	0.0	kip
Allowable load:	0.0	kip
AR Capacity:	0.0%	

(Bearing and Stability Checks) Tool for TIA Rev F or G - Application (MP, SST with unitbase)

Site Data

BU#:

Site Name: *Middletown SW*

App #:

Enter Load Factors Below:		
For P (DL)	1.2	<---- Enter Factor
For P,V, and M (WL)	1.35	<---- Enter Factor

Pad & Pier Data		
Base PL Dist. Above Pier:	3	in
Pier Dist. Above Grade:	6	in
Pad Bearing Depth, D:	8	ft
Pad Thickness, T:	3	ft
Pad Width=Length, L:	22	ft
Pier Cross Section Shape:	Round	<--Pull Down
Enter Pier Diameter:	7	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	38.48	ft^2
Pier Height:	5.50	ft
Soil (above pad) Height:	5.00	ft

Soil Parameters		
Unit Weight, γ:	125.0	pcf
Ultimate Bearing Capacity, qn:	12.00	ksf
Strength Reduct. factor, ϕ:	0.75	
Angle of Friction, Φ:	34.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: ϕ*qn:	9.00	ksf
Passive Pres. Coeff., Kp	3.54	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	51.2	kips
Pad Force Location Above D:	1.38	ft
ϕ(Passive Pressure Moment):	70.85	ft-kips
Factored O.T. M(WL), "1.6W":	5764.7	ft-kips
Factored OT (MW-Msoil), M1	5693.84	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	3.37	ft
Sum of Soil Wedges Wt:	51.81	kips
Soil Wedges ecc, K1:	9.01	ft
Ftg+Soil above Pad wt:	528.0	kips
Unfactored (Total ftg-soil Wt):	579.80	kips
1.2D. **No Soil Wedges.**	689.76	kips
0.9D. **With Soil Wedges**	563.95	kips

Resistance due to Cohesion (Vertical)		
ϕ*(1/2*Cu)(Total Vert. Planes)	0.00	kips
Cohesion Force Eccentricity, K2	0.00	ft

Monopole Base Reaction Forces		
TIA Revision:	F	<--Pull Down
Unfactored DL Axial, PD:	46.806	kips
Unfactored WL Axial, PW:	0	kips
Unfactored WL Shear, V:	37.905	kips
Unfactored WL Moment, M:	3938.478	ft-kips

Load Factor	Shaft Factored Loads		
1.20	1.2D+1.6W, Pu:	56.1672	kips
0.90	0.9D+1.6W, Pu:	42.1254	kips
1.35	Vu:	51.17175	kips
	Mu:	5316.945	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(No Soil Wedges) [Reaction+Conc+Soil]	689.76	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	5693.84	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	8.25	ft
Orthogonal qu=	5.71	ksf
qu/ϕ*qn Ratio=	**63.45%**	**Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	5.84	ft
Diagonal qu=	6.47	ksf
qu/ϕ*qn Ratio=	**71.85%**	**Pass**

Run <-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(w/ Soil Wedges) [Reaction+Conc+Soil]	563.95	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	5273.86	ft-kips

Orthogonal ecc3 = M2/P2 =	9.35	ft
Ortho Non Bearing Length,NBL=	18.70	ft
Orthogonal qu=	7.78	ksf
Diagonal qu=	7.32	ksf

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	3938.48		
M Orthogonal:	4041.09	**97.46%**	**Pass**
M Diagonal:	4041.09	**97.46%**	**Pass**

Dimensional Solutions Mat3D		Version	6.0.0	Date	10/13/2014
Foundation Name	Middletown SW			Time	10:35:06 AM
Designed By:	Black & Veatch Corp.	Engineer	B. Sedlacek	Checker	J. Riley
Filename:					

DETAIL REPORT

UNFACTORED (ALLOWABLE) LOAD COMBINATIONS

pier

Load Comb	Axial (kips)	Shear X (kips)	Mom Z (kip ft)	Shear Z (kips)	Mom X (kip ft)
1 - Dead	46.81	0.00	0.00	0.00	0.00
2 - Dead + Wind	46.81	37.91	3938.48	0.00	0.00

FACTORED (ULTIMATE) LOAD COMBINATIONS

pier

Load Comb	Axial (kips)	Shear X (kips)	Mom Z (kip ft)	Shear Z (kips)	Mom X (kip ft)
1 - 1.4Dead	65.53	0.00	0.00	0.00	0.00
2 - 1.2Dead + 1.6Wind	56.17	60.65	6301.57	0.00	0.00
3 - 0.9Dead + 1.6Wind	42.13	60.65	6301.57	0.00	0.00

FOOTING DESIGN INFORMATION

X Dim (ft)	22.00
Z Dim (ft)	22.00
Thickness (ft)	3.00

Top Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
2. 1.2Dead + 1.6Wind	22	11	12	1.56	0.35	-38.38	X
3. 0.9Dead + 1.6Wind	22	11	12	1.56	0	0	Z
				SR=	22.4		
				SR=	0		

Bottom Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
3. 0.9Dead + 1.6Wind	22	11	12	1.56	1.5	208.15	X
1. 1.4Dead	22	11	12	1.56	0.39	7.09	Z
				SR=	96.2		
				SR=	25		

Dimensional Solutions Mat3D		Version	6.0.0	Date	10/13/2014
Foundation Name	Middletown SW			Time	10:35:06 AM
Designed By:	Black & Veatch Corp.	Engineer	B. Sedlacek	Checker	J. Riley
Filename:					

DETAIL REPORT

PIER ULTIMATE LOAD CAPACITIES

pier

Load Comb	Axial Load (kips)	Axial Capa. (kips)	Mom (kip ft)	Mom Capa (kip ft)	Rem
1 - 1.4Dead	109.98	5624.66	36.55	1869.56	
2 - 1.2Dead + 1.6Wind	94.27	96.58	6635.17	6799.10	
3 - 0.9Dead + 1.6Wind	70.70	72.05	6635.15	6762.75	
	SR=	2	SR=	2	
	SR=	97.6	SR=	97.6	
	SR=	98.1	SR=	98.1	

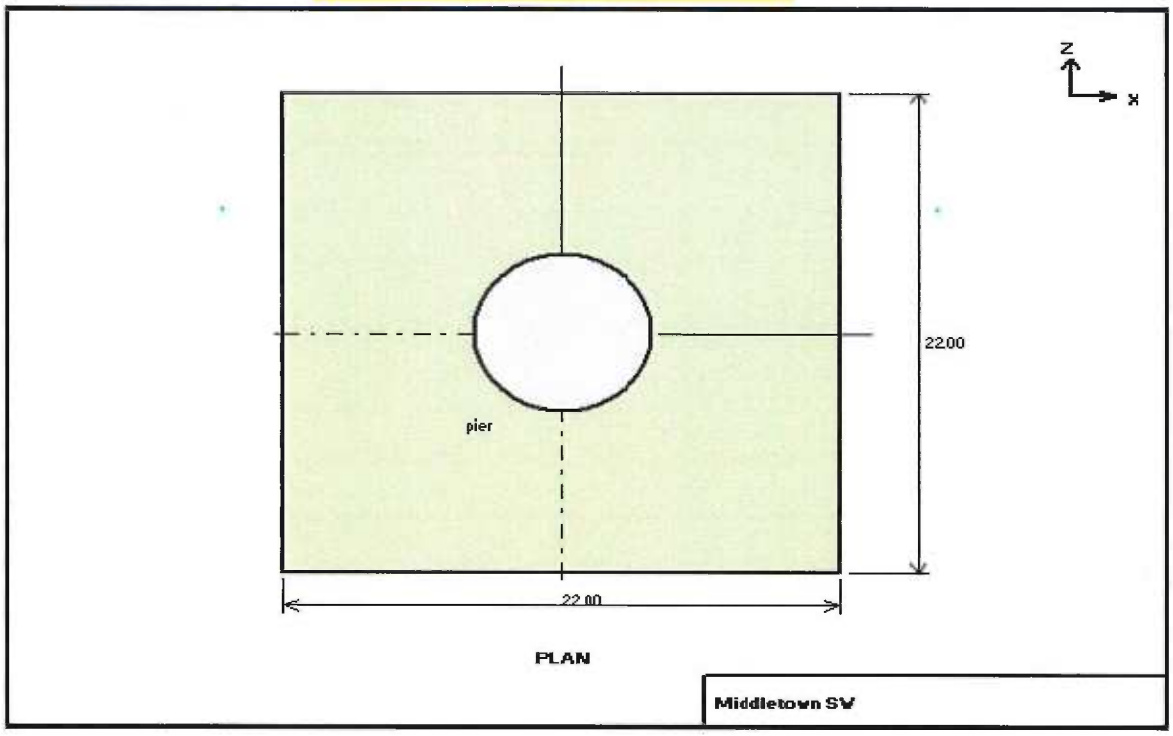

EXHIBIT C

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

T-Mobile Existing Facility

Site ID: CT11056J

ATT Middletown
290 Preston Avenue
Middletown, CT 06457

November 14, 2014

EBI Project Number: 62146124

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	64.40 %

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

EBI Consulting
environmental | engineering | due diligence

November 14, 2014

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Emissions Analysis for Site: **CT11056J – ATT Middletown**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **290 Preston Avenue, Middletown, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located 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 $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 700 MHz Band is 467 $\mu W/cm^2$, and the general population exposure limit for the PCS and AWS bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **290 Preston Avenue, Middletown, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel

2) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

5) 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.

6) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antennas used in this modeling are the **Ericsson AIR21 B4A/B2P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR21 B4A/B2P** has a maximum gain of **15.9 dBd** at its main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antenna mounting height centerline of the proposed antennas is **140 feet** above ground level (AGL).

9) 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 calculations were done with respect to uncontrolled / general public threshold limits.

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T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	140	Height (AGL):	140	Height (AGL):	140
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	2	Channel Count	2	# PCS Channels:	2
Total TX Power:	120	Total TX Power:	120	# AWS Channels:	120
ERP (W):	1,906.06	ERP (W):	1,906.06	ERP (W):	1,906.06
Antenna A1 MPE%	0.93	Antenna B1 MPE%	0.93	Antenna C1 MPE%	0.93
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	140	Height (AGL):	140	Height (AGL):	140
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power:	120	Total TX Power:	120	Total TX Power:	120
ERP (W):	1,906.06	ERP (W):	1,906.06	ERP (W):	1,906.06
Antenna A2 MPE%	0.93	Antenna B2 MPE%	0.93	Antenna C2 MPE%	0.93
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	140	Height (AGL):	140	Height (AGL):	140
Frequency Bands	700 Mhz	Frequency Bands	700 Mhz	Frequency Bands	700 Mhz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power:	30	Total TX Power:	30	Total TX Power:	30
ERP (W):	445.37	ERP (W):	445.37	ERP (W):	445.37
Antenna A3 MPE%	0.37	Antenna B3 MPE%	0.37	Antenna C3 MPE%	0.37

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	**6.72**
Sprint	4.77 %
Nextel	4.13 %
Verizon Wireless	34.30 %
AT&T	14.48 %
Site Total MPE %:	**64.40 %**

T-Mobile Sector 1 Total:	2.24 %
T-Mobile Sector 2 Total:	2.24 %
T-Mobile Sector 3 Total:	2.24 %
Site Total:	64.40 %

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Summary

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

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector 1:	2.24 %
Sector 2:	2.24 %
Sector 3 :	2.24 %
T-Mobile Total:	6.72 %
Site Total:	64.40 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **64.40%** 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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RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CT11056J

ATT Middletown
290 Preston Avenue
Middletown, CT 06457

November 14, 2014

EBI Project Number: 62146124

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	64.40 %

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