Transcend Wireless

10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
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June 2, 2016

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

T-Mobile Northeast LLC – CTHA059E
Tower Share Application
355 New London Road (Rt. 85), Colchester, CT 06415
Latitude- 41.54481900
Longitude- -72.30489200

Dear Ms. Bachman,

This letter and attachments are submitted on behalf of T-Mobile Northeast LLC ("T-Mobile"). T-Mobile plans to install antennas and related equipment at the American Tower monopole tower located at 355 New London Road (Rt. 85) in Colchester, CT.

T-Mobile will install six (6) 700/1900/2100 MHz antennas and nine (9) RRHs at the 138' level of the existing 180' monopole. One (1) hybrid cable will also be installed inside the monopole. T-Mobile's equipment cabinets will be placed on a 9' X 20' concrete pad within the existing fenced equipment compound. Included are plans prepared by Hudson Design Group dated June 2, 2016, depicting the planned changes and attached as **Exhibit A**. Also included is a structural analysis prepared by A.T. Engineering Service, PLLC dated May 26, 2016, confirming that the existing tower is structurally capable of supporting T-Mobile's equipment and attached as **Exhibit B**.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of T-Mobile's intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Mr. Art Shilosky, First Selectman for the Town of Colchester, the property owner, M&J Auto Recycling Inc., and tower owner, American Tower. Please see the letter from American Tower authorizing the proposed shared use of the facility, attached as **Exhibit C**.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. 16-50j-89.

1. The proposed modifications will not result in an increase in the height of the existing structure. The top of the monopole is 180'; T-Mobile's proposed antennas will be located at a center line height of 138'.

2. The proposed modifications will not require an extension of the site boundary as depicted on the attached site plan. T-Mobile's equipment will be located within the existing compound area.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria. The incremental effect of the proposed changes will be negligible.

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 24.61%, as evidenced by the power density calculations attached as **Exhibit D**.

5. The proposed equipment will not cause a change or alteration in the physical or environmental characteristics of the site. Please see the Programmatic Agreement Letter from American Tower dated May 6, 2016 attached as **Exhibit E**.

Connecticut General Statues 16-50aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, T-Mobile respectfully submits that the shared use of this facility satisfies these criteria.

A. Technical Feasibility. The existing monopole has been deemed to be structurally capable of supporting T-Mobile's proposed loading. The structural analysis is included as Exhibit B.
B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this monopole in Colchester. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit T-Mobile to obtain a building permit for the proposed installation. Further, a Letter of Authorization from the owner is included as Exhibit C, authorizing T-Mobile to file this application for shared use.
C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental effect. The installation of T-Mobile's equipment at the 138' level of the existing 180' monopole would have an insignificant visual impact on the area around the tower. T-Mobile's ground equipment would be installed within the existing facility compound. T-Mobile's shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit D, the proposed antennas will not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.
D. Economic Feasibility. T-Mobile will be entering into an agreement with the owner of this facility to mutually agreeable terms. As previously mentioned, the Letter of Authorization has been provided by the owner to assist T-Mobile with this tower sharing application.
E. Public Safety Concerns. As discussed above, the monopole is structurally capable of supporting T-Mobile's proposed loading. T-Mobile is not aware of any public safety concerns relative to the proposed sharing of the existing monopole. T-Mobile's intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through Colchester.

Sincerely,

Kyle Richers

Kyle Richers
Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, New Jersey 07430
krichers@transcendwireless.com
908-447-4716

Attachments:

cc: Art Shilosky, First Selectman, Town of Colchester
American Tower- tower owner
M&J Auto Recycling Inc.- property owner

SITE NUMBER: CTHA059E

355 NEW LONDON ROAD (RT. 85)
COLCHESTER, CT 06415
NEW LONDON COUNTY

SITE NAME: COLCHESTER CT 6

RF DESIGN GUIDELINE: 707C

T-MOBILE TECHNICIAN SITE SAFETY NOTES	
LOCATION	SPECIAL RESTRICTIONS
SECTOR A: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
SECTOR B: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
SECTOR C: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
GPS/LMU:	UNRESTRICTED CAUTION: OSHA-APPROVED PORTABLE 8' STEP-LADDER REQUIRED
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

GENERAL NOTES

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.

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.

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

TOWER OWNER SHALL PROVIDE GLOBAL STRUCTURAL STABILITY ANALYSIS OF EXISTING ANTENNA SUPPORT STRUCTURE. GENERAL CONTRACTOR SCOPE OF WORK SHALL INCLUDE ALL REQUIRED STRUCTURAL MODIFICATIONS, RE-BUNDLING OF COAXIAL CABLES OR OTHER SPECIAL MODIFICATIONS AS OUTLINED THEREIN.

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.

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 SUMMARY

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY T-MOBILE EQUIPMENT INSTALLATION
ZONING JURISDICTION: (TOWN OF COLCHESTER)	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:	355 NEW LONDON ROAD (RT. 85) COLCHESTER, CT 06415
LATITUDE:	41° 32' 41.35" N
LONGITUDE:	72° 18' 17.61" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
TOWER OWNER:	AMERICAN TOWER CORPORATION 116 HUNTINGTON AVENUE 11TH FLOOR BOSTON, MA 02116
ATC SITE ID:	302465
ATC SITE NAME:	COLCHESTER CT 6 CONNECTICUT

APPROVALS

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

DRIVING DIRECTIONS:

HEAD NORTHEAST ON GRIFFIN RD S AND TURN RIGHT ONTO DAY HILL RD. USE THE RAMP TO MERGE ONTO I-91 S. CONTINUE ON I-91 S AND THEN USE THE LEFT LANE TO TAKE EXIT 30 TO I-84 E. MERGE ONTO I-84 E AND THEN TAKE EXIT 55 FOR CT-2 E. CONTINUE ONTO CT-2 E. USE THE RIGHT LANE AND CONTINUE ON CT-11 S. TAKE EXIT 6 FOR LAKE HAYWARD RD TOWARD CT-85/CT-354. TURN LEFT ONTO LAKE HAYWARD RD. TURN RIGHT ONTO CT-85 S. DESTINATION WILL BE ON THE LEFT IN 1.4 MILES.

ARRIVE AT 355 NEW LONDON ROAD COLCHESTER, CT 06415.

CALL BEFORE YOU DIG
CALL TOLL FREE 888-DIG-SAFE OR CALL 811
UNDERGROUND SERVICE ALERT

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND PLAN, TOWER ELEVATION & EQUIPMENT PLAN	1
A-2	TOWER EQUIPMENT DETAILS	1
A-3	GROUND EQUIPMENT DETAILS	1
E-1	ELECTRICAL DETAILS & NOTES	1
G-1	GROUNDING SCHEMATIC & RISER DIAGRAM	1
G-2	GROUNDING DETAILS & NOTES	1

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
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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
DEREK J. CREASER
No. 25854
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: DR

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	06/02/16	ISSUED FOR CONSTRUCTION	VP
0	05/12/16	ISSUED FOR REVIEW	VP

SITE NUMBER:
CTHA059E
ATC SITE ID:
302465
SITE NAME:
COLCHESTER CT 6
SITE ADDRESS:
355 NEW LONDON ROAD
(RT. 85)
COLCHESTER, CT 06415
NEW LONDON 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 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 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: 2003 IBC WITH 2005 CT SUPPLEMENT, + 2009 & 2013 CT AMENDMENTS
    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, FOURTEENTH EDITION;

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

    EQUIPMENT 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	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

T-MOBILE NORTHEAST LLC
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Hudson Design Group LLC
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STATE OF CONNECTICUT
DEREK J. CREASER
No. 25854
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: DR

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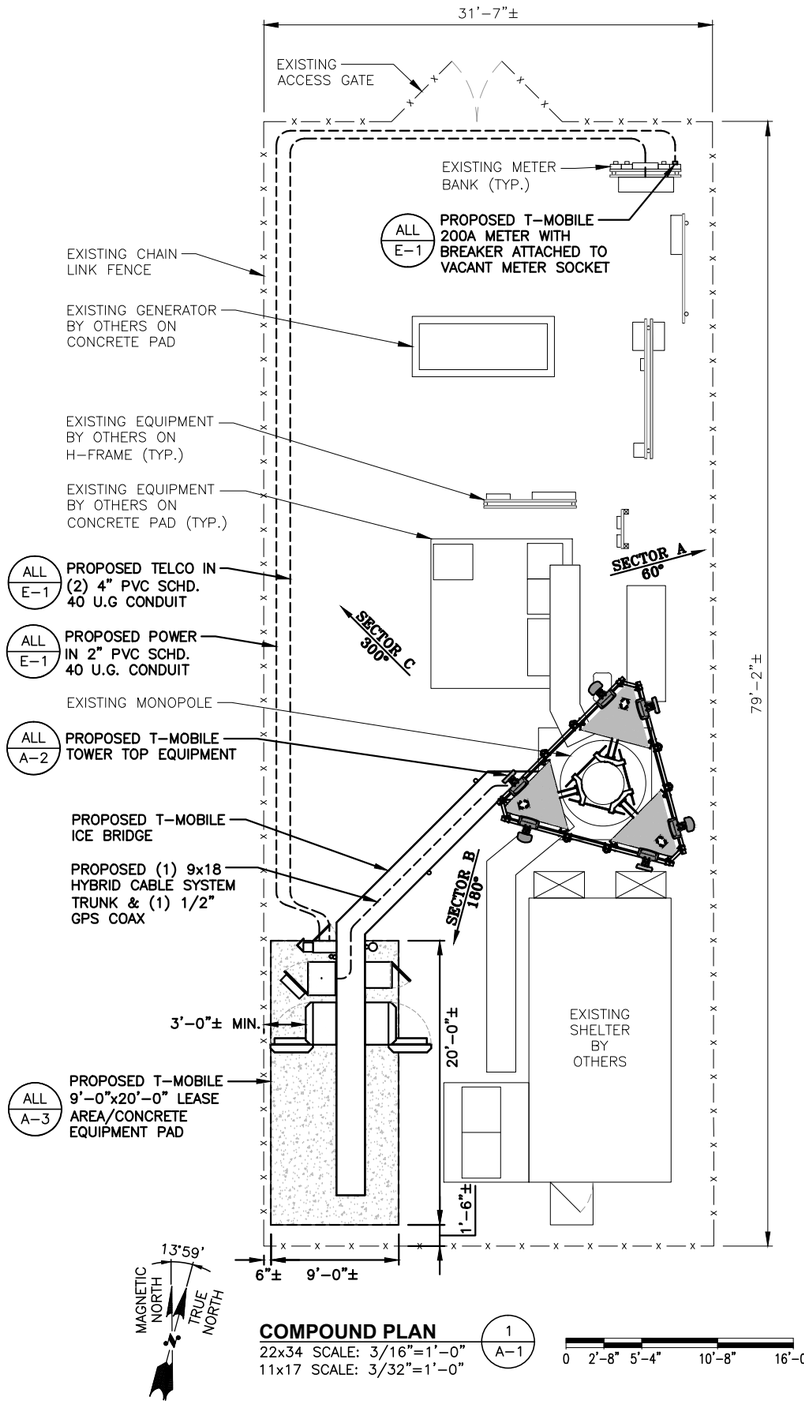
SHEET TITLE
GENERAL NOTES

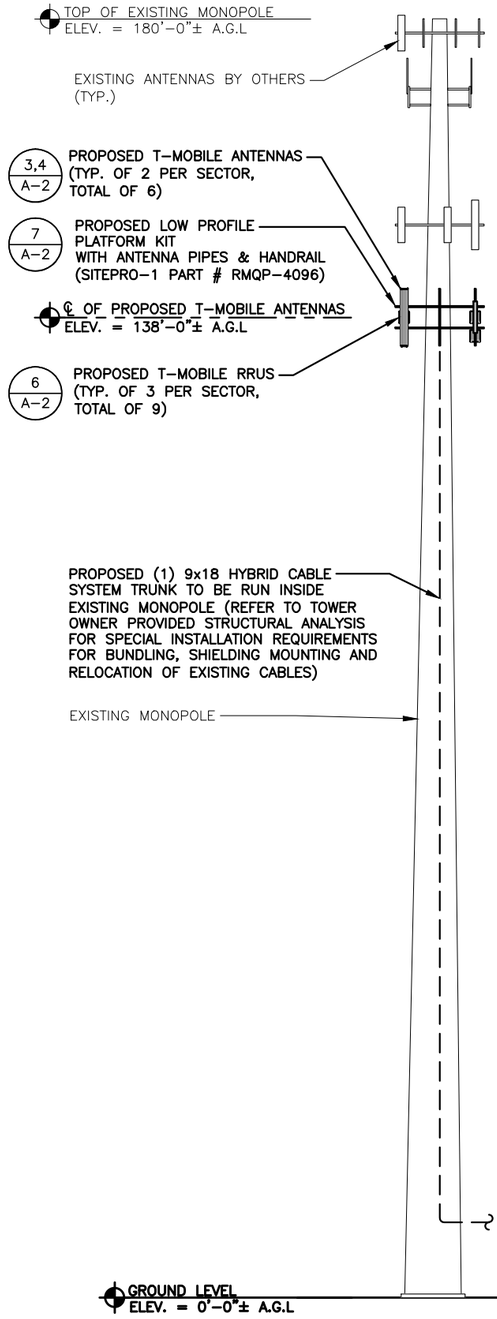
SHEET NUMBER
GN-1



COMPOUND PLAN
1 / A-1

22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

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

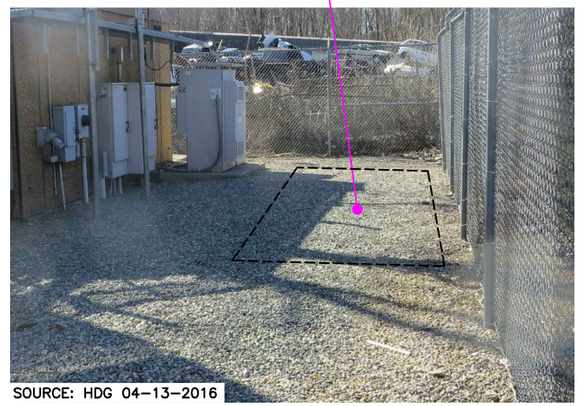


TOWER ELEVATION
2 / A-1

22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

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

STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS PROVIDED BY TOWER OWNER, DATED: MAY 27, 2016 TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS, OR RELOCATION ARRANGEMENTS.



SOURCE: HDG 04-13-2016

EQUIPMENT LOCATION PHOTO DETAIL
3 / A-1

SCALE: N.T.S

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 648-1116

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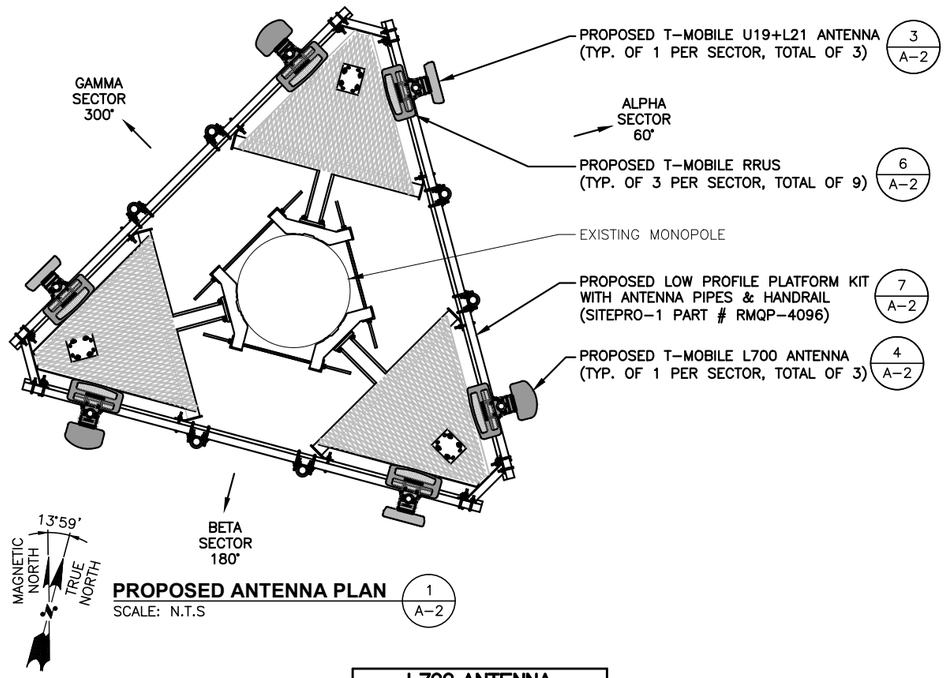
(RT. 85)
COLCHESTER, CT 06415
NEW LONDON COUNTY

SHEET TITLE
COMPOUND PLAN, TOWER ELEVATION & EQUIPMENT PLAN

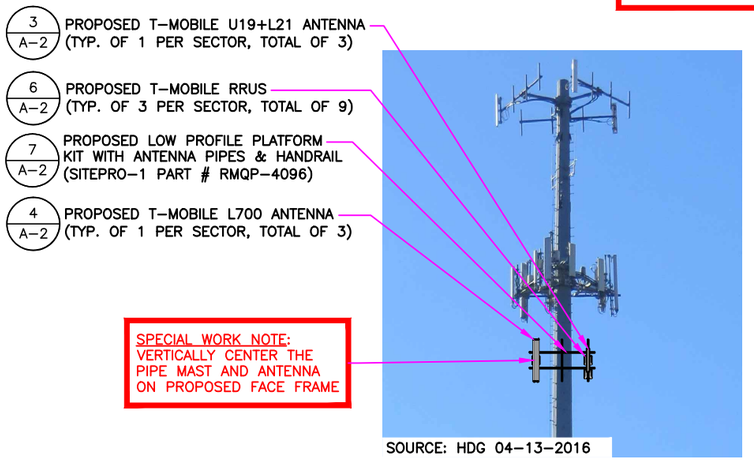
SHEET NUMBER
A-1



PROPOSED ANTENNA PLAN
1 / A-2

SCALE: N.T.S

STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS PROVIDED BY TOWER OWNER, DATED: MAY 27, 2016 TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS, OR RELOCATION ARRANGEMENTS.

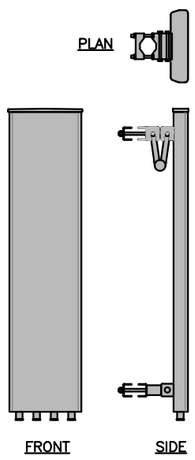


SOURCE: HDG 04-13-2016

PROPOSED ANTENNA MOUNT PHOTO DETAIL
2 / A-2

SCALE: N.T.S

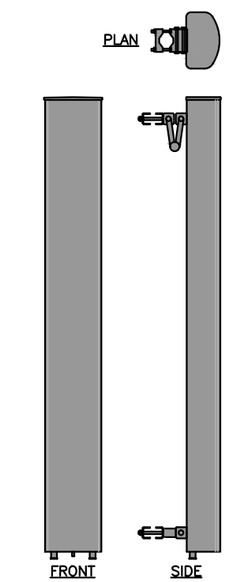
U19+L21 ANTENNA DIMENSIONS	
MODEL #	**APX16DWV-16DWV-S-E-A20**
MANUF.	RFS
WIDTH	13"
DEPTH	3.15"
HEIGHT	55.9"
WEIGHT	40.7 LBS



U19+L21 ANTENNA DETAIL
3 / A-2

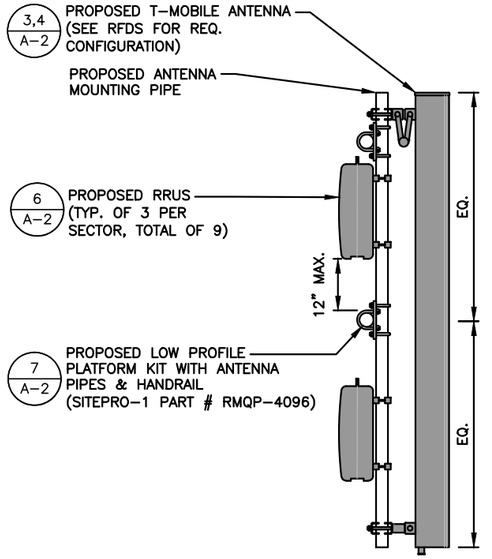
SCALE: N.T.S

L700 ANTENNA DIMENSIONS	
MODEL #	**LNX-6515DS-A1M**
MANUF.	COMMSCOPE
WIDTH	11.9"
DEPTH	7.1"
HEIGHT	96.6"
WEIGHT	43.7 LBS



L700 ANTENNA DETAIL
4 / A-2

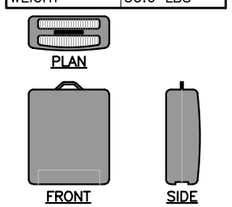
SCALE: N.T.S



PROPOSED ANTENNA & RRU MOUNTING DETAIL
5 / A-2

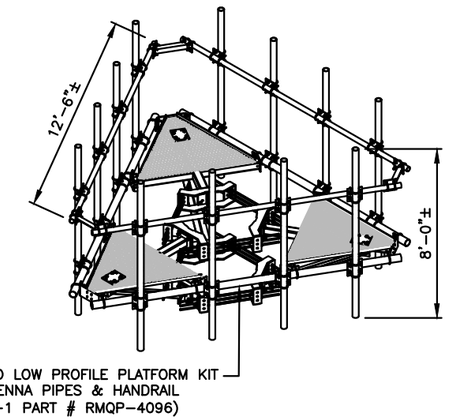
SCALE: N.T.S

RRU DIMENSIONS	
MODEL #	**RRUS B2**
MODEL #	**RRUS B12**
MANUF.	ERICSSON
WIDTH	17"
DEPTH	7"
HEIGHT	20"
WEIGHT	50.6 LBS



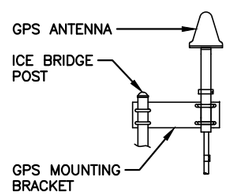
PROPOSED RRU DETAIL
6 / A-2

SCALE: N.T.S



ANTENNA MOUNTING KIT
7 / A-2

SCALE: N.T.S



GPS DIMENSIONS	
MODEL #	**CCAH32ST03**
MANUF.	NAIS
HEIGHT	3.9"
WIDTH	3.5"

GPS ANTENNA MOUNTING DETAIL
8 / A-2

SCALE: N.T.S

T-MOBILE NORTHEAST LLC
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STATE OF CONNECTICUT
DEREK J. CREASER
No. 28554
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: DR

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	06/02/16	ISSUED FOR CONSTRUCTION	VP
0	05/12/16	ISSUED FOR REVIEW	VP

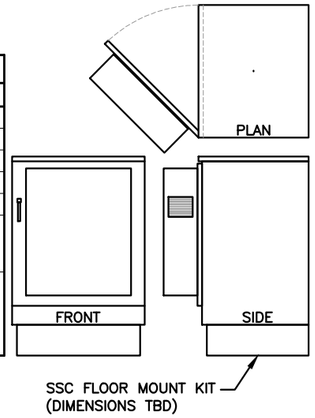
SITE NUMBER:
CTHA059E
ATC SITE ID:
302465
SITE NAME:
COLCHESTER CT 6
SITE ADDRESS:
355 NEW LONDON ROAD
(RT. 85)
COLCHESTER, CT 06415
NEW LONDON COUNTY

SHEET TITLE
TOWER EQUIPMENT DETAILS

SHEET NUMBER
A-2

SSC DIMENSIONS	
MODEL #	SXF17-2824
MANUF.	PURCELL
WIDTH	28"
DEPTH	23.5"
HEIGHT	35.5"
PLINTH	6.5"
WEIGHT (BASE CONFIGURATION)	70 LBS

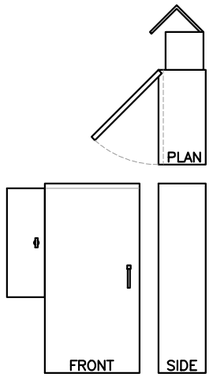
NOTE:
INSTALL CABINET ANCHORS AND FLOOR MOUNT KIT ANCHORS PER MANUFACTURER'S INSTALLATION GUIDELINES



SITE SUPPORT CABINET (SSC)
SCALE: N.T.S — 1 / A-3

PPC DIMENSIONS	
MODEL #	3799340400
MANUF.	DELTA
WIDTH	20"
DEPTH	10"
HEIGHT	40"
WEIGHT	75 LBS

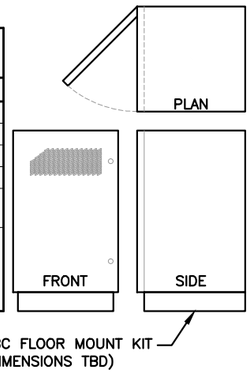
NOTE:
INSTALL CABINET ANCHORS PER MANUFACTURER'S INSTALLATION GUIDELINES



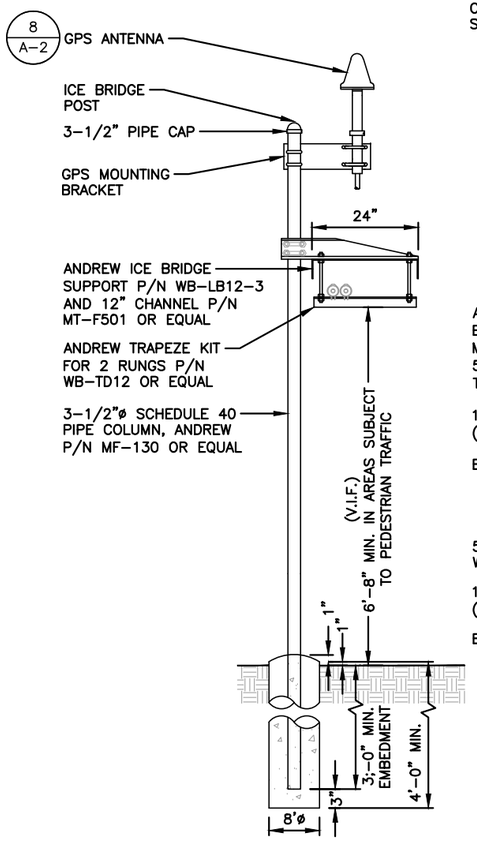
POWER PROTECTION CABINET (PPC)
SCALE: N.T.S — 2 / A-3

PBC DIMENSIONS	
MODEL #	PBC-05
MANUF.	ERICSSON
WIDTH	22.2"
DEPTH	22.8"
HEIGHT	34.1"
WEIGHT W/O BATTERIES	194 LBS

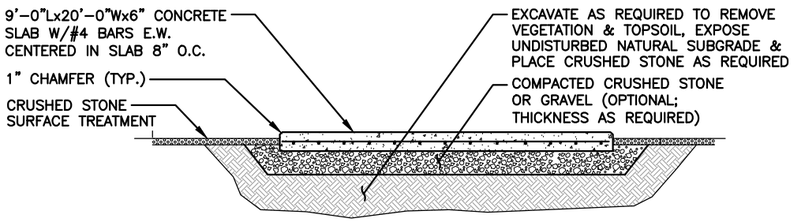
NOTE:
1. INSTALL CABINET ANCHORS AND FLOOR MOUNT KIT ANCHORS PER MANUFACTURER'S INSTALLATION GUIDELINES



POWER AND BATTERY CABINET (PBC)
SCALE: N.T.S — 3 / A-3

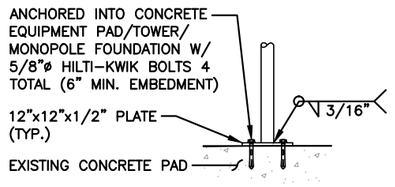


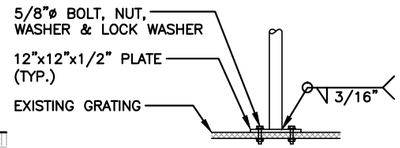
COAX ICE BRIDGE DETAIL
SCALE: N.T.S — 5 / A-3



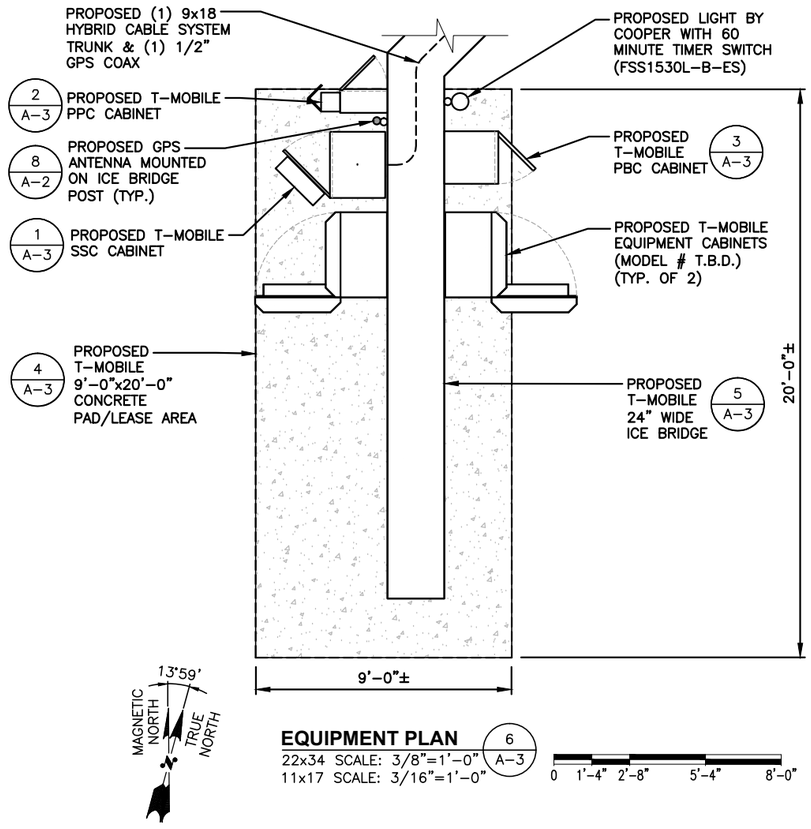
NEW CONC. PAD NOTES:
– REINF. W/ #4's @ 8" O.C. EA. WAY (MID-DEPTH).

CONCRETE PAD DETAIL
SCALE: N.T.S — 4 / A-3





NOTE:
ALL STEEL IS GALVANIZED. ALL BOLTS TO BE FURNISHED W/ WASHERS AND NUTS.



EQUIPMENT PLAN
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0" — 6 / A-3

T-MOBILE NORTHEAST LLC
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STATE OF CONNECTICUT
DEREK J. CREASER
No. 25054
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: DR

APPROVED BY: DJC

SUBMITTALS

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302465
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SITE ADDRESS:
355 NEW LONDON ROAD
(RT. 85)
COLCHESTER, CT 06415
NEW LONDON COUNTY

SHEET TITLE
GROUND EQUIPMENT DETAILS

SHEET NUMBER
A-3

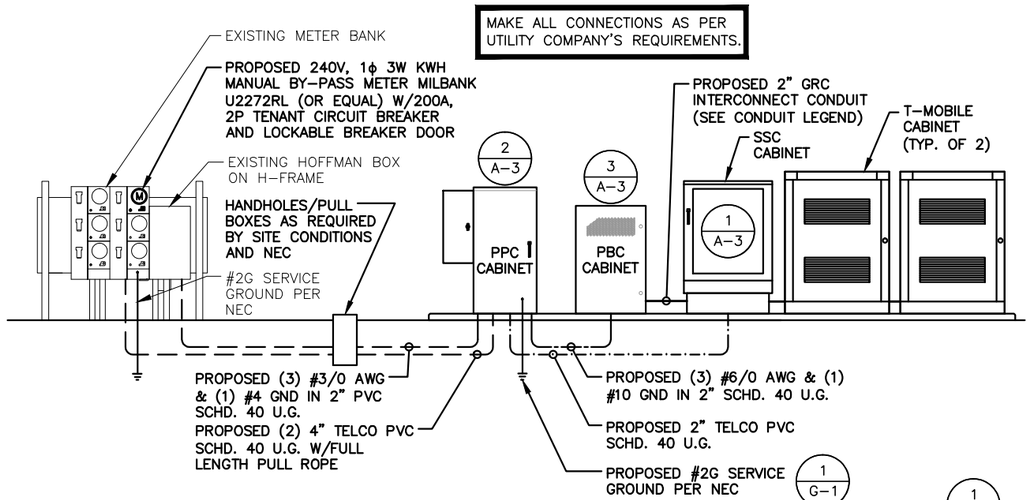
ELECTRICAL NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL METER BANK AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A–3. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.

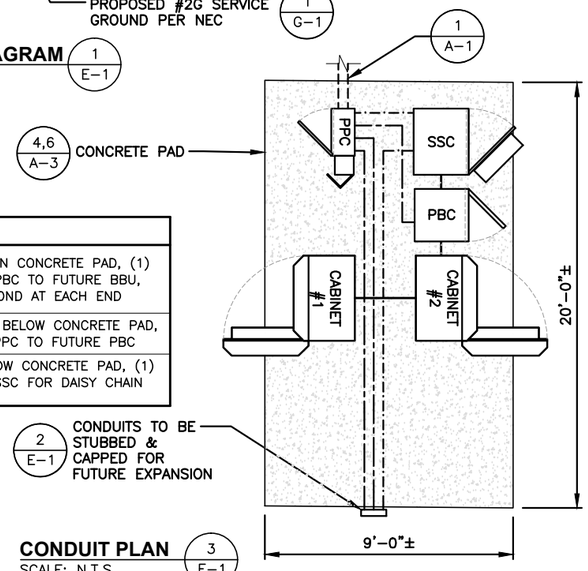
LEGEND

A	AMPERE
V	VOLT
KWH	KILOWATT – HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⏚	GROUND
MGB	MASTER GROUND BAR
	○ MECHANICAL CONNECTION
	● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
———	EXPOSED WIRING
———	#6G AWG INSULATED STRANDED
———	COAXIAL CABLE/HYBRID CABLE
⊙	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
⊛	GROUND ROD WITH TEST WELL
⊸⊸	● EXOTHERMIC (CAD WELD) OR
	○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
⊠	OMNI–DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

MAKE ALL CONNECTIONS AS PER UTILITY COMPANY'S REQUIREMENTS.



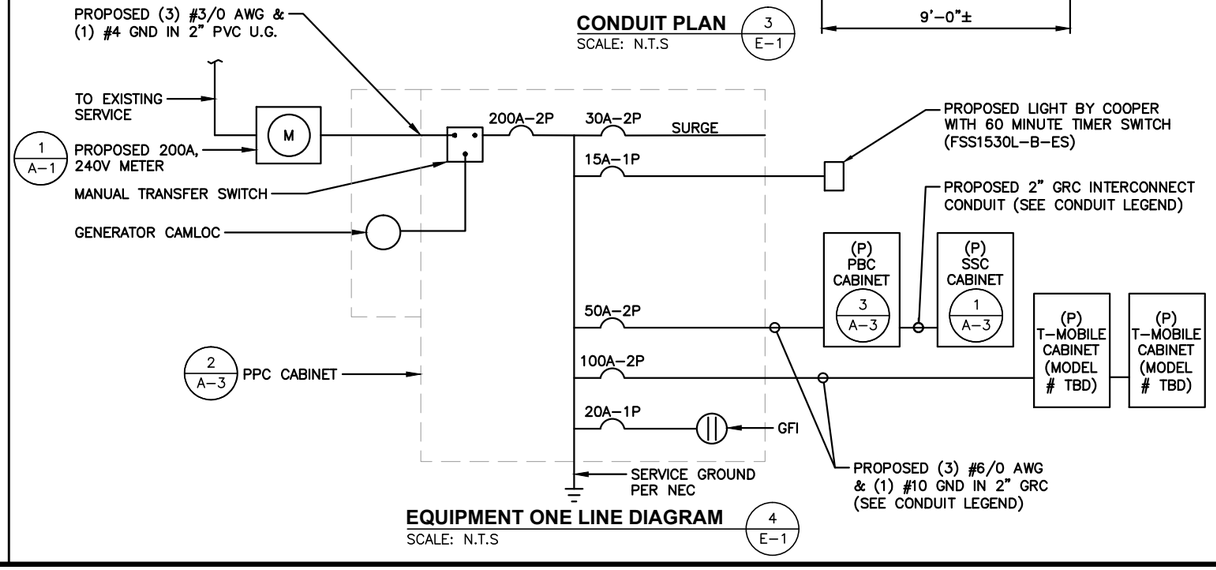
POWER RISER DIAGRAM 1 E–1
SCALE: N.T.S



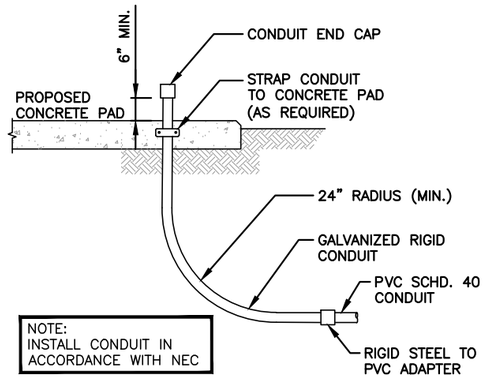
CONDUIT PLAN 3 E–1
SCALE: N.T.S

CONDUIT LEGEND

———	2"ø GRC INETRCONNECT KIT, –48V DC, ON CONCRETE PAD, (1) CONDUIT PBC TO SSC AND (1) CONDUIT PBC TO FUTURE BBU, ANCHOR AT 3' INTERVALS , GROUNDING BOND AT EACH END
——— ———	2"ø PVC SCHD. 40 CONDUIT, AC–POWER, BELOW CONCRETE PAD, (1) CONDUIT PPC TO PBC, (2) CONDUIT PPC TO FUTURE PBC
——— · ———	2"ø PVC SCHD. 40 CONDUIT, TELCO, BELOW CONCRETE PAD, (1) CONDUIT PPC TO SSC AND (1) CONDUIT SSC FOR DAISY CHAIN TO FUTURE SSC

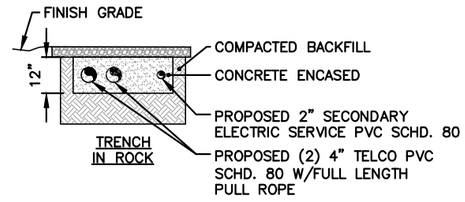


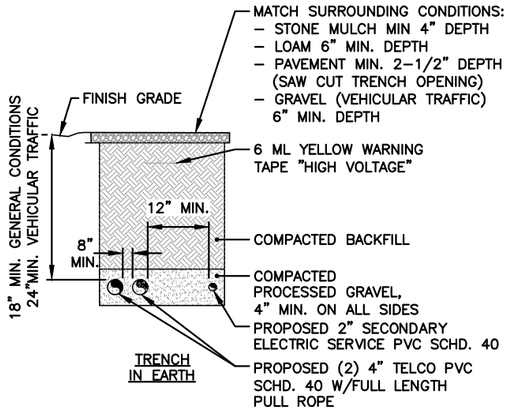
EQUIPMENT ONE LINE DIAGRAM 4 E–1
SCALE: N.T.S



NOTE:
INSTALL CONDUIT IN ACCORDANCE WITH NEC

CONDUIT SWEEP DETAIL 2 E–1
SCALE: N.T.S





SPECIAL WORK NOTE:
EXISTING UNDERGROUND UTILITY LOCATIONS ARE UNKNOWN. WHERE DIRECTED OR REQUIRED, HAND–EXCAVATE PROPOSED UTILITY TRENCHING

BURIED CONDUIT DETAIL 5 E–1
SCALE: N.T.S

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 25854
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: DR

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	06/02/16	ISSUED FOR CONSTRUCTION	VP
0	05/12/16	ISSUED FOR REVIEW	VP

SITE NUMBER:
CTHA059E
ATC SITE ID:
302465
SITE NAME:
COLCHESTER CT 6
SITE ADDRESS:
355 NEW LONDON ROAD
(RT. 85)
COLCHESTER, CT 06415
NEW LONDON COUNTY

SHEET TITLE
ELECTRICAL DETAILS & NOTES

SHEET NUMBER
E-1

ELECTRICAL NOTES

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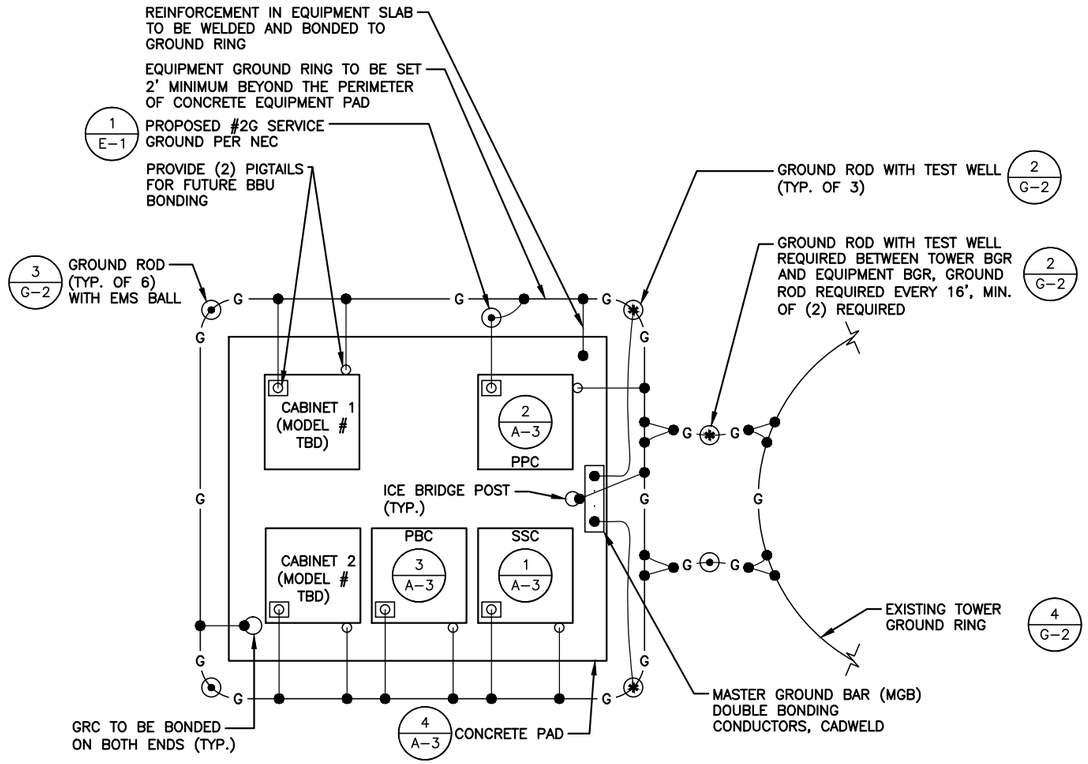
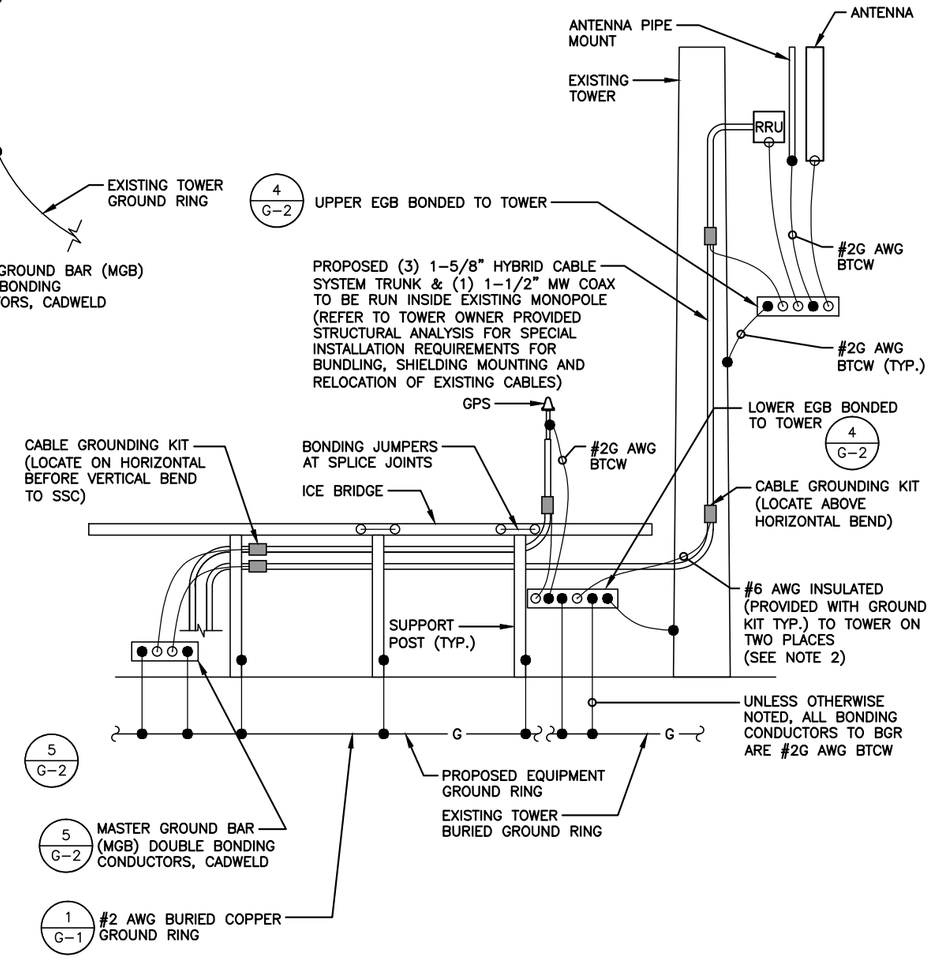
LEGEND

A	AMPERE
V	VOLT
KWH	KILOWATT – HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⏚	GROUND
MGB	MASTER GROUND BAR ○ MECHANICAL CONNECTION ● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
———	EXPOSED WIRING
———	#6G AWG INSULATED STRANDED
———	COAXIAL CABLE/HYBRID CABLE
⊙	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
✱	GROUND ROD WITH TEST WELL
——●——	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
⊠	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL



EQUIPMENT PLAN GROUNDING RING SCHEMATIC 1 G-1
SCALE: N.T.S

NOTE:
1. BASE BID TO INCLUDE INSTALLATION OF A BURIED GROUND RING AND (6) GROUND RODS OR SINGLE XIT HORIZONTAL CHEMICAL ROD AS DETERMINED BY FIELD CONDITIONS. ADDITIONAL RODS AS REQUIRED TO ACHIEVE 5 OHMS RESISTANCE.
2. MAXIMUM VERTICAL/HORIZONTAL DISTANCE BETWEEN CABLE GROUNDING KITS SHALL NOT EXCEED 100 FEET. INSTALL ADDITIONAL KITS AS REQUIRED BY FIELD CONDITIONS.
3. ALL CONNECTIONS TO EQUIPMENT PER MANUFACTURER'S GUIDELINES.
4. ALL ABOVE-GRADE DOWNLEADS TO BGR SHALL BE INSTALLED IN 1" NON-METALLIC CONDUIT SECURED EVERY 2' WITH NON-METALLIC CLIPS.



GROUNDING RISER DIAGRAM 2 G-1
SCALE: N.T.S

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NEW LONDON COUNTY

SHEET TITLE
GROUNDING SCHEMATIC & RISER DIAGRAM

SHEET NUMBER
G-1

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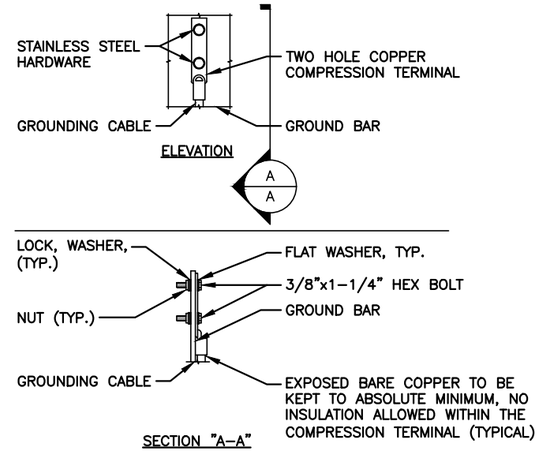
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL METER BANK AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-3. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.

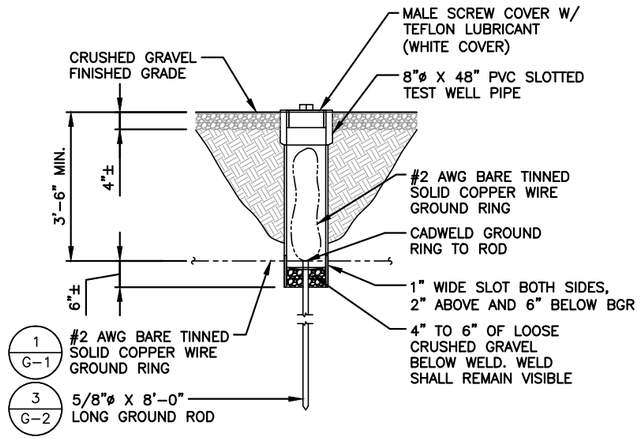
LEGEND

A	AMPERE
V	VOLT
KWH	KILOWATT – HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⏚	GROUND
MGB	MASTER GROUND BAR
	○ MECHANICAL CONNECTION
	● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
———	EXPOSED WIRING
———	#6G AWG INSULATED STRANDED
———	COAXIAL CABLE/HYBRID CABLE
⊙	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
✱	GROUND ROD WITH TEST WELL
●—●—	● EXOTHERMIC (CAD WELD) OR
	○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
⊗	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL



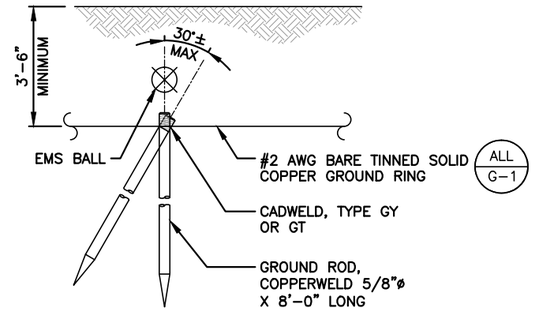
NOTE:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL 1 / G-2
SCALE: N.T.S



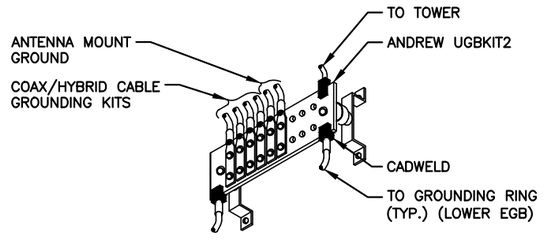
NOTE:
1. PROPOSED BGR TO BE INSTALLED 3'-6" MIN. BELOW GRADE OR BELOW LOCAL FROST DEPTH, WHICHEVER IS GREATER.
2. ONE TEST WELL SHALL BE PROVIDED BETWEEN THE TOWER GROUND LOOP AND TWO ON THE EQUIPMENT GROUND LOOP

GROUND ROD TEST WELL DETAIL 2 / G-2
SCALE: N.T.S

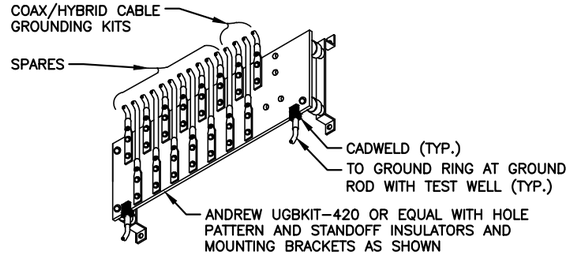


NOTE:
1. PROPOSED BGR TO BE INSTALLED 3'-6" MIN. BELOW GRADE OR BELOW LOCAL FROST DEPTH, WHICHEVER IS GREATER.
2. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 30 DEGREES FROM THE VERTICAL.

GROUND ROD DETAIL 3 / G-2
SCALE: N.T.S



EQUIPMENT GROUND BAR (EGB) 4 / G-2
SCALE: N.T.S



MASTER GROUND BAR (MGB) 5 / G-2
SCALE: N.T.S

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 648-1116

Transcend Wireless
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH, NJ 07430
TEL: (201) 684-0055
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
DEREK J. CREASER
No. 25854
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: DR

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	06/02/16	ISSUED FOR CONSTRUCTION	VP
0	05/12/16	ISSUED FOR REVIEW	VP

SITE NUMBER:
CTHA059E
ATC SITE ID:
302465
SITE NAME:
COLCHESTER CT 6
SITE ADDRESS:
355 NEW LONDON ROAD
(RT. 85)
COLCHESTER, CT 06415
NEW LONDON COUNTY

SHEET TITLE
GROUNDING DETAILS & NOTES

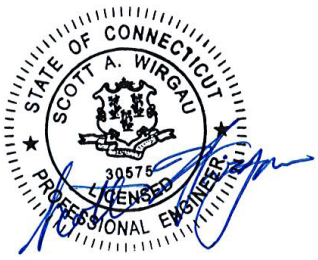
SHEET NUMBER
G-2

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**180 ft Monopole**
ATC Site Name	:	**Colchester CT 6, CT**
ATC Site Number	:	**302465**
Engineering Number	:	**66438621**
Proposed Carrier	:	**T-Mobile**
Carrier Site Name	:	**CTHA059E NSD**
Carrier Site Number	:	**CTHA059E**
Site Location	:	**355 Route 85** **Colchester, CT 06415-1825** **41.544819,-72.304892**
County	:	**New London**
Date	:	**May 26, 2016**
Max Usage	:	**100%**
Result	:	**Pass**

Reviewed by:
Scott Wirgau, PE
Structural Team Leader



Prepared By:
Stephan M. Rawles, E.I.

May 27 2016 8:59 AM

COA: PEC.0001553

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Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 180 ft monopole to reflect the change in loading by T-Mobile.

Supporting Documents

Tower Drawings	Valmont Order # 17494-98, dated June 8, 1998
Foundation Drawing	Valmont Drawing # 17494-S-01 dated July 10, 1998
Geotechnical Report	Tectonic Engineering Consultants W.O. #1170.C877 dated June 5, 1998

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/EIA-222.

Basic Wind Speed:	85 mph (Fastest Mile)
Basic Wind Speed w/ Ice:	74 mph (Fastest Mile)w/ 1/2" radial ice concurrent
Code:	ANSI/TIA/EIA-222-F / 2003 IBC , Sec. 1609.1.1, Exception (5) & Sec. 3108.4 w/ 2005 CT Supplement & 2009 CT Amendment

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
180.0	177.0	9	48" x 12" Panel	T-Arms	(15) 1 5/8" Coax	Sprint Nextel
		3	72" x 12" x 7" Panel			
171.0	169.0	2	Diamond X50A	Standoff Mounts	(2) 1/2" Coax	Senet
161.0	161.0	3	Alcatel-Lucent RRH2X60-AWS	Low Profile Platform	(2) 1 5/8" Coax	Verizon
		3	Alcatel-Lucent RRH2x60 700			
		1	RFS DB-T1-6Z-8AB-0Z			
		3	Commscope HBXX-6516DS-VTM			
		6	Commscope LNX-6514DS-VTM			
		3	Commscope HBXX-6517DS-VTM			
150.0	152.0	6	LGP LGP21903	Low Profile Platform	(12) 1 1/4" Coax (2) 0.65" 8 AWG 2C (1) 1.3" Hybrid	AT&T Mobility
		6	Powerwave LGP21401			
	151.0	6	Powerwave 7770.00			
		1	KMW AM-X-CD-16-65-00T-RET (54")			
		2	Powerwave P65-17-XLH-RR			
	150.0	1	Raycap DC6-48-60-18-8F			
	149.0	6	Ericsson RRUS-11 800MHz			

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
No loading considered as to be removed						

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
138.0	138.0	3	Ericsson RRUS 11 B12	Low Profile Platform	(1) 1 5/8" Fiber	T-Mobile
		3	Ericsson RRUS 11 B2			
		3	Ericsson RRUS 11 B4			
		3	RFS APX16DWV-16DWVS-E-A20			
		3	Commscope LNX-6515DS-A1M (96.6" Height)			

[1]Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	87%	Pass
Shaft	100%	Pass
Base Plate	93%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	5,098.1	70%
Axial (Kips)	48.7	86%
Shear (Kips)	43.0	47%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required. This has a factor of safety ≤ 2.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
138.0	Ericsson RRUS 11 B12	T-Mobile	2.197	2.003
	Ericsson RRUS 11 B4			
	Ericsson RRUS 11 B2			
	RFS APX16DWV-16DWVS-E-A20			
	Commscope LNX-6515DS-A1M (96.6" Height)			

***Deflection and Sway was evaluated considering a design wind speed of 50 mph (Fastest Mile) per ANSI/TIA/EIA-222-F.**

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Standard Conditions

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

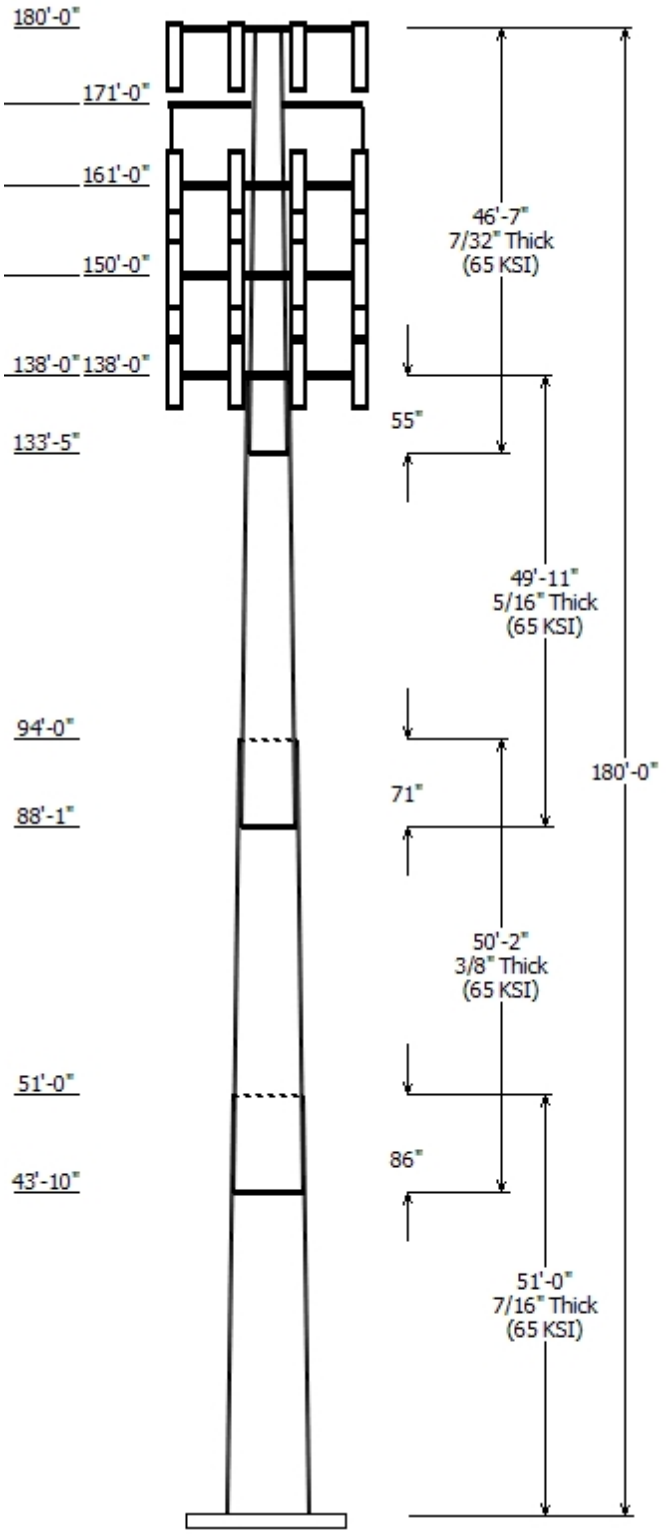
-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

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



Job Information

Pole :	302465 Code: TIA/EIA-222-F
Description :	180 ft Valmont Monopole verified 10-16-12 JK
Client :	T-MOBILE
Location :	Colchester CT 6, CT
Shape :	12 Sides
Height :	180.00 (ft)
Base Elev (ft):	0.00
Taper:	0.26079 (in/ft)

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
1	51.000	50.70	64.00	0.438		0.000	0.260800	65
2	50.167	40.23	53.31	0.375	Slip Joint	86.000	0.260800	65
3	49.917	29.38	42.40	0.313	Slip Joint	71.000	0.260800	65
4	46.583	18.87	31.01	0.219	Slip Joint	55.000	0.260800	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
180.000	177.000	3	72" x 12" x 7" Panel
180.000	177.000	9	48" x 12" Panel
180.000	180.000	3	Round T-Arm
171.000	171.000	2	Standoff Mounts
171.000	169.000	2	Diamond X50A
161.000	161.000	3	Commscope HBXX-6517DS-
161.000	161.000	6	Commscope LNX-6514DS-VTM
161.000	161.000	3	Commscope HBXX-6516DS-
161.000	161.000	1	Flat Low Profile Platform
161.000	161.000	1	RFS DB-T1-6Z-8AB-0Z
161.000	161.000	3	Alcatel-Lucent RRH2X60-AWS
161.000	161.000	3	Alcatel-Lucent RRH2x60 700
150.000	151.000	1	KMW AM-X-CD-16-65-00T-RET
150.000	151.000	6	Powerwave Allgon 7770.00
150.000	152.000	6	LGP Allgon LGP21903
150.000	150.000	1	Round Low Profile Platform
150.000	149.000	6	Ericsson RRUS-11 800 MHz
150.000	150.000	1	Raycap DC6-48-60-18-8F
150.000	151.000	2	Powerwave Allgon P65-17-
150.000	152.000	6	Powerwave Allgon LGP21401
138.000	138.000	1	Round Low Profile Platform
138.000	138.000	3	Commscope LNX-6515DS-A1M
138.000	138.000	3	RFS APX16DWV-16DWVS-E-A20
138.000	138.000	3	Ericsson RRUS 11 B2
138.000	138.000	3	Ericsson RRUS 11 B4
138.000	138.000	3	Ericsson RRUS 11 B12

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	138.0	1 5/8" Fiber	No
0.000	150.0	0.65" 8 AWG 2C	No
0.000	150.0	1 1/4" Coax	No
0.000	150.0	1.3" Hybrid	No
0.000	161.0	1 5/8" Coax	No
0.000	171.0	1/2" Coax	No
0.000	180.0	1 5/8" Coax	No

Load Cases

No Ice	85.00 mph Wind with No Ice

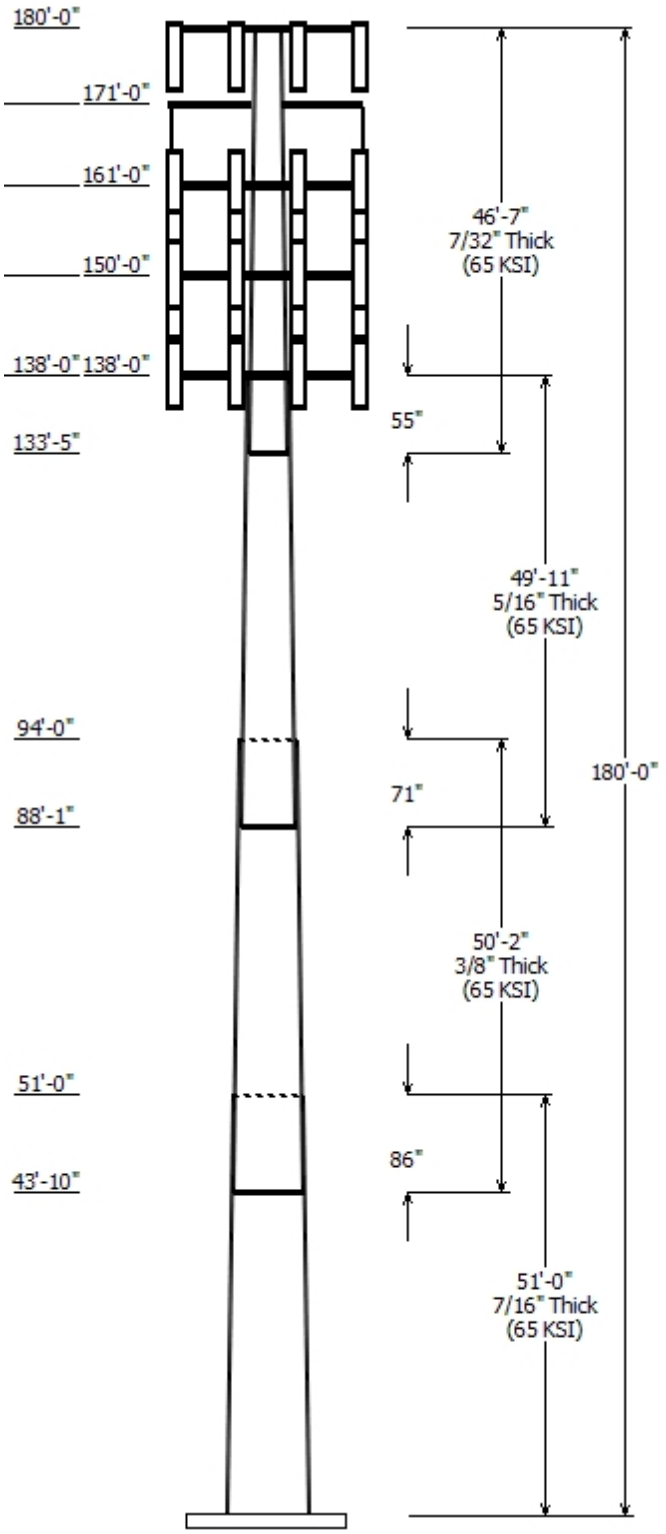
Ice	73.61 mph Wind with Ice
Twist/Sway	50.00 mph Wind with No Ice

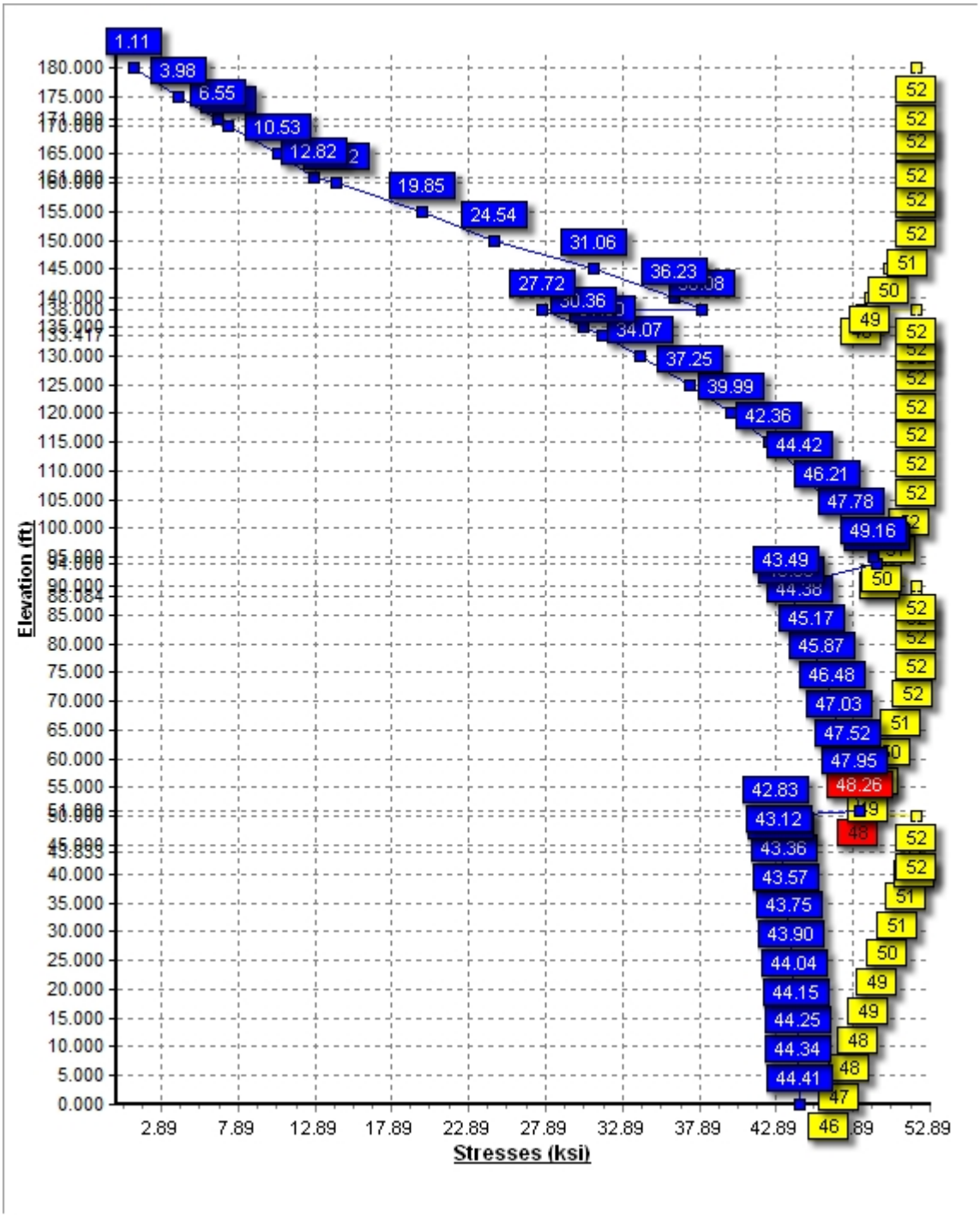
Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
No Ice	5098.12	42.99	43.95
Ice	3017.52	27.28	48.71
Twist/Sway	1766.66	14.88	44.00

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
	0.00	0.000	0.000




Elevation (ft)
Stresses (ksi)
2.89
7.89
12.89
17.89
22.89
27.89
32.89
37.89
42.89
52.89
1.11
3.98
6.55
10.53
12.82
19.85
24.54
31.06
36.23
27.72
30.36
34.07
37.25
39.99
42.36
44.42
46.21
47.78
49.16
43.49
44.38
45.17
45.87
46.48
47.03
47.52
47.95
48.26
42.83
43.12
43.36
43.57
43.75
43.90
44.04
44.15
44.25
44.34
44.41

Site Number:	**302465**	**Code: TIA/EIA-222-F**	
Site Name:	**Colchester CT 6, CT**	**Engineering Number: 664386KK2**	**5/26/2016 1:21:22 PM**
Customer:	**T-MOBILE**		

Analysis Parameters

Location:	**New London County, CT**		
Code:	**TIA/EIA-222-F**	**Height (ft):**	**180**
Shape:	**12 Sides**	**Base Diameter (in):**	**64.00**
Pole Type:	**Taper**	**Top Diameter (in):**	**18.87**
Pole Manfacturer:	**Valmont**	**Taper (in/ft) :**	**0.261**

Load Cases

No Ice	**85.00 mph Wind with No Ice**
Ice	**73.61 mph Wind with Ice**
Twist/Sway	**50.00 mph Wind with No Ice**

Site Number:	**302465**	**Code: TIA/EIA-222-F**	
Site Name:	**Colchester CT 6, CT**	**Engineering Number: 664386KK2**	**5/26/2016 1:21:22 PM**
Customer:	**T-MOBILE**		

Shaft Section Properties

							Bottom						Top						
Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Slip Joint Type	Slip Joint Len (in)	Weight (lb)	Dia (in)	Elev (ft)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-12	51.000	0.4375	65		0.00	13,914	64.00	0.00	89.54	46176.7	37.05	146.29	50.70	51.00	70.81	22831.9	28.91	115.88	0.260791
2-12	50.167	0.3750	65	Slip	86.00	9,565	53.31	43.83	63.93	22872.6	35.95	142.18	40.23	94.00	48.13	9761.2	26.61	107.29	0.260791
3-12	49.917	0.3125	65	Slip	71.00	6,082	42.40	88.08	42.35	9577.7	34.21	135.69	29.38	138.00	29.25	3156.2	23.05	94.03	0.260791
4-12	46.583	0.2188	65	Slip	55.00	2,761	31.01	133.42	21.69	2626.8	35.85	141.80	18.87	180.00	13.14	583.3	20.97	86.26	0.260791
				Shaft Weight		32,321													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor	Distance From Face (ft)	Vert Ecc (ft)
180.00	48" x 12" Panel	9	30.00	5.600	0.75	62.50	6.190	0.75	0.000	-3.000
180.00	72" x 12" x 7" Panel	3	45.00	8.400	0.81	0.00	0.000	0.81	0.000	-3.000
180.00	Round T-Arm	3	250.00	9.700	0.67	314.00	12.100	0.67	0.000	0.000
171.00	Diamond X50A	2	2.30	1.120	1.00	57.20	1.630	1.00	0.000	-2.000
171.00	Standoff Mounts	2	150.00	5.200	1.00	175.00	5.900	1.00	0.000	0.000
161.00	Alcatel-Lucent RRH2x60 700	3	56.70	2.510	0.67	0.00	0.000	0.67	0.000	0.000
161.00	Alcatel-Lucent RRH2X60-	3	44.00	2.190	0.67	0.00	0.000	0.67	0.000	0.000
161.00	Commscope HBXX-6516DS-	3	30.60	5.940	0.78	0.00	0.000	0.78	0.000	0.000
161.00	Commscope HBXX-6517DS-	3	43.00	8.740	0.67	0.00	0.000	0.67	0.000	0.000
161.00	Commscope LNX-6514DS-	6	38.80	8.410	0.82	0.00	0.000	0.82	0.000	0.000
161.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	1,700.00	31.600	1.00	0.000	0.000
161.00	RFS DB-T1-6Z-8AB-0Z	1	44.00	5.600	0.67	144.50	6.080	0.67	0.000	0.000
150.00	Ericsson RRUS-11 800 MHz	6	54.00	2.940	0.76	75.64	3.290	0.76	0.000	-1.000
150.00	KMW AM-X-CD-16-65-00T-	1	33.00	6.620	0.81	0.00	0.000	0.81	0.000	1.000
150.00	LGP Allgon LGP21903	6	5.50	0.270	0.67	7.90	0.380	0.67	0.000	2.000
150.00	Powerwave Allgon 7770.00	6	35.00	5.880	0.75	0.00	0.000	0.75	0.000	1.000
150.00	Powerwave Allgon LGP21401	6	14.10	1.290	0.67	21.26	1.530	0.67	0.000	2.000
150.00	Powerwave Allgon P65-17-	2	59.00	11.470	0.80	121.00	12.390	0.80	0.000	1.000
150.00	Raycap DC6-48-60-18-8F	1	20.00	1.270	1.00	35.10	1.460	1.00	0.000	0.000
150.00	Round Low Profile Platform	1	1500.00	21.700	1.00	1,700.00	27.200	1.00	0.000	0.000
138.00	Commscope LNX-6515DS-	3	43.70	11.470	0.84	0.00	0.000	0.84	0.000	0.000
138.00	Ericsson RRUS 11 B12	3	50.70	3.260	0.67	0.00	0.000	0.67	0.000	0.000
138.00	Ericsson RRUS 11 B2	3	50.70	3.260	0.67	0.00	0.000	0.67	0.000	0.000
138.00	Ericsson RRUS 11 B4	3	50.70	3.260	0.67	0.00	0.000	0.67	0.000	0.000
138.00	RFS APX16DWV-16DWVS-E-	3	40.70	7.230	0.65	75.00	7.910	0.65	0.000	0.000
138.00	Round Low Profile Platform	1	1500.00	21.700	1.00	1,700.00	27.200	1.00	0.000	0.000
	Totals	84	8291.40			8,344.30			Number of Loadings :	26

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	No Ice Weight (lb/ft)	No Ice CaAa (sf/ft)	Ice Weight (lb/ft)	Ice CaAa (sf/ft)	Exposed To Wind
0.00	180.00	15	1 5/8" Coax	15.00	0.00	0.00	0.00	N
0.00	171.00	2	1/2" Coax	0.30	0.00	0.00	0.00	N
0.00	161.00	2	1 5/8" Coax	0.82	0.00	0.00	0.00	N
0.00	150.00	2	0.65" 8 AWG 2C	0.31	0.00	0.00	0.00	N
0.00	150.00	12	1 1/4" Coax	0.63	0.00	0.00	0.00	N
0.00	150.00	1	1.3" Hybrid	1.00	0.00	0.00	0.00	N
0.00	138.00	1	1 5/8" Fiber	1.61	0.00	0.00	0.00	N
			Total Weight	3,396.50 (lb)		0.00 (lb)		

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Fa (ksi)	Weight (lb)
0.00		0.4375	64.000	89.544	46,176.7	37.05	146.29	65	46	0	0.0
5.00		0.4375	62.696	87.707	43,392.7	36.25	143.31	65	47	0	1,507.9
10.00		0.4375	61.392	85.870	40,722.9	35.46	140.32	65	48	0	1,476.6
15.00		0.4375	60.088	84.033	38,165.0	34.66	137.34	65	48	0	1,445.4
20.00		0.4375	58.784	82.196	35,716.4	33.86	134.36	65	49	0	1,414.1
25.00		0.4375	57.480	80.359	33,374.9	33.06	131.38	65	49	0	1,382.8
30.00		0.4375	56.176	78.522	31,138.1	32.26	128.40	65	50	0	1,351.6
35.00		0.4375	54.872	76.685	29,003.5	31.46	125.42	65	51	0	1,320.3
40.00		0.4375	53.568	74.848	26,968.7	30.66	122.44	65	51	0	1,289.1
43.83	Bot - Section 2	0.4375	52.569	73.440	25,474.9	30.05	120.16	65	52	0	967.1
45.00		0.4375	52.264	73.011	25,031.4	29.87	119.46	65	52	0	543.8
50.00		0.4375	50.960	71.174	23,189.2	29.07	116.48	65	52	0	2,294.6
51.00	Top - Section 1	0.3750	51.450	61.673	20,534.7	34.62	137.20	65	48	0	452.0
55.00		0.3750	50.406	60.413	19,302.0	33.87	134.42	65	49	0	830.9
60.00		0.3750	49.103	58.838	17,831.8	32.94	130.94	65	50	0	1,014.5
65.00		0.3750	47.799	57.264	16,438.3	32.01	127.46	65	50	0	987.7
70.00		0.3750	46.495	55.689	15,119.2	31.08	123.99	65	51	0	960.9
75.00		0.3750	45.191	54.115	13,872.7	30.15	120.51	65	52	0	934.1
80.00		0.3750	43.887	52.540	12,696.7	29.21	117.03	65	52	0	907.3
85.00		0.3750	42.583	50.966	11,589.1	28.28	113.55	65	52	0	880.5
88.08	Bot - Section 3	0.3750	41.779	49.995	10,939.2	27.71	111.41	65	52	0	529.7
90.00		0.3750	41.279	49.391	10,547.8	27.35	110.08	65	52	0	598.6
94.00	Top - Section 2	0.3125	40.861	40.801	8,562.5	32.89	130.75	65	50	0	1,226.3
95.00		0.3125	40.600	40.539	8,398.4	32.67	129.92	65	50	0	138.3
100.0		0.3125	39.296	39.227	7,609.0	31.55	125.75	65	51	0	678.6
105.0		0.3125	37.992	37.915	6,870.7	30.43	121.57	65	52	0	656.2
110.0		0.3125	36.688	36.603	6,181.8	29.31	117.40	65	52	0	633.9
115.0		0.3125	35.384	35.291	5,540.6	28.20	113.23	65	52	0	611.6
120.0		0.3125	34.080	33.979	4,945.3	27.08	109.06	65	52	0	589.3
125.0		0.3125	32.776	32.666	4,394.2	25.96	104.88	65	52	0	566.9
130.0		0.3125	31.472	31.354	3,885.7	24.84	100.71	65	52	0	544.6
133.4	Bot - Section 4	0.3125	30.581	30.458	3,561.7	24.08	97.86	65	52	0	359.4
135.0		0.3125	30.168	30.042	3,418.0	23.72	96.54	65	52	0	279.0
138.0		0.3125	29.386	29.255	3,156.3	23.05	94.03	65	52	0	518.3
138.0	Top - Section 3	0.2188	29.823	20.853	2,332.7	34.39	136.33	65	48	0	0.1
140.0		0.2188	29.302	20.485	2,211.6	33.75	133.95	65	49	0	140.6
145.0		0.2188	27.998	19.567	1,927.3	32.15	127.99	65	50	0	340.7
150.0		0.2188	26.694	18.648	1,668.4	30.55	122.03	65	51	0	325.1
155.0		0.2188	25.390	17.730	1,433.8	28.96	116.07	65	52	0	309.5
160.0		0.2188	24.086	16.811	1,222.3	27.36	110.11	65	52	0	293.8
161.0		0.2188	23.825	16.628	1,182.7	27.04	108.91	65	52	0	56.9
165.0		0.2188	22.782	15.893	1,032.7	25.76	104.15	65	52	0	221.3
170.0		0.2188	21.478	14.974	863.8	24.17	98.19	65	52	0	262.6
171.0		0.2188	21.217	14.791	832.4	23.85	96.99	65	52	0	50.6
175.0		0.2188	20.174	14.056	714.4	22.57	92.22	65	52	0	196.3
180.0		0.2188	18.870	13.138	583.3	20.97	86.26	65	52	0	231.3
											32,320.8

Load Case: No Ice — 85.00 mph Wind with No Ice — 25 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		424.9	0.0					0.0	0.0	424.9	0.0	0.0	0.0
5.00		841.1	1,507.9					0.0	98.4	841.1	1,606.2	0.0	0.0
10.00		823.6	1,476.6					0.0	98.4	823.6	1,575.0	0.0	0.0
15.00		806.1	1,445.4					0.0	98.4	806.1	1,543.7	0.0	0.0
20.00		788.6	1,414.1					0.0	98.4	788.6	1,512.4	0.0	0.0
25.00		771.1	1,382.8					0.0	98.4	771.1	1,481.2	0.0	0.0
30.00		753.6	1,351.6					0.0	98.4	753.6	1,449.9	0.0	0.0
35.00		749.6	1,320.3					0.0	98.4	749.6	1,418.7	0.0	0.0
40.00		669.4	1,289.1					0.0	98.4	669.4	1,387.4	0.0	0.0
43.83	Bot - Section 2	382.8	967.1					0.0	75.4	382.8	1,042.5	0.0	0.0
45.00		480.3	543.8					0.0	22.9	480.3	566.7	0.0	0.0
50.00		467.9	2,294.6					0.0	98.4	467.9	2,393.0	0.0	0.0
51.00	Top - Section 1	391.0	452.0					0.0	19.7	391.0	471.6	0.0	0.0
55.00		704.0	830.9					0.0	78.7	704.0	909.5	0.0	0.0
60.00		781.1	1,014.5					0.0	98.4	781.1	1,112.8	0.0	0.0
65.00		778.0	987.7					0.0	98.4	778.0	1,086.0	0.0	0.0
70.00		773.0	960.9					0.0	98.4	773.0	1,059.2	0.0	0.0
75.00		766.3	934.1					0.0	98.4	766.3	1,032.4	0.0	0.0
80.00		758.1	907.3					0.0	98.4	758.1	1,005.7	0.0	0.0
85.00		606.6	880.5					0.0	98.4	606.6	978.9	0.0	0.0
88.08	Bot - Section 3	373.7	529.7					0.0	60.7	373.7	590.3	0.0	0.0
90.00		441.6	598.6					0.0	37.7	441.6	636.3	0.0	0.0
94.00	Top - Section 2	371.4	1,226.3					0.0	78.7	371.4	1,305.0	0.0	0.0
95.00		438.9	138.3					0.0	19.7	438.9	158.0	0.0	0.0
100.00		723.5	678.6					0.0	98.4	723.5	776.9	0.0	0.0
105.00		709.3	656.2					0.0	98.4	709.3	754.6	0.0	0.0
110.00		694.1	633.9					0.0	98.4	694.1	732.3	0.0	0.0
115.00		678.0	611.6					0.0	98.4	678.0	709.9	0.0	0.0
120.00		661.0	589.3					0.0	98.4	661.0	687.6	0.0	0.0
125.00		643.2	566.9					0.0	98.4	643.2	665.3	0.0	0.0
130.00		528.3	544.6					0.0	98.4	528.3	643.0	0.0	0.0
133.42	Bot - Section 4	308.9	359.4					0.0	67.2	308.9	426.6	0.0	0.0
135.00		280.1	279.0					0.0	31.1	280.1	310.1	0.0	0.0
138.00	Appertunance(s)	182.5	518.3	3,968.6	0.0	0.0	2,209.5	0.0	59.0	4,151.1	2,786.9	0.0	0.0
138.00	Top - Section 3	119.6	0.1					0.0	0.0	119.6	0.1	0.0	0.0
140.00		411.5	140.6					0.0	36.1	411.5	176.7	0.0	0.0
145.00		573.2	340.7					0.0	90.3	573.2	431.0	0.0	0.0
150.00	Appertunance(s)	551.8	325.1	4,476.4	0.0	2,383.8	2,322.6	0.0	90.3	5,028.3	2,738.0	0.0	0.0
155.00		529.8	309.5					0.0	80.6	529.8	390.1	0.0	0.0
160.00		309.8	293.8					0.0	80.6	309.8	374.4	0.0	0.0
161.00	Appertunance(s)	247.9	56.9	5,513.1	0.0	0.0	2,299.7	0.0	16.1	5,761.0	2,372.7	0.0	0.0
165.00		433.5	221.3					0.0	61.2	433.5	282.5	0.0	0.0
170.00		281.9	262.6					0.0	76.5	281.9	339.1	0.0	0.0
171.00	Appertunance(s)	224.1	50.6	631.8	0.0	-223.3	304.6	0.0	15.3	855.9	370.5	0.0	0.0
175.00		390.0	196.3					0.0	60.0	390.0	256.3	0.0	0.0
180.00	Appertunance(s)	211.8	231.3	3,929.8	0.0	-8,820.9	1,155.0	0.0	75.0	4,141.6	1,461.3	0.0	0.0

Site Number:	**302465**	**Code: TIA/EIA-222-F**	
Site Name:	**Colchester CT 6, CT**	**Engineering Number: 664386KK2**	**5/26/2016 1:21:24 PM**
Customer:	**T-MOBILE**		

Load Case: **No Ice** **85.00 mph Wind with No Ice** **25 Iterations**

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Totals:	**43,356.3**	**44,008.6**	**0.00**	**0.00**

Site Number:	**302465**	**Code: TIA/EIA-222-F**	
Site Name:	**Colchester CT 6, CT**	**Engineering Number: 664386KK2**	**5/26/2016 1:21:24 PM**
Customer:	**T-MOBILE**		

Load Case: **No Ice** **85.00 mph Wind with No Ice** **25 Iterations**

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Shaft Forces and Deflections

Seg Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	X Deflect (in)	Z Deflect (in)	Total Deflect (in)	Rotation (deg)
0.00	-42.991	-43.949	0.000	0.000	0.000	-5,098.117	0.000	0.000	0.000	0.000
5.00	-42.263	-42.230	0.000	0.000	0.000	-4,883.164	-0.083	0.000	0.083	-0.154
10.00	-41.545	-40.544	0.000	0.000	0.000	-4,671.854	-0.329	0.000	0.329	-0.310
15.00	-40.838	-38.891	0.000	0.000	0.000	-4,464.134	-0.740	0.000	0.740	-0.470
20.00	-40.141	-37.271	0.000	0.000	0.000	-4,259.949	-1.320	0.000	1.320	-0.633
25.00	-39.456	-35.685	0.000	0.000	0.000	-4,059.246	-2.072	0.000	2.072	-0.798
30.00	-38.782	-34.131	0.000	0.000	0.000	-3,861.968	-2.998	0.000	2.998	-0.967
35.00	-38.105	-32.612	0.000	0.000	0.000	-3,668.062	-4.104	0.000	4.104	-1.139
40.00	-37.491	-31.137	0.000	0.000	0.000	-3,477.538	-5.391	0.000	5.391	-1.314
43.83	-37.131	-30.045	0.000	0.000	0.000	-3,333.823	-6.503	0.000	6.503	-1.452
45.00	-36.694	-29.419	0.000	0.000	0.000	-3,290.505	-6.864	0.000	6.864	-1.495
50.00	-36.212	-26.971	0.000	0.000	0.000	-3,107.037	-8.528	0.000	8.528	-1.677
51.00	-35.850	-26.452	0.000	0.000	0.000	-3,070.826	-8.883	0.000	8.883	-1.715
55.00	-35.198	-25.454	0.000	0.000	0.000	-2,927.427	-10.384	0.000	10.384	-1.864
60.00	-34.469	-24.242	0.000	0.000	0.000	-2,751.438	-12.449	0.000	12.449	-2.074
65.00	-33.737	-23.061	0.000	0.000	0.000	-2,579.096	-14.735	0.000	14.735	-2.286
70.00	-33.003	-21.910	0.000	0.000	0.000	-2,410.415	-17.245	0.000	17.245	-2.502
75.00	-32.271	-20.789	0.000	0.000	0.000	-2,245.401	-19.983	0.000	19.983	-2.721
80.00	-31.541	-19.699	0.000	0.000	0.000	-2,084.048	-22.951	0.000	22.951	-2.943
85.00	-30.943	-18.656	0.000	0.000	0.000	-1,926.343	-26.153	0.000	26.153	-3.168
88.08	-30.573	-18.026	0.000	0.000	0.000	-1,830.927	-28.246	0.000	28.246	-3.310
90.00	-30.137	-17.344	0.000	0.000	0.000	-1,772.340	-29.592	0.000	29.592	-3.400
94.00	-29.719	-16.004	0.000	0.000	0.000	-1,651.785	-32.519	0.000	32.519	-3.584
95.00	-29.314	-15.794	0.000	0.000	0.000	-1,622.077	-33.275	0.000	33.275	-3.632
100.0	-28.610	-14.935	0.000	0.000	0.000	-1,475.508	-37.218	0.000	37.218	-3.894
105.0	-27.914	-14.105	0.000	0.000	0.000	-1,332.461	-41.435	0.000	41.435	-4.157
110.0	-27.228	-13.303	0.000	0.000	0.000	-1,192.892	-45.927	0.000	45.927	-4.418
115.0	-26.552	-12.530	0.000	0.000	0.000	-1,056.754	-50.690	0.000	50.690	-4.677
120.0	-25.888	-11.787	0.000	0.000	0.000	-923.995	-55.721	0.000	55.721	-4.931
125.0	-25.235	-11.074	0.000	0.000	0.000	-794.558	-61.014	0.000	61.014	-5.179
130.0	-24.686	-10.399	0.000	0.000	0.000	-668.383	-66.560	0.000	66.560	-5.415
133.4	-24.357	-9.956	0.000	0.000	0.000	-584.025	-70.489	0.000	70.489	-5.572
135.0	-24.065	-9.633	0.000	0.000	0.000	-545.477	-72.346	0.000	72.346	-5.644
138.0	-19.665	-7.252	0.000	0.000	0.000	-473.283	-75.929	0.000	75.929	-5.771
138.0	-19.551	-7.249	0.000	0.000	0.000	-473.270	-75.930	0.000	75.930	-5.771
140.0	-19.145	-7.058	0.000	0.000	0.000	-434.181	-78.361	0.000	78.361	-5.853
145.0	-18.557	-6.614	0.000	0.000	0.000	-338.458	-84.617	0.000	84.617	-6.101
150.0	-13.277	-4.391	0.000	0.000	0.000	-243.291	-91.116	0.000	91.116	-6.317
155.0	-12.718	-4.027	0.000	0.000	0.000	-176.907	-97.818	0.000	97.818	-6.496
160.0	-12.373	-3.673	0.000	0.000	0.000	-113.317	-104.689	0.000	104.689	-6.640
161.0	-6.377	-1.978	0.000	0.000	0.000	-100.944	-106.080	0.000	106.080	-6.665
165.0	-5.917	-1.739	0.000	0.000	0.000	-75.435	-111.689	0.000	111.689	-6.749
170.0	-5.598	-1.432	0.000	0.000	0.000	-45.852	-118.789	0.000	118.789	-6.833
171.0	-4.705	-1.163	0.000	0.000	0.000	-40.254	-120.219	0.000	120.219	-6.847
175.0	-4.287	-0.953	0.000	0.000	0.000	-21.436	-125.962	0.000	125.962	-6.889
180.0	-4.142	0.000	0.000	0.000	0.000	0.000	-133.175	0.000	133.175	-6.911

Load Case: No Ice — 85.00 mph Wind with No Ice — 25 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Stresses

Seg Elev (ft)	Applied Stresses Axial (Y) (ksi)	Shear (X) (ksi)	Shear (Z) (ksi)	Torsion (ksi)	Bending (X) (ksi)	Bending (Z) (ksi)	Combined (ksi)	Allowable Stress (Fb) (ksi)	Allowable Stress (Fa) (ksi)	Stress Ratio
0.00	0.49	0.98	0.00	0.00	0.00	43.89	44.41	46.3	0.0	0.958
5.00	0.48	0.98	0.00	0.00	0.00	43.83	44.34	47.0	0.0	0.944
10.00	0.47	0.98	0.00	0.00	0.00	43.75	44.25	47.6	0.0	0.930
15.00	0.46	0.99	0.00	0.00	0.00	43.66	44.15	48.2	0.0	0.916
20.00	0.45	0.99	0.00	0.00	0.00	43.55	44.04	48.8	0.0	0.902
25.00	0.44	1.00	0.00	0.00	0.00	43.43	43.90	49.5	0.0	0.887
30.00	0.43	1.00	0.00	0.00	0.00	43.28	43.75	50.1	0.0	0.873
35.00	0.43	1.01	0.00	0.00	0.00	43.11	43.57	50.7	0.0	0.859
40.00	0.42	1.02	0.00	0.00	0.00	42.91	43.36	51.4	0.0	0.844
43.83	0.41	1.03	0.00	0.00	0.00	42.73	43.18	51.8	0.0	0.833
45.00	0.40	1.02	0.00	0.00	0.00	42.68	43.12	52.0	0.0	0.829
50.00	0.38	1.03	0.00	0.00	0.00	42.41	42.83	52.0	0.0	0.824
51.00	0.43	1.18	0.00	0.00	0.00	47.79	48.26	48.3	0.0	1.000
55.00	0.42	1.18	0.00	0.00	0.00	47.49	47.95	48.8	0.0	0.982
60.00	0.41	1.19	0.00	0.00	0.00	47.06	47.52	49.6	0.0	0.959
65.00	0.40	1.20	0.00	0.00	0.00	46.58	47.03	50.3	0.0	0.935
70.00	0.39	1.20	0.00	0.00	0.00	46.04	46.48	51.0	0.0	0.911
75.00	0.38	1.21	0.00	0.00	0.00	45.43	45.87	51.8	0.0	0.886
80.00	0.37	1.22	0.00	0.00	0.00	44.75	45.17	52.0	0.0	0.869
85.00	0.37	1.23	0.00	0.00	0.00	43.97	44.38	52.0	0.0	0.854
88.08	0.36	1.24	0.00	0.00	0.00	43.44	43.85	52.0	0.0	0.843
90.00	0.35	1.24	0.00	0.00	0.00	43.08	43.49	52.0	0.0	0.836
94.00	0.39	1.48	0.00	0.00	0.00	48.96	49.42	49.6	0.0	0.996
95.00	0.39	1.47	0.00	0.00	0.00	48.71	49.16	49.8	0.0	0.988
100.00	0.38	1.48	0.00	0.00	0.00	47.33	47.78	50.7	0.0	0.943
105.00	0.37	1.50	0.00	0.00	0.00	45.77	46.21	51.5	0.0	0.897
110.00	0.36	1.51	0.00	0.00	0.00	43.98	44.42	52.0	0.0	0.854
115.00	0.36	1.53	0.00	0.00	0.00	41.92	42.36	52.0	0.0	0.815
120.00	0.35	1.55	0.00	0.00	0.00	39.55	39.99	52.0	0.0	0.769
125.00	0.34	1.57	0.00	0.00	0.00	36.81	37.25	52.0	0.0	0.716
130.00	0.33	1.60	0.00	0.00	0.00	33.63	34.07	52.0	0.0	0.655
133.42	0.33	1.62	0.00	0.00	0.00	31.15	31.60	52.0	0.0	0.608
135.00	0.32	1.63	0.00	0.00	0.00	29.91	30.36	52.0	0.0	0.584
138.00	0.25	1.37	0.00	0.00	0.00	27.37	27.72	52.0	0.0	0.533
138.00	0.35	1.91	0.00	0.00	0.00	37.58	38.08	48.4	0.0	0.786
140.00	0.34	1.90	0.00	0.00	0.00	35.73	36.23	48.9	0.0	0.740
145.00	0.34	1.93	0.00	0.00	0.00	30.54	31.06	50.2	0.0	0.619
150.00	0.24	1.45	0.00	0.00	0.00	24.18	24.54	51.4	0.0	0.477
155.00	0.23	1.46	0.00	0.00	0.00	19.46	19.85	52.0	0.0	0.382
160.00	0.22	1.50	0.00	0.00	0.00	13.87	14.32	52.0	0.0	0.275
161.00	0.12	0.78	0.00	0.00	0.00	12.63	12.82	52.0	0.0	0.247
165.00	0.11	0.76	0.00	0.00	0.00	10.34	10.53	52.0	0.0	0.202
170.00	0.10	0.76	0.00	0.00	0.00	7.08	7.30	52.0	0.0	0.140
171.00	0.08	0.65	0.00	0.00	0.00	6.37	6.55	52.0	0.0	0.126
175.00	0.07	0.62	0.00	0.00	0.00	3.76	3.98	52.0	0.0	0.076
180.00	0.00	0.64	0.00	0.00	0.00	0.00	1.11	52.0	0.0	0.021

Load Case: Ice — 73.61 mph Wind with Ice — 25 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		323.7	0.0					0.0	0.0	323.7	0.0	0.0	0.0
5.00		640.8	1,705.7					0.0	98.4	640.8	1,804.0	0.0	0.0
10.00		627.7	1,670.4					0.0	98.4	627.7	1,768.7	0.0	0.0
15.00		614.6	1,635.0					0.0	98.4	614.6	1,733.4	0.0	0.0
20.00		601.5	1,599.7					0.0	98.4	601.5	1,698.0	0.0	0.0
25.00		588.3	1,564.4					0.0	98.4	588.3	1,662.7	0.0	0.0
30.00		575.2	1,529.0					0.0	98.4	575.2	1,627.4	0.0	0.0
35.00		572.4	1,493.7					0.0	98.4	572.4	1,592.0	0.0	0.0
40.00		511.4	1,458.3					0.0	98.4	511.4	1,556.7	0.0	0.0
43.83	Bot - Section 2	292.5	1,094.5					0.0	75.4	292.5	1,169.9	0.0	0.0
45.00		367.1	582.9					0.0	22.9	367.1	605.8	0.0	0.0
50.00		357.6	2,458.1					0.0	98.4	357.6	2,556.4	0.0	0.0
51.00	Top - Section 1	299.0	484.5					0.0	19.7	299.0	504.2	0.0	0.0
55.00		538.5	958.4					0.0	78.7	538.5	1,037.0	0.0	0.0
60.00		597.8	1,169.7					0.0	98.4	597.8	1,268.1	0.0	0.0
65.00		595.7	1,138.9					0.0	98.4	595.7	1,237.2	0.0	0.0
70.00		592.2	1,108.0					0.0	98.4	592.2	1,206.4	0.0	0.0
75.00		587.4	1,077.1					0.0	98.4	587.4	1,175.5	0.0	0.0
80.00		581.5	1,046.3					0.0	98.4	581.5	1,144.6	0.0	0.0
85.00		465.6	1,015.4					0.0	98.4	465.6	1,113.7	0.0	0.0
88.08	Bot - Section 3	286.9	611.3					0.0	60.7	286.9	672.0	0.0	0.0
90.00		339.1	649.5					0.0	37.7	339.1	687.2	0.0	0.0
94.00	Top - Section 2	285.3	1,329.9					0.0	78.7	285.3	1,408.6	0.0	0.0
95.00		337.4	164.1					0.0	19.7	337.4	183.7	0.0	0.0
100.00		556.4	803.1					0.0	98.4	556.4	901.5	0.0	0.0
105.00		545.9	776.7					0.0	98.4	545.9	875.1	0.0	0.0
110.00		534.8	750.3					0.0	98.4	534.8	848.7	0.0	0.0
115.00		522.8	723.9					0.0	98.4	522.8	822.3	0.0	0.0
120.00		510.3	697.5					0.0	98.4	510.3	795.9	0.0	0.0
125.00		497.1	671.1					0.0	98.4	497.1	769.5	0.0	0.0
130.00		408.7	644.7					0.0	98.4	408.7	743.1	0.0	0.0
133.42	Bot - Section 4	239.1	425.9					0.0	67.2	239.1	493.1	0.0	0.0
135.00		217.0	309.8					0.0	31.1	217.0	340.9	0.0	0.0
138.00	Appertunance(s)	141.4	575.3	1,503.8	0.0	0.0	1,925.0	0.0	59.0	1,645.2	2,559.3	0.0	0.0
138.00	Top - Section 3	92.7	0.1					0.0	0.0	92.7	0.1	0.0	0.0
140.00		319.2	177.9					0.0	36.1	319.2	214.0	0.0	0.0
145.00		445.2	429.9					0.0	90.3	445.2	520.2	0.0	0.0
150.00	Appertunance(s)	429.4	410.2	2,572.6	0.0	733.6	2,605.9	0.0	90.3	3,002.0	3,106.4	0.0	0.0
155.00		413.0	390.5					0.0	80.6	413.0	471.1	0.0	0.0
160.00		241.8	370.8					0.0	80.6	241.8	451.4	0.0	0.0
161.00	Appertunance(s)	193.8	72.1	1,315.2	0.0	0.0	1,844.5	0.0	16.1	1,509.1	1,932.7	0.0	0.0
165.00		339.4	279.6					0.0	61.2	339.4	340.8	0.0	0.0
170.00		221.0	331.4					0.0	76.5	221.0	407.9	0.0	0.0
171.00	Appertunance(s)	176.1	64.2	564.5	0.0	-243.7	464.4	0.0	15.3	740.6	543.9	0.0	0.0
175.00		307.1	248.1					0.0	60.0	307.1	308.1	0.0	0.0
180.00	Appertunance(s)	166.9	292.0	2,508.5	0.0	-4,748.2	1,504.5	0.0	75.0	2,675.4	1,871.5	0.0	0.0

Load Case: Ice — 73.61 mph Wind with Ice — 25 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Totals:	27,563.0	48,730.9	0.00	0.00

Site Number: 302465 | Code: TIA/EIA-222-F |

Site Name: Colchester CT 6, CT | Engineering Number: 664386KK2 | 5/26/2016 1:21:26 PM

Customer: T-MOBILE

Load Case: Ice | 73.61 mph Wind with Ice | 25 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Shaft Forces and Deflections

Seg Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	X Deflect (in)	Z Deflect (in)	Total Deflect (in)	Rotation (deg)
0.00	-27.279	-48.709	0.000	0.000	0.000	-3,017.522	0.000	0.000	0.000	0.000
5.00	-26.711	-46.862	0.000	0.000	0.000	-2,881.131	-0.049	0.000	0.049	-0.091
10.00	-26.153	-45.053	0.000	0.000	0.000	-2,747.576	-0.194	0.000	0.194	-0.183
15.00	-25.602	-43.280	0.000	0.000	0.000	-2,616.815	-0.437	0.000	0.437	-0.277
20.00	-25.061	-41.543	0.000	0.000	0.000	-2,488.805	-0.778	0.000	0.778	-0.372
25.00	-24.528	-39.843	0.000	0.000	0.000	-2,363.503	-1.220	0.000	1.220	-0.469
30.00	-24.004	-38.180	0.000	0.000	0.000	-2,240.865	-1.764	0.000	1.764	-0.567
35.00	-23.479	-36.553	0.000	0.000	0.000	-2,120.847	-2.411	0.000	2.411	-0.666
40.00	-23.003	-34.967	0.000	0.000	0.000	-2,003.456	-3.164	0.000	3.164	-0.767
43.83	-22.724	-33.781	0.000	0.000	0.000	-1,915.281	-3.813	0.000	3.813	-0.847
45.00	-22.386	-33.155	0.000	0.000	0.000	-1,888.770	-4.023	0.000	4.023	-0.872
50.00	-22.020	-30.581	0.000	0.000	0.000	-1,776.843	-4.992	0.000	4.992	-0.976
51.00	-21.741	-30.061	0.000	0.000	0.000	-1,754.823	-5.199	0.000	5.199	-0.997
55.00	-21.235	-28.996	0.000	0.000	0.000	-1,667.862	-6.071	0.000	6.071	-1.083
60.00	-20.670	-27.697	0.000	0.000	0.000	-1,561.686	-7.269	0.000	7.269	-1.202
65.00	-20.104	-26.431	0.000	0.000	0.000	-1,458.336	-8.593	0.000	8.593	-1.322
70.00	-19.536	-25.198	0.000	0.000	0.000	-1,357.819	-10.043	0.000	10.043	-1.444
75.00	-18.970	-23.997	0.000	0.000	0.000	-1,260.139	-11.622	0.000	11.622	-1.567
80.00	-18.406	-22.829	0.000	0.000	0.000	-1,165.290	-13.330	0.000	13.330	-1.691
85.00	-17.945	-21.699	0.000	0.000	0.000	-1,073.261	-15.169	0.000	15.169	-1.817
88.08	-17.660	-21.016	0.000	0.000	0.000	-1,017.924	-16.369	0.000	16.369	-1.896
90.00	-17.326	-20.318	0.000	0.000	0.000	-984.082	-17.140	0.000	17.140	-1.946
94.00	-17.012	-18.901	0.000	0.000	0.000	-914.775	-18.815	0.000	18.815	-2.048
95.00	-16.697	-18.704	0.000	0.000	0.000	-897.769	-19.247	0.000	19.247	-2.075
100.0	-16.152	-17.784	0.000	0.000	0.000	-814.285	-21.498	0.000	21.498	-2.220
105.0	-15.614	-16.892	0.000	0.000	0.000	-733.526	-23.900	0.000	23.900	-2.364
110.0	-15.084	-16.029	0.000	0.000	0.000	-655.456	-26.454	0.000	26.454	-2.508
115.0	-14.562	-15.195	0.000	0.000	0.000	-580.037	-29.157	0.000	29.157	-2.650
120.0	-14.049	-14.391	0.000	0.000	0.000	-507.228	-32.008	0.000	32.008	-2.790
125.0	-13.546	-13.616	0.000	0.000	0.000	-436.983	-35.003	0.000	35.003	-2.926
130.0	-13.123	-12.870	0.000	0.000	0.000	-369.254	-38.137	0.000	38.137	-3.056
133.4	-12.871	-12.377	0.000	0.000	0.000	-324.407	-40.356	0.000	40.356	-3.143
135.0	-12.648	-12.036	0.000	0.000	0.000	-304.037	-41.405	0.000	41.405	-3.183
138.0	-10.867	-9.567	0.000	0.000	0.000	-266.094	-43.427	0.000	43.427	-3.254
138.0	-10.778	-9.567	0.000	0.000	0.000	-266.087	-43.428	0.000	43.428	-3.254
140.0	-10.463	-9.354	0.000	0.000	0.000	-244.537	-44.800	0.000	44.800	-3.300
145.0	-10.009	-8.838	0.000	0.000	0.000	-192.222	-48.332	0.000	48.332	-3.440
150.0	-6.834	-5.908	0.000	0.000	0.000	-141.446	-52.002	0.000	52.002	-3.564
155.0	-6.401	-5.453	0.000	0.000	0.000	-107.276	-55.792	0.000	55.792	-3.670
160.0	-6.135	-5.012	0.000	0.000	0.000	-75.270	-59.684	0.000	59.684	-3.760
161.0	-4.505	-3.180	0.000	0.000	0.000	-69.134	-60.473	0.000	60.473	-3.777
165.0	-4.146	-2.858	0.000	0.000	0.000	-51.116	-63.661	0.000	63.661	-3.835
170.0	-3.900	-2.464	0.000	0.000	0.000	-30.385	-67.707	0.000	67.707	-3.891
171.0	-3.124	-1.971	0.000	0.000	0.000	-26.486	-68.522	0.000	68.522	-3.901
175.0	-2.798	-1.683	0.000	0.000	0.000	-13.988	-71.801	0.000	71.801	-3.928
180.0	-2.675	0.000	0.000	0.000	0.000	0.000	-75.922	0.000	75.922	-3.942

Load Case: Ice — 73.61 mph Wind with Ice — 25 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Stresses

Seg Elev (ft)	Applied Stresses Axial (Y) (ksi)	Shear (X) (ksi)	Shear (Z) (ksi)	Torsion (ksi)	Bending (X) (ksi)	Bending (Z) (ksi)	Combined (ksi)	Allowable Stress (Fb) (ksi)	Allowable Stress (Fa) (ksi)	Stress Ratio
0.00	0.54	0.62	0.00	0.00	0.00	25.98	26.54	46.3	0.0	0.573
5.00	0.53	0.62	0.00	0.00	0.00	25.86	26.41	47.0	0.0	0.562
10.00	0.52	0.62	0.00	0.00	0.00	25.73	26.28	47.6	0.0	0.552
15.00	0.52	0.62	0.00	0.00	0.00	25.59	26.13	48.2	0.0	0.542
20.00	0.51	0.62	0.00	0.00	0.00	25.44	25.97	48.8	0.0	0.532
25.00	0.50	0.62	0.00	0.00	0.00	25.28	25.80	49.5	0.0	0.522
30.00	0.49	0.62	0.00	0.00	0.00	25.11	25.62	50.1	0.0	0.511
35.00	0.48	0.62	0.00	0.00	0.00	24.92	25.42	50.7	0.0	0.501
40.00	0.47	0.62	0.00	0.00	0.00	24.72	25.21	51.4	0.0	0.491
43.83	0.46	0.63	0.00	0.00	0.00	24.55	25.03	51.8	0.0	0.483
45.00	0.45	0.62	0.00	0.00	0.00	24.50	24.97	52.0	0.0	0.480
50.00	0.43	0.63	0.00	0.00	0.00	24.26	24.71	52.0	0.0	0.475
51.00	0.49	0.72	0.00	0.00	0.00	27.31	27.83	48.3	0.0	0.577
55.00	0.48	0.71	0.00	0.00	0.00	27.06	27.56	48.8	0.0	0.564
60.00	0.47	0.71	0.00	0.00	0.00	26.71	27.21	49.6	0.0	0.549
65.00	0.46	0.71	0.00	0.00	0.00	26.34	26.83	50.3	0.0	0.533
70.00	0.45	0.71	0.00	0.00	0.00	25.94	26.42	51.0	0.0	0.518
75.00	0.44	0.71	0.00	0.00	0.00	25.50	25.97	51.8	0.0	0.502
80.00	0.43	0.71	0.00	0.00	0.00	25.02	25.48	52.0	0.0	0.490
85.00	0.43	0.72	0.00	0.00	0.00	24.50	24.95	52.0	0.0	0.480
88.08	0.42	0.72	0.00	0.00	0.00	24.15	24.60	52.0	0.0	0.473
90.00	0.41	0.71	0.00	0.00	0.00	23.92	24.36	52.0	0.0	0.469
94.00	0.46	0.85	0.00	0.00	0.00	27.12	27.62	49.6	0.0	0.557
95.00	0.46	0.84	0.00	0.00	0.00	26.96	27.46	49.8	0.0	0.552
100.00	0.45	0.84	0.00	0.00	0.00	26.12	26.61	50.7	0.0	0.525
105.00	0.45	0.84	0.00	0.00	0.00	25.19	25.68	51.5	0.0	0.498
110.00	0.44	0.84	0.00	0.00	0.00	24.16	24.64	52.0	0.0	0.474
115.00	0.43	0.84	0.00	0.00	0.00	23.01	23.49	52.0	0.0	0.452
120.00	0.42	0.84	0.00	0.00	0.00	21.71	22.18	52.0	0.0	0.427
125.00	0.42	0.84	0.00	0.00	0.00	20.25	20.71	52.0	0.0	0.398
130.00	0.41	0.85	0.00	0.00	0.00	18.58	19.05	52.0	0.0	0.366
133.42	0.41	0.86	0.00	0.00	0.00	17.30	17.77	52.0	0.0	0.342
135.00	0.40	0.86	0.00	0.00	0.00	16.67	17.13	52.0	0.0	0.330
138.00	0.33	0.75	0.00	0.00	0.00	15.39	15.77	52.0	0.0	0.303
138.00	0.46	1.05	0.00	0.00	0.00	21.13	21.67	48.4	0.0	0.447
140.00	0.46	1.04	0.00	0.00	0.00	20.13	20.66	48.9	0.0	0.422
145.00	0.45	1.04	0.00	0.00	0.00	17.35	17.89	50.2	0.0	0.356
150.00	0.32	0.74	0.00	0.00	0.00	14.06	14.43	51.4	0.0	0.281
155.00	0.31	0.73	0.00	0.00	0.00	11.80	12.17	52.0	0.0	0.234
160.00	0.30	0.74	0.00	0.00	0.00	9.21	9.60	52.0	0.0	0.185
161.00	0.19	0.55	0.00	0.00	0.00	8.65	8.89	52.0	0.0	0.171
165.00	0.18	0.53	0.00	0.00	0.00	7.00	7.24	52.0	0.0	0.139
170.00	0.16	0.53	0.00	0.00	0.00	4.69	4.94	52.0	0.0	0.095
171.00	0.13	0.43	0.00	0.00	0.00	4.19	4.39	52.0	0.0	0.084
175.00	0.12	0.40	0.00	0.00	0.00	2.45	2.67	52.0	0.0	0.051
180.00	0.00	0.41	0.00	0.00	0.00	0.00	0.72	52.0	0.0	0.014

Load Case: Twist/Sway — 50.00 mph Wind with No Ice — 24 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		147.0	0.0					0.0	0.0	147.0	0.0	0.0	0.0
5.00		291.0	1,507.9					0.0	98.4	291.0	1,606.2	0.0	0.0
10.00		285.0	1,476.6					0.0	98.4	285.0	1,575.0	0.0	0.0
15.00		278.9	1,445.4					0.0	98.4	278.9	1,543.7	0.0	0.0
20.00		272.9	1,414.1					0.0	98.4	272.9	1,512.4	0.0	0.0
25.00		266.8	1,382.8					0.0	98.4	266.8	1,481.2	0.0	0.0
30.00		260.8	1,351.6					0.0	98.4	260.8	1,449.9	0.0	0.0
35.00		259.4	1,320.3					0.0	98.4	259.4	1,418.7	0.0	0.0
40.00		231.6	1,289.1					0.0	98.4	231.6	1,387.4	0.0	0.0
43.83	Bot - Section 2	132.5	967.1					0.0	75.4	132.5	1,042.5	0.0	0.0
45.00		166.2	543.8					0.0	22.9	166.2	566.7	0.0	0.0
50.00		161.9	2,294.6					0.0	98.4	161.9	2,393.0	0.0	0.0
51.00	Top - Section 1	135.3	452.0					0.0	19.7	135.3	471.6	0.0	0.0
55.00		243.6	830.9					0.0	78.7	243.6	909.5	0.0	0.0
60.00		270.3	1,014.5					0.0	98.4	270.3	1,112.8	0.0	0.0
65.00		269.2	987.7					0.0	98.4	269.2	1,086.0	0.0	0.0
70.00		267.5	960.9					0.0	98.4	267.5	1,059.2	0.0	0.0
75.00		265.2	934.1					0.0	98.4	265.2	1,032.4	0.0	0.0
80.00		262.3	907.3					0.0	98.4	262.3	1,005.7	0.0	0.0
85.00		209.9	880.5					0.0	98.4	209.9	978.9	0.0	0.0
88.08	Bot - Section 3	129.3	529.7					0.0	60.7	129.3	590.3	0.0	0.0
90.00		152.8	598.6					0.0	37.7	152.8	636.3	0.0	0.0
94.00	Top - Section 2	128.5	1,226.3					0.0	78.7	128.5	1,305.0	0.0	0.0
95.00		151.9	138.3					0.0	19.7	151.9	158.0	0.0	0.0
100.00		250.3	678.6					0.0	98.4	250.3	776.9	0.0	0.0
105.00		245.4	656.2					0.0	98.4	245.4	754.6	0.0	0.0
110.00		240.2	633.9					0.0	98.4	240.2	732.3	0.0	0.0
115.00		234.6	611.6					0.0	98.4	234.6	709.9	0.0	0.0
120.00		228.7	589.3					0.0	98.4	228.7	687.6	0.0	0.0
125.00		222.6	566.9					0.0	98.4	222.6	665.3	0.0	0.0
130.00		182.8	544.6					0.0	98.4	182.8	643.0	0.0	0.0
133.42	Bot - Section 4	106.9	359.4					0.0	67.2	106.9	426.6	0.0	0.0
135.00		96.9	279.0					0.0	31.1	96.9	310.1	0.0	0.0
138.00	Appertunance(s)	63.1	518.3	1,373.2	0.0	0.0	2,209.5	0.0	59.0	1,436.4	2,786.9	0.0	0.0
138.00	Top - Section 3	41.4	0.1					0.0	0.0	41.4	0.1	0.0	0.0
140.00		142.4	140.6					0.0	36.1	142.4	176.7	0.0	0.0
145.00		198.3	340.7					0.0	90.3	198.3	431.0	0.0	0.0
150.00	Appertunance(s)	190.9	325.1	1,548.9	0.0	824.8	2,322.6	0.0	90.3	1,739.9	2,738.0	0.0	0.0
155.00		183.3	309.5					0.0	80.6	183.3	390.1	0.0	0.0
160.00		107.2	293.8					0.0	80.6	107.2	374.4	0.0	0.0
161.00	Appertunance(s)	85.8	56.9	1,907.7	0.0	0.0	2,299.7	0.0	16.1	1,993.4	2,372.7	0.0	0.0
165.00		150.0	221.3					0.0	61.2	150.0	282.5	0.0	0.0
170.00		97.5	262.6					0.0	76.5	97.5	339.1	0.0	0.0
171.00	Appertunance(s)	77.5	50.6	218.6	0.0	-77.3	304.6	0.0	15.3	296.2	370.5	0.0	0.0
175.00		135.0	196.3					0.0	60.0	135.0	256.3	0.0	0.0
180.00	Appertunance(s)	73.3	231.3	1,359.8	0.0	-3,052.2	1,155.0	0.0	75.0	1,433.1	1,461.3	0.0	0.0

Load Case: Twist/Sway — 50.00 mph Wind with No Ice — 24 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Totals:	15,002.1	44,008.6	0.00	0.00

Site Number:	**302465**	**Code: TIA/EIA-222-F**	
Site Name:	**Colchester CT 6, CT**	**Engineering Number: 664386KK2**	**5/26/2016 1:21:27 PM**
Customer:	**T-MOBILE**		

Load Case: Twist/Sway — 50.00 mph Wind with No Ice — 24 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Shaft Forces and Deflections

Seg Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	X Deflect (in)	Z Deflect (in)	Total Deflect (in)	Rotation (deg)
0.00	-14.875	-44.002	0.000	0.000	0.000	-1,766.656	0.000	0.000	0.000	0.000
5.00	-14.623	-42.382	0.000	0.000	0.000	-1,692.281	-0.029	0.000	0.029	-0.053
10.00	-14.375	-40.793	0.000	0.000	0.000	-1,619.166	-0.114	0.000	0.114	-0.108
15.00	-14.131	-39.237	0.000	0.000	0.000	-1,547.292	-0.256	0.000	0.256	-0.163
20.00	-13.890	-37.711	0.000	0.000	0.000	-1,476.640	-0.457	0.000	0.457	-0.219
25.00	-13.654	-36.218	0.000	0.000	0.000	-1,407.189	-0.718	0.000	0.718	-0.277
30.00	-13.421	-34.755	0.000	0.000	0.000	-1,338.922	-1.039	0.000	1.039	-0.335
35.00	-13.188	-33.324	0.000	0.000	0.000	-1,271.819	-1.422	0.000	1.422	-0.395
40.00	-12.976	-31.926	0.000	0.000	0.000	-1,205.882	-1.869	0.000	1.869	-0.456
43.83	-12.851	-30.878	0.000	0.000	0.000	-1,156.142	-2.254	0.000	2.254	-0.503
45.00	-12.701	-30.304	0.000	0.000	0.000	-1,141.149	-2.379	0.000	2.379	-0.518
50.00	-12.535	-27.905	0.000	0.000	0.000	-1,077.644	-2.956	0.000	2.956	-0.581
51.00	-12.410	-27.427	0.000	0.000	0.000	-1,065.110	-3.079	0.000	3.079	-0.594
55.00	-12.186	-26.507	0.000	0.000	0.000	-1,015.471	-3.600	0.000	3.600	-0.646
60.00	-11.934	-25.382	0.000	0.000	0.000	-954.544	-4.316	0.000	4.316	-0.719
65.00	-11.682	-24.285	0.000	0.000	0.000	-894.873	-5.109	0.000	5.109	-0.793
70.00	-11.430	-23.215	0.000	0.000	0.000	-836.462	-5.979	0.000	5.979	-0.868
75.00	-11.178	-22.172	0.000	0.000	0.000	-779.312	-6.929	0.000	6.929	-0.944
80.00	-10.928	-21.156	0.000	0.000	0.000	-723.420	-7.958	0.000	7.958	-1.021
85.00	-10.722	-20.169	0.000	0.000	0.000	-668.784	-9.069	0.000	9.069	-1.099
88.08	-10.595	-19.574	0.000	0.000	0.000	-635.721	-9.796	0.000	9.796	-1.148
90.00	-10.445	-18.932	0.000	0.000	0.000	-615.419	-10.263	0.000	10.263	-1.179
94.00	-10.301	-17.623	0.000	0.000	0.000	-573.636	-11.279	0.000	11.279	-1.243
95.00	-10.163	-17.459	0.000	0.000	0.000	-563.339	-11.541	0.000	11.541	-1.260
100.0	-9.921	-16.672	0.000	0.000	0.000	-512.527	-12.910	0.000	12.910	-1.351
105.0	-9.683	-15.908	0.000	0.000	0.000	-462.922	-14.374	0.000	14.374	-1.442
110.0	-9.447	-15.168	0.000	0.000	0.000	-414.510	-15.933	0.000	15.933	-1.533
115.0	-9.216	-14.450	0.000	0.000	0.000	-367.273	-17.588	0.000	17.588	-1.623
120.0	-8.988	-13.756	0.000	0.000	0.000	-321.195	-19.335	0.000	19.335	-1.711
125.0	-8.765	-13.085	0.000	0.000	0.000	-276.254	-21.174	0.000	21.174	-1.797
130.0	-8.576	-12.438	0.000	0.000	0.000	-232.431	-23.102	0.000	23.102	-1.880
133.4	-8.463	-12.009	0.000	0.000	0.000	-203.124	-24.467	0.000	24.467	-1.934
135.0	-8.363	-11.697	0.000	0.000	0.000	-189.730	-25.113	0.000	25.113	-1.959
138.0	-6.835	-8.959	0.000	0.000	0.000	-164.641	-26.358	0.000	26.358	-2.003
138.0	-6.795	-8.959	0.000	0.000	0.000	-164.636	-26.359	0.000	26.359	-2.003
140.0	-6.656	-8.780	0.000	0.000	0.000	-151.050	-27.204	0.000	27.204	-2.032
145.0	-6.454	-8.348	0.000	0.000	0.000	-117.770	-29.379	0.000	29.379	-2.118
150.0	-4.619	-5.672	0.000	0.000	0.000	-84.675	-31.640	0.000	31.640	-2.193
155.0	-4.426	-5.285	0.000	0.000	0.000	-61.580	-33.971	0.000	33.971	-2.255
160.0	-4.306	-4.913	0.000	0.000	0.000	-39.450	-36.361	0.000	36.361	-2.306
161.0	-2.220	-2.622	0.000	0.000	0.000	-35.144	-36.845	0.000	36.845	-2.314
165.0	-2.060	-2.344	0.000	0.000	0.000	-26.264	-38.797	0.000	38.797	-2.344
170.0	-1.949	-2.009	0.000	0.000	0.000	-15.966	-41.268	0.000	41.268	-2.373
171.0	-1.638	-1.651	0.000	0.000	0.000	-14.017	-41.765	0.000	41.765	-2.378
175.0	-1.493	-1.400	0.000	0.000	0.000	-7.464	-43.764	0.000	43.764	-2.393
180.0	-1.433	0.000	0.000	0.000	0.000	0.000	-46.274	0.000	46.274	-2.400

Load Case: Twist/Sway — 50.00 mph Wind with No Ice — 24 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Stresses

Seg Elev (ft)	Applied Stresses Axial (Y) (ksi)	Shear (X) (ksi)	Shear (Z) (ksi)	Torsion (ksi)	Bending (X) (ksi)	Bending (Z) (ksi)	Combined (ksi)	Allowable Stress (Fb) (ksi)	Allowable Stress (Fa) (ksi)	Stress Ratio
0.00	0.49	0.34	0.00	0.00	0.00	15.21	15.71	46.3	0.0	0.339
5.00	0.48	0.34	0.00	0.00	0.00	15.19	15.68	47.0	0.0	0.334
10.00	0.48	0.34	0.00	0.00	0.00	15.16	15.65	47.6	0.0	0.329
15.00	0.47	0.34	0.00	0.00	0.00	15.13	15.61	48.2	0.0	0.324
20.00	0.46	0.34	0.00	0.00	0.00	15.10	15.57	48.8	0.0	0.319
25.00	0.45	0.35	0.00	0.00	0.00	15.05	15.52	49.5	0.0	0.314
30.00	0.44	0.35	0.00	0.00	0.00	15.00	15.46	50.1	0.0	0.309
35.00	0.43	0.35	0.00	0.00	0.00	14.95	15.39	50.7	0.0	0.303
40.00	0.43	0.35	0.00	0.00	0.00	14.88	15.32	51.4	0.0	0.298
43.83	0.42	0.36	0.00	0.00	0.00	14.82	15.25	51.8	0.0	0.294
45.00	0.42	0.35	0.00	0.00	0.00	14.80	15.23	52.0	0.0	0.293
50.00	0.39	0.36	0.00	0.00	0.00	14.71	15.12	52.0	0.0	0.291
51.00	0.44	0.41	0.00	0.00	0.00	16.58	17.04	48.3	0.0	0.353
55.00	0.44	0.41	0.00	0.00	0.00	16.47	16.93	48.8	0.0	0.347
60.00	0.43	0.41	0.00	0.00	0.00	16.33	16.77	49.6	0.0	0.338
65.00	0.42	0.41	0.00	0.00	0.00	16.16	16.60	50.3	0.0	0.330
70.00	0.42	0.42	0.00	0.00	0.00	15.98	16.41	51.0	0.0	0.322
75.00	0.41	0.42	0.00	0.00	0.00	15.77	16.20	51.8	0.0	0.313
80.00	0.40	0.42	0.00	0.00	0.00	15.53	15.95	52.0	0.0	0.307
85.00	0.40	0.43	0.00	0.00	0.00	15.26	15.68	52.0	0.0	0.301
88.08	0.39	0.43	0.00	0.00	0.00	15.08	15.49	52.0	0.0	0.298
90.00	0.38	0.43	0.00	0.00	0.00	14.96	15.36	52.0	0.0	0.295
94.00	0.43	0.51	0.00	0.00	0.00	17.00	17.46	49.6	0.0	0.352
95.00	0.43	0.51	0.00	0.00	0.00	16.92	17.37	49.8	0.0	0.349
100.00	0.43	0.51	0.00	0.00	0.00	16.44	16.89	50.7	0.0	0.333
105.00	0.42	0.52	0.00	0.00	0.00	15.90	16.34	51.5	0.0	0.317
110.00	0.41	0.52	0.00	0.00	0.00	15.28	15.72	52.0	0.0	0.302
115.00	0.41	0.53	0.00	0.00	0.00	14.57	15.01	52.0	0.0	0.289
120.00	0.40	0.54	0.00	0.00	0.00	13.75	14.18	52.0	0.0	0.273
125.00	0.40	0.55	0.00	0.00	0.00	12.80	13.23	52.0	0.0	0.255
130.00	0.40	0.56	0.00	0.00	0.00	11.69	12.13	52.0	0.0	0.233
133.42	0.39	0.56	0.00	0.00	0.00	10.83	11.27	52.0	0.0	0.217
135.00	0.39	0.57	0.00	0.00	0.00	10.40	10.84	52.0	0.0	0.208
138.00	0.31	0.47	0.00	0.00	0.00	9.52	9.86	52.0	0.0	0.190
138.00	0.43	0.66	0.00	0.00	0.00	13.07	13.55	48.4	0.0	0.280
140.00	0.43	0.66	0.00	0.00	0.00	12.43	12.91	48.9	0.0	0.264
145.00	0.43	0.67	0.00	0.00	0.00	10.63	11.11	50.2	0.0	0.221
150.00	0.30	0.50	0.00	0.00	0.00	8.42	8.76	51.4	0.0	0.170
155.00	0.30	0.51	0.00	0.00	0.00	6.77	7.13	52.0	0.0	0.137
160.00	0.29	0.52	0.00	0.00	0.00	4.83	5.20	52.0	0.0	0.100
161.00	0.16	0.27	0.00	0.00	0.00	4.40	4.58	52.0	0.0	0.088
165.00	0.15	0.26	0.00	0.00	0.00	3.60	3.77	52.0	0.0	0.073
170.00	0.13	0.26	0.00	0.00	0.00	2.47	2.64	52.0	0.0	0.051
171.00	0.11	0.23	0.00	0.00	0.00	2.22	2.36	52.0	0.0	0.045
175.00	0.10	0.22	0.00	0.00	0.00	1.31	1.46	52.0	0.0	0.028
180.00	0.00	0.22	0.00	0.00	0.00	0.00	0.38	52.0	0.0	0.007

Analysis Summary

	Reactions						Max Stresses			
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Combined Stress (ksi)	Allowable Stress (ksi)	Elev (ft)	Stress Ratio
No Ice	43.0	0.00	43.95	0.00	0.00	5098.12	48.26	48.3	51.00	1.000
Ice	27.3	0.00	48.71	0.00	0.00	3017.52	27.83	48.3	51.00	0.577
Twist/Sway	14.9	0.00	44.00	0.00	0.00	1766.66	17.04	48.3	51.00	0.353

Base Summary

Reactions

Original Design			Analysis			
Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment Design %
4,932.40	45.02	41.52	5,098.12	48.71	42.99	103.36

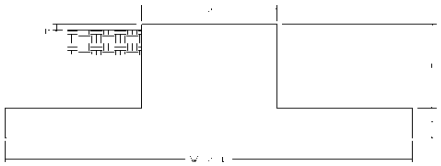
Base Plate

Yield (ksi)	Thick (in)	Width (in)	Style	Poly Sides	Clip Len (in)	Effective Len (in)	Moment (kip-in)	Allow Stress (ksi)	Applied Stress (ksi)	Stress Ratio
60.0	2.500	78.760	Polygon	12	0.00	10.289	597.77	60.00	55.77	0.93

Anchor Bolts

									Compression			Tension		
Bolt Circle	Num Bolts	Bolt Type	Bolt Dia (in)	Yield (ksi)	Ultimate (ksi)	Arrange	Cluster Dist (in)	Start Angle (deg)	Force (kip)	Allow (kip)	Ratio	Force (kip)	Allow (kip)	Ratio
72.76	20	2.25" 18J	2.25	75.00	100.00	Clustered	0.00	0.0	170.60	195.00	0.87	165.73	195.00	0.85

Site Name:	Colchester CT 6, CT	*Program Last Updated:*	*11/15/2012*
Site Number:	302465		
Engineering Number:	66438621		
Engineer:	S. Rawles		
Date:	05/13/16		
Tower Type:	MP		



Design Loads (Unfactored)

Design / Analysis / Mapping:	Analysis		Concrete Strength (f'_c):	4000	psi
Compression/Leg:	48.7	k	Pad Tension Steel Depth:	32.00	in
Uplift/Leg:		k	Wind Load Factor:	1.3	
Total Shear:	43.0	k	ϕ_{Shear}:	0.75	
Moment:	5098.1	k-ft	$\phi_{Flexure\ /\ Tension}$:	0.90	
Tower + Appurtenance Weight:	36.7	k	$\phi_{Compression:}$	0.65	
Depth to Base of Foundation:	8.00	ft	β:	0.85	
Diameter of Pier (d):	7.00	ft	Bottom Pad Rebar Size #:	11	
Height of Pier above Ground (h):	0.50		# of Bottom Pad Rebar:	30	
Width of Pad (W):	25.00	ft	Pad Bottom Steel Area:	46.80	in^2
Length of Pad (L):	25.00	ft	Pad Steel F_y:	60000	psi
Thickness of Pad (t):	3.00	ft	Top Pad Rebar Size #:	11	
Tower Leg Center to Center:	0.00	ft	# of Top Pad Rebar:	30	
Number of Tower Legs:	1.0	(1 if MP or GT)	Pad Top Steel Area:	46.80	in^2
Tower Center from Mat Center:	0.00	ft	Pier Rebar Size #:	11	
Depth Below Ground Surface to Water Table:	10.00	ft	Pier Steel Area (Single Bar):	1.56	in^2
Unit Weight of Concrete:	150.0	pcf	# of Pier Rebar:	38	
Unit Weight of Soil Above Water Table:	125.0	pcf	Pier Steel F_y:	60000	psi
Unit Weight of Water:	62.4	pcf	Pier Cage Diameter:	76.0	in
Unit Weight of Soil Below Water Table:	62.6	pcf	Rebar Strain Limit:	0.008	
Friction Angle of Uplift:	15.0	Degrees	Steel Elastic Modulus:	29000	ksi
Ultimate Coefficient of Shear Friction:	0.35		Tie Rebar Size #:	5	
Allowable Compressive Bearing Pressure:	5000.0	psf	Tie Steel Area (Single Bar):	0.31	in^2
Ultimate Passive Pressure on Pad Face:	0.0	psf	Tie Spacing:	12	in
Allowable Capacity Increase:	1.00		Tie Steel F_y:	60000	psi

Overturning Factor of Safety

Design OTM:	5463.5	k-ft
OTM Resistance:	9641.9	k-ft
OTM Resistance / Design OTM Factor of Safety:	1.76	Result: OK

Soil Bearing Pressure Usage:

Net Bearing Pressure:	4277	psf
Allowable Bearing Pressure:	5000	psf
Net Bearing Pressure/Allowable Bearing Pressure:	0.86	Result: OK
Load Direction Controling Design Bearing Pressure:	Diagonal to Pad Edge	

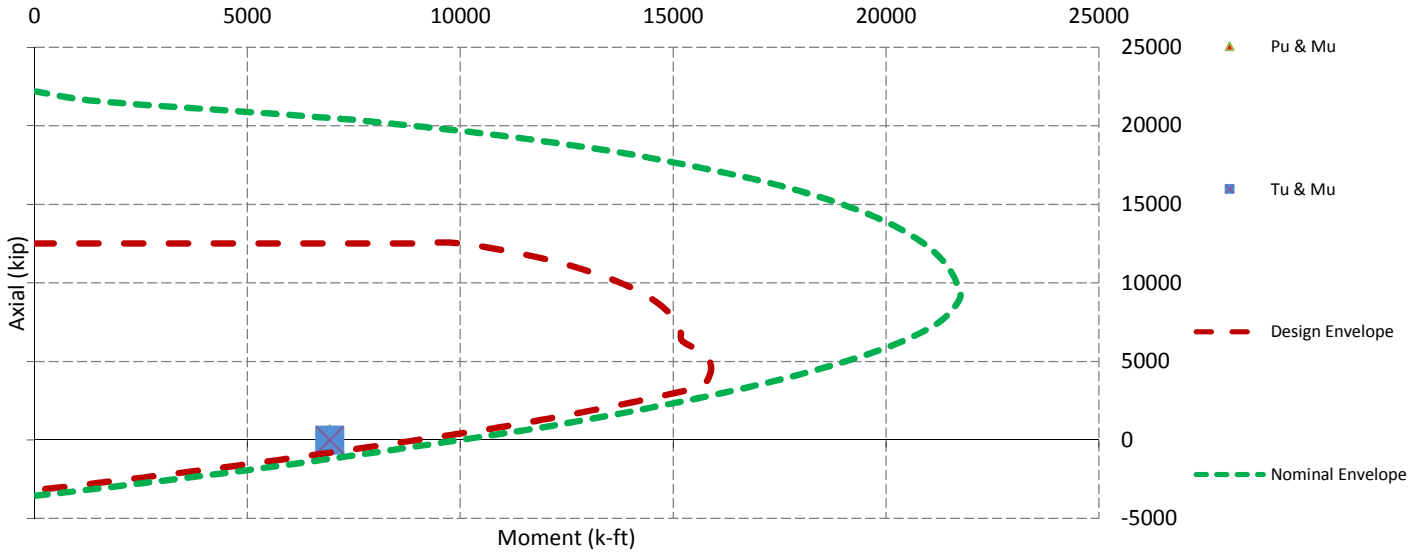
Sliding Factor of Safety

Total Ultimate Sliding Resistance:	250.7	k
Sliding Resistance/Sliding Design Factor of Safety:	5.83	Result: OK

One Way Shear, Flexual Capacity, and Punching Shear

Factored One Way Shear (V_u):	427.2	k
One Way Shear Capacity (ϕV_c):	910.7	k - ACI11.3.1.1
V_u / ϕV_c:	0.47	Result: OK
Load Direction Controling Shear Capacity:	Parallel to Pad Edge	
Lower Pad Steel Factored Moment (M_u):	2791.2	k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	6492.8	k-ft - ACI10.3
M_u / ϕM_n:	0.43	Result: OK
Load Direction Controling Flexural Capacity:	Parallel to Pad Edge	
Upper Steel Pad Factored Moment (M_u):	1735.9	k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	6492.8	k-ft
M_u / ϕM_n:	0.27	Result: OK
Lower Pad Flexural Reinforcement Ratio:	0.0049	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0049	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Reinforcement Spacing:	10	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	10	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear (V_u):	0.0	k
Nominal Punching Shear Capacity ($\phi_c V_n$):	2212.6	k - ACI11.12.2.1
V_u / ϕV_c:	0.00	Result: OK
Factored Moment in Pier (M_u):	6934.9	k-ft
Pier Moment Capacity (ϕM_n):	9918.2	k-ft
M_u / ϕM_n:	0.70	Result: OK
Factored Shear in Pier (V_u):	55.9	k
Pier Shear Capacity (ϕV_n):	528.0	k
V_u / ϕV_c:	0.11	Result: OK
Pier Shear Reinforcement Ratio:	0.0007	No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier (T_u):	0.0	k
Pier Tension Capacity (ϕT_n):	3201.1	k
T_u / ϕT_n:	0.00	Result: OK
Factored Compression in Pier (P_u):	63.3	k
Pier Compression Capacity (ϕP_n):	9693.0	k - ACI10.3.6.2
P_u / ϕP_n:	0.01	Result: OK
Pier Compression Reinforcement Ratio:	0.011	OK - Reinforcement Ratio Met - ACI10.9.1 & 10.8.4
$M_u/\phi_B M_n + T_u/\phi_T T_n$:	0.70	Result: OK

Nominal and Design Moment Capacity and Factored Design Loads



AMERICAN TOWER®
CORPORATION

LETTER OF AUTHORIZATION

ATC SITE # / NAME: 302465/Colchester CT 6
SITE ADDRESS: 355 Route 85 (New London Road) Colchester, CT
LICENSEE: T-Mobile Northeast LLC

I, Margaret Robinson, Senior Counsel for American Tower*, owner of the tower facility and property located at the address identified above (the "Tower Facility"), do hereby authorize **T-Mobile Northeast LLC,** successors and assigns, and/or its agent, (collectively, the "Licensee") to act as American Tower's non-exclusive agent for the sole purpose of filing and consummating any land-use or building permit application(s) as may be required by the applicable permitting authorities for Licensee's telecommunications' installation.

We understand that this application may be denied, modified or approved with conditions. The above authorization is limited to the acceptance by Licensee only of conditions related to Licensee's installation and any such conditions of approval or modifications will be Licensee's sole responsibility.

Signature:

Print Name: Margaret Robinson
Senior Counsel
American Tower*

NOTARY BLOCK

Commonwealth of MASSACHUSETTS
County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Senior Counsel for American Tower*, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

WITNESS my hand and official seal, this 16th day of May, 2016.

NOTARY SEAL

SUSANA P. RIBEIRO
Notary Public
Commonwealth of Massachusetts
My Commission Expires
March 16, 2018

Notary Public
My Commission Expires: March 16, 2018

*American Tower includes all affiliates and subsidiaries of American Tower Corporation.

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CTHA059E

ATC Colchester CT6
355 Route 85
Colchester, CT 06415

May 31, 2016

EBI Project Number: 6216002598

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	24.61 %

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

EBI Consulting
environmental | engineering | due diligence

May 31, 2016

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

Emissions Analysis for Site: **CTHA059E – ATC Colchester CT6**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **355 Route 85, Colchester, 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 approximately 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 **355 Route 85, Colchester, 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 UMTS 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 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.

3) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

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

6) The antennas used in this modeling are the **RFS APX16DWV-16DWVS-E-A20** 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 **RFS APX16DWV-16DWVS-E-A20** have a maximum gain of **16.3 dBd** at their main lobe at 1900 MHz and 2100 MHz. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe at 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antenna mounting height centerline of the proposed antennas is **138 feet** above ground level (AGL).

8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20
Gain:	16.3 dBd	Gain:	16.3 dBd	Gain:	16.3 dBd
Height (AGL):	138	Height (AGL):	138	Height (AGL):	138
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(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	7,678.43	ERP (W):	7,678.43	ERP (W):	7,678.43
Antenna A1 MPE%	1.58	Antenna B1 MPE%	1.58	Antenna C1 MPE%	1.58
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
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):	138	Height (AGL):	138	Height (AGL):	138
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A2 MPE%	0.38	Antenna B2 MPE%	0.38	Antenna C2 MPE%	0.38

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**1.97 %**
AT&T	15.28 %
Enertrac	0.00 %
Sprint	7.36 %
Site Total MPE %:	**24.61 %**

T-Mobile Sector 1 Total:	1.97 %
T-Mobile Sector 2 Total:	1.97 %
T-Mobile Sector 3 Total:	1.97 %
Site Total:	24.61 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 2100 MHz (AWS) LTE	**2**	**2559.48**	**138**	**10.56**	**2100**	**1000**	**1.06 %**
T-Mobile 1900 MHz (PCS) UMTS	**2**	**1279.74**	**138**	**5.28**	**1900**	**1000**	**0.53 %**
T-Mobile 700 MHz LTE	**1**	**865.21**	**138**	**1.79**	**700**	**467**	**0.38 %**
						Total:	**1.97 %**

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:	1.97 %
Sector 2:	1.97 %
Sector 3:	1.97 %
T-Mobile Per Sector Maximum:	1.97 %
Site Total:	24.61 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **24.61%** 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.

AMERICAN TOWER™
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Compliance Statement:
Nationwide Programmatic Agreement for the Collocation of Wireless Antennas and Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the Federal Communication Commission

5/6/2016

T-MOBILE
OFFICE ADDRESS

Attn: **T-MOBILE**

Re: Proposed collocation or modification of telecommunications equipment by T-MOBILE, or its agents or designees ("Customer") on that certain tower, known as Colchester CT 6, ATC # 302465 and located at 355 Route 85 (41-32-41.349984 N and 72-18-17.610012 W) in the county of NEW LONDON, State of CT (the "Tower"), and constructed on **07/13/1998.**

Dear **T-MOBILE**:

To facilitate Customer's collocation or modification of its telecommunications equipment on the above referenced Tower in compliance with both the Nationwide Programmatic Agreement for the Collocation of Wireless Antennas (the "Collocation Programmatic Agreement") and the Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the Federal Communication Commission ("the Nationwide Programmatic Agreement") executed by the Federal Communication Commission ("FCC"), the National Conference of State Historic Preservation Officers and the Advisory Council On Historic Preservation ("ACHP"), American Tower Corporation ("ATC"), makes the following certifications:

1. The Tower is a structure built for the primary purpose of supporting FCC-licensed antennas and their associated facilities.

2. Tower construction was completed on or before March 16, 2001, OR, if construction was not completed by that date, consultation with a SHPO/THPO has been completed pursuant to Section 106 of the National Historic Preservation Act ("NHPA"), and the SHPO/THPO has concurred that the undertaking will have "no effect" or "no adverse effect" to historic properties, OR, the tower was categorically exempt from SHPO review based on 47 CFR § 1.1306 Note 3 or one of the exemptions outlined in Section III of the Nationwide Programmatic Agreement, OR, SHPO choose to let the 30 day response period close and per Section VII B 2 of the Nationwide Programmatic Agreement the applicant may consider the S106 process complete.

3. Based solely on ATC's review of the plans provided by Customer and statements made by Customer to ATC, the proposed collocation or modification does not require a "substantial increase in the size of the tower," as that phrase is defined in Stipulation I.C. of the Collocation Programmatic Agreement, nor does it require "enhancement of the tower" as that phrase is defined in Stipulation III.A. of the Nationwide Programmatic Agreement; **OR**, if the proposed collocation or modification does require a "substantial increase" or "enhancement" ATC has completed consultation with a SHPO/THPO pursuant to Section 106 of the NHPA and the Programmatic Agreements. ATC has confirmed the

SHPO/THPO has concurred that the undertaking will have “no effect” or “no adverse effect” to historic properties.

4. There has been no “substantial increase in the size of the tower” since March 16, 2001, OR if there has been a “substantial increase, consultation with a SHPO/THPO has been completed pursuant to Section 106 of the NHPA and the Programmatic Agreements, and the SHPO/THPO has concurred that the undertaking will have “no effect” or “no adverse effect” to historic properties.

5. There has been no “enhancement of the tower” since March 7, 2005, OR if there has been an “enhancement”, consultation with a SHPO/THPO has been completed pursuant to Section 106 of the NHPA and the Programmatic Agreements, and the SHPO/THPO has concurred that the undertaking will have “no effect” or “no adverse effect” to historic properties.

6. ATC has no knowledge that the FCC has determined that the Tower has an effect on one or more historic properties, or if such an effect has been found, that such effect has been found to be not adverse through a no adverse effect finding, or that an adverse or potentially adverse effect has not been resolved through a conditional no adverse effect determination, a Memorandum of Agreement, a programmatic agreement, or that the Tower is not otherwise in compliance with Section 106 and Subpart B of 36 CFR Part 800.

7. ATC has no knowledge that the Tower is the subject of a pending environmental review or related proceeding before the FCC involving compliance with Section 106 of the NHPA.

8. ATC has no knowledge of having received any written or electronic notification that the FCC is in receipt of a complaint from a member of the public, a SHPO, or the ACHP that the collocation has or will have an adverse effect on one or more historic properties.

Based on the above certifications, the installation of the equipment on the Tower would not require review under the consultation process set forth under Subpart B of 36 CFR Part 800.

Please contact ATC’s Environmental Compliance Team at [colo.enviro@americantower.com] with any questions regarding this certification.

AMERICAN TOWER CORPORATION
10 Presidential Way
Woburn, MA 01801

By: Katey Kimball

Title: **Project Specialist**