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

February 10, 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: 803843**
AT&T Site ID: CT5194
Located at: 200 Stanley Street, New Britain, CT 06053
Latitude: 41° 39' 16.4"/ Longitude: -72° 46' 9.59"

Dear Ms. Bachman,

AT&T currently maintains six (6) antennas at the 195 foot level of the existing 192 foot monopole located at 200 Stanley Street, New Britain, CT. The tower is owned by Crown Castle. The property is owned by Crown Castle. AT&T now proposes to add: (3) new antennas; three (3) RRUs (non-antennas); one (1) raycap, two (2) DC power cables; and, one (1) fiber cable to their existing equipment. The antennas would be installed at the same 195 foot level of the tower and not to exceed a height of 199 feet.

This facility was approved by the City of New Britain Planning and Zoning Commission in March 11, 2002, permit number 2875. Please note that the building permit references Connecticut Siting Council Petition number 544, both documents are attached hereto for your reference.

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

B 2675

CITY OF NEW BRITAIN
DEPARTMENT OF LICENSES, PERMITS
AND INSPECTIONS
TELEPHONE: 826-3383

BUILDING/ZONING PERMIT

DATE 3/11/02
COST 18,000.
FEE 300.

APPLICANT Verizon Wireless TEL. NO. 203 494-0023

ADDRESS 99 East River Dr. E. Hartford, CT 06108

PERMIT FOR: Construction and installation of (Siting Petition #544)
12'x20' structure & antenna per plan & 1999 State Building Code. Installed on existing foundation.

LOCATION 200 STANLEY STREET

BUILDING DIMENSIONS ____ FT. WIDE BY ____ FT. LONG AND ____ FT. IN HEIGHT

BUILDING TYPE ____ USE GROUP ____ LOT SIZE ____ ZONE I 2

OWNER Downes Investments, LLC
ADDRESS PO Box 1508, NB, CT

CERT. OF OCCUPANCY REQUIRED YES ✓ NO ___
AS-BUILT SURVEY REQUIRED YES ___ NO ✓

THE MATCHING APPLICATION IS PART AND PARCEL OF THIS BUILDING PERMIT.

WHERE APPLICABLE SEPARATE PERMITS ARE REQUIRED FOR ELECTRICAL, PLUMBING AND MECHANICAL INSTALLATIONS.

OFFICE COPY

BUILDING OFFICIAL

MANDATORY INSPECTIONS REQUIRED

POST PERMIT FOR DURATION OF WORK

Petition No. 544
Crown Atlantic Company, LLC
New Britain, Connecticut
Staff Report
February 11, 2002

On February 11, 2002, Connecticut Siting Council (Council) member Gerald J. Heffernan with Robert Mercier of Council staff met Crown Atlantic Company LLC (Crown) representatives Kenneth Baldwin, Robert Stanford, and Shane Newhart for an inspection of an existing 195-foot monopole owned and operated by Crown and located at 200 Stanley Street in New Britain, Connecticut. Crown proposes to allow tower sharing for three wireless communications service providers; AT&T Wireless (AT&T), Northcoast Communications (Northcoast) and Verizon Wireless (Verizon) and is petitioning the Council for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required for the tower share request.

The petition was filed to address the Council's concerns that the tower was built without a Certificate. Crown filed for a City of New Britain (City) building permit in May of 2001. A building permit was issued on June 8, 2001. The Council denied a tower share request (TS-NORTHCOAST-089-011031) at the Council's November 29, 2001 meeting since the City approved the tower after Judge Covello's US District Court decision dated January 9, 2001.

The tower is located on a commercial lot in an industrial zone. Commercial properties abut the site to the north and south. Route 9 is located west of the site. Residential properties are located to the east. A fenced, graveled compound measuring 50' x 70 with one vacant equipment shelter exists at the site.

AT&T proposes to install six panel antennas at the 195-foot level and install equipment cabinets at the base of the tower. Northcoast proposes to install six panel antennas and three two-foot dishes at the 185-foot level and install a 10x20-foot equipment shelter at the base of the tower. Verizon proposes to install 12 panel antennas at the 100-foot level and install radio equipment in the existing building at the base of the tower.

The cumulative worst-case power density for the telecommunications operations at the site has been calculated to be 13.54% of the applicable standard for uncontrolled environments.

Crown contends that the proposed shared use of the existing tower and associated building compound would not cause a substantial adverse environmental effect. Approved 02/14/02.

From:	Goodall, Amanda
To:	"siting.council@ct.gov"
Subject:	Existing Telecommunication Tower located at 200 Stanley Street, New Britain (Crown Castle 803843 / AT&T CT5194) - Original Zoning Resolution
Date:	Wednesday, February 03, 2016 2:04:00 PM
Attachments:	image001.png

To Whom It May Concern:

Please be advised both the township (email below) and Crown Castle as the tower owner, do not have the original zoning resolution on file. Please use this email as notification to waive this requirement as we will include this and the email from the township within our submission.

Please let me know if you have any questions or need additional information. Thank you in advance.

AMANDA GOODALL
Real Estate Specialist
T: (339) 205-7017 | M: (978) 790-8547
Amanda.Goodall@crowncastle.com

CROWN CASTLE
12 Gill Street, Suite 5800, Woburn, MA 01801
CrownCastle.com

From: Dave Zajac [mailto:Dave.Zajac@newbritainct.gov]
Sent: Monday, February 01, 2016 10:50 AM
To: Goodall, Amanda
Subject: RE: Cell Tower 200 Stanley Street

Hi
In checking the files there was no formal zoning letter given.
The use is permitted and a zoning/building permit issued.
Any questions call or e-mail, that job goes back to 2001.
Dave

David D. Zajac
27 West Main Street Suite 404
New Britain, CT 06051
Office: 860-826-3384
Desk: 860-612-5014
City Web:www.newbritainct.gov

SITE NAME: NEW BRITAIN SE
FA NUMBER: 10091780
SITE NUMBER: CTL05194

200 STANLEY STREET
NEW BRITAIN, CT 06051
COUNTY: HARTFORD

CROWN CASTLE SITE NAME:
CROWN CASTLE SITE NUMBER:803843

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 P.A.
ADDRESS: 400 VALLEY ROAD, SUITE 304
CITY, STATE, ZIP: MT. ARLINGTON, NJ 07856
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

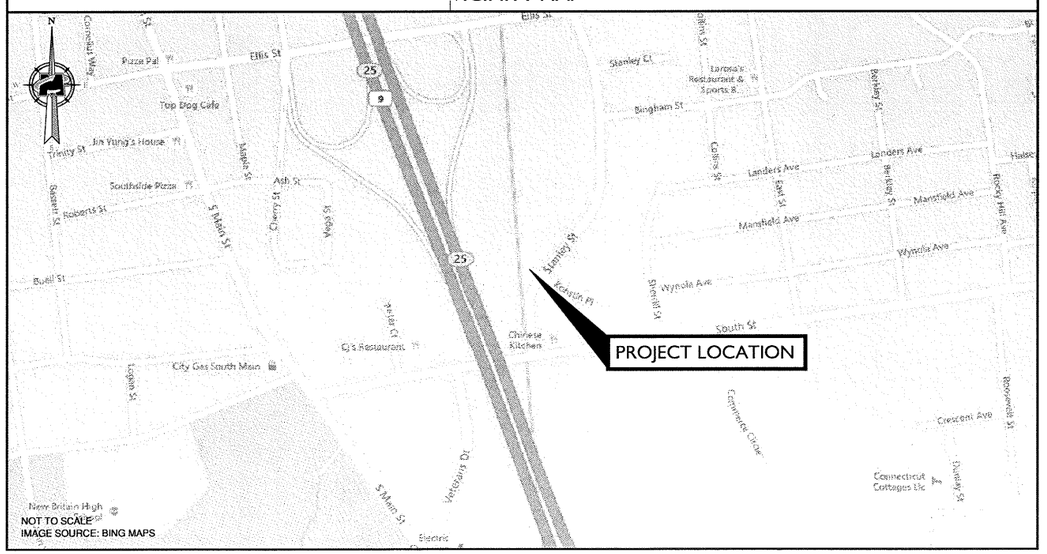
at&t

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

TOWER OWNER:

NAME:	CROWN CASTLE INTERNATIONAL
ADDRESS:	12 GILL STREET, SUITE 5800
CITY, STATE, ZIP:	WOBURN, MA 01801
SITE ID #:	803843
LATITUDE:	N 41.6538919°
LONGITUDE:	W 72.7692989°
LAT./LONG. TYPE:	NAD 83
AREA OF CONSTRUCTION:	EXISTING EQUIPMENT PAD AND MONOPOLE
ZONING/JURISDICTION:	NEW BRITAIN
CURRENT USE:	UNMANNED TELECOMMUNICATIONS FACILITY
PROPOSED USE:	NO CHANGE
HANDICAP REQUIREMENTS:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.
CONSTRUCTION TYPE:	IIB
USE GROUP:	U

VICINITY MAP



NOT TO SCALE
IMAGE SOURCE: BING MAPS

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 IS 3C WITH BRONZE STANDARD CONFIGURATION

- (3) NEW ANTENNAS, (1) PER SECTOR
- (3) NEW LTE RRH'S, (1) PER SECTOR
- ADD (1) DC6 POWER AND FIBER DISTRIBUTION SQUID
- ADD (1) FIBER CABLE
- ADD (2) DC TRUNKS
- NEW HARDWARE R 503(XMU 03) WILL BE PLACED INSIDE 6601 CHASSIS INSTEAD OF NEW DUS-41

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■ Sterling, VA ■ Norfolk, VA ■ Albuquerque, NM ■ Albany, NY ■ Chestnut Ridge, NY ■ Newburgh, NY
■ Hawthorne, NY ■ Lehigh Valley, PA ■ Exton, PA ■ Philadelphia, PA ■ Columbia, MD ■ Tampa, FL

smartlink
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: AS SHOWN
JOB NUMBER: 15946034A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	02/01/16	ISSUED FOR CONST.	JRF	FEP
0	10/23/15	ISSUED FOR REVIEW	RAP	FEP

STATE OF CONNECTICUT
FRANK E. PAZDEN
No. 28188
LICENSED PROFESSIONAL ENGINEER
2/1/16
FRANK E. PAZDEN
CONNECTICUT LICENSED PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.28188

SITE NAME:
NEW BRITAIN SE
FA# 10091780
SITE # CTL05194
CROWN SITE ID# 803843

200 STANLEY STREET
NEW BRITAIN, CT 06051
HARTFORD COUNTY

MT. ARLINGTON OFFICE
400 Valley Road
Suite 204
Mount Arlington, NJ 07856
Phone: 973.398.3110
Fax: 973.398.3199
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 5O 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 UTILITIZE 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 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
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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1362 MELLON ROAD
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at&t
NEW CINGULAR WIRELESS PCS, LLC
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

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12/01/16
FRANK E. PAZDEN
CONNECTICUT PROFESSIONAL ENGINEER LICENSE NUMBER: PEN.28188
PROFESSIONAL ENGINEER

SITE NAME:
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FA# 10091780
SITE # CTL05194
CROWN SITE ID# 803843

200 STANLEY STREET
NEW BRITAIN, CT 06051
HARTFORD COUNTY

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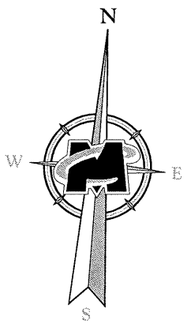
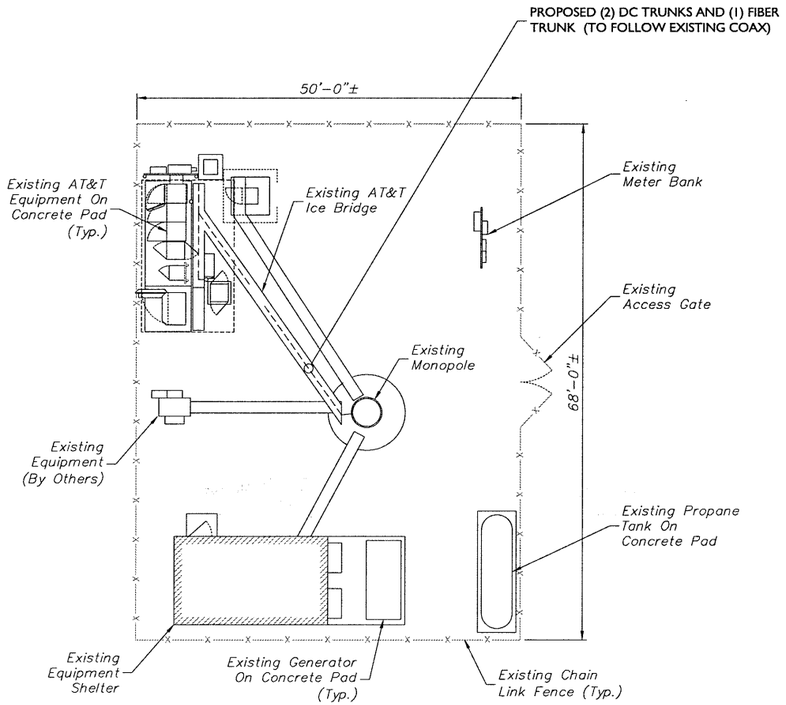
400 Valley Road
Suite 304
Mount Arlington, NJ 07856
Phone: 973.398.3110
Fax: 973.398.3199
email: solutions@maserconsulting.com

SHEET TITLE:
GENERAL NOTES

SHEET NUMBER:
GN-1





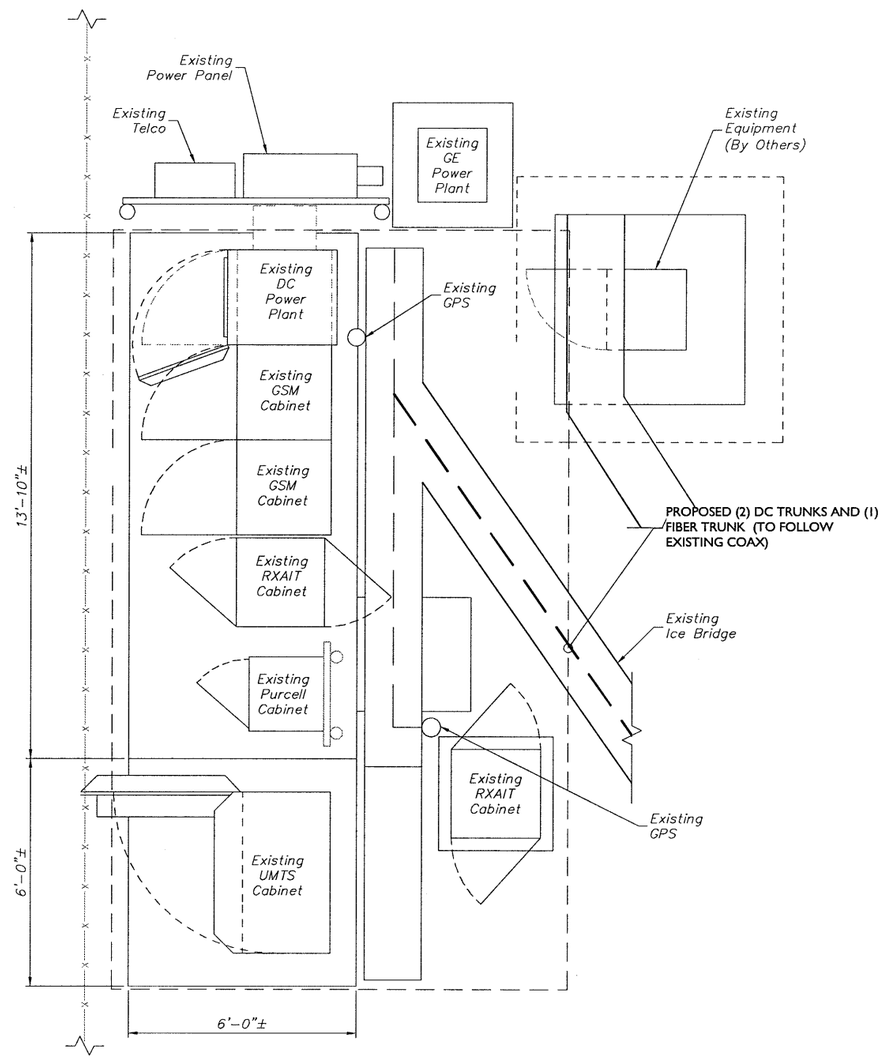
COMPOUND PLAN

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

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SCALE: 1" = 2' FOR 24"X36" DRAWINGS
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STATE OF CONNECTICUT
FRANK E. PAZDEN
02/01/16
FRANK E. PAZDEN
CONNECTICUT PROFESSIONAL ENGINEER LICENSE NUMBER: PEN.28188
LICENSED PROFESSIONAL ENGINEER

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FA# 10091780
SITE # CTL05194
CROWN SITE ID# 803843

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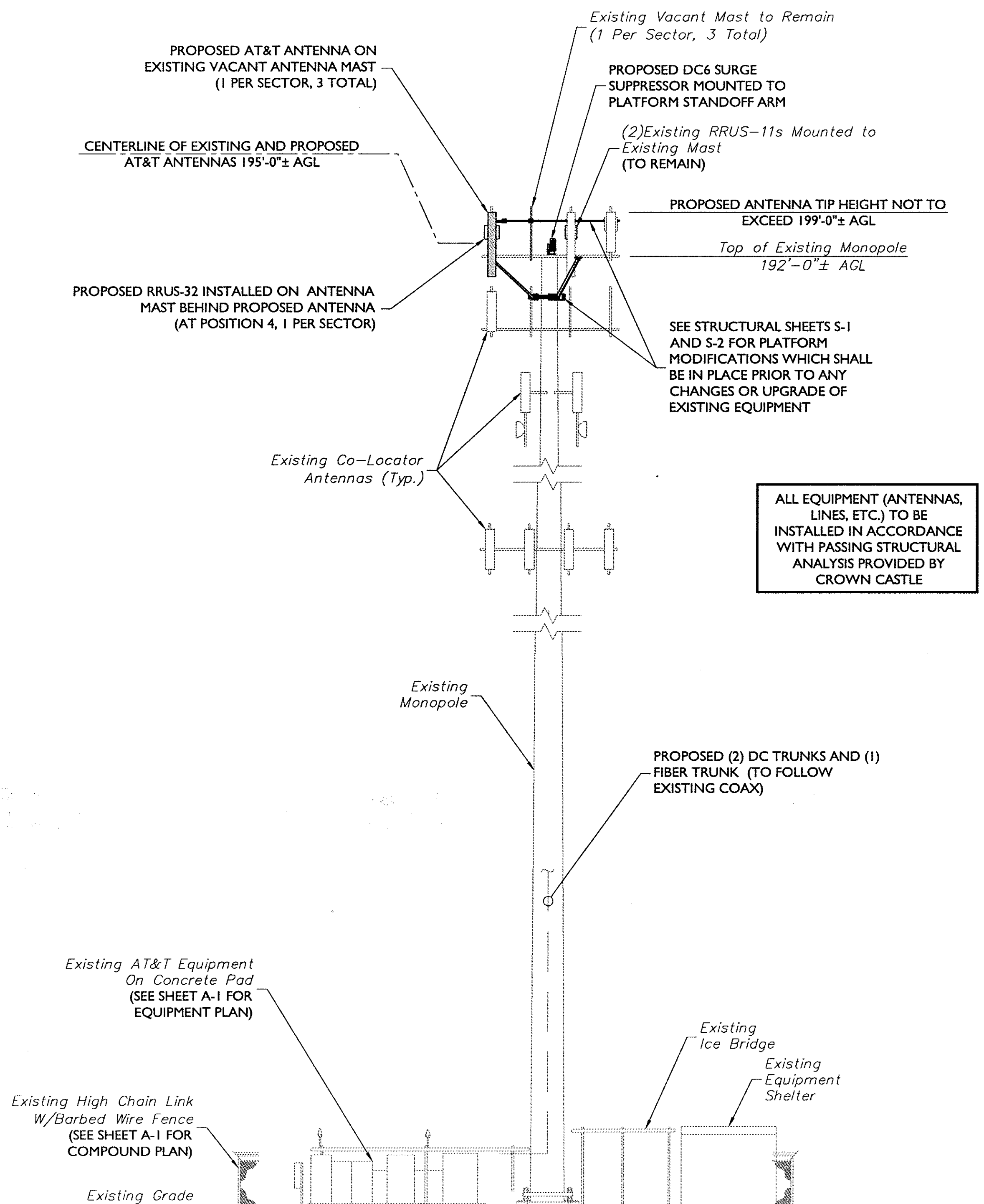
SHEET TITLE:
COMPOUND PLAN AND EQUIPMENT PLAN

SHEET NUMBER:
A-1



ELEVATION VIEW

GRAPHIC SCALE

10 0 5 10 20

(IN FEET)

SCALE: 1" = 10' 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 / GSM*	*REMAIN*	*54.50*	*10.30*	*5.90*	*46.30*	0°	195'	-	-
	A2	*AndrewSBNH-1D6565C*	*AndrewSBNH-1D6565C*	*LTE*	*REMAIN*	*96.40*	*11.90*	*7.10*	*66.10*	0°	195'	*(2) RRUS 11*	*REMAIN*
	A3	*VACANT MAST*	*VACANT MAST*	-	-	-	-	-	-	-	-	-	-
	A4	*VACANT MAST*	**CCI OPA-65R-LCUU-H8**	**LTE WCS**	**NEW**	**92.70**	**14.40**	**7.00**	**88.00**	**0°**	**195'**	**RRUS 32**	**NEW**
BETA	B1	*Kathrein 80010121*	*Kathrein 80010121*	*UMTS / GSM*	*REMAIN*	*54.50*	*10.30*	*5.90*	*46.30*	110°	195'	-	-
	B2	*Powerwave P65-17-XLH-RR*	*Powerwave P65-17-XLH-RR*	*LTE*	*REMAIN*	*96.00*	*12.00*	*6.00*	*70.00*	110°	195'	*(2) RRUS 11*	*REMAIN*
	B3	*VACANT MAST*	*VACANT MAST*	-	-	-	-	-	-	-	-	-	-
	B4	*VACANT MAST*	**CCI OPA-65R-LCUU-H8**	**LTE WCS**	**NEW**	**92.70**	**14.40**	**7.00**	**88.00**	**110°**	**195'**	**RRUS 32**	**NEW**
GAMMA	C1	*Kathrein 80010121*	*Kathrein 80010121*	*UMTS / GSM*	*REMAIN*	*54.50*	*10.30*	*5.90*	*46.30*	240°	195'	-	-
	C2	*KMW AM-X-CD-16-65-OOT-RET*	*KMW AM-X-CD-16-65-OOT-RET*	*LTE*	*REMAIN*	*72.00*	*11.80*	*5.90*	*48.50*	240°	195'	*(2) RRUS 11*	*REMAIN*
	C3	*VACANT MAST*	*VACANT MAST*	-	-	-	-	-	-	-	-	-	-
	C4	*VACANT MAST*	**CCI OPA-65R-LCUU-H8**	**LTE WCS**	**NEW**	**92.70**	**14.40**	**7.00**	**88.00**	**240°**	**195'**	**RRUS 32**	**NEW**

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/APPURTENANCES ON STRUCTURE. REFER TO THE LATEST STRUCTURAL ANALYSIS FOR EXISTING STRUCTURE LOADING AND THE PROPOSED METHOD OF ATTACHMENT OF THE PROPOSED ANTENNAS/CABLES.
4. STRUCTURAL MODIFICATIONS SHOWN ON SHEETS S-1 AND S-2 SHALL BE 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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AS SHOWN	15946034A

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-	-	-	-	-
-	-	-	-	-
1	02/01/16	ISSUED FOR CONST.	JRF	FEP
0	10/23/15	[illegible]	RAP	FEP

FRANK E. PAZDEN
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.[illegible]

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FA# 10091780
SITE # CTL05194
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HARTFORD COUNTY

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Mount Arlington, NJ 07856
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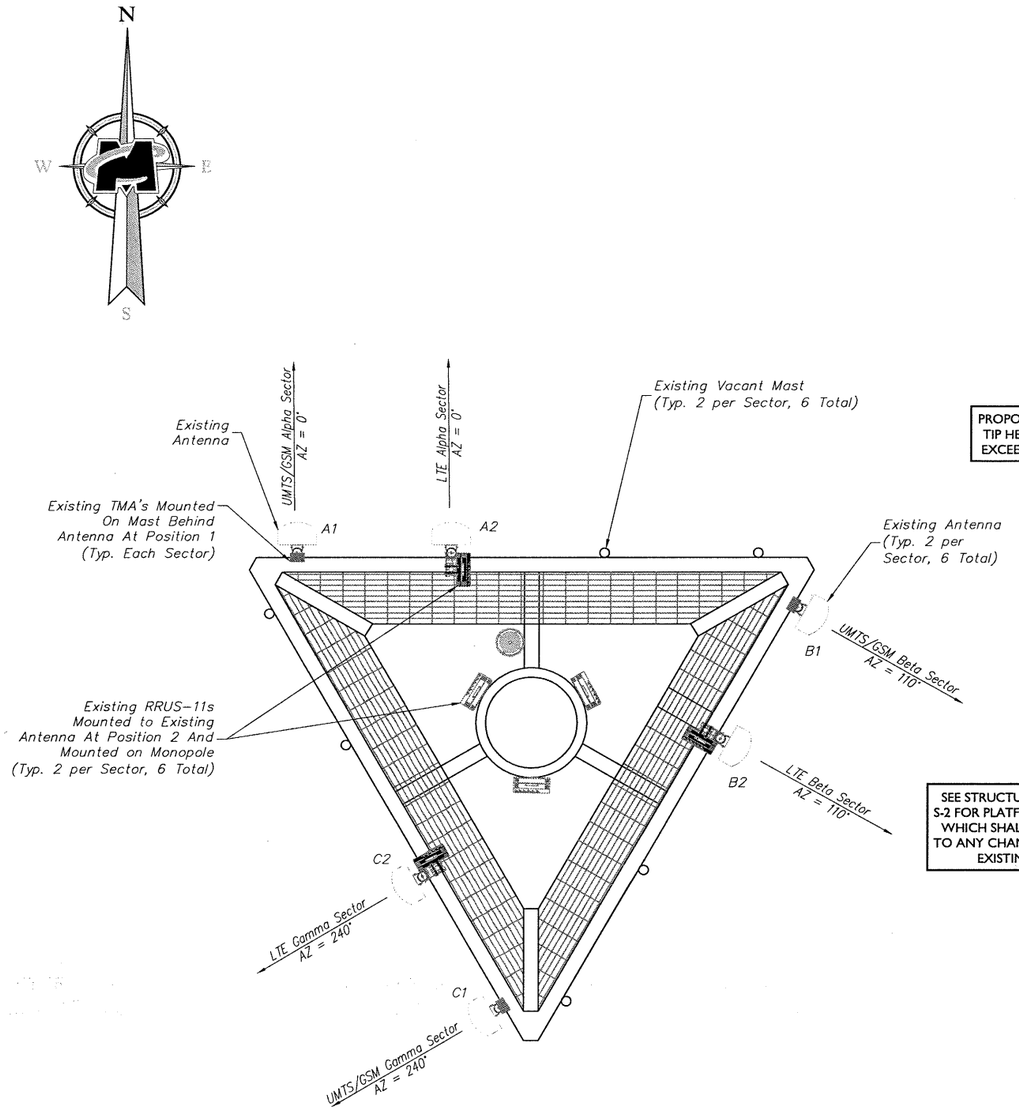
Fax: 973.398.3199
email: solutions@maserconsulting.com

SHEET TITLE:
ELEVATION VIEW AND ANTENNA SCHEDULE

SHEET NUMBER:
A-2

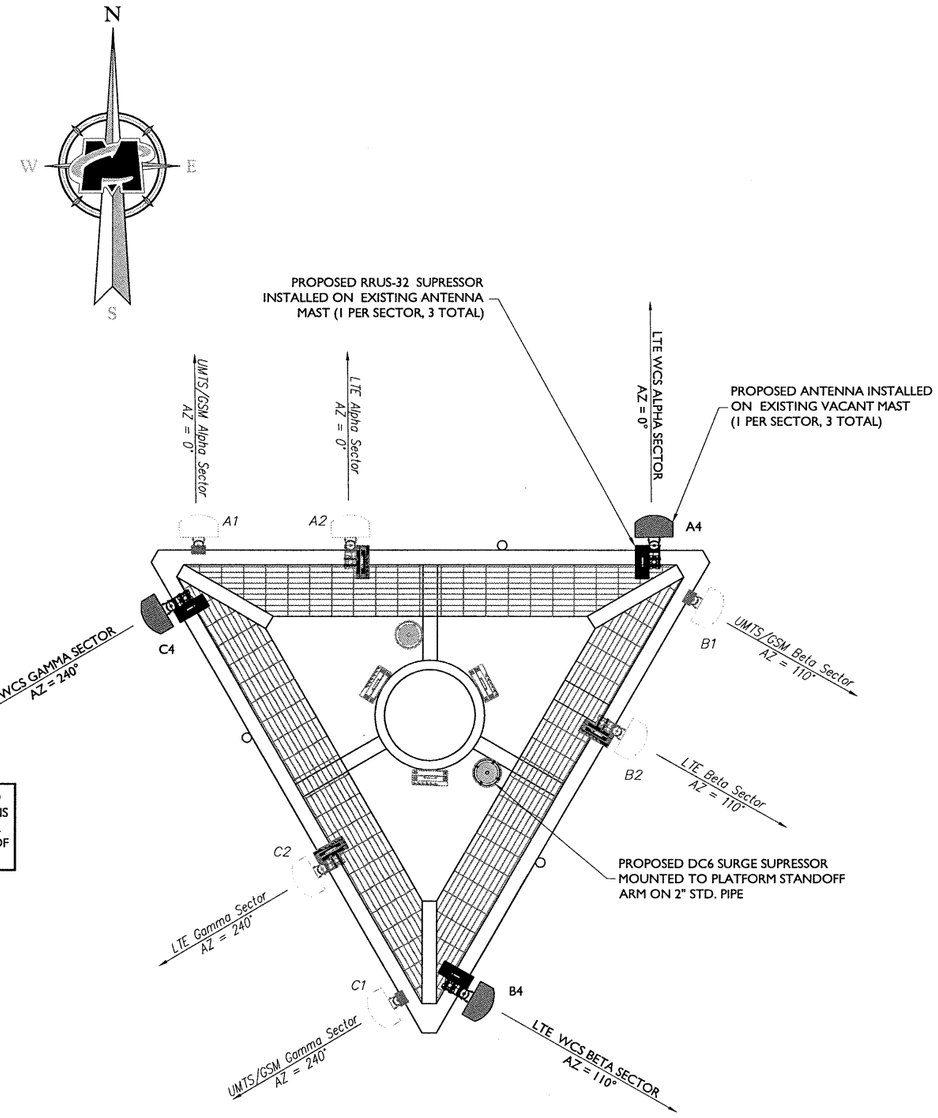


PROPOSED ANTENNA TIP HEIGHT NOT TO EXCEED 199'-0"± AGL

SEE STRUCTURAL SHEETS S-1 AND S-2 FOR PLATFORM MODIFICATIONS WHICH SHALL BE IN PLACE PRIOR TO ANY CHANGES OR UPGRADE OF EXISTING EQUIPMENT

EXISTING - ANTENNA LAYOUT

NOT TO SCALE



PROPOSED - ANTENNA LAYOUT

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NOTE:

REMOVE CROSS SECTOR REDUNDANCY IF PRESENT

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STATE OF CONNECTICUT
FRANK E. PAZDEN
LICENSED PROFESSIONAL ENGINEER
FRANK E. PAZDEN
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.0188
No. 28188

SITE NAME:
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FA# 10091780
SITE # CTL05194
CROWN SITE ID# 803843

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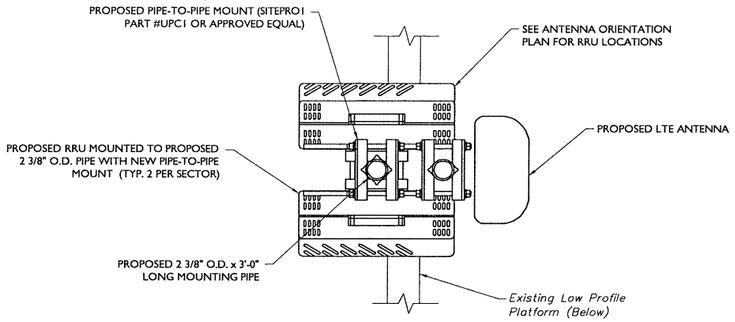
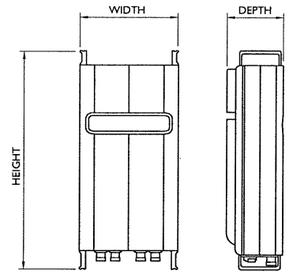
Fax: 973.398.3199
email: solutions@maserconsulting.com

SHEET TITLE:
ANTENNA LAYOUTS

SHEET NUMBER:
A-3



PLAN VIEW



RRUS FRONT VIEW

SIZE AND WEIGHT TABLE

RRUS	WIDTH	DEPTH	HEIGHT	WEIGHT W/O BRACKET
RRUS-32 4X25-WCS (WITH SOLAR SHIELD)	-	-	-	-
RRUS-32 4X25-WCS (WITHOUT SOLAR SHIELD)	12.1"	6.7"	26.7"	60

MINIMUM CLEARANCE TABLE

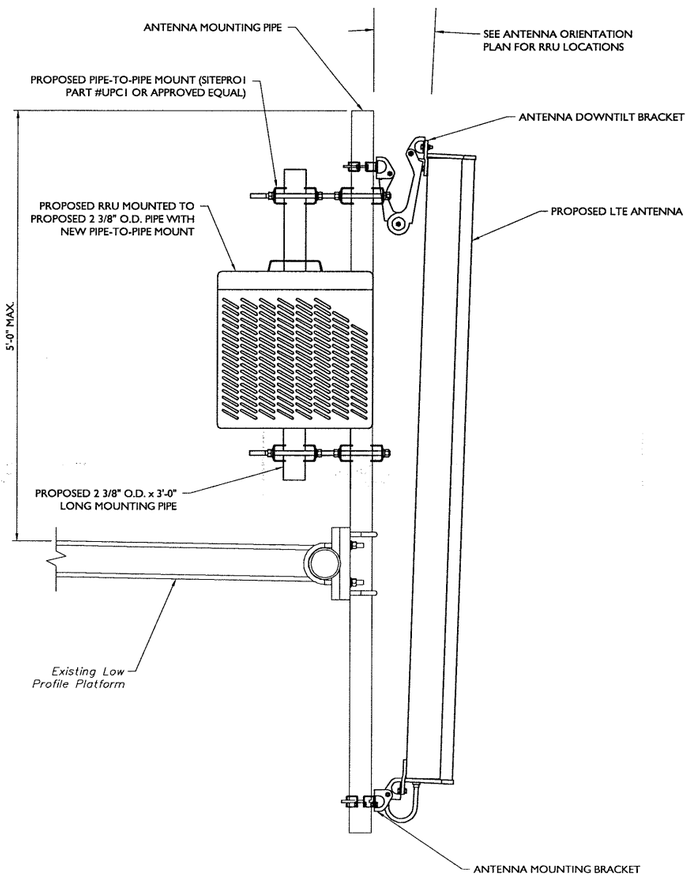
RRUS CABINET	CLEARANCES (INCHES)	COMMENTS
FRONT	-	INSTALLATION ACCESS
REAR	-	ZERO REAR CLEARANCE IS ALLOWED USING SUPPLIED MOUNTING BRACKETS
RIGHT	-	AIR FLOW
LEFT	-	AIR FLOW
TOP	-	AIR FLOW
BOTTOM	-	CONDUIT ROUTING

NOTE:

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

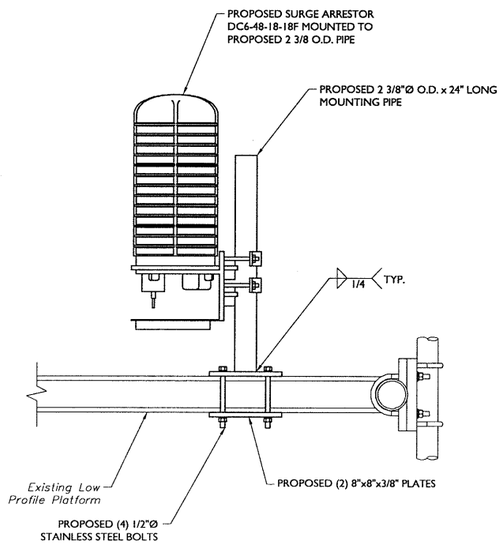
PROPOSED RRUS-32 DETAIL

NOT TO SCALE



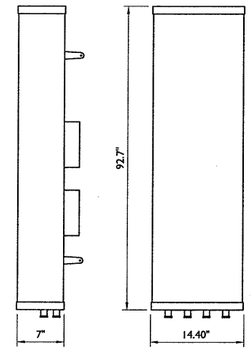
RRU MOUNTING DETAIL

NOT TO SCALE



SURGE ARRESTOR MOUNTING DETAIL

NOT TO SCALE



WEIGHT = 88 LBS

CCI OPA-65R-LCUU-H8

ANTENNA DETAIL

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STATE OF CONNECTICUT
FRANK E. PAZDEN
LICENSED PROFESSIONAL ENGINEER
FRANK E. PAZDEN
CONNECTICUT LICENSED PROFESSIONAL ENGINEER - LICENSE NUMBER: 28188
2/1/16

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FA# 10091780
SITE # CTL05194
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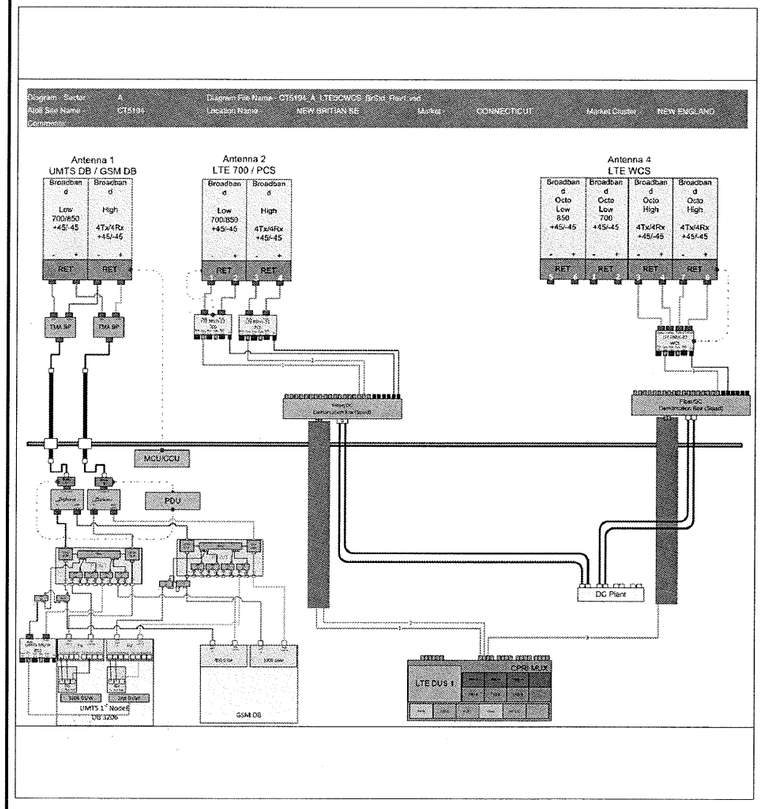
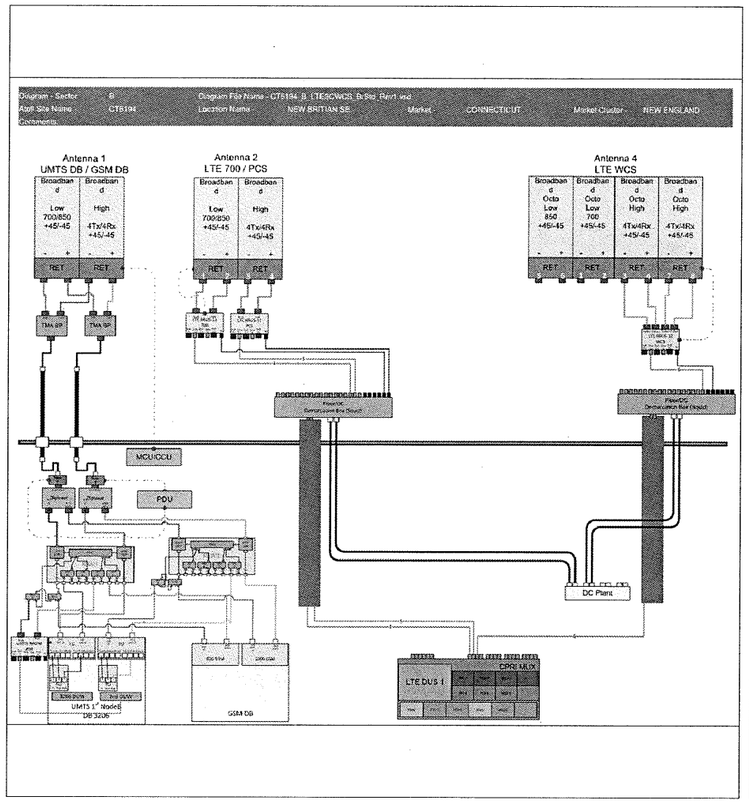
SHEET TITLE:
DETAILS - 1

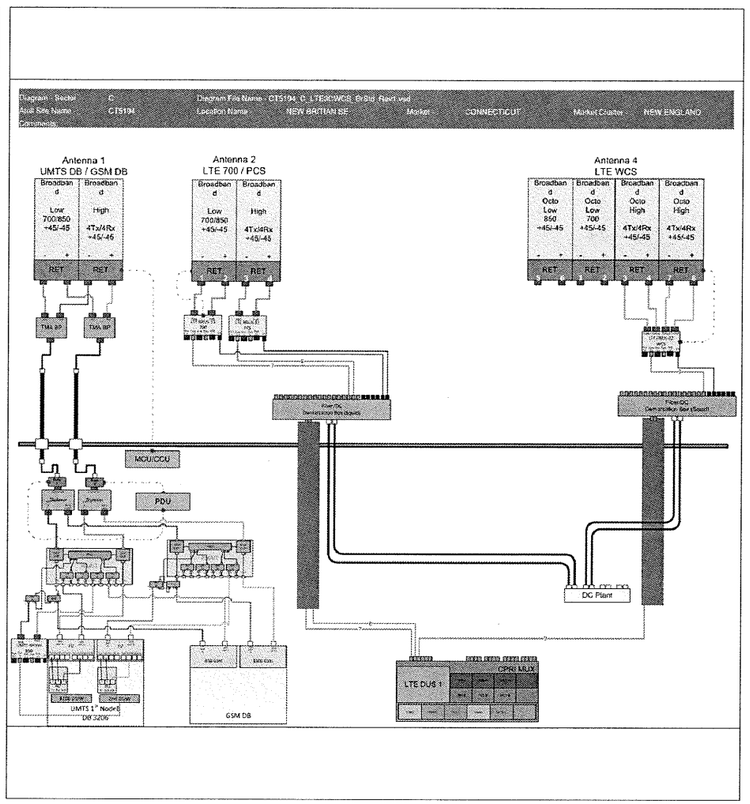
SHEET NUMBER:
A-4



ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR

BASED ON RF ENGINEERING DESIGN ENTITLED "NEW-ENGLAND_CONNECTICUT_CT5194_2016-LTE-Next-Carrier_LTE-3C_om636a_2051A02JY5_10091780_25889_06-23-2015_Preliminary-Approved_v1.00"

RF PLUMBING DIAGRAMS

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STATE OF CONNECTICUT
FRANK E. PALDEN
No. 28178
LICENSED PROFESSIONAL ENGINEER
7/01/16

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FA# 10091780
SITE # CTL05194
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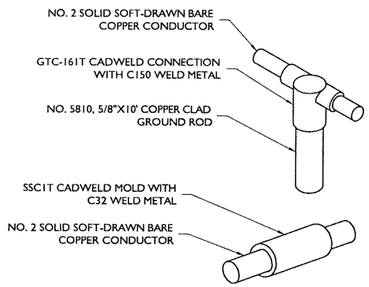
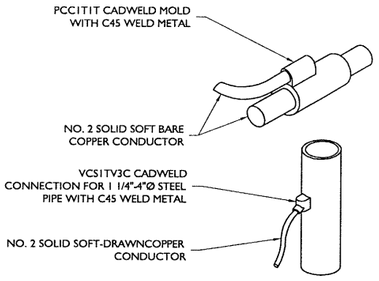
SHEET TITLE:
RF PLUMBING DIAGRAMS

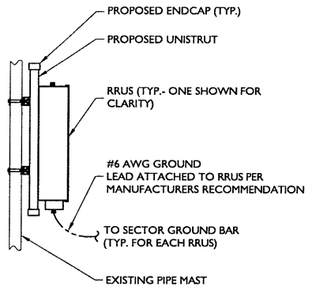
SHEET NUMBER:
A-5



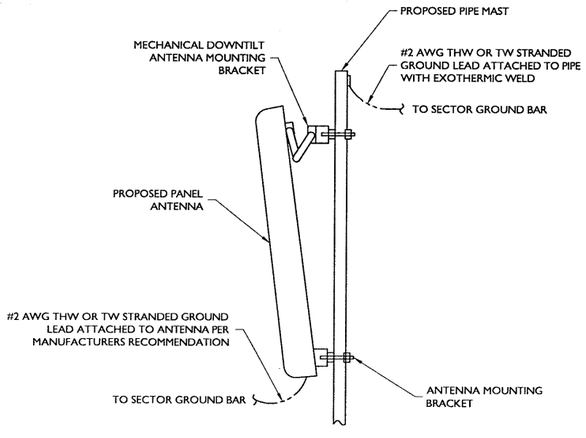


CADWELD DETAILS
NOT TO SCALE

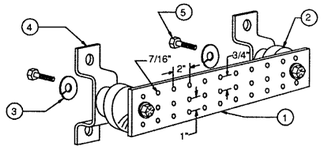
NOT TO SCALE



RRH GROUNDING
NOT TO SCALE



ANTENNA 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.

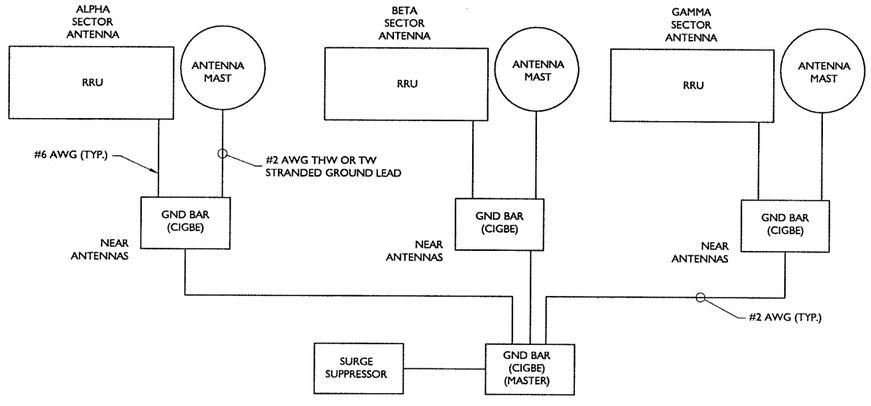
SECTION "P" - SURGE PRODUCERS

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



SCHEMATIC DIAGRAM GROUNDING SYSTEM
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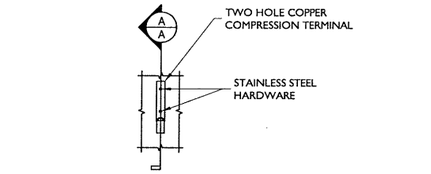
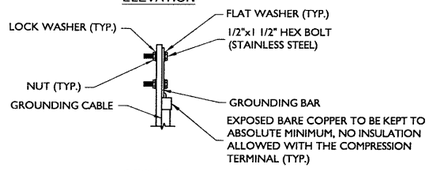


ELEVATION



SECTION A-A

TYPICAL GROUND BAR CONNECTION DETAIL
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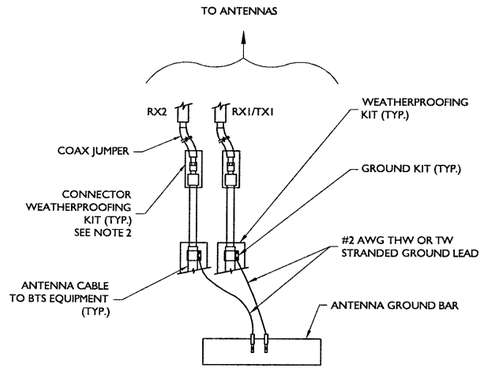

NOTES:

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
NOT TO SCALE

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REV	DATE	DESCRIPTION	DRWN	CHECKED BY
1	02/01/16	ISSUED FOR CONST.	JRF	FEP
0	10/23/15	[illegible]	RAP	FEP

STATE OF CONNECTICUT
FRANK E. PYDDEN
12
FRANK E. PYDDEN
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.28188
LICENSED PROFESSIONAL ENGINEER

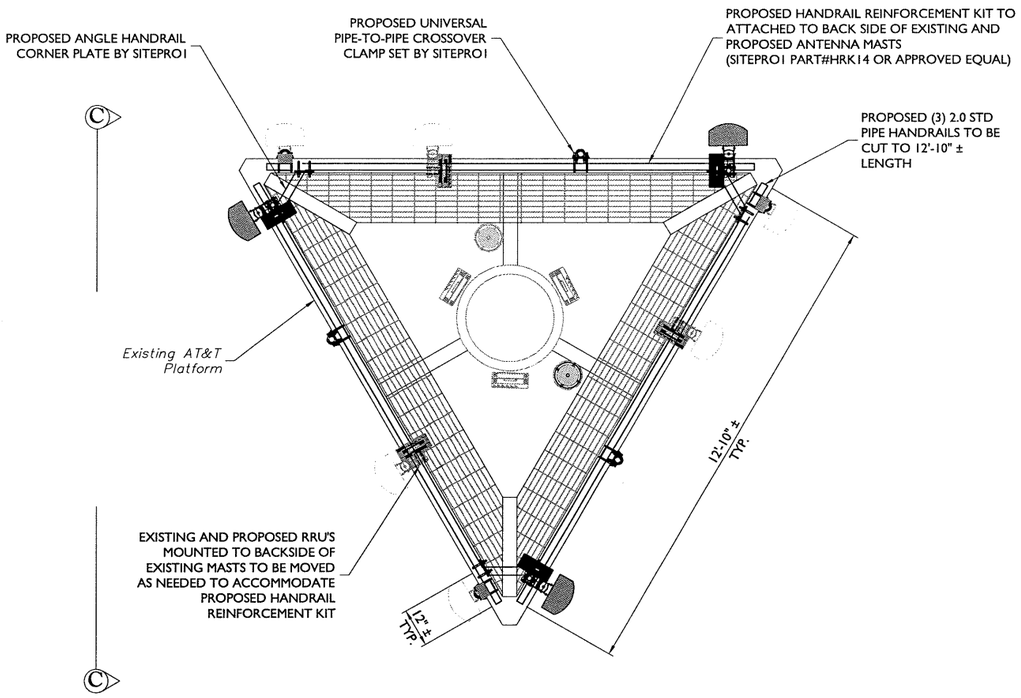
SITE NAME:
NEW BRITAIN SE
FA# 10091780
SITE # CTL05194
CROWN SITE ID# 803843

200 STANLEY STREET
NEW BRITAIN, CT 06051
HARTFORD COUNTY

MT. ARLINGTON OFFICE
400 Valley Road
Suite 304
Mount Arlington, NJ 07856
Phone: 973.398.3110
Fax: 973.398.3199
email: solutions@maserconsulting.com

SHEET TITLE: GROUNDING DETAILS

SHEET NUMBER: G-1



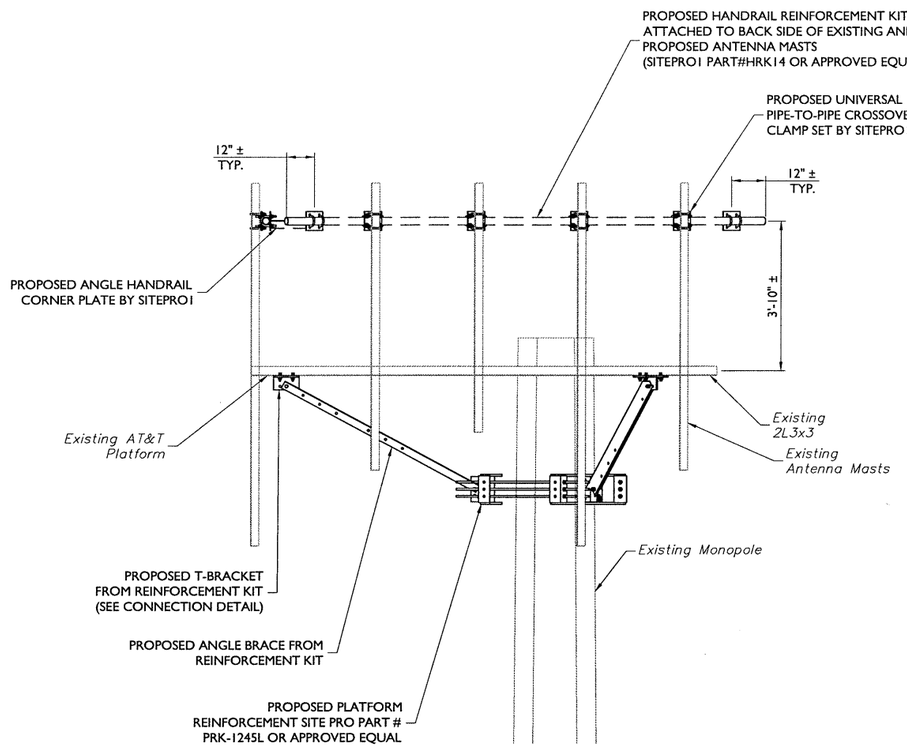
PLAN VIEW

GRAPHIC SCALE

2 0 1 2 4

(IN FEET)

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



ELEVATION C-C

GRAPHIC SCALE

2 0 1 2 4

(IN FEET)

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

ALL PROPOSED MODIFICATION COMPONENTS SHALL BE INSTALLED PRIOR TO INSTALLATION OF ANY PROPOSED EQUIPMENT OR MODIFICATIONS TO EXISTING EQUIPMENT.

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AS SHOWN	15946034A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
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0	10/23/15	ISSUED FOR REVIEW	RAP	FEP

STATE OF CONNECTICUT
FRANK E. PAZDEN
12/31/17
LICENSED PROFESSIONAL ENGINEER

FRANK E. PAZDEN
CONNECTICUT LICENSED PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.20158

SITE NAME:
NEW BRITAIN SE
FA# 10091780
SITE # CTL05194
CROWN SITE ID# 803843

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NEW BRITAIN, CT 06051
HARTFORD COUNTY

MT. ARLINGTON OFFICE
400 Valley Road
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Mount Arlington, NJ 07856
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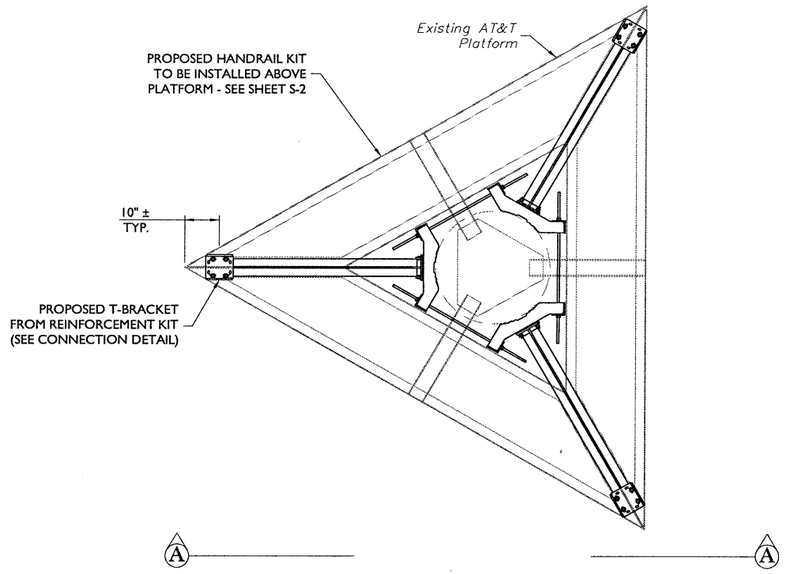
Fax: 973.398.3199
email: solutions@maserconsulting.com

SHEET TITLE:
STRUCTURAL DETAILS - 2

SHEET NUMBER:
S-2



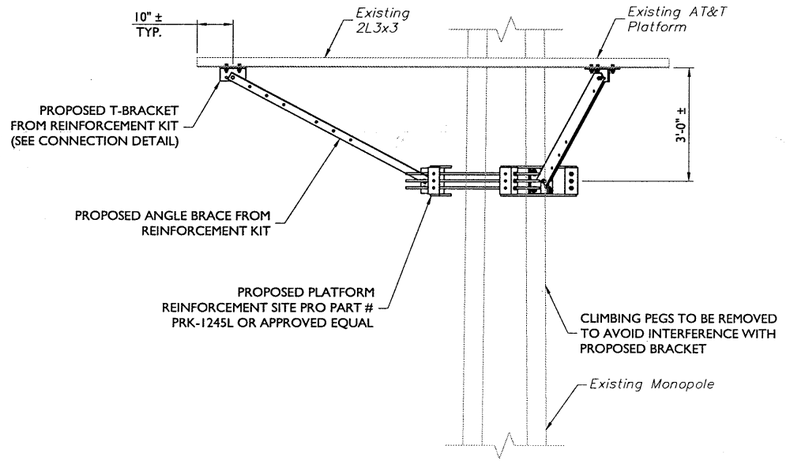
PLAN VIEW

GRAPHIC SCALE

2 0 1 2 4

(IN FEET)

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



ELEVATION A-A

GRAPHIC SCALE

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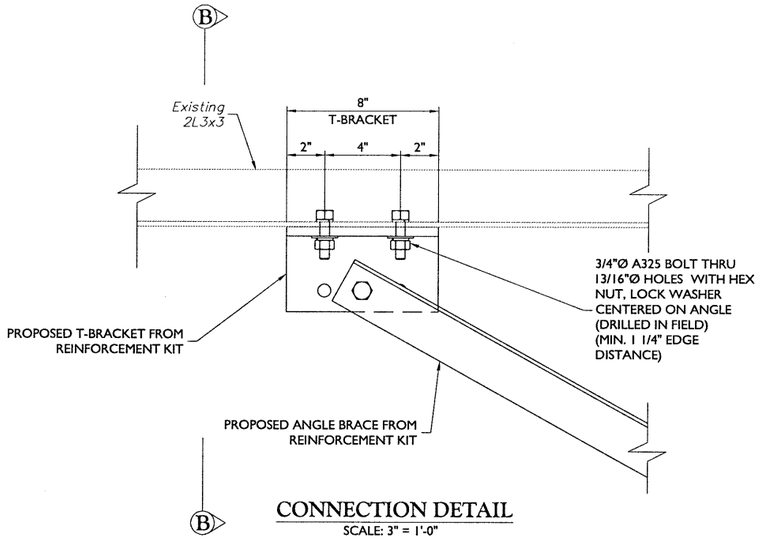
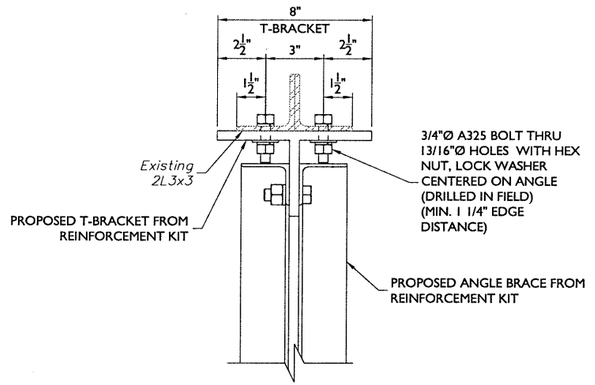
(IN FEET)

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



CONNECTION DETAIL

SCALE: 3" = 1'-0"



SECTION B-B

SCALE: 3" = 1'-0"

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FA# 10091780
SITE # CTL05194
CROWN SITE ID# 803843

200 STANLEY STREET
NEW BRITAIN, CT 06051
HARTFORD COUNTY

MT. ARLINGTON OFFICE
400 Valley Road
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Mount Arlington, NJ 07856
Phone: 973.398.3110
Fax: 973.398.3199
email: solutions@maserconsulting.com

SHEET TITLE:
STRUCTURAL DETAILS - 1

SHEET NUMBER:
S-1

Date: **October 05, 2015**

Randy Wofford
Crown Castle
1500 Corporate Drive
Canonsburg, PA 15317

Crown Castle
2000 Corporate Dr.
Canonsburg, PA 15317
(724) 416-2000

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CTL05194
	Carrier Site Name:	New Britian SE
Crown Castle Designation:	**Crown Castle BU Number:**	803843
	Crown Castle Site Name:	CT NEW BRITAIN 4 CAC 803843
	Crown Castle JDE Job Number:	347971
	Crown Castle Work Order Number:	1124762
	Crown Castle Application Number:	311043 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	1124762
Site Data:	**200 Stanley Street, New Britain, Hartford County, CT** **Latitude *41° 39' 16.4"*, Longitude *-72° 46' 9.59"*** **192 Foot - Monopole Tower**	

Dear Randy Wofford,

Crown Castle 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 1124762, in accordance with application 311043, revision 1.

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.

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

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

We at *Crown Castle* 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: Eric Stover, P.E. / RAA

Respectfully submitted by:

Maribel Dentinger, P.E.
Sr. Project Engineer

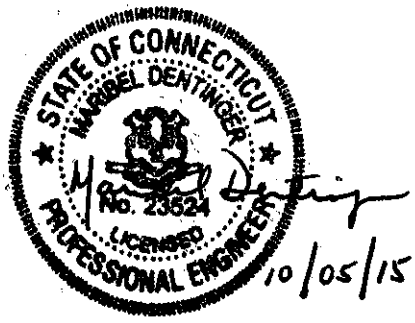


TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 192 ft Monopole tower designed by Summit in April of 2001. The tower was originally designed for a wind speed of 80 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
193.0	195.0	3	cci antennas	OPA-65R-LCUU-H8 w/ Mount Pipe	6	1-5/8	-
		3	ericsson	RRUS 32 B30	2	3/4	
		1	raycap	DC6-48-60-18-8F	1	3/8	

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
193.0	195.0	1	andrew	SBNH-1D6565C w/ Mount Pipe	6	1-5/8	1
		3	ericsson	RRUS-11	1	3/8	
		3	kathrein	800 10121 w/ Mount Pipe	2	3/4	
		1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		1	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
	193.0	3	ericsson	RRUS-11			
		6	powerwave technologies	LGP21401			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 1201-1]			
185.0	185.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8	1
		1	tower mounts	Platform Mount [LP 1201-1]			
175.0	177.0	1	andrew	PX2F-52	3	1/4	1
		2	andrew	VHLP2-23	1	5/16	
	176.0	3	argus technologies	LLPX310R w/ Mount Pipe	3	5/8	
	175.0	2	dragonwave	HORIZON COMPACT	3	1/2	
		1	motorola	TIMING 2000			
		3	samsung telecommunications	WIMAX DAP HEAD			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		1	tower mounts	Side Arm Mount [SO 101-3]			
100.0	102.0	3	alcatel lucent	RRH2X60-AWS	2	1-5/8	2
		3	alcatel lucent	RRH2X60-PCS			
		3	alcatel lucent	RRH2x60-700			
		9	andrew	SBNHH-1D65B w/ Mount Pipe			
		2	antel	BXA-80080/4CF w/ Mount Pipe	12	1-5/8	1
		1	antel	BXA-80090/4CF w/ Mount Pipe			
	100.0	1	tower mounts	T-Arm Mount [TA 602-3]			
		1	rfs celwave	DB-T1-6Z-8AB-0Z	-	-	2

Notes:
1) Existing Equipment
2) Reserved Equipment

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)
192	192	-	-	PANEL ANTENNAS (CaAa = 75 FT SQ TOTAL)	-	-
185	185	-	-	PANEL ANTENNAS (CaAa = 75 FT SQ TOTAL)	-	-
175	175	-	-	PANEL ANTENNAS (CaAa = 75 FT SQ TOTAL)	-	-
165	165	-	-	MICROWAVE W/ MOUNT (CaAa = 110 FT SQ)	-	-
155	155	-	-	PANEL ANTENNAS (CaAa = 75 FT SQ TOTAL)	-	-
145	145	-	-	PANEL ANTENNAS (CaAa = 75 FT SQ TOTAL)	-	-
135	135	-	-	PANEL ANTENNAS (CaAa = 75 FT SQ TOTAL)	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti, P.E.	2384583	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit / Paul J. Ford	1118798	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Summit / Paul J. Ford	925033	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle 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	192 - 151.25	Pole	TP39.245x26x0.3125	1	-11.03	1923.73	26.6	Pass
L2	151.25 - 111.25	Pole	TP51.621x36.9948x0.4375	2	-20.49	3542.45	27.4	Pass
L3	111.25 - 72.75	Pole	TP63.259x48.6333x0.5	3	-36.43	4963.31	29.4	Pass
L4	72.75 - 35.75	Pole	TP74.285x59.6589x0.5625	4	-54.65	6563.60	29.8	Pass
L5	35.75 - 0	Pole	TP84.78x70.1535x0.5625	5	-81.67	7816.75	32.3	Pass
							Summary	
						Pole (L5)	32.3	Pass
						Rating =	32.3	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	45.0	Pass
1	Base Plate	0	39.2	Pass
1,2	Base Foundation (Structure)	0	40.8	Pass
1,2	Base Foundation (Soil Interaction)	0	48.4	Pass

Structure Rating (max from all components) =	48.4%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
2) It is unknown whether the foundation is a drilled shaft or pier and pad. Both designs were analyzed and determined to be sufficient.

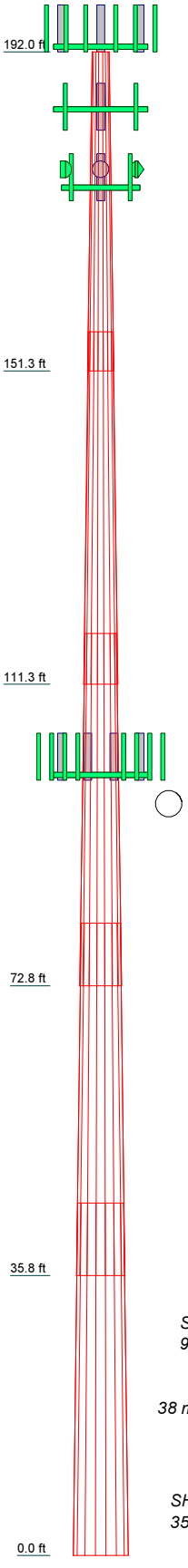
4.1) Recommendations

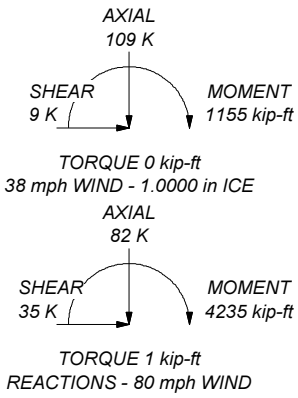
The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	40.75	18	0.3125	5.00	26.0000	39.2450		4.4
2	45.00	18	0.4375	6.50	36.9948	51.6210		9.3
3	45.00	18	0.5000	8.00	48.6333	63.2590	A607-65	13.5
4	45.00	18	0.5625	9.25	59.6589	74.2850		18.2
5	45.00	18	0.5625		70.1535	84.7800		21.0
								66.4





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
800 10121 w/ Mount Pipe	193	LLPX310R w/ Mount Pipe	175
800 10121 w/ Mount Pipe	193	LLPX310R w/ Mount Pipe	175
800 10121 w/ Mount Pipe	193	LLPX310R w/ Mount Pipe	175
SBNH-1D6565C w/ Mount Pipe	193	TIMING 2000	175
P65-17-XLH-RR w/ Mount Pipe	193	WIMAX DAP HEAD	175
AM-X-CD-16-65-00T-RET w/ Mount Pipe	193	WIMAX DAP HEAD	175
		WIMAX DAP HEAD	175
(2) LGP21401	193	HORIZON COMPACT	175
(2) LGP21401	193	HORIZON COMPACT	175
(2) LGP21401	193	Side Arm Mount [SO 101-3]	175
RRUS-11	193	6' x 2" Mount Pipe	175
RRUS-11	193	6' x 2" Mount Pipe	175
RRUS-11	193	6' x 2" Mount Pipe	175
RRUS-11	193	VHLP2-23	175
RRUS-11	193	PX2F-52	175
RRUS-11	193	VHLP2-23	175
DC6-48-60-18-8F	193	(3) SBNHH-1D65B w/ Mount Pipe	100
OPA-65R-LCUU-H8 w/ Mount Pipe	193	(3) SBNHH-1D65B w/ Mount Pipe	100
OPA-65R-LCUU-H8 w/ Mount Pipe	193	(3) SBNHH-1D65B w/ Mount Pipe	100
OPA-65R-LCUU-H8 w/ Mount Pipe	193	RRH2X60-AWS	100
RRUS 32 B30	193	RRH2X60-AWS	100
RRUS 32 B30	193	RRH2X60-AWS	100
RRUS 32 B30	193	RRH2x60-700	100
DC6-48-60-18-8F	193	RRH2x60-700	100
Platform Mount [LP 1201-1]	193	RRH2x60-700	100
5' x 2' Pipe Mount	193	RRH2X60-PCS	100
5' x 2' Pipe Mount	193	RRH2X60-PCS	100
5' x 2' Pipe Mount	193	RRH2X60-PCS	100
Lightning Rod 1"x10'	192	DB-T1-6Z-8AB-0Z	100
APXV18-206517S-C w/ Mount Pipe	185	T-Arm Mount [TA 602-3]	100
APXV18-206517S-C w/ Mount Pipe	185	(2) 4' ICE SHIELDS	100
APXV18-206517S-C w/ Mount Pipe	185	(2) 4' ICE SHIELDS	100
Platform Mount [LP 1201-1]	185	(2) 4' ICE SHIELDS	100
(3) 5' x 2' Pipe Mount	185	BXA-80080/4CF w/ Mount Pipe	100
(3) 5' x 2' Pipe Mount	185	BXA-80080/4CF w/ Mount Pipe	100
(3) 5' x 2' Pipe Mount	185	BXA-80090/4CF w/ Mount Pipe	100

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 38 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: 32.3%

CROWN CASTLE
The Foundation for a Wireless World

Crown Castle
2000 Corporate Dr.
Canonsburg, PA 15317
Phone: (724) 416-2000
FAX: (724) 416-2257

Job: **BU# 803843**			
Project:			
Client: Crown Castle	Drawn by: RAshworth		App'd:
Code: TIA/EIA-222-F	Date: 10/02/15		Scale: NTS
Path: C:\Users\rashworth\Desktop\803843 WO 1124762\QA\803843.en			Dwg No. E-1

Tower Input Data

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

3) Tower is located in Hartford County, Connecticut.
4) Basic wind speed of 80 mph.
5) Nominal ice thickness of 1.0000 in.
6) Ice thickness is considered to increase with height.
7) Ice density of 56 pcf.
8) A wind speed of 38 mph is used in combination with ice.
9) Temperature drop of 50 °F.
10) Deflections calculated using a wind speed of 50 mph.
11) A non-linear (P-delta) analysis was used.
12) Pressures are calculated at each section.
13) Stress ratio used in pole design is 1.333.
14) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	192.00-151.25	40.75	5.00	18	26.0000	39.2450	0.3125	1.2500	A607-65 (65 ksi)
L2	151.25-111.25	45.00	6.50	18	36.9948	51.6210	0.4375	1.7500	A607-65 (65 ksi)
L3	111.25-72.75	45.00	8.00	18	48.6333	63.2590	0.5000	2.0000	A607-65 (65 ksi)
L4	72.75-35.75	45.00	9.25	18	59.6589	74.2850	0.5625	2.2500	A607-65 (65 ksi)
L5	35.75-0.00	45.00		18	70.1535	84.7800	0.5625	2.2500	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	26.4011	25.4788	2124.0264	9.1191	13.2080	160.8136	4250.8477	12.7418	4.0260	12.883
	39.8504	38.6162	7394.8824	13.8210	19.9365	370.9225	14799.4952	19.3118	6.3571	20.343
L2	39.2158	50.7644	8571.2947	12.9779	18.7934	456.0805	17153.8678	25.3870	5.7411	13.122
	52.4173	71.0747	23524.0650	18.1701	26.2235	897.0616	47079.0836	35.5441	8.3153	19.006
L3	51.5288	76.3876	22358.9907	17.0873	24.7057	905.0122	44747.4018	38.2011	7.6795	15.359
	64.2349	99.5985	49561.2695	22.2794	32.1356	1542.2557	99187.7529	49.8087	10.2536	20.507
L4	63.2195	105.5092	46553.2031	20.9792	30.3067	1536.0691	93167.6621	52.7646	9.5100	16.907
	75.4310	131.6223	90378.9022	26.1715	37.7368	2394.9818	180876.7273	65.8237	12.0842	21.483
L5	74.2887	124.2461	76019.7623	24.7048	35.6380	2133.1104	152139.5533	62.1348	11.3570	20.19
	86.0879	150.3598	134732.9861	29.8972	43.0682	3128.3606	269643.2573	75.1942	13.9313	24.767

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 192.00-151.25				1	1	1		
L2 151.25-111.25				1	1	1		
L3 111.25-72.75				1	1	1		
L4 72.75-35.75				1	1	1		
L5 35.75-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
**********										

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
2" Rigid Conduit	C	No	Inside Pole	192.00 - 0.00	1	No Ice	0.00	2.80
						1/2" Ice	0.00	2.80
						1" Ice	0.00	2.80
						2" Ice	0.00	2.80
						4" Ice	0.00	2.80
LDF7-50A(1-5/8")	C	No	Inside Pole	192.00 - 0.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
FB-L98B-002-75000(3/8")	C	No	Inside Pole	192.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	192.00 - 0.00	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
LDF7-50A(1-5/8")	C	No	Inside Pole	192.00 - 0.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
FB-L98B-034-XXXXXX(3/8)	C	No	Inside Pole	192.00 - 0.00	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)	C	No	Inside Pole	192.00 - 0.00	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
**********								
LCF158-50JL(1-5/8")	C	No	Inside Pole	185.00 - 0.00	6	No Ice	0.00	0.52
						1/2" Ice	0.00	0.52
						1" Ice	0.00	0.52
						2" Ice	0.00	0.52
						4" Ice	0.00	0.52
**********								
2" Rigid Conduit	C	No	Inside Pole	175.00 - 0.00	2	No Ice	0.00	2.80
						1/2" Ice	0.00	2.80
						1" Ice	0.00	2.80
						2" Ice	0.00	2.80
						4" Ice	0.00	2.80
FSJ1-50A(1/4")	C	No	Inside Pole	175.00 - 0.00	3	No Ice	0.00	0.04
						1/2" Ice	0.00	0.04
						1" Ice	0.00	0.04
						2" Ice	0.00	0.04
						4" Ice	0.00	0.04
FSJ4-50B(1/2")	C	No	Inside Pole	175.00 - 0.00	3	No Ice	0.00	0.14
						1/2" Ice	0.00	0.14
						1" Ice	0.00	0.14
						2" Ice	0.00	0.14
						4" Ice	0.00	0.14
HJ4.5-50(5/8")	C	No	Inside Pole	175.00 - 0.00	3	No Ice	0.00	0.40
						1/2" Ice	0.00	0.40
						1" Ice	0.00	0.40
						2" Ice	0.00	0.40
						4" Ice	0.00	0.40
9207(5/16")	C	No	Inside Pole	175.00 - 0.00	1	No Ice	0.00	0.60
						1/2" Ice	0.00	0.60
						1" Ice	0.00	0.60
						2" Ice	0.00	0.60
						4" Ice	0.00	0.60
**********								
LDF7-50A(1-5/8")	C	No	Inside Pole	100.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	100.00 - 0.00	2	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
						2" Ice	0.00	1.30
						4" Ice	0.00	1.30
**********								

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	192.00-151.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.91
L2	151.25-111.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1.05
L3	111.25-72.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1.35
L4	72.75-35.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1.43
L5	35.75-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1.38

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	192.00-151.25	A	1.218	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.91
L2	151.25-111.25	A	1.179	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1.05
L3	111.25-72.75	A	1.130	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1.35
L4	72.75-35.75	A	1.061	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1.43
L5	35.75-0.00	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1.38

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	192.00-151.25	0.0000	0.0000	0.0000	0.0000
L2	151.25-111.25	0.0000	0.0000	0.0000	0.0000
L3	111.25-72.75	0.0000	0.0000	0.0000	0.0000
L4	72.75-35.75	0.0000	0.0000	0.0000	0.0000
L5	35.75-0.00	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K

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 1"x10'	C	None			0.0000	192.00	No Ice	1.00	1.00	0.04
							1/2" Ice	2.02	2.02	0.05
							1" Ice	3.05	3.05	0.06
							2" Ice	5.15	5.15	0.12
							4" Ice	7.68	7.68	0.30
***										
800 10121 w/ Mount Pipe	A	From Leg	4.00		0.0000	193.00	No Ice	5.69	4.60	0.07
			0.00				1/2" Ice	6.18	5.35	0.11
			2.00				1" Ice	6.68	6.05	0.17
							2" Ice	7.70	7.53	0.30
							4" Ice	9.86	10.83	0.68
800 10121 w/ Mount Pipe	B	From Leg	4.00		0.0000	193.00	No Ice	5.69	4.60	0.07
			0.00				1/2" Ice	6.18	5.35	0.11
			2.00				1" Ice	6.68	6.05	0.17
							2" Ice	7.70	7.53	0.30
							4" Ice	9.86	10.83	0.68
800 10121 w/ Mount Pipe	C	From Leg	4.00		0.0000	193.00	No Ice	5.69	4.60	0.07
			0.00				1/2" Ice	6.18	5.35	0.11
			2.00				1" Ice	6.68	6.05	0.17
							2" Ice	7.70	7.53	0.30
							4" Ice	9.86	10.83	0.68
SBNH-1D6565C w/ Mount Pipe	A	From Leg	4.00		0.0000	193.00	No Ice	11.68	9.84	0.09
			0.00				1/2" Ice	12.40	11.37	0.18
			2.00				1" Ice	13.14	12.91	0.28
							2" Ice	14.60	15.27	0.52
							4" Ice	17.87	20.14	1.16
P65-17-XLH-RR w/ Mount Pipe	B	From Leg	4.00		0.0000	193.00	No Ice	11.70	8.94	0.09
			0.00				1/2" Ice	12.42	10.45	0.18
			2.00				1" Ice	13.15	11.99	0.27
							2" Ice	14.64	14.31	0.50
							4" Ice	17.91	19.14	1.13
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00		0.0000	193.00	No Ice	8.50	6.30	0.07
			0.00				1/2" Ice	9.15	7.48	0.14
			2.00				1" Ice	9.77	8.37	0.21
							2" Ice	11.03	10.18	0.38
							4" Ice	13.68	14.02	0.87
(2) LGP21401	A	From Leg	4.00		0.0000	193.00	No Ice	1.29	0.23	0.01
			0.00				1/2" Ice	1.45	0.31	0.02
			0.00				1" Ice	1.61	0.40	0.03
							2" Ice	1.97	0.61	0.05
							4" Ice	2.79	1.12	0.14
(2) LGP21401	B	From Leg	4.00		0.0000	193.00	No Ice	1.29	0.23	0.01
			0.00				1/2" Ice	1.45	0.31	0.02
			0.00				1" Ice	1.61	0.40	0.03
							2" Ice	1.97	0.61	0.05
							4" Ice	2.79	1.12	0.14
(2) LGP21401	C	From Leg	4.00		0.0000	193.00	No Ice	1.29	0.23	0.01
			0.00				1/2" Ice	1.45	0.31	0.02
			0.00				1" Ice	1.61	0.40	0.03
							2" Ice	1.97	0.61	0.05
							4" Ice	2.79	1.12	0.14
RRUS-11	A	From Leg	4.00		0.0000	193.00	No Ice	3.25	1.37	0.05
			0.00				1/2" Ice	3.49	1.55	0.07
			2.00				1" Ice	3.74	1.74	0.09
							2" Ice	4.27	2.14	0.15

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	5.43	3.04	0.31
						4" Ice			
RRUS-11	B	From Leg	4.00 0.00 2.00	0.0000	193.00	No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.09
						2" Ice	4.27	2.14	0.15
						4" Ice	5.43	3.04	0.31
RRUS-11	C	From Leg	4.00 0.00 2.00	0.0000	193.00	No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.09
						2" Ice	4.27	2.14	0.15
						4" Ice	5.43	3.04	0.31
RRUS-11	A	From Leg	4.00 0.00 0.00	0.0000	193.00	No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.09
						2" Ice	4.27	2.14	0.15
						4" Ice	5.43	3.04	0.31
RRUS-11	B	From Leg	4.00 0.00 0.00	0.0000	193.00	No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.09
						2" Ice	4.27	2.14	0.15
						4" Ice	5.43	3.04	0.31
RRUS-11	C	From Leg	4.00 0.00 0.00	0.0000	193.00	No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.09
						2" Ice	4.27	2.14	0.15
						4" Ice	5.43	3.04	0.31
DC6-48-60-18-8F	A	From Leg	4.00 0.00 0.00	0.0000	193.00	No Ice	1.27	1.27	0.02
						1/2" Ice	1.46	1.46	0.04
						1" Ice	1.66	1.66	0.05
						2" Ice	2.09	2.09	0.10
						4" Ice	3.10	3.10	0.21
OPA-65R-LCUU-H8 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	193.00	No Ice	13.22	9.32	0.12
						1/2" Ice	14.02	10.79	0.21
						1" Ice	14.82	12.24	0.32
						2" Ice	16.39	14.50	0.56
						4" Ice	19.63	19.21	1.22
OPA-65R-LCUU-H8 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	193.00	No Ice	13.22	9.32	0.12
						1/2" Ice	14.02	10.79	0.21
						1" Ice	14.82	12.24	0.32
						2" Ice	16.39	14.50	0.56
						4" Ice	19.63	19.21	1.22
OPA-65R-LCUU-H8 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	193.00	No Ice	13.22	9.32	0.12
						1/2" Ice	14.02	10.79	0.21
						1" Ice	14.82	12.24	0.32
						2" Ice	16.39	14.50	0.56
						4" Ice	19.63	19.21	1.22
RRUS 32 B30	A	From Leg	4.00 0.00 2.00	0.0000	193.00	No Ice	3.14	1.74	0.06
						1/2" Ice	3.40	1.96	0.08
						1" Ice	3.66	2.19	0.10
						2" Ice	4.22	2.67	0.16
						4" Ice	5.43	3.75	0.32
RRUS 32 B30	B	From Leg	4.00 0.00 2.00	0.0000	193.00	No Ice	3.14	1.74	0.06
						1/2" Ice	3.40	1.96	0.08
						1" Ice	3.66	2.19	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	4.22	2.67	0.16
						2" Ice	5.43	3.75	0.32
						4" Ice			
RRUS 32 B30	C	From Leg	4.00 0.00 2.00	0.0000	193.00	No Ice	3.14	1.74	0.06
						1/2" Ice	3.40	1.96	0.08
						1" Ice	3.66	2.19	0.10
						2" Ice	4.22	2.67	0.16
						4" Ice	5.43	3.75	0.32
DC6-48-60-18-8F	B	From Leg	4.00 0.00 2.00	0.0000	193.00	No Ice	1.27	1.27	0.02
						1/2" Ice	1.46	1.46	0.04
						1" Ice	1.66	1.66	0.05
						2" Ice	2.09	2.09	0.10
						4" Ice	3.10	3.10	0.21
Platform Mount [LP 1201-1]	C	None		0.0000	193.00	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
5' x 2' Pipe Mount	A	From Leg	3.00 0.00 0.00	0.0000	193.00	No Ice	1.00	1.00	0.03
						1/2" Ice	1.39	1.39	0.04
						1" Ice	1.70	1.70	0.05
						2" Ice	2.35	2.35	0.08
						4" Ice	3.78	3.78	0.20
5' x 2' Pipe Mount	B	From Leg	3.00 0.00 0.00	0.0000	193.00	No Ice	1.00	1.00	0.03
						1/2" Ice	1.39	1.39	0.04
						1" Ice	1.70	1.70	0.05
						2" Ice	2.35	2.35	0.08
						4" Ice	3.78	3.78	0.20
5' x 2' Pipe Mount	C	From Leg	3.00 0.00 0.00	0.0000	193.00	No Ice	1.00	1.00	0.03
						1/2" Ice	1.39	1.39	0.04
						1" Ice	1.70	1.70	0.05
						2" Ice	2.35	2.35	0.08
						4" Ice	3.78	3.78	0.20
***									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	185.00	No Ice	5.40	4.70	0.05
						1/2" Ice	5.96	5.86	0.10
						1" Ice	6.48	6.73	0.15
						2" Ice	7.55	8.51	0.28
						4" Ice	9.92	12.28	0.68
APXV18-206517S-C w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	185.00	No Ice	5.40	4.70	0.05
						1/2" Ice	5.96	5.86	0.10
						1" Ice	6.48	6.73	0.15
						2" Ice	7.55	8.51	0.28
						4" Ice	9.92	12.28	0.68
APXV18-206517S-C w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	185.00	No Ice	5.40	4.70	0.05
						1/2" Ice	5.96	5.86	0.10
						1" Ice	6.48	6.73	0.15
						2" Ice	7.55	8.51	0.28
						4" Ice	9.92	12.28	0.68
Platform Mount [LP 1201-1]	C	None		0.0000	185.00	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
(3) 5' x 2' Pipe Mount	A	From Leg	3.00	0.0000	185.00	No Ice	1.00	1.00	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2"	1.39	1.39	0.04
			0.00			Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
						4" Ice			
(3) 5' x 2' Pipe Mount	B	From Leg	3.00	0.0000	185.00	No Ice	1.00	1.00	0.03
			0.00			1/2"	1.39	1.39	0.04
			0.00			Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
						4" Ice			
(3) 5' x 2' Pipe Mount	C	From Leg	3.00	0.0000	185.00	No Ice	1.00	1.00	0.03
			0.00			1/2"	1.39	1.39	0.04
			0.00			Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
						4" Ice			
***									
LLPX310R w/ Mount Pipe	A	From Leg	3.00	0.0000	175.00	No Ice	5.07	2.98	0.05
			0.00			1/2"	5.48	3.53	0.08
			1.00			Ice	5.91	4.09	0.13
						1" Ice	6.79	5.31	0.23
						2" Ice	8.70	8.13	0.54
						4" Ice			
LLPX310R w/ Mount Pipe	B	From Leg	3.00	0.0000	175.00	No Ice	5.07	2.98	0.05
			0.00			1/2"	5.48	3.53	0.08
			1.00			Ice	5.91	4.09	0.13
						1" Ice	6.79	5.31	0.23
						2" Ice	8.70	8.13	0.54
						4" Ice			
LLPX310R w/ Mount Pipe	C	From Leg	3.00	0.0000	175.00	No Ice	5.07	2.98	0.05
			0.00			1/2"	5.48	3.53	0.08
			1.00			Ice	5.91	4.09	0.13
						1" Ice	6.79	5.31	0.23
						2" Ice	8.70	8.13	0.54
						4" Ice			
TIMING 2000	C	From Leg	3.00	0.0000	175.00	No Ice	0.13	0.13	0.00
			0.00			1/2"	0.18	0.18	0.00
			0.00			Ice	0.24	0.24	0.01
						1" Ice	0.38	0.38	0.01
						2" Ice	0.78	0.78	0.05
						4" Ice			
WIMAX DAP HEAD	A	From Leg	3.00	0.0000	175.00	No Ice	1.80	0.78	0.03
			0.00			1/2"	1.99	0.92	0.04
			0.00			Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
						4" Ice			
WIMAX DAP HEAD	B	From Leg	3.00	0.0000	175.00	No Ice	1.80	0.78	0.03
			0.00			1/2"	1.99	0.92	0.04
			0.00			Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
						4" Ice			
WIMAX DAP HEAD	C	From Leg	3.00	0.0000	175.00	No Ice	1.80	0.78	0.03
			0.00			1/2"	1.99	0.92	0.04
			0.00			Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
						4" Ice			
HORIZON COMPACT	A	From Leg	3.00	0.0000	175.00	No Ice	0.84	0.43	0.01
			0.00			1/2"	0.97	0.52	0.02
			0.00			Ice	1.10	0.63	0.03
						1" Ice	1.39	0.86	0.05
						2" Ice	2.08	1.43	0.12

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice			
HORIZON COMPACT	C	From Leg	3.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.84 0.97 1.10 1.39 2.08	0.43 0.52 0.63 0.86 1.43	0.01 0.02 0.03 0.05 0.12
Side Arm Mount [SO 101-3]	C	None		0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.50 8.90 10.30 13.10 18.70	7.50 8.90 10.30 13.10 18.70	0.25 0.33 0.41 0.58 0.90
6' x 2" Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.02 0.03 0.05 0.09 0.23
6' x 2" Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.02 0.03 0.05 0.09 0.23
6' x 2" Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.02 0.03 0.05 0.09 0.23
***									
BXA-80080/4CF w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.49 5.94 6.40 7.35 9.39	4.03 4.65 5.30 6.70 9.78	0.03 0.08 0.13 0.25 0.60
BXA-80080/4CF w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.49 5.94 6.40 7.35 9.39	4.03 4.65 5.30 6.70 9.78	0.03 0.08 0.13 0.25 0.60
BXA-80090/4CF w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.97 4.39 4.83 5.73 7.67	3.88 4.49 5.12 6.50 9.54	0.03 0.07 0.11 0.22 0.54
(3) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.62 9.27 9.90 11.17 13.84	7.08 8.28 9.19 11.03 15.07	0.08 0.15 0.22 0.40 0.91
(3) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.62 9.27 9.90 11.17 13.84	7.08 8.28 9.19 11.03 15.07	0.08 0.15 0.22 0.40 0.91
(3) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	100.00	No Ice 1/2" Ice	8.62 9.27 9.90	7.08 8.28 9.19	0.08 0.15 0.22

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	11.17	11.03	0.40
						2" Ice	13.84	15.07	0.91
						4" Ice			
RRH2X60-AWS	A	From Leg	4.00 0.00 2.00	0.0000	100.00	No Ice	3.96	1.82	0.06
						1/2" Ice	4.27	2.08	0.08
						1" Ice	4.60	2.36	0.11
						2" Ice	5.27	2.96	0.17
						4" Ice	6.72	4.25	0.35
RRH2X60-AWS	B	From Leg	4.00 0.00 2.00	0.0000	100.00	No Ice	3.96	1.82	0.06
						1/2" Ice	4.27	2.08	0.08
						1" Ice	4.60	2.36	0.11
						2" Ice	5.27	2.96	0.17
						4" Ice	6.72	4.25	0.35
RRH2X60-AWS	C	From Leg	4.00 0.00 2.00	0.0000	100.00	No Ice	3.96	1.82	0.06
						1/2" Ice	4.27	2.08	0.08
						1" Ice	4.60	2.36	0.11
						2" Ice	5.27	2.96	0.17
						4" Ice	6.72	4.25	0.35
RRH2x60-700	A	From Leg	4.00 0.00 2.00	0.0000	100.00	No Ice	3.96	1.82	0.06
						1/2" Ice	4.27	2.08	0.08
						1" Ice	4.60	2.36	0.11
						2" Ice	5.27	2.96	0.17
						4" Ice	6.72	4.25	0.35
RRH2x60-700	B	From Leg	4.00 0.00 2.00	0.0000	100.00	No Ice	3.96	1.82	0.06
						1/2" Ice	4.27	2.08	0.08
						1" Ice	4.60	2.36	0.11
						2" Ice	5.27	2.96	0.17
						4" Ice	6.72	4.25	0.35
RRH2x60-700	C	From Leg	4.00 0.00 2.00	0.0000	100.00	No Ice	3.96	1.82	0.06
						1/2" Ice	4.27	2.08	0.08
						1" Ice	4.60	2.36	0.11
						2" Ice	5.27	2.96	0.17
						4" Ice	6.72	4.25	0.35
RRH2X60-PCS	A	From Leg	4.00 0.00 2.00	0.0000	100.00	No Ice	2.57	2.01	0.06
						1/2" Ice	2.79	2.22	0.08
						1" Ice	3.02	2.43	0.10
						2" Ice	3.52	2.89	0.16
						4" Ice	4.61	3.92	0.31
RRH2X60-PCS	B	From Leg	4.00 0.00 2.00	0.0000	100.00	No Ice	2.57	2.01	0.06
						1/2" Ice	2.79	2.22	0.08
						1" Ice	3.02	2.43	0.10
						2" Ice	3.52	2.89	0.16
						4" Ice	4.61	3.92	0.31
RRH2X60-PCS	C	From Leg	4.00 0.00 2.00	0.0000	100.00	No Ice	2.57	2.01	0.06
						1/2" Ice	2.79	2.22	0.08
						1" Ice	3.02	2.43	0.10
						2" Ice	3.52	2.89	0.16
						4" Ice	4.61	3.92	0.31
DB-T1-6Z-8AB-0Z	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice	5.60	2.33	0.04
						1/2" Ice	5.92	2.56	0.08
						1" Ice	6.24	2.79	0.12
						2" Ice	6.91	3.28	0.21
						4" Ice	8.37	4.37	0.45
T-Arm Mount [TA 602-3]	C	None		0.0000	100.00	No Ice	11.59	11.59	0.77
						1/2"	15.44	15.44	0.99

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						Ice	19.29	19.29	1.21
						1" Ice	26.99	26.99	1.64
						2" Ice	42.39	42.39	2.50
						4" Ice			
(2) 4' ICE SHIELDS	A	From Leg	2.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	1.40 1.88 2.38 3.39 5.51	0.47 0.64 0.82 1.21 2.09	0.03 0.10 0.17 0.33 0.75
(2) 4' ICE SHIELDS	B	From Leg	2.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	1.40 1.88 2.38 3.39 5.51	0.47 0.64 0.82 1.21 2.09	0.03 0.10 0.17 0.33 0.75
(2) 4' ICE SHIELDS	C	From Leg	2.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	1.40 1.88 2.38 3.39 5.51	0.47 0.64 0.82 1.21 2.09	0.03 0.10 0.17 0.33 0.75
***									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP2-23	A	Paraboloid w/Shroud (HP)	From Leg	3.00 0.00 2.00	30.0000		175.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.72 4.00 4.31 4.94 6.34	0.03 0.03 0.04 0.07 0.19
PX2F-52	B	Paraboloid w/Radome	From Leg	3.00 0.00 2.00	30.0000		175.00	2.09	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.44 3.72 3.99 4.55 5.67	0.01 0.02 0.02 0.05 0.17
VHLP2-23	C	Paraboloid w/Shroud (HP)	From Leg	3.00 0.00 2.00	30.0000		175.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.72 4.00 4.31 4.94 6.34	0.03 0.03 0.04 0.07 0.19

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

Comb. No.	Description
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	192 - 151.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-19.30	-0.38	0.50
			Max. Mx	11	-11.03	383.77	-1.42
			Max. My	2	-11.03	-0.44	382.82
			Max. Vy	11	-13.01	383.77	-1.42
			Max. Vx	2	-12.98	-0.44	382.82
			Max. Torque	7			1.02
L2	151.25 - 111.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-31.57	-0.38	0.50
			Max. Mx	11	-20.49	956.81	-4.74
			Max. My	2	-20.49	-1.56	954.71
			Max. Vy	11	-16.85	956.81	-4.74
			Max. Vx	2	-16.82	-1.56	954.71
			Max. Torque	12			-0.92
L3	111.25 - 72.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-54.84	-0.48	1.39
			Max. Mx	11	-36.43	1759.73	-7.22
			Max. My	2	-36.43	-2.16	1759.73
			Max. Vy	11	-25.92	1759.73	-7.22
			Max. Vx	2	-26.04	-2.16	1759.73
			Max. Torque	12			-1.43
L4	72.75 - 35.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-76.84	-0.48	1.39
			Max. Mx	11	-54.65	2761.30	-9.50
			Max. My	2	-54.65	-2.39	2765.63

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L5	35.75 - 0	Pole	Max. Vy	11	-30.04	2761.30	-9.50
			Max. Vx	2	-30.16	-2.39	2765.63
			Max. Torque	12			-1.43
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-108.94	-0.48	1.39
			Max. Mx	11	-81.67	4224.98	-12.34
			Max. My	2	-81.67	-2.67	4234.75
			Max. Vy	11	-35.01	4224.98	-12.34
			Max. Vx	2	-35.13	-2.67	4234.75
			Max. Torque	12			-1.43

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	108.94	0.00	0.00
	Max. H_x	11	81.68	35.00	-0.06
	Max. H_z	2	81.68	-0.01	35.12
	Max. M_x	2	4234.75	-0.01	35.12
	Max. M_z	5	4223.62	-34.99	0.04
	Max. Torsion	6	1.37	-30.35	-17.51
	Min. Vert	27	81.68	-0.00	13.72
	Min. H_x	5	81.68	-34.99	0.04
	Min. H_z	8	81.68	0.06	-35.12
	Min. M_x	8	-4233.66	0.06	-35.12
	Min. M_z	11	-4224.98	35.00	-0.06
	Min. Torsion	12	-1.43	30.33	17.55

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	81.68	0.00	0.00	-0.42	-0.06	0.00
Dead+Wind 0 deg - No Ice	81.68	0.01	-35.12	-4234.75	-2.67	0.51
Dead+Wind 30 deg - No Ice	81.68	17.55	-30.36	-3659.41	-2123.64	0.17
Dead+Wind 60 deg - No Ice	81.68	30.30	-17.55	-2117.79	-3658.28	-0.58
Dead+Wind 90 deg - No Ice	81.68	34.99	-0.04	-10.03	-4223.62	-1.19
Dead+Wind 120 deg - No Ice	81.68	30.35	17.51	2106.62	-3666.29	-1.37
Dead+Wind 150 deg - No Ice	81.68	17.51	30.41	3665.06	-2112.66	-0.82
Dead+Wind 180 deg - No Ice	81.68	-0.06	35.12	4233.66	11.47	-0.39
Dead+Wind 210 deg - No Ice	81.68	-17.53	30.37	3658.84	2120.03	0.20
Dead+Wind 240 deg - No Ice	81.68	-30.31	17.54	2114.51	3659.55	0.85
Dead+Wind 270 deg - No Ice	81.68	-35.00	0.06	12.34	4224.98	1.33
Dead+Wind 300 deg - No Ice	81.68	-30.33	-17.55	-2115.33	3661.90	1.43
Dead+Wind 330 deg - No Ice	81.68	-17.51	-30.42	-3667.12	2113.23	1.04
Dead+Ice+Temp	108.94	0.00	0.00	-1.39	-0.48	0.00
Dead+Wind 0 deg+Ice+Temp	108.94	0.01	-9.09	-1154.78	-2.17	0.17
Dead+Wind 30 deg+Ice+Temp	108.94	4.55	-7.86	-998.59	-580.32	0.06
Dead+Wind 60 deg+Ice+Temp	108.94	7.85	-4.55	-579.00	-998.49	-0.16
Dead+Wind 90 deg+Ice+Temp	108.94	9.06	-0.02	-4.98	-1152.17	-0.33
Dead+Wind 120 deg+Ice+Temp	108.94	7.86	4.53	571.68	-999.67	-0.39
Dead+Wind 150 deg+Ice+Temp	108.94	4.53	7.86	996.46	-575.72	-0.25
Dead+Wind 180	108.94	-0.02	9.09	1151.81	3.54	-0.13

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
deg+Ice+Temp						
Dead+Wind 210 deg+Ice+Temp	108.94	-4.54	7.86	995.77	578.38	0.04
Dead+Wind 240 deg+Ice+Temp	108.94	-7.85	4.54	575.45	997.85	0.23
Dead+Wind 270 deg+Ice+Temp	108.94	-9.06	0.02	2.92	1151.55	0.37
Dead+Wind 300 deg+Ice+Temp	108.94	-7.85	-4.54	-576.68	997.52	0.41
Dead+Wind 330 deg+Ice+Temp	108.94	-4.53	-7.87	-999.69	574.89	0.31
Dead+Wind 0 deg - Service	81.68	0.00	-13.72	-1654.62	-1.08	0.20
Dead+Wind 30 deg - Service	81.68	6.86	-11.86	-1429.86	-829.67	0.07
Dead+Wind 60 deg - Service	81.68	11.84	-6.86	-827.60	-1429.20	-0.23
Dead+Wind 90 deg - Service	81.68	13.67	-0.02	-4.18	-1650.05	-0.46
Dead+Wind 120 deg - Service	81.68	11.86	6.84	822.72	-1432.32	-0.53
Dead+Wind 150 deg - Service	81.68	6.84	11.88	1431.54	-825.38	-0.32
Dead+Wind 180 deg - Service	81.68	-0.02	13.72	1653.67	4.44	-0.15
Dead+Wind 210 deg - Service	81.68	-6.85	11.86	1429.12	828.18	0.08
Dead+Wind 240 deg - Service	81.68	-11.84	6.85	825.80	1429.61	0.33
Dead+Wind 270 deg - Service	81.68	-13.67	0.02	4.56	1650.51	0.52
Dead+Wind 300 deg - Service	81.68	-11.85	-6.86	-826.64	1430.53	0.56
Dead+Wind 330 deg - Service	81.68	-6.84	-11.88	-1432.87	825.52	0.41

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-81.68	0.00	0.00	81.68	0.00	0.000%
2	0.01	-81.68	-35.12	-0.01	81.68	35.12	0.000%
3	17.55	-81.68	-30.36	-17.55	81.68	30.36	0.000%
4	30.30	-81.68	-17.55	-30.30	81.68	17.55	0.000%
5	34.99	-81.68	-0.04	-34.99	81.68	0.04	0.000%
6	30.35	-81.68	17.51	-30.35	81.68	-17.51	0.000%
7	17.51	-81.68	30.41	-17.51	81.68	-30.41	0.000%
8	-0.06	-81.68	35.12	0.06	81.68	-35.12	0.000%
9	-17.53	-81.68	30.37	17.53	81.68	-30.37	0.000%
10	-30.31	-81.68	17.54	30.31	81.68	-17.54	0.000%
11	-35.00	-81.68	0.06	35.00	81.68	-0.06	0.000%
12	-30.33	-81.68	-17.55	30.33	81.68	17.55	0.000%
13	-17.51	-81.68	-30.42	17.51	81.68	30.42	0.000%
14	0.00	-108.94	0.00	0.00	108.94	0.00	0.000%
15	0.01	-108.94	-9.09	-0.01	108.94	9.09	0.000%
16	4.55	-108.94	-7.86	-4.55	108.94	7.86	0.000%
17	7.85	-108.94	-4.55	-7.85	108.94	4.55	0.000%
18	9.06	-108.94	-0.02	-9.06	108.94	0.02	0.000%
19	7.86	-108.94	4.53	-7.86	108.94	-4.53	0.000%
20	4.53	-108.94	7.86	-4.53	108.94	-7.86	0.000%
21	-0.02	-108.94	9.09	0.02	108.94	-9.09	0.000%
22	-4.54	-108.94	7.86	4.54	108.94	-7.86	0.000%
23	-7.85	-108.94	4.54	7.85	108.94	-4.54	0.000%
24	-9.06	-108.94	0.02	9.06	108.94	-0.02	0.000%
25	-7.85	-108.94	-4.54	7.85	108.94	4.54	0.000%
26	-4.53	-108.94	-7.87	4.53	108.94	7.87	0.000%
27	0.00	-81.68	-13.72	-0.00	81.68	13.72	0.000%
28	6.86	-81.68	-11.86	-6.86	81.68	11.86	0.000%
29	11.84	-81.68	-6.86	-11.84	81.68	6.86	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
30	13.67	-81.68	-0.02	-13.67	81.68	0.02	0.000%
31	11.86	-81.68	6.84	-11.86	81.68	-6.84	0.000%
32	6.84	-81.68	11.88	-6.84	81.68	-11.88	0.000%
33	-0.02	-81.68	13.72	0.02	81.68	-13.72	0.000%
34	-6.85	-81.68	11.86	6.85	81.68	-11.86	0.000%
35	-11.84	-81.68	6.85	11.84	81.68	-6.85	0.000%
36	-13.67	-81.68	0.02	13.67	81.68	-0.02	0.000%
37	-11.85	-81.68	-6.86	11.85	81.68	6.86	0.000%
38	-6.84	-81.68	-11.88	6.84	81.68	11.88	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00003872
3	Yes	4	0.00000001	0.00035460
4	Yes	4	0.00000001	0.00035486
5	Yes	4	0.00000001	0.00004642
6	Yes	4	0.00000001	0.00033284
7	Yes	4	0.00000001	0.00035863
8	Yes	4	0.00000001	0.00003643
9	Yes	4	0.00000001	0.00035041
10	Yes	4	0.00000001	0.00034048
11	Yes	4	0.00000001	0.00004588
12	Yes	4	0.00000001	0.00036777
13	Yes	4	0.00000001	0.00033679
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00054541
16	Yes	4	0.00000001	0.00055572
17	Yes	4	0.00000001	0.00055583
18	Yes	4	0.00000001	0.00054512
19	Yes	4	0.00000001	0.00055326
20	Yes	4	0.00000001	0.00055215
21	Yes	4	0.00000001	0.00054286
22	Yes	4	0.00000001	0.00055250
23	Yes	4	0.00000001	0.00055323
24	Yes	4	0.00000001	0.00054407
25	Yes	4	0.00000001	0.00055377
26	Yes	4	0.00000001	0.00055380
27	Yes	4	0.00000001	0.00001593
28	Yes	4	0.00000001	0.00003424
29	Yes	4	0.00000001	0.00003430
30	Yes	4	0.00000001	0.00001646
31	Yes	4	0.00000001	0.00003194
32	Yes	4	0.00000001	0.00003489
33	Yes	4	0.00000001	0.00001579
34	Yes	4	0.00000001	0.00003371
35	Yes	4	0.00000001	0.00003259
36	Yes	4	0.00000001	0.00001658
37	Yes	4	0.00000001	0.00003618
38	Yes	4	0.00000001	0.00003230

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	192 - 151.25	14.873	27	0.7780	0.0021
L2	156.25 - 111.25	9.505	27	0.6224	0.0007

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L3	117.75 - 72.75	5.209	27	0.4333	0.0004
L4	80.75 - 35.75	2.408	27	0.2788	0.0002
L5	45 - 0	0.761	27	0.1505	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
193.00	800 10121 w/ Mount Pipe	27	14.873	0.7780	0.0021	64567
192.00	Lightning Rod 1"x10'	27	14.873	0.7780	0.0021	64567
185.00	APXV18-206517S-C w/ Mount Pipe	27	13.769	0.7488	0.0017	46119
177.00	VHLP2-23	27	12.523	0.7150	0.0014	21522
175.00	LLPX310R w/ Mount Pipe	27	12.216	0.7064	0.0013	18990
100.00	BXA-80080/4CF w/ Mount Pipe	27	3.723	0.3551	0.0003	14323

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	192 - 151.25	38.051	2	1.9899	0.0053
L2	156.25 - 111.25	24.320	2	1.5925	0.0019
L3	117.75 - 72.75	13.329	2	1.1087	0.0009
L4	80.75 - 35.75	6.162	2	0.7135	0.0005
L5	45 - 0	1.948	2	0.3853	0.0002

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
193.00	800 10121 w/ Mount Pipe	2	38.051	1.9899	0.0053	25291
192.00	Lightning Rod 1"x10'	2	38.051	1.9899	0.0053	25291
185.00	APXV18-206517S-C w/ Mount Pipe	2	35.227	1.9154	0.0045	18065
177.00	VHLP2-23	2	32.040	1.8291	0.0036	8430
175.00	LLPX310R w/ Mount Pipe	2	31.256	1.8073	0.0034	7438
100.00	BXA-80080/4CF w/ Mount Pipe	2	9.526	0.9086	0.0007	5600

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	192 - 151.25 (1)	TP39.245x26x0.3125	40.75	0.00	0.0	39.000	37.0042	-11.03	1443.16	0.008

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 $\frac{P}{P_a}$
L2	151.25 - 111.25 (2)	TP51.621x36.9948x0.4375	45.00	0.00	0.0	39.000	68.1410	-20.49	2657.50	0.008
L3	111.25 - 72.75 (3)	TP63.259x48.6333x0.5	45.00	0.00	0.0	39.000	95.4721	-36.43	3723.41	0.010
L4	72.75 - 35.75 (4)	TP74.285x59.6589x0.5625	45.00	0.00	0.0	39.000	126.2550	-54.65	4923.93	0.011
L5	35.75 - 0 (5)	TP84.78x70.1535x0.5625	45.00	0.00	0.0	39.000	150.3600	-81.67	5864.03	0.014

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	192 - 151.25 (1)	TP39.245x26x0.3125	383.77	13.526	39.000	0.347	0.00	0.000	39.000	0.000
L2	151.25 - 111.25 (2)	TP51.621x36.9948x0.4375	956.82	13.930	39.000	0.357	0.00	0.000	39.000	0.000
L3	111.25 - 72.75 (3)	TP63.259x48.6333x0.5	1760.21	14.910	39.000	0.382	0.00	0.000	39.000	0.000
L4	72.75 - 35.75 (4)	TP74.285x59.6589x0.5625	2765.63	15.065	39.000	0.386	0.00	0.000	39.000	0.000
L5	35.75 - 0 (5)	TP84.78x70.1535x0.5625	4234.75	16.244	39.000	0.417	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	192 - 151.25 (1)	TP39.245x26x0.3125	13.02	0.352	26.000	0.027	0.75	0.013	26.000	0.000
L2	151.25 - 111.25 (2)	TP51.621x36.9948x0.4375	16.85	0.247	26.000	0.019	0.75	0.005	26.000	0.000
L3	111.25 - 72.75 (3)	TP63.259x48.6333x0.5	25.94	0.272	26.000	0.021	0.58	0.002	26.000	0.000
L4	72.75 - 35.75 (4)	TP74.285x59.6589x0.5625	30.16	0.239	26.000	0.018	0.51	0.001	26.000	0.000
L5	35.75 - 0 (5)	TP84.78x70.1535x0.5625	35.13	0.234	26.000	0.018	0.51	0.001	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	192 - 151.25 (1)	0.008	0.347	0.000	0.027	0.000	0.355 ✔	1.333	H1-3+VT ✔
L2	151.25 - 111.25 (2)	0.008	0.357	0.000	0.019	0.000	0.365 ✔	1.333	H1-3+VT ✔
L3	111.25 - 72.75 (3)	0.010	0.382	0.000	0.021	0.000	0.392 ✔	1.333	H1-3+VT ✔
L4	72.75 - 35.75 (4)	0.011	0.386	0.000	0.018	0.000	0.397 ✔	1.333	H1-3+VT ✔

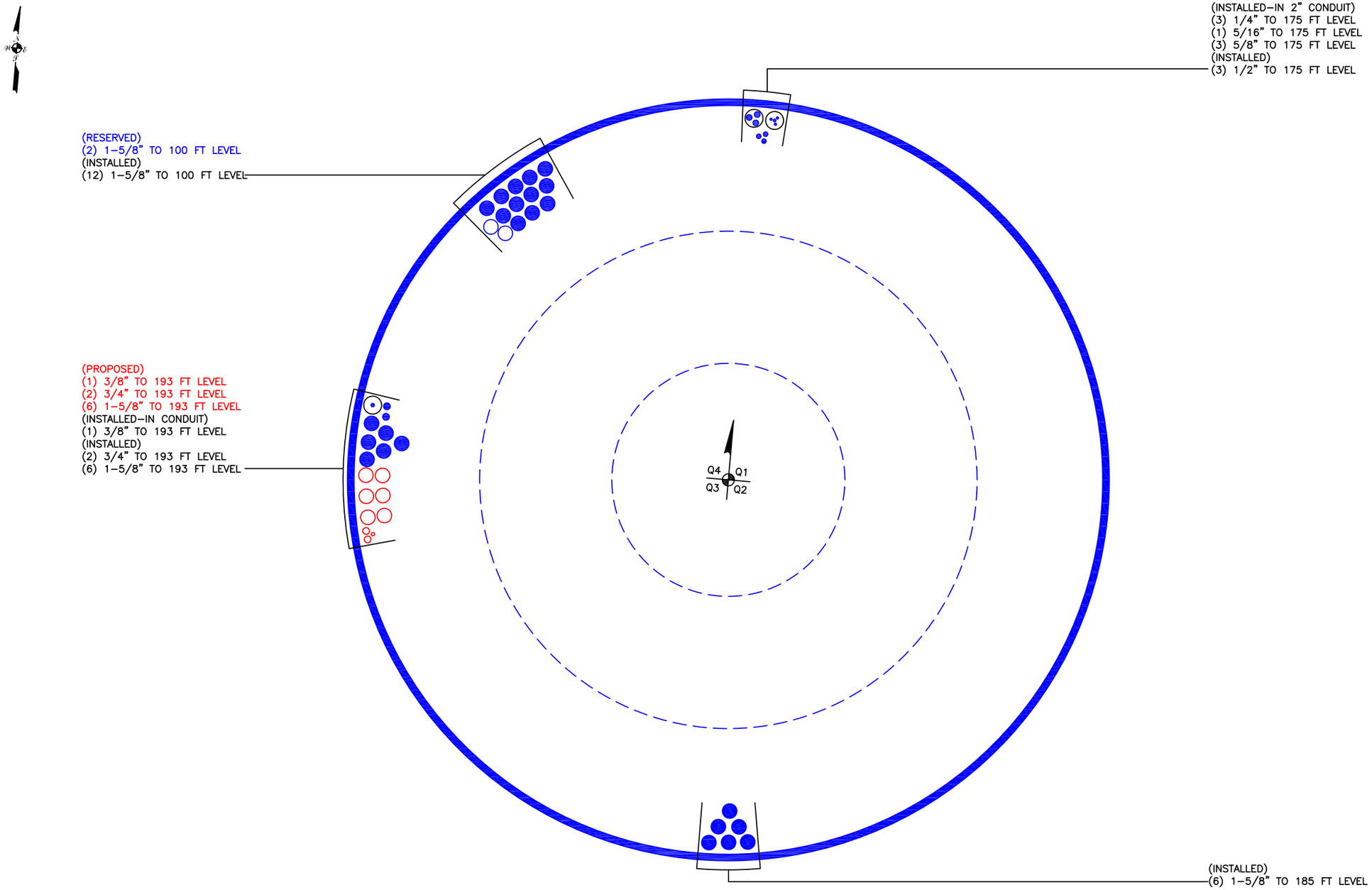
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L5	35.75 - 0 (5)	0.014	0.417	0.000	0.018	0.000	0.431 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	192 - 151.25	Pole	TP39.245x26x0.3125	1	-11.03	1923.73	26.6	Pass
L2	151.25 - 111.25	Pole	TP51.621x36.9948x0.4375	2	-20.49	3542.45	27.4	Pass
L3	111.25 - 72.75	Pole	TP63.259x48.6333x0.5	3	-36.43	4963.31	29.4	Pass
L4	72.75 - 35.75	Pole	TP74.285x59.6589x0.5625	4	-54.65	6563.60	29.8	Pass
L5	35.75 - 0	Pole	TP84.78x70.1535x0.5625	5	-81.67	7816.75	32.3	Pass
							Summary	
						Pole (L5)	32.3	Pass
						RATING =	**32.3**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 803843 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#: *803843*
Site Name: *CT New Britain 4 CAC 80384*
App #: *311043 Rev 1*

Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	93	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	91	in
Thick:	3.25	in
Grade:	55	ksi
Clip Distance:	9	in

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

Pole Data		
Diam:	84.78	in
Thick:	0.5625	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Stress Increase Factor		
ASD ASIF:	1.333	

Base Reactions		
TIA Revision:	F	
Unfactored Moment, M:	4235	ft-kips
Unfactored Axial, P:	82	kips
Unfactored Shear, V:	35	kips

Anchor Rod Results

TIA F --> Maximum Rod Tension	87.7	Kips
Allowable Tension:	195.0	Kips
Anchor Rod Stress Ratio:	45.0%	**Pass**

Base Plate Results Flexural Check

Base Plate Stress:	21.5	ksi
Allowable PL Bending Stress:	55.0	ksi
Base Plate Stress Ratio:	39.2%	**Pass**

PL Ref. Data	
Yield Line (in):	43.91
Max PL Length:	43.91

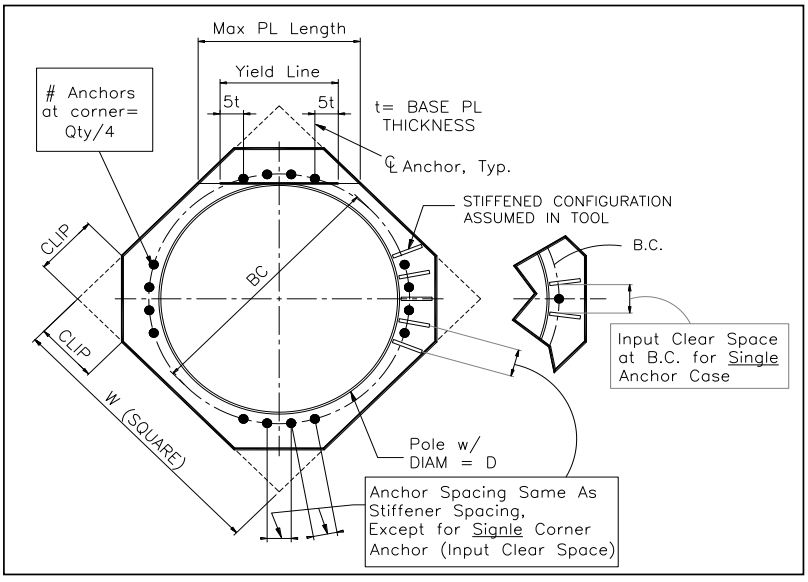
N/A - Unstiffened

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



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

CCI Foundation Tool Suite - Monopole Pier

CCIFTS 1.2.108.14286 - Phase 1-2 Date: 10/2/2015

BU:	803843
Site Name:	CT NEW BRITAIN 4 CAC 803843
App Number:	311043 Rev. 1
Work Order:	1124762

Monopole Drilled Pier

Input

Criteria

TIA Revision:	F
ACI 318 Revision:	2002
Seismic Category:	B

Forces

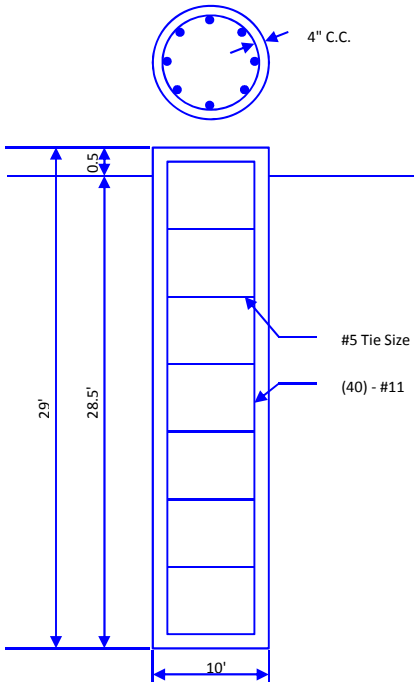
Compression	82	kips
Shear	35	kips
Moment	4235	k-ft
Swelling Force	0	kips

Foundation Dimensions

Pier Diameter:	10	ft
Ext. above grade:	0.5	ft
Depth below grade:	28.5	ft

Material Properties

Number of Rebar:	40	
Rebar Size:	11	
Tie Size	5	
Rebar tensile strength:	60	ksi
Concrete Strength:	3000	psi
Ultimate Concrete Strain	0.003	in/in
Clear Cover to Ties:	4	in



Soil Profile: 803843 Soil

Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Skin Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	5	0	5	115	0	0	0	0	0	
2	8	5	13	115	0	30			0	
3	2	13	15	52.6	0	30			0	
4	13.5	15	28.5	72.6	0	34			24	

Analysis Results

Soil Lateral Capacity

Depth to Zero Shear:	7.28	ft
Max Moment, Mu:	4541.52	k-ft
Soil Safety Factor:	4.13	
Safety Factor Req'd:	2	
RATING:	48.4%	

Soil Axial Capacity

Skin Friction (k):	241.28	kips
End Bearing (k):	942.48	kips
Comp. Capacity (k), ϕCn:	1183.76	kips
Comp. (k), Cu:	106.60	kips
RATING:	9.0%	

Concrete/Steel Check

Mu (from soil analysis)	5903.98	k-ft
ϕMn	14471.76	k-ft
RATING:	40.8%	

rho provided	0.55	
rho required	0.33	OK

Rebar Spacing	7.18	
Spacing required	22.56	OK

Dev. Length required	20.89	
Dev. Length provided	61.78	OK

Overall Foundation Rating: 48.4%

Monopole Pier and Pad Foundation

BU # : 803843
Site Name: CT NEW BRITAIN 4 CAC 80
App. Number: 311043 Rev. 1

TIA-222 Revision: F

Design Reactions		
Shear, **S**:	35	kips
Moment, **M**:	4235	ft-kips
Tower Height, **H**:	192	ft
Tower Weight, **Wt**:	82	kips
Base Diameter, **BD**:	7.07	ft

Foundation Dimensions		
Depth, **D**:	7	ft
Pad Width, **W**:	32.5	ft
Neglected Depth, **N**:	5	ft
Thickness, **T**:	4.00	ft
Pier Diameter, **Pd**:	10.00	ft
Ext. Above Grade, **E**:	0.50	ft
BP Dist. Above Pier:	3	in.
Clear Cover, **Cc**:	3.0	in

Soil Properties		
Soil Unit Weight, **γ**:	0.125	kcf
Ult. Bearing Capacity, Bc:	6.0	ksf
Angle of Friction, **Φ**:	30	deg
Cohesion, **Co**:	0.000	ksf
Passive Pressure, **Pp**:	0.000	ksf
Base Friction, **μ**:	0.50	

Material Properties		
Rebar Yield Strength, **Fy**:	60000	psi
Concrete Strength, **F'c**:	3000	psi
Concrete Unit Weight, **δc**:	0.150	kcf
Seismic Zone, **z**:	1	

Rebar Properties		
Pier Rebar Size, **Sp**:	11	
Pier Rebar Quanity, **mp**:	64	37
Pad Rebar Size, **Spad**:	11	
Pad Rebar Quanity, **mpad**:	60	11
Pier Tie Size, **St**:	4	4
Tie Quanity, **mt**:	10	5

Design Checks	Capacity/ Availability	Demand/ Limits	Check
Req'd Pier Diam.(ft)	10	9.065	**OK**
Overturning (ft-kips)	9359.73	4235.00	**45.2%**
Shear Capacity (kips)	291.84	35.00	**12.0%**
Bearing (ksf)	4.50	1.98	**43.9%**
Pad Shear - 1-way (kips)	1419.29	545.60	**38.4%**
Pad Shear - 2-way (kips)	3756.74	221.46	**5.9%**
Pad Moment Capacity (k-ft)	17467.78	1824.27	**10.4%**
Pier Moment Capacity (k-ft)	14398.42	4357.50	**30.3%**

Maximum Allowable Moment of a Circular Pier

Axial Load (Negative for Compression) = -82.00 kips

Pier Properties

Concrete:

Pier Diameter = 10.0 ft

Concrete Area = 11309.7 in^2

Reinforcement:

Clear Cover = 3.00 in

Cage Diameter = 9.38 ft

Bar Size = 11

Bar Diameter = 1.41 in

Bar Area = 1.56 in^2

Number of Bars = 64

Material Properties

Concrete compressive strength = 3000 psi

Reinforcement yield strength = 60000 psi

Modulus of elasticity = 29000 ksi

Reinforcement yield strain = 0.00207

Limiting compressive strain = 0.003

Seismic Properties

Seismic Zone = 1

Minimum Area of Steel

Required area of steel = 56.55 in^2

Provided area of steel = 99.84 in^2 **OK**

Axial Loading

Load factor = 1.3

Reduction factor = 0.9

Factored axial load = -118.444 kips

Neutral Axis

Distance from extreme edge to neutral axis = 20.15 in

Equivalent compression zone factor = 0.85

Distance from extreme edge to equivalent compression zone factor = 17.13 in

Distance from centroid to neutral axis = 39.85 in

Compression Zone

Area of steel in compression zone = 23.40 in^2

Angle from centroid of pier to intersection of equivalent compression zone and edge of pier = 44.39 deg

Area of concrete in compression = 989.78 in^2

Force in concrete = 0.85 * f`c * Acc = 2523.95 kips

Total reinforcement forces = -2405.51 kips

Factored axial load = -118.44 kips

Force in concrete = -2523.95 kips

Sum of the forces in concrete = 0.00 kips **OK**

Maximum Moment

First moment of the concrete area in compression about the centoid = 49306.02 in^3

Distance between centroid of concrete in compression and centroid of pier = 49.81 in

Moment of concrete in compression = 125730.34 in-kips

Total reinforcement moment = 123842.34 in-kips

Nominal moment strength of column = 249572.68 in-kips

Factored moment strength of column = 172781.08 in-kips

Maximum Allowable Moment = 14398.42 ft-kips

Individual Bars

Bar #	Angle from first bar (deg)	Distance to centroid (in)	Distance to neutral axis (in)	Distance to equivalent comp. zone (in)	Strain	Area of steel in compression (in^2)	Stress (ksi)	Axial force (kips)
1	0.00	0.00	-39.85	-42.87	-0.005933	0.00	-60.00	-93.60
2	5.63	5.52	-34.33	-37.35	-0.005111	0.00	-60.00	-93.60
3	11.25	10.98	-28.87	-31.89	-0.004298	0.00	-60.00	-93.60
4	16.88	16.34	-23.51	-26.53	-0.0035	0.00	-60.00	-93.60
5	22.50	21.54	-18.31	-21.33	-0.002726	0.00	-60.00	-93.60
6	28.13	26.54	-13.31	-16.34	-0.001982	0.00	-57.48	-89.67
7	33.75	31.28	-8.57	-11.60	-0.001277	0.00	-37.02	-57.75
8	39.38	35.71	-4.14	-7.16	-0.000616	0.00	-17.86	-27.86
9	45.00	39.81	-0.04	-3.07	-6.46E-06	0.00	-0.19	-0.29
10	50.63	43.52	3.67	0.64	0.0005459	1.56	15.83	20.72
11	56.25	46.81	6.96	3.94	0.0010359	1.56	30.04	42.88
12	61.88	49.65	9.80	6.78	0.0014587	1.56	42.30	62.01
13	67.50	52.01	12.16	9.14	0.0018104	1.56	52.50	77.92
14	73.13	53.87	14.02	11.00	0.0020875	1.56	60.00	89.62
15	78.75	55.21	15.36	12.34	0.0022873	1.56	60.00	89.62
16	84.38	56.02	16.17	13.15	0.002408	1.56	60.00	89.62
17	90.00	56.30	16.45	13.42	0.0024484	1.56	60.00	89.62
18	95.63	56.02	16.17	13.15	0.002408	1.56	60.00	89.62
19	101.25	55.21	15.36	12.34	0.0022873	1.56	60.00	89.62
20	106.88	53.87	14.02	11.00	0.0020875	1.56	60.00	89.62
21	112.50	52.01	12.16	9.14	0.0018104	1.56	52.50	77.92
22	118.13	49.65	9.80	6.78	0.0014587	1.56	42.30	62.01
23	123.75	46.81	6.96	3.94	0.0010359	1.56	30.04	42.88
24	129.38	43.52	3.67	0.64	0.0005459	1.56	15.83	20.72
25	135.00	39.81	-0.04	-3.07	-6.46E-06	0.00	-0.19	-0.29
26	140.63	35.71	-4.14	-7.16	-0.000616	0.00	-17.86	-27.86
27	146.25	31.28	-8.57	-11.60	-0.001277	0.00	-37.02	-57.75
28	151.88	26.54	-13.31	-16.34	-0.001982	0.00	-57.48	-89.67
29	157.50	21.54	-18.31	-21.33	-0.002726	0.00	-60.00	-93.60
30	163.13	16.34	-23.51	-26.53	-0.0035	0.00	-60.00	-93.60
31	168.75	10.98	-28.87	-31.89	-0.004298	0.00	-60.00	-93.60
32	174.38	5.52	-34.33	-37.35	-0.005111	0.00	-60.00	-93.60
33	180.00	0.00	-39.85	-42.87	-0.005933	0.00	-60.00	-93.60
34	185.63	-5.52	-45.37	-48.39	-0.006754	0.00	-60.00	-93.60
35	191.25	-10.98	-50.83	-53.86	-0.007568	0.00	-60.00	-93.60
36	196.88	-16.34	-56.19	-59.21	-0.008366	0.00	-60.00	-93.60
37	202.50	-21.54	-61.39	-64.42	-0.00914	0.00	-60.00	-93.60
38	208.13	-26.54	-66.39	-69.41	-0.009884	0.00	-60.00	-93.60
39	213.75	-31.28	-71.13	-74.15	-0.010589	0.00	-60.00	-93.60
40	219.38	-35.71	-75.56	-78.59	-0.01125	0.00	-60.00	-93.60
41	225.00	-39.81	-79.66	-82.68	-0.01186	0.00	-60.00	-93.60
42	230.63	-43.52	-83.37	-86.39	-0.012412	0.00	-60.00	-93.60
43	236.25	-46.81	-86.66	-89.68	-0.012902	0.00	-60.00	-93.60
44	241.88	-49.65	-89.50	-92.52	-0.013325	0.00	-60.00	-93.60
45	247.50	-52.01	-91.86	-94.88	-0.013676	0.00	-60.00	-93.60
46	253.13	-53.87	-93.72	-96.74	-0.013953	0.00	-60.00	-93.60
47	258.75	-55.21	-95.06	-98.09	-0.014153	0.00	-60.00	-93.60

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RF COMPLIANCE EXPERTS
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info@sitesafe.com ● www.sitesafe.com

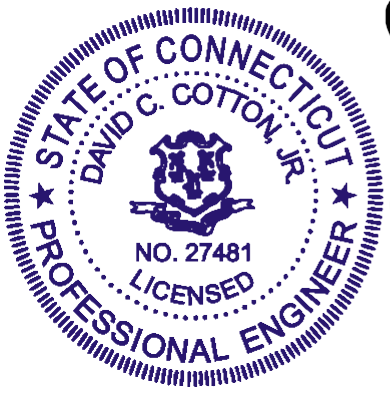
SmartLink, LLC
on behalf of AT&T Mobility, LLC
Site FA – 10091780
Site ID – CTL05194 (3C)
USID – 25889
Site Name – New Britian SE
Site Compliance Report

200 Stanley Street
New Britain, CT 06051

Latitude: N41-39-14.01
Longitude: W72-46-09.48
Structure Type: Monopole

Report generated date: January 21, 2016
Report by: Kevin Bernstetter
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-January-21

Table of Contents

1 General Site Summary

1.1 Report Summary

AT&T Mobility, LLC	Summary
Access to Antennas Locked?	No
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 Ground Level	<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_CT5194_2016-LTE-Next-Carrier_LTE-3C_om636a_2051A02JY5_10091780_25889_06-23-2015_Preliminary-Approved_v1.00

CD's: 10091780_AE201_102315_CTL05194.Rev0.CD MD KES 12-17-15

RF Configuration Datasheet: CT_33 sites with power density form

2 Map of Site

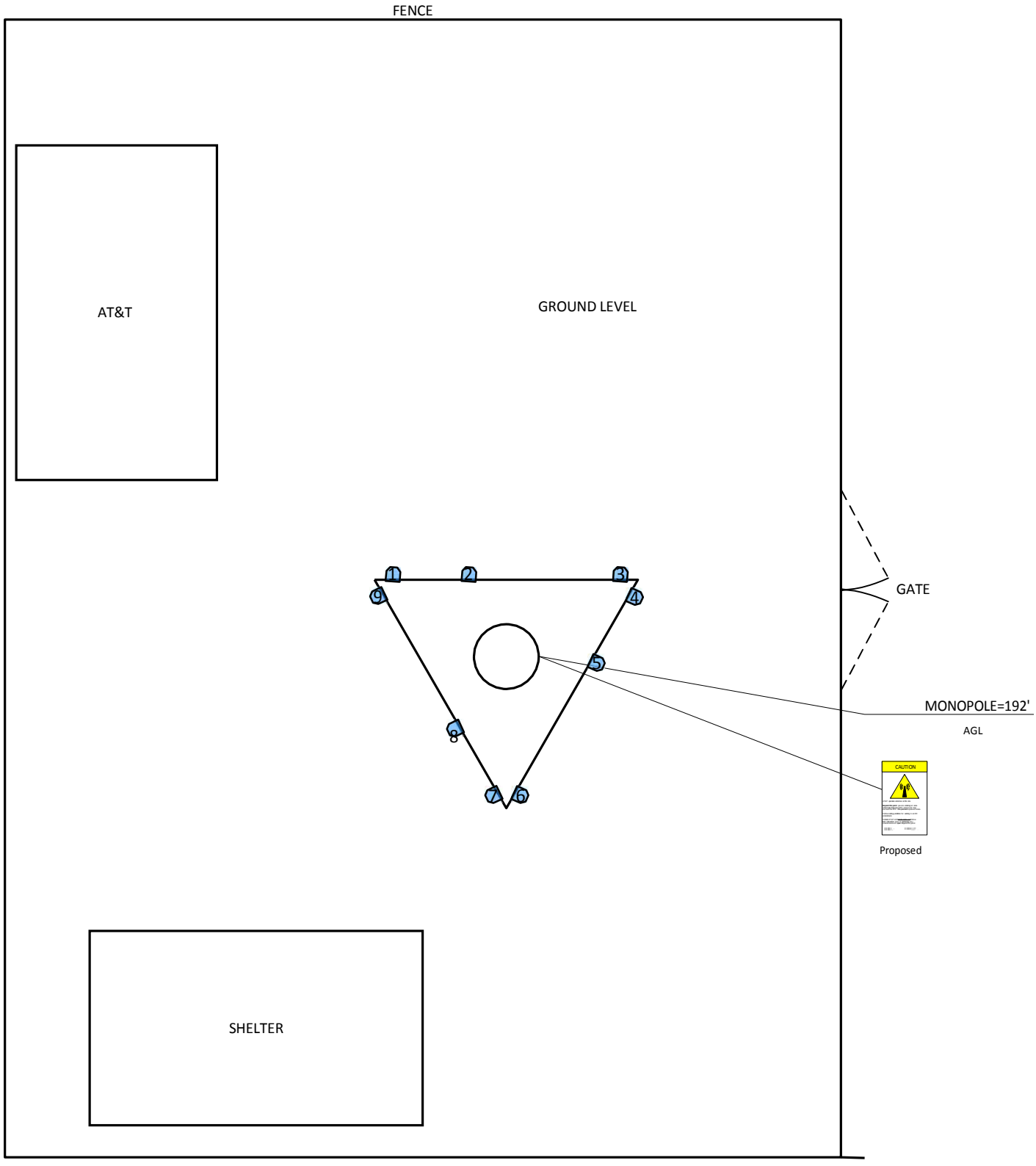
In the RF Emissions Simulations below all heights are reflected with respect to main site level. In most rooftop cases this is the height of the main rooftop and in other cases this can be ground level. Each different height area, rooftop, or platform level is labeled with its height relative to the 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
- East Elevation View

Site Map For: New Britian SE



(Feet)

0 4.2 8.4

www.sitesafe.com
Site Name:New Britian SE

3 Antenna Inventory

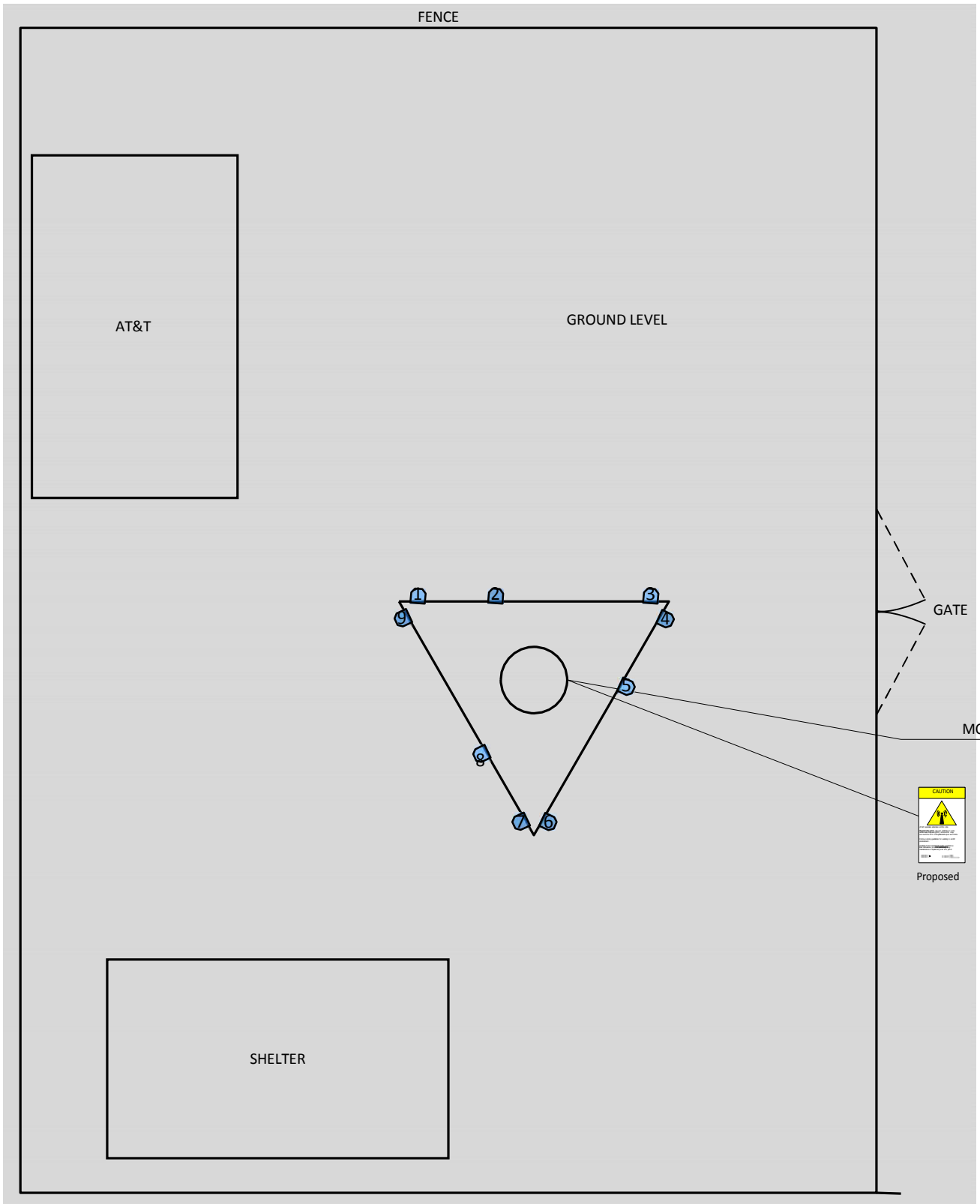
The following antenna inventory was obtained by the customer and was utilized to create the site model diagrams:

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	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	850	0	87.6	4.5	11.35	0	2	0	285.2	36.8'	50.9'	192.7'
1	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	0	85.7	4.5	14.32	0	1	0	293.2	36.8'	50.9'	192.7'
1	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	0	85.7	4.5	14.32	1	0	0	293.2	36.8'	50.9'	192.7'
1	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	0	87.6	4.5	11.35	1	0	0	142.6	36.8'	50.9'	192.7'
2	AT&T MOBILITY LLC	Andrew SBNH-1D6565C	Panel	737	0	71	8	13.733	0	0	1	81.3	41.4'	50.9'	191'
2	AT&T MOBILITY LLC	Andrew SBNH-1D6565C	Panel	1900	0	57	8	15.504	0	0	1	1476.2	41.4'	50.9'	191'
3	AT&T MOBILITY LLC (Proposed)	CCI Antennas OPA-65R-LCUU-H8	Panel	2300	0	63.7	7.7	14.66	0	0	1	698.5	50.4'	50.9'	191.1'
4	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	110	87.6	4.5	11.35	0	2	0	285.9	51.3'	49.5'	192.7'
4	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	110	85.7	4.5	14.32	0	1	0	293.2	51.3'	49.5'	192.7'
4	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	110	85.7	4.5	14.32	1	0	0	293.2	51.3'	49.5'	192.7'
4	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	110	87.6	4.5	11.35	1	0	0	142.9	51.3'	49.5'	192.7'
5	AT&T MOBILITY LLC	Powerwave P65-17-XLH-RR	Panel	737	110	70	8	13.41	0	0	1	81.9	49'	45.6'	191'
5	AT&T MOBILITY LLC	Powerwave P65-17-XLH-RR	Panel	1900	110	63	8	14.51	0	0	1	1476.2	49'	45.6'	191'
6	AT&T MOBILITY LLC (Proposed)	CCI Antennas OPA-65R-LCUU-H8	Panel	2300	110	63.7	7.7	14.66	0	0	1	698.5	44.5'	37.7'	191.1'
7	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	240	87.6	4.5	11.35	0	2	0	329	42.8'	37.7'	192.7'
7	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	240	85.7	4.5	14.32	0	1	0	293.2	42.8'	37.7'	192.7'
7	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	240	85.7	4.5	14.32	1	0	0	293.2	42.8'	37.7'	192.7'
7	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	240	87.6	4.5	11.35	1	0	0	164.5	42.8'	37.7'	192.7'
8	AT&T MOBILITY LLC	KMW AM-X-CD-16-65-00T	Panel	737	240	65	6	13.36	0	0	1	81.9	40.5'	41.6'	192'
8	AT&T MOBILITY LLC	KMW AM-X-CD-16-65-00T	Panel	1900	240	67	6	15.26	0	0	1	1330.9	40.5'	41.6'	192'
9	AT&T MOBILITY LLC (Proposed)	CCI Antennas OPA-65R-LCUU-H8	Panel	2300	240	63.7	7.7	14.66	0	0	1	698.5	35.9'	49.6'	191.1'

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 ground level. 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.

Note: AT&T Mobility, LLC antennas were only considered for this study as no information of other carriers was provided.

RF Emissions Simulation For: New Britian SE



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

>= 1000	>= 100	>= 20	>= 1	< 1

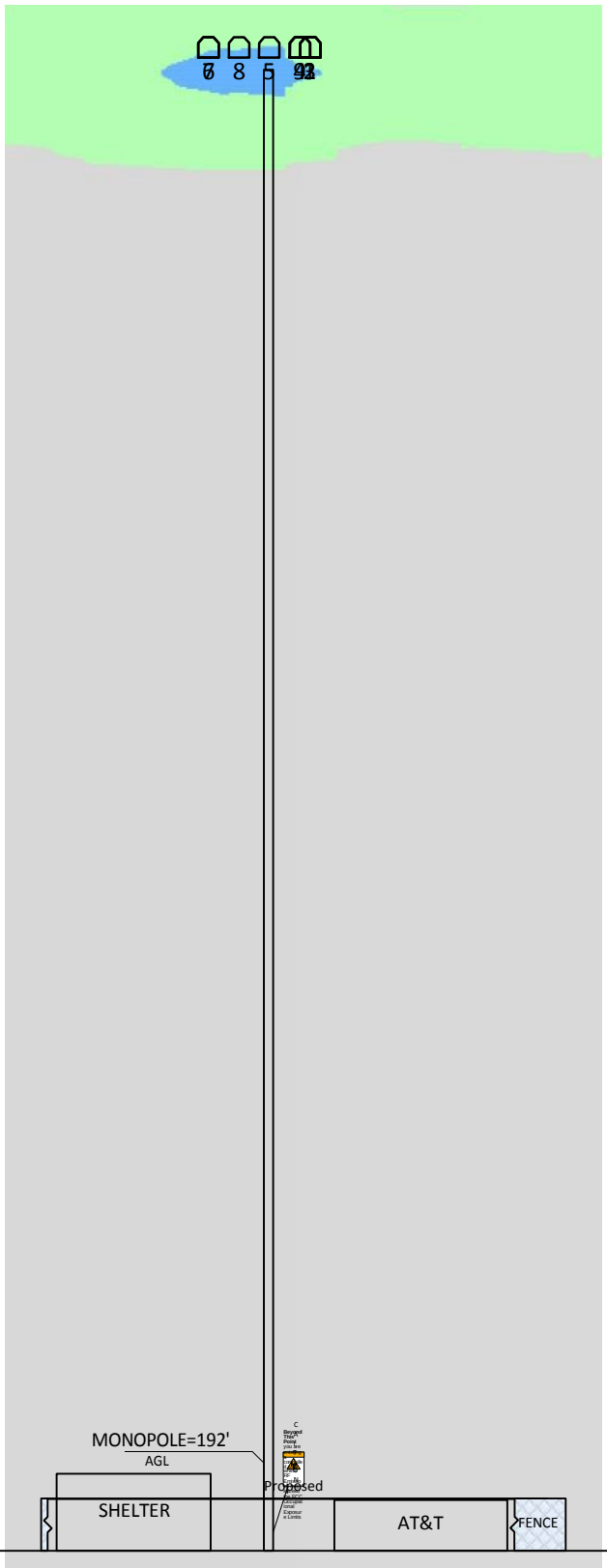
(Feet)

0 4.2 8.4

www.sitesafe.com
Site Name:New Britian SE

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

RF Emissions Simulation For: New Britian SE
East Elevation View



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

(Feet)

0 12 24.1

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

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

www.sitesafe.com
Site Name:New Britian SE

SitesafeTC Version: 1.0.0.0
1/18/2016 2:03:49 PM

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:

Monopole Base

Yellow caution 2 sign required.

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 Young Kim.

January 21, 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.

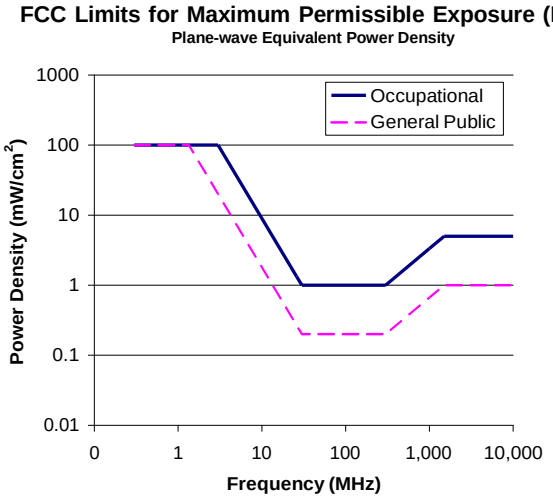
FCC regulations define two separate tiers of exposure limits: Occupational or "Controlled environment" and General Public or "Uncontrolled environment". The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to *accessible* 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