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telecom

March 4, 2016

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

Regarding:	Notice of Exempt Modification – Antenna Swap & Addition of Three Radio Heads
Property Address:	664 Rimmon Hill Road, Beacon Falls (Seymour), CT 06403 (the "Property")
Applicant:	AT&T Mobility (AT&T)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 173-foot monopole at the above-referenced address, latitude 41.40719, longitude -73.0793. Said monopole is owned by American Tower Corporation. The existing equipment shelter is 11' x 26' totaling 286 square feet.

AT&T desires to modify its existing telecommunications facility by swapping three (3) antennas and adding three remote-radio heads ("RRHs") with A2 modules. The centerline height of said antennas is and will remain at 157 feet. Antennas are mounted utilizing a platform with hand rails.

Please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72 (b)(2). In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to Christopher J. Bielik, First Selectmen for the Town of Beacon Falls. A copy of this letter is also being sent to the monopole owner American Tower Corporation, and the landowners Wilbur Weed and Joan Weed.

The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72 (b)(2). Specifically:

1. The planned modification will not result in an increase in the height of the existing structure. The antennas to be swapped will be installed at the existing height of 157 feet on the 173-foot monopole.

2. The proposed modifications will not involve any changes to ground-mounted equipment, and therefore will not require an extension of the site boundary.

3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.

Sarah Snell • Empire Telecom USA, LLC • 16 Esquire Road Billerica, MA 01862 • 978-608-8146 • ssnell@empiretelecomm.com

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above Federal Communications Commission (FCC) safety standard. An RF emissions calculation (attached) for AT&T's modified facility is herein provided.

5. The proposed modifications will not case a change or alteration in the physical or environmental characteristics of the site.

6. The monopole and its foundation can support AT&T's proposed modifications (please see attached structural analysis completed by American Tower dated January15, 2016).

For the foregoing reasons, AT&T respectfully requests that the proposed antenna swap and remote radio head installation be allowed within the exempt modifications under R.C.S.A. §16-50j-72 (b)(2).

Sincerely,

Sarah Snell
Site Acquisition Specialist

cc: Christopher J. Bielik, First Selectmen for the Town of Beacon Falls
American Tower Corporation
Wilbur Weed & Joan Weed

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PROJECT INFORMATION

SCOPE OF WORK:

- REMOVE (1) EXISTING LTE ANTENNA PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) EXISTING ANTENNAS TO BE REMOVED.
- NEW AT&T ANTENNAS: (1) NEW ANTENNA PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW ANTENNAS; (6) EXISTING GSM/UMTS ANTENNAS TO REMAIN (2 PER SECTOR)
- AT&T RRUs: (1) NEW RRUs PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUs; (1) EXISTING RRU PER SECTOR TO REMAIN, FOR A TOTAL OF (3) EXISTING RRUs.
- (1) NEW A2 MODULE PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW A2 MODULES.

SITE ADDRESS:	664 RIMMON HILL ROAD BEACON FALLS, CT 06403
LATITUDE:	41.4071861 41° 24' 25.86996"N
LONGITUDE:	−73.0792769 −73° 04' 45.39684"W
USID:	61185
TOWER OWNER:	
TYPE OF SITE:	MONOPOLE/INDOOR EQUIPMENT
MONOPOLE HEIGHT:	173'−0"±
RAD CENTER:	159'−0"±
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

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APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN, ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AMD MAY IMPOSE CHANGES OR SITE MODIFICATIONS.

DISCIPLINE:	NAME:	DATE:
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		

at&t MOBILITY

FA CODE: 10035091
SITE NUMBER: CT2161
SITE NAME: BEACON FALLS RIMMON HILL

VICINITY MAP

1) TAKE RAMP LEFT FOR I−91 SOUTH, 9.1MI. 2) AT EXIT 18, TAKE RAMP RIGHT FOR I−691 WEST TOWARD MERIDEN/WATERBURY, 7.9MI. 3) AT EXIT 1, TAKE RAMP LEFT FOR I−84 WEST TOWARD WATERBURY/DANBURY, 8.6MI. 4) AT EXIT 19, TAKE RAMP LEFT FOR CT−8 SOUTH TOWARD BRIDGEPORT/NAUGATUCK, 11.2MI. 5) AT EXIT 22, TAKE RAMP FOR CT−67 TOWARD SEYMOUR/BANK ST, 0.2MI. 6) KEEP STRAIGHT ONTO CT−67, 0.6MI. 7) BEAR RIGHT ONTO OLD DR, 0.1MI. 8) BEAR RIGHT ONTO RIMMON ST, 0.5MI. 9) ROAD NAME CHANGES TO RIMMON HILL RD, 0.2MI. 10) ARRIVE AT 664 RIMMON HILL RD, TOWN OF BEACON FALLS, CT 06403

PROJECT TEAM

CLIENT REPRESENTATIVE
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617−639−4908
EMAIL: dcooper@empiretelecomm.com

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COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
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ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617−639−4908
EMAIL: dcooper@empiretelecomm.com

ENGINEERING:
COMPANY: COM−EX CONSULTANTS, LLC
ADDRESS: 115 ROUTE 46 SUITE 39, MOUNTAIN LAKES, NJ 07046
CONTACT: NICHOLAS D. BARILE, P.E.
PHONE: 862−209−4300
EMAIL: nbarile@comexconsultants.com

RF ENGINEER:
COMPANY: AT&T MOBILITY − NEW ENGLAND
ADDRESS: 550 COCHITUATE ROAD SUITE 550 13 & 14, FRAMINGHAM, MA 01701
CONTACT: CAMERON SYME
PHONE: 508−596−7146
EMAIL: cs6970@att.com

CONSTRUCTION MANAGEMENT:
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: GRZEGORZ "GREG" DORMAN
PHONE: 484−683−1750
EMAIL: gdorman@empiretelecomm.com

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY, AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CONNECTICUT ONE CALL SYSTEM, INC. 1-800-922-4455 STOP · CALL BEFORE YOU DIG!

CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800−922−4455 OR DIAL 811

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FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/23/15	PRELIM SUBMISSION	AM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: AM | DRAWN BY: AM

SEAL:

NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE: TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV
15132−EMP	T−1	A

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. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.

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 WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.

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

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

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

12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').

14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE ½" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR – EMPIRE TELECOM
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY
   OEM – ORIGINAL EQUIPMENT MANUFACTURER

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 (EMPIRE TELECOM).

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

7. 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.

8. 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. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR

9. 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.

10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF 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.

11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

14. 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). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."

16. 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.

17. 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 MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

18. SINCE THE CELL SITE MAY BE 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 REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

19. 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.
    - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
    - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
    - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS

20. 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, THIRTEENTH EDITION
    - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
    - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
    - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
    - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
    - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
    - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

21. 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.

22. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

23. INFORMATION SHOWN ON THIS SET OF PLANS TAKEN FROM DRAWINGS PREPARED BY CENTEK ENGINEERING FOR A RECENT UPGRADE DATED 05/18/2012. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.

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SITE NUMBER: CT2161
SITE NAME: BEACON FALLS RIMMON HILL

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NEW HAVEN COUNTY

at&t MOBILITY
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A	11/23/15	PRELIM SUBMISSION	AM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: AM | DRAWN BY: AM

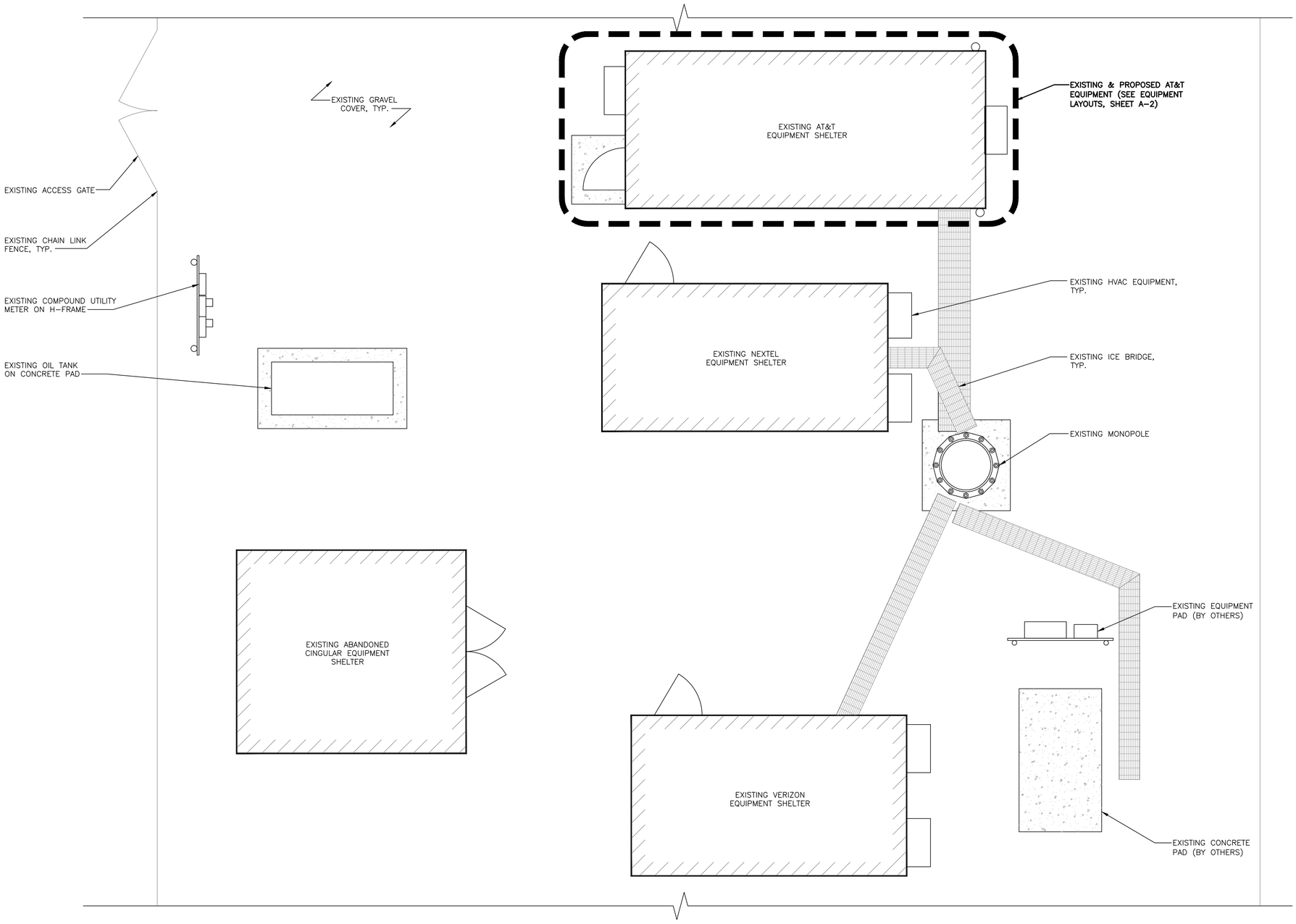
SEAL:

NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
GROUNDING & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
15132-EMP	GN-1	A



NORTH

COMPOUND LAYOUT

SCALE: 1" = 4'-0"

4 0 2 4 8 16

(IN FEET)

1/4 Inch = 1 Foot

NOTE:
CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

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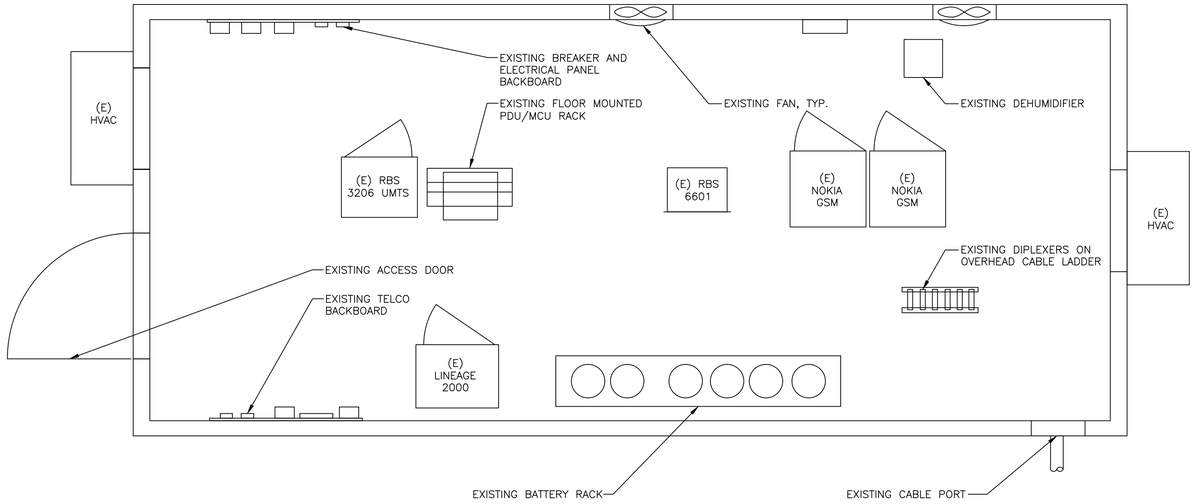
SEAL:

NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
COMPOUND LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
15132-EMP	A-1	A

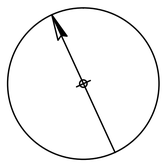


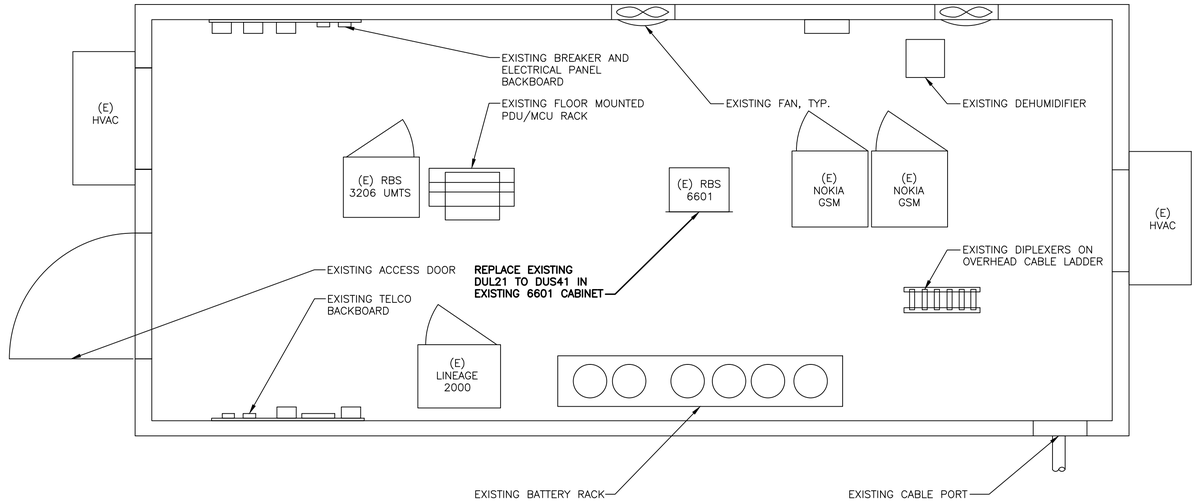
EXISTING EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot



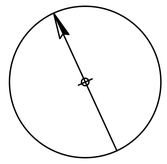


PROPOSED EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot



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SITE NUMBER: CT2161
SITE NAME: BEACON FALLS RIMMON HILL

664 RIMMON HILL ROAD
BEACON FALLS, CT 06403
NEW HAVEN COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/23/15	PRELIM SUBMISSION	AM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: AM | DRAWN BY: AM

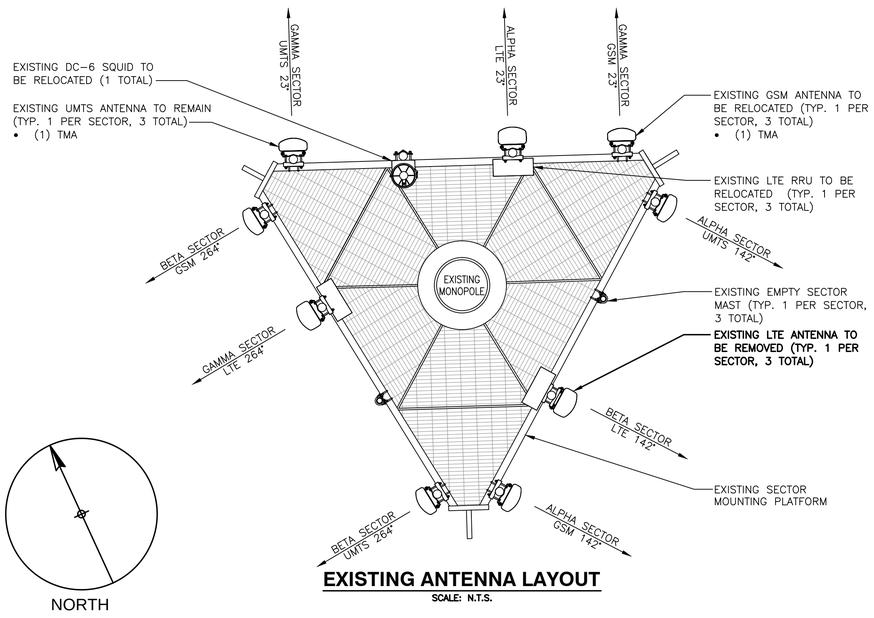
SEAL:

NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

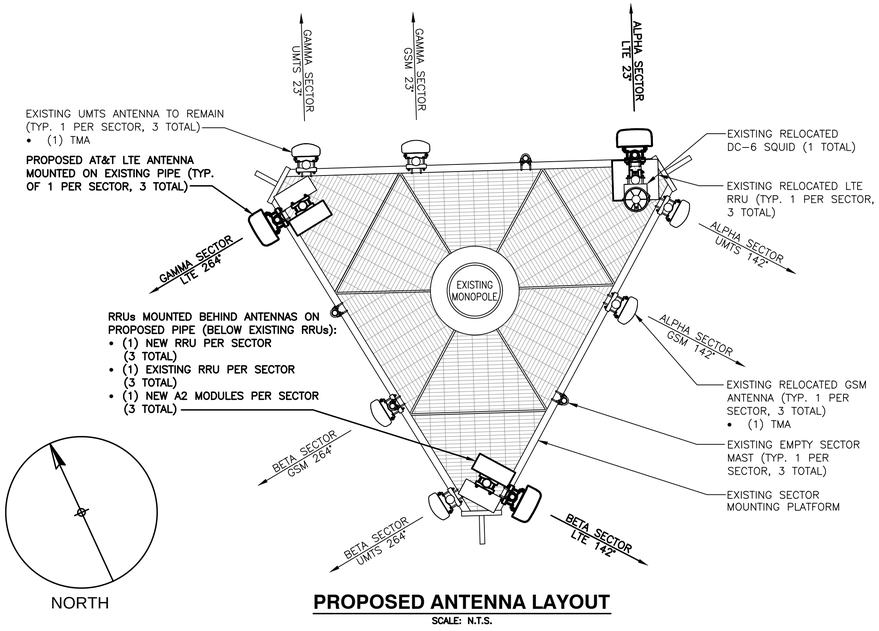
DRAWING TITLE:
EQUIPMENT LAYOUTS

JOB NUMBER	DRAWING NUMBER	REV
15132-EMP	A-2	A



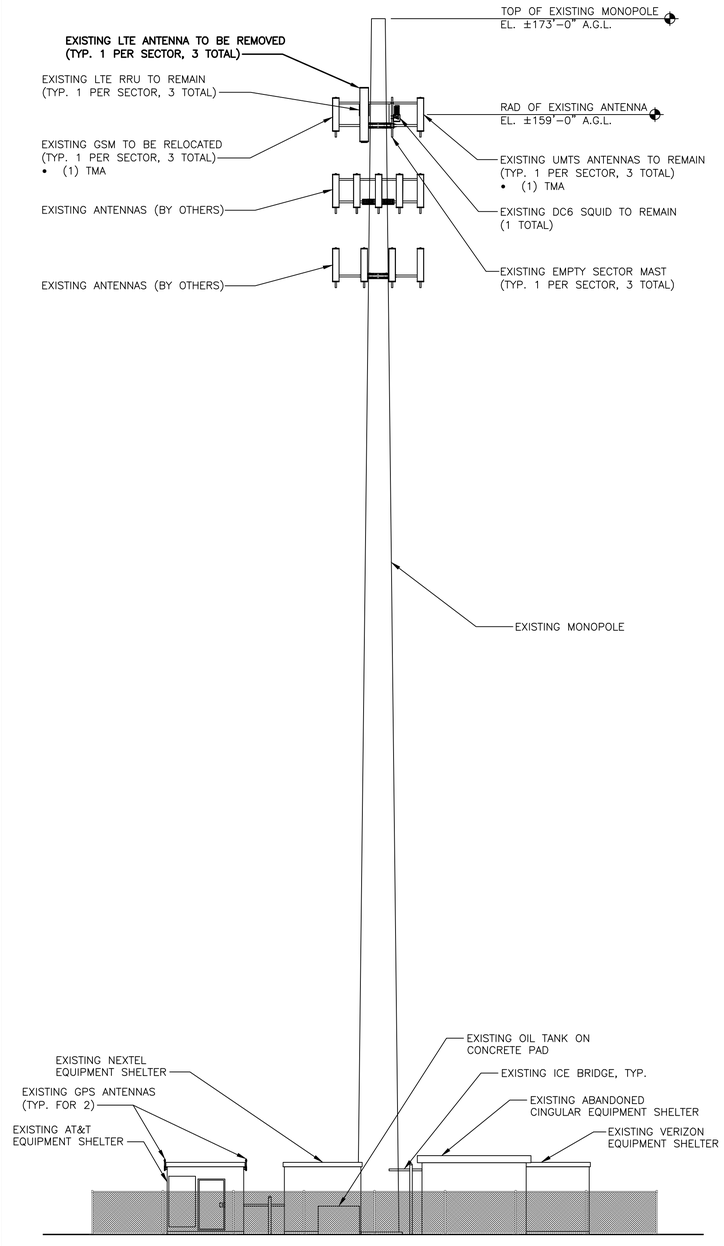
EXISTING ANTENNA LAYOUT

SCALE: N.T.S.



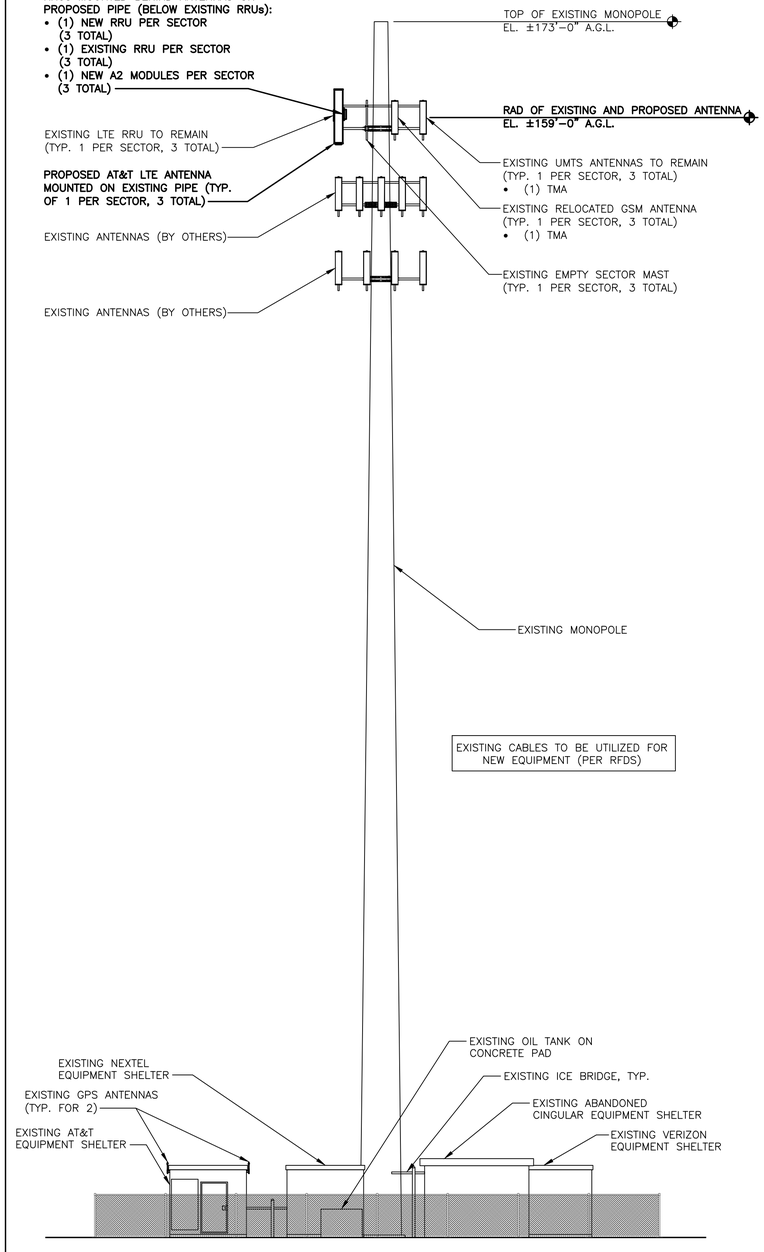
PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.



EXISTING TOWER ELEVATION

SCALE: NTS



PROPOSED TOWER ELEVATION

SCALE: NTS

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.

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SEAL:

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CT LICENSE NO. 28643

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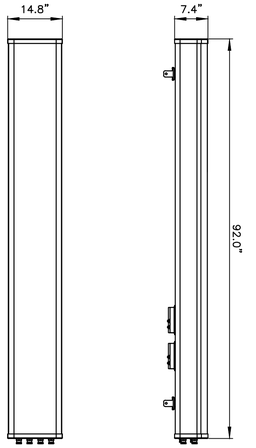
DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

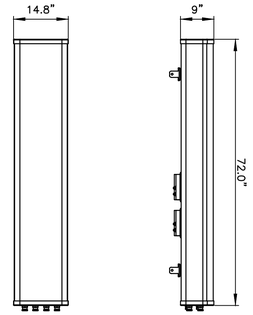
JOB NUMBER	DRAWING NUMBER	REV
15132-EMP	A-3	A



FRONT VIEW SIDE VIEW

BOTTOM VIEW

MANUFACTURER	CCI
MODEL	HPA-65R-BUU-H8
WEIGHT	68.0 LBS



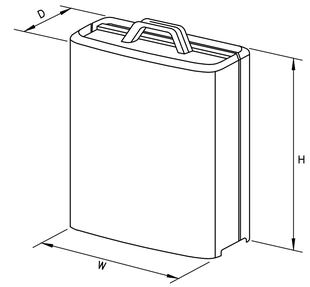
FRONT VIEW SIDE VIEW

BOTTOM VIEW

MANUFACTURER	CCI
MODEL	HPA-65R-BUU-H6
WEIGHT	50.7 LBS

LTE ANTENNA DETAIL

SCALE: N.T.S.



MODEL	L x W x H	WEIGHT
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS-12	20.4" x 18.5" x 7.5"	58 LBS
A2 MODULE	16.4" x 15.2" x 3.4"	22 LBS

*DENOTES EXISTING.

RRUS DETAIL

SCALE: N.T.S.

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NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/23/15	PRELIM SUBMISSION	AM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: AM | DRAWN BY: AM

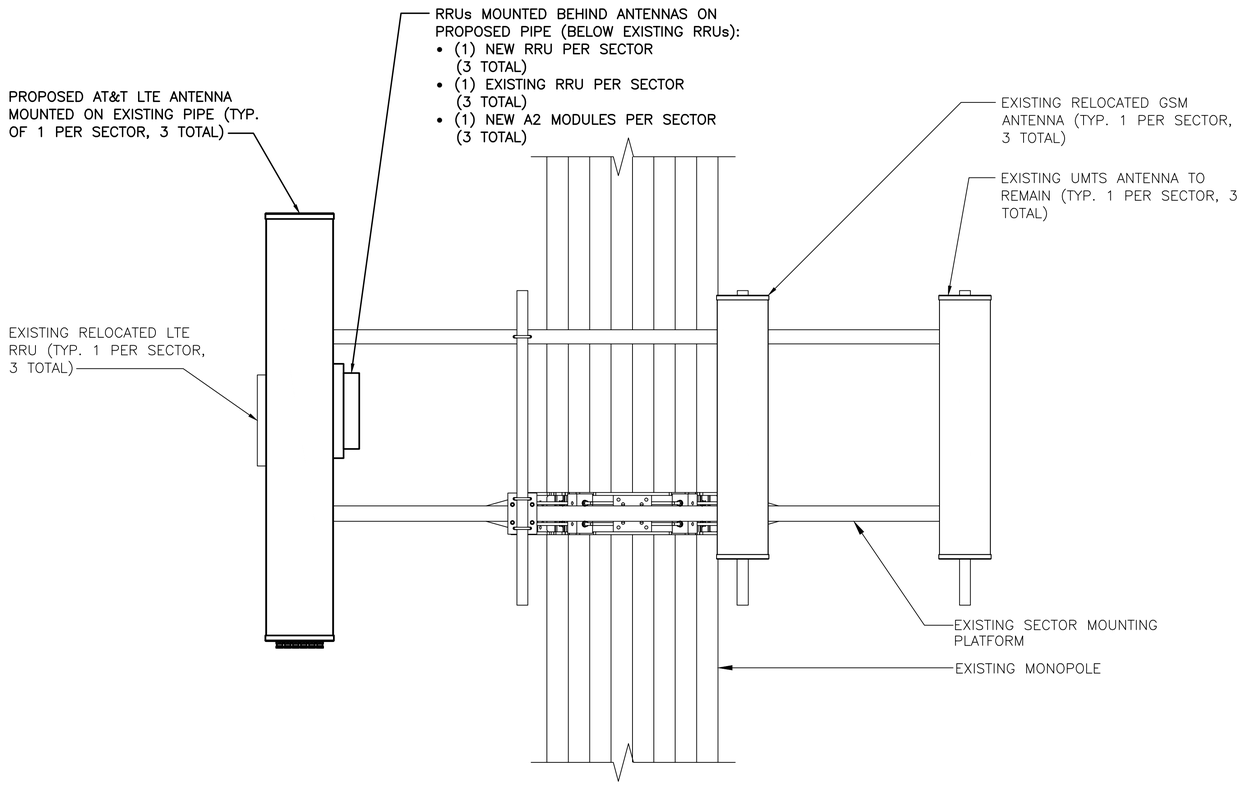
SEAL:

NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

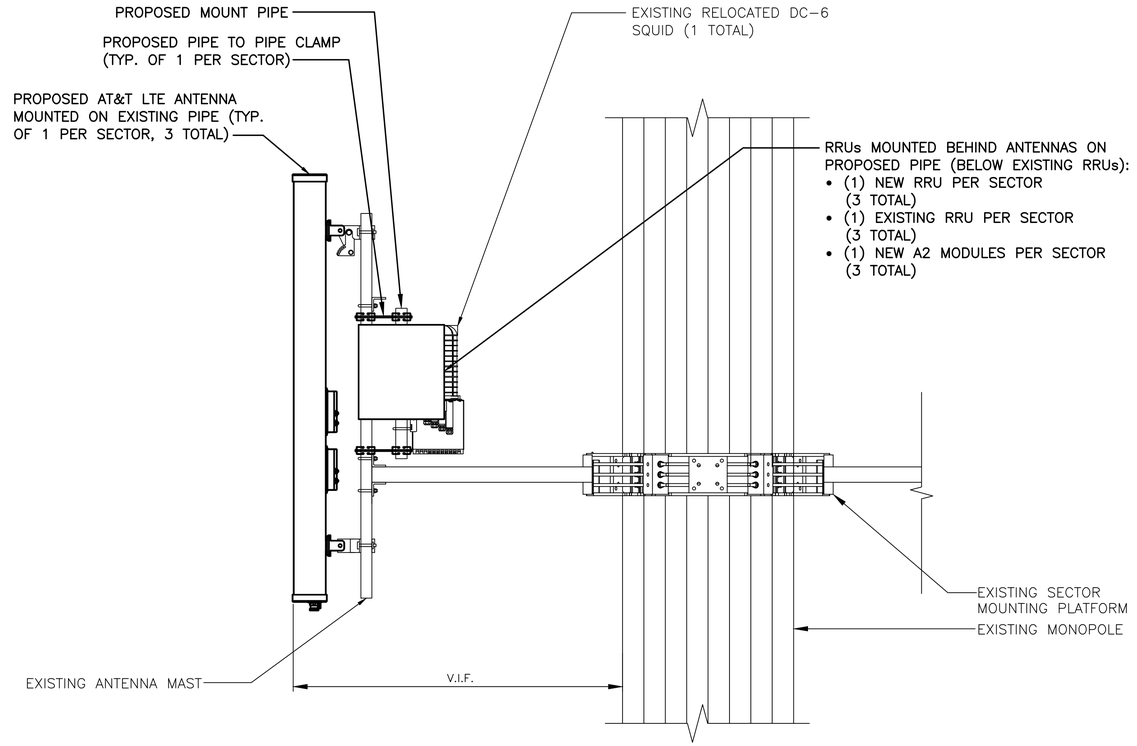
DRAWING TITLE: DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15132-EMP	A-4	A



PROPOSED ANTENNA MOUNTING DETAIL (FRONT VIEW)

SCALE: N.T.S.



PROPOSED ANTENNA MOUNTING DETAIL (SIDE VIEW)

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	A2	–	–	–
	A3	ANDREW	SBNH-1D6565C	96.4"x11.9"x7.1"
	A4	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
BETA	B1	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	B2	–	–	–
	B3	ANDREW	SBNH-1D6565C	96.4"x11.9"x7.1"
	B4	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
GAMMA	G1	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	G2	–	–	–
	G3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G4	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"

FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	A2	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	A3	–	–	–
	A4	**CCI**	**HPA-65R-BUU-H8**	**92.4"x14.8"x7.4"**
BETA	B1	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	B2	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	B3	–	–	–
	B4	**CCI**	**HPA-65R-BUU-H8**	**92.4"x14.8"x7.4"**
GAMMA	G1	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	G2	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	G3	–	–	–
	G4	**CCI**	**HPA-65R-BUU-H6**	**72"x14.8"x9"**

PROPOSED RRU SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	**ERICSSON**	**RRUS-12**	**20.4"x18.5"x7.5"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
BETA	**ERICSSON**	**RRUS-12**	**20.4"x18.5"x7.5"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
GAMMA	**ERICSSON**	**RRUS-12**	**20.4"x18.5"x7.5"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		

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NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/23/15	PRELIM SUBMISSION	AM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: AM | DRAWN BY: AM

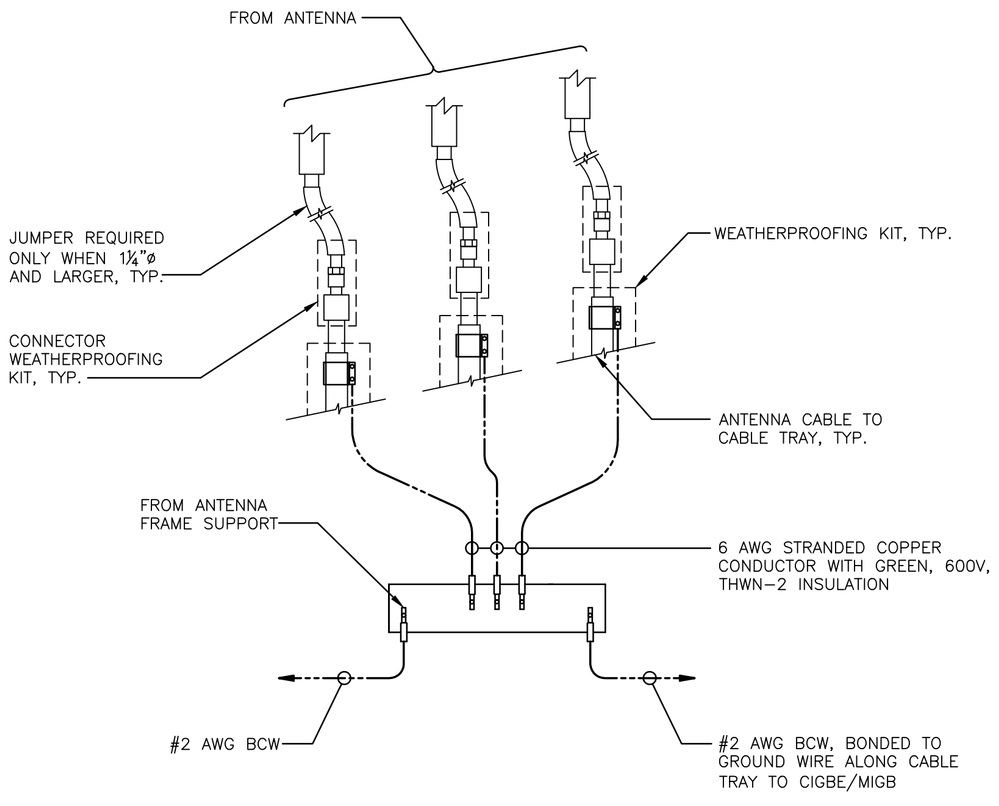
SEAL:

NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

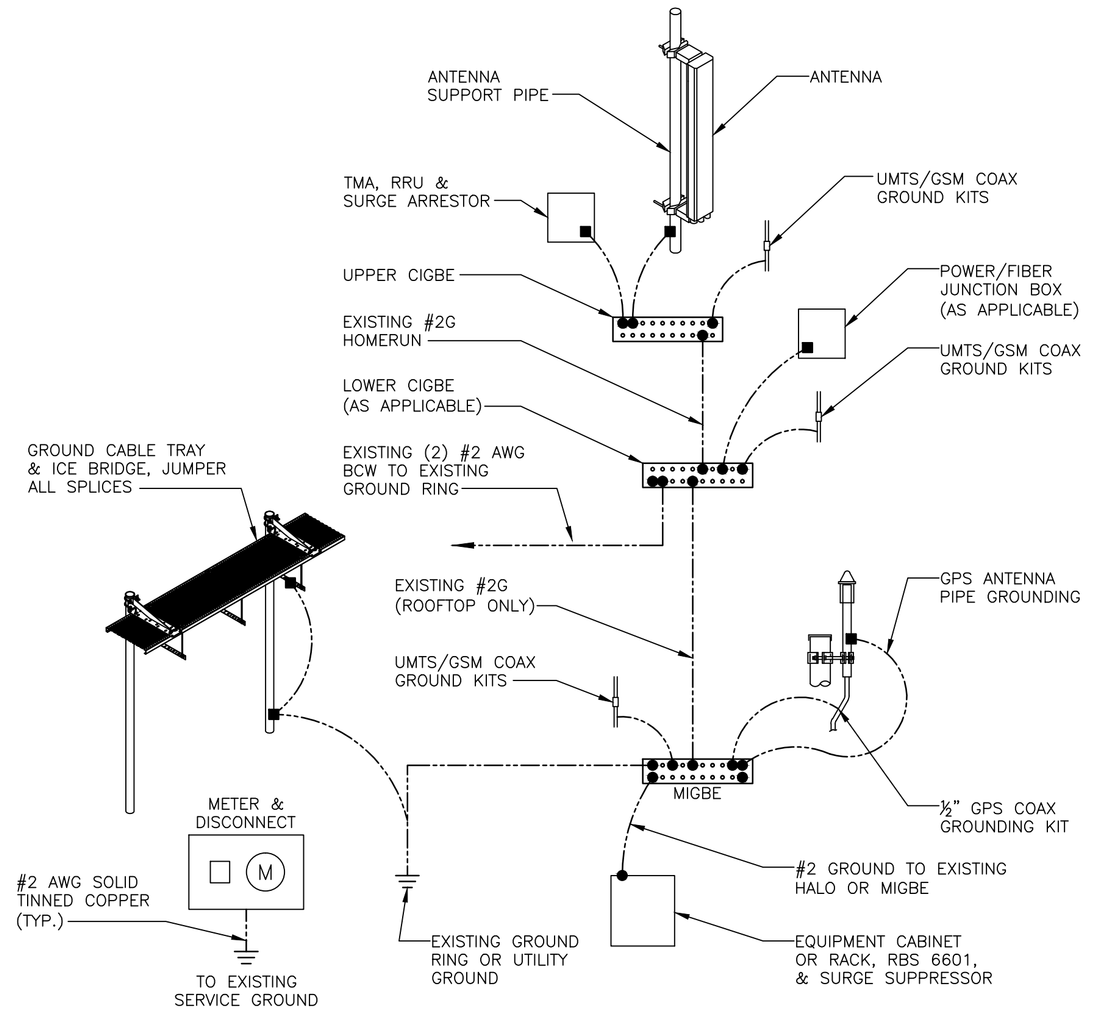
DRAWING TITLE:
ANTENNA MOUNTING DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15132-EMP	A-5	A



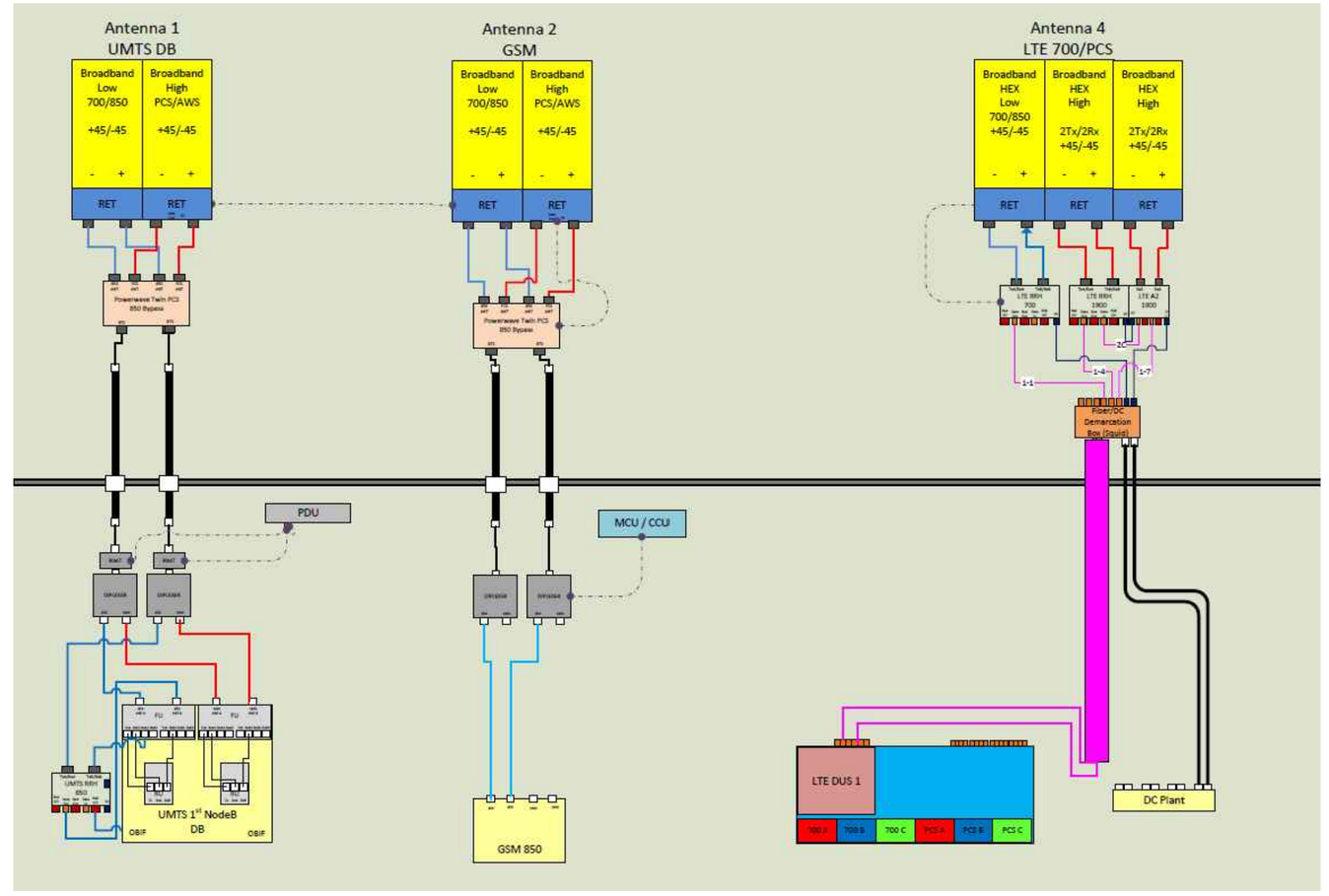
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



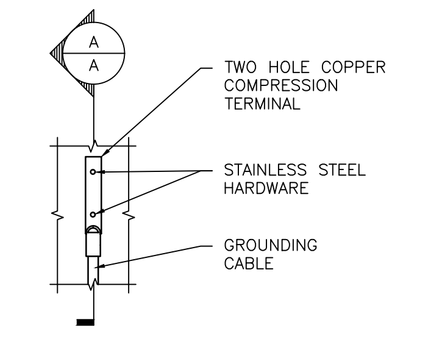
GROUNDING RISER DIAGRAM

SCALE: N.T.S.

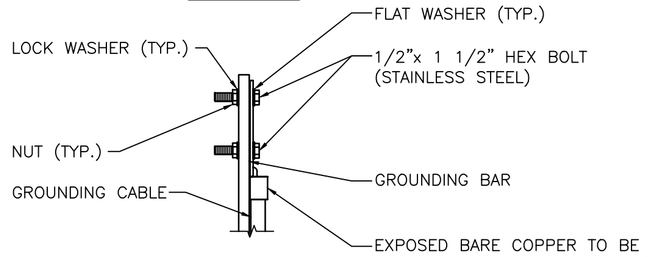


TYPICAL PLUMBING DIAGRAM (PER SECTOR)

SCALE: N.T.S.



ELEVATION



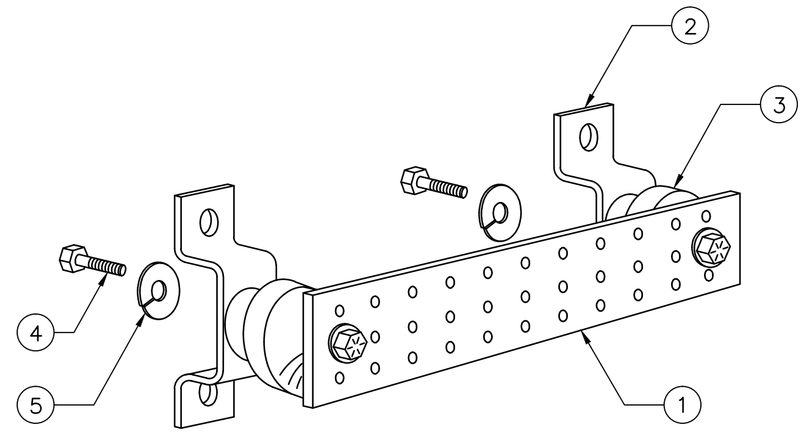
SECTION "A–A"

NOTE:

1. "DOUBLING UP" OR "STACKING" OF CONNECTIONS 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

SCALE: N.T.S.



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x ¼")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	⅝"–11x1" H.H.C.S.
5	4	⅝" LOCK WASHER

NOTES:

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

SECTION "P" – SURGE PRODUCERS
- CABLE ENTRY PORTS (HATCH PLATES) (#2)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
- +24V POWER SUPPLY RETURN BAR (#2)
- –48V POWER SUPPLY RETURN BAR (#2)
- RECTIFIER FRAMES

SECTION "A" – SURGE ABSORBERS
- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)

GROUND BAR DETAIL

SCALE: N.T.S.

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NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/23/15	PRELIM SUBMISSION	AM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: AM | DRAWN BY: AM

SEAL:

NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
GROUNDING, ONE–LINE DIAGRAM & DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15132–EMP	G–1	A

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environmental | engineering | due diligence

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

AT&T Existing Facility

Site ID: CT2161

Beacon Falls Rimmon Hill
664 Rimmon Hill Road
Beacon Falls, CT 06403

February 24, 2016

EBI Project Number: 6216000895

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	4.37 %

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

EBI Consulting
environmental | engineering | due diligence

February 24, 2016

AT&T Mobility – New England
Attn: Cameron Syme, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT2161 – Beacon Falls Rimmon Hill**

EBI Consulting was directed to analyze the proposed AT&T facility located at **664 Rimmon Hill Road, Beacon Falls, CT**, for the purpose of determining whether the emissions from the Proposed AT&T 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 limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) 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 AT&T Wireless antenna facility located at **664 Rimmon Hill Road, Beacon Falls, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T 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 (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

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

3) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 2 LTE channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

6) 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.

7) 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.

8) The antennas used in this modeling are the **CCI HPA-65R-BUU-H6, CCI HPA-65R-BUU-H8 and the KMW AM-X-CD-14-65-00T-RET** for transmission in the 700 MHz, 850 MHz and1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. 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.

9) The antenna mounting height centerline of the proposed antennas is **159 feet** above ground level (AGL).

10) 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.

EBI Consulting

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AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	KMW AM-X-CD-14-65-00T-RET	Make / Model:	KMW AM-X-CD-14-65-00T-RET	Make / Model:	KMW AM-X-CD-14-65-00T-RET
Gain:	12.65 / 14.15 dBd	Gain:	12.65 / 14.15 dBd	Gain:	12.65 / 14.15 dBd
Height (AGL):	159 feet	Height (AGL):	159 feet	Height (AGL):	159 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,664.56	ERP (W):	2,664.56	ERP (W):	2,664.56
Antenna A1 MPE%	**0.54**	Antenna B1 MPE%	**0.54**	Antenna C1 MPE%	**0.54**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	KMW AM-X-CD-14-65-00T-RET	Make / Model:	KMW AM-X-CD-14-65-00T-RET	Make / Model:	KMW AM-X-CD-14-65-00T-RET
Gain:	11.85 / 14.15 dBd	Gain:	11.85 / 14.15 dBd	Gain:	11.85 / 14.15 dBd
Height (AGL):	159 feet	Height (AGL):	159 feet	Height (AGL):	159 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	4,957.50	ERP (W):	4,957.50	ERP (W):	4,957.50
Antenna A2 MPE%	**1.08**	Antenna B2 MPE%	**1.08**	Antenna C2 MPE%	**1.08**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	CCI OPA-65R-BUU-H8	Make / Model:	CCI OPA-65R-BUU-H8	Make / Model:	CCI OPA-65R-BUU-H6
Gain:	14.05 dBd	Gain:	14.05 dBd	Gain:	12.65 dBd
Height (AGL):	159 feet	Height (AGL):	159 feet	Height (AGL):	159 feet
Frequency Bands	850 MHz	Frequency Bands	850 MHz	Frequency Bands	850 MHz
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	60	Total TX Power(W):	60	Total TX Power(W):	60
ERP (W):	1,524.58	ERP (W):	1,524.58	ERP (W):	1,104.46
Antenna A3 MPE%	**0.41**	Antenna B3 MPE%	**0.41**	Antenna C3 MPE%	**0.30**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**2.04 %**
Nextel	0.33 %
Verizon Wireless	2.00 %
Site Total MPE %:	**4.37 %**

AT&T Sector 1 Total:	5.41 %
AT&T Sector 2 Total:	5.41 %
AT&T Sector 3 Total:	5.41 %
Site Total:	4.37 %

AT&T _ Max Sector (Sectors A & B)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	552.23	159	1.70	700	567	0.30 %
AT&T 1900 MHz (PCS) UMTS	2	780.05	159	2.40	1900	1000	0.24 %
AT&T 700 MHz LTE	2	918.65	159	2.82	850	467	0.60 %
AT&T 1900 MHz (PCS) UMTS	2	1560.10	159	4.79	850	1000	0.48 %
AT&T 850 MHz GSM	2	762.23	159	2.34	1900	567	0.41 %
						Total:	2.04 %

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Summary

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

The anticipated maximum composite contributions from the AT&T 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:

AT&T Sector	Power Density Value (%)
Sector 1:	2.04%
Sector 2:	2.04%
Sector 3 :	1.92%
AT&T Maximum Total (per sector):	2.04%
Site Total:	4.37 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **4.37%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803

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Structural Analysis Report

Structure	:	**173 ft Monopole**
ATC Site Name	:	**Beacon Falls, CT**
ATC Site Number	:	**302524**
Engineering Number	:	**64753521**
Proposed Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**Beachon Falls Rimmon Rill**
Carrier Site Number	:	**CT2161/FA#10035091**
Site Location	:	**664 Rimmon Hill Road** **Seymour, CT 06483-2722** **41.407194,-73.079300**
County	:	**New Haven**
Date	:	**January 15, 2016**
Max Usage	:	**94%**
Result	:	**Pass**

Prepared By:
Fathullah Zamani
Infinigy

STATE OF CONNECTICUT
JOSEPH R. JOHNSTON
29460
LICENSED PROFESSIONAL ENGINEER
JAN 15 2016

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Calculations ..... Attached

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 173 ft monopole to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	Valmont Drawing #DC3268Z, dated May 28, 1996
Foundation Drawing	Girard & Company Sheet #4 of 11, dated July 16, 1996
Geotechnical Report	S&ME Job #1261-07-418Z, dated November 13, 2007
Modifications	Spectrasite Site #CT-0060, dated February 20, 2002

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/TIA-222.

Basic Wind Speed:	105 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2003 IBC w/ 2005 CT Supplement & 2009 CT Amendment
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.19, S_1 = 0.06
Site Class:	D - Stiff Soil

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					
157.0	157.0	6	KMW KDXCV0012017	Platform w/ Handrails	(12) 1 1/4" Coax (2) 0.78" 8 AWG 6 (1) 0.39" Cable (1) 3" Conduit	AT&T Mobility
		6	Powerwave TT08-19DB111-001			
		1	Raycap DC6-48-60-18-8F (23.5" Height)			
		3	Ericsson RRUS-11 (50 lbs.)			
143.0	149.0	3	Alcatel-Lucent RRH2x40-AWS	Platform w/ Handrails	(12) 1 5/8" Coax (1) 1 5/8" Hybriflex	Verizon Wireless
		1	RFS DB-B1-6C-12AB-0Z			
	146.0	6	RFS FD9R6004/1C-3L			
		6	Andrew DB844H80E-XY			
		6	Kathrein 742 213V01			
		1	Powerwave P65-16-XL			
		2	Andrew LNX-6514DS-T4M			
137.5	135.0	12	Decibel DB844H90E-XY	Low Profile Platform	(12) 1 1/4" Coax	Sprint Nextel

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
157.0	157.0	6	Powerwave P65-15-XLH-RR	-	-	AT&T Mobility
		3	Andrew SBNH-1D6565C			

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
157.0	157.0	3	Ericsson RRUS 12 w/ RRUS A2	Platform w/ Handrails	-	AT&T Mobility
		6	KMW AM-X-CD-14-65-00T-RET			
		1	CCI HPA-65R-BUU-H6			
		2	CCI HPA-65R-BUU-H8			

[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).

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	73%	Pass
Shaft	94%	Pass
Base Plate	47%	Pass
Flanges	2%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	3,020.9	4,078.2	3,557.7	87%
Shear (Kips)	28.0	37.8	31.6	84%

*** The design reactions are factored by 1.35 per ANSI/TIA-222-G, Sec. 15.5.1**

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
157.0	Ericsson RRUS 12 w/ RRUS A2	AT&T Mobility	2.828	2.037
	KMW AM-X-CD-14-65-00T-RET			
	CCI HPA-65R-BUU-H6			
	CCI HPA-65R-BUU-H8			

***Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G**

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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.

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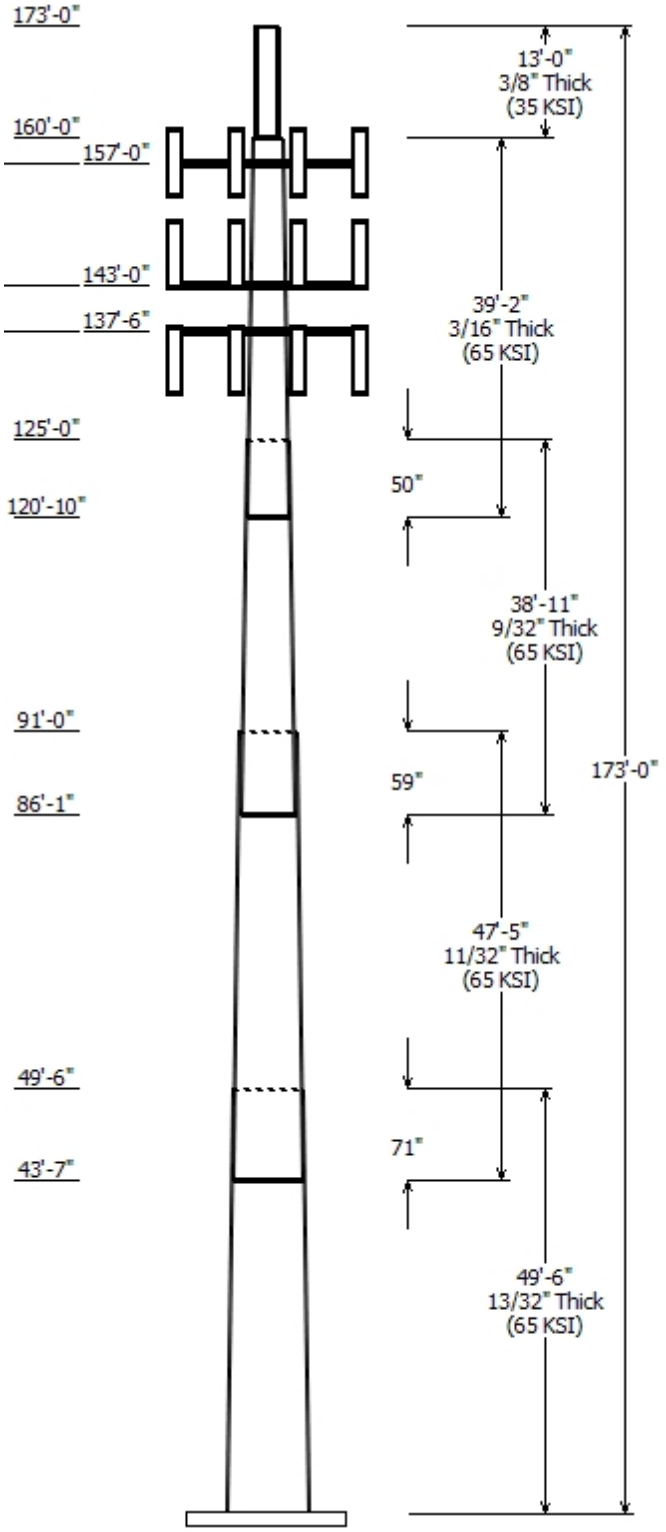


Job Information

Pole :	302524	Code:	ANSI/TIA-222-G
Description :	173 ft Valmont Monopole		
Client :	AT&T MOBILITY	Struct Class :	II
Location :	Beacon Falls, CT		
Shape :	12 Sides	Exposure :	B
Height :	173.00 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.20300(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	49.500	38.45	48.50	0.406		0.000	0.203000	65
2	47.417	30.71	40.34	0.344	Slip Joint	71.000	0.203000	65
3	38.917	24.37	32.27	0.281	Slip Joint	59.000	0.203000	65
4	39.167	17.64	25.59	0.188	Slip Joint	50.000	0.203000	65
5	13.000	14.00	14.00	0.375	Butt Joint	0.000	0.000000	35

Discrete Appurtenance

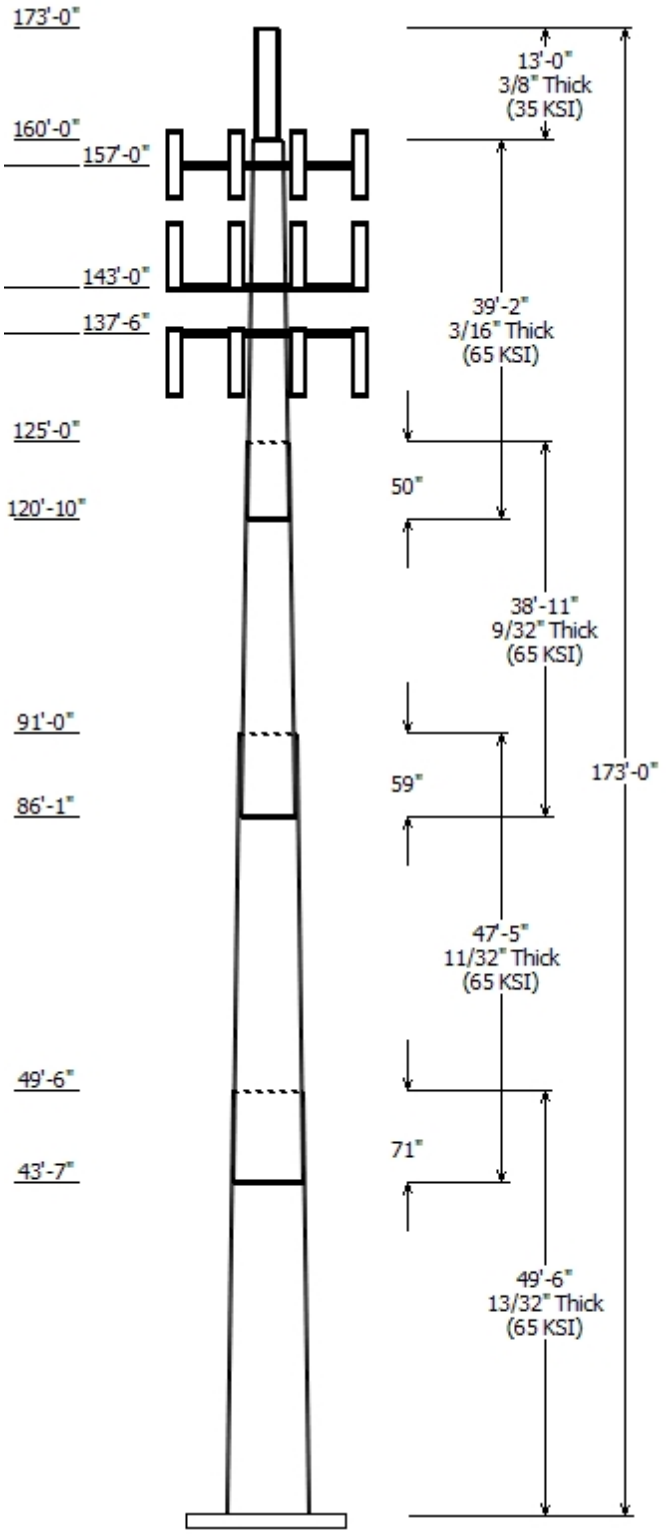
Attach Elev (ft)	Force Elev (ft)	Qty	Description
157.000	157.000	2	CCI HPA-65R-BUU-H8
157.000	157.000	1	CCI HPA-65R-BUU-H6
157.000	157.000	6	KMW AM-X-CD-14-65-00T-RET
157.000	157.000	3	Ericsson RRUS 12 w/ RRUS A2
157.000	157.000	1	Raycap DC6-48-60-18-8F (23.5"
157.000	157.000	6	KMW KDXCV0012017
157.000	157.000	1	Flat Platform w/ Handrails
157.000	157.000	6	Powerwave Allgon TT08-
157.000	157.000	3	Ericsson RRUS-11 (50 lbs.)
143.000	146.000	6	Kathrein 742 213V01
143.000	149.000	1	RFS DB-B1-6C-12AB-0Z
143.000	149.000	3	Alcatel-Lucent RRH2x40-AWS
143.000	146.000	6	RFS FD9R6004/1C-3L
143.000	146.000	1	Powerwave Allgon P65-16-XL
143.000	143.000	1	Flat Platform w/ Handrails
143.000	146.000	6	Andrew DB844H80E-XY
143.000	146.000	2	Andrew LNX-6514DS-T4M
137.500	135.000	12	Decibel DB844H90E-XY
137.500	137.500	1	Flat Low Profile Platform

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	137.5	1 1/4" Coax	No
0.000	143.0	1 5/8" Coax	No
0.000	143.0	1 5/8" Hybriflex	No
0.000	157.0	0.39" Cable	No
0.000	157.0	0.78" 8 AWG 6	No
0.000	157.0	1 1/4" Coax	No
0.000	157.0	3" Conduit	No

Load Cases

1.2D + 1.6W	105 mph with No Ice
0.9D + 1.6W	105 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral



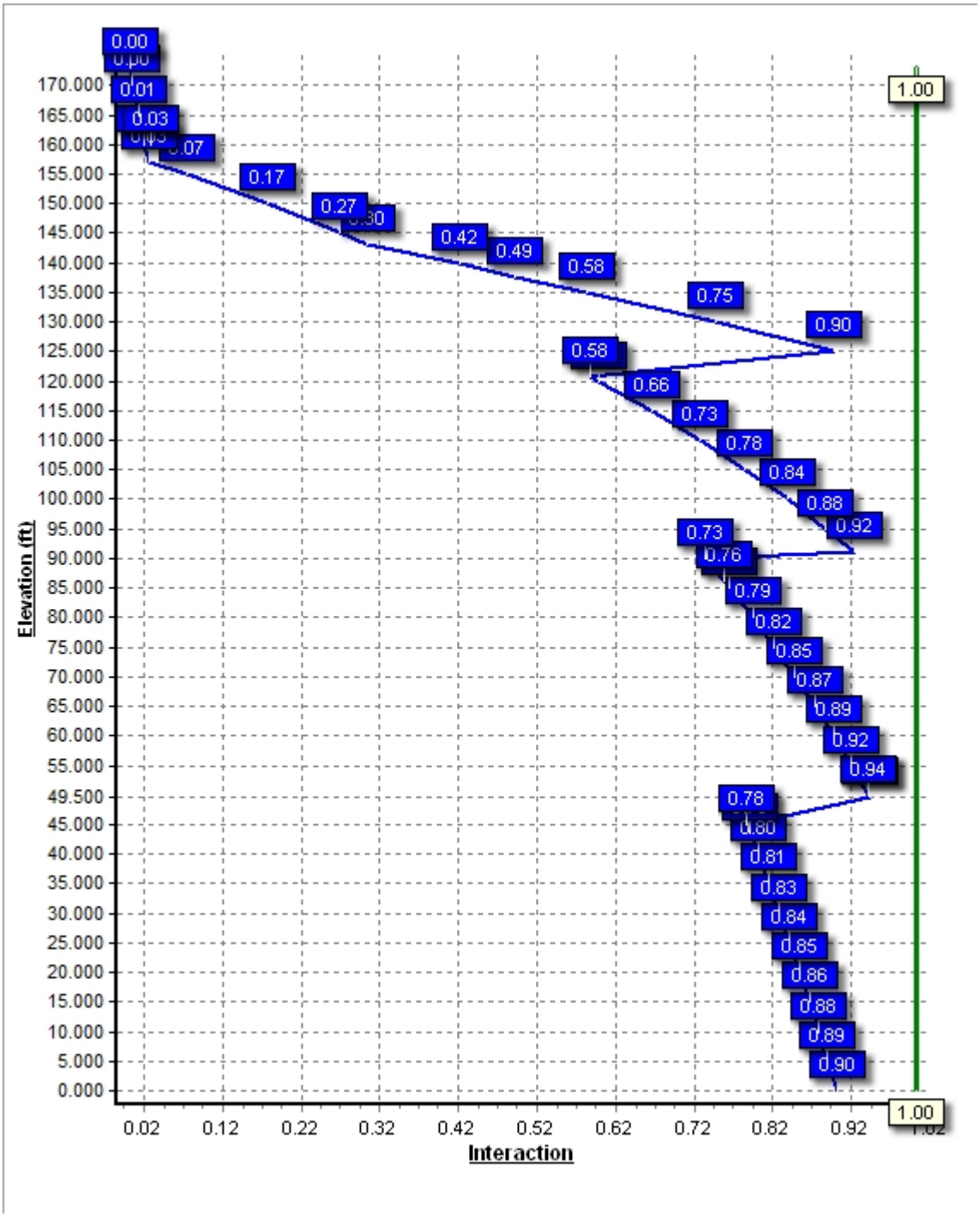
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	3557.67	31.62	40.56
0.9D + 1.6W	3500.57	31.59	30.41
1.2D + 1.0Di + 1.0Wi	730.06	6.04	60.77
(1.2 + 0.2Sds) * DL + E ELFM	181.90	1.32	40.51
(1.2 + 0.2Sds) * DL + E EMAM	154.54	1.45	40.51
(0.9 - 0.2Sds) * DL + E ELFM	178.12	1.32	28.02
(0.9 - 0.2Sds) * DL + E EMAM	151.27	1.45	28.02
1.0D + 1.0W	720.92	6.45	33.86

Dish Deflections

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


Elevation (ft)
170.000
165.000
160.000
155.000
150.000
145.000
140.000
135.000
130.000
125.000
120.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
49.500
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction
1.00
1.00
0.00
0.01
0.03
0.07
0.17
0.27
0.42
0.49
0.58
0.75
0.90
0.58
0.66
0.73
0.78
0.84
0.88
0.92
0.73
0.76
0.79
0.82
0.85
0.87
0.89
0.92
0.94
0.78
0.81
0.83
0.84
0.85
0.86
0.88
0.89
0.90

Site Number:	**302524**	**Code: ANSI/TIA-222-G**	*© 2007 - 2016 by ATC IP LLC. All rights reserved.*
Site Name:	**Beacon Falls, CT**	**Engineering Number: 64753521**	**1/15/2016 12:32:46 PM**
Customer:	**AT&T MOBILITY**		

Analysis Parameters

Location:	**New Haven County, CT**		
Code:	**ANSI/TIA-222-G**	**Height (ft):**	**173**
Shape:	**12 Sides. Sect 5: Round**	**Base Diameter (in):**	**48.50**
Pole Type:	**Custom**	**Top Diameter (in):**	**14.00**
Pole Manfacturer:	**Valmont**	**Taper (in/ft) :**	**0.203**

Ice & Wind Parameters

Structure Class:	**II**	**Design Wind Speed Without Ice:**	**105 mph**
Exposure Category:	**B**	**Design Wind Speed With Ice:**	**50 mph**
Topographic Category:	**1**	**Operational Wind Speed:**	**60 mph**
Crest Height:	**0.0 ft**	**Design Ice Thickness:**	**0.75 in**

Seismic Parameters

Analysis Method:	**Equivalent Modal Analysis & Equivalent Lateral Force Methods**				
Site Class:	**D - Stiff Soil**				
Period Based on Rayleigh Method (sec):	**2.92**				
T_L (sec):	**6**	**p:**	**1.3**	**C_s:**	**0.030**
S_s:	**0.194**	**S_1:**	**0.064**	**C_s Max:**	**0.030**
F_a:	**1.600**	**F_v:**	**2.400**	**C_s Min:**	**0.030**
S_{ds}:	**0.207**	**S_{d1}:**	**0.102**		

Load Cases

1.2D + 1.6W	**105 mph with No Ice**
0.9D + 1.6W	**105 mph with No Ice (Reduced DL)**
1.2D + 1.0Di + 1.0Wi	**50 mph with 0.75 in Radial Ice**
(1.2 + 0.2Sds) * DL + E ELFM	**Seismic Equivalent Lateral Forces Method**
(1.2 + 0.2Sds) * DL + E EMAM	**Seismic Equivalent Modal Analysis Method**
(0.9 - 0.2Sds) * DL + E ELFM	**Seismic (Reduced DL) Equivalent Lateral Forces Method**
(0.9 - 0.2Sds) * DL + E EMAM	**Seismic (Reduced DL) Equivalent Modal Analysis Method**
1.0D + 1.0W	**Serviceability 60 mph**

Site Number:	**302524**	**Code: ANSI/TIA-222-G**	*© 2007 - 2016 by ATC IP LLC. All rights reserved.*
Site Name:	**Beacon Falls, CT**	**Engineering Number: 64753521**	**1/15/2016 12:32:46 PM**
Customer:	**AT&T MOBILITY**		

Shaft Section Properties

							Bottom						Top						
Sect Info	Length (ft)	Thick (in)	Fy (ksi)	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	49.500	0.4063	65		0.00	9,490	48.50	0.00	62.91	18573.8	29.85	119.38	38.45	49.50	49.77	9194.7	23.22	94.65	0.203000
2-12	47.417	0.3438	65	Slip	71.00	6,284	40.34	43.58	44.27	9039.5	29.30	117.35	30.71	91.00	33.62	3957.8	21.80	89.35	0.203000
3-12	38.917	0.2813	65	Slip	59.00	3,363	32.27	86.08	28.97	3785.6	28.61	114.76	24.37	125.00	21.82	1616.8	21.08	86.67	0.203000
4-12	39.167	0.1875	65	Slip	50.00	1,725	25.59	120.83	15.34	1264.1	34.43	136.51	17.64	160.00	10.54	410.0	23.07	94.11	0.203000
5-R	13.000	0.3750	35	Butt	0.00	710	14.00	160.00	16.05	372.8	0.00	37.33	14.00	173.00	16.05	372.8	0.00	37.33	0.000000
				Shaft Weight		21,571													

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)
157.00	CCI HPA-65R-BUU-H6	1	51.00	9.660	0.83	300.24	11.032	0.83	0.000	0.000
157.00	CCI HPA-65R-BUU-H8	2	68.00	12.980	0.79	360.38	14.602	0.79	0.000	0.000
157.00	Ericsson RRUS 12 w/ RRUS	3	71.40	3.150	0.67	183.14	3.867	0.67	0.000	0.000
157.00	Ericsson RRUS-11 (50 lbs.)	3	50.00	2.570	0.67	131.77	3.217	0.67	0.000	0.000
157.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	3,429.68	63.498	1.00	0.000	0.000
157.00	KMW AM-X-CD-14-65-00T-	6	36.40	4.990	0.78	167.67	5.941	0.78	0.000	0.000
157.00	KMW KDXCV0012017	6	6.60	0.410	0.50	23.33	0.637	0.50	0.000	0.000
157.00	Powerwave Allgon TT08-	6	22.00	0.920	0.50	57.41	1.206	0.50	0.000	0.000
157.00	Raycap DC6-48-60-18-8F	1	20.00	1.110	1.00	100.97	2.527	1.00	0.000	0.000
143.00	Alcatel-Lucent RRH2x40-AWS	3	44.00	2.160	0.67	116.99	2.800	0.67	0.000	6.000
143.00	Andrew DB844H80E-XY	6	10.00	3.610	0.90	116.52	3.721	0.90	0.000	3.000
143.00	Andrew LNX-6514DS-T4M	2	38.40	8.170	0.69	240.43	9.469	0.69	0.000	3.000
143.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	3,415.80	63.293	1.00	0.000	0.000
143.00	Kathrein 742 213V01	6	19.80	5.170	0.67	133.55	6.446	0.67	0.000	3.000
143.00	Powerwave Allgon P65-16-XL	1	33.00	8.130	0.65	213.48	9.421	0.65	0.000	3.000
143.00	RFS DB-B1-6C-12AB-0Z	1	21.40	2.510	0.67	114.72	3.159	0.67	0.000	6.000
143.00	RFS FD9R6004/1C-3L	6	3.10	0.370	0.50	16.10	0.577	0.50	0.000	3.000
137.50	Decibel DB844H90E-XY	12	14.00	3.610	0.92	123.35	3.913	0.92	0.000	-2.500
137.50	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,143.01	45.048	1.00	0.000	0.000
	Totals	68	7089.80			16,782.90			Number of Loadings :	19

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Flat	Projected Width (in)	Exposed To Wind	Carrier
0.00	157.00	1	0.39" Cable	0.39	0.07	N	0.00	N	AT&T Mobility
0.00	157.00	2	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	157.00	12	1 1/4" Coax	1.55	0.63	N	0.00	N	AT&T Mobility
0.00	157.00	1	3" Conduit	3.50	7.58	N	0.00	N	AT&T Mobility
0.00	143.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon
0.00	143.00	1	1 5/8" Hybriflex	1.98	1.30	N	0.00	N	Verizon
0.00	137.50	12	1 1/4" Coax	1.55	0.63	N	0.00	N	Sprint Nextel

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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)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.4063	48.500	62.913	18,573.8	29.85	119.38	72.2	739.8	0.0	0.0
5.00		0.4063	47.485	61.585	17,422.5	29.18	116.89	72.9	708.8	0.0	1,059.1
10.00		0.4063	46.470	60.257	16,319.7	28.51	114.39	73.6	678.4	0.0	1,036.5
15.00		0.4063	45.455	58.929	15,264.5	27.84	111.89	74.4	648.7	0.0	1,013.9
20.00		0.4063	44.440	57.602	14,255.8	27.17	109.39	75.1	619.7	0.0	991.3
25.00		0.4063	43.425	56.274	13,292.6	26.50	106.89	75.8	591.3	0.0	968.7
30.00		0.4063	42.410	54.946	12,373.7	25.83	104.39	76.5	563.6	0.0	946.1
35.00		0.4063	41.395	53.618	11,498.2	25.16	101.90	77.3	536.6	0.0	923.6
40.00		0.4063	40.380	52.291	10,665.0	24.49	99.40	78.0	510.2	0.0	901.0
43.58	Bot - Section 2	0.4063	39.653	51.339	10,093.3	24.01	97.61	78.5	491.7	0.0	631.8
45.00		0.4063	39.365	50.963	9,873.0	23.82	96.90	78.7	484.5	0.0	459.2
49.50	Top - Section 1	0.3438	39.139	42.941	8,249.4	28.36	113.86	73.8	407.2	0.0	1,436.5
50.00		0.3438	39.038	42.829	8,184.8	28.29	113.56	73.9	405.0	0.0	73.0
55.00		0.3438	38.023	41.706	7,557.4	27.49	110.61	74.7	384.0	0.0	719.1
60.00		0.3438	37.007	40.582	6,963.0	26.70	107.66	75.6	363.5	0.0	700.0
65.00		0.3438	35.993	39.459	6,400.6	25.91	104.71	76.5	343.5	0.0	680.9
70.00		0.3438	34.978	38.335	5,869.3	25.12	101.75	77.3	324.2	0.0	661.8
75.00		0.3438	33.963	37.212	5,368.2	24.33	98.80	78.2	305.4	0.0	642.7
80.00		0.3438	32.948	36.088	4,896.5	23.54	95.85	79.0	287.1	0.0	623.6
85.00		0.3438	31.933	34.965	4,453.3	22.75	92.89	79.9	269.4	0.0	604.4
86.08	Bot - Section 3	0.3438	31.713	34.721	4,360.9	22.58	92.25	80.1	265.7	0.0	128.4
90.00		0.3438	30.918	33.841	4,037.7	21.96	89.94	80.8	252.3	0.0	838.2
91.00	Top - Section 2	0.2813	31.277	28.071	3,442.2	27.65	111.21	74.6	212.6	0.0	210.6
95.00		0.2813	30.465	27.335	3,178.7	26.88	108.32	75.4	201.6	0.0	377.1
100.0		0.2813	29.450	26.416	2,868.7	25.91	104.71	76.5	188.2	0.0	457.3
105.0		0.2813	28.435	25.497	2,579.5	24.95	101.10	77.5	175.3	0.0	441.6
110.0		0.2813	27.420	24.578	2,310.5	23.98	97.49	78.6	162.8	0.0	426.0
115.0		0.2813	26.405	23.658	2,060.8	23.01	93.88	79.6	150.8	0.0	410.3
120.0		0.2813	25.390	22.739	1,829.8	22.05	90.28	80.7	139.2	0.0	394.7
120.8	Bot - Section 4	0.2813	25.221	22.586	1,793.1	21.88	89.67	80.8	137.3	0.0	64.3
125.0	Top - Section 3	0.1875	24.750	14.830	1,142.0	33.23	132.00	68.5	89.1	0.0	528.7
130.0		0.1875	23.735	14.217	1,006.2	31.78	126.59	70.1	81.9	0.0	247.1
135.0		0.1875	22.720	13.604	881.6	30.32	121.17	71.6	75.0	0.0	236.7
137.5		0.1875	22.213	13.298	823.4	29.60	118.47	72.4	71.6	0.0	114.4
140.0		0.1875	21.705	12.991	767.7	28.87	115.76	73.2	68.3	0.0	111.8
143.0		0.1875	21.096	12.624	704.4	28.00	112.51	74.2	64.5	0.0	130.7
145.0		0.1875	20.690	12.378	664.1	27.42	110.35	74.8	62.0	0.0	85.1
150.0		0.1875	19.675	11.766	570.3	25.97	104.93	76.4	56.0	0.0	205.4
155.0		0.1875	18.660	11.153	485.8	24.52	99.52	78.0	50.3	0.0	195.0
157.0		0.1875	18.254	10.908	454.4	23.94	97.35	78.6	48.1	0.0	75.1
160.0	Top - Section 4	0.1875	17.645	10.540	410.0	23.07	94.11	79.6	44.9	0.0	109.5
160.0	Bot - Section 5	0.3750	14.000	16.052	372.8	0.00	37.33	35.0	53.3	69.6	
165.0		0.3750	14.000	16.052	372.8	0.00	37.33	35.0	53.3	69.6	273.1
170.0		0.3750	14.000	16.052	372.8	0.00	37.33	35.0	53.3	69.6	273.1
173.0		0.3750	14.000	16.052	372.8	0.00	37.33	35.0	53.3	69.6	163.9
											21,571.2

Site Number: 302524 | Code: ANSI/TIA-222-G | © 2007 - 2016 by ATC IP LLC. All rights reserved.

Site Name: Beacon Falls, CT | Engineering Number: 64753521 | 1/15/2016 12:32:46 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W | 105 mph with No Ice | 30 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 1.20
Wind Load Factor : 1.60

Wind Importance 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		341.9	0.0					0.0	0.0	341.9	0.0	0.0	0.0
5.00		676.6	1,270.9					0.0	210.5	676.6	1,481.5	0.0	0.0
10.00		662.2	1,243.8					0.0	210.5	662.2	1,454.3	0.0	0.0
15.00		647.7	1,216.7					0.0	210.5	647.7	1,427.2	0.0	0.0
20.00		633.2	1,189.6					0.0	210.5	633.2	1,400.1	0.0	0.0
25.00		618.8	1,162.5					0.0	210.5	618.8	1,373.0	0.0	0.0
30.00		611.5	1,135.4					0.0	210.5	611.5	1,345.9	0.0	0.0
35.00		616.5	1,108.3					0.0	210.5	616.5	1,318.8	0.0	0.0
40.00		535.6	1,081.2					0.0	210.5	535.6	1,291.7	0.0	0.0
43.58	Bot - Section 2	315.6	758.2					0.0	150.9	315.6	909.0	0.0	0.0
45.00		380.1	551.1					0.0	59.7	380.1	610.7	0.0	0.0
49.50	Top - Section 1	321.5	1,723.8					0.0	189.5	321.5	1,913.3	0.0	0.0
50.00		354.6	87.6					0.0	21.1	354.6	108.6	0.0	0.0
55.00		644.5	863.0					0.0	210.5	644.5	1,073.5	0.0	0.0
60.00		643.2	840.0					0.0	210.5	643.2	1,050.6	0.0	0.0
65.00		640.0	817.1					0.0	210.5	640.0	1,027.6	0.0	0.0
70.00		635.3	794.1					0.0	210.5	635.3	1,004.7	0.0	0.0
75.00		629.1	771.2					0.0	210.5	629.1	981.7	0.0	0.0
80.00		621.7	748.3					0.0	210.5	621.7	958.8	0.0	0.0
85.00		375.2	725.3					0.0	210.5	375.2	935.9	0.0	0.0
86.08	Bot - Section 3	308.5	154.1					0.0	45.6	308.5	199.8	0.0	0.0
90.00		303.5	1,005.9					0.0	164.9	303.5	1,170.8	0.0	0.0
91.00	Top - Section 2	304.7	252.7					0.0	42.1	304.7	294.8	0.0	0.0
95.00		542.5	452.5					0.0	168.4	542.5	620.9	0.0	0.0
100.00		592.3	548.7					0.0	210.5	592.3	759.2	0.0	0.0
105.00		579.9	529.9					0.0	210.5	579.9	740.5	0.0	0.0
110.00		566.7	511.2					0.0	210.5	566.7	721.7	0.0	0.0
115.00		552.7	492.4					0.0	210.5	552.7	702.9	0.0	0.0
120.00		317.5	473.6					0.0	210.5	317.5	684.2	0.0	0.0
120.83	Bot - Section 4	268.5	77.1					0.0	35.1	268.5	112.2	0.0	0.0
125.00	Top - Section 3	485.2	634.4					0.0	175.5	485.2	809.9	0.0	0.0
130.00		514.6	296.5					0.0	210.5	514.6	507.1	0.0	0.0
135.00		376.6	284.0					0.0	210.5	376.6	494.5	0.0	0.0
137.50	Appertunance(s)	244.7	137.3	2,953.1	0.0	-4,050.0	2,001.6	0.0	105.3	3,197.8	2,244.2	0.0	0.0
140.00		263.9	134.2					0.0	82.6	263.9	216.8	0.0	0.0
143.00	Appertunance(s)	235.9	156.9	4,684.4	0.0	8,191.1	2,952.7	0.0	99.1	4,920.3	3,208.7	0.0	0.0
145.00		320.1	102.1					0.0	39.3	320.1	141.4	0.0	0.0
150.00		444.3	246.5					0.0	98.3	444.3	344.8	0.0	0.0
155.00		301.8	234.0					0.0	98.3	301.8	332.3	0.0	0.0
157.00	Appertunance(s)	207.9	90.1	4,973.8	0.0	0.0	3,553.4	0.0	39.3	5,181.7	3,682.9	0.0	0.0
160.00	Top - Section 4	217.3	131.4					0.0	0.0	217.3	131.4	0.0	0.0
165.00		188.3	327.7					0.0	0.0	188.3	327.7	0.0	0.0
170.00		151.7	327.7					0.0	0.0	151.7	327.7	0.0	0.0
173.00		57.1	196.6					0.0	0.0	57.1	196.6	0.0	0.0
								Totals:		31,862.5	40,640.1	0.00	0.00

Site Number: 302524 Code: ANSI/TIA-222-G © 2007 - 2016 by ATC IP LLC. All rights reserved.

Site Name: Beacon Falls, CT Engineering Number: 64753521 1/15/2016 12:32:48 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W 105 mph with No Ice 30 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 1.20

Wind Load Factor : 1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-40.56	-31.62	0.00	-3,557.67	0.00	3,557.67	4,086.01	2,043.01	8,107.89	4,004.18	0.00	0.00	0.899
5.00	-38.94	-31.12	0.00	-3,399.59	0.00	3,399.59	4,040.25	2,020.12	7,846.47	3,875.07	0.14	-0.27	0.887
10.00	-37.34	-30.63	0.00	-3,244.00	0.00	3,244.00	3,992.74	1,996.37	7,585.59	3,746.24	0.57	-0.54	0.876
15.00	-35.78	-30.14	0.00	-3,090.87	0.00	3,090.87	3,943.49	1,971.74	7,325.49	3,617.78	1.28	-0.81	0.864
20.00	-34.24	-29.65	0.00	-2,940.20	0.00	2,940.20	3,892.49	1,946.24	7,066.38	3,489.82	2.28	-1.09	0.852
25.00	-32.74	-29.17	0.00	-2,791.96	0.00	2,791.96	3,839.74	1,919.87	6,808.48	3,362.45	3.58	-1.38	0.839
30.00	-31.26	-28.68	0.00	-2,646.13	0.00	2,646.13	3,785.25	1,892.63	6,552.02	3,235.80	5.18	-1.67	0.826
35.00	-29.82	-28.18	0.00	-2,502.74	0.00	2,502.74	3,729.02	1,864.51	6,297.22	3,109.96	7.09	-1.97	0.813
40.00	-28.42	-27.72	0.00	-2,361.85	0.00	2,361.85	3,671.04	1,835.52	6,044.29	2,985.05	9.31	-2.27	0.799
43.58	-27.45	-27.44	0.00	-2,262.51	0.00	2,262.51	3,628.42	1,814.21	5,864.30	2,896.16	11.10	-2.49	0.789
45.00	-26.77	-27.12	0.00	-2,223.64	0.00	2,223.64	3,611.32	1,805.66	5,793.46	2,861.17	11.85	-2.58	0.785
49.50	-24.80	-26.78	0.00	-2,101.58	0.00	2,101.58	2,851.35	1,425.67	4,562.16	2,253.08	14.42	-2.86	0.942
50.00	-24.62	-26.50	0.00	-2,088.19	0.00	2,088.19	2,847.21	1,423.61	4,543.52	2,243.87	14.72	-2.89	0.940
55.00	-23.42	-25.95	0.00	-1,955.67	0.00	1,955.67	2,804.92	1,402.46	4,357.58	2,152.04	17.93	-3.24	0.917
60.00	-22.26	-25.38	0.00	-1,825.93	0.00	1,825.93	2,760.87	1,380.44	4,172.57	2,060.67	21.52	-3.60	0.894
65.00	-21.12	-24.81	0.00	-1,699.02	0.00	1,699.02	2,715.09	1,357.54	3,988.71	1,969.88	25.48	-3.96	0.871
70.00	-20.01	-24.23	0.00	-1,574.97	0.00	1,574.97	2,667.55	1,333.78	3,806.24	1,879.76	29.82	-4.32	0.846
75.00	-18.92	-23.65	0.00	-1,453.82	0.00	1,453.82	2,618.28	1,309.14	3,625.36	1,790.43	34.54	-4.69	0.820
80.00	-17.87	-23.06	0.00	-1,335.57	0.00	1,335.57	2,567.25	1,283.63	3,446.31	1,702.00	39.64	-5.06	0.792
85.00	-16.89	-22.67	0.00	-1,220.25	0.00	1,220.25	2,514.49	1,257.24	3,269.29	1,614.58	45.13	-5.43	0.763
86.08	-16.64	-22.40	0.00	-1,195.69	0.00	1,195.69	2,502.82	1,251.41	3,231.23	1,595.78	46.37	-5.51	0.756
90.00	-15.44	-22.03	0.00	-1,107.95	0.00	1,107.95	2,459.97	1,229.99	3,094.54	1,528.28	51.01	-5.81	0.732
91.00	-15.10	-21.75	0.00	-1,085.91	0.00	1,085.91	1,883.48	941.74	2,407.21	1,188.83	52.23	-5.89	0.922
95.00	-14.41	-21.24	0.00	-998.91	0.00	998.91	1,854.90	927.45	2,308.01	1,139.84	57.29	-6.19	0.885
100.00	-13.57	-20.66	0.00	-892.73	0.00	892.73	1,817.60	908.80	2,184.84	1,079.01	63.98	-6.61	0.835
105.00	-12.76	-20.09	0.00	-789.40	0.00	789.40	1,778.55	889.28	2,062.81	1,018.74	71.11	-7.03	0.783
110.00	-11.98	-19.52	0.00	-688.94	0.00	688.94	1,737.76	868.88	1,942.11	959.14	78.67	-7.43	0.726
115.00	-11.23	-18.96	0.00	-591.32	0.00	591.32	1,695.22	847.61	1,822.99	900.31	86.64	-7.83	0.664
120.00	-10.52	-18.59	0.00	-496.52	0.00	496.52	1,650.94	825.47	1,705.66	842.36	95.02	-8.20	0.596
120.83	-10.39	-18.34	0.00	-481.03	0.00	481.03	1,643.39	821.70	1,686.29	832.80	96.45	-8.27	0.584
125.00	-9.57	-17.79	0.00	-404.62	0.00	404.62	913.94	456.97	926.96	457.79	103.77	-8.56	0.896
130.00	-9.04	-17.26	0.00	-315.65	0.00	315.65	896.41	448.21	871.33	430.32	112.88	-8.88	0.745
135.00	-8.53	-16.85	0.00	-229.34	0.00	229.34	877.14	438.57	815.56	402.77	122.35	-9.26	0.581
137.50	-6.80	-13.35	0.00	-187.20	0.00	187.20	866.86	433.43	787.69	389.01	127.23	-9.43	0.490
140.00	-6.59	-13.07	0.00	-153.82	0.00	153.82	856.13	428.06	759.86	375.27	132.18	-9.58	0.419
143.00	-4.24	-7.69	0.00	-106.41	0.00	106.41	842.68	421.34	726.58	358.83	138.22	-9.73	0.302
145.00	-4.14	-7.36	0.00	-91.02	0.00	91.02	833.37	416.68	704.47	347.91	142.30	-9.81	0.267
150.00	-3.86	-6.87	0.00	-54.21	0.00	54.21	808.86	404.43	649.60	320.81	152.60	-9.96	0.174
155.00	-3.58	-6.52	0.00	-19.84	0.00	19.84	782.61	391.31	595.47	294.08	163.04	-10.05	0.072
157.00	-0.86	-0.78	0.00	-6.79	0.00	6.79	771.63	385.81	574.08	283.51	167.24	-10.07	0.025
160.00	-0.77	-0.54	0.00	-4.46	0.00	4.46	754.62	377.31	542.30	267.82	173.53	-10.08	0.018
160.00	-0.77	-0.54	0.00	-4.46	0.00	4.46	505.62	252.81	279.19	182.79	173.53	-10.08	0.026
165.00	-0.48	-0.30	0.00	-1.76	0.00	1.76	505.62	252.81	279.19	182.79	184.04	-10.09	0.011
170.00	-0.18	-0.09	0.00	-0.27	0.00	0.27	505.62	252.81	279.19	182.79	194.56	-10.09	0.002
173.00	0.00	-0.06	0.00	0.00	0.00	0.00	505.62	252.81	279.19	182.79	200.87	-10.10	0.000

Site Number: 302524 | Code: ANSI/TIA-222-G | © 2007 - 2016 by ATC IP LLC. All rights reserved.

Site Name: Beacon Falls, CT | Engineering Number: 64753521 | 1/15/2016 12:32:48 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W — 105 mph with No Ice (Reduced DL) — 30 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 0.90
Wind Load Factor : 1.60

Wind Importance 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		341.9	0.0					0.0	0.0	341.9	0.0	0.0	0.0
5.00		676.6	953.2					0.0	157.9	676.6	1,111.1	0.0	0.0
10.00		662.2	932.9					0.0	157.9	662.2	1,090.8	0.0	0.0
15.00		647.7	912.5					0.0	157.9	647.7	1,070.4	0.0	0.0
20.00		633.2	892.2					0.0	157.9	633.2	1,050.1	0.0	0.0
25.00		618.8	871.9					0.0	157.9	618.8	1,029.8	0.0	0.0
30.00		611.5	851.5					0.0	157.9	611.5	1,009.4	0.0	0.0
35.00		616.5	831.2					0.0	157.9	616.5	989.1	0.0	0.0
40.00		535.6	810.9					0.0	157.9	535.6	968.8	0.0	0.0
43.58	Bot - Section 2	315.6	568.6					0.0	113.2	315.6	681.8	0.0	0.0
45.00		380.1	413.3					0.0	44.7	380.1	458.0	0.0	0.0
49.50	Top - Section 1	321.5	1,292.9					0.0	142.1	321.5	1,435.0	0.0	0.0
50.00		354.6	65.7					0.0	15.8	354.6	81.5	0.0	0.0
55.00		644.5	647.2					0.0	157.9	644.5	805.1	0.0	0.0
60.00		643.2	630.0					0.0	157.9	643.2	787.9	0.0	0.0
65.00		640.0	612.8					0.0	157.9	640.0	770.7	0.0	0.0
70.00		635.3	595.6					0.0	157.9	635.3	753.5	0.0	0.0
75.00		629.1	578.4					0.0	157.9	629.1	736.3	0.0	0.0
80.00		621.7	561.2					0.0	157.9	621.7	719.1	0.0	0.0
85.00		375.2	544.0					0.0	157.9	375.2	701.9	0.0	0.0
86.08	Bot - Section 3	308.5	115.6					0.0	34.2	308.5	149.8	0.0	0.0
90.00		303.5	754.4					0.0	123.7	303.5	878.1	0.0	0.0
91.00	Top - Section 2	304.7	189.5					0.0	31.6	304.7	221.1	0.0	0.0
95.00		542.5	339.4					0.0	126.3	542.5	465.7	0.0	0.0
100.00		592.3	411.5					0.0	157.9	592.3	569.4	0.0	0.0
105.00		579.9	397.5					0.0	157.9	579.9	555.4	0.0	0.0
110.00		566.7	383.4					0.0	157.9	566.7	541.3	0.0	0.0
115.00		552.7	369.3					0.0	157.9	552.7	527.2	0.0	0.0
120.00		317.5	355.2					0.0	157.9	317.5	513.1	0.0	0.0
120.83	Bot - Section 4	268.5	57.8					0.0	26.3	268.5	84.2	0.0	0.0
125.00	Top - Section 3	485.2	475.8					0.0	131.6	485.2	607.4	0.0	0.0
130.00		514.6	222.4					0.0	157.9	514.6	380.3	0.0	0.0
135.00		376.6	213.0					0.0	157.9	376.6	370.9	0.0	0.0
137.50	Appertunance(s)	244.7	103.0	2,953.1	0.0	-4,050.0	1,501.2	0.0	79.0	3,197.8	1,683.1	0.0	0.0
140.00		263.9	100.6					0.0	61.9	263.9	162.6	0.0	0.0
143.00	Appertunance(s)	235.9	117.7	4,684.4	0.0	8,191.1	2,214.5	0.0	74.3	4,920.3	2,406.5	0.0	0.0
145.00		320.1	76.6					0.0	29.5	320.1	106.1	0.0	0.0
150.00		444.3	184.9					0.0	73.8	444.3	258.6	0.0	0.0
155.00		301.8	175.5					0.0	73.8	301.8	249.2	0.0	0.0
157.00	Appertunance(s)	207.9	67.6	4,973.8	0.0	0.0	2,665.1	0.0	29.5	5,181.7	2,762.1	0.0	0.0
160.00	Top - Section 4	217.3	98.5					0.0	0.0	217.3	98.5	0.0	0.0
165.00		188.3	245.8					0.0	0.0	188.3	245.8	0.0	0.0
170.00		151.7	245.8					0.0	0.0	151.7	245.8	0.0	0.0
173.00		57.1	147.5					0.0	0.0	57.1	147.5	0.0	0.0
								Totals:		31,862.5	30,480.0	0.00	0.00

Site Number: 302524 Code: ANSI/TIA-222-G © 2007 - 2016 by ATC IP LLC. All rights reserved.

Site Name: Beacon Falls, CT Engineering Number: 64753521 1/15/2016 12:32:49 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W 105 mph with No Ice (Reduced DL) 30 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 0.90

Wind Load Factor : 1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-30.41	-31.59	0.00	-3,500.57	0.00	3,500.57	4,086.01	2,043.01	8,107.89	4,004.18	0.00	0.00	0.882
5.00	-29.15	-31.05	0.00	-3,342.61	0.00	3,342.61	4,040.25	2,020.12	7,846.47	3,875.07	0.14	-0.26	0.870
10.00	-27.92	-30.51	0.00	-3,187.38	0.00	3,187.38	3,992.74	1,996.37	7,585.59	3,746.24	0.56	-0.53	0.858
15.00	-26.72	-29.98	0.00	-3,034.84	0.00	3,034.84	3,943.49	1,971.74	7,325.49	3,617.78	1.26	-0.80	0.846
20.00	-25.54	-29.45	0.00	-2,884.96	0.00	2,884.96	3,892.49	1,946.24	7,066.38	3,489.82	2.24	-1.08	0.833
25.00	-24.38	-28.93	0.00	-2,737.71	0.00	2,737.71	3,839.74	1,919.87	6,808.48	3,362.45	3.52	-1.36	0.821
30.00	-23.24	-28.41	0.00	-2,593.06	0.00	2,593.06	3,785.25	1,892.63	6,552.02	3,235.80	5.09	-1.64	0.808
35.00	-22.13	-27.88	0.00	-2,451.01	0.00	2,451.01	3,729.02	1,864.51	6,297.22	3,109.96	6.96	-1.93	0.794
40.00	-21.06	-27.40	0.00	-2,311.63	0.00	2,311.63	3,671.04	1,835.52	6,044.29	2,985.05	9.14	-2.23	0.780
43.58	-20.32	-27.11	0.00	-2,213.45	0.00	2,213.45	3,628.42	1,814.21	5,864.30	2,896.16	10.90	-2.44	0.770
45.00	-19.79	-26.77	0.00	-2,175.04	0.00	2,175.04	3,611.32	1,805.66	5,793.46	2,861.17	11.64	-2.53	0.766
49.50	-18.31	-26.43	0.00	-2,054.56	0.00	2,054.56	2,851.35	1,425.67	4,562.16	2,253.08	14.15	-2.80	0.919
50.00	-18.16	-26.14	0.00	-2,041.35	0.00	2,041.35	2,847.21	1,423.61	4,543.52	2,243.87	14.45	-2.84	0.916
55.00	-17.23	-25.55	0.00	-1,910.67	0.00	1,910.67	2,804.92	1,402.46	4,357.58	2,152.04	17.60	-3.18	0.894
60.00	-16.33	-24.97	0.00	-1,782.89	0.00	1,782.89	2,760.87	1,380.44	4,172.57	2,060.67	21.11	-3.53	0.871
65.00	-15.45	-24.37	0.00	-1,658.06	0.00	1,658.06	2,715.09	1,357.54	3,988.71	1,969.88	24.99	-3.88	0.848
70.00	-14.60	-23.78	0.00	-1,536.19	0.00	1,536.19	2,667.55	1,333.78	3,806.24	1,879.76	29.24	-4.23	0.823
75.00	-13.77	-23.18	0.00	-1,417.30	0.00	1,417.30	2,618.28	1,309.14	3,625.36	1,790.43	33.86	-4.59	0.797
80.00	-12.96	-22.58	0.00	-1,301.40	0.00	1,301.40	2,567.25	1,283.63	3,446.31	1,702.00	38.86	-4.95	0.770
85.00	-12.21	-22.19	0.00	-1,188.48	0.00	1,188.48	2,514.49	1,257.24	3,269.29	1,614.58	44.23	-5.31	0.741
86.08	-12.02	-21.91	0.00	-1,164.43	0.00	1,164.43	2,502.82	1,251.41	3,231.23	1,595.78	45.44	-5.39	0.735
90.00	-11.11	-21.56	0.00	-1,078.61	0.00	1,078.61	2,459.97	1,229.99	3,094.54	1,528.28	49.98	-5.68	0.711
91.00	-10.85	-21.27	0.00	-1,057.05	0.00	1,057.05	1,883.48	941.74	2,407.21	1,188.83	51.18	-5.76	0.895
95.00	-10.31	-20.75	0.00	-971.97	0.00	971.97	1,854.90	927.45	2,308.01	1,139.84	56.12	-6.05	0.859
100.00	-9.67	-20.17	0.00	-868.24	0.00	868.24	1,817.60	908.80	2,184.84	1,079.01	62.66	-6.46	0.810
105.00	-9.05	-19.59	0.00	-767.42	0.00	767.42	1,778.55	889.28	2,062.81	1,018.74	69.63	-6.87	0.759
110.00	-8.45	-19.02	0.00	-669.47	0.00	669.47	1,737.76	868.88	1,942.11	959.14	77.02	-7.26	0.703
115.00	-7.88	-18.45	0.00	-574.39	0.00	574.39	1,695.22	847.61	1,822.99	900.31	84.81	-7.64	0.643
120.00	-7.35	-18.10	0.00	-482.12	0.00	482.12	1,650.94	825.47	1,705.66	842.36	92.99	-8.01	0.577
120.83	-7.25	-17.84	0.00	-467.04	0.00	467.04	1,643.39	821.70	1,686.29	832.80	94.39	-8.07	0.566
125.00	-6.63	-17.31	0.00	-392.71	0.00	392.71	913.94	456.97	926.96	457.79	101.53	-8.35	0.867
130.00	-6.23	-16.78	0.00	-306.17	0.00	306.17	896.41	448.21	871.33	430.32	110.42	-8.66	0.720
135.00	-5.84	-16.38	0.00	-222.27	0.00	222.27	877.14	438.57	815.56	402.77	119.67	-9.04	0.560
137.50	-4.65	-12.97	0.00	-181.33	0.00	181.33	866.86	433.43	787.69	389.01	124.42	-9.20	0.472
140.00	-4.50	-12.69	0.00	-148.91	0.00	148.91	856.13	428.06	759.86	375.27	129.26	-9.34	0.403
143.00	-2.92	-7.45	0.00	-102.65	0.00	102.65	842.68	421.34	726.58	358.83	135.15	-9.49	0.290
145.00	-2.85	-7.12	0.00	-87.75	0.00	87.75	833.37	416.68	704.47	347.91	139.12	-9.56	0.256
150.00	-2.66	-6.65	0.00	-52.15	0.00	52.15	808.86	404.43	649.60	320.81	149.18	-9.71	0.166
155.00	-2.46	-6.31	0.00	-18.92	0.00	18.92	782.61	391.31	595.47	294.08	159.36	-9.80	0.068
157.00	-0.62	-0.73	0.00	-6.30	0.00	6.30	771.63	385.81	574.08	283.51	163.45	-9.82	0.023
160.00	-0.56	-0.50	0.00	-4.11	0.00	4.11	754.62	377.31	542.30	267.82	169.59	-9.83	0.016
160.00	-0.56	-0.50	0.00	-4.11	0.00	4.11	505.62	252.81	279.19	182.79	169.59	-9.83	0.024
165.00	-0.35	-0.27	0.00	-1.61	0.00	1.61	505.62	252.81	279.19	182.79	179.83	-9.84	0.009
170.00	-0.14	-0.08	0.00	-0.24	0.00	0.24	505.62	252.81	279.19	182.79	190.08	-9.84	0.002
173.00	0.00	-0.06	0.00	0.00	0.00	0.00	505.62	252.81	279.19	182.79	196.23	-9.84	0.000

Site Number: 302524	**Code:** ANSI/TIA-222-G	© 2007 - 2016 by ATC IP LLC. All rights reserved.	
Site Name: Beacon Falls, CT	**Engineering Number:** 64753521	**1/15/2016 12:32:49 PM**	
Customer: AT&T MOBILITY			

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 0.75 in Radial Ice — 29 Iterations

Gust Response Factor : 1.10 | Ice Dead Load Factor : 1.00 | Wind Importance Factor : 1.00

Dead Load Factor : 1.20 | Ice Importance 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		60.9	0.0					0.0	0.0	60.9	0.0	0.0	0.0
5.00		120.8	1,636.0					0.0	210.5	120.8	1,846.6	0.0	0.0
10.00		118.8	1,643.9					0.0	210.5	118.8	1,854.4	0.0	0.0
15.00		116.6	1,629.4					0.0	210.5	116.6	1,839.9	0.0	0.0
20.00		114.4	1,607.5					0.0	210.5	114.4	1,818.1	0.0	0.0
25.00		112.1	1,581.9					0.0	210.5	112.1	1,792.4	0.0	0.0
30.00		111.0	1,553.9					0.0	210.5	111.0	1,764.4	0.0	0.0
35.00		112.2	1,524.2					0.0	210.5	112.2	1,734.7	0.0	0.0
40.00		97.7	1,493.3					0.0	210.5	97.7	1,703.8	0.0	0.0
43.58	Bot - Section 2	57.7	1,051.6					0.0	150.9	57.7	1,202.5	0.0	0.0
45.00		69.5	668.9					0.0	59.7	69.5	728.6	0.0	0.0
49.50	Top - Section 1	58.8	2,092.4					0.0	189.5	58.8	2,281.9	0.0	0.0
50.00		65.0	128.6					0.0	21.1	65.0	149.7	0.0	0.0
55.00		118.4	1,265.7					0.0	210.5	118.4	1,476.2	0.0	0.0
60.00		118.5	1,236.1					0.0	210.5	118.5	1,446.7	0.0	0.0
65.00		118.2	1,206.1					0.0	210.5	118.2	1,416.7	0.0	0.0
70.00		117.7	1,175.7					0.0	210.5	117.7	1,386.3	0.0	0.0
75.00		116.9	1,145.0					0.0	210.5	116.9	1,355.5	0.0	0.0
80.00		115.9	1,113.9					0.0	210.5	115.9	1,324.4	0.0	0.0
85.00		70.1	1,082.5					0.0	210.5	70.1	1,293.1	0.0	0.0
86.08	Bot - Section 3	57.7	231.3					0.0	45.6	57.7	276.9	0.0	0.0
90.00		56.8	1,283.8					0.0	164.9	56.8	1,448.7	0.0	0.0
91.00	Top - Section 2	57.2	323.5					0.0	42.1	57.2	365.6	0.0	0.0
95.00		102.0	729.2					0.0	168.4	102.0	897.6	0.0	0.0
100.00		111.8	885.3					0.0	210.5	111.8	1,095.8	0.0	0.0
105.00		109.9	857.3					0.0	210.5	109.9	1,067.8	0.0	0.0
110.00		107.9	829.0					0.0	210.5	107.9	1,039.6	0.0	0.0
115.00		105.7	800.6					0.0	210.5	105.7	1,011.2	0.0	0.0
120.00		60.9	772.1					0.0	210.5	60.9	982.6	0.0	0.0
120.83	Bot - Section 4	51.7	126.7					0.0	35.1	51.7	161.8	0.0	0.0
125.00	Top - Section 3	93.6	878.4					0.0	175.5	93.6	1,053.9	0.0	0.0
130.00		99.8	579.1					0.0	210.5	99.8	789.7	0.0	0.0
135.00		73.3	556.5					0.0	210.5	73.3	767.0	0.0	0.0
137.50	Appertunance(s)	47.9	271.1	575.0	0.0	-622.2	3,756.8	0.0	105.3	622.9	4,133.1	0.0	0.0
140.00		51.8	265.4					0.0	82.6	51.8	348.0	0.0	0.0
143.00	Appertunance(s)	46.5	310.6	876.0	0.0	1,367.1	6,215.0	0.0	99.1	922.5	6,624.7	0.0	0.0
145.00		63.4	202.9					0.0	39.3	63.4	242.2	0.0	0.0
150.00		88.5	487.7					0.0	98.3	88.5	586.0	0.0	0.0
155.00		60.5	464.5					0.0	98.3	60.5	562.9	0.0	0.0
157.00	Appertunance(s)	42.0	180.7	941.6	0.0	0.0	7,129.1	0.0	39.3	983.6	7,349.1	0.0	0.0
160.00	Top - Section 4	58.2	263.4					0.0	0.0	58.2	263.4	0.0	0.0
165.00		66.8	497.0					0.0	0.0	66.8	497.0	0.0	0.0
170.00		53.8	497.6					0.0	0.0	53.8	497.6	0.0	0.0
173.00		20.3	298.8					0.0	0.0	20.3	298.8	0.0	0.0
								Totals:		6,071.93	60,776.7	0.00	0.00

Site Number:	**302524**	**Code: ANSI/TIA-222-G**	*© 2007 - 2016 by ATC IP LLC. All rights reserved.*
Site Name:	**Beacon Falls, CT**	**Engineering Number: 64753521**	**1/15/2016 12:32:51 PM**
Customer:	**AT&T MOBILITY**		

Load Case: **1.2D + 1.0Di + 1.0Wi** **50 mph with 0.75 in Radial Ice** **29 Iterations**

Gust Response Factor : 1.10 **Ice Dead Load Factor : 1.00** **Wind Importance Factor : 1.00**
Dead Load Factor : 1.20 **Ice Importance Factor : 1.00**
Wind Load Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-60.77	-6.04	0.00	-730.06	0.00	730.06	4,086.01	2,043.01	8,107.89	4,004.18	0.00	0.00	0.197
5.00	-58.92	-5.98	0.00	-699.86	0.00	699.86	4,040.25	2,020.12	7,846.47	3,875.07	0.03	-0.05	0.195
10.00	-57.06	-5.91	0.00	-669.98	0.00	669.98	3,992.74	1,996.37	7,585.59	3,746.24	0.12	-0.11	0.193
15.00	-55.22	-5.84	0.00	-640.43	0.00	640.43	3,943.49	1,971.74	7,325.49	3,617.78	0.26	-0.17	0.191
20.00	-53.39	-5.78	0.00	-611.21	0.00	611.21	3,892.49	1,946.24	7,066.38	3,489.82	0.47	-0.23	0.189
25.00	-51.59	-5.71	0.00	-582.32	0.00	582.32	3,839.74	1,919.87	6,808.48	3,362.45	0.74	-0.29	0.187
30.00	-49.82	-5.65	0.00	-553.75	0.00	553.75	3,785.25	1,892.63	6,552.02	3,235.80	1.07	-0.35	0.184
35.00	-48.08	-5.57	0.00	-525.52	0.00	525.52	3,729.02	1,864.51	6,297.22	3,109.96	1.47	-0.41	0.182
40.00	-46.38	-5.51	0.00	-497.65	0.00	497.65	3,671.04	1,835.52	6,044.29	2,985.05	1.93	-0.47	0.179
43.58	-45.17	-5.47	0.00	-477.91	0.00	477.91	3,628.42	1,814.21	5,864.30	2,896.16	2.30	-0.52	0.177
45.00	-44.44	-5.42	0.00	-470.17	0.00	470.17	3,611.32	1,805.66	5,793.46	2,861.17	2.46	-0.54	0.177
49.50	-42.16	-5.36	0.00	-445.78	0.00	445.78	2,851.35	1,425.67	4,562.16	2,253.08	2.99	-0.60	0.213
50.00	-42.00	-5.33	0.00	-443.10	0.00	443.10	2,847.21	1,423.61	4,543.52	2,243.87	3.05	-0.60	0.212
55.00	-40.52	-5.25	0.00	-416.46	0.00	416.46	2,804.92	1,402.46	4,357.58	2,152.04	3.73	-0.68	0.208
60.00	-39.07	-5.16	0.00	-390.24	0.00	390.24	2,760.87	1,380.44	4,172.57	2,060.67	4.48	-0.75	0.204
65.00	-37.65	-5.07	0.00	-364.44	0.00	364.44	2,715.09	1,357.54	3,988.71	1,969.88	5.31	-0.83	0.199
70.00	-36.26	-4.99	0.00	-339.07	0.00	339.07	2,667.55	1,333.78	3,806.24	1,879.76	6.22	-0.91	0.194
75.00	-34.90	-4.89	0.00	-314.14	0.00	314.14	2,618.28	1,309.14	3,625.36	1,790.43	7.22	-0.99	0.189
80.00	-33.57	-4.80	0.00	-289.67	0.00	289.67	2,567.25	1,283.63	3,446.31	1,702.00	8.29	-1.07	0.183
85.00	-32.27	-4.73	0.00	-265.67	0.00	265.67	2,514.49	1,257.24	3,269.29	1,614.58	9.46	-1.15	0.177
86.08	-31.99	-4.69	0.00	-260.54	0.00	260.54	2,502.82	1,251.41	3,231.23	1,595.78	9.72	-1.17	0.176
90.00	-30.54	-4.63	0.00	-242.15	0.00	242.15	2,459.97	1,229.99	3,094.54	1,528.28	10.70	-1.23	0.171
91.00	-30.17	-4.59	0.00	-237.53	0.00	237.53	1,883.48	941.74	2,407.21	1,188.83	10.96	-1.25	0.216
95.00	-29.27	-4.50	0.00	-219.19	0.00	219.19	1,854.90	927.45	2,308.01	1,139.84	12.04	-1.31	0.208
100.00	-28.17	-4.41	0.00	-196.67	0.00	196.67	1,817.60	908.80	2,184.84	1,079.01	13.46	-1.41	0.198
105.00	-27.10	-4.32	0.00	-174.61	0.00	174.61	1,778.55	889.28	2,062.81	1,018.74	14.99	-1.50	0.187
110.00	-26.06	-4.22	0.00	-153.03	0.00	153.03	1,737.76	868.88	1,942.11	959.14	16.61	-1.59	0.175
115.00	-25.05	-4.13	0.00	-131.91	0.00	131.91	1,695.22	847.61	1,822.99	900.31	18.32	-1.68	0.161
120.00	-24.06	-4.06	0.00	-111.29	0.00	111.29	1,650.94	825.47	1,705.66	842.36	20.12	-1.76	0.147
120.83	-23.90	-4.02	0.00	-107.91	0.00	107.91	1,643.39	821.70	1,686.29	832.80	20.43	-1.78	0.144
125.00	-22.84	-3.92	0.00	-91.18	0.00	91.18	913.94	456.97	926.96	457.79	22.01	-1.84	0.224
130.00	-22.05	-3.82	0.00	-71.60	0.00	71.60	896.41	448.21	871.33	430.32	23.98	-1.91	0.191
135.00	-21.28	-3.75	0.00	-52.49	0.00	52.49	877.14	438.57	815.56	402.77	26.03	-2.00	0.155
137.50	-17.17	-2.99	0.00	-43.12	0.00	43.12	866.86	433.43	787.69	389.01	27.09	-2.04	0.131
140.00	-16.83	-2.93	0.00	-35.66	0.00	35.66	856.13	428.06	759.86	375.27	28.16	-2.07	0.115
143.00	-10.24	-1.77	0.00	-25.49	0.00	25.49	842.68	421.34	726.58	358.83	29.48	-2.11	0.083
145.00	-10.00	-1.71	0.00	-21.94	0.00	21.94	833.37	416.68	704.47	347.91	30.37	-2.13	0.075
150.00	-9.41	-1.60	0.00	-13.40	0.00	13.40	808.86	404.43	649.60	320.81	32.62	-2.17	0.053
155.00	-8.85	-1.52	0.00	-5.39	0.00	5.39	782.61	391.31	595.47	294.08	34.90	-2.19	0.030
157.00	-1.55	-0.26	0.00	-2.35	0.00	2.35	771.63	385.81	574.08	283.51	35.81	-2.19	0.010
160.00	-1.29	-0.19	0.00	-1.57	0.00	1.57	754.62	377.31	542.30	267.82	37.19	-2.20	0.008
160.00	-1.29	-0.19	0.00	-1.57	0.00	1.57	505.62	252.81	279.19	182.79	37.19	-2.20	0.011
165.00	-0.79	-0.10	0.00	-0.62	0.00	0.62	505.62	252.81	279.19	182.79	39.50	-2.20	0.005
170.00	-0.30	-0.03	0.00	-0.10	0.00	0.10	505.62	252.81	279.19	182.79	41.80	-2.20	0.001
173.00	0.00	-0.02	0.00	0.00	0.00	0.00	505.62	252.81	279.19	182.79	43.18	-2.20	0.000

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Load Case: 1.0D + 1.0W Serviceability 60 mph 28 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00
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		69.8	0.0					0.0	0.0	69.8	0.0	0.0	0.0
5.00		138.1	1,059.1					0.0	175.5	138.1	1,234.5	0.0	0.0
10.00		135.1	1,036.5					0.0	175.5	135.1	1,212.0	0.0	0.0
15.00		132.2	1,013.9					0.0	175.5	132.2	1,189.4	0.0	0.0
20.00		129.2	991.3					0.0	175.5	129.2	1,166.8	0.0	0.0
25.00		126.3	968.7					0.0	175.5	126.3	1,144.2	0.0	0.0
30.00		124.8	946.1					0.0	175.5	124.8	1,121.6	0.0	0.0
35.00		125.8	923.6					0.0	175.5	125.8	1,099.0	0.0	0.0
40.00		109.3	901.0					0.0	175.5	109.3	1,076.4	0.0	0.0
43.58	Bot - Section 2	64.4	631.8					0.0	125.7	64.4	757.5	0.0	0.0
45.00		77.6	459.2					0.0	49.7	77.6	508.9	0.0	0.0
49.50	Top - Section 1	65.6	1,436.5					0.0	157.9	65.6	1,594.4	0.0	0.0
50.00		72.4	73.0					0.0	17.5	72.4	90.5	0.0	0.0
55.00		131.5	719.1					0.0	175.5	131.5	894.6	0.0	0.0
60.00		131.3	700.0					0.0	175.5	131.3	875.5	0.0	0.0
65.00		130.6	680.9					0.0	175.5	130.6	856.4	0.0	0.0
70.00		129.6	661.8					0.0	175.5	129.6	837.2	0.0	0.0
75.00		128.4	642.7					0.0	175.5	128.4	818.1	0.0	0.0
80.00		126.9	623.6					0.0	175.5	126.9	799.0	0.0	0.0
85.00		76.6	604.4					0.0	175.5	76.6	779.9	0.0	0.0
86.08	Bot - Section 3	63.0	128.4					0.0	38.0	63.0	166.5	0.0	0.0
90.00		61.9	838.2					0.0	137.4	61.9	975.7	0.0	0.0
91.00	Top - Section 2	62.2	210.6					0.0	35.1	62.2	245.7	0.0	0.0
95.00		110.7	377.1					0.0	140.4	110.7	517.4	0.0	0.0
100.00		120.9	457.3					0.0	175.5	120.9	632.7	0.0	0.0
105.00		118.4	441.6					0.0	175.5	118.4	617.1	0.0	0.0
110.00		115.7	426.0					0.0	175.5	115.7	601.4	0.0	0.0
115.00		112.8	410.3					0.0	175.5	112.8	585.8	0.0	0.0
120.00		64.8	394.7					0.0	175.5	64.8	570.2	0.0	0.0
120.83	Bot - Section 4	54.8	64.3					0.0	29.2	54.8	93.5	0.0	0.0
125.00	Top - Section 3	99.0	528.7					0.0	146.2	99.0	674.9	0.0	0.0
130.00		105.0	247.1					0.0	175.4	105.0	422.5	0.0	0.0
135.00		76.9	236.7					0.0	175.5	76.9	412.1	0.0	0.0
137.50	Appertunance(s)	49.9	114.4	602.7	0.0	-826.5	1,668.0	0.0	87.7	652.6	1,870.2	0.0	0.0
140.00		53.9	111.8					0.0	68.8	53.9	180.6	0.0	0.0
143.00	Appertunance(s)	48.1	130.7	956.0	0.0	1,671.7	2,460.6	0.0	82.6	1,004.1	2,673.9	0.0	0.0
145.00		65.3	85.1					0.0	32.8	65.3	117.9	0.0	0.0
150.00		90.7	205.4					0.0	82.0	90.7	287.3	0.0	0.0
155.00		61.6	195.0					0.0	82.0	61.6	276.9	0.0	0.0
157.00	Appertunance(s)	42.4	75.1	1,015.1	0.0	0.0	2,961.2	0.0	32.8	1,057.5	3,069.0	0.0	0.0
160.00	Top - Section 4	44.4	109.5					0.0	0.0	44.4	109.5	0.0	0.0
165.00		38.4	273.1					0.0	0.0	38.4	273.1	0.0	0.0
170.00		31.0	273.1					0.0	0.0	31.0	273.1	0.0	0.0
173.00		11.7	163.9					0.0	0.0	11.7	163.9	0.0	0.0
								Totals:		6,502.57	33,866.7	0.00	0.00

Site Number:	**302524**	**Code:**	**ANSI/TIA-222-G**	*© 2007 - 2016 by ATC IP LLC. All rights reserved.*	
Site Name:	**Beacon Falls, CT**	**Engineering Number:**	**64753521**		**1/15/2016 12:32:52 PM**
Customer:	**AT&T MOBILITY**				

Load Case: **1.0D + 1.0W** **Serviceability 60 mph** **28 Iterations**

Gust Response Factor : 1.10 **Wind Importance Factor : 1.00**
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-33.86	-6.45	0.00	-720.92	0.00	720.92	4,086.01	2,043.01	8,107.89	4,004.18	0.00	0.00	0.188
5.00	-32.62	-6.34	0.00	-688.68	0.00	688.68	4,040.25	2,020.12	7,846.47	3,875.07	0.03	-0.05	0.186
10.00	-31.41	-6.23	0.00	-656.97	0.00	656.97	3,992.74	1,996.37	7,585.59	3,746.24	0.11	-0.11	0.183
15.00	-30.21	-6.13	0.00	-625.80	0.00	625.80	3,943.49	1,971.74	7,325.49	3,617.78	0.26	-0.16	0.181
20.00	-29.04	-6.02	0.00	-595.16	0.00	595.16	3,892.49	1,946.24	7,066.38	3,489.82	0.46	-0.22	0.178
25.00	-27.89	-5.92	0.00	-565.03	0.00	565.03	3,839.74	1,919.87	6,808.48	3,362.45	0.73	-0.28	0.175
30.00	-26.76	-5.82	0.00	-535.43	0.00	535.43	3,785.25	1,892.63	6,552.02	3,235.80	1.05	-0.34	0.173
35.00	-25.66	-5.71	0.00	-506.33	0.00	506.33	3,729.02	1,864.51	6,297.22	3,109.96	1.44	-0.40	0.170
40.00	-24.58	-5.62	0.00	-477.77	0.00	477.77	3,671.04	1,835.52	6,044.29	2,985.05	1.89	-0.46	0.167
43.58	-23.82	-5.56	0.00	-457.63	0.00	457.63	3,628.42	1,814.21	5,864.30	2,896.16	2.25	-0.50	0.165
45.00	-23.30	-5.49	0.00	-449.76	0.00	449.76	3,611.32	1,805.66	5,793.46	2,861.17	2.40	-0.52	0.164
49.50	-21.71	-5.42	0.00	-425.04	0.00	425.04	2,851.35	1,425.67	4,562.16	2,253.08	2.92	-0.58	0.196
50.00	-21.61	-5.37	0.00	-422.32	0.00	422.32	2,847.21	1,423.61	4,543.52	2,243.87	2.98	-0.59	0.196
55.00	-20.71	-5.25	0.00	-395.49	0.00	395.49	2,804.92	1,402.46	4,357.58	2,152.04	3.63	-0.66	0.191
60.00	-19.83	-5.13	0.00	-369.24	0.00	369.24	2,760.87	1,380.44	4,172.57	2,060.67	4.36	-0.73	0.186
65.00	-18.97	-5.02	0.00	-343.57	0.00	343.57	2,715.09	1,357.54	3,988.71	1,969.88	5.16	-0.80	0.181
70.00	-18.13	-4.90	0.00	-318.49	0.00	318.49	2,667.55	1,333.78	3,806.24	1,879.76	6.04	-0.87	0.176
75.00	-17.31	-4.78	0.00	-294.00	0.00	294.00	2,618.28	1,309.14	3,625.36	1,790.43	6.99	-0.95	0.171
80.00	-16.51	-4.66	0.00	-270.10	0.00	270.10	2,567.25	1,283.63	3,446.31	1,702.00	8.03	-1.02	0.165
85.00	-15.73	-4.58	0.00	-246.81	0.00	246.81	2,514.49	1,257.24	3,269.29	1,614.58	9.14	-1.10	0.159
86.08	-15.56	-4.53	0.00	-241.84	0.00	241.84	2,502.82	1,251.41	3,231.23	1,595.78	9.39	-1.12	0.158
90.00	-14.58	-4.45	0.00	-224.12	0.00	224.12	2,459.97	1,229.99	3,094.54	1,528.28	10.33	-1.18	0.153
91.00	-14.33	-4.40	0.00	-219.66	0.00	219.66	1,883.48	941.74	2,407.21	1,188.83	10.58	-1.19	0.192
95.00	-13.81	-4.29	0.00	-202.08	0.00	202.08	1,854.90	927.45	2,308.01	1,139.84	11.60	-1.25	0.185
100.00	-13.18	-4.18	0.00	-180.62	0.00	180.62	1,817.60	908.80	2,184.84	1,079.01	12.96	-1.34	0.175
105.00	-12.56	-4.06	0.00	-159.74	0.00	159.74	1,778.55	889.28	2,062.81	1,018.74	14.41	-1.42	0.164
110.00	-11.95	-3.95	0.00	-139.43	0.00	139.43	1,737.76	868.88	1,942.11	959.14	15.94	-1.50	0.152
115.00	-11.36	-3.83	0.00	-119.69	0.00	119.69	1,695.22	847.61	1,822.99	900.31	17.56	-1.58	0.140
120.00	-10.79	-3.76	0.00	-100.52	0.00	100.52	1,650.94	825.47	1,705.66	842.36	19.26	-1.66	0.126
120.83	-10.70	-3.71	0.00	-97.38	0.00	97.38	1,643.39	821.70	1,686.29	832.80	19.55	-1.67	0.123
125.00	-10.02	-3.60	0.00	-81.92	0.00	81.92	913.94	456.97	926.96	457.79	21.03	-1.73	0.190
130.00	-9.60	-3.50	0.00	-63.90	0.00	63.90	896.41	448.21	871.33	430.32	22.88	-1.80	0.159
135.00	-9.19	-3.42	0.00	-46.42	0.00	46.42	877.14	438.57	815.56	402.77	24.81	-1.87	0.126
137.50	-7.34	-2.71	0.00	-37.88	0.00	37.88	866.86	433.43	787.69	389.01	25.80	-1.91	0.106
140.00	-7.16	-2.65	0.00	-31.11	0.00	31.11	856.13	428.06	759.86	375.27	26.81	-1.94	0.091
143.00	-4.52	-1.56	0.00	-21.49	0.00	21.49	842.68	421.34	726.58	358.83	28.03	-1.97	0.065
145.00	-4.40	-1.49	0.00	-18.38	0.00	18.38	833.37	416.68	704.47	347.91	28.86	-1.98	0.058
150.00	-4.12	-1.39	0.00	-10.93	0.00	10.93	808.86	404.43	649.60	320.81	30.96	-2.02	0.039
155.00	-3.84	-1.32	0.00	-3.98	0.00	3.98	782.61	391.31	595.47	294.08	33.08	-2.03	0.018
157.00	-0.81	-0.15	0.00	-1.34	0.00	1.34	771.63	385.81	574.08	283.51	33.93	-2.04	0.006
160.00	-0.71	-0.11	0.00	-0.87	0.00	0.87	754.62	377.31	542.30	267.82	35.21	-2.04	0.004
160.00	-0.71	-0.11	0.00	-0.87	0.00	0.87	505.62	252.81	279.19	182.79	35.21	-2.04	0.006
165.00	-0.44	-0.06	0.00	-0.34	0.00	0.34	505.62	252.81	279.19	182.79	37.35	-2.04	0.003
170.00	-0.16	-0.02	0.00	-0.05	0.00	0.05	505.62	252.81	279.19	182.79	39.49	-2.04	0.001
173.00	0.00	-0.01	0.00	0.00	0.00	0.00	505.62	252.81	279.19	182.79	40.77	-2.04	0.000

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Equivalent Lateral Forces Method Analysis

(Based on ASCE7-10 Chapters 11, 12, 15)

Spectral Response Acceleration for Short Period (S_s):	0.19
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Long-Period Transition Period (T_L):	6
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coeffiecient F_v:	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.21
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Seismic Response Coefficient (C_s):	0.03
Upper Limit C_s	0.03
Lower Limit C_s	0.03
Period based on Rayleigh Method (sec):	2.92
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	2.00
Total Unfactored Dead Load:	33.87 k
Seismic Base Shear (E):	1.32 k

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Equivalent Modal Forces Analysis

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period (S_s):	0.19
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.21
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	2.92
Redundancy Factor (p):	1.30

Load Case (1.2 + 0.2Sds) * DL + E ELFM **Seismic Equivalent Lateral Forces Method**

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
43	171.50	164	1.857	1.812	1.079	0.367	52	141
42	167.50	273	1.772	1.413	0.929	0.310	73	234
41	162.50	273	1.668	1.003	0.766	0.244	58	234
40	158.50	109	1.586	0.737	0.652	0.196	19	94
39	156.00	108	1.537	0.596	0.588	0.169	16	93
38	152.50	277	1.469	0.427	0.506	0.133	32	238
37	147.50	287	1.374	0.236	0.405	0.087	22	247
36	144.00	118	1.309	0.134	0.345	0.058	6	101
35	141.50	213	1.264	0.074	0.306	0.040	7	183
34	138.75	181	1.216	0.020	0.267	0.021	3	155
33	136.25	202	1.172	-0.020	0.235	0.006	1	174
32	132.50	412	1.109	-0.065	0.192	-0.015	-5	354
31	127.50	423	1.027	-0.102	0.145	-0.036	-13	363
30	122.92	675	0.954	-0.118	0.110	-0.051	-30	579
29	120.42	94	0.916	-0.121	0.094	-0.056	-5	80
28	117.50	570	0.872	-0.121	0.077	-0.061	-30	490
27	112.50	586	0.799	-0.112	0.054	-0.064	-32	503
26	107.50	601	0.730	-0.096	0.036	-0.061	-32	516
25	102.50	617	0.663	-0.075	0.023	-0.051	-27	530
24	97.50	633	0.600	-0.053	0.015	-0.036	-19	543
23	93.00	517	0.546	-0.033	0.010	-0.018	-8	444
22	90.50	246	0.517	-0.022	0.008	-0.008	-2	211
21	88.04	976	0.489	-0.012	0.007	0.002	2	838
20	85.54	166	0.462	-0.003	0.006	0.012	2	143
19	82.50	780	0.430	0.008	0.006	0.023	16	670
18	77.50	799	0.379	0.024	0.007	0.039	27	686
17	72.50	818	0.332	0.038	0.010	0.050	35	702
16	67.50	837	0.288	0.048	0.013	0.057	41	719
15	62.50	856	0.247	0.056	0.017	0.061	45	735
14	57.50	875	0.209	0.062	0.022	0.062	47	752
13	52.50	895	0.174	0.066	0.027	0.062	48	768
12	49.75	91	0.156	0.067	0.029	0.062	5	78
11	47.25	1,594	0.141	0.069	0.031	0.061	85	1,369
10	44.29	509	0.124	0.070	0.034	0.061	27	437

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9	41.79	758	0.110	0.070	0.036	0.060	39	650
8	37.50	1,076	0.089	0.071	0.039	0.059	55	924
7	32.50	1,099	0.067	0.072	0.041	0.058	55	944
6	27.50	1,122	0.048	0.071	0.042	0.056	55	963
5	22.50	1,144	0.032	0.069	0.041	0.055	54	982
4	17.50	1,167	0.019	0.064	0.038	0.052	52	1,002
3	12.50	1,189	0.010	0.055	0.032	0.046	48	1,021
2	7.50	1,212	0.004	0.040	0.022	0.036	38	1,041
1	2.50	1,235	0.000	0.016	0.009	0.017	18	1,060
KMW KDXCV0012017	157.00	40	1.557	0.650	0.613	0.180	6	34
Powerwave Allgon TT0	157.00	132	1.557	0.650	0.613	0.180	21	113
Raycap DC6-48-60-18-	157.00	20	1.557	0.650	0.613	0.180	3	17
Ericsson RRUS-11 (50	157.00	150	1.557	0.650	0.613	0.180	23	129
Ericsson RRUS 12 w/	157.00	214	1.557	0.650	0.613	0.180	33	184
KMW AM-X-CD-14-65-00	157.00	218	1.557	0.650	0.613	0.180	34	188
CCI HPA-65R-BUU-H6	157.00	51	1.557	0.650	0.613	0.180	8	44
CCI HPA-65R-BUU-H8	157.00	136	1.557	0.650	0.613	0.180	21	117
Flat Platform w/ Han	157.00	2,000	1.557	0.650	0.613	0.180	311	1,717
RFS FD9R6004/1C-3L	143.00	19	1.291	0.109	0.329	0.051	1	16
Alcatel-Lucent RRH2x	143.00	132	1.291	0.109	0.329	0.051	6	113
RFS DB-B1-6C-12AB-0Z	143.00	21	1.291	0.109	0.329	0.051	1	18
Andrew DB844H80E-XY	143.00	60	1.291	0.109	0.329	0.051	3	52
Kathrein 742 213V01	143.00	119	1.291	0.109	0.329	0.051	5	102
Powerwave Allgon P65	143.00	33	1.291	0.109	0.329	0.051	1	28
Andrew LNX-6514DS-T4	143.00	77	1.291	0.109	0.329	0.051	3	66
Flat Platform w/ Han	143.00	2,000	1.291	0.109	0.329	0.051	88	1,717
Decibel DB844H90E-XY	137.50	168	1.194	-0.001	0.250	0.013	2	144
Flat Low Profile Pla	137.50	1,500	1.194	-0.001	0.250	0.013	17	1,288
		33,867	55.495	13.253	15.989	4.209	1,466	29,078

Load Case (1.2 + 0.2Sds) * DL + E EMAM **Seismic Equivalent Modal Analysis Method**

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
43	171.50	164	1.857	1.812	1.079	0.367	52	141
42	167.50	273	1.772	1.413	0.929	0.310	73	234
41	162.50	273	1.668	1.003	0.766	0.244	58	234
40	158.50	109	1.586	0.737	0.652	0.196	19	94
39	156.00	108	1.537	0.596	0.588	0.169	16	93
38	152.50	277	1.469	0.427	0.506	0.133	32	238
37	147.50	287	1.374	0.236	0.405	0.087	22	247
36	144.00	118	1.309	0.134	0.345	0.058	6	101
35	141.50	213	1.264	0.074	0.306	0.040	7	183
34	138.75	181	1.216	0.020	0.267	0.021	3	155
33	136.25	202	1.172	-0.020	0.235	0.006	1	174
32	132.50	412	1.109	-0.065	0.192	-0.015	-5	354
31	127.50	423	1.027	-0.102	0.145	-0.036	-13	363
30	122.92	675	0.954	-0.118	0.110	-0.051	-30	579
29	120.42	94	0.916	-0.121	0.094	-0.056	-5	80
28	117.50	570	0.872	-0.121	0.077	-0.061	-30	490
27	112.50	586	0.799	-0.112	0.054	-0.064	-32	503
26	107.50	601	0.730	-0.096	0.036	-0.061	-32	516
25	102.50	617	0.663	-0.075	0.023	-0.051	-27	530
24	97.50	633	0.600	-0.053	0.015	-0.036	-19	543
23	93.00	517	0.546	-0.033	0.010	-0.018	-8	444
22	90.50	246	0.517	-0.022	0.008	-0.008	-2	211
21	88.04	976	0.489	-0.012	0.007	0.002	2	838
20	85.54	166	0.462	-0.003	0.006	0.012	2	143
19	82.50	780	0.430	0.008	0.006	0.023	16	670
18	77.50	799	0.379	0.024	0.007	0.039	27	686

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17	72.50	818	0.332	0.038	0.010	0.050	35	702
16	67.50	837	0.288	0.048	0.013	0.057	41	719
15	62.50	856	0.247	0.056	0.017	0.061	45	735
14	57.50	875	0.209	0.062	0.022	0.062	47	752
13	52.50	895	0.174	0.066	0.027	0.062	48	768
12	49.75	91	0.156	0.067	0.029	0.062	5	78
11	47.25	1,594	0.141	0.069	0.031	0.061	85	1,369
10	44.29	509	0.124	0.070	0.034	0.061	27	437
9	41.79	758	0.110	0.070	0.036	0.060	39	650
8	37.50	1,076	0.089	0.071	0.039	0.059	55	924
7	32.50	1,099	0.067	0.072	0.041	0.058	55	944
6	27.50	1,122	0.048	0.071	0.042	0.056	55	963
5	22.50	1,144	0.032	0.069	0.041	0.055	54	982
4	17.50	1,167	0.019	0.064	0.038	0.052	52	1,002
3	12.50	1,189	0.010	0.055	0.032	0.046	48	1,021
2	7.50	1,212	0.004	0.040	0.022	0.036	38	1,041
1	2.50	1,235	0.000	0.016	0.009	0.017	18	1,060
KMW KDXCV0012017	157.00	40	1.557	0.650	0.613	0.180	6	34
Powerwave Allgon TT0	157.00	132	1.557	0.650	0.613	0.180	21	113
Raycap DC6-48-60-18-	157.00	20	1.557	0.650	0.613	0.180	3	17
Ericsson RRUS-11 (50	157.00	150	1.557	0.650	0.613	0.180	23	129
Ericsson RRUS 12 w/	157.00	214	1.557	0.650	0.613	0.180	33	184
KMW AM-X-CD-14-65-00	157.00	218	1.557	0.650	0.613	0.180	34	188
CCI HPA-65R-BUU-H6	157.00	51	1.557	0.650	0.613	0.180	8	44
CCI HPA-65R-BUU-H8	157.00	136	1.557	0.650	0.613	0.180	21	117
Flat Platform w/ Han	157.00	2,000	1.557	0.650	0.613	0.180	311	1,717
RFS FD9R6004/1C-3L	143.00	19	1.291	0.109	0.329	0.051	1	16
Alcatel-Lucent RRH2x	143.00	132	1.291	0.109	0.329	0.051	6	113
RFS DB-B1-6C-12AB-0Z	143.00	21	1.291	0.109	0.329	0.051	1	18
Andrew DB844H80E-XY	143.00	60	1.291	0.109	0.329	0.051	3	52
Kathrein 742 213V01	143.00	119	1.291	0.109	0.329	0.051	5	102
Powerwave Allgon P65	143.00	33	1.291	0.109	0.329	0.051	1	28
Andrew LNX-6514DS-T4	143.00	77	1.291	0.109	0.329	0.051	3	66
Flat Platform w/ Han	143.00	2,000	1.291	0.109	0.329	0.051	88	1,717
Decibel DB844H90E-XY	137.50	168	1.194	-0.001	0.250	0.013	2	144
Flat Low Profile Pla	137.50	1,500	1.194	-0.001	0.250	0.013	17	1,288
		33,867	55.495	13.253	15.989	4.209	1,466	29,078

Load Case (0.9 - 0.2Sds) * DL + E ELFM **Seismic (Reduced DL) Equivalent Lateral Forces Method**

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
43	171.50	164	1.857	1.812	1.079	0.367	52	141
42	167.50	273	1.772	1.413	0.929	0.310	73	234
41	162.50	273	1.668	1.003	0.766	0.244	58	234
40	158.50	109	1.586	0.737	0.652	0.196	19	94
39	156.00	108	1.537	0.596	0.588	0.169	16	93
38	152.50	277	1.469	0.427	0.506	0.133	32	238
37	147.50	287	1.374	0.236	0.405	0.087	22	247
36	144.00	118	1.309	0.134	0.345	0.058	6	101
35	141.50	213	1.264	0.074	0.306	0.040	7	183
34	138.75	181	1.216	0.020	0.267	0.021	3	155
33	136.25	202	1.172	-0.020	0.235	0.006	1	174
32	132.50	412	1.109	-0.065	0.192	-0.015	-5	354
31	127.50	423	1.027	-0.102	0.145	-0.036	-13	363
30	122.92	675	0.954	-0.118	0.110	-0.051	-30	579
29	120.42	94	0.916	-0.121	0.094	-0.056	-5	80
28	117.50	570	0.872	-0.121	0.077	-0.061	-30	490
27	112.50	586	0.799	-0.112	0.054	-0.064	-32	503
26	107.50	601	0.730	-0.096	0.036	-0.061	-32	516

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25	102.50	617	0.663	-0.075	0.023	-0.051	-27	530
24	97.50	633	0.600	-0.053	0.015	-0.036	-19	543
23	93.00	517	0.546	-0.033	0.010	-0.018	-8	444
22	90.50	246	0.517	-0.022	0.008	-0.008	-2	211
21	88.04	976	0.489	-0.012	0.007	0.002	2	838
20	85.54	166	0.462	-0.003	0.006	0.012	2	143
19	82.50	780	0.430	0.008	0.006	0.023	16	670
18	77.50	799	0.379	0.024	0.007	0.039	27	686
17	72.50	818	0.332	0.038	0.010	0.050	35	702
16	67.50	837	0.288	0.048	0.013	0.057	41	719
15	62.50	856	0.247	0.056	0.017	0.061	45	735
14	57.50	875	0.209	0.062	0.022	0.062	47	752
13	52.50	895	0.174	0.066	0.027	0.062	48	768
12	49.75	91	0.156	0.067	0.029	0.062	5	78
11	47.25	1,594	0.141	0.069	0.031	0.061	85	1,369
10	44.29	509	0.124	0.070	0.034	0.061	27	437
9	41.79	758	0.110	0.070	0.036	0.060	39	650
8	37.50	1,076	0.089	0.071	0.039	0.059	55	924
7	32.50	1,099	0.067	0.072	0.041	0.058	55	944
6	27.50	1,122	0.048	0.071	0.042	0.056	55	963
5	22.50	1,144	0.032	0.069	0.041	0.055	54	982
4	17.50	1,167	0.019	0.064	0.038	0.052	52	1,002
3	12.50	1,189	0.010	0.055	0.032	0.046	48	1,021
2	7.50	1,212	0.004	0.040	0.022	0.036	38	1,041
1	2.50	1,235	0.000	0.016	0.009	0.017	18	1,060
KMW KDXCV0012017	157.00	40	1.557	0.650	0.613	0.180	6	34
Powerwave Allgon TT0	157.00	132	1.557	0.650	0.613	0.180	21	113
Raycap DC6-48-60-18-	157.00	20	1.557	0.650	0.613	0.180	3	17
Ericsson RRUS-11 (50	157.00	150	1.557	0.650	0.613	0.180	23	129
Ericsson RRUS 12 w/	157.00	214	1.557	0.650	0.613	0.180	33	184
KMW AM-X-CD-14-65-00	157.00	218	1.557	0.650	0.613	0.180	34	188
CCI HPA-65R-BUU-H6	157.00	51	1.557	0.650	0.613	0.180	8	44
CCI HPA-65R-BUU-H8	157.00	136	1.557	0.650	0.613	0.180	21	117
Flat Platform w/ Han	157.00	2,000	1.557	0.650	0.613	0.180	311	1,717
RFS FD9R6004/1C-3L	143.00	19	1.291	0.109	0.329	0.051	1	16
Alcatel-Lucent RRH2x	143.00	132	1.291	0.109	0.329	0.051	6	113
RFS DB-B1-6C-12AB-0Z	143.00	21	1.291	0.109	0.329	0.051	1	18
Andrew DB844H80E-XY	143.00	60	1.291	0.109	0.329	0.051	3	52
Kathrein 742 213V01	143.00	119	1.291	0.109	0.329	0.051	5	102
Powerwave Allgon P65	143.00	33	1.291	0.109	0.329	0.051	1	28
Andrew LNX-6514DS-T4	143.00	77	1.291	0.109	0.329	0.051	3	66
Flat Platform w/ Han	143.00	2,000	1.291	0.109	0.329	0.051	88	1,717
Decibel DB844H90E-XY	137.50	168	1.194	-0.001	0.250	0.013	2	144
Flat Low Profile Pla	137.50	1,500	1.194	-0.001	0.250	0.013	17	1,288
		33,867	55.495	13.253	15.989	4.209	1,466	29,078

Load Case (0.9 - 0.2Sds) * DL + E EMAM **Seismic (Reduced DL) Equivalent Modal Analysis Method**

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
43	171.50	164	1.857	1.812	1.079	0.367	52	141
42	167.50	273	1.772	1.413	0.929	0.310	73	234
41	162.50	273	1.668	1.003	0.766	0.244	58	234
40	158.50	109	1.586	0.737	0.652	0.196	19	94
39	156.00	108	1.537	0.596	0.588	0.169	16	93
38	152.50	277	1.469	0.427	0.506	0.133	32	238
37	147.50	287	1.374	0.236	0.405	0.087	22	247
36	144.00	118	1.309	0.134	0.345	0.058	6	101
35	141.50	213	1.264	0.074	0.306	0.040	7	183
34	138.75	181	1.216	0.020	0.267	0.021	3	155

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33	136.25	202	1.172	-0.020	0.235	0.006	1	174
32	132.50	412	1.109	-0.065	0.192	-0.015	-5	354
31	127.50	423	1.027	-0.102	0.145	-0.036	-13	363
30	122.92	675	0.954	-0.118	0.110	-0.051	-30	579
29	120.42	94	0.916	-0.121	0.094	-0.056	-5	80
28	117.50	570	0.872	-0.121	0.077	-0.061	-30	490
27	112.50	586	0.799	-0.112	0.054	-0.064	-32	503
26	107.50	601	0.730	-0.096	0.036	-0.061	-32	516
25	102.50	617	0.663	-0.075	0.023	-0.051	-27	530
24	97.50	633	0.600	-0.053	0.015	-0.036	-19	543
23	93.00	517	0.546	-0.033	0.010	-0.018	-8	444
22	90.50	246	0.517	-0.022	0.008	-0.008	-2	211
21	88.04	976	0.489	-0.012	0.007	0.002	2	838
20	85.54	166	0.462	-0.003	0.006	0.012	2	143
19	82.50	780	0.430	0.008	0.006	0.023	16	670
18	77.50	799	0.379	0.024	0.007	0.039	27	686
17	72.50	818	0.332	0.038	0.010	0.050	35	702
16	67.50	837	0.288	0.048	0.013	0.057	41	719
15	62.50	856	0.247	0.056	0.017	0.061	45	735
14	57.50	875	0.209	0.062	0.022	0.062	47	752
13	52.50	895	0.174	0.066	0.027	0.062	48	768
12	49.75	91	0.156	0.067	0.029	0.062	5	78
11	47.25	1,594	0.141	0.069	0.031	0.061	85	1,369
10	44.29	509	0.124	0.070	0.034	0.061	27	437
9	41.79	758	0.110	0.070	0.036	0.060	39	650
8	37.50	1,076	0.089	0.071	0.039	0.059	55	924
7	32.50	1,099	0.067	0.072	0.041	0.058	55	944
6	27.50	1,122	0.048	0.071	0.042	0.056	55	963
5	22.50	1,144	0.032	0.069	0.041	0.055	54	982
4	17.50	1,167	0.019	0.064	0.038	0.052	52	1,002
3	12.50	1,189	0.010	0.055	0.032	0.046	48	1,021
2	7.50	1,212	0.004	0.040	0.022	0.036	38	1,041
1	2.50	1,235	0.000	0.016	0.009	0.017	18	1,060
KMW KDXCV0012017	157.00	40	1.557	0.650	0.613	0.180	6	34
Powerwave Allgon TT0	157.00	132	1.557	0.650	0.613	0.180	21	113
Raycap DC6-48-60-18-	157.00	20	1.557	0.650	0.613	0.180	3	17
Ericsson RRUS-11 (50	157.00	150	1.557	0.650	0.613	0.180	23	129
Ericsson RRUS 12 w/	157.00	214	1.557	0.650	0.613	0.180	33	184
KMW AM-X-CD-14-65-00	157.00	218	1.557	0.650	0.613	0.180	34	188
CCI HPA-65R-BUU-H6	157.00	51	1.557	0.650	0.613	0.180	8	44
CCI HPA-65R-BUU-H8	157.00	136	1.557	0.650	0.613	0.180	21	117
Flat Platform w/ Han	157.00	2,000	1.557	0.650	0.613	0.180	311	1,717
RFS FD9R6004/1C-3L	143.00	19	1.291	0.109	0.329	0.051	1	16
Alcatel-Lucent RRH2x	143.00	132	1.291	0.109	0.329	0.051	6	113
RFS DB-B1-6C-12AB-0Z	143.00	21	1.291	0.109	0.329	0.051	1	18
Andrew DB844H80E-XY	143.00	60	1.291	0.109	0.329	0.051	3	52
Kathrein 742 213V01	143.00	119	1.291	0.109	0.329	0.051	5	102
Powerwave Allgon P65	143.00	33	1.291	0.109	0.329	0.051	1	28
Andrew LNX-6514DS-T4	143.00	77	1.291	0.109	0.329	0.051	3	66
Flat Platform w/ Han	143.00	2,000	1.291	0.109	0.329	0.051	88	1,717
Decibel DB844H90E-XY	137.50	168	1.194	-0.001	0.250	0.013	2	144
Flat Low Profile Pla	137.50	1,500	1.194	-0.001	0.250	0.013	17	1,288
		33,867	55.495	13.253	15.989	4.209	1,466	29,078

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Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	31.62	0.00	40.56	0.00	0.00	3557.67	49.50	0.94
0.9D + 1.6W	31.59	0.00	30.41	0.00	0.00	3500.57	49.50	0.92
1.2D + 1.0Di + 1.0Wi	6.04	0.00	60.77	0.00	0.00	730.06	125.00	0.22
(1.2 + 0.2Sds) * DL + E ELFM	1.32	0.00	40.51	0.00	0.00	181.90	125.00	0.06
(1.2 + 0.2Sds) * DL + E EMAM	1.45	0.00	40.51	0.00	0.00	154.54	125.00	0.08
(0.9 - 0.2Sds) * DL + E ELFM	1.32	0.00	28.02	0.00	0.00	178.12	125.00	0.06
(0.9 - 0.2Sds) * DL + E EMAM	1.45	0.00	28.02	0.00	0.00	151.27	125.00	0.07
1.0D + 1.0W	6.45	0.00	33.86	0.00	0.00	720.92	49.50	0.20

Base/Flange Plate	Plate Type	***Baseplate***	
	Pole Diameter	48.5	in
	Pole Thickness	0.40625	in
	Plate Diameter	62.71	in
	Plate Thickness	2.75	in
	Plate Fy	60	ksi
	Weld Length	0.40625	in
	ϕ_s Resistance	972.23	k-in
	Applied	454.87	k-in
Stiffeners	#	***0***	

Bolts	#	***16***	
	Bolt Circle	56.71	in
	(R)adial / (S)quare	R	
●	Diameter	2.25	in
	Hole Diameter	2.625	in
	Type	18J	
	Fy	75	ksi
	Fu	100	ksi
	ϕ_s Resistance	259.82	k
	Applied	190.62	k
Reinforcement ●	#	***0***	
Extra Bolts O	#	***0***	

Code Rev.	***G***	**Date**	1/14/2016
		Engineer	F. Zamani
		Site #	302524
Moment	3557.7 k-ft	**Carrier**	AT&T Mobility
Axial	40.6 k		

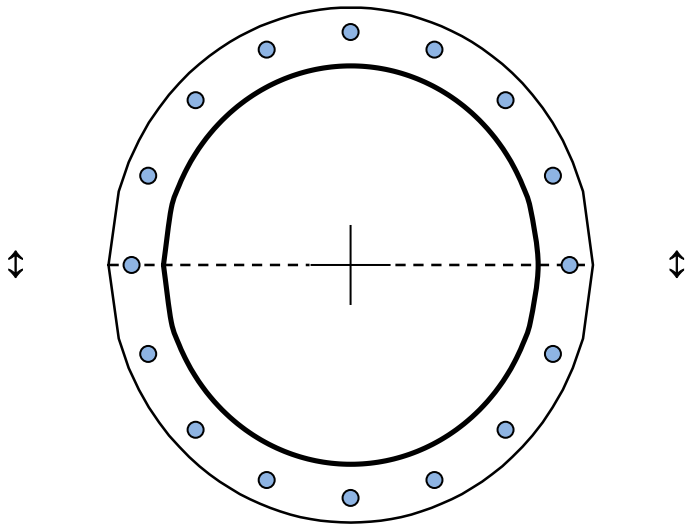

Plate Stress Ratio:

0.47 (Pass)

Bolt Stress Ratio:

0.73 (Pass)

Base/Flange Plate			
	Plate Type	***Flange***	***@ 160.0 ft***
	Pole Diameter	14	in
	Pole Thickness	0.375	in
	Plate Diameter	20.375	in
	Plate Thickness	0.5	in
	Plate Fy	36	ksi
	Weld Length	0.375	in
	ϕ_s Resistance	723.83	k-in
	Applied	0.67	k-in

Stiffeners			
	#	***24***	***Hide***
	Thickness	0.375	in
	Length	3	in
	Height	13.5	in
	Chamfer	0.25	in
	Offset Angle	0	°
	Fy	36	ksi

Bolts			
	#	***12***	
	Bolt Circle	17.1875	in
	(R)adial / (S)quare	R	
●	Diameter	1	in
	Hole Diameter	1.0625	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	ϕ_s Resistance	54.52	k
	Applied	0.98	k

Reinforcement ●		
#	***0***	

Extra Bolts O		
#	***0***	

Code Rev. ***G***

Moment 4.5 k-ft

Axial 0.8 k

Date 1/14/2016

Engineer F. Zamani

Site # 302524

Carrier AT&T Mobility

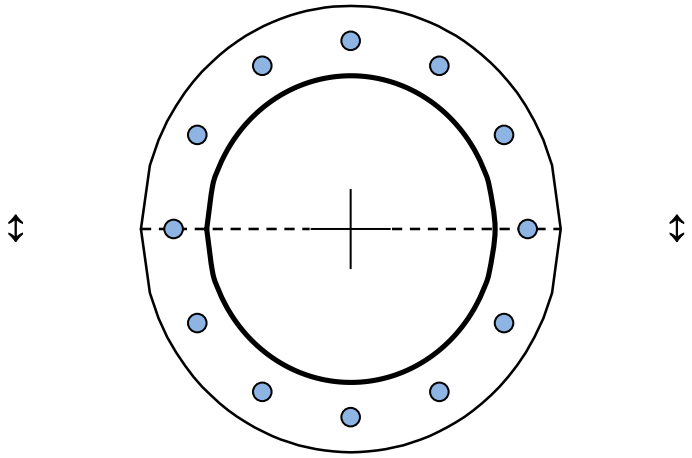

Plate Stress Ratio:

0.00 (Pass)

Bolt Stress Ratio:

0.02 (Pass)