Crown Castle
12 Gill Street, Suite 5800
Woburn, MA 01801

February 29, 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 / L700 Crown Site BU: 803175**
AT&T Site ID: CT5379
Located at: 167/178 Lester Street, New Britain, CT 06051
Latitude: 41° 41' 11.8" / Longitude: -72° 45' 27.8

Dear Ms. Bachman,

AT&T currently maintains six (6) antennas at the 189 foot level of the existing 188 foot monopole located at 167 Lester Street, New Britain, CT. The tower is owned by Crown Castle. The property is owned by Crown Castle. AT&T now proposes to add three (3) antennas; three (3) RRUs (non-antennas); one (1) raycap; two (2) DC power cables; and, one (1) fiber cable. The antennas would be installed at the same 189 foot level of the tower.

This facility was approved by the City of New Britain Planning and Zoning Commission on May 2002. This approval did not include any conditions (please see attached letter from City Zoning Enforcement Officer).

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 The Honorable Erin E. Stewart, Mayor, as well as the property owner and the tower owner.

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

2. The proposed modification 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-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Amanda Goodall.

Sincerely,

Amanda Goodall
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
339-205-7017
Amanda.Goodall@crowncastle.com
Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 4: Exhibit-3: General Power Density Table report (RF Emissions Analysis Report)

cc: Honorable Erin E. Stewart, Mayor

City of New Britain
27 West Main Street
New Britain, CT 06051

Crown Castle (Both Property Owner and Tower Owner)
12 Gill Street, Suite 5800
Woburn, Ma 01801

City of New Britain

DEPARTMENT OF
LICENSES, PERMITS AND INSPECTIONS

"New Britain: A City for All People"

Tel (860) 826-3384 27 West Main Street, Suite 404 New Britain, CT 06051 Fax (860) 612-4212

December 8, 2015

AMANDA GOODALL
Real Estate Specialist
c/o CROWN CASTLE
12 Gill Street, Suite 5800
Woburn, MA 01801

Subject: 167 Lester Street
I-2 District (general industry) Zone

Dear Sir or Madam:

This is to advise you that the zoning and use of the above caption Premises are governed by the law and regulations of the City of New Britain and the Premises are located in an I-2 District (general industry) under the City of New Britain Zoning Ordinances Section 200.

The property is being used as a Telecommunication tower, 200-10-110 Industry--which is not specifically prohibited. Therefore is a permitted use.

A file check in this department revealed no violations or special conditions on file. Certificate of Occupancy(completion) was issued May 30, 2002.

I hope this letter will suffice in satisfying your needs. If you have any questions, please call at (860) 612 5014.

Sincerely,

David D. Zajac
Building Inspector
Zoning Enforcement Officer

Cc:
file

SITE NAME: NEW BRITAIN EAST
FA NUMBER: 10091781
SITE NUMBER: CTL05379

178 LESTER STREET
NEW BRITAIN, CT 06051
COUNTY: HARTFORD

CROWN SITE NAME: CT NEW BRITAIN 3 CAC 803175
CROWN SITE NUMBER: 803175

PROJECT TEAM

CLIENT REPRESENTATIVE

COMPANY: SMARTLINK, LLC
ADDRESS: 1362 MELLON ROAD, SUITE 140
CITY, STATE, ZIP: HANOVER, MD 21076
CONTACT: RICH WAGNER
E-MAIL: RWAGNER@SMARTLINKLLC.COM

SITE ACQUISITION

COMPANY: SMARTLINK, LLC
ADDRESS: 33 BOSTON POST ROAD WEST, SUITE 210
CITY, STATE, ZIP: MARLBOROUGH, MA 01752
CONTACT: TODD OLIVER
PHONE: (774) 369-3618
E-MAIL: TODD.OLIVER@SMARTLINKLLC.COM

ENGINEER

COMPANY: MASER CONSULTING CONNECTICUT
ADDRESS: 331 NEWMAN SPRINGS RD, SUITE 203
CITY, STATE, ZIP: RED BANK, NJ 07701-5699
CONTACT: FRANK PAZDEN
PHONE: (973) 398-3110 x4505
E-MAIL: FPAZDEN@MASERCONSULTING.COM

RF ENGINEER

COMPANY: NEW CINGULAR WIRELESS PCS, LLC
ADDRESS: 550 COCHITUATE RD.
CITY, STATE, ZIP: FRAMINGHAM, MA 01701
CONTACT: CAMERON SYME
E-MAIL: CS6970@ATT.COM

CONSTRUCTION MANAGER

COMPANY: SMARTLINK, LLC.
ADDRESS: 33 BOSTON POST ROAD WEST, SUITE 210
CITY, STATE, ZIP: MARLBOROUGH, MA 01752
CONTACT: MARK DONNELLY
PHONE: (617) 515-2080
E-MAIL: MARK.DONNELLY@SMARTLINKLLC.COM

SITE INFORMATION

APPLICANT/LESSEE

at&t

NEW CINGULAR WIRELESS PCS, LLC
550 COCHITUATE RD.
FRAMINGHAM, MA 01701

PROPERTY/TOWER OWNER:

NAME: CROWN CASTLE INTERNATIONAL
ADDRESS: 12 GILL STREET, SUITE 5800
CITY, STATE, ZIP: WOBURN, MA 01801
SITE ID #: 803843

LATITUDE: 41.6898919° N

LONGITUDE: 72.7583989° W

LAT./LONG. TYPE: NAD 83

AREA OF CONSTRUCTION: EXISTING EQUIPMENT PAD AND MONOPOLE

ZONING/JURISDICTION: CITY OF NEW BRITAIN

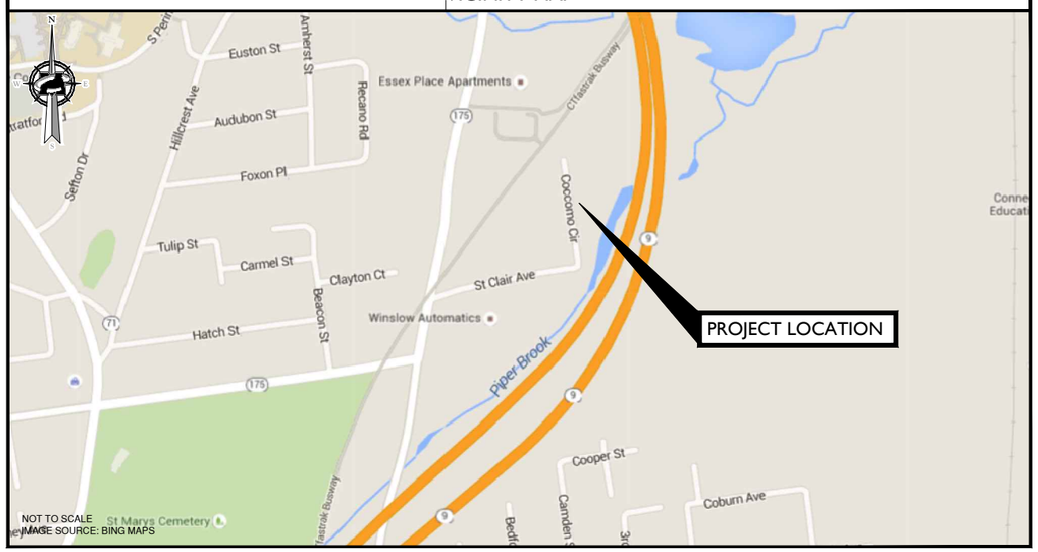
CURRENT USE/PROPOSED USE: UNMANNED TELECOMMUNICATIONS FACILITY

HANDICAP REQUIREMENTS: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.

CONSTRUCTION TYPE: IIB

USE GROUP: U

VICINITY MAP



CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.

1. CONNECTICUT STATE BUILDING CODE (2005) & ALL SUBSEQUENT AMENDMENTS
2. NATIONAL ELECTRIC CODE 2011
3. NATIONAL FIRE PROTECTION ASSOCIATION 70 - 2011
4. LIGHTNING PROTECTION CODE 201
5. AMERICAN CONCRETE INSTITUTE 318
6. AMERICAN INSTITUTE OF STEEL CONSTRICTION 14 ED.
7. EIA/TIA-222 REVISION F
8. TIA 607 FOR GROUNDING
9. INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS 81
10. IEEE C2 LATEST EDITION
11. TELCORDIA GR-1275 12. ANSI T1.311

GENERAL CONTRACTOR NOTES

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

PROJECT DESCRIPTION/SCOPE OF WORK

LTE WCS WILL BE 3C AT THE SITE WITH BRONZE STANDARD CONFIGURATION.

PROPOSED PROJECT SCOPE HEREIN BASED ON RFDS ID# 743836, VERSION 1.00 LAST UPDATED 06/24/15.

THIS PROJECT WILL BE COMPRISED OF
- (3) NEW ANTENNAS TO VACANT MASTS, (1) PER SECTOR
- (3) NEW LTE RRUS, (1) PER SECTOR
- ADD (1) DC-6 SURGE SUPRESSOR
- ADD (1) FIBER CABLE AND (2) DC TRUNK LINES

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1362 MELLON ROAD
SUITE 140
HANOVER, MD 21076
TEL: (410) 582-8043 FAX: (443) 221-2962

at&t

NEW CINGULAR WIRELESS PCS, LLC
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

811 Know what's below. Call before you dig.

PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE:	JOB NUMBER:
AS SHOWN	15946038A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	02/17/16	REVISED PER SMARTLINK'S COMMENTS	DG	FEP
0	10/23/15	ISSUED FOR REVIEW	DG	FEP

STATE OF CONNECTICUT — FRANK E. PAZDEN — NO. 28188 — REGISTERED PROFESSIONAL ENGINEER
FRANK E. PAZDEN
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.28188

SITE NAME:

NEW BRITAIN EAST
FA# 10091781
SITE # CTL05379
CROWN CASTLE # 803175

178 LESTER STREET
NEW BRITAIN, CT 06051
COUNTY OF HARTFORD

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701-5699
Phone: 732.383.1950
Fax: 732.383.1984
email: solutions @maserconsulting.com

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
T-1

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING 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 GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 50 HMS OR LESS.
4. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
5. 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.
6. 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.
7. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE EQUIPMENT GROUND RING WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
8. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
9. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
10. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
11. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. ALL BENDS SHALL BE MADE WITH 12" RADIUS OR LARGER.
12. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
13. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS EXCEPT FOR GROUND BAR CONNECTION FROM MGB TO OUTSIDE EXTERIOR GROUND SHALL ALL BE CADWELD CONNECTIONS.
14. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
15. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED TO THE TOWER GROUND BAR.
16. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
17. ALL EXTERIOR AND INTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
18. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
19. BOND ALL METALLIC OBJECTS WITHIN 6 FT OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
20. 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.
21. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/4" IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50.

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

   CONTRACTOR – SMARTLINK
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T (NEW CINGULAR WIRELESS PCS, LLC)

2. ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
3. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
4. 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.
5. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. 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. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
11. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE RESPONSIBLE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.
12. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.
13. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION.
14. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
15. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
16. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
18. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
19. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
20. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
21. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR.
22. 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.
23. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
24. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS.
25. ALL STRUCTUAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (F_y = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (F_y = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
26. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
27. 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 DESCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
28. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION, ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
29. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN ALERT OF DANGEROUS EXOPOSURE LEVELS.

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at&t
NEW CINGULAR WIRELESS PCS, LLC
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

SCALE : AS SHOWN
JOB NUMBER : 15946038A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
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-	-	-	-	-
1	02/17/16	REVISED PER SMARTLINK'S COMMENTS	DG	FEP
0	10/23/15	ISSUED FOR REVIEW	DG	FEP

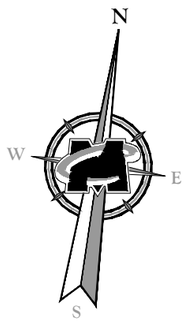
STATE OF CONNECTICUT
FRANK E. FAZDEN
No. 28188
LICENSED PROFESSIONAL ENGINEER
FRANK E. FAZDEN
CONNECTICUT PROFESSIONAL
ENGINEER - LICENSE NUMBER: PEN.28188

SITE NAME:

NEW BRITAIN EAST
FA# 10091781
SITE # CTL05379
CROWN CASTLE # 803175
178 LESTER STREET
NEW BRITAIN, CT 06051
COUNTY OF HARTFORD

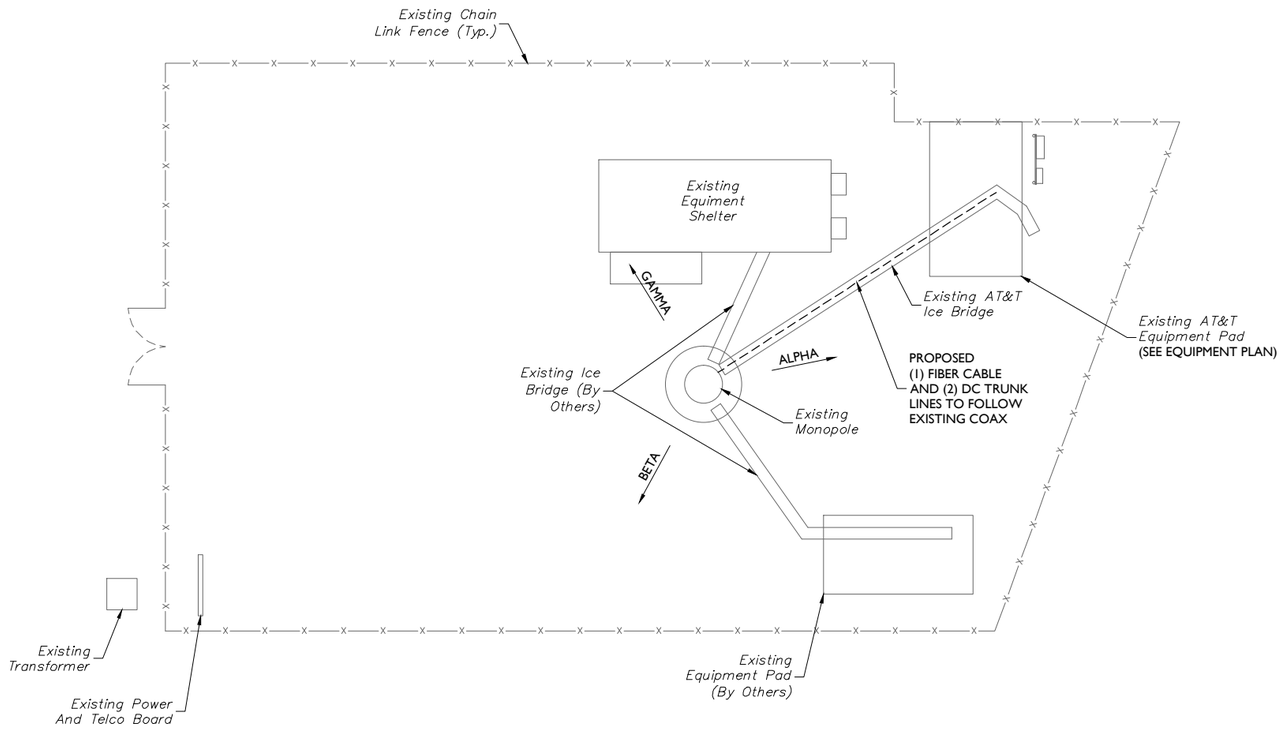
RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701-5699
Phone: 732.383.1950
Fax: 732.383.1984
email: solutions @maserconsulting.com

SHEET TITLE :
GENERAL NOTES



NOTES:

1. THE CONDUIT ROUTING IS DIAGRAMMATICALLY SHOWN ON THE PLANS AND ARE ONLY APPROXIMATIONS. THE EXACT LOCATION AND ROUTING SHALL BE FIELD VERIFIED.
2. ALL DISCONNECTS AND CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED LAMICOID NAMEPLATES, INDICATING THE CIRCUITS ORIGINATION AND ALL EQUIPMENT TERMINATIONS.
3. SUBCONTRACTOR SHALL PROVIDE ALL CONDUITS AND CIRCUITS AS REQUIRED FOR A COMPLETED SYSTEM AND SHALL BE IN COMPLIANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
4. ALL NEW CABLING TO BE ROUTED ON EXISTING CABLE RACKS.
5. ALL INSTALLED GROUND LUGS MUST BE INSPECTION HOLE LUGS.
6. INSTALLED GROUND LEADS MUST TERMINATE AT MGB, NOT HALO.
7. NO OVERLAPPING GROUND HARDWARE.



COMPOUND PLAN

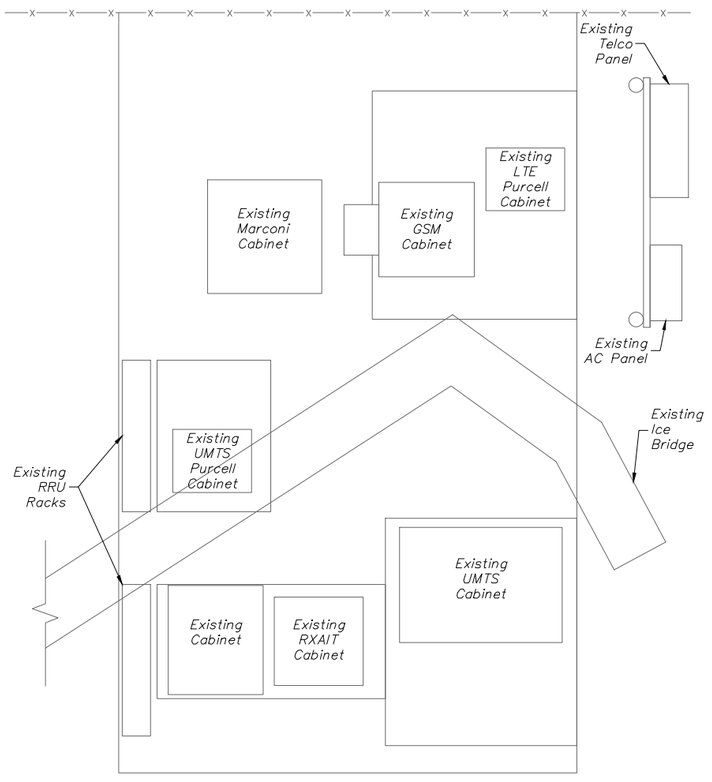
GRAPHIC SCALE

10 0 5 10 20

(IN FEET)

SCALE: 1" = 10' FOR 24"X36" DRAWINGS

(DO NOT SCALE 11"X17" DRAWINGS)



EQUIPMENT PLAN

GRAPHIC SCALE

2 0 1 2 4

(IN FEET)

SCALE: 1" = 2' FOR 24"X36" DRAWINGS

(DO NOT SCALE 11"X17" DRAWINGS)

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SCALE:	JOB NUMBER:
AS SHOWN	15946038A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	02/17/16	REVISED PER SMARTLINK'S COMMENTS	DG	FEP
0	10/23/15	ISSUED FOR REVIEW	DG	FEP

STATE OF CONNECTICUT — FRANK E. PERRETTA — LIC. NO. 28188 — PROFESSIONAL ENGINEER

FRANK E. PERRETTA
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.28188

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF THE RESPONSIBLE LICENSED PROFFESIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SITE NAME:

NEW BRITAIN EAST
FA# 10091781
SITE # CTL05379
CROWN CASTLE # 803175

178 LESTER STREET
NEW BRITAIN, CT 06051
COUNTY OF HARTFORD

RED BANK OFFICE
331 Newman Springs Road
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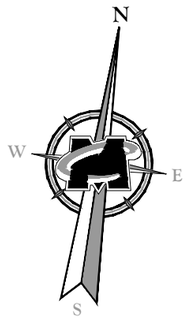
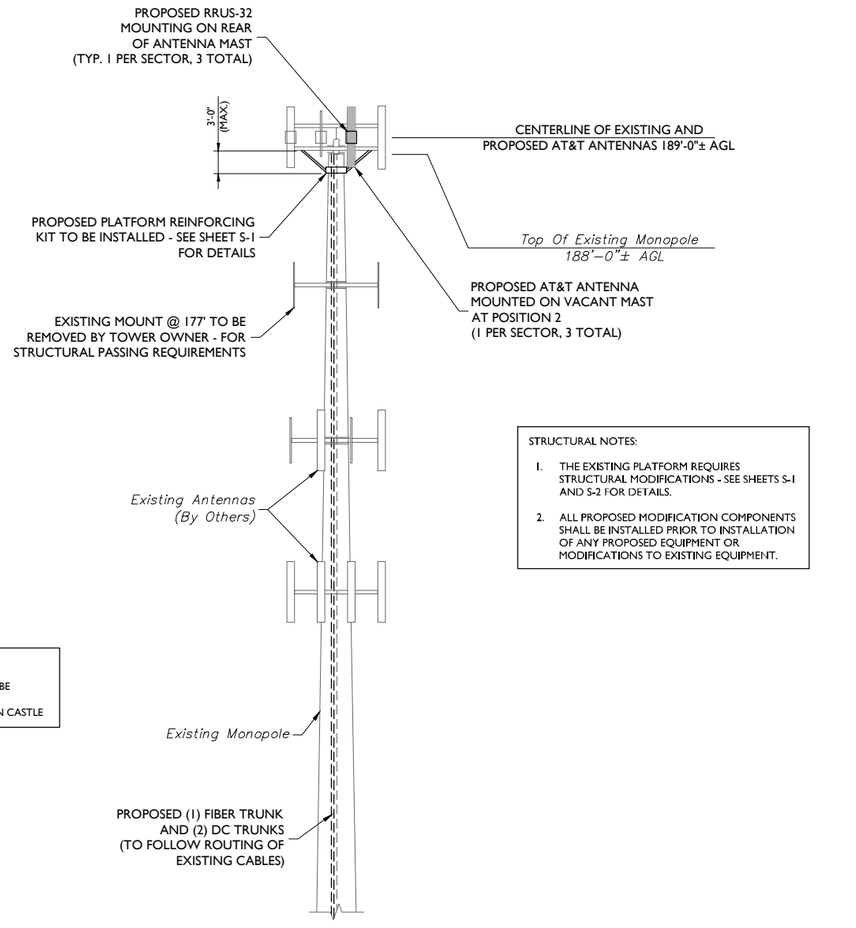
Fax: 732.383.1984
email: solutions @maserconsulting.com

SHEET TITLE:
COMPOUND PLAN AND EQUIPMENT PLAN

SHEET NUMBER:
A-1





STRUCTURAL NOTES:

1. THE EXISTING PLATFORM REQUIRES STRUCTURAL MODIFICATIONS - SEE SHEETS S-1 AND S-2 FOR DETAILS.
2. ALL PROPOSED MODIFICATION COMPONENTS SHALL BE INSTALLED PRIOR TO INSTALLATION OF ANY PROPOSED EQUIPMENT OR MODIFICATIONS TO EXISTING EQUIPMENT.

NOTE:

ALL EQUIPMENT (ANTENNAS, LINES, ETC.) TO BE INSTALLED IN ACCORDANCE WITH PASSING STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE

ELEVATION VIEW

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)

SCALE: 1" = 20' FOR 24"X36" DRAWINGS
(DO NOT SCALE 11"X17" DRAWINGS)

PROPOSED ANTENNA AND RRUS CONFIGURATION

SECTOR		EXISTING ANTENNA CONFIGURATION	PROPOSED ANTENNA CONFIGURATION	TECHNOLOGY	ANTENNA STATUS	HEIGHT (in)	WIDTH (in)	DEPTH (in)	WEIGHT (lbs)	ANTENNA AZIMUTH	ANT. CL ELEV.(ft.)	RRUS CONFIGURATION	STATUS
ALPHA	A1	Kathrein 80010121	Kathrein 80010121	UMTS	REMAIN	54.50	10.30	5.90	44.10	70°	189'	-	-
	A2	VACANT MAST	**CCI OPA-65R-LCUU-H4**	**LTE WCS**	**NEW**	**48.00**	**14.40**	**7.30**	**57.00**	**70°**	**189'**	**RRUS-32**	**NEW**
	A3	VACANT MAST	VACANT MAST	-	-	-	-	-	-	-	-	-	-
	A4	KMW AM-X-CD-14-65-OOT-RET	KMW AM-X-CD-14-65-OOT-RET	LTE 700/1900	REMAIN	48.00	11.80	5.90	36.40	70°	189'	(2) RRUS-11	REMAIN
BETA	B1	Kathrein 80010121	Kathrein 80010121	UMTS	REMAIN	54.50	10.30	5.90	44.10	200°	189'	-	-
	B2	VACANT MAST	**CCI OPA-65R-LCUU-H6**	**LTE WCS**	**NEW**	**72.00**	**14.80**	**7.40**	**73.00**	**200°**	**189'**	**RRUS-32**	**NEW**
	B3	VACANT MAST	VACANT MAST	-	-	-	-	-	-	-	-	-	-
	B4	KMW AM-X-CD-16-65-OOT-RET	KMW AM-X-CD-16-65-OOT-RET	LTE 700/1900	REMAIN	72.00	11.80	5.90	48.50	200°	189'	(2) RRUS-11	REMAIN
GAMMA	C1	Kathrein 80010121	Kathrein 80010121	UMTS	REMAIN	54.50	10.30	5.90	44.10	320°	189'	-	-
	C2	VACANT MAST	**CCI OPA-65R-LCUU-H6**	**LTE WCS**	**NEW**	**72.00**	**14.80**	**7.40**	**73.00**	**320°**	**189'**	**RRUS-32**	**NEW**
	C3	VACANT MAST	VACANT MAST	-	-	-	-	-	-	-	-	-	-
	C4	KMW AM-X-CD-16-65-OOT-RET	KMW AM-X-CD-16-65-OOT-RET	LTE 700/1900	REMAIN	72.00	11.80	5.90	48.50	320°	189'	(2) RRUS-11	REMAIN

ANTENNA SCHEDULE

STRUCTURAL NOTES:

1. A STRUCTURAL ANALYSIS TO DETERMINE IF THE EXISTING STRUCTURE AND FOUNDATION CAN ADEQUATELY SUPPORT THE PROPOSED LOADING HAS NOT BEEN PREPARED/ANALYZED BY MASER AND IS TO BE PERFORMED BY OTHERS.
2. NO CONSTRUCTION OF THE PROPOSED LOADING SHOWN SHALL PROCEED UNTIL ADEQUACY OF EXISTING STRUCTURE AND FOUNDATION, INCLUDING THE PROPOSED AT&T ANTENNA MOUNTING CONFIGURATION SHOWN HEREIN, HAS BEEN CONFIRMED BY SMARTLINK.
3. THE STRUCTURE ELEVATION IS SHOWN FOR INFORMATIONAL PURPOSES ONLY AND MAY NOT REFLECT AS-BUILT FIELD CONDITIONS FOR ALL EXISTING INVENTORY LOADING/ANTENNAS/APPURTANENCES ON STRUCTURE. REFER TO THE LATEST STRUCTURAL ANALYSIS FOR EXISTING STRUCTURE LOADING AND THE PROPOSED METHOD OF ATTACHMENT OF THE PROPOSED ANTENNAS/CABLES.
4. THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT ANY IMPROVEMENTS AND REINFORCEMENTS REQUIRED BY THE STRUCTURAL ANALYSIS CERTIFICATION ARE PROPERLY INSTALLED PRIOR TO THE ADDITION OF ANTENNAS, CABLES, SUPPORTS AND APPURTENANCES PROPOSED ON THESE DRAWINGS OR OTHERWISE NOTED IN THE STRUCTURAL ANALYSIS.

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1	02/17/16	REVISED PER SMARTLINK'S COMMENTS	DG	FEP
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STATE OF CONNECTICUT — PRELIMINARY — NOT FOR CONSTRUCTION — NO. 28188 — REGISTERED PROFESSIONAL ENGINEER

FRANK E. PENDEN
CONNECTICUT PROFESSIONAL
ENGINEER - LICENSE NUMBER: PEN.28188

SITE NAME:

NEW BRITAIN EAST
FA# 10091781
SITE # CTL05379
CROWN CASTLE # 803175

178 LESTER STREET
NEW BRITAIN, CT 06051
COUNTY OF HARTFORD

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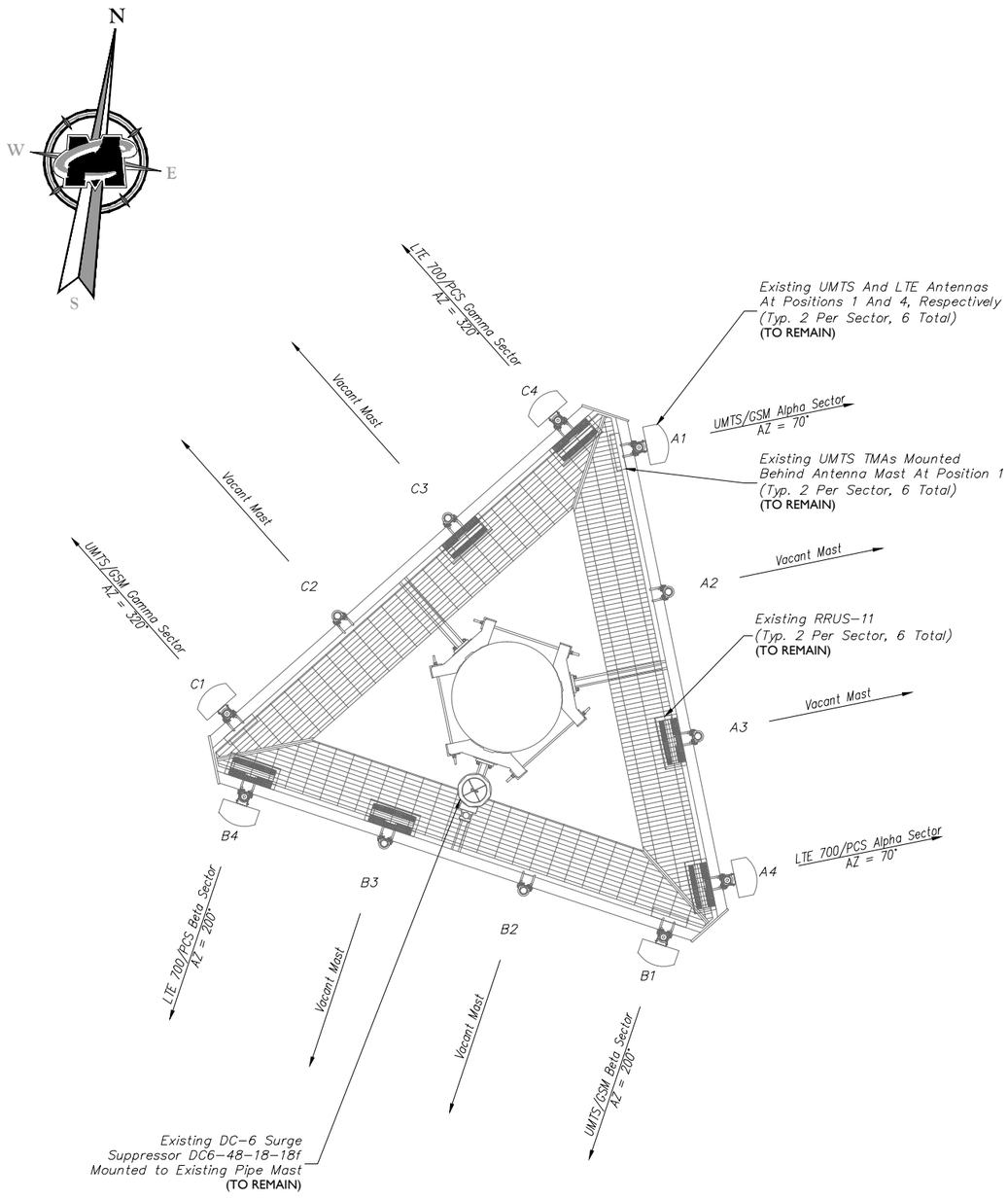
email: solutions @maserconsulting.com

SHEET TITLE:
ELEVATION VIEW AND ANTENNA SCHEDULE

SHEET NUMBER:
A-2

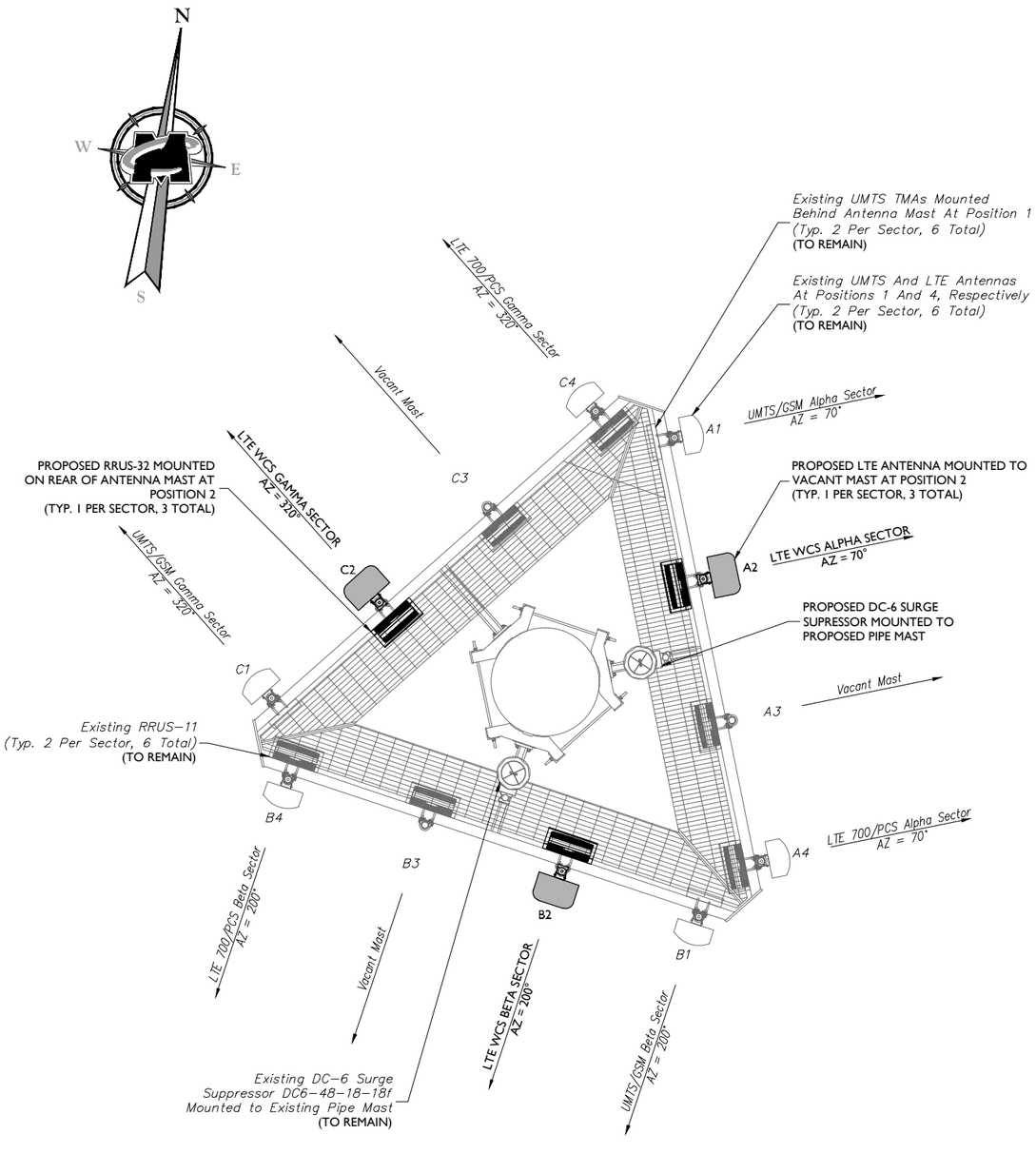


EXISTING - ANTENNA LAYOUT

NOT TO SCALE

STRUCTURAL NOTES:

1. THE EXISTING PLATFORM REQUIRES STRUCTURAL MODIFICATIONS – SEE SHEETS S-1 AND S-2 FOR DETAILS.
2. ALL PROPOSED MODIFICATION COMPONENTS SHALL BE INSTALLED PRIOR TO INSTALLATION OF ANY PROPOSED EQUIPMENT OR MODIFICATIONS TO EXISTING EQUIPMENT.



PROPOSED - ANTENNA LAYOUT

NOT TO SCALE

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FRANK E. PERRETTE
CONNECTICUT LICENSED PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.28188

SITE NAME:

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SITE # CTL05379
CROWN CASTLE # 803175

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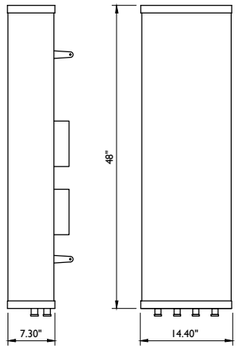
email: solutions @maserconsulting.com

SHEET TITLE:
ANTENNA LAYOUTS

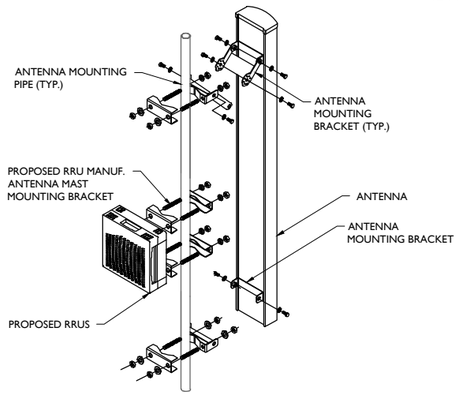
SHEET NUMBER:
A-3

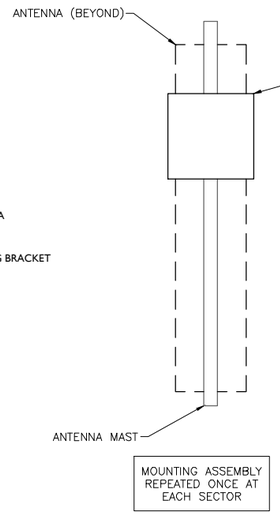


WEIGHT = 57 LBS

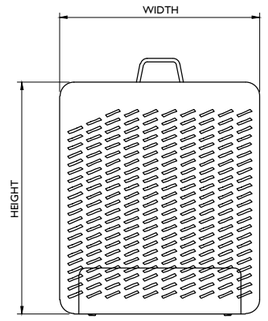
CCI OPA-65R-LCUU-H4

ANTENNA DETAIL
NOT TO SCALE





ANTENNA AND RRUS MOUNTING DETAILS
NOT TO SCALE



RRUS FRONT VIEW

SIZE AND WEIGHT TABLE

RRUS	WIDTH	DEPTH	HEIGHT	WEIGHT W/O BRACKET
RRUS-32 4X40-1900 (WITH SOLAR SHIELD)	-	-	-	-
RRUS-32 4X40-1900 (WITHOUT SOLAR SHIELD)	17"	7.2"	19.7"	50.7

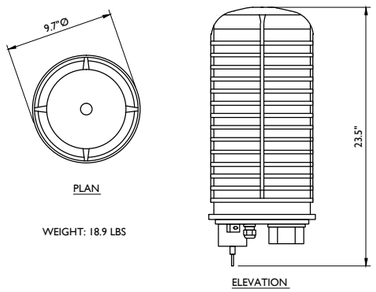
MINIMUM CLEARANCE TABLE

RRUS CABINET	CLEARANCES (INCHES)	COMMENTS
FRONT	36"	INSTALLATION ACCESS
REAR	2"	ZERO REAR CLEARANCE IS ALLOWED USING SUPPLIED MOUNTING BRACKETS
RIGHT	4"	AIR FLOW
LEFT	4"	AIR FLOW
TOP	12"	AIR FLOW
BOTTOM	12"	CONDUIT ROUTING

NOTE:

USE 1/2" COAXIAL CABLE W/7/16 DIN MALE CONNECTORS ON BOTH ENDS.

RRUS DETAIL
NOT TO SCALE

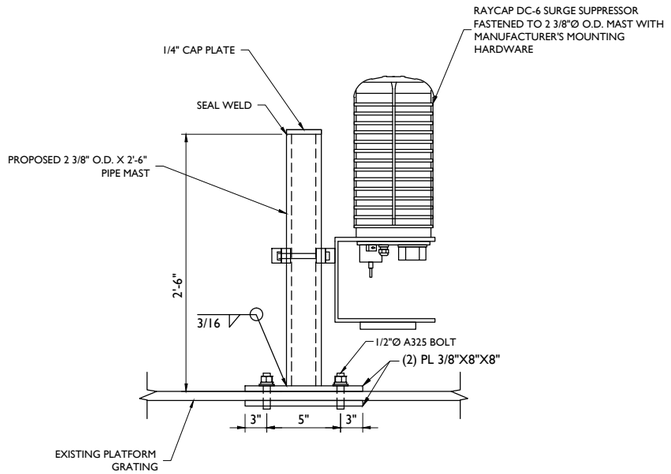


PLAN

WEIGHT: 18.9 LBS

ELEVATION

RAYCAP DC6-48-60-18-8F SURGE SUPPRESSOR
NOT TO SCALE



DC-6 SURGE SUPRESSION DOME PIPE MAST MOUNT
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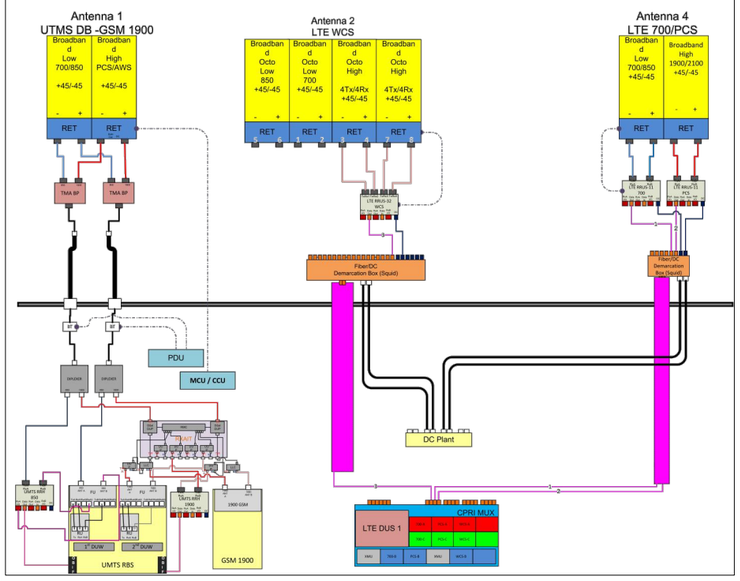
SHEET TITLE: DETAILS

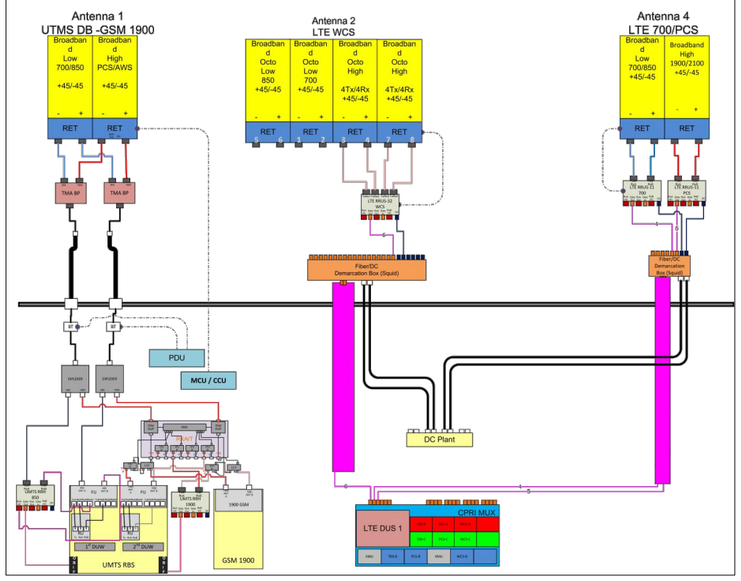
SHEET NUMBER: A-4

Diagram - Sector A Diagram File Name - CT5379_A_LTE3CWCS_BrBld_Rev1.vsd
Atoll Site Name - CT5379 Location Name - NEW BRITAIN EAST Market - CONNECTICUT Market Cluster - NEW ENGLAND
Comments:



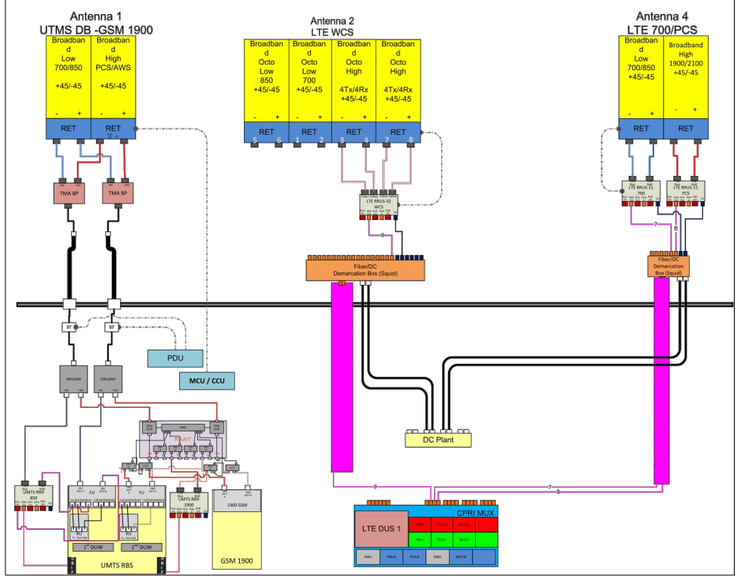
ALPHA SECTOR

Diagram - Sector B Diagram File Name - CT5379_B_LTE3CWCS_BrBld_Rev1.vsd
Atoll Site Name - CT5379 Location Name - NEW BRITAIN EAST Market - CONNECTICUT Market Cluster - NEW ENGLAND
Comments:



BETA SECTOR

Diagram - Sector C Diagram File Name - CT5379_C_LTE3CWCS_BrBld_Rev1.vsd
Atoll Site Name - CT5379 Location Name - NEW BRITAIN EAST Market - CONNECTICUT Market Cluster - NEW ENGLAND
Comments:



GAMMA SECTOR

BASED ON RF ENGINEERING DESIGN ENTITLED "NEW-ENGLAND_CONNECTICUT_CT5379_2016-LTE-Next-Carrier_LTE-3C_om636a_2051A02J19_10091781_25976_06-24-2015_Preliminary-Approved_v1.00"

RF PLUMBING DIAGRAMS

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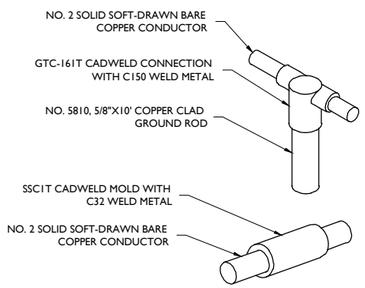
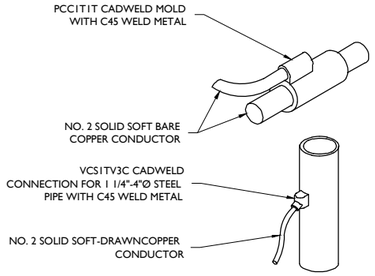
SHEET TITLE: RF PLUMBING DIAGRAMS

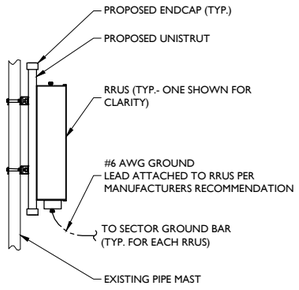
SHEET NUMBER: A-5





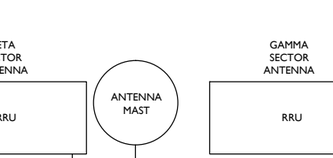
CADWELD DETAILS

NOT TO SCALE



RRH GROUNDING

NOT TO SCALE



LEGEND

1- TINNED COPPER GROUND BAR, 1/4"x4"x20", NEWTON INSTRUMENT CO. CAT. NO. B-6142 OR EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.

2- INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4

3- 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8

4- WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-5056

5- 5/8-11 X 1" HHCS BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1

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

SECTION "P" - SURGE PRODUCERS

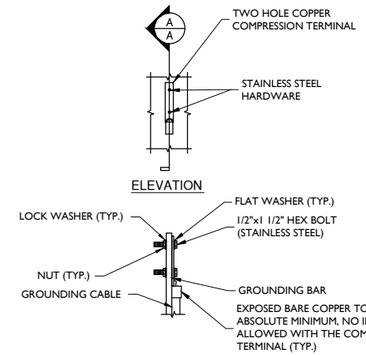
CABLE ENTRY PORTS (HATCH PLATES) (#2)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
+24V POWER SUPPLY RETURN BAR (#2)
-48V POWER SUPPLT RETURN BAR (#2)
RECTIFIER FRAMES.

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)

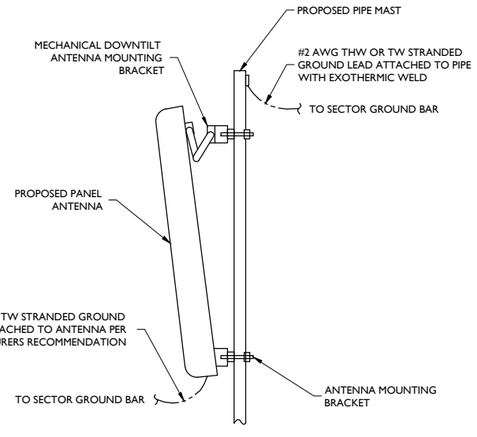
MASTER GROUND BAR

NOT TO SCALE



TYPICAL GROUND BAR CONNECTION DETAIL

NOT TO SCALE

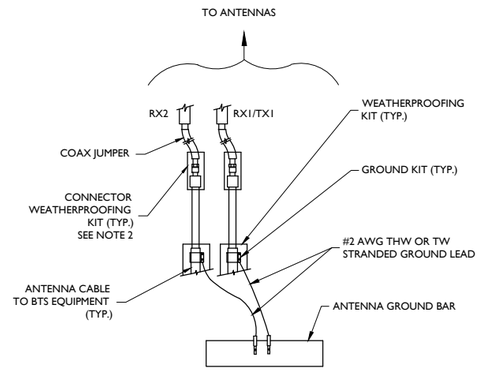


ANTENNA GROUNDING

NOT TO SCALE

SCHEMATIC DIAGRAM GROUNDING SYSTEM

NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

TYPICAL GROUND WIRE TO GROUNDING BAR

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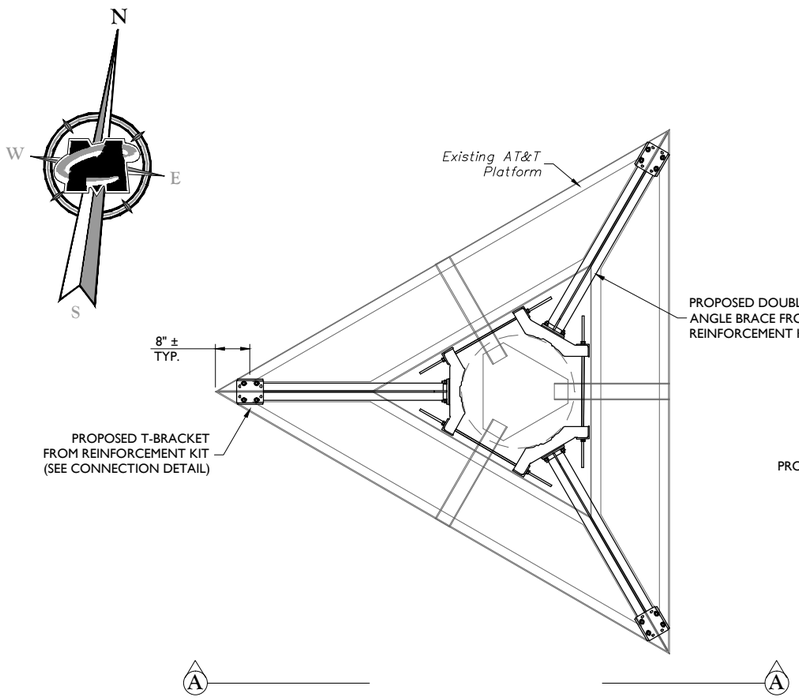
SHEET TITLE:
GROUNDING DETAILS

SHEET NUMBER:
G-1



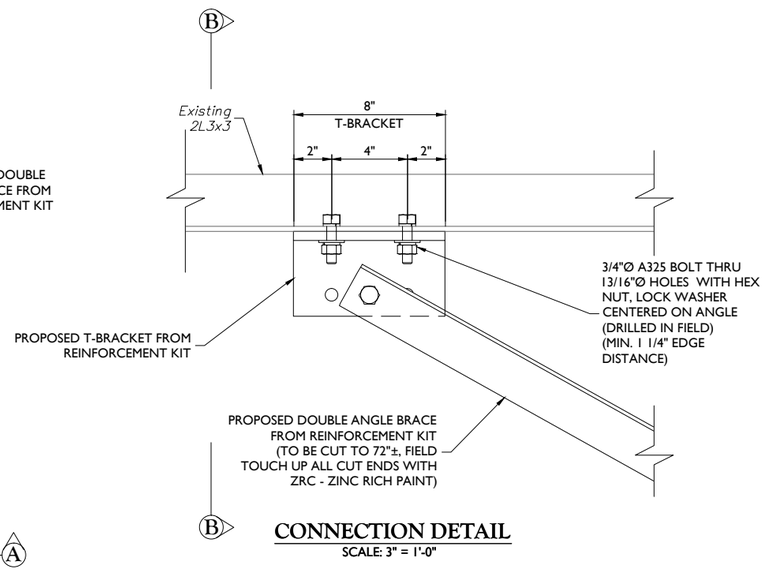
PLAN VIEW

GRAPHIC SCALE

2 0 1 2 4

(IN FEET)

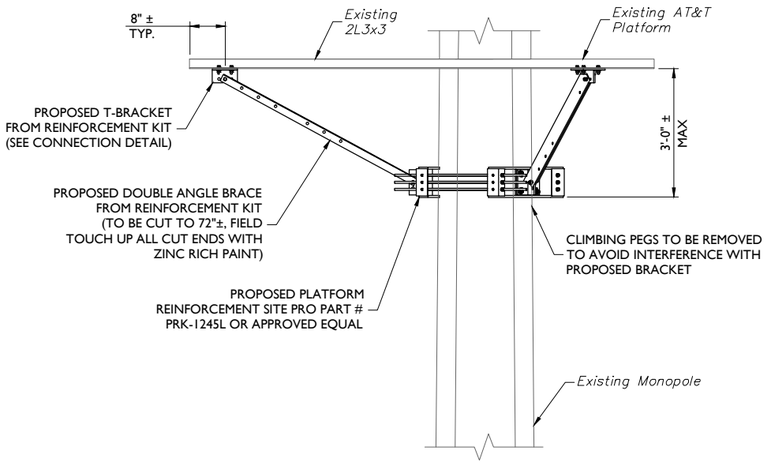
SCALE: 1" = 2' FOR 24"X36" DRAWINGS
(DO NOT SCALE 11"X17" DRAWINGS)



CONNECTION DETAIL

SCALE: 3" = 1'-0"

ALL PROPOSED MODIFICATION COMPONENTS SHALL BE INSTALLED PRIOR TO INSTALLATION OF ANY PROPOSED EQUIPMENT OR MODIFICATIONS TO EXISTING EQUIPMENT.
TOUCH–UP ALL FIELD DRILLED HOLES AND CUT ENDS WITH ZINC RICH PAINT PRIOR TO INSTALLING HARDWARE



ELEVATION A-A

GRAPHIC SCALE

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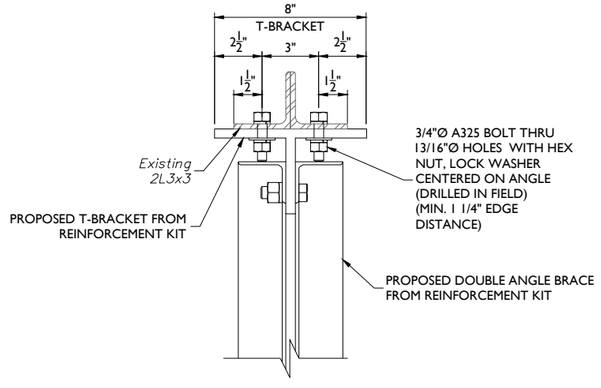
(IN FEET)

SCALE: 1" = 2' FOR 24"X36" DRAWINGS
(DO NOT SCALE 11"X17" DRAWINGS)



SECTION B-B

SCALE: 3" = 1'-0"

MODIFICATION NOTES:

1. IF THE EXISTING CONDITIONS ARE NOT AS REPRESENTED ON THESE DRAWINGS, MASER CONSULTING SHOULD BE CONTACTED IMMEDIATELY TO RE–RVALUATE THE STRUCTURE BASED ON THE FIELD CONDITIONS AND DIMENSIONS FOUND.
2. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE DRAWINGS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE.
3. THIS DRAWING DOES NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTORS SHALL SUPERVISE AND DIRECT THE WORK AND THEY SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES.
4. CONTRACTOR SHALL VERIFY PLACEMENT OF ALL NEW PIECES FOR ADEQUATE FIT, CLEARANCES, AND DESIGN INTENT BEFORE FABRICATION STARTS.
5. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE STABILITY, SAFETY OF THE STRUCTURE AND MOUNTS (AS APPLICABLE), AND THE ADEQUACY OF TEMPORARY OR INCOMPLETE CONNECTIONS DURING CONSTRUCTION.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THIS INCLUDES WHATEVER PROVISIONS NEED TO BE TAKEN TO PROTECT THE PROPERTY IN THE VICINITY OF THE TOWER DURING CONSTRUCTION.
7. DURING CONSTRUCTION THE CONTRACTOR SHALL COORDINATE WITH THE TOWER/STRUCTURE OWNER AND CORDON OFF AREAS BELOW AND AROUND THE WORK TO PREVENT INJURY TO PERSONS AND/OR PROPERTY. DAMAGES RESULTING FROM THE CONTRATORS WORK SHALL BE REPAIRED AT TEH CONTRACTORS EXPENSE.
8. BACKCHARGES FOR CORRETIVE WORK OR REPLACEMENT MATERIALS WILL NOT BE ACCEPTED UNLESS EXPRESSLY AUTHORIZED BY MASER CONSULTING BEFORE ANY SUCH COSTS ARE INCURRED.
9. POST CONSTRUCTION INSPECTION TO BE COMPLETED BY OTHERS.
10. ALL FIELD CONNECTIONS, UNLESS NOTED OTHERWISE , SHALL BE BOLTED.
11. CUTTING OR BURNING OF STEEL IN THE FIELD IS STRICTLY PROHIBITED.
12. WHERE STEEL IS IN CONTACT WITH ALUMINUM PROVIDE ADEQUATE BARRIER TO PREVENT OXIDATION OF THE STEEL AND ALUMINUM.
13. ALL BOLT HOLES SHALL BE $\frac{1}{16}$" LARGER THAN BOLT DIAMETER. ALL BOLTS SHALL HAVE ONE FLAT WHASER, ONE LOCK WASHER, AND ONE NUT UNLESS NOTED OTHERWISE.
14. COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE CURRENT EDITIONS OF THE FOLLOWING STANDARDS AND CODES:
    - 14.1. AMERICAN INSTITURE OF STEEL CONSTRUCTION (AISC) "SPECIFICATIONS FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
    - 14.2. AMERICAN IRON AND STEEL INSTITUTE (AISI) "DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS".
    - 14.3. ASTM A563–04 "STANDARD SPECIFICATION FOR CARBON AND ALLOY STEEL NUTS".
    - 14.4. ASTM F436–03 "STANDARD SPECIFICATION FOR HARDENED STEEL WASHERS"
    - 14.5. ASTM A325–04 "STANDARD SPECIFICATION FOR STRUCTURAL BOLTS, STEEL, HEAT TREATED, $\frac{120}{105}$ KSI MENIMUM TENSILE STRENGTH".
    - 14.6. ASTM A153/A153M–09 "STANDARD SPECIFICATION FOR ZINC COATING (HOT–DIP) ON IRON AND STEEL HARDWARE".
    - 14.7. ASTM 123/A1123M–09 "STANDARD SPECIFICATION FOR ZINC (HOT–DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS".
15. ALL STEEL WORK SHALL BE ASTM A572 GRADE 50 FOR W–FLANGE SECTIONS AND A36 FOR ALL OTHER SHAPES AND GALVANIZED UNLESS NOTED OTHERWISE, GALVANIZED COATING THICKNESS TO BE G90.
16. SHOP WELDING SHALL BE PERFORMED BY WELDERS THAT ARE CERTIFIED (AWS "STANDARD QUALIFICATION PROCEDURE") TO PERFORM THE TYPE OF WORK REQUIRED. WELDS SHALL CONFORM TO AMERICAN WELDING SOCIETY (AWS) D1.1 "STRUCTURAL WELDING CODE – STEEL". PROVIDE THE MINIMUM SIZE PER PART 8 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", LRFD 3RD EDITION, WHEN WELD SIZES ARE NOT SHOWN. USE E70XX ELECTRODES FOR ALL WELDING.
17. ALL CONNECTIONS, UNLESS OTHERWISE NOTED, SHALL BE CONSTRUCTION WITH A MINIMUM EDGE DISTANCE OF 1 1/2 INCHES AND BOLT SPACING OF 3 INCHES.
18. UNLESS NOTED OTHERWISE ALL BOLTS SHALL BE INSTALLED WITH HEADS UP OR TOWARD THE OUTSIDE FACE, AND NUTS DOWN OR ON THE SIDE MOST PROTECTED FROM WEATHER.
19. USE PRECAUTIONS & PROCEDURES PER AWS D1.1 WHEN WELDING GALVANIZED MATERIALS. AT COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.
20. TOUCHUP ALL DAMAGE GALVANIZED STEEL WITH COLD ZINC, "GALVANOX", "DRY GALV.", "ZINC–IT" OR APPROVED EQUIVALENT, IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES. TOUCHUP DAMAGED NON GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.
21. ALL STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE CURRENT EDITION OF AISC "SPECIFICATIONS FOR DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS – LOAD AND RESISTANCE FACTOR DESIGN".
22. MEMBERS SHALL BE LAID PLUMB AND TRUE AS SHOWN ON THE DRAWINGS.
23. COPE ALL FRAMING AT ENDS AS NECESSARY, UNLESS NOTED OTHERWISE.
24. THE GENERAL CONTRACTOR AND THEIR SUBCONSULTANTS SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK.

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FRANK E. PERRETTA
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.28188

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF THE RESPONSIBLE LICENSED PROFFESIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SITE NAME:

NEW BRITAIN EAST
FA# 10091781
SITE # CTL05379
CROWN CASTLE # 803175

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NEW BRITAIN, CT 06051
COUNTY OF HARTFORD

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Phone: 732.383.1950
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email: solutions @maserconsulting.com

SHEET TITLE: STRUCTURAL DETAILS - 1

SHEET NUMBER: S-1

PLAN VIEW

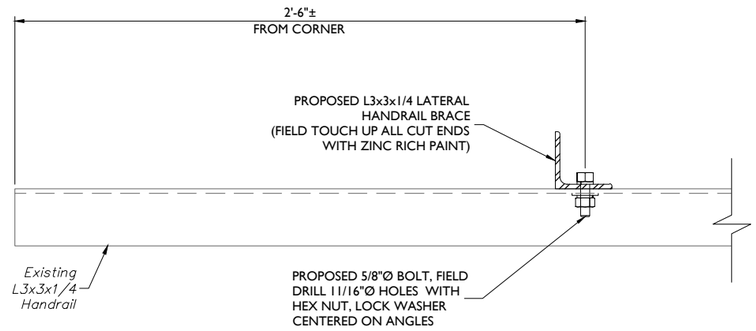
GRAPHIC SCALE

2 0 1 2 4

(IN FEET)

SCALE: 1" = 2' FOR 24"X36" DRAWINGS

(DO NOT SCALE 11"X17" DRAWINGS)



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STATE OF CONNECTICUT — FRANK E. PERNICE — No. 28188 — REGISTERED PROFESSIONAL ENGINEER

FRANK E. PERNICE
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.28188

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FA# 10091781
SITE # CTL05379
CROWN CASTLE # 803175

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SHEET TITLE :

STRUCTURAL DETAILS - 2

SHEET NUMBER :

S-2

Date: **February 19, 2016**

Rebecca Klein
Crown Castle
525 Alderman Lane
Fort Mill, SC 29715
(704) 405-6525

SSOE Group
1001 Madison Avenue
Toledo, OH 43604
(419) 255-3830
lsamson-akpan@ssoe.com

Subject: **Structural Analysis Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CTL05379
	Carrier Site Name:	New Britain Eat
Crown Castle Designation:	**Crown Castle BU Number:**	803175
	Crown Castle Site Name:	CT New Britain 3 CAC 803175
	Crown Castle JDE Job Number:	349922
	Crown Castle Work Order Number:	1192544
	Crown Castle Application Number:	313670 Rev. 7
Engineering Firm Designation:	**SSOE Group Project Number:**	016-00010-00 BC 1477
Site Data:	**Lester Road, New Britain, CT 06050, Hartford County** **Latitude *41° 41' 11.8"*, Longitude *-72° 45' 27.8"*** **188 Foot – Summit Monopole Tower**	

Dear Ms. Rebecca Klein,

SSOE Group 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 871847, in accordance with application 313670, revision 7.

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 structure has sufficient capacity once the loading changes described in the Recommendations section of the report are completed.**

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

We at *SSOE Group* 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: LaTasha Samson-Akpan

Respectfully submitted by:

Barry W. Burgess, PE
Section Manager

TABLE OF CONTENTS

1) INTRODUCTION

The existing 188' monopole has eighteen sides and is evenly tapered from 59.61" (flat-flat) at the base to 22.00" (flat-flat) at the top. It has four major sections, connected with slip joints. The structure is galvanized and has no tower lighting.

The tower was originally designed for Crown Castle by Summit Manufacturing of West Hazleton, Pennsylvania for an 85 mph wind speed with 0.5" radial ice in accordance with TIA/EIA-222-F 1996.

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 using a fastest mile wind speed of 80 mph with no ice, 28 mph with 1" 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
188.0	189.0	1	CCI Antennas	OPA-65R-LCUU-H4 w/ Mount Pipe	1 2 2	3/8 3/4 1-5/8	1
		2	CCI Antennas	OPA-65R-LCUU-H6 w/ Mount Pipe			
		3	Ericsson	RRUS 32 B30			
		1	Raycap	DC6-48-60-18-8F			
		1	Site Pro	PRK-1245L			

Notes:
1) See Appendix B for the proposed coax layout.

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
188.0	189.0	3	Kathrein	800 10121 w/ Mount Pipe	1 2 7	3/8 3/4 1-5/8	
		2	KMW Communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		1	KMW Communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe			
	188.0	6	Ericsson	RRUS-11			
		6	Powerwave Technologies	LGP21401			
		1	Raycap	DC6-48-60-18-8F			
		1		Miscellaneous [NA 510-2]			
		1		Platform Mount [LP 1201-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
177.0	177.0	1		Platform Mount [LP 601-1]			1,3
160.0	163.0	3	Commscope	LNX-6515DS-VTM w/ Mount Pipe			2
		3	Ericsson	RRUS 11 B12			
		3	Ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	13	1-5/8	
		3	Ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
	160.0	3	RFS Celwave	ATMAA1412D-1A20			
		1		Platform Mount [LP 601-1]			
145.0	150.0	1	GPS	GPS_A	1	1/2	
	145.0	2	Andrew	LNX-6512DS-T4M w/ Mount Pipe	13	1-5/8	
		3	Antel	BXA-80063/6 w/ Mount Pipe			
		3	Alcatel Lucent	RRH2X60-AWS	1	1-5/8	2
		3	Alcatel Lucent	RRH2X60-PCS			
		3	Alcatel Lucent	RRH2x60-700			
		6	Andrew	SBNHH-1D65B w/ Mount Pipe			
		1	Kathrein	800 10735V01 w/ Mount Pipe			
		1	RFS Celwave	DB-T1-6Z-8AB-0Z			
		1		Platform Mount [LP 601-1]			

Notes:
1) Empty mount
2) Reserved equipment
3) Existing equipment to be removed; not 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)
188.0	188.0	12	Generic	1’ x 5’ x 3” Panel Antenna	-	-
		1		14’ Platform		
177.0	177.0	12	Generic	1’ x 5’ x 3” Panel Antenna	-	-
		1		14’ Platform		
162.0	162.0	12	Generic	1’ x 5’ x 3” Panel Antenna	-	-
		1		14’ Platform		
147.0	147.0	12	Generic	1’ x 5’ x 3” Panel Antenna	-	-
		1		14’ Platform		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Original Tower Drawings	Summit Job #: 12481, dated 12/11/00	Doc ID#: 679659	Crown DMZ
Foundation Drawings	Summit Job #: 12481, dated 12/11/00	Doc ID#: 679660	Crown DMZ
Foundation Mapping	Tower Engineering Professionals Project #: 100063, dated 1/7/10	Doc ID#: 679660	Crown DMZ
Geotechnical Report	Clough, Harbour & Associates Project #: 8961.07.46, dated 10/26/00	Doc ID#: 679661	Crown DMZ

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) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
2) No foundation reinforcement steel information was available; therefore, the minimum allowable steel per code has been assumed for this analysis.
3) All equipment model numbers, quantities, and centerline elevations are as provided in the CCI CAD package, dated 10/6/15 with any adjustments as noted below.

This analysis may be affected if any assumptions are not valid or have been made in error. SSOE Group 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	188 - 137	Pole	TP32.711x22x0.25	1	-10.99	1302.25	63.8	Pass
L2	137 - 90.25	Pole	TP42.03x31.3184x0.3125	2	-18.96	2094.29	92.7	Pass
L3	90.25 - 44.5	Pole	TP51.014x40.3023x0.375	3	-30.01	3048.94	92.3	Pass
L4	44.5 - 0	Pole	TP59.61x48.8988x0.5	4	-48.42	4876.78	75.3	Pass
							Summary	
						Pole (L2)	92.7	Pass
						Rating =	**92.7**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods		79.7%	Pass
1	Base Plate		79.9%	Pass
1	Foundation (Structural)		48.2%	Pass
1	Foundation (Soil Interaction)		94.5%	Pass

Structure Rating (max from all components) =	94.5%

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

4.1) Recommendations

The tower and foundation have sufficient capacity to carry the existing, reserved, and proposed loading. In order for the results of this analysis to be considered valid the loading modification listed below must be completed.

Loading Changes:

1.) Removal of the mount at the 177' level

No structural modifications are required at this time, provided that the above listed changes are implemented.

5) DISCLAIMER OF WARRANTIES

SSOE Group has not performed a site visit to the tower to verify member sizes or antenna/coax loading. SSOE Group shall be contacted immediately if the existing conditions are not as represented on the tower elevation contained in this report in order to evaluate the significance of the discrepancy. SSOE Group has not performed a condition assessment of the tower foundation. This report does not replace a full tower inspection

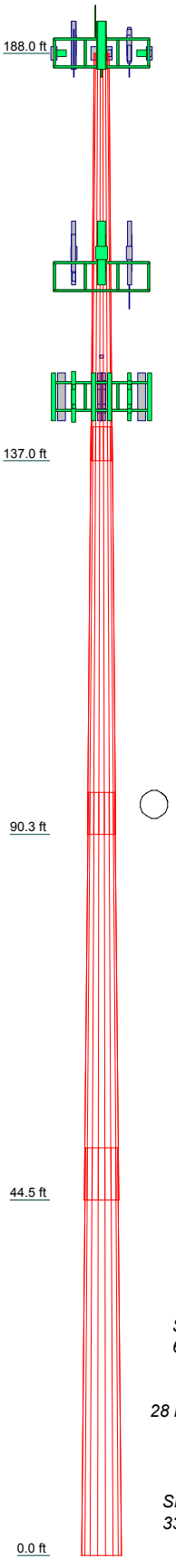
The engineering services rendered by SSOE Group in connection with this structural analysis are limited to an analysis of the tower structure and theoretical capacity of its main structural members. Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as part of our work. We recommend that material of suitable size and strength be purchased from a reputable tower manufacturer.

SSOE Group makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. SSOE Group will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data contained in this report. The maximum liability of SSOE Group pursuant to this report will be limited to the total fee received for preparation of this report.

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	51.00	18	0.2500	4.25	22.0000	32.7110	A607-65	3.7
2	51.00	18	0.3125	5.25	31.3184	42.0300		6.3
3	51.00	18	0.3750	6.50	40.3023	51.0140		9.4
4	51.00	18	0.5000		48.8988	59.6100		14.8
								34.1



AXIAL
73 K

SHEAR
6 K

MOMENT
806 kip-ft

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

AXIAL
48 K

SHEAR
33 K

MOMENT
4402 kip-ft

TORQUE 1 kip-ft
REACTIONS - 80 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 3/4" x 8'	188	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	160
Platform Mount [LP 1201-1]	188	LNX-6515DS-VTM w/ Mount Pipe	160
Miscellaneous [NA 510-2]	188	RRUS 11 B12	160
Miscellaneous [NA 509-3]	188	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	160
2" x 6' Mount Pipe	188	ATMAA1412D-1A20	160
2" x 6' Mount Pipe	188	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	160
2" x 6' Mount Pipe	188	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	160
800 10121 w/ Mount Pipe	188	ATMAA1412D-1A20	160
(2) LGP21401	188	LNX-6515DS-VTM w/ Mount Pipe	160
OPA-65R-LCUU-H6 w/ Mount Pipe	188	RRUS 11 B12	160
RRUS 32 B30	188	Platform Mount [LP 601-1]	145
AM-X-CD-16-65-00T-RET w/ Mount Pipe	188	2" x 6' Mount Pipe	145
(2) RRUS-11	188	2" x 6' Mount Pipe	145
800 10121 w/ Mount Pipe	188	2" x 6' Mount Pipe	145
(2) LGP21401	188	GPS_A	145
OPA-65R-LCUU-H4 w/ Mount Pipe	188	BXA-80063/6 w/ Mount Pipe	145
RRUS 32 B30	188	(2) SBNHH-1D65B w/ Mount Pipe	145
DC6-48-60-18-8F	188	RRH2X60-AWS	145
AM-X-CD-14-65-00T-RET w/ Mount Pipe	188	DB-T1-6Z-8AB-0Z	145
DC6-48-60-18-8F	188	LNX-6512DS-T4M w/ Mount Pipe	145
(2) RRUS-11	188	RRH2x60-700	145
800 10121 w/ Mount Pipe	188	RRH2X60-PCS	145
(2) LGP21401	188	BXA-80063/6 w/ Mount Pipe	145
OPA-65R-LCUU-H6 w/ Mount Pipe	188	(2) SBNHH-1D65B w/ Mount Pipe	145
RRUS 32 B30	188	RRH2X60-AWS	145
AM-X-CD-16-65-00T-RET w/ Mount Pipe	188	LNX-6512DS-T4M w/ Mount Pipe	145
Platform Mount [LP 601-1]	160	RRH2x60-700	145
2" x 8' Mount Pipe	160	RRH2X60-PCS	145
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	160	BXA-80063/6 w/ Mount Pipe	145
LNX-6515DS-VTM w/ Mount Pipe	160	(2) SBNHH-1D65B w/ Mount Pipe	145
RRUS 11 B12	160	RRH2X60-AWS	145
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	160	800 10735V01 w/ Mount Pipe	145
ATMAA1412D-1A20	160	RRH2x60-700	145
		RRH2X60-PCS	145

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	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 28 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 92.7%

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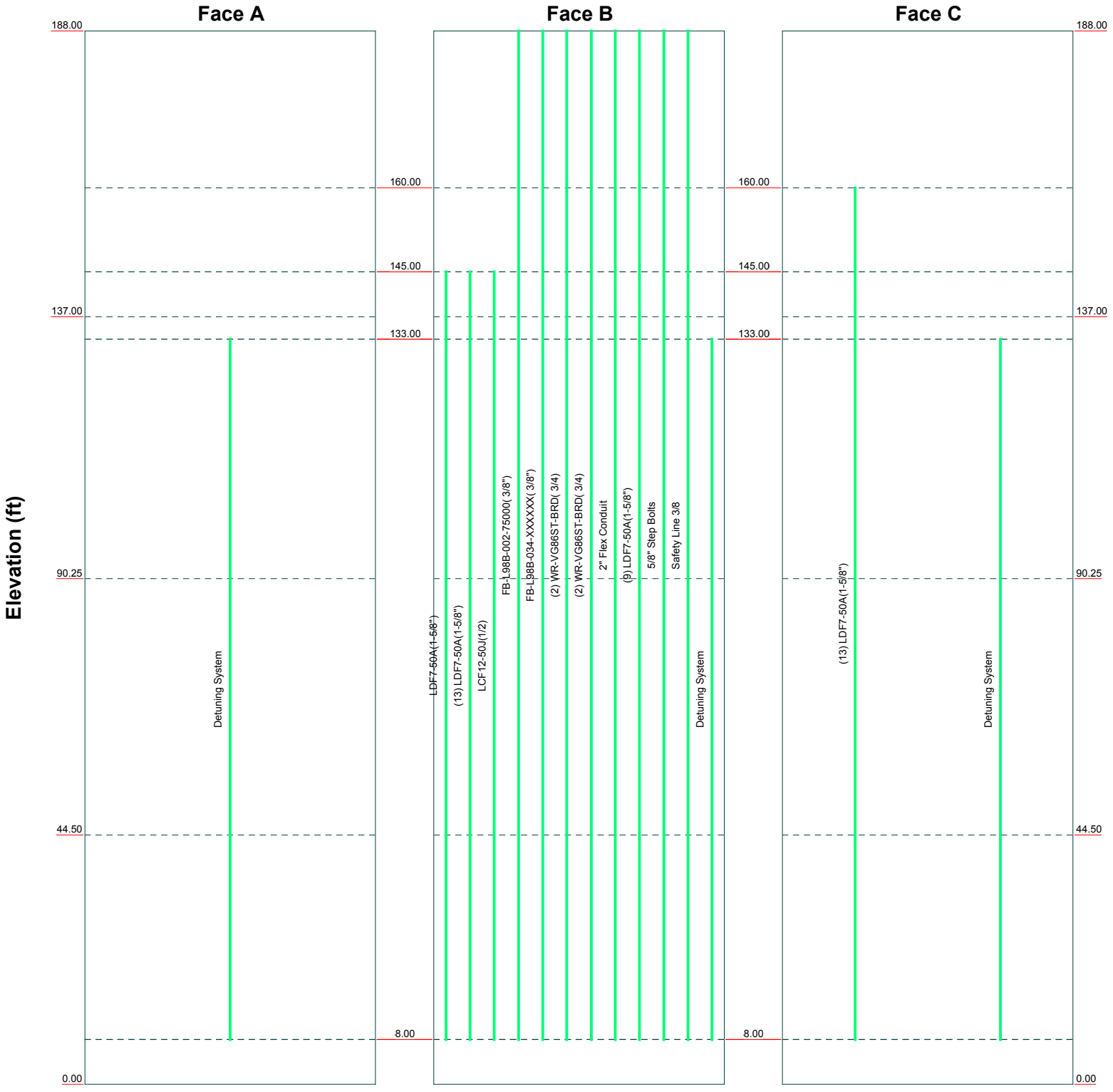
SSOE Group
1001 Madison Ave.
Toledo, OH 43604
Phone: (419) 255-3830
FAX: (419) 255-6101

Job: *BU 803175*			
Project: *016-00010-00*			
Client: CCI	Drawn by: 15423	App'd:	
Code: TIA/EIA-222-F	Date: 02/11/16	Scale: NTS	
Path: C:\Users\15423\Desktop\SAs\February 2016\4 BU 803175 Mono\Working\tnx\803175.dri		Dwg No. E-1	

Feed Line Distribution Chart
0' - 188'

Round | Flat | App In Face | App Out Face | Truss Leg



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Job: ***BU 803175***		
Project: ***016-00010-00***		
Client: CCI	Drawn by: 15423	App'd:
Code: TIA/EIA-222-F	Date: 02/11/16	Scale: NTS
Path: C:\Users\15423\Desktop\SAs\February 2016\4 BU 803175 Mono\Working\tnx\803175.dri		Dwg No. E-7

SSOE Group
1001 Madison Ave.
Toledo, OH 43604
Phone: (419) 255-3830
FAX: (419) 255-6101

Tower Input Data

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

Tower is located in Hartford County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 28 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
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* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	188.00-137.00	51.00	4.25	18	22.0000	32.7110	0.2500	1.0000	A607-65 (65 ksi)
L2	137.00-90.25	51.00	5.25	18	31.3184	42.0300	0.3125	1.2500	A607-65 (65 ksi)
L3	90.25-44.50	51.00	6.50	18	40.3023	51.0140	0.3750	1.5000	A607-65 (65 ksi)
L4	44.50-0.00	51.00		18	48.8988	59.6100	0.5000	2.0000	A607-65 (65 ksi)

Tapered Pole Properties

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
L1	22.3394	17.2586	1031.4832	7.7212	11.1760	92.2945	2064.3237	8.6310	3.4320	13.728
	33.2156	25.7578	3429.0204	11.5237	16.6172	206.3538	6862.5527	12.8813	5.3171	21.269
L2	32.7080	30.7540	3735.3226	11.0071	15.9098	234.7819	7475.5603	15.3799	4.9620	15.879
	42.6784	41.3785	9098.0688	14.8097	21.3512	426.1143	18208.1091	20.6932	6.8473	21.911
L3	42.0437	47.5235	9571.6471	14.1742	20.4736	467.5120	19155.8888	23.7663	6.4332	17.155
	51.8010	60.2731	19526.7966	17.9768	25.9151	753.4907	39079.2871	30.1423	8.3185	22.183
L4	51.0393	76.8089	22730.9631	17.1816	24.8406	915.0736	45491.8362	38.4117	7.7262	15.452
	60.5296	93.8076	41409.2395	20.9841	30.2819	1367.4593	82872.9664	46.9127	9.6114	19.223

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 188.00-137.00				1	1	1		
L2 137.00-90.25				1	1	1		
L3 90.25-44.50				1	1	1		
L4 44.50-0.00				1	1	1		

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")	B	No	Inside Pole	145.00 - 8.00	1	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
LDF7-50A(1-5/8")	B	No	Inside Pole	145.00 - 8.00	13	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
LCF12-50J(1/2)	B	No	Inside Pole	145.00 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
FB-L98B-002-75000(3/8")	B	No	Inside Pole	188.00 - 8.00	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
FB-L98B-034-XXXXXX (3/8")	B	No	Inside Pole	188.00 - 8.00	1	No Ice	0.00	0.05
						1/2" Ice	0.00	0.05
						1" Ice	0.00	0.05
						2" Ice	0.00	0.05
						4" Ice	0.00	0.05
WR-VG86ST-BRD(3/4)	B	No	Inside Pole	188.00 - 8.00	2	No Ice	0.00	0.59

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						1/2" Ice	0.00	0.59
						1" Ice	0.00	0.59
						2" Ice	0.00	0.59
						4" Ice	0.00	0.59
WR-VG86ST-BRD(3/4)	B	No	Inside Pole	188.00 - 8.00	2	No Ice	0.00	0.59
						1/2" Ice	0.00	0.59
						1" Ice	0.00	0.59
						2" Ice	0.00	0.59
						4" Ice	0.00	0.59
2" Flex Conduit	B	No	Inside Pole	188.00 - 8.00	1	No Ice	0.00	0.32
						1/2" Ice	0.00	0.32
						1" Ice	0.00	0.32
						2" Ice	0.00	0.32
						4" Ice	0.00	0.32
LDF7-50A(1-5/8")	B	No	Inside Pole	188.00 - 8.00	9	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
LDF7-50A(1-5/8")	C	No	Inside Pole	160.00 - 8.00	13	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
5/8" Step Bolts	B	No	CaAa (Out Of Face)	188.00 - 8.00	1	No Ice	0.04	1.00
						1/2" Ice	0.14	1.56
						1" Ice	0.24	2.73
						2" Ice	0.44	6.91
						4" Ice	0.84	22.58
Safety Line 3/8	B	No	CaAa (Out Of Face)	188.00 - 8.00	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
Detuning System	A	No	CaAa (Out Of Face)	133.00 - 8.00	1	No Ice	0.05	0.37
						1/2" Ice	0.30	1.90
						1" Ice	0.40	4.03
						2" Ice	0.60	10.14
						4" Ice	1.00	29.69
Detuning System	B	No	CaAa (Out Of Face)	133.00 - 8.00	1	No Ice	0.05	0.37
						1/2" Ice	0.30	1.90
						1" Ice	0.40	4.03
						2" Ice	0.60	10.14
						4" Ice	1.00	29.69
Detuning System	C	No	CaAa (Out Of Face)	133.00 - 8.00	1	No Ice	0.05	0.37
						1/2" Ice	0.30	1.90
						1" Ice	0.40	4.03
						2" Ice	0.60	10.14
						4" Ice	1.00	29.69

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	188.00-137.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	4.037	0.67
		C	0.000	0.000	0.000	0.000	0.25

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
L2	137.00-90.25	A	0.000	0.000	0.000	1.958	0.02
		B	0.000	0.000	0.000	5.659	1.09
		C	0.000	0.000	0.000	1.958	0.51
L3	90.25-44.50	A	0.000	0.000	0.000	2.096	0.02
		B	0.000	0.000	0.000	5.717	1.07
		C	0.000	0.000	0.000	2.096	0.50
L4	44.50-0.00	A	0.000	0.000	0.000	1.672	0.01
		B	0.000	0.000	0.000	4.561	0.85
		C	0.000	0.000	0.000	1.672	0.40

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	188.00-137.00	A	1.210	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	28.713	0.87
		C		0.000	0.000	0.000	0.000	0.25
L2	137.00-90.25	A	1.159	0.000	0.000	0.000	18.892	0.23
		B		0.000	0.000	0.000	45.212	1.48
		C		0.000	0.000	0.000	18.892	0.73
L3	90.25-44.50	A	1.089	0.000	0.000	0.000	19.756	0.23
		B		0.000	0.000	0.000	44.589	1.45
		C		0.000	0.000	0.000	19.756	0.72
L4	44.50-0.00	A	1.000	0.000	0.000	0.000	15.249	0.17
		B		0.000	0.000	0.000	34.038	1.13
		C		0.000	0.000	0.000	15.249	0.56

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	188.00-137.00	0.0994	0.0574	0.5477	0.3162
L2	137.00-90.25	0.0965	0.0557	0.4462	0.2576
L3	90.25-44.50	0.0974	0.0562	0.4616	0.2665
L4	44.50-0.00	0.0800	0.0462	0.3982	0.2299

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod 3/4" x 8'	C	From Leg	0.00 0.00	0.0000	188.00	No Ice 1/2" Ice	1.00 1.41	1.00 1.41	0.11 0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			4.00			1" Ice	2.25	2.25	0.13
						2" Ice	3.67	3.67	0.16
						4" Ice	5.74	5.74	0.31
Platform Mount [LP 1201-1]	C	None		0.0000	188.00	No Ice	23.10	23.10	2.10
						1/2" Ice	26.80	26.80	2.50
						1" Ice	30.50	30.50	2.90
						2" Ice	37.90	37.90	3.70
						4" Ice	52.70	52.70	5.30
Miscellaneous [NA 510-2]	C	None		0.0000	188.00	No Ice	13.00	13.00	0.46
						1/2" Ice	17.90	17.90	0.63
						1" Ice	22.80	22.80	0.81
						2" Ice	32.60	32.60	1.15
						4" Ice	52.20	52.20	1.84
Miscellaneous [NA 509-3]	C	None		0.0000	188.00	No Ice	11.84	11.84	0.28
						1/2" Ice	16.96	16.96	0.30
						1" Ice	22.08	22.08	0.32
						2" Ice	32.32	32.32	0.36
						4" Ice	52.80	52.80	0.44
2" x 6' Mount Pipe	A	From Centroid-Face	4.00 0.00 0.00	0.0000	188.00	No Ice	1.20	1.20	0.03
						1/2" Ice	1.80	1.80	0.04
						1" Ice	2.17	2.17	0.05
						2" Ice	2.93	2.93	0.09
						4" Ice	4.57	4.57	0.23
2" x 6' Mount Pipe	B	From Centroid-Face	4.00 0.00 0.00	0.0000	188.00	No Ice	1.20	1.20	0.03
						1/2" Ice	1.80	1.80	0.04
						1" Ice	2.17	2.17	0.05
						2" Ice	2.93	2.93	0.09
						4" Ice	4.57	4.57	0.23
2" x 6' Mount Pipe	C	From Centroid-Face	4.00 0.00 0.00	0.0000	188.00	No Ice	1.20	1.20	0.03
						1/2" Ice	1.80	1.80	0.04
						1" Ice	2.17	2.17	0.05
						2" Ice	2.93	2.93	0.09
						4" Ice	4.57	4.57	0.23
800 10121 w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 1.00	0.0000	188.00	No Ice	5.69	4.60	0.07
						1/2" Ice	6.18	5.34	0.11
						1" Ice	6.67	6.04	0.17
						2" Ice	7.69	7.51	0.30
						4" Ice	9.84	10.82	0.67
(2) LGP21401	A	From Centroid-Face	4.00 0.00 0.00	0.0000	188.00	No Ice	1.29	0.23	0.01
						1/2" Ice	1.45	0.31	0.02
						1" Ice	1.61	0.40	0.03
						2" Ice	1.97	0.61	0.05
						4" Ice	2.79	1.12	0.14
OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 1.00	0.0000	188.00	No Ice	10.60	7.18	0.10
						1/2" Ice	11.27	8.36	0.18
						1" Ice	11.91	9.26	0.26
						2" Ice	13.21	11.09	0.46
						4" Ice	15.93	15.15	1.00
RRUS 32 B30	A	From Centroid-Face	4.00 0.00 1.00	0.0000	188.00	No Ice	3.87	2.76	0.08
						1/2" Ice	4.15	3.02	0.10
						1" Ice	4.44	3.29	0.14
						2" Ice	5.06	3.85	0.21
						4" Ice	6.38	5.08	0.41
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 1.00	0.0000	188.00	No Ice	8.50	6.30	0.07
						1/2" Ice	9.15	7.48	0.14
						1" Ice	9.77	8.37	0.21
						2" Ice	11.03	10.18	0.38

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice	13.68	14.02	0.87
(2) RRUS-11	A	From Centroid-Face	4.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
800 10121 w/ Mount Pipe	B	From Centroid-Face	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.69 6.18 6.67 7.69 9.84	4.60 5.34 6.04 7.51 10.82	0.07 0.11 0.17 0.30 0.67
(2) LGP21401	B	From Centroid-Face	4.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	0.01 0.02 0.03 0.05 0.14
OPA-65R-LCUU-H4 w/ Mount Pipe	B	From Centroid-Face	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.14 7.62 8.10 9.10 11.22	5.39 6.07 6.76 8.20 11.35	0.08 0.13 0.20 0.34 0.76
RRUS 32 B30	B	From Centroid-Face	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.87 4.15 4.44 5.06 6.38	2.76 3.02 3.29 3.85 5.08	0.08 0.10 0.14 0.21 0.41
DC6-48-60-18-8F	B	From Centroid-Face	4.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.22 2.44 2.66 3.15 4.21	2.22 2.44 2.66 3.15 4.21	0.02 0.04 0.06 0.12 0.27
AM-X-CD-14-65-00T-RET w/ Mount Pipe	B	From Centroid-Face	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.98 6.54 7.06 8.15 10.45	4.25 5.06 5.76 7.28 10.53	0.06 0.11 0.16 0.29 0.67
DC6-48-60-18-8F	B	From Centroid-Face	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.22 2.44 2.66 3.15 4.21	2.22 2.44 2.66 3.15 4.21	0.02 0.04 0.06 0.12 0.27
(2) RRUS-11	B	From Centroid-Face	4.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
800 10121 w/ Mount Pipe	C	From Centroid-Face	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.69 6.18 6.67 7.69 9.84	4.60 5.34 6.04 7.51 10.82	0.07 0.11 0.17 0.30 0.67
(2) LGP21401	C	From Centroid-Face	4.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	0.01 0.02 0.03 0.05 0.14
OPA-65R-LCUU-H6 w/	C	From	4.00	0.0000	188.00	No Ice	10.60	7.18	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe		Centroid-Face	0.00 1.00			1/2" Ice 1" Ice 2" Ice 4" Ice	11.27 11.91 13.21 15.93	8.36 9.26 11.09 15.15	0.18 0.26 0.46 1.00
RRUS 32 B30	C	From Centroid-Face	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.87 4.15 4.44 5.06 6.38	2.76 3.02 3.29 3.85 5.08	0.08 0.10 0.14 0.21 0.41
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Centroid-Face	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.07 0.14 0.21 0.38 0.87
Platform Mount [LP 601-1]	C	None		0.0000	160.00	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
2" x 8' Mount Pipe	B	From Centroid-Face	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.60 2.42 3.24 4.23 6.32	1.60 2.42 3.24 4.23 6.32	0.03 0.04 0.06 0.11 0.28
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 3.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
LNX-6515DS-VTM w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 3.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.68 12.40 13.14 14.60 17.87	9.84 11.37 12.91 15.27 20.14	0.08 0.17 0.27 0.51 1.15
RRUS 11 B12	A	From Centroid-Face	4.00 0.00 3.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.31 3.55 3.80 4.33 5.50	1.36 1.54 1.73 2.13 3.04	0.05 0.07 0.10 0.15 0.31
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 3.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ATMAA1412D-1A20	A	From Centroid-Face	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.17 1.31 1.47 1.81 2.58	0.47 0.57 0.69 0.95 1.57	0.01 0.02 0.03 0.06 0.14
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Centroid-Face	4.00 0.00 3.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
LNX-6515DS-VTM w/ Mount Pipe	B	From Centroid-Face	4.00 0.00 3.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	14.60	15.27	0.51
						4" Ice	17.87	20.14	1.15
RRUS 11 B12	B	From Centroid-Face	4.00 0.00 3.00	0.0000	160.00	No Ice	3.31	1.36	0.05
						1/2" Ice	3.55	1.54	0.07
						1" Ice	3.80	1.73	0.10
						2" Ice	4.33	2.13	0.15
						4" Ice	5.50	3.04	0.31
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Centroid-Face	4.00 0.00 3.00	0.0000	160.00	No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
ATMAA1412D-1A20	B	From Centroid-Face	4.00 0.00 0.00	0.0000	160.00	No Ice	1.17	0.47	0.01
						1/2" Ice	1.31	0.57	0.02
						1" Ice	1.47	0.69	0.03
						2" Ice	1.81	0.95	0.06
						4" Ice	2.58	1.57	0.14
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Centroid-Face	4.00 0.00 3.00	0.0000	160.00	No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Centroid-Face	4.00 0.00 3.00	0.0000	160.00	No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
ATMAA1412D-1A20	C	From Centroid-Face	4.00 0.00 0.00	0.0000	160.00	No Ice	1.17	0.47	0.01
						1/2" Ice	1.31	0.57	0.02
						1" Ice	1.47	0.69	0.03
						2" Ice	1.81	0.95	0.06
						4" Ice	2.58	1.57	0.14
LNX-6515DS-VTM w/ Mount Pipe	C	From Centroid-Face	4.00 0.00 3.00	0.0000	160.00	No Ice	11.68	9.84	0.08
						1/2" Ice	12.40	11.37	0.17
						1" Ice	13.14	12.91	0.27
						2" Ice	14.60	15.27	0.51
						4" Ice	17.87	20.14	1.15
RRUS 11 B12	C	From Centroid-Face	4.00 0.00 3.00	0.0000	160.00	No Ice	3.31	1.36	0.05
						1/2" Ice	3.55	1.54	0.07
						1" Ice	3.80	1.73	0.10
						2" Ice	4.33	2.13	0.15
						4" Ice	5.50	3.04	0.31
Platform Mount [LP 601-1]	C	None		0.0000	145.00	No Ice	28.47	28.47	1.12
						1/2" Ice	33.59	33.59	1.51
						1" Ice	38.71	38.71	1.91
						2" Ice	48.95	48.95	2.69
						4" Ice	69.43	69.43	4.26
2" x 6' Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	145.00	No Ice	1.20	1.20	0.03
						1/2" Ice	1.80	1.80	0.04
						1" Ice	2.17	2.17	0.05
						2" Ice	2.93	2.93	0.09
						4" Ice	4.57	4.57	0.23
2" x 6' Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	145.00	No Ice	1.20	1.20	0.03
						1/2" Ice	1.80	1.80	0.04
						1" Ice	2.17	2.17	0.05
						2" Ice	2.93	2.93	0.09
						4" Ice	4.57	4.57	0.23

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
2" x 6' Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.20 1.80 2.17 2.93 4.57	1.20 1.80 2.17 2.93 4.57	0.03 0.04 0.05 0.09 0.23
GPS_A	A	From Centroid-Leg	4.00 0.00 5.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.30 0.37 0.46 0.65 1.15	0.30 0.37 0.46 0.65 1.15	0.00 0.00 0.01 0.02 0.08
BXA-80063/6 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.98 8.62 9.23 10.47 13.08	5.41 6.56 7.42 9.20 12.95	0.04 0.10 0.17 0.33 0.79
(2) SBNHH-1D65B w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.40 8.95 9.51 10.66 13.06	6.82 7.78 8.61 10.33 14.12	0.06 0.13 0.20 0.38 0.86
RRH2X60-AWS	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.96 4.27 4.60 5.27 6.72	1.82 2.08 2.36 2.96 4.25	0.06 0.08 0.11 0.17 0.35
DB-T1-6Z-8AB-0Z	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00
LNX-6512DS-T4M w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.85 6.31 6.77 7.74 9.80	4.55 5.23 5.91 7.34 10.46	0.05 0.09 0.15 0.28 0.65
RRH2x60-700	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.96 4.27 4.60 5.27 6.72	1.82 2.08 2.36 2.96 4.25	0.06 0.08 0.11 0.17 0.35
RRH2X60-PCS	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.57 2.79 3.02 3.52 4.61	2.01 2.22 2.43 2.89 3.92	0.06 0.08 0.10 0.16 0.31
BXA-80063/6 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.98 8.62 9.23 10.47 13.08	5.41 6.56 7.42 9.20 12.95	0.04 0.10 0.17 0.33 0.79
(2) SBNHH-1D65B w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.40 8.95 9.51 10.66 13.06	6.82 7.78 8.61 10.33 14.12	0.06 0.13 0.20 0.38 0.86
RRH2X60-AWS	B	From Centroid-Le	4.00 0.00	0.0000	145.00	No Ice 1/2" Ice	3.96 4.27	1.82 2.08	0.06 0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
		g	0.00			1" Ice	4.60	2.36	0.11
						2" Ice	5.27	2.96	0.17
						4" Ice	6.72	4.25	0.35
LNX-6512DS-T4M w/ Mount Pipe	B	From Centroid-Le g	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.85 6.31 6.77 7.74 9.80	4.55 5.23 5.91 7.34 10.46	0.05 0.09 0.15 0.28 0.65
RRH2x60-700	B	From Centroid-Le g	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.96 4.27 4.60 5.27 6.72	1.82 2.08 2.36 2.96 4.25	0.06 0.08 0.11 0.17 0.35
RRH2X60-PCS	B	From Centroid-Le g	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.57 2.79 3.02 3.52 4.61	2.01 2.22 2.43 2.89 3.92	0.06 0.08 0.10 0.16 0.31
BXA-80063/6 w/ Mount Pipe	C	From Centroid-Le g	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.98 8.62 9.23 10.47 13.08	5.41 6.56 7.42 9.20 12.95	0.04 0.10 0.17 0.33 0.79
(2) SBNHH-1D65B w/ Mount Pipe	C	From Centroid-Le g	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.40 8.95 9.51 10.66 13.06	6.82 7.78 8.61 10.33 14.12	0.06 0.13 0.20 0.38 0.86
RRH2X60-AWS	C	From Centroid-Le g	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.96 4.27 4.60 5.27 6.72	1.82 2.08 2.36 2.96 4.25	0.06 0.08 0.11 0.17 0.35
800 10735V01 w/ Mount Pipe	C	From Centroid-Le g	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	9.04 9.72 10.37 11.69 14.45	5.49 6.71 7.69 9.56 13.51	0.06 0.12 0.19 0.36 0.85
RRH2x60-700	C	From Centroid-Le g	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.96 4.27 4.60 5.27 6.72	1.82 2.08 2.36 2.96 4.25	0.06 0.08 0.11 0.17 0.35
RRH2X60-PCS	C	From Centroid-Le g	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.57 2.79 3.02 3.52 4.61	2.01 2.22 2.43 2.89 3.92	0.06 0.08 0.10 0.16 0.31

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
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	188 - 137	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-25.39	-0.24	0.78
			Max. Mx	5	-10.98	-531.33	-1.55
			Max. My	2	-11.01	1.84	525.54
			Max. Vy	5	21.50	-531.33	-1.55
			Max. Vx	2	-21.32	1.84	525.54
			Max. Torque	12			-0.76
L2	137 - 90.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-36.23	-0.55	0.60
			Max. Mx	5	-18.96	-1604.68	-1.65
			Max. My	2	-18.98	1.85	1590.58
			Max. Vy	5	25.42	-1604.68	-1.65
			Max. Vx	2	-25.24	1.85	1590.58
			Max. Torque	11			-0.67
L3	90.25 - 44.5	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	14	-50.44	-0.90	0.40
			Max. Mx	5	-30.01	-2820.91	-1.76
			Max. My	2	-30.02	1.82	2798.74
			Max. Vy	5	29.13	-2820.91	-1.76
			Max. Vx	2	-28.95	1.82	2798.74
			Max. Torque	12			-0.66
L4	44.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-72.69	-1.27	0.18
			Max. Mx	5	-48.42	-4402.40	-1.87
			Max. My	2	-48.42	1.78	4371.22
			Max. Vy	5	32.80	-4402.40	-1.87
			Max. Vx	2	-32.63	1.78	4371.22
			Max. Torque	12			-0.66

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	18	72.69	-5.90	0.00
	Max. H_x	11	48.44	32.77	0.00
	Max. H_z	2	48.44	0.00	32.60
	Max. M_x	2	4371.22	0.00	32.60
	Max. M_z	5	4402.40	-32.77	-0.00
	Max. Torsion	6	0.65	-28.38	-16.30
	Min. Vert	1	48.44	0.00	0.00
	Min. H_x	5	48.44	-32.77	-0.00
	Min. H_z	8	48.44	-0.00	-32.60
	Min. M_x	8	-4370.71	-0.00	-32.60
	Min. M_z	11	-4401.70	32.77	0.00
	Min. Torsion	12	-0.66	28.38	16.30

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	48.44	0.00	0.00	-0.23	-0.34	0.00
Dead+Wind 0 deg - No Ice	48.44	-0.00	-32.60	-4371.22	1.78	0.26
Dead+Wind 30 deg - No Ice	48.44	16.38	-28.23	-3784.55	-2199.60	-0.08
Dead+Wind 60 deg - No Ice	48.44	28.38	-16.30	-2183.85	-3811.63	-0.39
Dead+Wind 90 deg - No Ice	48.44	32.77	0.00	1.87	-4402.40	-0.60
Dead+Wind 120 deg - No Ice	48.44	28.38	16.30	2187.00	-3813.71	-0.65
Dead+Wind 150 deg - No Ice	48.44	16.38	28.23	3786.13	-2203.26	-0.53
Dead+Wind 180 deg - No Ice	48.44	0.00	32.60	4370.71	-2.47	-0.27
Dead+Wind 210 deg - No Ice	48.44	-16.38	28.23	3784.03	2198.90	0.07
Dead+Wind 240 deg - No Ice	48.44	-28.38	16.30	2183.34	3810.92	0.39
Dead+Wind 270 deg - No Ice	48.44	-32.77	-0.00	-2.38	4401.70	0.61
Dead+Wind 300 deg - No Ice	48.44	-28.38	-16.30	-2187.51	3813.02	0.66
Dead+Wind 330 deg - No Ice	48.44	-16.38	-28.23	-3786.64	2202.56	0.53
Dead+Ice+Temp	72.69	0.00	0.00	-0.18	-1.27	-0.00
Dead+Wind 0 deg+Ice+Temp	72.69	0.00	-5.87	-800.73	-1.32	0.14
Dead+Wind 30 deg+Ice+Temp	72.69	2.95	-5.09	-693.46	-403.89	0.09

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+Wind 60 deg+Ice+Temp	72.69	5.11	-2.94	-400.45	-698.60	0.02
Dead+Wind 90 deg+Ice+Temp	72.69	5.90	-0.00	-0.21	-806.49	-0.06
Dead+Wind 120 deg+Ice+Temp	72.69	5.11	2.94	400.02	-698.66	-0.12
Dead+Wind 150 deg+Ice+Temp	72.69	2.95	5.09	693.00	-403.98	-0.15
Dead+Wind 180 deg+Ice+Temp	72.69	-0.00	5.87	800.21	-1.43	-0.14
Dead+Wind 210 deg+Ice+Temp	72.69	-2.95	5.09	401.	401.13	-0.09
Dead+Wind 240 deg+Ice+Temp	72.69	-5.11	2.94	399.93	695.85	-0.02
Dead+Wind 270 deg+Ice+Temp	72.69	-5.90	0.00	-0.32	803.74	0.06
Dead+Wind 300 deg+Ice+Temp	72.69	-5.11	-2.94	-400.54	695.90	0.12
Dead+Wind 330 deg+Ice+Temp	72.69	-2.95	-5.09	-693.52	401.23	0.15
Dead+Wind 0 deg - Service	48.44	-0.00	-12.73	-1710.50	0.48	0.10
Dead+Wind 30 deg - Service	48.44	6.40	-11.03	-1480.95	-860.86	-0.03
Dead+Wind 60 deg - Service	48.44	11.08	-6.37	-854.65	-1491.63	-0.15
Dead+Wind 90 deg - Service	48.44	12.80	0.00	0.57	-1722.80	-0.24
Dead+Wind 120 deg - Service	48.44	11.08	6.37	855.58	-1492.46	-0.26
Dead+Wind 150 deg - Service	48.44	6.40	11.03	1481.26	-862.30	-0.21
Dead+Wind 180 deg - Service	48.44	0.00	12.73	1709.97	-1.19	-0.11
Dead+Wind 210 deg - Service	48.44	-6.40	11.03	1480.43	860.16	0.03
Dead+Wind 240 deg - Service	48.44	-11.08	6.37	854.13	1490.92	0.15
Dead+Wind 270 deg - Service	48.44	-12.80	-0.00	-1.09	1722.10	0.24
Dead+Wind 300 deg - Service	48.44	-11.08	-6.37	-856.10	1491.75	0.26
Dead+Wind 330 deg - Service	48.44	-6.40	-11.03	-1481.78	861.60	0.21

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-48.44	0.00	0.00	48.44	0.00	0.000%
2	-0.00	-48.44	-32.60	0.00	48.44	32.60	0.000%
3	16.38	-48.44	-28.23	-16.38	48.44	28.23	0.000%
4	28.38	-48.44	-16.30	-28.38	48.44	16.30	0.000%
5	32.77	-48.44	0.00	-32.77	48.44	-0.00	0.000%
6	28.38	-48.44	16.30	-28.38	48.44	-16.30	0.000%
7	16.38	-48.44	28.23	-16.38	48.44	-28.23	0.000%
8	0.00	-48.44	32.60	-0.00	48.44	-32.60	0.000%
9	-16.38	-48.44	28.23	16.38	48.44	-28.23	0.000%
10	-28.38	-48.44	16.30	28.38	48.44	-16.30	0.000%
11	-32.77	-48.44	-0.00	32.77	48.44	0.00	0.000%
12	-28.38	-48.44	-16.30	28.38	48.44	16.30	0.000%
13	-16.38	-48.44	-28.23	16.38	48.44	28.23	0.000%
14	0.00	-72.69	0.00	0.00	72.69	0.00	0.000%
15	0.00	-72.69	-5.87	-0.00	72.69	5.87	0.000%
16	2.95	-72.69	-5.09	-2.95	72.69	5.09	0.000%
17	5.11	-72.69	-2.94	-5.11	72.69	2.94	0.000%
18	5.90	-72.69	-0.00	-5.90	72.69	0.00	0.000%
19	5.11	-72.69	2.94	-5.11	72.69	-2.94	0.000%
20	2.95	-72.69	5.09	-2.95	72.69	-5.09	0.000%
21	-0.00	-72.69	5.87	0.00	72.69	-5.87	0.000%
22	-2.95	-72.69	5.09	2.95	72.69	-5.09	0.000%
23	-5.11	-72.69	2.94	5.11	72.69	-2.94	0.000%
24	-5.90	-72.69	0.00	5.90	72.69	-0.00	0.000%
25	-5.11	-72.69	-2.94	5.11	72.69	2.94	0.000%
26	-2.95	-72.69	-5.09	2.95	72.69	5.09	0.000%
27	-0.00	-48.44	-12.73	0.00	48.44	12.73	0.000%
28	6.40	-48.44	-11.03	-6.40	48.44	11.03	0.000%
29	11.08	-48.44	-6.37	-11.08	48.44	6.37	0.000%
30	12.80	-48.44	0.00	-12.80	48.44	-0.00	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
31	11.08	-48.44	6.37	-11.08	48.44	-6.37	0.000%
32	6.40	-48.44	11.03	-6.40	48.44	-11.03	0.000%
33	0.00	-48.44	12.73	-0.00	48.44	-12.73	0.000%
34	-6.40	-48.44	11.03	6.40	48.44	-11.03	0.000%
35	-11.08	-48.44	6.37	11.08	48.44	-6.37	0.000%
36	-12.80	-48.44	-0.00	12.80	48.44	0.00	0.000%
37	-11.08	-48.44	-6.37	11.08	48.44	6.37	0.000%
38	-6.40	-48.44	-11.03	6.40	48.44	11.03	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	5	0.00000001	0.00000871
3	Yes	6	0.00000001	0.00006026
4	Yes	6	0.00000001	0.00006090
5	Yes	5	0.00000001	0.00001879
6	Yes	6	0.00000001	0.00006000
7	Yes	6	0.00000001	0.00006095
8	Yes	5	0.00000001	0.00001248
9	Yes	6	0.00000001	0.00006045
10	Yes	6	0.00000001	0.00006002
11	Yes	5	0.00000001	0.00002444
12	Yes	6	0.00000001	0.00006125
13	Yes	6	0.00000001	0.00006008
14	Yes	4	0.00000001	0.00000001
15	Yes	6	0.00000001	0.00002390
16	Yes	6	0.00000001	0.00002780
17	Yes	6	0.00000001	0.00002788
18	Yes	6	0.00000001	0.00002406
19	Yes	6	0.00000001	0.00002775
20	Yes	6	0.00000001	0.00002773
21	Yes	6	0.00000001	0.00002379
22	Yes	6	0.00000001	0.00002756
23	Yes	6	0.00000001	0.00002764
24	Yes	6	0.00000001	0.00002397
25	Yes	6	0.00000001	0.00002782
26	Yes	6	0.00000001	0.00002768
27	Yes	5	0.00000001	0.00000479
28	Yes	6	0.00000001	0.00000770
29	Yes	6	0.00000001	0.00000786
30	Yes	5	0.00000001	0.00000662
31	Yes	6	0.00000001	0.00000765
32	Yes	6	0.00000001	0.00000787
33	Yes	5	0.00000001	0.00000498
34	Yes	6	0.00000001	0.00000773
35	Yes	6	0.00000001	0.00000764
36	Yes	5	0.00000001	0.00000706
37	Yes	6	0.00000001	0.00000795
38	Yes	6	0.00000001	0.00000767

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	188 - 137 (1)	TP32.711x22x0.25	51.00	0.00	0.0	39.000	25.0495	-10.99	976.93	0.011
L2	137 - 90.25 (2)	TP42.03x31.3184x0.3125	51.00	0.00	0.0	39.000	40.2848	-18.96	1571.11	0.012
L3	90.25 - 44.5 (3)	TP51.014x40.3023x0.375	51.00	0.00	0.0	39.000	58.6481	-30.01	2287.28	0.013
L4	44.5 - 0 (4)	TP59.61x48.8988x0.5	51.00	0.00	0.0	39.000	93.8076	-48.42	3658.50	0.013

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	188 - 137 (1)	TP32.711x22x0.25	531.49	32.687	39.000	0.838	0.00	0.000	39.000	0.000
L2	137 - 90.25 (2)	TP42.03x31.3184x0.3125	1604.68	47.687	39.000	1.223	0.00	0.000	39.000	0.000
L3	90.25 - 44.5 (3)	TP51.014x40.3023x0.375	2820.91	47.459	39.000	1.217	0.00	0.000	39.000	0.000
L4	44.5 - 0 (4)	TP59.61x48.8988x0.5	4402.40	38.633	39.000	0.991	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	188 - 137 (1)	TP32.711x22x0.25	21.46	0.857	26.000	0.066	0.67	0.020	26.000	0.001
L2	137 - 90.25 (2)	TP42.03x31.3184x0.3125	25.42	0.631	26.000	0.049	0.64	0.009	26.000	0.000
L3	90.25 - 44.5 (3)	TP51.014x40.3023x0.375	29.13	0.497	26.000	0.038	0.62	0.005	26.000	0.000
L4	44.5 - 0 (4)	TP59.61x48.8988x0.5	32.80	0.350	26.000	0.027	0.60	0.003	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	188 - 137 (1)	0.011	0.838	0.000	0.066	0.001	0.851 ✔	1.333	H1-3+VT ✔
L2	137 - 90.25 (2)	0.012	1.223	0.000	0.049	0.000	1.235 ✔	1.333	H1-3+VT ✔
L3	90.25 - 44.5 (3)	0.013	1.217	0.000	0.038	0.000	1.230 ✔	1.333	H1-3+VT ✔
L4	44.5 - 0 (4)	0.013	0.991	0.000	0.027	0.000	1.004 ✔	1.333	H1-3+VT ✔

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

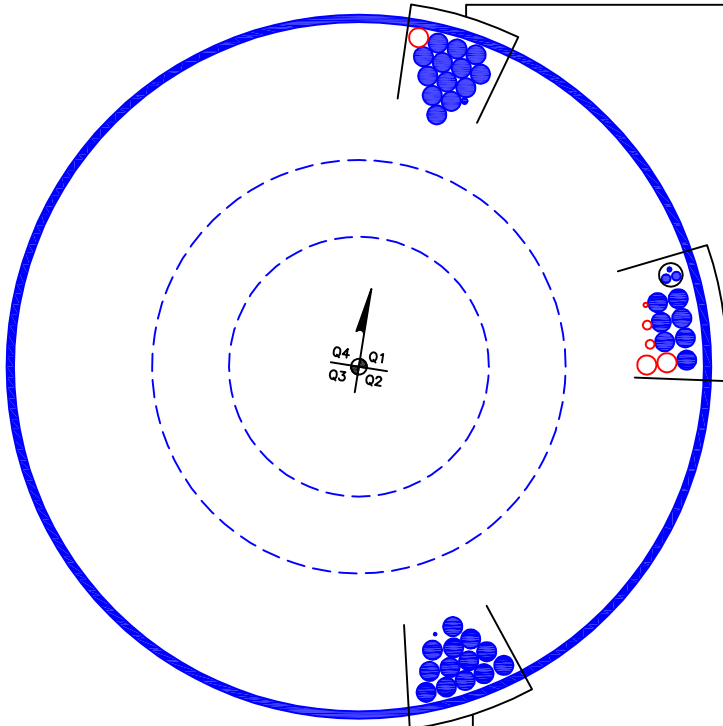
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	188 - 137	Pole	TP32.711x22x0.25	1	-10.99	1302.25	63.8	Pass
L2	137 - 90.25	Pole	TP42.03x31.3184x0.3125	2	-18.96	2094.29	92.7	Pass
L3	90.25 - 44.5	Pole	TP51.014x40.3023x0.375	3	-30.01	3048.94	92.3	Pass
L4	44.5 - 0	Pole	TP59.61x48.8988x0.5	4	-48.42	4876.78	75.3	Pass

Summary	ELC:	Existing/Proposed/Reserved
Pole (L2)	92.7	Pass
Rating =	92.7	Pass

APPENDIX B

BASE LEVEL DRAWING



(PROPOSED)
(1) 1-5/8" TO 145 FT LEVEL
(INSTALLED)
(1) 1/2" TO 145 FT LEVEL
(13) 1-5/8" TO 145 FT LEVEL

(PROPOSED)
(1) 3/8" TO 188 FT LEVEL
(2) 3/4" TO 188 FT LEVEL
(2) 1-5/8" TO 188 FT LEVEL
(INSTALLED-IN CONDUIT)
(1) 3/8" TO 188 FT LEVEL
(2) 3/4" TO 188 FT LEVEL
(INSTALLED)
(7) 1-5/8" TO 188 FT LEVEL

(INSTALLED)
(1) 1/4" TO 160 FT LEVEL
(13) 1-5/8" TO 160 FT LEVEL

BUSINESS UNIT: 803175 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *803175*
Site Name: *CT New Britain 3CAC*
App #: *313670 Rev. 7*

Base Reactions		
TIA Revision:	F	
Unfactored Moment, M:	4402	ft-kips
Unfactored Axial, P:	48	kips
Unfactored Shear, V:	33	kips

Anchor Rod Data		
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	67	in
Anchor Spacing:	6.125	in

Anchor Rod Results

TIA F --> Maximum Rod Tension	155.3	Kips
Allowable Tension:	195.0	Kips
Anchor Rod Stress Ratio:	79.7%	**Pass**

Plate Data		
W=Side:	66	in
Thick:	3	in
Grade:	50	ksi
Clip Distance:	14	in

Base Plate Results Flexural Check

Base Plate Stress:	39.9	ksi
Allowable PL Bending Stress:	50.0	ksi
Base Plate Stress Ratio:	79.9%	**Pass**

PL Ref. Data
Yield Line (in):
33.73
Max PL Length:
33.73

Stiffener Data (Welding at both sides)		
Configuration:	Unstiffened	
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

N/A - Unstiffened

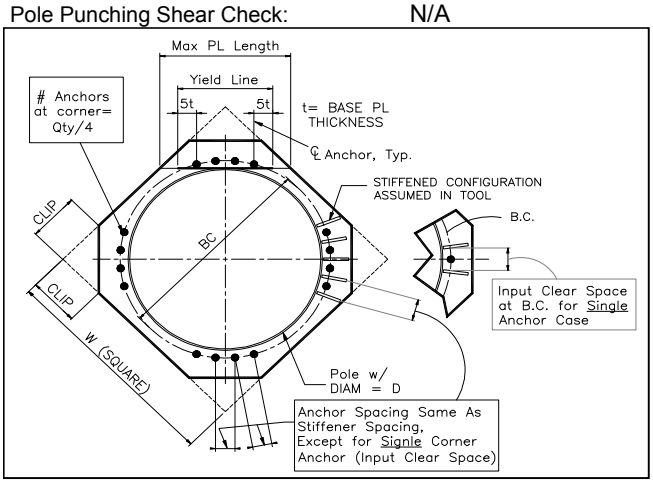
Stiffener Results

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

Pole Data		
Diam:	59.61	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round



Stress Increase Factor		
ASD ASIF:	1.333	

** 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#: *803175*
Site Name: *CT New Britain 3 CAC 803175*
App #: *313670 Rev. 7*

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

Pad & Pier Data		
Base PL Dist. Above Pier:	3.75	in
Pier Dist. Above Grade:	8	in
Pad Bearing Depth, D:	5.92	ft
Pad Thickness, T:	3	ft
Pad Width=Length, L:	26	ft
Pier Cross Section Shape:	Square	<--Pull Down
Enter Pier Side Width:	8	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	64.00	ft^2
Pier Height:	3.59	ft
Soil (above pad) Height:	2.92	ft

Soil Parameters		
Unit Weight, γ:	110.0	pcf
Ultimate Bearing Capacity, qn:	12.00	ksf
Strength Reduct. factor, ϕ:	0.75	
Angle of Friction, Φ:	30.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: ϕ*qn:	9.00	ksf
Passive Pres. Coeff., Kp	3.00	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	44.6	kips
Pad Force Location Above D:	1.33	ft
ϕ(Passive Pressure Moment):	59.27	ft-kips
Factored O.T. M(WL), "1.6W":	6250.1	ft-kips
Factored OT (MW-Msoil), M1	6190.79	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	1.69	ft
Sum of Soil Wedges Wt:	19.76	kips
Soil Wedges ecc, K1:	6.37	ft
Ftg+Soil above Pad wt:	535.2	kips
Unfactored (Total ftg-soil Wt):	554.96	kips
1.2D. **No Soil Wedges**.	699.85	kips
0.9D. **With Soil Wedges**	542.67	kips

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

Monopole Base Reaction Forces		
TIA Revision:	F	<--Pull Down
Unfactored DL Axial, PD:	48	kips
Unfactored WL Axial, PW:	0	kips
Unfactored WL Shear, V:	33	kips
Unfactored WL Moment, M:	4402	ft-kips

Load Factor	Shaft Factored Loads		
1.20	1.2D+1.6W, Pu:	57.6	kips
0.90	0.9D+1.6W, Pu:	43.2	kips
1.35	Vu:	44.55	kips
	Mu:	5942.7	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(**No Soil Wedges**) [Reaction+Conc+Soil]	699.85	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	6190.79	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	8.85	ft
Orthogonal qu=	3.24	ksf
qu/ϕ*qn Ratio=	**36.00%**	**Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	6.25	ft
Diagonal qu=	3.84	ksf
qu/ϕ*qn Ratio=	**42.72%**	**Pass**

Run <-- Press Upon Completing All Input

Overturning Stability Check

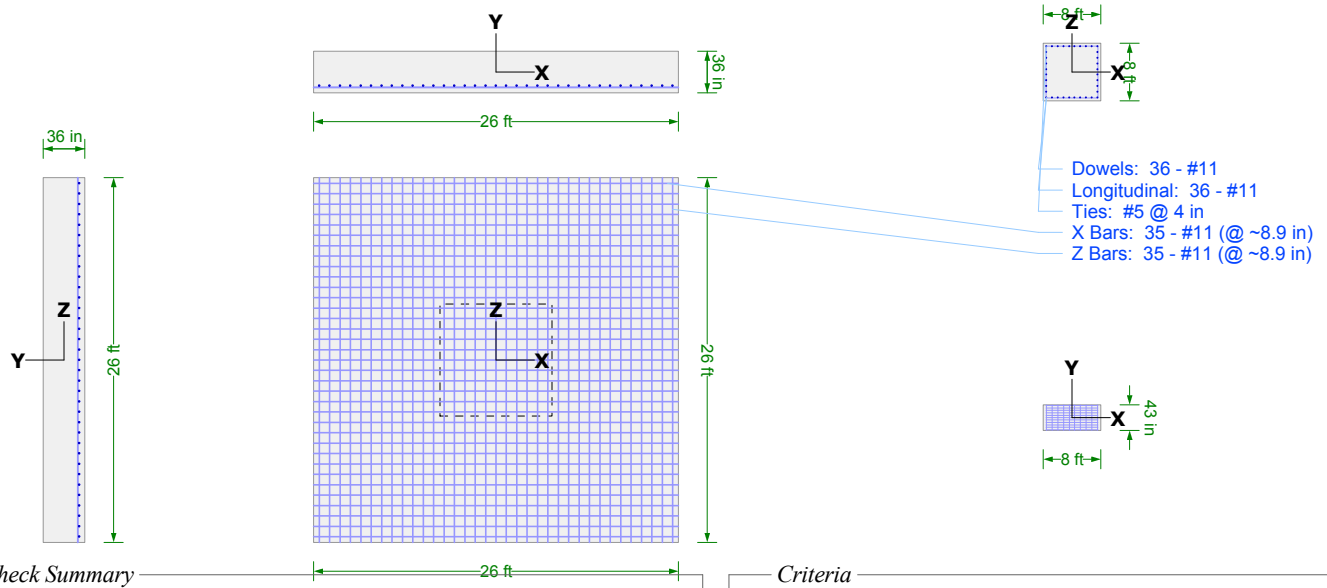
0.9D+1.6W Load Combination, Bearing Results:

(**w/ Soil Wedges**) [Reaction+Conc+Soil]	542.67	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	6077.57	ft-kips

Orthogonal ecc3 = M2/P2 =	11.20	ft
Ortho Non Bearing Length,NBL=	22.40	ft
Orthogonal qu=	5.80	ksf
Diagonal qu=	5.26	ksf

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	4402.00		
M Orthogonal:	4659.98	**94.46%**	**Pass**
M Diagonal:	4659.98	**94.46%**	**Pass**

Design Detail



Check Summary

Ratio	Check	Provided	Required	Combination
----- Footing -----				
✓ 0.133	X Flexure (-Z)	6837 ft·k	908.2 ft·k	
✓ 0.133	X Flexure (+Z)	6837 ft·k	908.2 ft·k	
✓ 0.347	Z Flexure (-X)	7183 ft·k	2490 ft·k	
✓ 0.347	Z Flexure (+X)	7183 ft·k	2490 ft·k	
✓ 0.191	Shear (-Z)	766.1 k	146 k	
✓ 0.191	Shear (+Z)	766.1 k	146 k	
✓ 0.000	Shear (-X)	802.2 k	0 k	
✓ 0.482	Shear (+X)	802.2 k	386.6 k	
✓ 0.209	Punching Shear	164.3 psi	34.33 psi	
----- Pedestal -----				
✓ 0.006	Axial	13898 k	82.4 k	
✓ 0.402	Biaxial Bending	0.402	1.000	
✓ 0.024	Shear X	1351 k	33 k	
✓ 0.000	Shear Z	1351 k	0 k	

Criteria

Building Code	IBC 2006
Strength Load Combinations	IBC 2006 (Strength)
Stability Load Combinations	ASCE 7-05 (ASD)

Loads Summary (Prefactored Loads)

Load Set	Combination	Type	P	Mx	Mz	Vx	Vz	Overburden	Footing Weight
Tower Reactions		Strength	82.4 k	0 ft·k	4402 ft·k	33 k	0 k	321 psf	304.2 k

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RF COMPLIANCE EXPERTS
A BUSINESS OF FDH VELOCITEL

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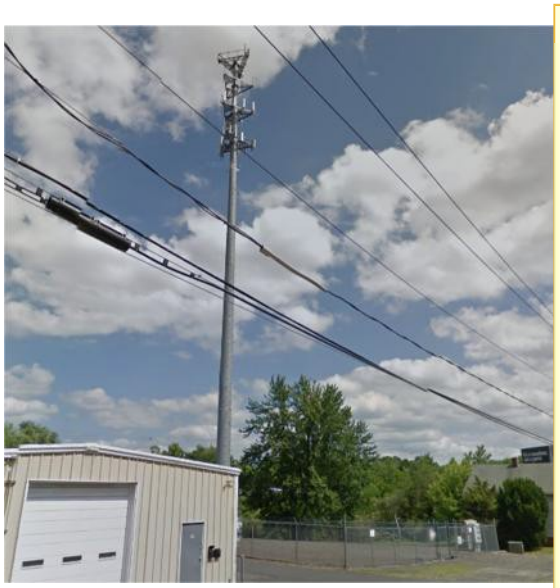


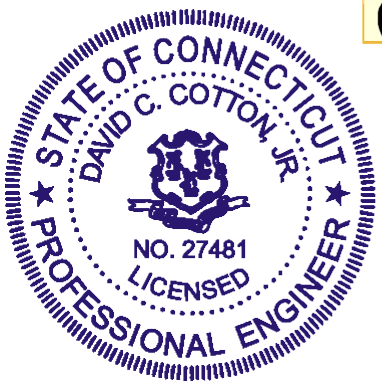
SmartLink, LLC on behalf of AT&T Mobility, LLC
Site FA – 10091781
Site ID – CTL05379 (3C)
USID – 25976
Site Name – New Britain East
Site Compliance Report

178 Lester Street
New Britain, CT 06051

Latitude: N41-41-23.61
Longitude: W72-45-30.24
Structure Type: Monopole

Report generated date: February 10, 2016
Report by: Brandon Green
Customer Contact: Kristen Smith

AT&T Mobility, LLC will be compliant when the remediation recommended in section 5.2 or other appropriate remediation is implemented.



David C. Cotton, Jr.
Licensed Professional Engineer (Electrical)
State of Connecticut, PEN.0027481
Date: 2016-February-10

Table of Contents

1 General Site Summary

1.1 Report Summary

AT&T Mobility, LLC	Summary
Access to Antennas Locked?	Yes
RF Sign(s) @ access point(s)	None
RF Sign(s) @ antennas	None
Barrier(s) @ sectors	None
Max cumulative simulated Radio Frequency Exposure (RFE) level on the ground	<5% of General Public limit
FCC & AT&T Compliant?	Will be compliant

The following documents were provided by the client and were utilized to create this report:

RFDS: NEW-ENGLAND_CONNECTICUT_CT5379_2016-LTE-Next-Carrier_LTE-3C_om636a_2051A.

CD's: 10091781_AE201_102315_CTL05379.Rev0.CD.

2 Map of Site

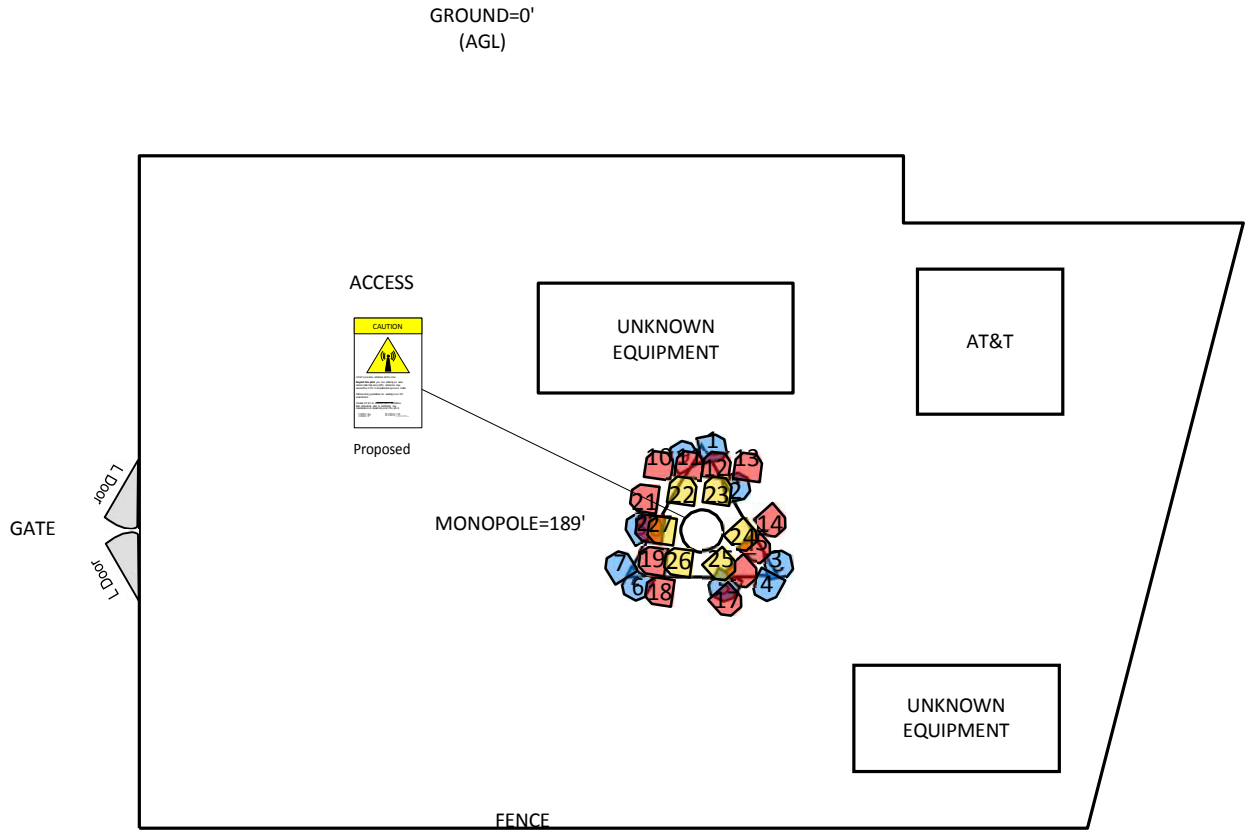
In the RF Emissions Simulations below all heights are reflected with respect to main site level. In most rooftop cases this is the height of the main rooftop and in other cases this can be ground level. Each different height area, rooftop, or platform level is labeled with its height relative to the main site level. Emissions are calculated appropriately based on the relative height and location of that area to all antennas.

The Antenna Inventory heights are referenced to the same level.

The following diagrams are included:

- Site Map
- RF Emissions Diagram
- AT&T Mobility, LLC Contribution
- Elevation View

Site Map For: New Britain East



(Feet)

0 10.6 21.3

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Site Name:New Britain East

AT&T MOBILITY LLC	VERIZONWIRELESS	T-MOBILE	METROPCS	CRICKET COMMUNICATIONS	CLEARWIRE	SPRINT

3 Antenna Inventory

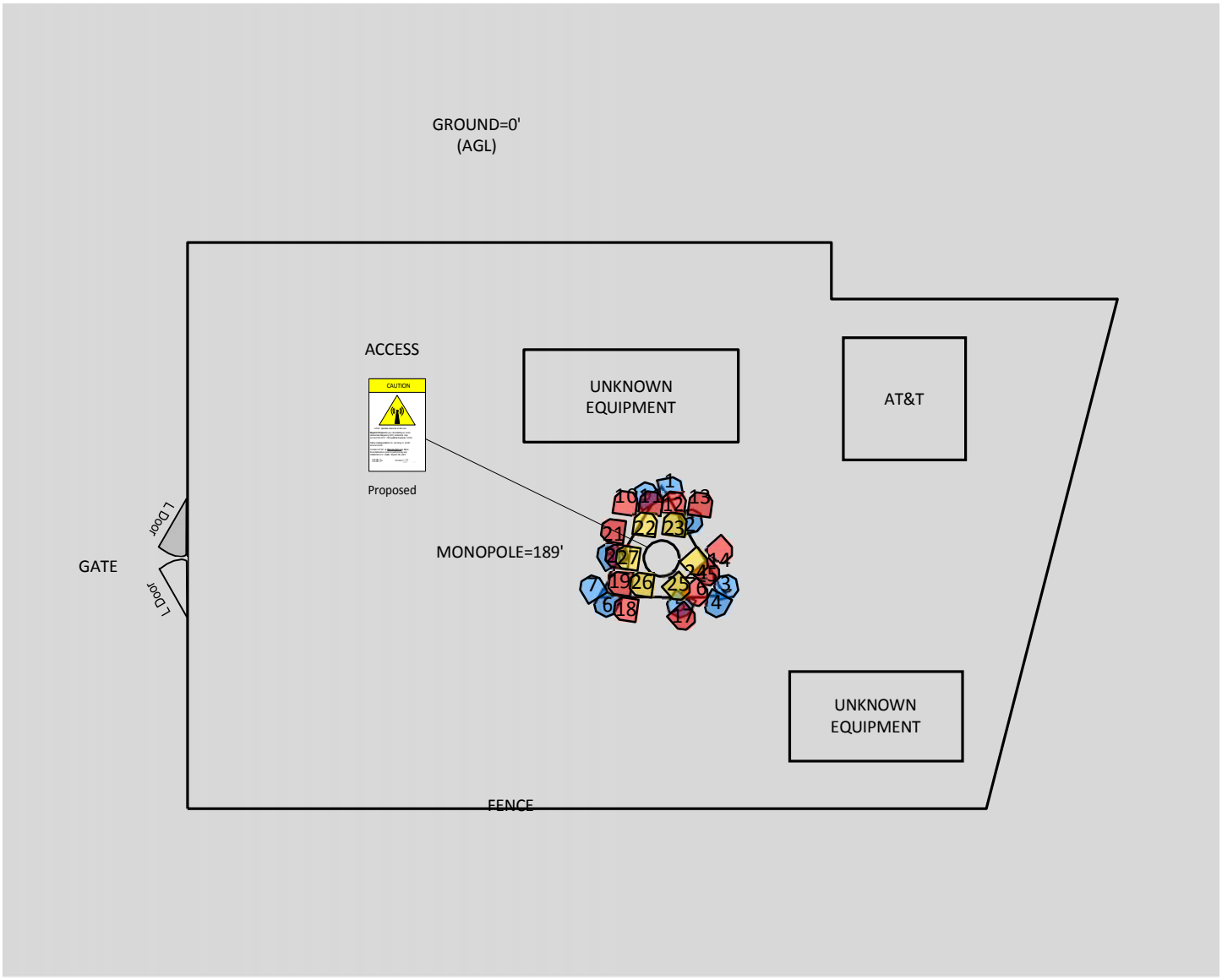
The following antenna inventory on this and the following page, were obtained by the customer and were utilized to create the site model diagrams:

Ant ID	Operator	Antenna Make & Model	Type	TX Freq	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Ant Gain (dBd)	2G GSM Radio(s)	3G UMTS Radio(s)	4G Radio(s)	Total ERP	X	Y	Z (AGL
1	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	70	85.7	4.5	14.32	1	0	0	389.6	105.8'	136.9'	187.7'
1	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	70	87.6	4.5	11.35	0	2	0	281.7	105.8'	136.9'	187.7'
1	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	70	85.7	4.5	14.32	0	1	0	257.3	105.8'	136.9'	187.7'
1	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	70	85.7	4.5	14.32	0	1	0	389.6	105.8'	136.9'	187.7'
2	AT&T MOBILITY LLC (Proposed)	CCI Antennas OPA-65R-LCUU-H4	Panel	2300	70	61.1	4	14.26	0	0	1	636.6	108.4'	132.6'	187'
3	AT&T MOBILITY LLC	KMW AM-X-CD-14-65-00T	Panel	737	70	67	4	11.66	0	0	1	482.9	113.1'	124'	187'
3	AT&T MOBILITY LLC	KMW AM-X-CD-14-65-00T	Panel	1900	70	65	4	13.86	0	0	1	1056.7	113.1'	124'	187'
4	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	200	85.7	4.5	14.32	1	0	0	339.6	111.9'	121.7'	187.7'
4	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	200	87.6	4.5	11.35	0	2	0	281.7	111.9'	121.7'	187.7'
4	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	200	85.7	4.5	14.32	0	1	0	224.4	111.9'	121.7'	187.7'
4	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	200	85.7	4.5	14.32	0	1	0	339.6	111.9'	121.7'	187.7'
5	AT&T MOBILITY LLC (Proposed)	CCI Antennas HPA-65R-BUU-H6	Panel	2300	200	61.1	6	14.53	0	0	1	748.2	107'	121.6'	186'
6	AT&T MOBILITY LLC	KMW AM-X-CD-14-65-00T	Panel	737	200	67	4	11.66	0	0	1	682.3	97.4'	121.7'	187'
6	AT&T MOBILITY LLC	KMW AM-X-CD-14-65-00T	Panel	1900	200	65	4	13.86	0	0	1	1330.5	97.4'	121.7'	187'
7	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	320	85.7	4.5	14.32	1	0	0	339.6	95.6'	123.9'	187.7'
7	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	320	87.6	4.5	11.35	0	2	0	281.7	95.6'	123.9'	187.7'
7	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	320	85.7	4.5	14.32	0	1	0	224.4	95.6'	123.9'	187.7'
7	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	320	85.7	4.5	14.32	0	1	0	339.6	95.6'	123.9'	187.7'
8	AT&T MOBILITY LLC (Proposed)	CCI Antennas OPA-65R-LCUU-H4	Panel	2300	320	61.1	4	14.26	0	0	1	748.2	97.8'	128.2'	187'
9	AT&T MOBILITY LLC	KMW AM-X-CD-14-65-00T	Panel	737	320	67	4	11.66	0	0	1	682.3	102.6'	136.1'	187'
9	AT&T MOBILITY LLC	KMW AM-X-CD-14-65-00T	Panel	1900	320	65	4	13.86	0	0	1	1330.5	102.6'	136.1'	187'
10	VERIZON WIRELESS	Generic	Panel	850	0	65	4.6	12.77	-	-	-	1513.9	99.9'	135'	109.7'
11	VERIZON WIRELESS	Generic	Panel	751	0	65	4.6	12.14	-	-	-	982.1	103.3'	135'	109.7'
12	VERIZON WIRELESS	Generic	Panel	1900	0	65	4.6	15.43	-	-	-	1675.9	106.3'	135'	109.7'
13	VERIZON WIRELESS	Generic	Panel	850	0	65	4.6	12.77	-	-	-	1513.9	109.8'	134.8'	109.7'
14	VERIZON WIRELESS	Generic	Panel	850	130	65	4.6	12.77	-	-	-	1513.9	112.4'	128.8'	109.7'
15	VERIZON WIRELESS	Generic	Panel	751	130	65	4.6	12.14	-	-	-	982.1	110.7'	125.8'	109.7'
16	VERIZON WIRELESS	Generic	Panel	1900	130	65	4.6	15.43	-	-	-	1675.9	109.2'	123.1'	109.7'
17	VERIZON WIRELESS	Generic	Panel	850	130	65	4.6	12.77	-	-	-	1513.9	107.5'	120'	109.7'

Ant ID	Operator	Antenna Make & Model	Type	TX Freq	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Ant Gain (dBd)	2G GSM Radio(s)	3G UMTS Radio(s)	4G Radio(s)	Total ERP	X	Y	Z (AGL
18	VERIZON WIRELESS	Generic	Panel	850	270	65	4.6	12.77	-	-	-	1513.9	100'	121.1'	109.7'
19	VERIZON WIRELESS	Generic	Panel	751	270	65	4.6	12.14	-	-	-	982.1	99.2'	124.4'	109.7'
20	VERIZON WIRELESS	Generic	Panel	1900	270	65	4.6	15.43	-	-	-	1675.9	98.9'	128'	109.7'
21	VERIZON WIRELESS	Generic	Panel	850	270	65	4.6	12.77	-	-	-	1513.9	98.3'	131.4'	109.7'
22	SPRINT	Generic	Panel	862	0	65	6.3	13.43	-	-	-	881.2	102.5'	132.2'	133.9'
22	SPRINT	Generic	Panel	1900	0	65	6.3	16.26	-	-	-	1690.7	102.5'	132.2'	133.9'
23	SPRINT	Generic	Panel	2500	0	65	4.1	15.01	-	-	-	1600	106.4'	132.2'	135'
24	SPRINT	Generic	Panel	862	130	65	6.3	13.43	-	-	-	881.2	109.2'	127.2'	133.9'
24	SPRINT	Generic	Panel	1900	130	65	6.3	16.26	-	-	-	1690.7	109.2'	127.2'	133.9'
25	SPRINT	Generic	Panel	2500	130	65	4.1	15.01	-	-	-	1600	106.8'	123.9'	135'
26	SPRINT	Generic	Panel	862	270	65	6.3	13.43	-	-	-	881.2	102'	124.3'	133.9'
26	SPRINT	Generic	Panel	1900	270	65	6.3	16.26	-	-	-	1690.7	102'	124.3'	133.9'
27	SPRINT	Generic	Panel	2500	270	65	4.1	15.01	-	-	-	1600	100.2'	127.8'	135'

NOTE: X, Y and Z indicate relative position of the bottom of the antenna to the origin location on the site, displayed in the model results diagram. Specifically, the Z reference indicates the bottom of the antenna height above the main site level unless otherwise indicated. The distance to the bottom of the antenna is calculated by subtracting half of the length of the antenna from the antenna centerline**.** Effective Radiated Power (ERP) is provided by the operator or based on Sitesafe experience. The values used in the modeling may be greater than are currently deployed. For other operators at this site the use of "Generic" as an antenna model or "Unknown" for a wireless operator means the information with regard to operator, their FCC license and/or antenna information was not available nor could it be secured while on site. Other operator's equipment, antenna models and powers used for modeling are based on obtained information or Sitesafe experience.

RF Emissions Simulation For: New Britain East



% of FCC Occupational Exposure Limit
Spatial average 0' - 6'

>= 5000	>= 500	>= 100	>= 5	< 5

AT&T MOBILITY LLC	VERIZON WIRELESS	T-MOBILE	METROPCS	CRICKET COMMUNICATIONS	CLEARWIRE	SPRINT

(Feet)

0 10.7 21.3

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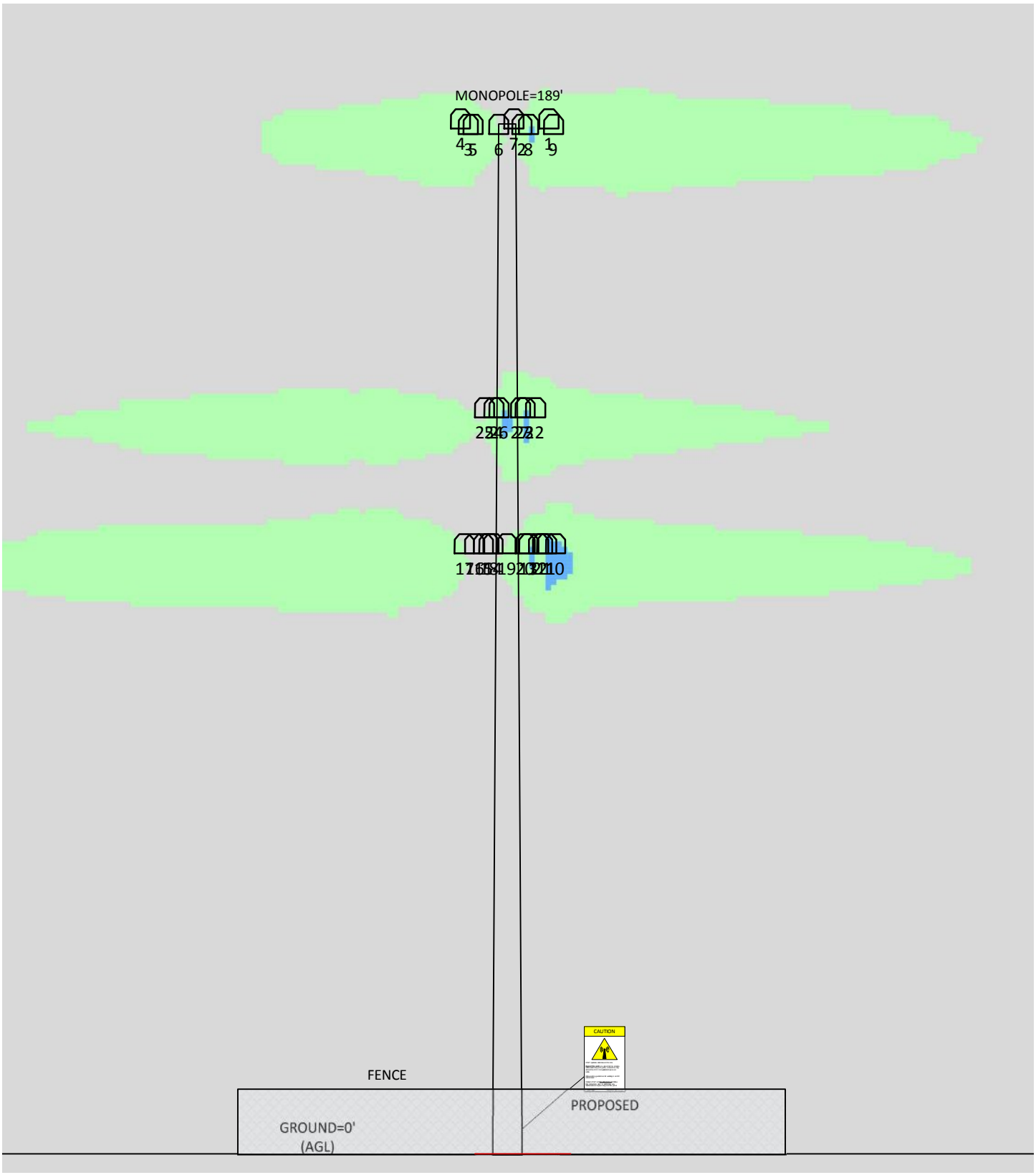
Site Name:New Britain East

RF Emissions Simulation For: New Britain East
Elevation View



% of FCC Occupational Exposure Limit
Spatial average 0' - 6'

>= 5000 | >= 500 | >= 100 | >= 5 | < 5

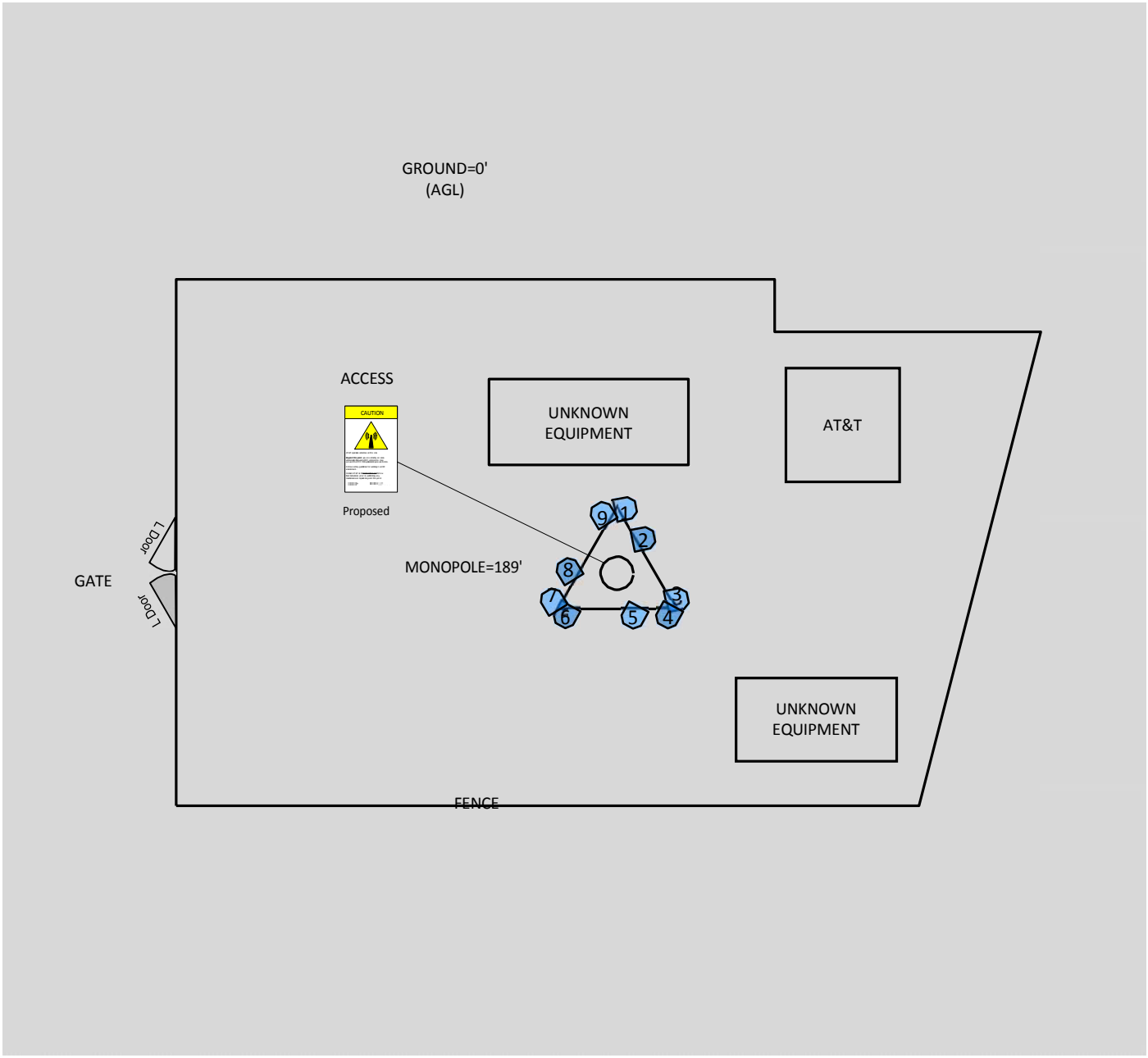
AT&T MOBILITY LLC	VERIZONWIRELESS	T-MOBILE	METROPCS	CRICKET COMMUNICATIONS	CLEARWIRE	SPRINT

(Feet)

0 12.6 25.3

www.sitesafe.com
Site Name:New Britain East

RF Emissions Simulation For: New Britain East
AT&T Mobility, LLC Contribution



% of FCC Occupational Exposure Limit
Spatial average 0' - 6'

>= 5000	>= 500	>= 100	>= 5	< 5

(Feet)

0 11.1 22.3

www.sitesafe.com
Site Name:New Britain East

AT&T MOBILITY LLC	VERIZON WIRELESS	T-MOBILE	METROPCS	CRICKET COMMUNICATIONS	CLEARWIRE	SPRINT

5 Site Compliance

5.1 Site Compliance Statement

Upon evaluation of the cumulative RF emission levels from all operators at this site, RF hazard signage and antenna locations, Sitesafe has determined that:

AT&T Mobility, LLC will be compliant when the remediation recommended in section 5.2 or other appropriate remediation is implemented.

The compliance determination is based on General Public RFE levels derived from theoretical modeling, RF signage placement, proposed antenna inventory and the level of restricted access to the antennas at the site. Any deviation from the AT&T Mobility, LLC's proposed deployment plan could result in the site being rendered non-compliant.

Modeling is used for determining compliance and the percentage of MPE contribution.

5.2 Actions for Site Compliance

Based on FCC regulations, common industry practice, and our understanding of AT&T Mobility, LLC RF Safety Policy requirements, this section provides a statement of recommendations for site compliance. Recommendations have been proposed based on our understanding of existing access restrictions, signage, and an analysis of predicted RFE levels.

The site will be made compliant if the following changes are implemented:

Site Access Location

Install a Yellow Caution 2 sign.

AT&T Mobility, LLC Proposed Alpha Sector Location

No action required.

AT&T Mobility, LLC Proposed Beta Sector Location

No action required.

AT&T Mobility, LLC Proposed Gamma Sector Location

No action required.

6 Engineer Certification

The professional engineer whose seal appears on the cover of this document hereby certifies and affirms that:

I am registered as a Professional Engineer in the jurisdiction indicated in the professional engineering stamp on the cover of this document; and

That I am an employee of Sitesafe, Inc., in Arlington, Virginia, at which place the staff and I provide RF compliance services to clients in the wireless communications industry; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission (FCC) as well as the regulations of the Occupational Safety and Health Administration (OSHA), both in general and specifically as they apply to the FCC Guidelines for Human Exposure to Radio-frequency Radiation; and

That I have thoroughly reviewed this Site Compliance Report and believe it to be true and accurate to the best of my knowledge as assembled by and attested to by Brandon Green.

February 10, 2016

Appendix A – Statement of Limiting Conditions

Sitesafe has provided computer generated model(s) in this Site Compliance Report to show approximate dimensions of the site, and the model is included to assist the reader of the compliance report to visualize the site area, and to provide supporting documentation for Sitesafe's recommendations.

Sitesafe may note in the Site Compliance Report any adverse physical conditions, such as needed repairs, that Sitesafe became aware of during the normal research involved in creating this report. Sitesafe will not be responsible for any such conditions that do exist or for any engineering or testing that might be required to discover whether such conditions exist. Because Sitesafe is not an expert in the field of mechanical engineering or building maintenance, the Site Compliance Report must not be considered a structural or physical engineering report.

Sitesafe obtained information used in this Site Compliance Report from sources that Sitesafe considers reliable and believes them to be true and correct. Sitesafe does not assume any responsibility for the accuracy of such items that were furnished by other parties. When conflicts in information occur between data collected by Sitesafe provided by a second party and data collected by Sitesafe, the data will be used.

Appendix B – Regulatory Background Information

FCC Rules and Regulations

In 1996, the Federal Communication Commission (FCC) adopted regulations for the evaluating of the effects of RF emissions in 47 CFR § 1.1307 and 1.1310. The guideline from the FCC Office of Engineering and Technology is Bulletin 65 ("OET Bulletin 65"), *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*, Edition 97-01, published August 1997. Since 1996 the FCC periodically reviews these rules and regulations as per their congressional mandate.

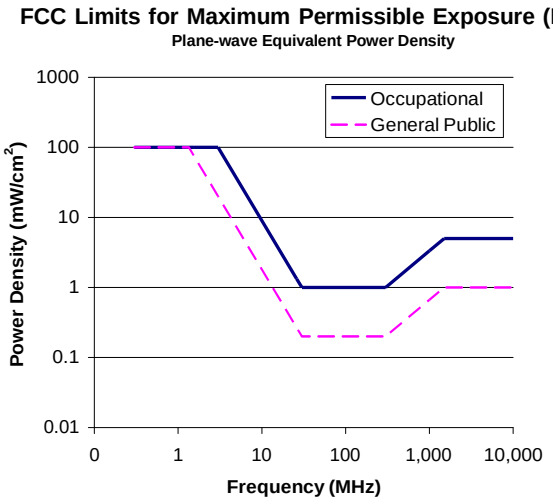
FCC regulations define two separate tiers of exposure limits: Occupational or "Controlled environment" and General Public or "Uncontrolled environment". The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to *accessible* areas where workers or the general public may be exposed to Radio Frequency (RF) electromagnetic fields.

Occupational or Controlled limits apply in situations in which persons are exposed as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

An area is considered a Controlled environment when access is limited to these aware personnel. Typical criteria are restricted access (i.e. locked or alarmed doors, barriers, etc.) to the areas where antennas are located coupled with proper RF warning signage. A site with Controlled environments is evaluated with Occupational limits.

All other areas are considered Uncontrolled environments. If a site has no access controls or no RF warning signage it is evaluated with General Public limits.

The theoretical modeling of the RF electromagnetic fields has been performed in accordance with OET Bulletin 65. The Maximum Permissible Exposure (MPE) limits utilized in this analysis are outlined in the following diagram:



Limits for Occupational/Controlled Exposure (MPE)

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

Limits for General Population/Uncontrolled Exposure (MPE)

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

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

OSHA Statement

The General Duty clause of the OSHA Act (Section 5) outlines the occupational safety and health responsibilities of the employer and employee. The General Duty clause in Section 5 states:

(a) Each employer –

(1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;

(2) shall comply with occupational safety and health standards promulgated under this Act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.

OSHA has defined Radiofrequency and Microwave Radiation safety standards for workers who may enter hazardous RF areas. Regulation Standards 29 CFR § 1910.147 identify a generic Lock Out Tag Out procedure aimed to control the unexpected energization or start up of machines when maintenance or service is being performed.

Appendix C – Safety Plan and Procedures

The following items are general safety recommendations that should be administered on a site by site basis as needed by the carrier.

General Maintenance Work: Any maintenance personnel required to work immediately in front of antennas and / or in areas indicated as above 100% of the Occupational MPE limits should coordinate with the wireless operators to disable transmitters during their work activities.

Training and Qualification Verification: All personnel accessing areas indicated as exceeding the General Population MPE limits should have a basic understanding of EME awareness and RF Safety procedures when working around transmitting antennas. Awareness training increases a workers understanding to potential RF exposure scenarios. Awareness can be achieved in a number of ways (e.g. videos, formal classroom lecture or internet based courses).

Physical Access Control: Access restrictions to transmitting antennas locations is the primary element in a site safety plan. Examples of access restrictions are as follows:

- Locked door or gate
- Alarmed door
- Locked ladder access
- Restrictive Barrier at antenna (e.g. Chain link with posted RF Sign)

RF Signage: Everyone should obey all posted signs at all times. RF signs play an important role in properly warning a worker prior to entering into a potential RF Exposure area.

Assume all antennas are active: Due to the nature of telecommunications transmissions, an antenna transmits intermittently. Always assume an antenna is transmitting. Never stop in front of an antenna. If you have to pass by an antenna, move through as quickly and safely as possible thereby reducing any exposure to a minimum.

Maintain a 3 foot clearance from all antennas: There is a direct correlation between the strength of an EME field and the distance from the transmitting antenna. The further away from an antenna, the lower the corresponding EME field is.

Site RF Emissions Diagram: Section 4 of this report contains an RF Diagram that outlines various theoretical Maximum Permissible Exposure (MPE) areas at the site. The modeling is a worst case scenario assuming a duty cycle of 100% for each transmitting antenna at full power. This analysis is based on one of two access control criteria: General Public criteria means the access to the site is uncontrolled and anyone can gain access. Occupational criteria means the access is restricted and only properly trained individuals can gain access to the antenna locations.

Appendix D – RF Emissions

The RF Emissions Simulation(s) in this report display theoretical spatially averaged percentage of the Maximum Permissible Exposure for all systems at the site unless otherwise noted. These diagrams use modeling as prescribed in OET Bulletin 65 and assumptions detailed in Appendix E.

The key at the bottom of each RF Emissions Simulation indicates percentages displayed referenced to FCC General Public Maximum Permissible Exposure (MPE) limits. Color coding on the diagram is as follows:

- Areas indicated as Gray are predicted to be below 5% of the MPE limits. **Gray represents areas more than 20 times below the most conservative exposure limit**.
- Green represents areas are predicted to be between 5% and 100% of the MPE limits. **Green areas are accessible to anyone**.
- Blue represents areas predicted to exceed the General Public MPE limits but are less than Occupational limits. **Blue areas should be accessible only to RF trained workers**.
- Yellow represents areas predicted to exceed Occupational MPE limits. **Yellow areas should be accessible only to RF trained workers able to assess current exposure levels**.
- Red represents areas predicted to have exposure more than 10 times the Occupational MPE limits. **Red indicates that the RF levels must be reduced prior to access.** An RF Safety Plan is required which outlines how to reduce the RF energy in these areas prior to access.

Appendix E – Assumptions and Definitions

General Model Assumptions

In this site compliance report, it is assumed that all antennas are operating at **full power at all times**. Software modeling was performed for all transmitting antennas located on the site. Sitesafe has further assumed a 100% duty cycle and maximum radiated power.

The site has been modeled with these assumptions to show the maximum RF energy density. Sitesafe believes this to be a *worst-case* analysis, based on best available data. Areas modeled to predict emissions greater than 100% of the applicable MPE level may not actually occur, but are shown as a *worst-case* prediction that could be realized real time. Sitesafe believes these areas to be safe for entry by occupationally trained personnel utilizing appropriate personal protective equipment (in most cases, a personal monitor).

Thus, at any time, if power density measurements were made, we believe the real-time measurements would indicate levels below those depicted in the RF emission diagram(s) in this report. By modeling in this way, Sitesafe has conservatively shown exclusion areas – areas that should not be entered without the use of a personal monitor, carriers reducing power, or performing real-time measurements to indicate real-time exposure levels.

Use of Generic Antennas

For the purposes of this report, the use of "Generic" as an antenna model, or "Unknown" for an operator means the information about a carrier, their FCC license and/or antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use our industry specific knowledge of equipment, antenna models, and transmit power to model the site. If more specific information can be obtained for the unknown measurement criteria, Sitesafe recommends remodeling of the site utilizing the more complete and accurate data. Information about similar facilities is used when the service is identified and associated with a particular antenna. If no information is available regarding the transmitting service associated with an unidentified antenna, using the antenna manufacturer's published data regarding the antenna's physical characteristics makes more conservative assumptions.

Where the frequency is unknown, Sitesafe uses the closest frequency in the antenna's range that corresponds to the highest Maximum Permissible Exposure (MPE), resulting in a conservative analysis.

Definitions

5% Rule – The rules adopted by the FCC specify that, in general, at multiple transmitter sites actions necessary to bring the area into compliance with the guidelines are the shared responsibility of all licensees whose transmitters produce field strengths or power density levels at the area in question in excess of 5% of the exposure limits. In other words, any wireless operator that contributes 5% or greater of the MPE limit in an area that is identified to be greater than 100% of the MPE limit is responsible taking corrective actions to bring the site into compliance.

Compliance – The determination of whether a site is safe or not with regards to Human Exposure to Radio Frequency Radiation from transmitting antennas.

Decibel (dB) – A unit for measuring power or strength of a signal.

Duty Cycle – The percent of pulse duration to the pulse period of a periodic pulse train. Also, may be a measure of the temporal transmission characteristic of an intermittently transmitting RF source such as a paging antenna by dividing average transmission duration by the average period for transmission. A duty cycle of 100% corresponds to continuous operation.

Effective (or Equivalent) Isotropic Radiated Power (EIRP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna.

Effective Radiated Power (ERP) – In a given direction, the relative gain of a transmitting antenna with respect to the maximum directivity of a half wave dipole multiplied by the net power accepted by the antenna from the connecting transmitter.

Gain (of an antenna) – The ratio of the maximum intensity in a given direction to the maximum radiation in the same direction from an isotropic radiator. Gain is a measure of the relative efficiency of a directional antennas as compared to an omni directional antenna.

General Population/Uncontrolled Environment – Defined by the FCC, as an area where exposure to RF energy may occur to persons who are **unaware** of the potential for exposure and who have no control of their exposure. General Population is also referenced as General Public.

Generic Antenna – For the purposes of this report, the use of "Generic" as an antenna model means the antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use our industry specific knowledge of antenna models to select a worst case scenario antenna to model the site.

Isotropic Antenna – An antenna that is completely non-directional. In other words, an antenna that radiates energy equally in all directions.

Maximum Measurement – This measurement represents the single largest measurement recorded when performing a spatial average measurement.

Maximum Permissible Exposure (MPE) – The maximum levels of RF exposure a person may be exposed to without harmful effect and with acceptable safety factor.

Occupational/Controlled Environment – Defined by the FCC, as an area where Radio Frequency Radiation (RFR) exposure may occur to persons who are **aware** of the

potential for exposure as a condition of employment or specific activity and can exercise control over their exposure.

OET Bulletin 65 – Technical guideline developed by the FCC's Office of Engineering and Technology to determine the impact of Radio Frequency radiation on Humans. The guideline was published in August 1997.

OSHA (Occupational Safety and Health Administration) – Under the Occupational Safety and Health Act of 1970, employers are responsible for providing a safe and healthy workplace for their employees. OSHA's role is to promote the safety and health of America's working men and women by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continual process improvement in workplace safety and health. For more information, visit www.osha.gov.

Radio Frequency (RF) – The frequencies of electromagnetic waves which are used for radio communications. Approximately 3 kHz to 300 GHz.

Radio Frequency Exposure (RFE) – The amount of RF power density that a person is or might be exposed to.

Spatial Average Measurement – A technique used to average a minimum of ten (10) measurements taken in a ten (10) second interval from zero (0) to six (6) feet. This measurement is intended to model the average power density an average sized human will be exposed to at a location.

Transmitter Power Output (TPO) – The radio frequency output power of a transmitter's final radio frequency stage as measured at the output terminal while connected to a load.

Appendix F – References

The following references can be followed for further information about RF Health and Safety.

Sitesafe, Inc.
http://www.sitesafe.com
FCC Radio Frequency Safety
http://www.fcc.gov/encyclopedia/radio-frequency-safety
National Council on Radiation Protection and Measurements (NCRP)
http://www.ncrponline.org
Institute of Electrical and Electronics Engineers, Inc., (IEEE)
http://www.ieee.org
American National Standards Institute (ANSI)
http://www.ansi.org
Environmental Protection Agency (EPA)
http://www.epa.gov/radtown/wireless-tech.html
National Institutes of Health (NIH)
http://www.niehs.nih.gov/health/topics/agents/emf/
Occupational Safety and Health Agency (OSHA)
http://www.osha.gov/SLTC/radiofrequencyradiation/
International Commission on Non-Ionizing Radiation Protection (ICNIRP)
http://www.icnirp.org
World Health Organization (WHO)
http://www.who.int/peh-emf/en/
National Cancer Institute
http://www.cancer.gov/cancertopics/factsheet/Risk/cellphones
American Cancer Society (ACS)
http://www.cancer.org/docroot/PED/content/PED_1_3X_Cellular_Phone_Towers.asp?siteareа=PED
European Commission Scientific Committee on Emerging and Newly Identified Health Risks
http://ec.europa.eu/health/ph_risk/committees/04_scenihr/docs/scenihr_o_022.pdf
Fairfax County, Virginia Public School Survey
http://www.fcps.edu/fts/safety-security/RFEESurvey/
UK Health Protection Agency Advisory Group on Non-ionising Radiation
http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1317133826368
Norwegian Institute of Public Health
http://www.fhi.no/dokumenter/545eea7147.pdf