Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

February 11, 2016

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

RE: **Notice of Exempt Modification for AT&T/ LTE 3C Crown Site BU: 801486**
AT&T Site ID: CT1138
44 Ffyler Place, Suffield, CT 06078
Latitude: 41° 58' 49.7" / Longitude: -72° 39' 26.2"

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 107-foot level of the existing 109-foot monopole at 44 Ffyler Place in Suffield, CT. The tower is owned by Crown Castle. The property is owned by the Town of Suffield. AT&T now intends to replace three (3) antennas with three (3) new CCI 700 MHz antennas. These antennas would be installed at the 107-foot level of the tower. AT&T also intends to install three (3) RRUs and one (1) squid.

This facility was approved by the by the Town of Suffield Planning and Zoning Commission on May 1, 2000. This approval included the conditions that:

1. The heights of the respective mono-pole towers, included antennae, shall not exceed 120-feet.
2. Each tower shall be certified as "self-collapsing" by a Connecticut registered professional engineer;
3. Details drawings are to be submitted with each request for building permits for both the towers and related facilities.
4. FCC licenses shall be produced prior to the issuance of the permits for company leasing space on the towers;
5. The Zoning Enforcement Officer shall review each proposal for zoning conformance prior to the issuance of building permits;
6. All utilities are underground;
7. Site plans are to be revised.

This modification complies with the aforementioned condition(s).

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 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.S.C.A. § 16-50j-73, a copy of this letter is being sent to Ms. Melissa Mack, First Selectman, Town of Suffield, as well as the property owner, and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.

2. The proposed modifications will not require the extension of the site boundary.

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

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.

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

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Sincerely,

Jeffrey Barbadora
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
781-729-0053
Jeff.Barbadora@crowncastle.com

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: Ms. Melissa Mack, First Selectman
Town of Suffield
83 Mountain Road
Suffield, CT 06078

Zoning and Planning Commission
Town of Suffield

May 3, 2000

Town of Suffield
Board of Selectmen
83 Mountain Road
Suffield, Connecticut 06078

Re: Request of the Suffield Board of Selectmen for the Suffield Zoning and Planning Commission's report concerning three lease sites for communication towers located on Town Properties: WPCA, Highway Department, and Landfill under CGS 8-24.

Gentlemen:

At a duly called Special Meeting of the Suffield Zoning and Planning Commission held on Monday, May 1, 2000, the Commission voted to approve the request of the Suffield Board of Selectmen for the Commission's favorable report, as required under CGS 8-24, concerning a lease agreement between Crown Atlantic Company L.L.C. as Lessee and the Town of Suffield as the Lessor for sites for telecommunication towers located on Town Properties as follows:

1. Town of Suffield Transfer Station site on the west side of Mountain Road (Route 168), on undeveloped land west of the transfer station operations (Site A);

2. Town of Suffield Public Works garage/maintenance facility off of Mountain Road, on land immediately adjacent to the maintenance facility building (Site B); and

3. Town of Suffield Sewage Treatment Plant on the east side of East Street (Route 159), on undeveloped land along the north side of the treatment plant's access driveway (Site C).

Sincerely,

Douglas H. Viets, M.D.
Chairman

:bgk

cc: Building Official
Economic Development Director
Planning Consultant
Town Engineer
Zoning Enforcement Officer
File

Suffield Conservation Commission

83 Mountain Road • Suffield, Connecticut 06078
(860) 668-3847

March 30, 2000

Elaine Sarsynski
Suffield Economic Development Commission
83 Mountain Road
Suffield, CT 06078

RE: PERMIT # 1264
Communications Towers
Phelps Road, Ffyler Place, & Ucar Street

Dear Elaine:

The Suffield Conservation Commission (SCC), at their March 28, 2000 meeting, approved the Town's application for the construction of three communications towers. The properties are located on Phelps Road, Ffyler Place, and Ucar Street, Assessor's Map Numbers 80, 34H, and 9, Parcels 55, 70, 32,4, and 9, in Suffield, Connecticut.

This permit is granted as a Declaratory Ruling, as there are no wetland impacts proposed.

The following items shall be addressed in the final submittal for construction:

9) The SCC must be notified in writing prior to any work commencing on site, of the date work will start, and the name, address, and telephone number of the contractor responsible for the work. Failure to do so will render this permit null and void.

10) The contractor is responsible for using proper soil and erosion controls. The contractor is also responsible for any fees associated with soil and erosion control inspections by the Town's Consultant.

11) All the poles and atennas shall be tinted a dull gray color.

12) If the FAA or any other regulatory agency ever requires lights on top of the town landfill tower, the applicant must come back to the Commission for review and approval.

13) The foundation design and geotechnical data must be supplied to the Commission for each pole.

The fee has been waived.

Respectfully,

Art Christian, Chairman

AC/klm
Cc: Suffield Building Department

Zoning and Planning Commission
Town of Suffield

May 4, 2000

Ms. Elaine Sarsynski, Director
Suffield Economic Development Commission
83 Mountain Road
Suffield, Connecticut 06078

Re: File #740 – Request of the Suffield Economic Development Commission for a special use permit for the approval of sites for telecommunication towers located on Town properties: WPCA, Highway Department, and Transfer Station.

Dear Ms. Sarsynski:

At a duly called Special Meeting of the Suffield Zoning and Planning Commission held on Monday, May 1, 2000, the Commission voted to approve the Town of Suffield's special use permit request for the for three (3) proposed telecommunication sites located as designated:

1. Town of Suffield Transfer Station site on the west side of Mountain Road (Route 168), on undeveloped land west of the Transfer Station operations (Site A);
2. Town of Suffield Public Works garage/maintenance facility off of Mountain Road, on land immediately adjacent to the Maintenance Facility Building (Site B); and
3. Town of Suffield Sewage Treatment Plant on the east side of East Street (Route 159), on undeveloped land along the north side of the Treatment's Plant's access driveway (Site C).

with the following conditions:

1. The heights of the respective mono-pole towers, including antennae, shall not exceed 199-feet (Site A); 120-feet (Site B); and 174-feet (Site C);
2. Each tower shall be certified as "self-collapsing" by a Connecticut registered professional engineer;
3. Details drawings are to be submitted with each request for building permits for both the towers and related facilities;
4. FCC licenses shall be produced prior to the issuance of the permits for company leasing space on the towers;
5. The Zoning Enforcement Officer shall review each proposal for zoning conformance prior to the issuance of the building permits;
6. All utilities are to be underground;
7. Site plans are to be revised.

A mylar and four (4) copies of site plans for each of the three approved sites must be submitted to this office as soon as possible for signatures.

Please remit a check in the amount of $10.00 (payable to the Town of Suffield), ***along with this original letter,*** to the Office of the Town Clerk, 83 Mountain Road. This fee is required to cover the cost of recording the Special Use Permit in the Office of the Town Clerk.

A copy of the legal notice that will appear in the Journal Inquirer on Saturday, May 6, 2000 is enclosed.

Sincerely,

Douglas H. Viets, M.D. /bgk

Douglas H. Viets, M.D.
Chairman

:bgk
Enclosure

cc: Building Official
Planning Consultant
Town Engineer
Zoning Enforcement Officer
File

LEGAL NOTICE
SUFFIELD PLANNING AND ZONING COMMISSION

At a duly called Special Meeting of the Suffield Zoning and Planning Commission held on Monday, May 1, 2000, the Commission took the following actions:

APPROVED WITH CONDITIONS: Special use permit request of Suffield Economic Development Commission for the approval of sites for communication towers located on Town properties: WPCA, Highway Department and Landfill.

_____
Douglas H. Viets, M.D., Chairman

_____
Stephen J. Martin, Secretary

Journal Inquirer
May 6, 2000

PROJECT INFORMATION

SCOPE OF WORK:
- AT&T ANTENNAS: (1) NEW ANTENNA PER SECTOR, FOR A TOTAL (3) NEW ANTENNAS. (2) EXISTING ANTENNAS PER SECTOR FOR 3 SECTORS, FOR A TOTAL OF (6) EXISTING ANTENNAS TO REMAIN. (1) EXISTING ANTENNA PER SECTOR FOR (3) SECTORS, FOR A TOTAL OF (3) EXISTING ANTENNAS TO BE REMOVED.
- AT&T RRUs: (1) NEW RRUs PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUs; (1) EXISTING RRU PER SECTOR TO BE REUSED, FOR A TOTAL OF (3) EXISTING RRUs.
- AT&T SQUID: (1) EXISTING DC-6 SQUID TO REMAIN.

SITE ADDRESS:	44 FFYLER ROAD SUFFIELD, CT 06078
LATITUDE: LONGITUDE:	41.9804639 41° 58' 49.67004"N -72.6573050 -72° 39' 26.298"W
USID:	59385
TOWER OWNER:	TBD
TYPE OF SITE:	MONOPINE/INDOOR EQUIPMENT
MONOPINE HEIGHT:	109'-0"±
RAD CENTER:	107'-0"±
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

DRAWING INDEX

		REV.
T-1	TITLE SHEET	0
GN-1	GROUNDING & GENERAL NOTES	0
A-1	COMPOUND LAYOUT	0
A-2	EQUIPMENT LAYOUTS	0
A-3	ANTENNA LAYOUTS & ELEVATIONS	0
A-4	DETAILS	0
G-1	GROUNDING, ONE-LINE DIAGRAM & DETAILS	0

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.

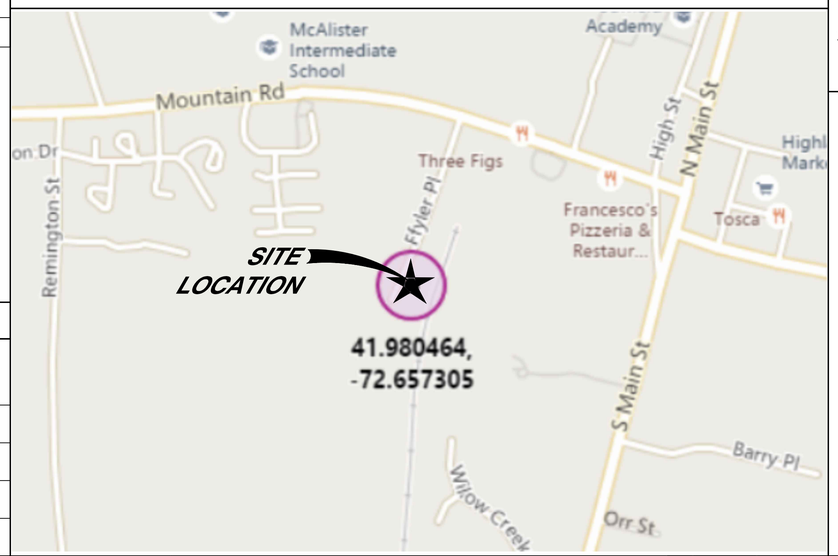
DISCIPLINE:	NAME:	
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		

at&t MOBILITY

FA CODE: 10035284
SITE NUMBER: CTV1138
SITE NAME: SUFFIELD FFYLER RD
BUN: 801486

VICINITY MAP

START OUT GOING NE ON ENTERPRISE DR TOWARD CAPITAL BLVD, TURN LEFT ONTO CAPITAL BLVD, TURN LEFT ONTO WEST ST, TURN LEFT TO MERGE ONTO I-91 N TOWARD HARTFORD, TAKE EXIT 40 TO MERGE ONTO CT-20 W/CT-401 N TOWARD BRADLEY INTERNATIONAL AIRPORT, TAKE THE CT-75 EXIT TOWARD POQUONOCK/SUFFIELD, TURN RIGHT ONTO CT-75 N/ELLA GRASSO TURNPIKE /TURNPIKE RD CONTINUE TO FOLLOW CT-75 N, SLIGHT LEFT ONTO S MAIN ST, TURN LEFT ONTO MOUNTAIN RD, TAKE THE 2ND LEFT ONTO FFYLER PL.



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

SITE ACQUISITION:
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
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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 E39, 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

COM-EX Consultants
115 ROUTE 46
SUITE E39
MOUNTAIN LAKES, NJ 07046
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CTV1138
SITE NAME: SUFFIELD FFYLER RD
44 FFYLER ROAD
SUFFIELD, CT 06078
HARTFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/08/16	ISSUED AS FINAL	NJM	NDB	NDB

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

SEAL: STATE OF CONNECTICUT, NICHOLAS D. BARILE, 25643, PROFESSIONAL ENGINEER

AT&T

DRAWING TITLE: TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV
15105-EMP	T-1	0

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 HUDSON DESIGN GROUP FOR A RECENT UPGRADE DATED 04/23/2012. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.

COM-EX Consultants
115 ROUTE 46
SUITE E39
MOUNTAIN LAKES, NJ 07046
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CTV1138
SITE NAME: SUFFIELD FFYLER RD

44 FFYLER ROAD
SUFFIELD, CT 06078
HARTFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/08/16	ISSUED AS FINAL	NJM	NDB	NDB

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

SEAL:
STATE OF CONNECTICUT
DOUGLAS G. BALL
LICENSED
PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
CT LICENSE NO. 23643

AT&T

DRAWING TITLE:
GROUNDING & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
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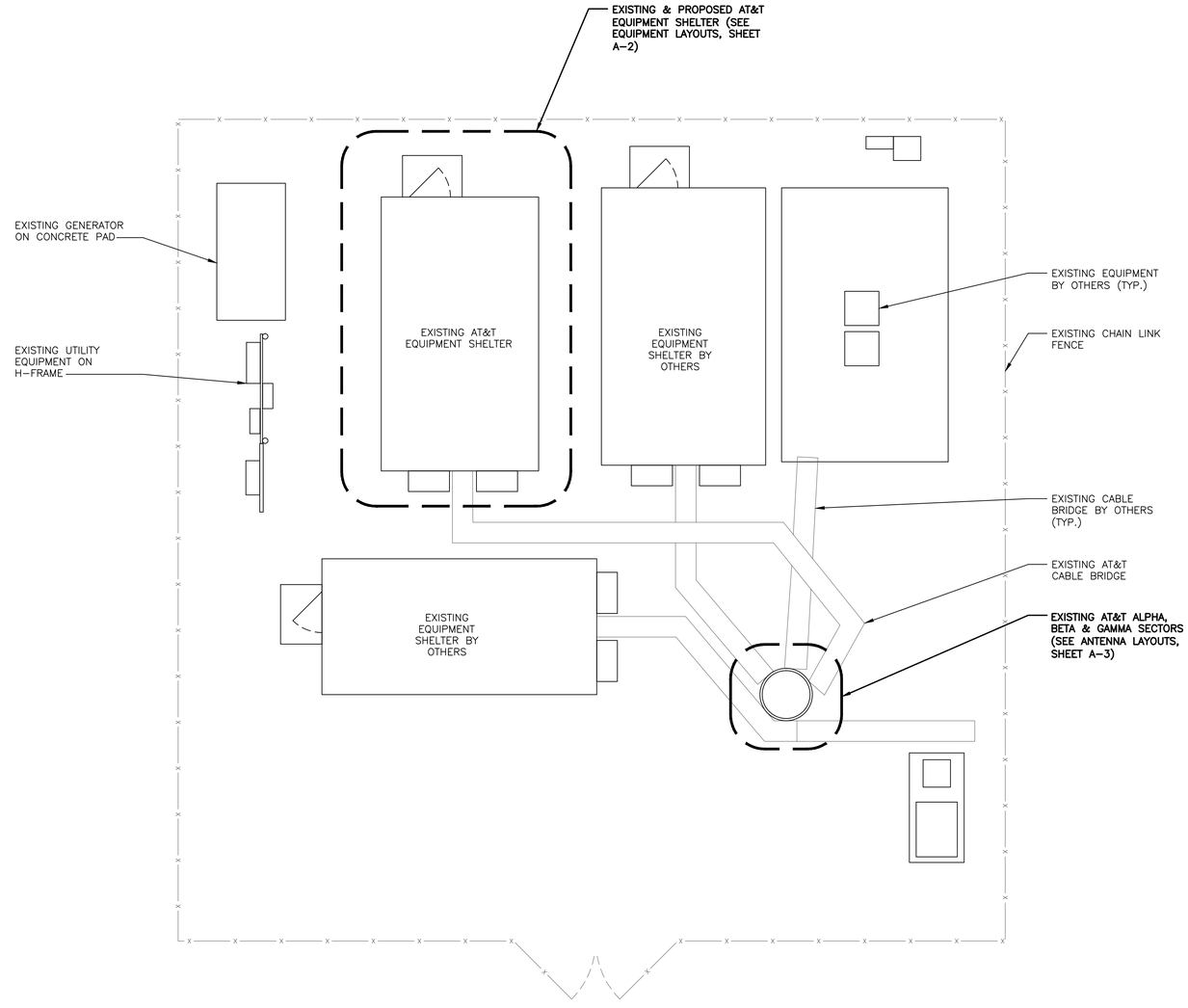

NORTH

COMPOUND LAYOUT

SCALE: 1/8" = 1'–0"

0 4 8 16

GRAPHIC SCALE: 1/8"=1'–0"

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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0	02/08/16	ISSUED AS FINAL	NJM	NDB	NDB

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

SEAL:
STATE OF CONNECTICUT
NICHOLAS D. BARTO
LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
COMPOUND LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
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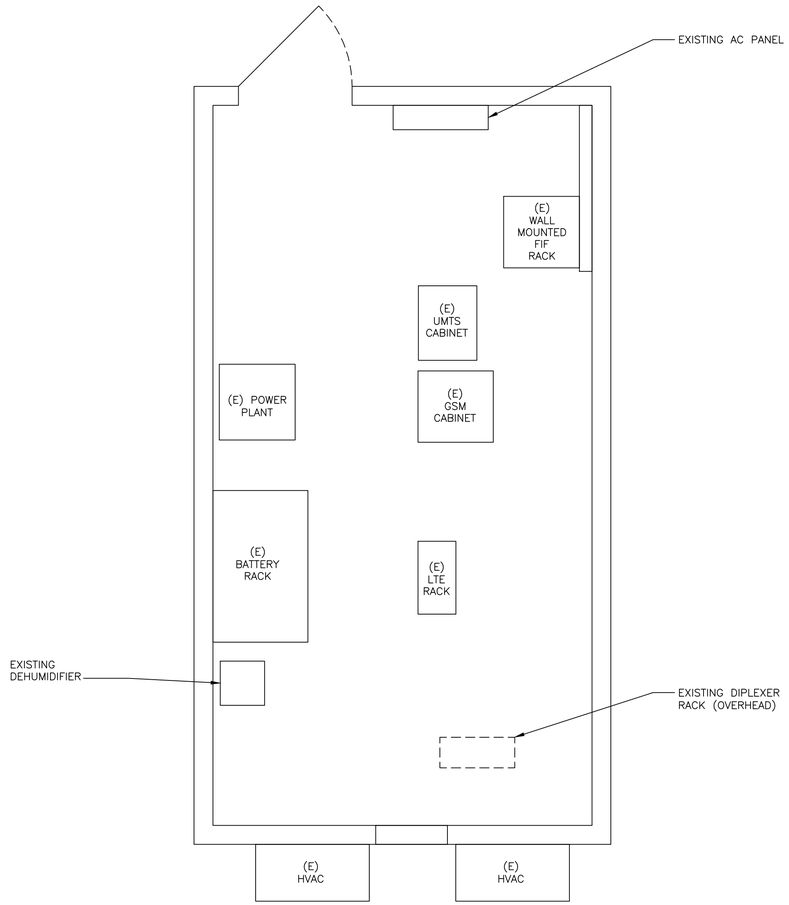

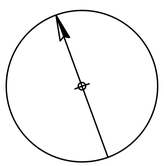

NORTH

NO GROUND EQUIPMENT MODIFICATIONS ARE BEING MADE AS PART OF THIS SCOPE. EXISTING GROUND EQUIPMENT CONFIGURATION TO REMAIN.

EXISTING EQUIPMENT LAYOUT

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

0 1 2 4

GRAPHIC SCALE: 1/2"=1'-0"

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

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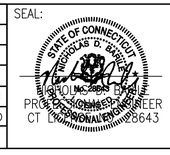

PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE: EQUIPMENT LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
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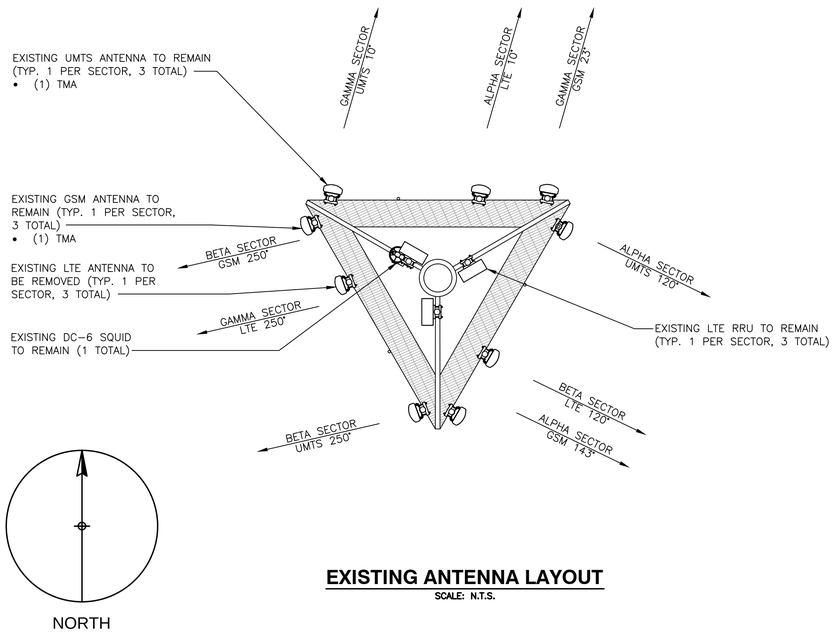
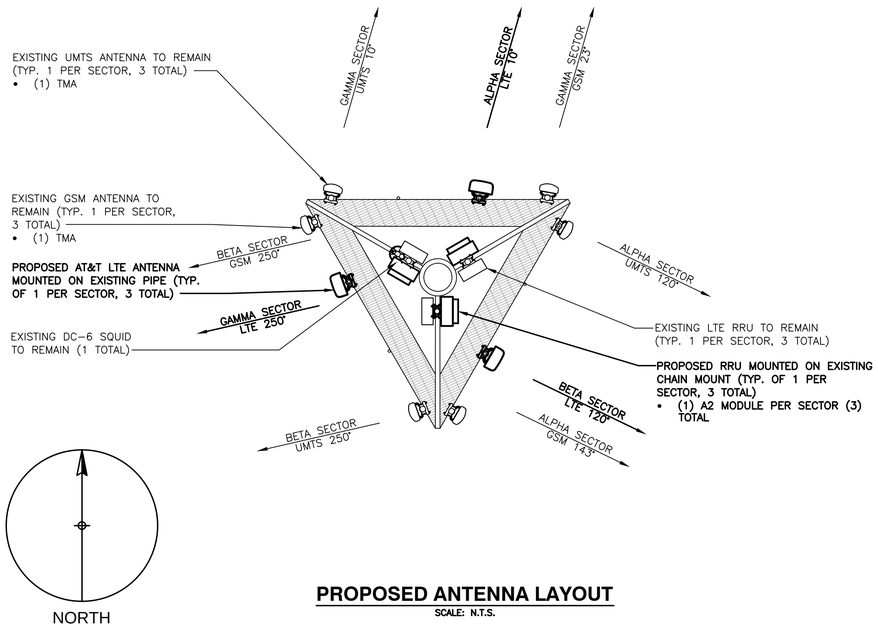


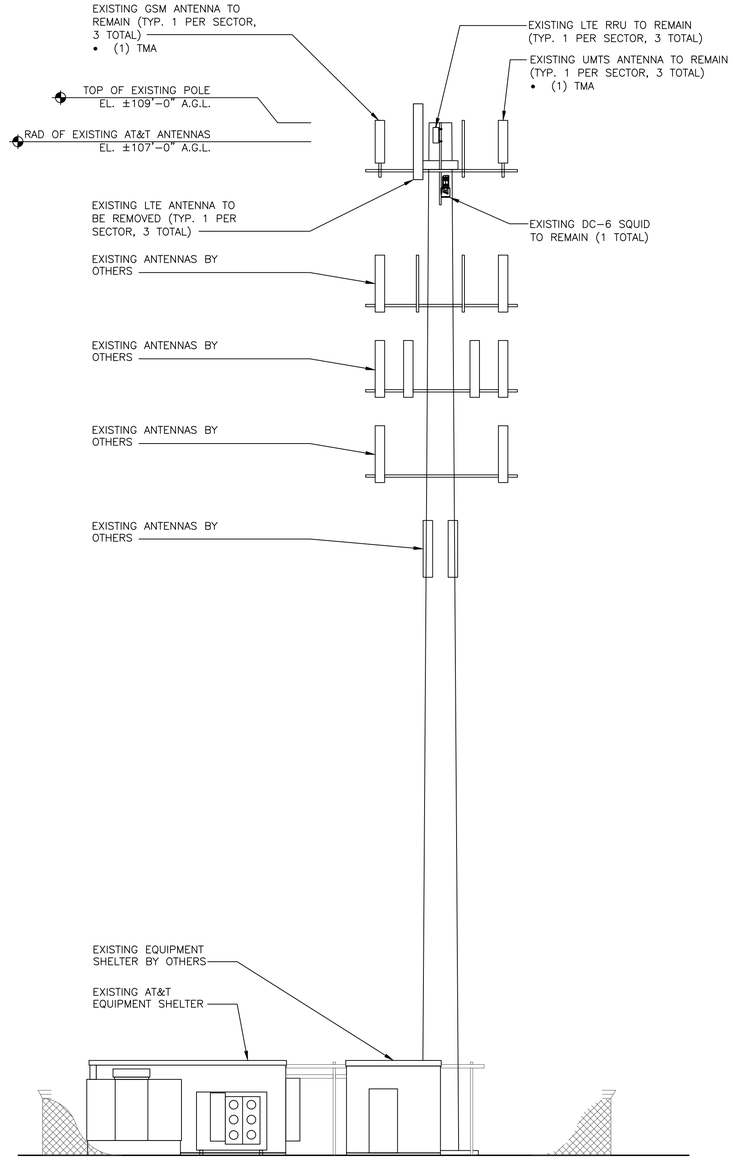
EXISTING ANTENNA LAYOUT

SCALE: N.T.S.



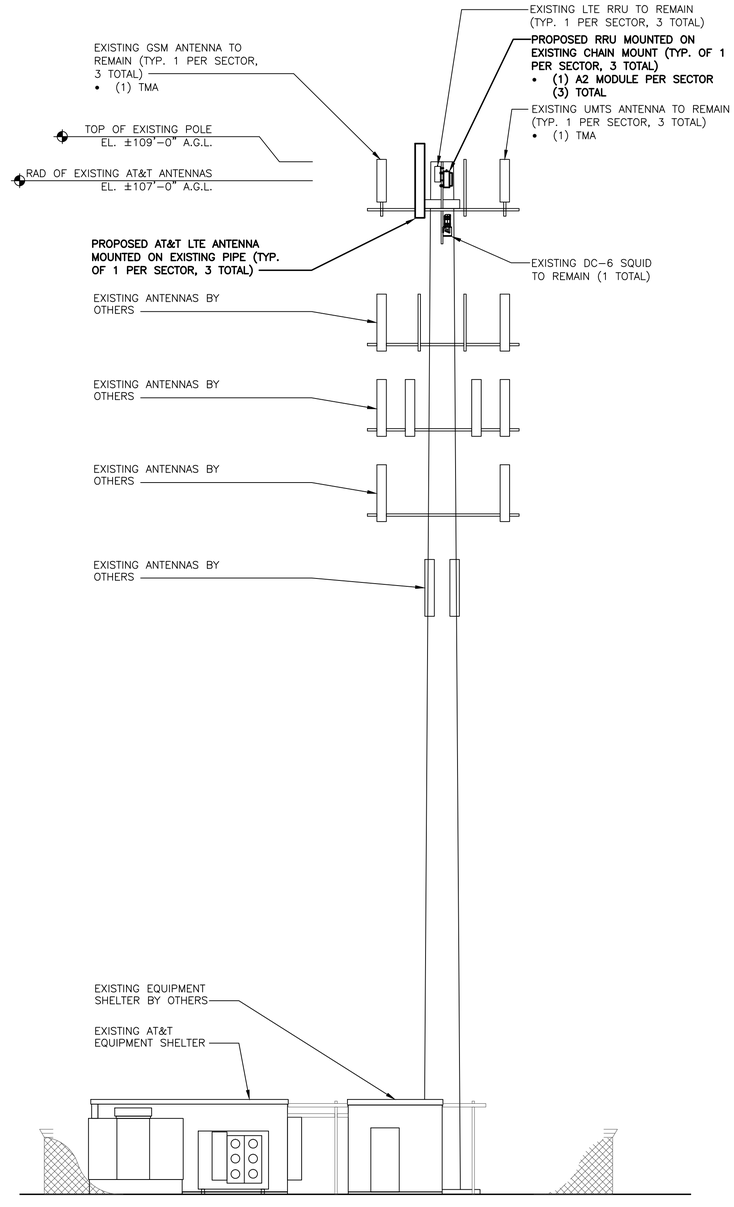
PROPOSED ANTENNA LAYOUT

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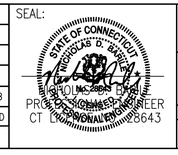
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

SEAL:



PROJECT ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
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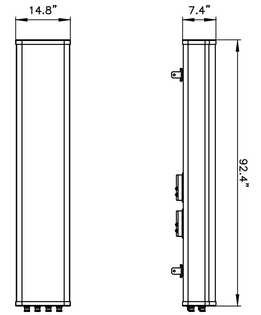
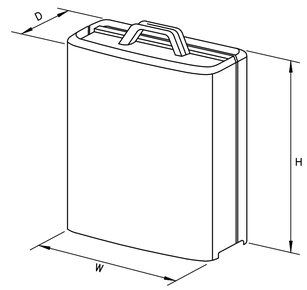


FRONT VIEW SIDE VIEW

BOTTOM VIEW

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

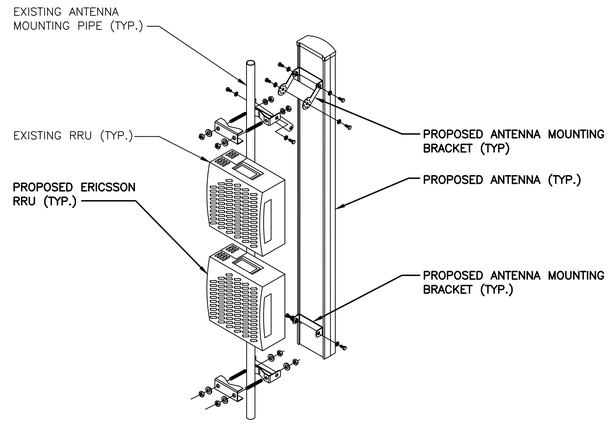
LTE ANTENNA DETAIL
SCALE: N.T.S.



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.



ANTENNA AND RRU MOUNTING DETAIL
SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	KATHREIN	800 10121 @850	54.5"x10.3"x5.9"
	A2	–	–	–
	A3	ANDREW	SBNH-1D6565C	96.4"x11.9"x7.1"
	A4	KATHREIN	800 10121 @850	54.5"x10.3"x5.9"
BETA	B1	KATHREIN	800 10121 @850	54.5"x10.3"x5.9"
	B2	–	–	–
	B3	POWERWAVE	P65-17-XLH-RR	96"x12"x6"
	B4	KATHREIN	800 10121 @850	54.5"x10.3"x5.9"
GAMMA	G1	KATHREIN	800 10121 @850	54.5"x10.3"x5.9"
	G2	–	–	–
	G3	ANDREW	SBNH-1D6565C	96.4"x11.9"x7.1"
	G4	KATHREIN	800 10121 @850	54.5"x10.3"x5.9"

FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	KATHREIN	800 10121 @850	54.5"x10.3"x5.9"
	A2	–	–	–
	A3	**CCI**	**HPA-65R-BUU-H8**	**92.4"x14.8"x7.4"**
	A4	KATHREIN	800 10121 @850	54.5"x10.3"x5.9"
BETA	B1	KATHREIN	800 10121 @850	54.5"x10.3"x5.9"
	B2	–	–	–
	B3	**CCI**	**HPA-65R-BUU-H8**	**92.4"x14.8"x7.4"**
	B4	KATHREIN	800 10121 @850	54.5"x10.3"x5.9"
GAMMA	G1	KATHREIN	800 10121 @850	54.5"x10.3"x5.9"
	G2	–	–	–
	G3	**CCI**	**HPA-65R-BUU-H8**	**92.4"x14.8"x7.4"**
	G4	KATHREIN	800 10121 @850	54.5"x10.3"x5.9"

PROPOSED RRU SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	**ERICSSON**	**RRUS-12**	**20.4"x18.5"x9.5"**	**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"x9.5"**	**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"x9.5"**	**A2 MODULE**	**16.4"X15.2"X3.4"**
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	–	–
	–	–	–		

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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SITE NUMBER: CTV1138
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550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/08/16	ISSUED AS FINAL	NJM	NDB	NDB

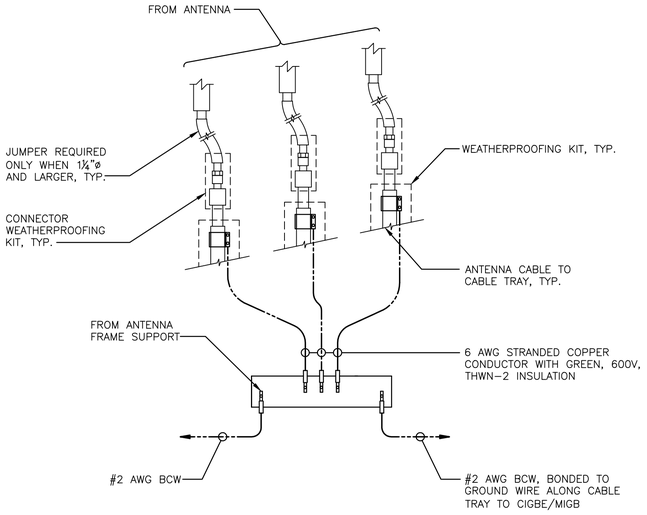
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

SEAL:
STATE OF CONNECTICUT
NICHOLAS D. BARTELL
LICENSED
PROFESSIONAL ENGINEER
CT 30643

AT&T

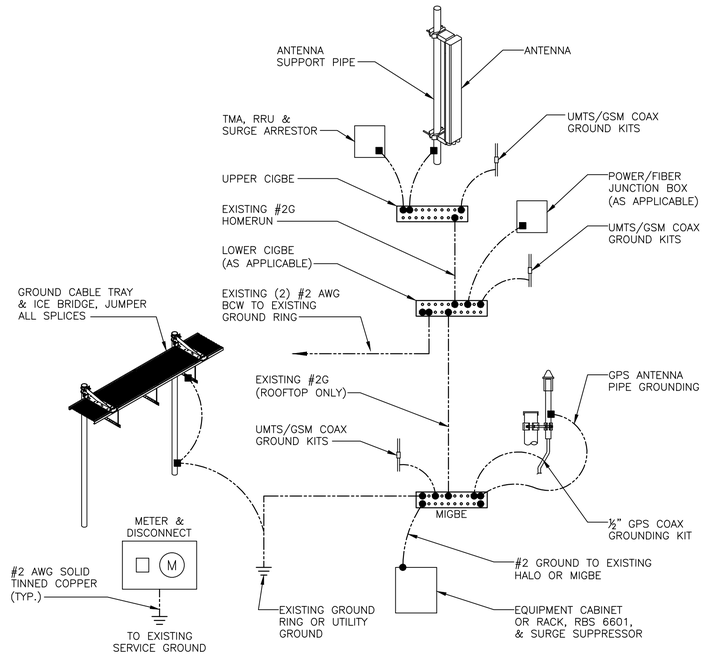
DRAWING TITLE:
DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15105-EMP	A-4	0



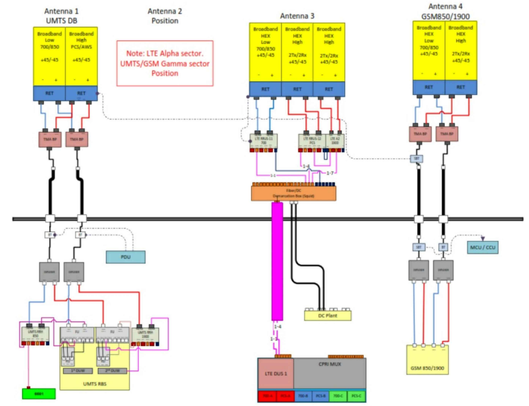
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



GROUNDING RISER DIAGRAM

SCALE: N.T.S.



TYPICAL PLUMBING DIAGRAM (PER SECTOR)

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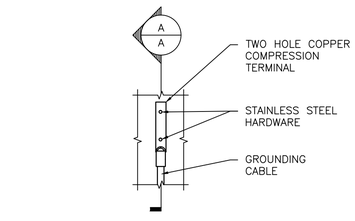
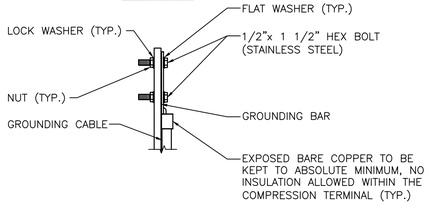


ELEVATION



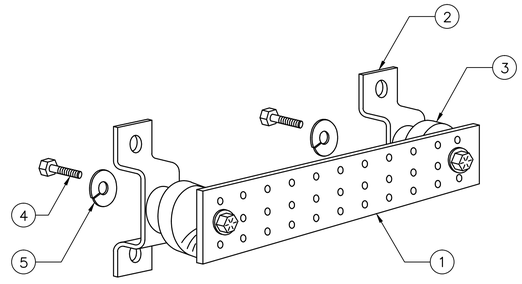
SECTION "A–A"

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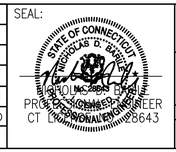
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

SEAL:



PREPARED BY: NICHOLAS D. WARNER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE: GROUNDING, ONE-LINE DIAGRAM & DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15105-EMP	G-1	0

Date: **January 25, 2016**

Brittany Richardson
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

JACOBS
Jacobs Engineering Group, Inc.
5449 Bells Ferry Rd
Acworth, GA 30102
(770)701-2500

Subject: **Structural Analysis Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT1138
	Carrier Site Name:	Suffield Flyer Rd
Crown Castle Designation:	**Crown Castle BU Number:**	801486
	Crown Castle Site Name:	CT SUFFIELD 2 CAC 801486
	Crown Castle JDE Job Number:	358358
	Crown Castle Work Order Number:	1181739
	Crown Castle Application Number:	322497 Rev. 3
Engineering Firm Designation:	**Jacobs Engineering Group, Inc. Project Number:**	1181739
Site Data:	**44 FFyler Place, Suffield, Hartford County, CT** **Latitude *41° 58' 49.7"*, Longitude *-72° 39' 26.2"*** **109 Foot - Monopole Tower**	

Dear Brittany Richardson,

Jacobs Engineering Group, Inc. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 865673, in accordance with application 322497, revision 3.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 Connecticut State Building Code with 2009 amendment based upon a wind speed of 80 mph fastest mile.

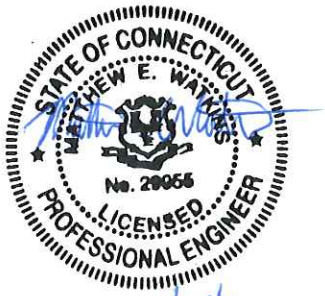
All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *Jacobs Engineering Group, Inc.* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by:

Nikhil Sharma
Structural Engineer

Reviewed By:



1/25/16

Matthew E. Watkins, P.E.
Engineering Project Manager

tnxTower Report - version 6.1.4.1

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 109 ft Monopole tower designed by FWT INC. in February of 2002. The tower was originally designed for a wind speed of 80 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1.25 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
107.0	109.0	3	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe	-	-	-
		3	ericsson	RRUS 12			
		3	ericsson	RRUS A2			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
107.0	109.0	2	andrew	SBNH-1D6565C w/ Mount Pipe	-	-	3
		3	powerwave technologies	7020.00			
		6	powerwave technologies	LGP13519			
		1	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		6	powerwave technologies	TT19-08BP111-001			
		3	ericsson	RRUS-11			
		2	andrew	SBNH-1D6565A w/ Mount Pipe	1 2 12	3/8 3/4 1-5/8	1
		3	kathrein	800 10121 w/ Mount Pipe			
		1	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
	107.0	3	communication components inc.	DTMABP7819VG12A			
		3	ericsson	RRUS-11			
		6	kathrein	860 10025			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts (crown)	Platform Mount [LP 712-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
90.0	91.0	3	alcatel lucent	RRH2x40-AWS	1	1-5/8	2
		2	antel	BXA-70063-6CF-EDIN-0 w/ Mount Pipe			
		6	kathrein	742 213 w/ Mount Pipe			
		1	rfs celwave	DB-B1-6C-8AB-0Z			
		6	rfs celwave	FD9R6004/2C-3L			
		1	antel	BXA-70063-4CF-EDIN-X w/ Mount Pipe	12	1-1/4	1
		2	antel	LPA-80080-4CF-EDIN-0 w/ Mount Pipe			
		4	swedcom	SC 9012 REV2 w/Mount Pipe			
	90.0	1	tower mounts (crown)	Platform Mount [LP 712-1]			
80.0	81.0	12	decibel	DB844H90-XY w/ Mount Pipe	12	7/8	4
	80.0	1	tower mounts (crown)	Platform Mount [LP 601-1]			
74.0	74.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	-	-	1
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	tower mounts (crown)	Side Arm Mount [SO 102-3]			
72.0	74.0	3	alcatel lucent	TD-RRH8x20-25	1 3	5/8 1-1/4	1
		2	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe			
		1	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
	72.0	1	tower mounts (crown)	Platform Mount [LP 601-1]			
62.0	62.0	3	rfs celwave	APX18-206516L	6	1-5/8	1
		1	tower mounts (crown)	Pipe Mount [PM 501-3]			
47.0	47.0	1	gps	GPS_A	-	-	1
		1	tower mounts (crown)	Side Arm Mount [SO 701-1]			

Notes:
1) Existing equipment
2) Reserved Equipment
3) Equipment to be removed; not considered in this analysis.
4) Abandoned Equipment; considered in this analysis.

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
110	110	12	swedcom	ALP-9212-N	-	-
102	102	12	swedcom	ALP-9212-N	-	-
92	92	12	swedcom	ALP-9212-N	-	-
82	82	12	swedcom	ALP-9212-N	-	-
72	72	12	swedcom	ALP-9212-N	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clough, Harbour & Associates, LLP	2294830	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	FWT	821489	CCISITES
4-TOWER MANUFACTURER DRAWINGS	FWT	823124	CCISITES

3.1) Analysis Method

tnxTower (version 6.1.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

This analysis may be affected if any assumptions are not valid or have been made in error. Jacobs Engineering Group, Inc. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	109 - 95	Pole	TP26.715x23.476x0.1875	1	-3.22	820.73	16.9	Pass
L2	95 - 48.08	Pole	TP37.573x26.715x0.3125	2	-14.81	1862.61	51.3	Pass
L3	48.08 - 0	Pole	TP48.075x35.8094x0.375	3	-26.62	2951.56	65.0	Pass
							Summary	
						Pole (L3)	65.0	Pass
						Rating =	65.0	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	51.1	Pass
1	Base Plate	0	30.6	Pass
1	Base Foundation Structural	0	71.5	Pass
1	Base Foundation Soil Interaction	0	37.7	Pass
1	Flange Bolts & Plate	95	11.3 & 4.6	Pass

Structure Rating (max from all components) =	71.5%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

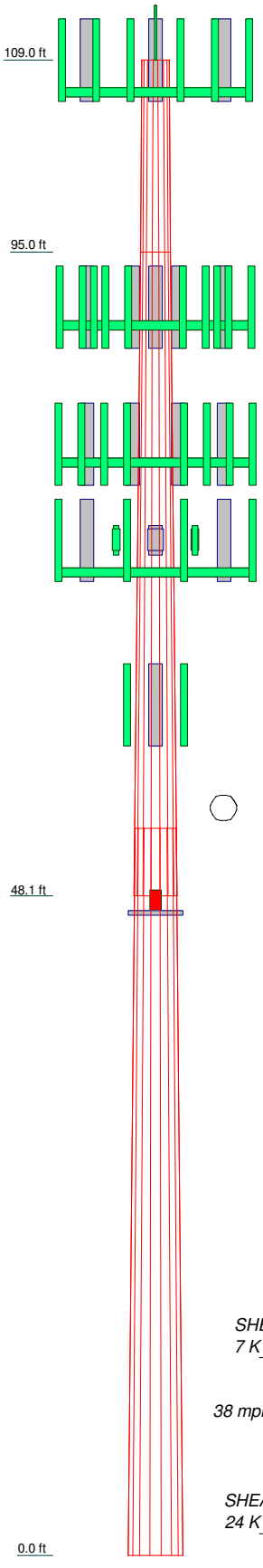
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing, reserved and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	14.00	18	0.1875		23.4760	26.7150		0.7
2	46.92	18	0.3125	4.92	26.7150	37.5730	A572-65	5.0
3	53.00	18	0.3750		35.8094	48.0750		8.9
								14.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lighting Rod 3/4" x 4'	111	(2) FD9R6004/2C-3L	90
800 10121 w/ Mount Pipe	107	(2) FD9R6004/2C-3L	90
800 10121 w/ Mount Pipe	107	(2) FD9R6004/2C-3L	90
800 10121 w/ Mount Pipe	107	RRH2x40-AWS	90
SBNH-1D6565A w/ Mount Pipe	107	RRH2x40-AWS	90
SBNH-1D6565A w/ Mount Pipe	107	RRH2x40-AWS	90
P65-17-XLH-RR w/ Mount Pipe	107	DB-B1-6C-8AB-0Z	90
(2) 860 10025	107	Platform Mount [LP 712-1]	90
(2) 860 10025	107	(4) DB844H90-XY w/ Mount Pipe	80
(2) 860 10025	107	(4) DB844H90-XY w/ Mount Pipe	80
DC6-48-60-18-8F	107	(4) DB844H90-XY w/ Mount Pipe	80
(2) RRUS-11	107	Platform Mount [LP 601-1]	80
RRUS-11	107	PCS 1900MHz 4x45W-65MHz	74
DTMABP7819VG12A	107	PCS 1900MHz 4x45W-65MHz	74
(2) DTMABP7819VG12A	107	PCS 1900MHz 4x45W-65MHz	74
HPA-65R-BUU-H8 w/ Mount Pipe	107	800MHz 2X50W RRH W/FILTER	74
HPA-65R-BUU-H8 w/ Mount Pipe	107	800MHz 2X50W RRH W/FILTER	74
HPA-65R-BUU-H8 w/ Mount Pipe	107	800MHz 2X50W RRH W/FILTER	74
RRUS 12	107	(2) 5'x2 1/2" Pipe Mount	74
RRUS 12	107	(2) 5'x2 1/2" Pipe Mount	74
RRUS 12	107	(2) 5'x2 1/2" Pipe Mount	74
RRUS A2	107	Side Arm Mount [SO 102-3]	74
RRUS A2	107	APXV9ERR18-C-A20 w/ Mount Pipe	72
RRUS A2	107	APXV9ERR18-C-A20 w/ Mount Pipe	72
8'x2.375" Pipe Mount	107	APXVSPP18-C-A20 w/ Mount Pipe	72
8'x2.375" Pipe Mount	107	APXVTM14-C-120 w/ Mount Pipe	72
8'x2.375" Pipe Mount	107	APXVTM14-C-120 w/ Mount Pipe	72
Platform Mount [LP 712-1]	107	APXVTM14-C-120 w/ Mount Pipe	72
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	90	TD-RRH8x20-25	72
		TD-RRH8x20-25	72
BXA-70063-4CF-EDIN-X w/ Mount Pipe	90	TD-RRH8x20-25	72
		5' x 2' Pipe Mount	72
(2) SC 9012 REV2 w/Mount Pipe	90	5' x 2' Pipe Mount	72
(2) SC 9012 REV2 w/Mount Pipe	90	5' x 2' Pipe Mount	72
(2) 742 213 w/ Mount Pipe	90	Platform Mount [LP 601-1]	72
(2) 742 213 w/ Mount Pipe	90	APX18-206516L	62
(2) 742 213 w/ Mount Pipe	90	APX18-206516L	62
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	90	APX18-206516L	62
		Pipe Mount [PM 501-3]	62
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	90	GPS	47
		Side Arm Mount [SO 701-1]	47

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.25 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 65%

AXIAL
48 K
SHEAR
7 K
MOMENT
577 kip-ft
TORQUE 1 kip-ft
38 mph WIND - 1.2500 in ICE
AXIAL
27 K
SHEAR
24 K
MOMENT
1856 kip-ft
TORQUE 3 kip-ft
REACTIONS - 80 mph WIND

JACOBS
Jacobs Engineering Group, Inc.
Jacobs Engineering Group, Inc.
5449 Bells Ferry Rd
Acworth, GA 30102
Phone: (770)701-2500
FAX: (770)701-2501

Job:	***110' - MP - CT SUFFIELD 2 CAC 801486***		
Project:	***BU 801486 WO 1181739***		
Client: Crown Castle	Drawn by: Nikhil Sharma		App'd:
Code: TIA/EIA-222-F	Date: 01/25/16		Scale: NTS
Path: C:\Users\sharmanl\Desktop\801486 CT SUFFIELD 2 CAC 801486\WO 1181739\Analysis\Models\BU 801486 WO 1181739.eri			Dwg No. E-1

Tower Input Data

There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

1) Tower is located in Hartford County, Connecticut.
2) Basic wind speed of 80 mph.
3) Nominal ice thickness of 1.2500 in.
4) Ice thickness is considered to increase with height.
5) Ice density of 56 pcf.
6) A wind speed of 38 mph is used in combination with ice.
7) Temperature drop of 50 °F.
8) Deflections calculated using a wind speed of 50 mph.
9) A non-linear (P-delta) analysis was used.
10) Pressures are calculated at each section.
11) Stress ratio used in pole design is 1.333.
12) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Treat Feedline Bundles As Cylinder
	Consider Moments - Horizontals		Assume Legs Pinned		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Calculate Redundant Bracing Forces
	Use Moment Magnification	√	Use Clear Spans For Wind Area		Ignore Redundant Members in FEA
√	Use Code Stress Ratios		Use Clear Spans For KL/r		SR Leg Bolts Resist Compression
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		All Leg Panels Have Same Allowable
√	Escalate Ice	√	Bypass Mast Stability Checks		Offset Girt At Foundation
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Consider Feedline Torque
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Include Angle Block Shear Check
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Poles
	Leg Bolts Are At Top Of Section		SR Members Have Cut Ends	√	Include Shear-Torsion Interaction
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Always Use Sub-Critical Flow
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Use Top Mounted Sockets
	Add IBC .6D+W Combination		Use TIA-222-G Tension Splice Capacity Exemption		

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	109.00-95.00	14.00	0.00	18	23.4760	26.7150	0.1875	0.7500	A572-65 (65 ksi)
L2	95.00-48.08	46.92	4.92	18	26.7150	37.5730	0.3125	1.2500	A572-65 (65 ksi)
L3	48.08-0.00	53.00		18	35.8094	48.0750	0.3750	1.5000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia.	Area	I	r	C	I/C	J	It/Q	w	w/t
	in	in^2	in^4	in	in	in^3	in^4	in^2	in	
L1	23.8382	13.8596	949.6645	8.2674	11.9258	79.6310	1900.5786	6.9311	3.8018	20.276
	27.1271	15.7872	1403.5717	9.4173	13.5712	103.4227	2808.9903	7.8951	4.3718	23.316

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L2	27.1271	26.1880	2306.3730	9.3729	13.5712	169.9459	4615.7808	13.0965	4.1518	13.286
	38.1526	36.9578	6482.4687	13.2275	19.0871	339.6259	12973.4672	18.4824	6.0628	19.401
L3	37.5180	42.1758	6690.4026	12.5792	18.1912	367.7825	13389.6086	21.0919	5.6425	15.047
	48.8166	56.7749	16320.3992	16.9335	24.4221	668.2635	32662.2732	28.3929	7.8012	20.803

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 109.00-95.00				1	1	1		
L2 95.00-48.08				1	1	1		
L3 48.08-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
HB158-1-08U8-S8J18(1-5/8)	A	Surface Ar (CaAa)	90.00 - 0.00	1	1	0.300 0.300	1.9800		1.30

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF7-50A(1-5/8")	C	No	Inside Pole	107.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
FB-L98B-002-75000(3/8")	C	No	Inside Pole	107.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	107.00 - 0.00	2	No Ice	0.00	0.58
						1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
						2" Ice	0.00	0.58
						4" Ice	0.00	0.58
2" Rigid Conduit	C	No	Inside Pole	107.00 - 0.00	1	No Ice	0.00	2.80
						1/2" Ice	0.00	2.80
						1" Ice	0.00	2.80
						2" Ice	0.00	2.80
						4" Ice	0.00	2.80
***								
LDF6-50A(1-1/4")	A	No	Inside Pole	90.00 - 0.00	12	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
						2" Ice	0.00	0.66
						4" Ice	0.00	0.66
***								
LDF5-50A(7/8")	A	No	Inside Pole	80.00 - 0.00	12	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33
***								
HB114-1-08U4-M5J(1 1/4")	B	No	Inside Pole	72.00 - 0.00	3	No Ice	0.00	1.08
						1/2" Ice	0.00	1.08
						1" Ice	0.00	1.08
						2" Ice	0.00	1.08
						4" Ice	0.00	1.08
HB058-M12-XXXF(5/8")	B	No	Inside Pole	72.00 - 0.00	1	No Ice	0.00	0.24
						1/2" Ice	0.00	0.24
						1" Ice	0.00	0.24
						2" Ice	0.00	0.24
						4" Ice	0.00	0.24
***								
CR 50 1873(1-5/8")	C	No	CaAa (Out Of Face)	62.00 - 0.00	5	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
CR 50 1873(1-5/8")	C	No	CaAa (Out Of Face)	62.00 - 0.00	1	No Ice	0.20	0.83
						1/2" Ice	0.30	2.34
						1" Ice	0.40	4.47
						2" Ice	0.60	10.55
						4" Ice	1.00	30.05
***								
Safety Line 3/8	C	No	CaAa (Out Of Face)	0.00 - 0.00	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75
						1" Ice	0.24	1.28
						2" Ice	0.44	2.34
						4" Ice	0.84	4.46

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	109.00-95.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.17
L2	95.00-48.08	A	0.000	0.000	8.300	0.000	0.51
		B	0.000	0.000	0.000	0.000	0.08
		C	0.000	0.000	0.000	2.756	0.66
L3	48.08-0.00	A	0.000	0.000	9.520	0.000	0.63
		B	0.000	0.000	0.000	0.000	0.17
		C	0.000	0.000	0.000	9.520	0.71

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	109.00-95.00	A	1.431	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.17
L2	95.00-48.08	A	1.370	0.000	0.000	19.785	0.000	0.75
		B		0.000	0.000	0.000	0.000	0.08
		C		0.000	0.000	0.000	6.570	0.74
L3	48.08-0.00	A	1.250	0.000	0.000	22.692	0.000	0.90
		B		0.000	0.000	0.000	0.000	0.17
		C		0.000	0.000	0.000	22.692	0.99

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	109.00-95.00	0.0000	0.0000	0.0000	0.0000
L2	95.00-48.08	-0.1856	-0.1952	-0.3716	-0.3910
L3	48.08-0.00	-0.3451	-0.1218	-0.6871	-0.2426

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lighting Rod 3/4" x 4'	C	None		0.0000	111.00	No Ice	0.30	0.30	0.03
						1/2" Ice	0.71	0.71	0.03
						1" Ice	1.00	1.00	0.04
						2" Ice	1.52	1.52	0.06
						4" Ice	2.72	2.72	0.14
level 107									
800 10121 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	107.00	No Ice	5.69	4.60	0.07
						1/2" Ice	6.18	5.35	0.11
						1" Ice	6.68	6.05	0.17
						2" Ice	7.70	7.53	0.30
						4" Ice	9.86	10.83	0.68
800 10121 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	107.00	No Ice	5.69	4.60	0.07
						1/2" Ice	6.18	5.35	0.11
						1" Ice	6.68	6.05	0.17
						2" Ice	7.70	7.53	0.30
						4" Ice	9.86	10.83	0.68
800 10121 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	107.00	No Ice	5.69	4.60	0.07
						1/2" Ice	6.18	5.35	0.11
						1" Ice	6.68	6.05	0.17
						2" Ice	7.70	7.53	0.30
						4" Ice	9.86	10.83	0.68
SBNH-1D6565A w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	107.00	No Ice	6.14	4.78	0.05
						1/2" Ice	6.62	5.50	0.10
						1" Ice	7.10	6.22	0.16
						2" Ice	8.10	7.70	0.30
						4" Ice	10.22	10.90	0.68
SBNH-1D6565A w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	107.00	No Ice	6.14	4.78	0.05
						1/2" Ice	6.62	5.50	0.10
						1" Ice	7.10	6.22	0.16
						2" Ice	8.10	7.70	0.30
						4" Ice	10.22	10.90	0.68
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	107.00	No Ice	11.70	8.94	0.09
						1/2" Ice	12.42	10.45	0.18
						1" Ice	13.15	11.99	0.27
						2" Ice	14.64	14.31	0.50
						4" Ice	17.91	19.14	1.13
(2) 860 10025	A	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice	0.16	0.14	0.00
						1/2" Ice	0.23	0.20	0.00
						1" Ice	0.30	0.27	0.01
							0.48	0.44	0.01

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		*C_AA_A Front* ft^2	*C_AA_A Side* ft^2	*Weight* K
						2" Ice	0.93	0.88	0.05
						4" Ice			
(2) 860 10025	B	From Leg	4.00	0.0000	107.00	No Ice	0.16	0.14	0.00
			0.00			1/2"	0.23	0.20	0.00
			0.00			Ice	0.30	0.27	0.01
						1" Ice	0.48	0.44	0.01
						2" Ice	0.93	0.88	0.05
						4" Ice			
(2) 860 10025	C	From Leg	4.00	0.0000	107.00	No Ice	0.16	0.14	0.00
			0.00			1/2"	0.23	0.20	0.00
			0.00			Ice	0.30	0.27	0.01
						1" Ice	0.48	0.44	0.01
						2" Ice	0.93	0.88	0.05
						4" Ice			
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	107.00	No Ice	1.47	1.47	0.03
			0.00			1/2"	1.67	1.67	0.05
			0.00			Ice	1.88	1.88	0.07
						1" Ice	2.33	2.33	0.12
						2" Ice	3.38	3.38	0.25
						4" Ice			
(2) RRUS-11	A	From Leg	4.00	0.0000	107.00	No Ice	2.94	1.25	0.06
			0.00			1/2"	3.17	1.41	0.07
			0.00			Ice	3.41	1.59	0.10
						1" Ice	3.91	1.96	0.15
						2" Ice	5.02	2.82	0.30
						4" Ice			
RRUS-11	B	From Leg	4.00	0.0000	107.00	No Ice	2.94	1.25	0.06
			0.00			1/2"	3.17	1.41	0.07
			0.00			Ice	3.41	1.59	0.10
						1" Ice	3.91	1.96	0.15
						2" Ice	5.02	2.82	0.30
						4" Ice			
DTMABP7819VG12A	B	From Leg	4.00	0.0000	107.00	No Ice	1.14	0.39	0.02
			0.00			1/2"	1.28	0.49	0.03
			0.00			Ice	1.44	0.59	0.04
						1" Ice	1.77	0.83	0.06
						2" Ice	2.54	1.41	0.14
						4" Ice			
(2) DTMABP7819VG12A	C	From Leg	4.00	0.0000	107.00	No Ice	1.14	0.39	0.02
			0.00			1/2"	1.28	0.49	0.03
			0.00			Ice	1.44	0.59	0.04
						1" Ice	1.77	0.83	0.06
						2" Ice	2.54	1.41	0.14
						4" Ice			
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	4.00	0.0000	107.00	No Ice	13.81	10.80	0.08
			0.00			1/2"	14.54	12.12	0.18
			2.00			Ice	15.27	13.17	0.29
						1" Ice	16.76	15.29	0.54
						2" Ice	19.84	19.72	1.22
						4" Ice			
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.00	0.0000	107.00	No Ice	13.81	10.80	0.08
			0.00			1/2"	14.54	12.12	0.18
			2.00			Ice	15.27	13.17	0.29
						1" Ice	16.76	15.29	0.54
						2" Ice	19.84	19.72	1.22
						4" Ice			
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	4.00	0.0000	107.00	No Ice	13.81	10.80	0.08
			0.00			1/2"	14.54	12.12	0.18
			2.00			Ice	15.27	13.17	0.29
						1" Ice	16.76	15.29	0.54
						2" Ice	19.84	19.72	1.22
						4" Ice			
RRUS 12	A	From Leg	4.00	0.0000	107.00	No Ice	3.67	1.49	0.06
			0.00			1/2"	3.93	1.67	0.08
			2.00			Ice	4.19	1.87	0.11

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* °	*Placement* *ft*		*C_AA_A Front* *ft^2*	*C_AA_A Side* *ft^2*	*Weight* *K*
						1" Ice	4.75	2.28	0.17
						2" Ice	5.96	3.21	0.34
						4" Ice			
RRUS 12	B	From Leg	4.00	0.0000	107.00	No Ice	3.67	1.49	0.06
			0.00			1/2"	3.93	1.67	0.08
			2.00			Ice	4.19	1.87	0.11
						1" Ice	4.75	2.28	0.17
						2" Ice	5.96	3.21	0.34
						4" Ice			
RRUS 12	C	From Leg	4.00	0.0000	107.00	No Ice	3.67	1.49	0.06
			0.00			1/2"	3.93	1.67	0.08
			2.00			Ice	4.19	1.87	0.11
						1" Ice	4.75	2.28	0.17
						2" Ice	5.96	3.21	0.34
						4" Ice			
RRUS A2	A	From Leg	4.00	0.0000	107.00	No Ice	2.41	0.53	0.02
			0.00			1/2"	2.62	0.67	0.03
			2.00			Ice	2.84	0.81	0.05
						1" Ice	3.30	1.11	0.09
						2" Ice	4.32	1.83	0.20
						4" Ice			
RRUS A2	B	From Leg	4.00	0.0000	107.00	No Ice	2.41	0.53	0.02
			0.00			1/2"	2.62	0.67	0.03
			2.00			Ice	2.84	0.81	0.05
						1" Ice	3.30	1.11	0.09
						2" Ice	4.32	1.83	0.20
						4" Ice			
RRUS A2	C	From Leg	4.00	0.0000	107.00	No Ice	2.41	0.53	0.02
			0.00			1/2"	2.62	0.67	0.03
			2.00			Ice	2.84	0.81	0.05
						1" Ice	3.30	1.11	0.09
						2" Ice	4.32	1.83	0.20
						4" Ice			
8'x2.375" Pipe Mount	A	From Leg	4.00	0.0000	107.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice	6.50	6.50	0.30
						4" Ice			
8'x2.375" Pipe Mount	B	From Leg	4.00	0.0000	107.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice	6.50	6.50	0.30
						4" Ice			
8'x2.375" Pipe Mount	C	From Leg	4.00	0.0000	107.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice	6.50	6.50	0.30
						4" Ice			
Platform Mount [LP 712-1]	C	None		0.0000	107.00	No Ice	24.53	24.53	1.34
						1/2"	29.94	29.94	1.65
						Ice	35.35	35.35	1.96
						1" Ice	46.17	46.17	2.58
						2" Ice	67.81	67.81	3.82
						4" Ice			
level 90									
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	A	From Leg	4.00	0.0000	90.00	No Ice	2.86	7.23	0.03
			0.00			1/2"	3.22	7.92	0.08
			1.00			Ice	3.59	8.63	0.13
						1" Ice	4.45	10.11	0.25
						2" Ice	6.32	13.34	0.61
						4" Ice			
BXA-70063-4CF-EDIN-X	A	From Leg	4.00	0.0000	90.00	No Ice	5.89	4.18	0.04

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		*C_AA_A Front* ft^2	*C_AA_A Side* ft^2	*Weight* K
w/ Mount Pipe			0.00			1/2"	6.59	5.21	0.08
			1.00			Ice	7.17	5.95	0.14
						1" Ice	8.36	7.53	0.27
						2" Ice	10.91	10.98	0.65
						4" Ice			
(2) SC 9012 REV2 w/Mount Pipe	B	From Leg	4.00	0.0000	90.00	No Ice	2.95	4.40	0.03
			0.00			1/2"	3.33	5.01	0.06
			1.00			Ice	3.73	5.64	0.10
						1" Ice	4.55	6.96	0.21
						2" Ice	6.35	9.90	0.51
						4" Ice			
(2) SC 9012 REV2 w/Mount Pipe	C	From Leg	4.00	0.0000	90.00	No Ice	2.95	4.40	0.03
			0.00			1/2"	3.33	5.01	0.06
			1.00			Ice	3.73	5.64	0.10
						1" Ice	4.55	6.96	0.21
						2" Ice	6.35	9.90	0.51
						4" Ice			
(2) 742 213 w/ Mount Pipe	A	From Leg	4.00	0.0000	90.00	No Ice	5.37	4.62	0.05
			0.00			1/2"	5.95	6.00	0.09
			1.00			Ice	6.50	6.98	0.15
						1" Ice	7.61	8.85	0.28
						2" Ice	9.93	12.79	0.68
						4" Ice			
(2) 742 213 w/ Mount Pipe	B	From Leg	4.00	0.0000	90.00	No Ice	5.37	4.62	0.05
			0.00			1/2"	5.95	6.00	0.09
			1.00			Ice	6.50	6.98	0.15
						1" Ice	7.61	8.85	0.28
						2" Ice	9.93	12.79	0.68
						4" Ice			
(2) 742 213 w/ Mount Pipe	C	From Leg	4.00	0.0000	90.00	No Ice	5.37	4.62	0.05
			0.00			1/2"	5.95	6.00	0.09
			1.00			Ice	6.50	6.98	0.15
						1" Ice	7.61	8.85	0.28
						2" Ice	9.93	12.79	0.68
						4" Ice			
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	B	From Leg	4.00	0.0000	90.00	No Ice	7.97	5.80	0.04
			0.00			1/2"	8.61	6.95	0.10
			1.00			Ice	9.22	7.82	0.17
						1" Ice	10.46	9.60	0.34
						2" Ice	13.07	13.37	0.80
						4" Ice			
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	C	From Leg	4.00	0.0000	90.00	No Ice	7.97	5.80	0.04
			0.00			1/2"	8.61	6.95	0.10
			1.00			Ice	9.22	7.82	0.17
						1" Ice	10.46	9.60	0.34
						2" Ice	13.07	13.37	0.80
						4" Ice			
(2) FD9R6004/2C-3L	A	From Leg	4.00	0.0000	90.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			1.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
						4" Ice			
(2) FD9R6004/2C-3L	B	From Leg	4.00	0.0000	90.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			1.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
						4" Ice			
(2) FD9R6004/2C-3L	C	From Leg	4.00	0.0000	90.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			1.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
						4" Ice			

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		*C_AA_A Front* ft^2	*C_AA_A Side* ft^2	*Weight* K
RRH2x40-AWS	A	From Leg	4.00 0.00 1.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.52 2.75 2.99 3.50 4.61	1.59 1.80 2.01 2.46 3.48	0.04 0.06 0.08 0.13 0.28
RRH2x40-AWS	B	From Leg	4.00 0.00 1.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.52 2.75 2.99 3.50 4.61	1.59 1.80 2.01 2.46 3.48	0.04 0.06 0.08 0.13 0.28
RRH2x40-AWS	C	From Leg	4.00 0.00 1.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.52 2.75 2.99 3.50 4.61	1.59 1.80 2.01 2.46 3.48	0.04 0.06 0.08 0.13 0.28
DB-B1-6C-8AB-0Z	A	From Leg	4.00 0.00 1.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.60 5.92 6.24 6.91 8.37	2.33 2.56 2.79 3.28 4.37	0.04 0.08 0.12 0.21 0.45
Platform Mount [LP 712-1]	C	None		0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	24.53 29.94 35.35 46.17 67.81	24.53 29.94 35.35 46.17 67.81	1.34 1.65 1.96 2.58 3.82
level 80									
(4) DB844H90-XY w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.10 3.48 3.88 4.76 6.66	5.15 5.83 6.52 7.96 11.09	0.03 0.07 0.11 0.22 0.55
(4) DB844H90-XY w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.10 3.48 3.88 4.76 6.66	5.15 5.83 6.52 7.96 11.09	0.03 0.07 0.11 0.22 0.55
(4) DB844H90-XY w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.10 3.48 3.88 4.76 6.66	5.15 5.83 6.52 7.96 11.09	0.03 0.07 0.11 0.22 0.55
Platform Mount [LP 601-1]	C	None		0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	28.47 33.59 38.71 48.95 69.43	28.47 33.59 38.71 48.95 69.43	1.12 1.51 1.91 2.69 4.26
level 74									
PCS 1900MHz 4x45W-65MHz	A	From Leg	2.00 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.85 3.09 3.61 4.74	0.06 0.08 0.11 0.17 0.35
PCS 1900MHz 4x45W-65MHz	B	From Leg	2.00 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice	2.71 2.95 3.20	2.61 2.85 3.09	0.06 0.08 0.11

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		*C_AA_A Front* *ft^2*	*C_AA_A Side* *ft^2*	*Weight* *K*
						1" Ice	3.72	3.61	0.17
						2" Ice	4.86	4.74	0.35
						4" Ice			
PCS 1900MHz 4x45W-65MHz	C	From Leg	2.00 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.85 3.09 3.61 4.74	0.06 0.08 0.11 0.17 0.35
800MHz 2X50W RRH W/FILTER	A	From Leg	2.00 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	B	From Leg	2.00 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	C	From Leg	2.00 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
(2) 5'x2 1/2" Pipe Mount	A	From Leg	2.00 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.33 1.63 1.95 2.60 4.11	1.33 1.63 1.95 2.60 4.11	0.03 0.04 0.05 0.09 0.22
(2) 5'x2 1/2" Pipe Mount	B	From Leg	2.00 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.33 1.63 1.95 2.60 4.11	1.33 1.63 1.95 2.60 4.11	0.03 0.04 0.05 0.09 0.22
(2) 5'x2 1/2" Pipe Mount	C	From Leg	2.00 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.33 1.63 1.95 2.60 4.11	1.33 1.63 1.95 2.60 4.11	0.03 0.04 0.05 0.09 0.22
Side Arm Mount [SO 102-3]	C	None		0.0000	74.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.00 3.48 3.96 4.92 6.84	3.00 3.48 3.96 4.92 6.84	0.08 0.11 0.14 0.20 0.32
level 72									
APXV9ERR18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	7.47 8.66 9.56 11.39 15.53	0.09 0.16 0.24 0.42 0.94
APXV9ERR18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	7.47 8.66 9.56 11.39 15.53	0.09 0.16 0.24 0.42 0.94
APXVSPP18-C-A20 w/	B	From Leg	4.00	0.0000	72.00	No Ice	8.50	6.95	0.08

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		*C_AA_A Front* ft^2	*C_AA_A Side* ft^2	*Weight* K
Mount Pipe			0.00			1/2"	9.15	8.13	0.15
			2.00			Ice	9.77	9.02	0.23
						1" Ice	11.03	10.84	0.41
						2" Ice	13.68	14.85	0.91
						4" Ice			
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00	0.0000	72.00	No Ice	7.13	4.96	0.08
			0.00			1/2"	7.66	5.75	0.13
			2.00			Ice	8.18	6.47	0.19
						1" Ice	9.26	8.01	0.34
						2" Ice	11.53	11.41	0.75
						4" Ice			
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00	0.0000	72.00	No Ice	7.13	4.96	0.08
			0.00			1/2"	7.66	5.75	0.13
			2.00			Ice	8.18	6.47	0.19
						1" Ice	9.26	8.01	0.34
						2" Ice	11.53	11.41	0.75
						4" Ice			
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00	0.0000	72.00	No Ice	7.13	4.96	0.08
			0.00			1/2"	7.66	5.75	0.13
			2.00			Ice	8.18	6.47	0.19
						1" Ice	9.26	8.01	0.34
						2" Ice	11.53	11.41	0.75
						4" Ice			
TD-RRH8x20-25	A	From Leg	4.00	0.0000	72.00	No Ice	4.72	1.70	0.07
			0.00			1/2"	5.01	1.92	0.10
			2.00			Ice	5.32	2.14	0.13
						1" Ice	5.95	2.62	0.20
						2" Ice	7.31	3.68	0.40
						4" Ice			
TD-RRH8x20-25	B	From Leg	4.00	0.0000	72.00	No Ice	4.72	1.70	0.07
			0.00			1/2"	5.01	1.92	0.10
			2.00			Ice	5.32	2.14	0.13
						1" Ice	5.95	2.62	0.20
						2" Ice	7.31	3.68	0.40
						4" Ice			
TD-RRH8x20-25	C	From Leg	4.00	0.0000	72.00	No Ice	4.72	1.70	0.07
			0.00			1/2"	5.01	1.92	0.10
			2.00			Ice	5.32	2.14	0.13
						1" Ice	5.95	2.62	0.20
						2" Ice	7.31	3.68	0.40
						4" Ice			
5' x 2' Pipe Mount	A	From Leg	4.00	0.0000	72.00	No Ice	1.00	1.00	0.03
			0.00			1/2"	1.39	1.39	0.04
			2.00			Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
						4" Ice			
5' x 2' Pipe Mount	B	From Leg	4.00	0.0000	72.00	No Ice	1.00	1.00	0.03
			0.00			1/2"	1.39	1.39	0.04
			2.00			Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
						4" Ice			
5' x 2' Pipe Mount	C	From Leg	4.00	0.0000	72.00	No Ice	1.00	1.00	0.03
			0.00			1/2"	1.39	1.39	0.04
			2.00			Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
						4" Ice			
Platform Mount [LP 601-1]	C	None		0.0000	72.00	No Ice	28.47	28.47	1.12
						1/2"	33.59	33.59	1.51
						Ice	38.71	38.71	1.91
						1" Ice	48.95	48.95	2.69
						2" Ice	69.43	69.43	4.26
						4" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
level 62									
APX18-206516L	A	From Leg	1.00 0.00 0.00	0.0000	62.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.51 3.85 4.22 5.04 6.80	2.00 2.33 2.66 3.34 4.81	0.02 0.04 0.06 0.12 0.31
APX18-206516L	B	From Leg	1.00 0.00 0.00	0.0000	62.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.51 3.85 4.22 5.04 6.80	2.00 2.33 2.66 3.34 4.81	0.02 0.04 0.06 0.12 0.31
APX18-206516L	C	From Leg	1.00 0.00 0.00	0.0000	62.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.51 3.85 4.22 5.04 6.80	2.00 2.33 2.66 3.34 4.81	0.02 0.04 0.06 0.12 0.31
Pipe Mount [PM 501-3]	C	None		0.0000	62.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.78 7.37 8.96 12.14 18.50	5.78 7.37 8.96 12.14 18.50	0.16 0.18 0.20 0.24 0.32
level 47									
GPS	A	From Leg	3.00 0.00 0.00	0.0000	47.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.17 0.24 0.31 0.48 0.92	0.17 0.24 0.31 0.48 0.92	0.00 0.00 0.00 0.01 0.05
Side Arm Mount [SO 701-1]	A	From Leg	1.50 0.00 0.00	0.0000	47.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.85 1.14 1.43 2.01 3.17	1.67 2.34 3.01 4.35 7.03	0.07 0.08 0.09 0.12 0.18

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp

Comb. No.	Description
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	109 - 95	Pole	Max Tension	15	0.00	0.00	-0.00
			Max. Compression	14	-8.01	-0.32	1.80
			Max. Mx	5	-3.23	-72.17	0.42
			Max. My	2	-3.22	0.03	74.09
			Max. Vy	5	5.77	-72.17	0.42
			Max. Vx	2	-5.88	0.03	74.09
			Max. Torque	5			1.37
L2	95 - 48.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-32.20	0.00	3.16
			Max. Mx	5	-14.82	-694.80	-0.11
			Max. My	2	-14.82	0.96	697.29
			Max. Vy	5	20.03	-694.80	-0.11
			Max. Vx	2	-20.02	0.96	697.29
			Max. Torque	5			2.68
L3	48.08 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-47.93	0.78	3.81
			Max. Mx	11	-26.62	1853.15	3.58
			Max. My	2	-26.62	2.36	1854.20
			Max. Vy	11	-23.66	1853.15	3.58
			Max. Vx	2	-23.62	2.36	1854.20
			Max. Torque	5			2.90

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	47.93	3.55	6.13
	Max. H_x	11	26.63	23.64	0.02
	Max. H_z	2	26.63	0.02	23.60
	Max. M_x	2	1854.20	0.02	23.60
	Max. M_z	5	1853.10	-23.64	-0.02
	Max. Torsion	5	2.90	-23.64	-0.02
	Min. Vert	1	26.63	0.00	0.00
	Min. H_x	5	26.63	-23.64	-0.02

Location	*Condition*	*Gov. Load Comb.*	*Vertical K*	*Horizontal, X K*	*Horizontal, Z K*
	Min. H_z	8	26.63	-0.02	-23.60
	Min. M_x	8	-1851.70	-0.02	-23.60
	Min. M_z	11	-1853.15	23.64	0.02
	Min. Torsion	11	-2.89	23.64	0.02

Tower Mast Reaction Summary

Load Combination	*Vertical K*	*Shear$_x$ K*	*Shear$_z$ K*	*Overturning Moment, M_x kip-ft*	*Overturning Moment, M_z kip-ft*	*Torque kip-ft*
Dead Only	26.63	0.00	0.00	-1.22	0.03	0.00
Dead+Wind 0 deg - No Ice	26.63	-0.02	-23.60	-1854.20	2.36	-0.09
Dead+Wind 30 deg - No Ice	26.63	11.80	-20.43	-1604.79	-924.52	-1.52
Dead+Wind 60 deg - No Ice	26.63	20.46	-11.78	-925.70	-1603.66	-2.55
Dead+Wind 90 deg - No Ice	26.63	23.64	0.02	1.09	-1853.10	-2.90
Dead+Wind 120 deg - No Ice	26.63	20.48	11.82	927.25	-1605.99	-2.46
Dead+Wind 150 deg - No Ice	26.63	11.84	20.45	1604.62	-928.55	-1.37
Dead+Wind 180 deg - No Ice	26.63	0.02	23.60	1851.70	-2.31	0.09
Dead+Wind 210 deg - No Ice	26.63	-11.80	20.43	1602.29	924.57	1.52
Dead+Wind 240 deg - No Ice	26.63	-20.46	11.78	923.21	1603.71	2.55
Dead+Wind 270 deg - No Ice	26.63	-23.64	-0.02	-3.58	1853.15	2.89
Dead+Wind 300 deg - No Ice	26.63	-20.48	-11.82	-929.74	1606.04	2.47
Dead+Wind 330 deg - No Ice	26.63	-11.84	-20.45	-1607.12	928.61	1.38
Dead+Ice+Temp	47.93	-0.00	-0.00	-3.81	0.78	0.00
Dead+Wind 0 deg+Ice+Temp	47.93	-0.01	-7.07	-576.34	1.34	-0.06
Dead+Wind 30 deg+Ice+Temp	47.93	3.54	-6.12	-499.37	-285.70	-0.49
Dead+Wind 60 deg+Ice+Temp	47.93	6.14	-3.53	-289.64	-495.97	-0.80
Dead+Wind 90 deg+Ice+Temp	47.93	7.10	0.01	-3.35	-573.13	-0.89
Dead+Wind 120 deg+Ice+Temp	47.93	6.15	3.54	282.79	-496.52	-0.74
Dead+Wind 150 deg+Ice+Temp	47.93	3.55	6.13	492.11	-286.65	-0.39
Dead+Wind 180 deg+Ice+Temp	47.93	0.01	7.07	568.53	0.24	0.06
Dead+Wind 210 deg+Ice+Temp	47.93	-3.54	6.12	491.56	287.27	0.49
Dead+Wind 240 deg+Ice+Temp	47.93	-6.14	3.53	281.84	497.54	0.80
Dead+Wind 270 deg+Ice+Temp	47.93	-7.10	-0.01	-4.45	574.71	0.89
Dead+Wind 300 deg+Ice+Temp	47.93	-6.15	-3.54	-290.60	498.09	0.74
Dead+Wind 330 deg+Ice+Temp	47.93	-3.55	-6.13	-499.92	288.23	0.39
Dead+Wind 0 deg - Service	26.63	-0.01	-9.22	-725.28	0.94	-0.03
Dead+Wind 30 deg - Service	26.63	4.61	-7.98	-627.83	-361.23	-0.60
Dead+Wind 60 deg - Service	26.63	7.99	-4.60	-362.48	-626.61	-1.00
Dead+Wind 90 deg - Service	26.63	9.23	0.01	-0.34	-724.07	-1.13
Dead+Wind 120 deg - Service	26.63	8.00	4.62	361.56	-627.52	-0.96
Dead+Wind 150 deg - Service	26.63	4.63	7.99	626.24	-362.81	-0.54
Dead+Wind 180 deg - Service	26.63	0.01	9.22	722.78	-0.88	0.03
Dead+Wind 210 deg - Service	26.63	-4.61	7.98	625.33	361.29	0.60
Dead+Wind 240 deg - Service	26.63	-7.99	4.60	359.98	626.66	1.00
Dead+Wind 270 deg - Service	26.63	-9.23	-0.01	-2.16	724.13	1.13
Dead+Wind 300 deg -	26.63	-8.00	-4.62	-364.06	627.57	0.96

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Service Dead+Wind 330 deg - Service	26.63	-4.63	-7.99	-628.74	362.87	0.54

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-26.63	0.00	0.00	26.63	0.00	0.000%
2	-0.02	-26.63	-23.60	0.02	26.63	23.60	0.000%
3	11.80	-26.63	-20.43	-11.80	26.63	20.43	0.000%
4	20.46	-26.63	-11.78	-20.46	26.63	11.78	0.000%
5	23.64	-26.63	0.02	-23.64	26.63	-0.02	0.000%
6	20.48	-26.63	11.82	-20.48	26.63	-11.82	0.000%
7	11.84	-26.63	20.45	-11.84	26.63	-20.45	0.000%
8	0.02	-26.63	23.60	-0.02	26.63	-23.60	0.000%
9	-11.80	-26.63	20.43	11.80	26.63	-20.43	0.000%
10	-20.46	-26.63	11.78	20.46	26.63	-11.78	0.000%
11	-23.64	-26.63	-0.02	23.64	26.63	0.02	0.000%
12	-20.48	-26.63	-11.82	20.48	26.63	11.82	0.000%
13	-11.84	-26.63	-20.45	11.84	26.63	20.45	0.000%
14	0.00	-47.93	0.00	0.00	47.93	0.00	0.000%
15	-0.01	-47.93	-7.07	0.01	47.93	7.07	0.000%
16	3.54	-47.93	-6.12	-3.54	47.93	6.12	0.000%
17	6.14	-47.93	-3.53	-6.14	47.93	3.53	0.000%
18	7.10	-47.93	0.01	-7.10	47.93	-0.01	0.000%
19	6.15	-47.93	3.54	-6.15	47.93	-3.54	0.000%
20	3.55	-47.93	6.13	-3.55	47.93	-6.13	0.000%
21	0.01	-47.93	7.07	-0.01	47.93	-7.07	0.000%
22	-3.54	-47.93	6.12	3.54	47.93	-6.12	0.000%
23	-6.14	-47.93	3.53	6.14	47.93	-3.53	0.000%
24	-7.10	-47.93	-0.01	7.10	47.93	0.01	0.000%
25	-6.15	-47.93	-3.54	6.15	47.93	3.54	0.000%
26	-3.55	-47.93	-6.13	3.55	47.93	6.13	0.000%
27	-0.01	-26.63	-9.22	0.01	26.63	9.22	0.000%
28	4.61	-26.63	-7.98	-4.61	26.63	7.98	0.000%
29	7.99	-26.63	-4.60	-7.99	26.63	4.60	0.000%
30	9.23	-26.63	0.01	-9.23	26.63	-0.01	0.000%
31	8.00	-26.63	4.62	-8.00	26.63	-4.62	0.000%
32	4.63	-26.63	7.99	-4.63	26.63	-7.99	0.000%
33	0.01	-26.63	9.22	-0.01	26.63	-9.22	0.000%
34	-4.61	-26.63	7.98	4.61	26.63	-7.98	0.000%
35	-7.99	-26.63	4.60	7.99	26.63	-4.60	0.000%
36	-9.23	-26.63	-0.01	9.23	26.63	0.01	0.000%
37	-8.00	-26.63	-4.62	8.00	26.63	4.62	0.000%
38	-4.63	-26.63	-7.99	4.63	26.63	7.99	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00001863
3	Yes	5	0.00000001	0.00002685
4	Yes	5	0.00000001	0.00003434
5	Yes	4	0.00000001	0.00047321
6	Yes	5	0.00000001	0.00002562
7	Yes	5	0.00000001	0.00003220
8	Yes	4	0.00000001	0.00002536
9	Yes	5	0.00000001	0.00003161
10	Yes	5	0.00000001	0.00002545

11	Yes	4	0.00000001	0.00048205
12	Yes	5	0.00000001	0.00003473
13	Yes	5	0.00000001	0.00002682
14	Yes	4	0.00000001	0.00000966
15	Yes	4	0.00000001	0.00068312
16	Yes	4	0.00000001	0.00081158
17	Yes	4	0.00000001	0.00083925
18	Yes	4	0.00000001	0.00069446
19	Yes	4	0.00000001	0.00079473
20	Yes	4	0.00000001	0.00080716
21	Yes	4	0.00000001	0.00066626
22	Yes	4	0.00000001	0.00080400
23	Yes	4	0.00000001	0.00079269
24	Yes	4	0.00000001	0.00069537
25	Yes	4	0.00000001	0.00084300
26	Yes	4	0.00000001	0.00081419
27	Yes	4	0.00000001	0.00000760
28	Yes	4	0.00000001	0.00011330
29	Yes	4	0.00000001	0.00018751
30	Yes	4	0.00000001	0.00010459
31	Yes	4	0.00000001	0.00011583
32	Yes	4	0.00000001	0.00016132
33	Yes	4	0.00000001	0.00000791
34	Yes	4	0.00000001	0.00015565
35	Yes	4	0.00000001	0.00011361
36	Yes	4	0.00000001	0.00010531
37	Yes	4	0.00000001	0.00019108
38	Yes	4	0.00000001	0.00011367

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	109 - 95	14.380	38	1.0531	0.0079
L2	95 - 48.08	11.337	38	1.0089	0.0059
L3	53 - 0	3.753	38	0.6441	0.0020

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
111.00	Lighting Rod 3/4" x 4'	38	14.380	1.0531	0.0079	45343
107.00	800 10121 w/ Mount Pipe	38	13.942	1.0481	0.0076	45343
90.00	(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	38	10.278	0.9832	0.0053	11475
80.00	(4) DB844H90-XY w/ Mount Pipe	38	8.245	0.9139	0.0042	7250
74.00	PCS 1900MHz 4x45W-65MHz	38	7.100	0.8625	0.0036	5938
72.00	APXV9ERR18-C-A20 w/ Mount Pipe	38	6.734	0.8440	0.0034	5600
62.00	APX18-206516L	38	5.042	0.7433	0.0026	4359
47.00	GPS	38	3.036	0.5754	0.0016	4096

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	109 - 95	36.719	13	2.6847	0.0201

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L2	95 - 48.08	28.957	13	2.5752	0.0151
L3	53 - 0	9.593	13	1.6460	0.0050

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
111.00	Lighting Rod 3/4" x 4'	13	36.719	2.6847	0.0202	18195
107.00	800 10121 w/ Mount Pipe	13	35.601	2.6723	0.0195	18195
90.00	(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	13	26.254	2.5106	0.0136	4566
80.00	(4) DB844H90-XY w/ Mount Pipe	13	21.065	2.3345	0.0107	2863
74.00	PCS 1900MHz 4x45W-65MHz	13	18.142	2.2036	0.0092	2339
72.00	APXV9ERR18-C-A20 w/ Mount Pipe	13	17.207	2.1564	0.0087	2204
62.00	APX18-206516L	13	12.886	1.8993	0.0066	1711
47.00	GPS	13	7.758	1.4706	0.0042	1605

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	109 - 95 (1)	TP26.715x23.476x0.1875	14.00	0.00	0.0	39.000	15.7872	-3.22	615.70	0.005
L2	95 - 48.08 (2)	TP37.573x26.715x0.3125	46.92	0.00	0.0	39.000	35.8284	-14.81	1397.31	0.011
L3	48.08 - 0 (3)	TP48.075x35.8094x0.375	53.00	0.00	0.0	39.000	56.7749	-26.62	2214.22	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	109 - 95 (1)	TP26.715x23.476x0.1875	74.09	8.596	39.000	0.220	0.00	0.000	39.000	0.000
L2	95 - 48.08 (2)	TP37.573x26.715x0.3125	697.62	26.234	39.000	0.673	0.00	0.000	39.000	0.000
L3	48.08 - 0 (3)	TP48.075x35.8094x0.375	1856.11	33.330	39.000	0.855	0.00	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	109 - 95 (1)	TP26.715x23.476x0.1875	5.88	0.372	26.000	0.029	0.15	0.009	26.000	0.000
L2	95 - 48.08 (2)	TP37.573x26.715x0.3125	20.04	0.559	26.000	0.043	1.36	0.025	26.000	0.001
L3	48.08 - 0 (3)	TP48.075x35.8094x0.375	23.65	0.417	26.000	0.032	1.38	0.012	26.000	0.000

Pole Interaction Design Data

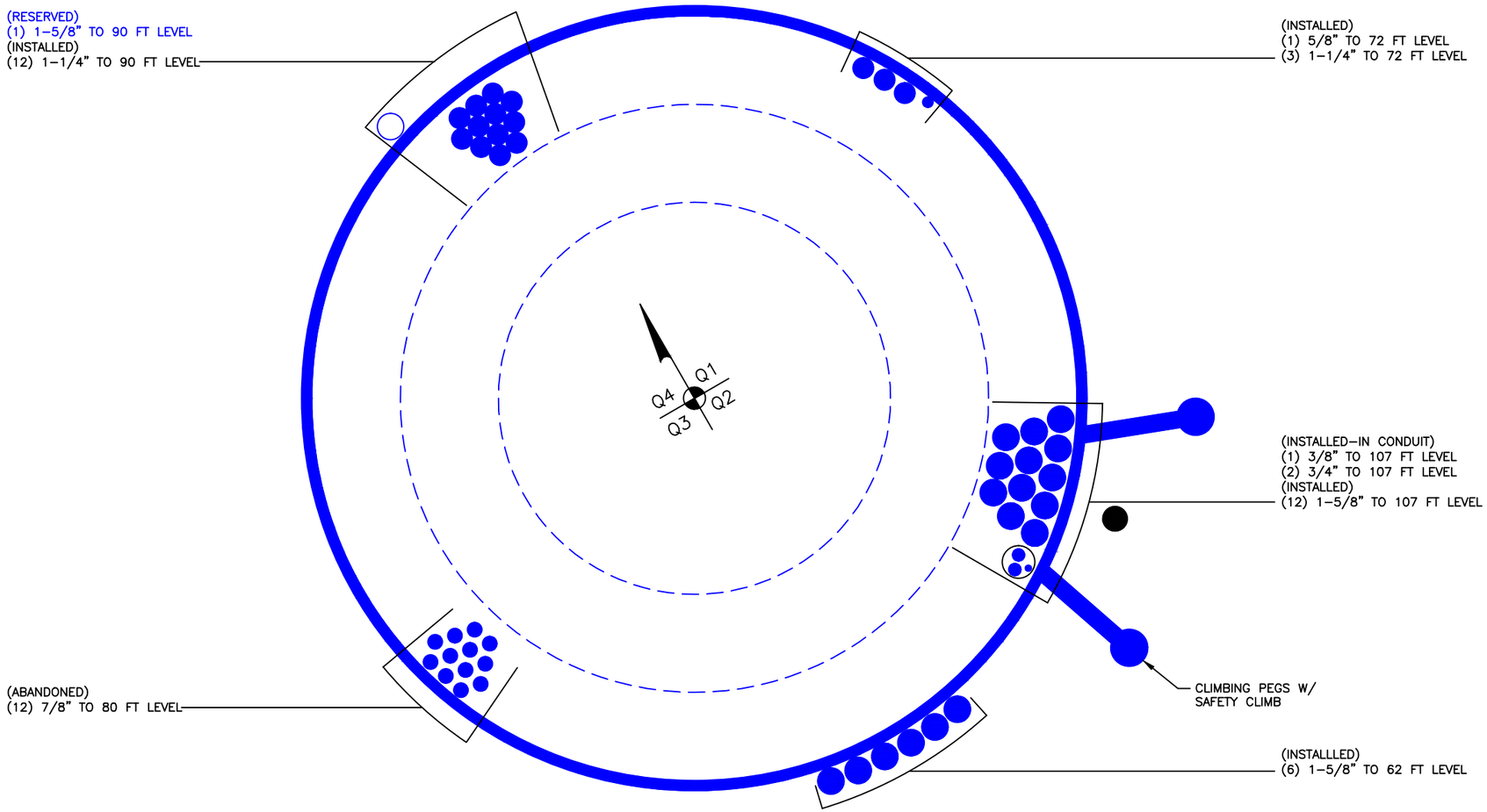
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	109 - 95 (1)	0.005	0.220	0.000	0.029	0.000	0.226 ✔	1.333	H1-3+VT ✔
L2	95 - 48.08 (2)	0.011	0.673	0.000	0.043	0.001	0.684 ✔	1.333	H1-3+VT ✔
L3	48.08 - 0 (3)	0.012	0.855	0.000	0.032	0.000	0.867 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	109 - 95	Pole	TP26.715x23.476x0.1875	1	-3.22	820.73	16.9	Pass
L2	95 - 48.08	Pole	TP37.573x26.715x0.3125	2	-14.81	1862.61	51.3	Pass
L3	48.08 - 0	Pole	TP48.075x35.8094x0.375	3	-26.62	2951.56	65.0	Pass
							Summary	
						Pole (L3)	65.0	Pass
						RATING =	**65.0**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 801486 TOWER ID: C_BASELEVEL

BASE LEVEL DRAWING | NOT TO SCALE | 1

Xref R:\Standards – URE\CAD Standards V5.0\Templates\Typical Blocks For Templates\TITLE BLOCK STD–VER 5.1.dwg

CROWN REGION ADDRESS

USA

29/11/11	AS–BUILT INFORMATION ADDED PER WORK ORDER # 447410	VP
14/12/11	UPDATED PER WORK ORDER # 457083	ESG
12/10/12	UPDATED PER WORK ORDER # 541116	SF
03/12/12	UPDATED PER WORK ORDER # 556505	CJK
24/10/13	UPDATED PER WORK ORDER # 661884	TDG
23/12/13	UPDATED PER WORK ORDER # 693438	CMV
07/03/14	UPDATED PER WORK ORDER # 723728	TAS
12/9/2014	UPDATED PER WORK ORDER 900325	KAH
15/10/2015	UPDATED PER WORK ORDER 1110937	SLW

DRAWN BY: **CDR**
CHECKED BY:
DRAWING DATE: **17/03/06**

SITE NUMBER:
SITE NAME:

SITE NAME

CT SUFFIELD 2 CAC 801486

BUSINESS UNIT NUMBER

801486

SITE ADDRESS

44 FYLER PLACE
SUFFIELD, CT 06078
HARTFORD COUNTY
USA

SHEET TITLE

BASE LEVEL

SHEET NUMBER

A1-0

APPENDIX C

ADDITIONAL CALCULATIONS

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

BU#:	*801486*
Site Name:	*CT SUFFIELD 2 CAC 8014*
App #:	*322497 Rev#3*
Pole Manufacturer:	*Other*

Reactions		
Moment:	1856	ft-kips
Axial:	27	kips
Shear:	24	kips

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	55	in

Plate Data		
Diam:	61	in
Thick:	2.75	in
Grade:	60	ksi
Single-Rod B-eff:	9.54	in

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	48.075	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

If No stiffeners, Criteria:	AISC ASD	<-Only Applcable to Unstiffened Cases

Anchor Rod Results

Maximum Rod Tension:	99.5 Kips	Rigid
Allowable Tension:	195.0 Kips	Service, ASD
Anchor Rod Stress Ratio:	51.1% **Pass**	Fty*ASIF

Base Plate Results

Base Plate Stress:	18.3 ksi	Rigid
Allowable Plate Stress:	60.0 ksi	Service ASD
Base Plate Stress Ratio:	30.6% **Pass**	0.75*Fy*ASIF
	Flexural Check	Y.L. Length: 26.72

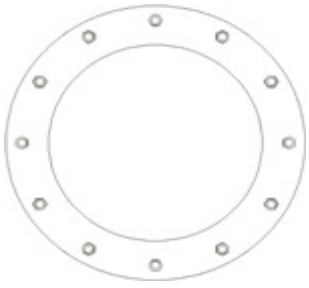
n/a

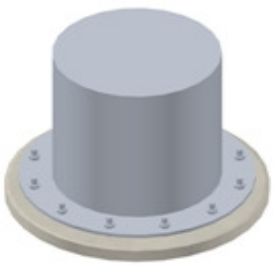
Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: *801486*
Site Name: *CT SUFFIELD 2 CAC 801*
App #: *322497 Rev#3*

Pole Manufacturer:	Other

Reactions		
Moment:	74.09	ft-kips
Axial:	3.22	kips
Shear:	5.88	kips
Elevation:	95	feet

If No stiffeners, Criteria: AISC ASD <-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	20		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	75	<-- Disregard	Bolt Fty: 44.00
N/A:	55	<-- Disregard	
Circle (in.):	33		

Plate Data		
Diam:	36	in
Thick, t:	2.25	in
Grade (Fy):	60	ksi
Strength, Fu:	70	ksi
Single-Rod B-eff:	4.24	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	26.715	in
Thick:	0.1875	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

Bolt Tension Capacity, **B**:	46.07	kips	Rigid
Max Bolt directly applied T:	5.23	Kips	Service, ASD
Min. PL "tc" for **B** cap. **w/o** Pry:	1.703	in	Fty*ASIF
Min PL "treq" for actual **T w/ Pry**:	0.434	in	
Min PL "t1" for actual **T w/o Pry**:	0.574	in	
T allowable w/o Prying:	46.07	kips	α'<0 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	5.23	kips	
Non-Prying Bolt Stress Ratio, T/B:	11.3%	**Pass**	

Exterior Flange Plate Results Flexural Check

Compression Side Plate Stress:	2.8	ksi	Rigid
Allowable Plate Stress:	60.0	ksi	Service ASD
Compression Plate Stress Ratio:	4.6%	**Pass**	0.75*Fy*ASIF
No Prying			Comp. Y.L. Length: 19.37
Tension Side Stress Ratio, (treq/t)^2:	3.7%	**Pass**	

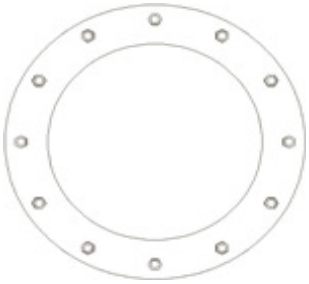
n/a

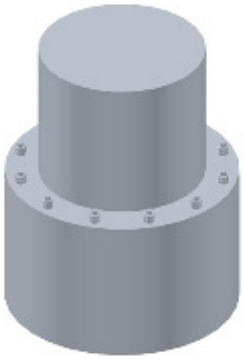
Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

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

Site Data

BU#: *801486*
Site Name: *CT SUFFIELD 2 CAC 801486*
App #: *322497 Rev # 3*

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

Pad & Pier Data		
Base PL Dist. Above Pier:	0	in
Pier Dist. Above Grade:	6	in
Pad Bearing Depth, D:	6.5	ft
Pad Thickness, T:	2.5	ft
Pad Width=Length, L:	26	ft
Pier Cross Section Shape:	Round	<--Pull Down
Enter Pier Diameter:	6.5	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	33.18	ft^2
Pier Height:	4.50	ft
Soil (above pad) Height:	4.00	ft

Soil Parameters		
Unit Weight, γ:	120.0	pcf
Ultimate Bearing Capacity, qn:	8.00	ksf
Strength Reduct. factor, ϕ:	0.75	
Angle of Friction, Φ:	0.0	degrees
Undrained Shear Strength, Cu:	1.15	ksf
Allowable Bearing: ϕ*qn:	6.00	ksf
Passive Pres. Coeff., Kp	1.00	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	32.4	kips
Pad Force Location Above D:	1.23	ft
ϕ(Passive Pressure Moment):	39.81	ft-kips
Factored O.T. M(WL), "1.6W":	2732.4	ft-kips
Factored OT (MW-Msoil), M1	2692.59	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	0.00	ft
Sum of Soil Wedges Wt:	0.00	kips
Soil Wedges ecc, K1:	0.00	ft
Ftg+Soil above Pad wt:	584.5	kips
Unfactored (Total ftg-soil Wt):	584.45	kips
1.2D. **No Soil Wedges**.	733.74	kips
0.9D. **With Soil Wedges**	550.31	kips

Resistance due to Cohesion (Vertical)		
ϕ*(1/2*Cu)(Total Vert. Planes)	69.41	kips
Cohesion Force Eccentricity, K2	11.74	ft

Monopole Base Reaction Forces		
TIA Revision:	F	<--Pull Down
Unfactored DL Axial, PD:	27	kips
Unfactored WL Axial, PW:	0	kips
Unfactored WL Shear, V:	24	kips
Unfactored WL Moment, M:	1856	ft-kips

Load Factor	Shaft Factored Loads		
1.20	1.2D+1.6W, Pu:	32.4	kips
0.90	0.9D+1.6W, Pu:	24.3	kips
1.35	Vu:	32.4	kips
	Mu:	2505.6	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(**No Soil Wedges**) [Reaction+Conc+Soil]	733.74	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	2692.59	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	3.67	ft
Orthogonal qu=	1.70	ksf
qu/ϕ*qn Ratio=	**28.30%**	**Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	2.59	ft
Diagonal qu=	1.69	ksf
qu/ϕ*qn Ratio=	**28.24%**	**Pass**

Run <-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(**w/ Soil Wedges**) [Reaction+Conc+Soil]	550.31	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	1959.15	ft-kips

Orthogonal ecc3 = M2/P2 =	3.56	ft
Ortho Non Bearing Length,NBL=	7.12	ft
Orthogonal qu=	1.26	ksf
Diagonal qu=	1.25	ksf

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	1856.00		
M Orthogonal:	4921.61	**37.71%**	**Pass**
M Diagonal:	4921.61	**37.71%**	**Pass**

Project Name:	CT SUFFIELD C CAC 801486	JACOBS® Jacobs Engineering Group, Inc.	Created On: 6/3/2014
Project Number:	BU 801486		Checked By: DW
Job Number:	WO 1181739		Revised On: 3/4/2015
Date:	1/25/2016		Revision No.: 1.6

Monopole Pad & Pier Foundation

Foundation Parameters

Load		
Code	F	
Axial	27	kips
Shear	24	kips
Moment	1856	k-ft
Soil Unit Weight	120	pcf
Friction Angle	0	
Cohesion	1150	psf

Material		
Concrete Strength (F'c)	3000	psi
Concrete Density	150	pcf
Rebar Tensile (Fy)	60	ksi
Clear Cover	3.5	in

Pad		
Thickness	2.5	ft
Bearing Depth	6.5	ft
Width	26	ft
Rebar Size	9	
Rebar Quantity	22	

Pier		
Pier type	Circle	
Diameter	6.5	ft
Height above Grade	0.5	ft
Rebar Size	9	
Rebar Quantity	32	
Tie Size	5	
Tie C/C Spacing	9	in

Structural Checks

Pad Beam Shear Capacity	635.9	kips
Pad Beam Shear	319.2	kips
Pad Beam Shear Check	50.2%	Pass

Pad Bending Moment Capacity	2373.9	k-ft
Pad Bending Moment	1697.4	k-ft
Pad Bending Moment Check	71.5%	Pass

Punching Shear Capacity	1316.6	kips
Punching Shear	332.5	kips
Punching Shear Check	25.3%	Pass

Pad-Pier Bearing Capacity	15840.3	kips
Pad-Pier Bearing	733.7	kips
Pad-Pier Bearing Check	4.6%	Pass

Pier Beam Shear Capacity	455.4	kips
Pier Beam Shear	32.4	kips
Pier Beam Shear Check	7.1%	Pass

Pier Bending Moment Capacity	4596.6	k-ft
Pier Bending Moment	2638.9	k-ft
Pier Bending Moment Check	57.4%	Pass

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

AT&T Existing Facility

Site ID: CTV1138

Suffield Ffyler Road
Ffyler Road
Suffield, CT 06078

February 1, 2016

EBI Project Number: 6216000450

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	18.68 %

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

EBI Consulting
environmental | engineering | due diligence

February 1, 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: **CTV1138 – Suffield Ffyler Road**

EBI Consulting was directed to analyze the proposed AT&T facility located at **Ffyler Road, Suffield, 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 **Ffyler Road, Suffield, 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) 2 GSM channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

7) 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.

8) 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.

9) The antennas used in this modeling are the **Kathrein 800-10121 and the CCI HPA-65R-BUU-H8** 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.

10) The antenna mounting height centerline of the proposed antennas is **107 feet** above ground level (AGL).

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

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

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AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121
Gain:	11.45 / 14.35 dBd	Gain:	11.45 / 14.35 dBd	Gain:	11.45 / 14.35 dBd
Height (AGL):	107 feet	Height (AGL):	107 feet	Height (AGL):	107 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):	2,471.44	ERP (W):	2,471.44	ERP (W):	2,471.44
Antenna A1 MPE%	**1.10**	Antenna B1 MPE%	**1.10**	Antenna C1 MPE%	**1.10**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	CCI HPA-65R-BUU-H8	Make / Model:	CCI HPA-65R-BUU-H8	Make / Model:	CCI HPA-65R-BUU-H8
Gain:	13.15 / 14.95 dBd	Gain:	13.15 / 14.95 dBd	Gain:	13.15 / 14.95 dBd
Height (AGL):	107 feet	Height (AGL):	107 feet	Height (AGL):	107 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):	6,229.75	ERP (W):	6,229.75	ERP (W):	6,229.75
Antenna A2 MPE%	**3.19**	Antenna B2 MPE%	**3.19**	Antenna C2 MPE%	**3.19**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121
Gain:	11.45 / 14.35 dBd	Gain:	11.45 / 14.35 dBd	Gain:	11.45 / 14.35 dBd
Height (AGL):	107 feet	Height (AGL):	107 feet	Height (AGL):	107 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):	2,471.44	ERP (W):	2,471.44	ERP (W):	2,471.44
Antenna A3 MPE%	**1.10**	Antenna B3 MPE%	**1.10**	Antenna C3 MPE%	**1.10**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**5.39 %**
Verizon Wireless	7.94 %
MetroPCS	2.17 %
Nextel	0.96 %
Sprint	2.22 %
Site Total MPE %:	**18.68 %**

AT&T Sector 1 Total:	5.39 %
AT&T Sector 2 Total:	5.39 %
AT&T Sector 3 Total:	5.39 %
Site Total:	18.68 %

AT&T _ Per Sector (Sectors B & C)	**# 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	418.91	107	2.95	850	567	0.52 %
AT&T 1900 MHz (PCS) UMTS	2	816.81	107	5.76	1900	1000	0.58 %
AT&T 700 MHz LTE	2	1239.23	107	8.73	700	467	1.87 %
AT&T 1900 MHz (PCS) LTE	2	1875.65	107	13.22	1900	1000	1.32 %
AT&T 850 MHz GSM	2	418.91	107	2.95	850	567	0.52 %
AT&T 1900 MHz (PCS) GSM	2	816.81	107	5.76	1900	1000	0.58 %
						Total:	5.39 %

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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:	5.39 %
Sector 2:	5.39 %
Sector 3 :	5.39 %
AT&T Maximum Total (per sector):	5.39 %
Site Total:	18.68 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **18.68%** 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.

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