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

September 2, 2016

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

RE: **Notice of Exempt Modification for AT&T / LTE 3C Crown Site BU: 876329**
AT&T Site ID: CTL01193
Located at: 28 Brewer Dr., Bloomfield, CT 06002
Latitude: 41° 50' 6.57" / Longitude: -72°44'.28.2"

Dear Ms. Bachman,

AT&T currently maintains nine (9) antennas at the 100 foot level of the existing 120' foot monopole located at 28 Brewer Dr., Bloomfield, CT. The tower is owned by Crown Castle. The property is owned by The Town of Bloomfield. AT&T now proposes to remove three (3) antennas, replace six (6) antennas with six (6) new antennas; and, add three (3) RRUs (non-antennas), one (1) raycap, two (2) DC power cables, one (1) fiber cable and six (6) triplexers. The antennas would be installed at the same 100' level of the monopole.

This facility was approved by the Town of Bloomfield Plan & Zoning Commission on August 22, 1996. This approval included the condition(s) that:

1. The road way be removed upon completion of construction.

This modification complies with the aforementioned condition(s).

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72(b)(2). In

accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Benjamin G. Blake, Mayor for the City of Milford, 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,

Jeffrey Barbadora
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
781-970-0053
Jeff.Barbadora@crowncastle.com

Attachments:

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

cc: The Town Clerk
Town of Bloomfield
800 Bloomfield Ave
Bloomfield, CT 06002

TOWN OF BLOOMFIELD

Council-Manager Government Since 1941

800 Bloomfield Avenue
P.O. BOX 337 BLOOMFIELD, CONNECTICUT 06002
(860)769-3515

TOWN PLAN & ZONING COMMISSION

PERMIT TO DEVELOP

Permission is hereby granted to Sprint Spectrum L.P.

to develop premises located at 28 Brewer Drive (rear of Filley Pond)

in accordance with site plan dated August 1996

as approved by the Town Plan & Zoning commission on August 22, 1996.

Installation of Sprint Tower

All improvements required as part of site plan approval shall be installed within a twelve (12) month period. Under special circumstances, the Commission may extend the installation of improvements an additional twelve (12) months.

When development of these premises has been completed, a Certificate of Occupancy/Use/Completion must be issued by the Building Department of the Town of Bloomfield PRIOR TO USE OR OCCUPANCY OF THE PREMISES.

In addition to this Permit to Develop, a building permit is required for any building, sign, or other structure to be erected on the site.

ALL SITE WORK MUST BE COMPLETED IN ACCORDANCE WITH THE APPROVED SITE PLAN PRIOR TO ISSUANCE OF A C.O. FOR THE BUILDING.

This Permit to Develop is subject to the following conditions:

SEE PLAN: Road way to be removed upon completion of construction

THIS SITE MAY BE SUBJECT TO REGULATION BY ARMY CORPS OF ENGINEERS

TOWN PLAN & ZONING COMMISSION

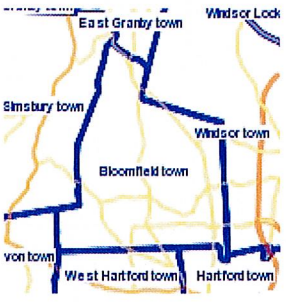
Shirley P. Williams /mmf

Shirley P. Williams
Secretary

Date November 15, 1996
8/75; rev. 1/17/85, 4/88

cc: Building
Engineering (2)
PZP

Town of Bloomfield			
Parcel: 7622 Acres: 3.37			
Name:	BLOOMFIELD TOWN OF	Land Value	327300
Site:	28 BREWER DR	Building Value	0
Sale:	0 on 0000-00-00 Reason=U Qual=34	Misc Value	0
Mail:	800 BLOOMFIELD AVE BLOOMFIELD, CT 06002	Just Value	330700
		Assessed Value	0
		Exempt Value	0
		Taxable Value	0



Date printed: 09/02/16 : 13:25:59

PROJECT INFORMATION

SCOPE OF WORK:	ITEMS TO BE MOUNTED ON THE EXISTING TOWER: (6) LTE-3C ANTENNAS, (3) RRH'S, (1) SURGE ARRESTOR, (6) TRIPLEXERS, (2) DC POWER CABLES, (1) FIBER RUN. ITEMS TO BE INSTALLED INSIDE THE EXISTING AT&T EQUIPMENT AREA: (6) TRIPLEXERS, (2) LTE DUS, (1) NEW DC POWER PLANT ITEMS TO REMAIN: (6) RRH'S, (3) TMAS, (1) SURGE ARRESTOR, (12) LINES OF 7/8" COAX, (2) DC POWER CABLES, (1) FIBER RUN. ITEMS TO BE REMOVED: (3) LTE ANTENNAS, (3) UMST ANTENNAS, (3) GSM ANTENNAS & (6) DIPLEXERS PTN: 2051A03JN6 RFDS VERSION: FINAL DATE: 07/19/2016
SITE ADDRESS:	28 BREWER DRIVE BLOOMFIELD, CT 06002
LATITUDE:	41.835159° N, 41° 50' 06.57" N
LONGITUDE:	72.741166° W, 72° 44' 28.20" W
USID:	5816
LANDLORD:	CROWN CASTLE
CROWN SITE #:	876329
TYPE OF SITE:	MONOPOLE / EQUIPMENT SHELTER
TOWER HEIGHT:	120'-0"±
RAD CENTER:	100'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

at&t

FA NUMBER: 10035118
SITE NUMBER: CTL01193

SITE NAME: BLOOMFIELD CEMETERY
28 BREWER DRIVE
BLOOMFIELD, CT 06002
CROWN SITE #: 876329
PROJECT: LTE-3C

PROJECT TEAM

CLIENT REPRESENTATIVE

COMPANY:	SMARTLINK, LLC
ADDRESS:	1997 ANNAPOLIS EXCHANGE PARKWAY, SUITE 200
CITY, STATE, ZIP:	ANNAPOLIS, MD 21401
CONTACT:	TIM BOYCE
PHONE:	(908) 333-3640
E-MAIL:	tboyce@smartlinkllc.com

RF ENGINEER

COMPANY:	AT&T MOBILITY – NEW ENGLAND
ADDRESS:	550 COCHITUATE ROAD SUITE 550 13 AND 14
CITY, STATE, ZIP:	FRAMINGHAM, MA 01701
CONTACT:	CAMERON SYME
PHONE:	(508) 596-7146
E-MAIL:	cs6970@att.com

SITE ACQUISITION

COMPANY:	SMARTLINK, LLC
ADDRESS:	85 RANGEWAY RD, SUITE 102
CITY, STATE, ZIP:	BILLERICA, MA 01862
CONTACT:	SHARON R. KEEFE
PHONE:	(978) 930-3918
E-MAIL:	sharon.keefe@smartlinkllc.com

CONSTRUCTION MANAGER

COMPANY:	SMARTLINK, LLC.
ADDRESS:	85 RANGEWAY RD, SUITE 102
CITY, STATE, ZIP:	BILLERICA, MA 01862
CONTACT:	MARK J. DONNELLY
PHONE:	(617) 515-2080
E-MAIL:	mark.donnely@smartlinkllc.com

ENGINEERING

COMPANY:	HUDSON DESIGN GROUP, LLC.
ADDRESS:	1600 OSGOOD STREET BUILDING 20 NORTH, SUITE 3090
CITY, STATE, ZIP:	NORTH ANDOVER, MA 01845
CONTACT:	DANIEL P. HAMM, PE
PHONE:	(978) 557-5553
E-MAIL:	info@hudsondesigngroupllc.com

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
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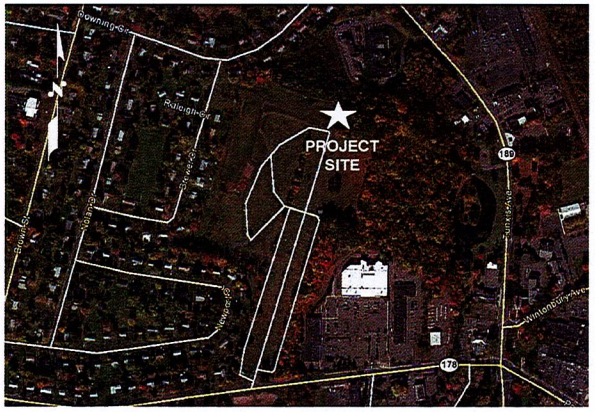
APPROVALS

DISCIPLINE:	SIGNATURE:	DATE:
THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS & AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT & MAY IMPOSE CHANGES OR MODIFICATIONS.		
SMARTLINK SITE ACQUISITION:		
SMARTLINK CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		

VICINITY MAP

DIRECTIONS TO SITE:

HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD. 0.3 MILES. TURN LEFT ONTO CAPITAL BLVD. 0.3 MILES. TURN LEFT ONTO WEST ST. 0.6 MILES. TURN RIGHT ONTO CT-3 N/CROMWELL AVE. 0.8 MILES. TURN LEFT ONTO CT-160 W/NEW BRITAIN AVE. 0.1 MILES. DESTINATION WILL BE ON THE LEFT



GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

72 HOURS

CALL BEFORE YOU DIG

CALL TOLL FREE 1-800-922-4455

OR CALL 811

UNDERGROUND SERVICE ALERT

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

smartlink
1997 ANNAPOLIS EXCHANGE PKWY
SUITE 200
ANNAPOLIS, MD 21401

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

SITE NUMBER: CTL01193
SITE NAME: BLOOMFIELD CEMETERY
CROWN SITE #: 876329
28 BREWER DRIVE
BLOOMFIELD, CT 06002
HARTFORD COUNTY

NO.	DATE	REVISIONS	BY	CHK	APP'D
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0	12/21/15	ISSUED FOR REVIEW	FM	HC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: FM

DEREK J. CRESSY — No. 27350 — LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
(LTE 3C)

SITE NUMBER	DRAWING NUMBER	REV
CTL01193	T-1	3

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

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

   CONTRACTOR – SMARTLINK
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH UMTS SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
    BUILDING CODE: 2003 IBC WITH 2005 CT SUPPLEMENT, + 2009 & 2013 CT AMENDMENTS
    ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
    LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

    MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

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

    EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

    FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

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

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

smartlink
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at&t
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NO.	DATE	REVISIONS	BY	CHK	APP'D
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2	05/12/16	ISSUED FOR CONSTRUCTION	FM	HC	DPH
1	04/08/16	ISSUED FOR PERMITTING	FM	HC	DPH
0	12/21/15	ISSUED FOR REVIEW	FM	HC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: FM

STATE OF CONNECTICUT · DEREK J. CRESSEY · No. 25358 · LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
(LTE 3C)

SITE NUMBER	DRAWING NUMBER	REV
CTL01193	GN-1	3

NOTE:

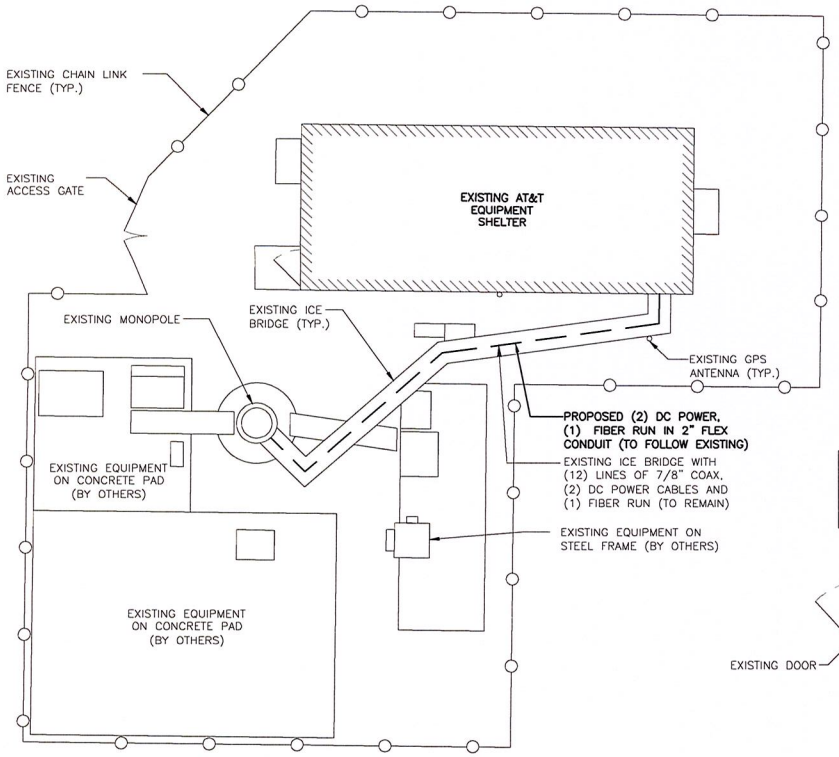
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: AUGUST 3, 2016

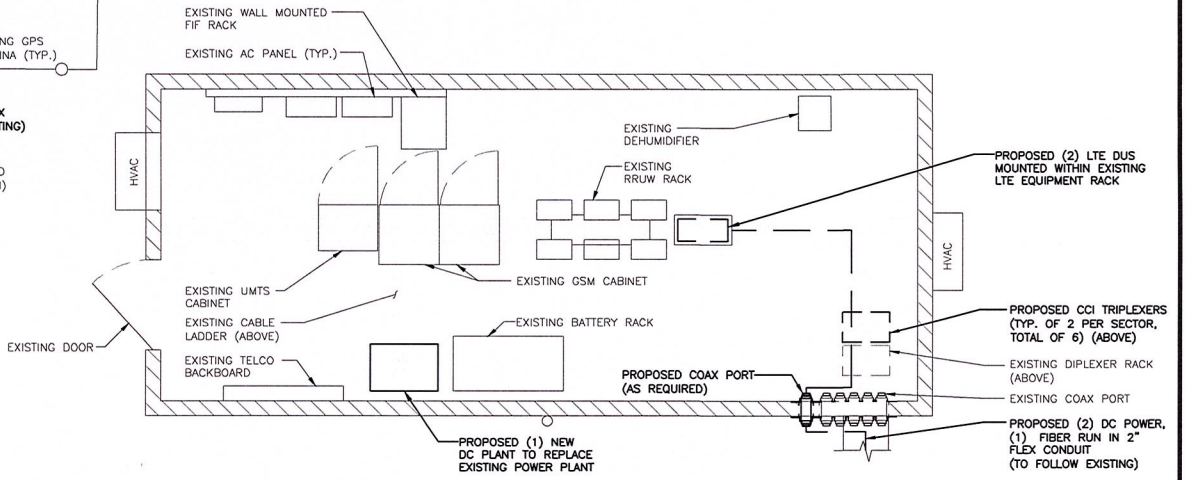
NOTE:

1. PROPOSED DC POWER PLANT TO BE FED BY (11) 30A BREAKERS (ONE PER RECTIFIER) WIRED WITH A MINIMUM OF #10 AWG CONDUCTORS.
2. CONTRACTOR TO VERIFY IF THE BATTERY DISCONNECT NEEDS TO BE REPLACED. RUN (2) #4/0 & (1) #4/0 G FROM THE DISCONNECT TO THE NEW POWER PLANT IF NECESSARY.

NOTE:
ALL LINES AND ANTENNAS TO BE INSTALLED IN ACCORDANCE WITH PASSING STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND AT&T ANTENNA DESIGN SHEET RECOMMENDATION.

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.





COMPOUND PLAN (1 / A-1)
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

0 2'-0" 4'-0" 8'-0" 12'-0"

PROPOSED EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

Hudson Design Group LLC
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at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
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1	04/08/16	ISSUED FOR PERMITTING	FM	HC	DPH
0	12/21/15	ISSUED FOR REVIEW	FM	HC	DPH

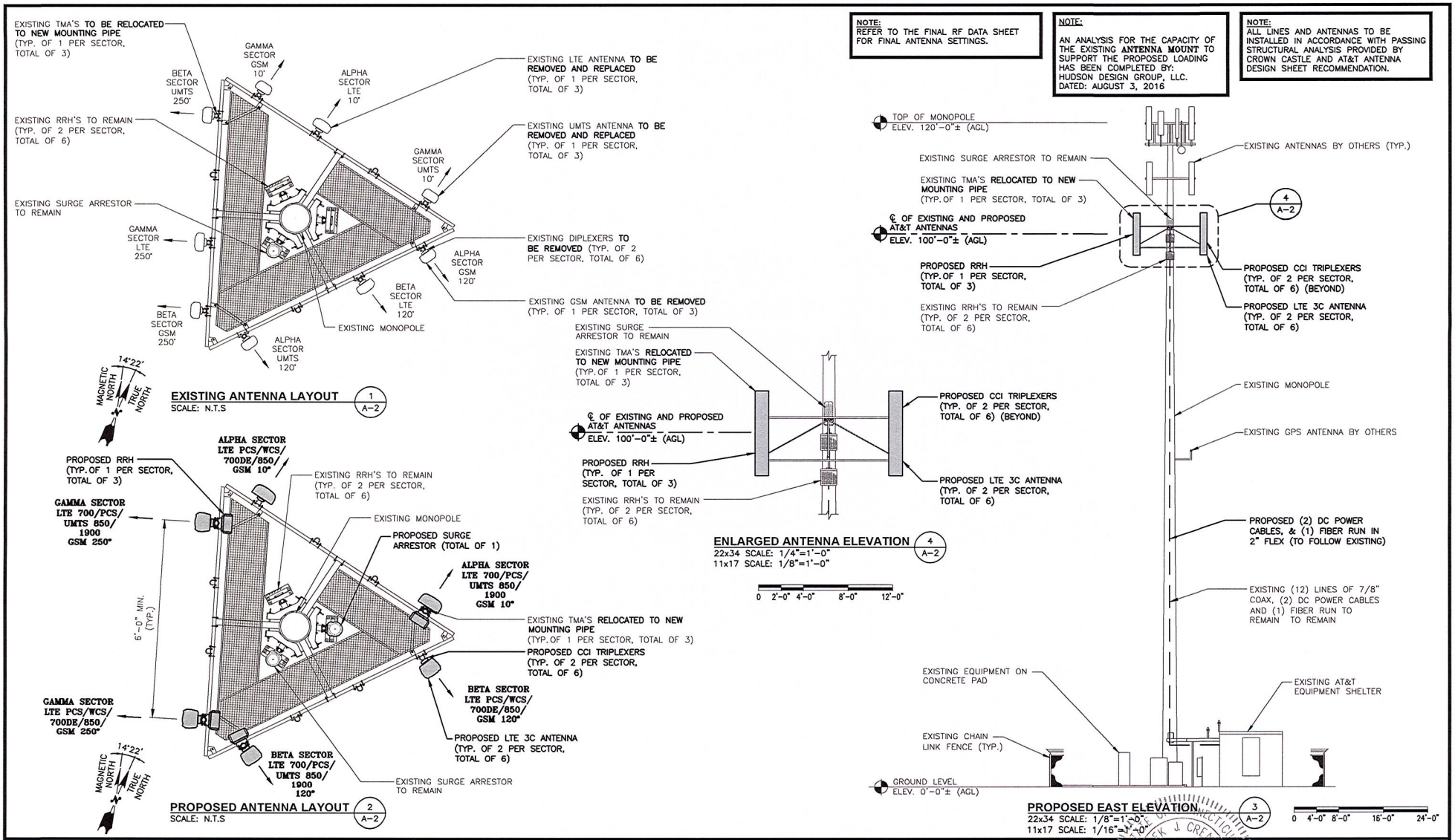
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: FM

STATE OF CONNECTICUT
DEREK J. CREAMER
No. 25...
LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLANS
(LTE 3C)

SITE NUMBER	DRAWING NUMBER	REV
CTL01193	A-1	3



Hudson Design Group LLC
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TEL: (978) 557-5553
FAX: (978) 336-5586

smartlink
1997 ANNAPOLIS EXCHANGE PKWY
SUITE 200
ANNAPOLIS, MD 21401

SITE NUMBER: CTL01193
SITE NAME: BLOOMFIELD CEMETERY
CROWN SITE #: 876329
28 BREWER DRIVE
BLOOMFIELD, CT 06002
HARTFORD COUNTY

at&t
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SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: FM

AT&T

ANTENNA LAYOUTS & ELEVATION (LTE 3C)

SITE NUMBER	DRAWING NUMBER	REV
CTL01193	A-2	3

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: AUGUST 3, 2016

NOTE:
ALL LINES AND ANTENNAS TO BE INSTALLED IN ACCORDANCE WITH PASSING STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND AT&T ANTENNA DESIGN SHEET RECOMMENDATION.

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

EXISTING & PROPOSED ANTENNA SCHEDULE

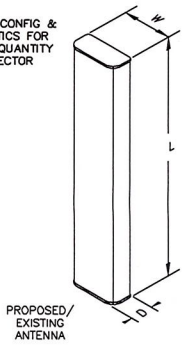
SECTOR	TECHNOLOGY	EXISTING/PROPOSED	RAD CENTER	AZIMUTH	MAKE	MODEL#	SIZE (INCHES) (L x W x D)
ALPHA	LTE	PROPOSED	100'-0"±	10°	QUINTEL	QS66512-2	72.0x12.0x9.6
	LTE	PROPOSED	100'-0"±	10°	QUINTEL	QS66512-2	72.0x12.0x9.6
BETA	LTE	PROPOSED	100'-0"±	120°	QUINTEL	QS66512-2	72.0x12.0x9.6
	LTE	PROPOSED	100'-0"±	120°	QUINTEL	QS66512-2	72.0x12.0x9.6
GAMMA	LTE	PROPOSED	100'-0"±	250°	QUINTEL	QS66512-2	72.0x12.0x9.6
	LTE	PROPOSED	100'-0"±	250°	QUINTEL	QS66512-2	72.0x12.0x9.6

EXISTING & PROPOSED RRU SCHEDULE

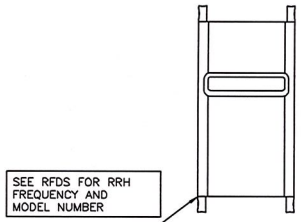
SECTOR	EXISTING/PROPOSED	MAKE	MODEL#	SIZE (INCHES) (L x W x D)
ALPHA	PROPOSED	ERICSSON	RRUS-32	26.7x12.1x6.7
	EXISTING	ERICSSON	(2)RRUS-11	19.7x17.0x7.2
BETA	PROPOSED	ERICSSON	RRUS-32	26.7x12.1x6.7
	EXISTING	ERICSSON	(2)RRUS-11	19.7x17.0x7.2
GAMMA	PROPOSED	ERICSSON	RRUS-32	26.7x12.1x6.7
	EXISTING	ERICSSON	(2)RRUS-11	19.7x17.0x7.2

NOTES:

1. REFER TO RF CONFIG & SECTOR SCHEMATICS FOR MODEL, TYPE & QUANTITY REQUIRED PER SECTOR

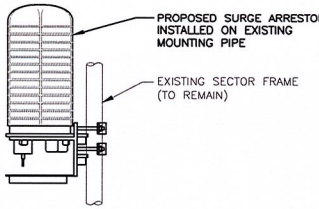


PROPOSED ANTENNA DETAIL (1 / A-3)
SCALE: N.T.S

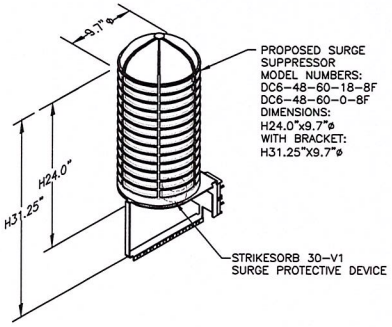


NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRH DETAIL (2 / A-3)
SCALE: N.T.S

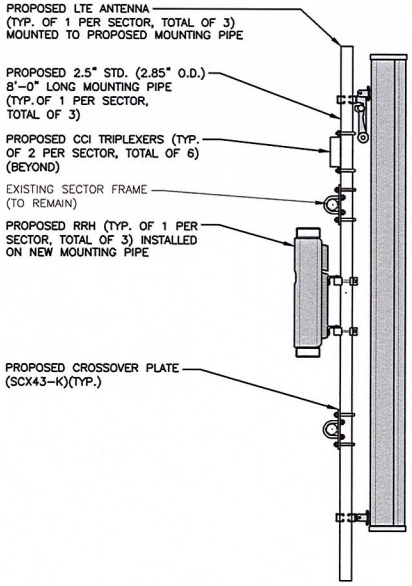


PROPOSED SURGE ARRESTOR MOUNTING DETAIL (3 / A-3)
SCALE: N.T.S

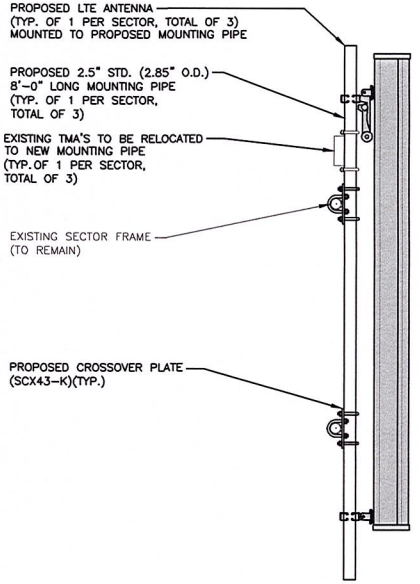


NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (4 / A-3)
SCALE: N.T.S



PROPOSED LTE ANTENNA MOUNTING DETAIL (POSITION 4) (5 / A-3)
SCALE: N.T.S



PROPOSED LTE ANTENNA MOUNTING DETAIL (POSITION 1) (6 / A-3)
SCALE: N.T.S

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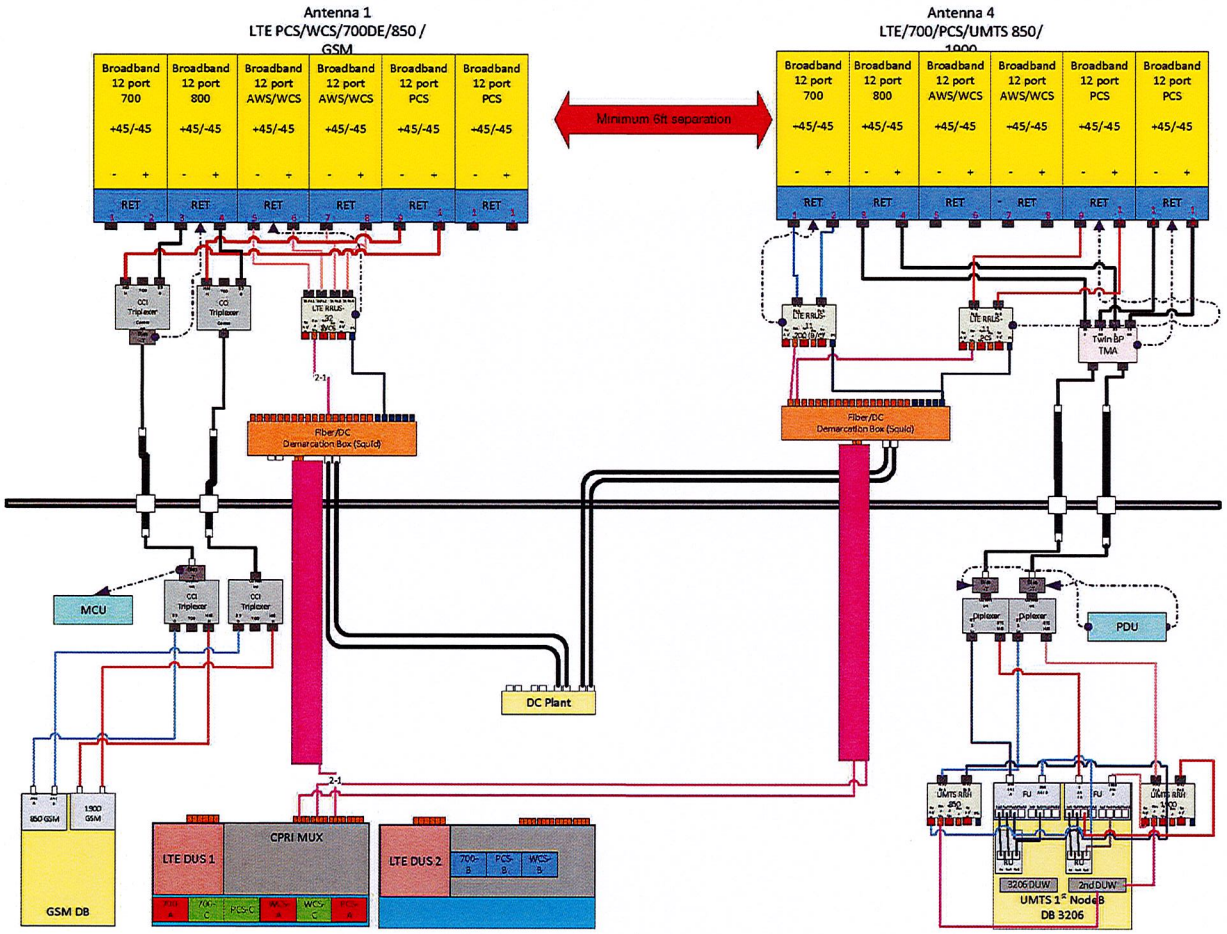
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: FM

STATE OF CONNECTICUT — DEREK J. CREASER — No. 25... — LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
(LTE 3C)

SITE NUMBER	DRAWING NUMBER	REV
CTL01193	A-3	3



RF PLUMBING DIAGRAM (1 / RF-1)
SCALE: N.T.S

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

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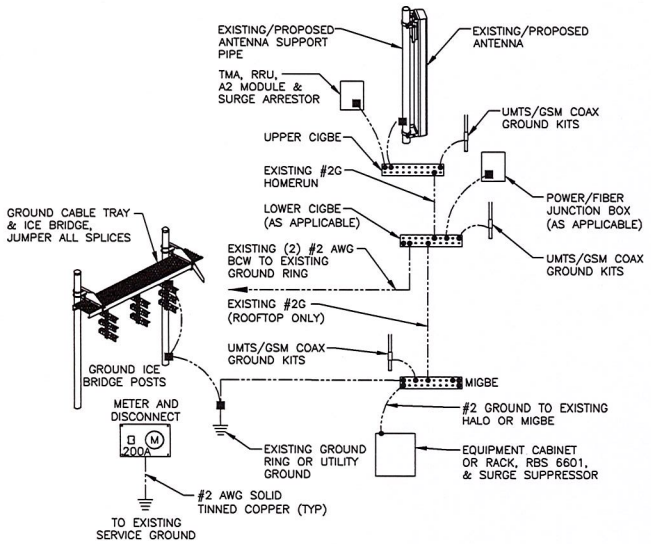
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: FM

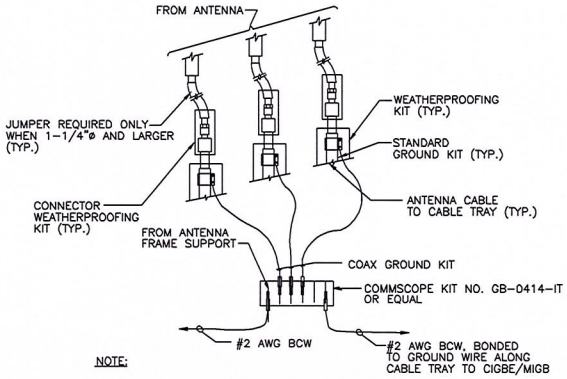
STATE OF CONNECTION — DEREK J. CREAMER — No. 23951 — LICENSED PROFESSIONAL ENGINEER

AT&T
RF PLUMBING DIAGRAM
(LTE 3C)

SITE NUMBER	DRAWING NUMBER	REV
CTL01193	RF-1	3

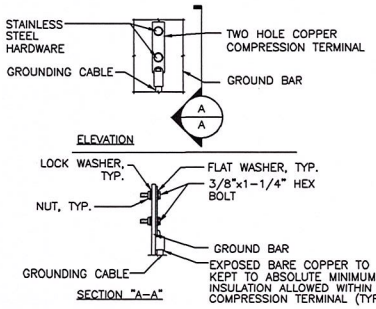


GROUNDING RISER DIAGRAM (1 / G-1)
SCALE: N.T.S



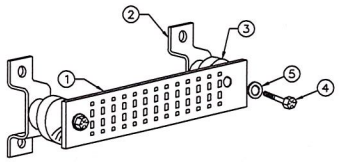
NOTE:
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

GROUND WIRE TO GROUND BAR CONNECTION DETAIL (2 / G-1)
SCALE: N.T.S



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

TYPICAL GROUND BAR CONNECTION DETAIL (3 / G-1)
SCALE: N.T.S



GROUND BAR - DETAIL (4 / G-1)
SCALE: N.T.S

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

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
BUILDING STEEL (IF AVAILABLE) (#2)

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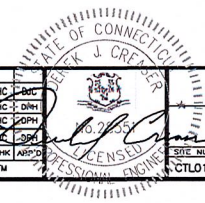


AT&T
GROUNDING DETAILS
(LTE 3C)

SITE NUMBER	DRAWING NUMBER	REV
CTL01193	G-1	3

PAUL J. FORD & COMPANY

Date: **June 21, 2016**

Charles Mcguirt
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679
jjohnson@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CTL01193
	Carrier Site Name:	Bloomfield Cemetary
Crown Castle Designation:	**Crown Castle BU Number:**	876329
	Crown Castle Site Name:	MTN. VIEW CEM. (FILLEY PARK)
	Crown Castle JDE Job Number:	361800
	Crown Castle Work Order Number:	1254554
	Crown Castle Application Number:	328428 Rev. 8
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37516-0115.004.7805
Site Data:	**28 Brewer Dr., BLOOMFIELD, Hartford County, CT** **Latitude *41° 50' 6.57"*, Longitude *-72° 44' 28.2"*** **120 Foot - Monopole Tower**	

Dear Charles Mcguirt,

Paul J Ford and Company 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 915748, in accordance with application 328428, revision 8.

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:

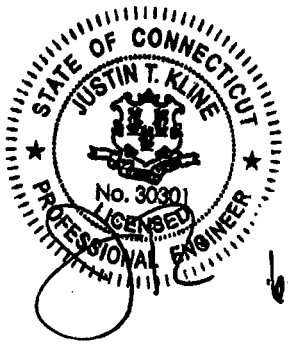
LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the 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 0.75 inch ice thickness and 50 mph under service loads.

We at *Paul J Ford and Company* 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.

Respectfully submitted by:

Joshua Johnson, E.I.
Structural Designer



6-21-16

PAUL J. FORD & COMPANY

Date: **June 21, 2016**

Charles Mcguirt
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3530 Toringdon Way, Suite 300
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Subject: **Structural Analysis Report**

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Respectfully submitted by:

Joshua Johnson, E.I.
Structural Designer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 120 ft Monopole tower designed by ROHN in January of 1998. The tower was originally designed for a wind speed of 70 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the 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 0.75 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
99.0	100.0	6	quintel technology	QS66512-2 w/ Mount Pipe	1 2	3/8 3/4	-
		3	ericsson	RRUS 32			
		6	cci antennas	TPX-070821			
		1	raycap	DC6-48-60-18-8F			

Table 2 - Existing 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
118.0	120.0	3	alcatel lucent	TD-RRH8x20-25	2 1 3	1/2 5/8 1-1/4	1
		1	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe			
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
		3	rfs celwave	IBC1900BB-1			
		3	rfs celwave	IBC1900HG-2A			
	118.0	1	tower mounts	Platform Mount [LP 501-1]			
	116.0	1	andrew	VHLP1-23-DW1			
		1	andrew	VHLP1-18			
		2	dragonwave	HORIZON COMPACT			
114.0	115.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz	-	-	1
	114.0	1	tower mounts	Pipe Mount [PM 601-3]			
	113.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER			
107.0	108.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	6 7	1-5/8 1-5/8	1
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
	107.0	1	tower mounts	Platform Mount [LP 712-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
99.0	100.0	6	quintel technology	QS66512-2 w/ Mount Pipe	1 (I) 2 (I)	3/8 3/4	2
		3	ericsson	RRUS 32			
		6	cci antennas	TPX-070821			
		1	raycap	DC6-48-60-18-8F			
		2	kmw communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe	1 (I)	3/8	3
		2	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		3	communication components inc.	DTMABP7819VG12A	1 (I) 2 (I) 12 (I)	3/8 3/4 7/8	1
		6	ericsson	RRUS-11			
		6	kathrein	782-10250			
		1	raycap	DC6-48-60-18-8F			
	99.0	1	tower mounts	Platform Mount [LP 501-1]			
59.0	59.0	1	tower mounts	Side Arm Mount [SO 702-1]	-	-	3
48.0	50.0	1	lucent	KS24019-L112A	-	-	3
		1	gps	GPS_A	3 (E)	1/2	1
	48.0	1	tower mounts	Side Arm Mount [SO 702-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed
(E) Coax mounted externally and exposed to the wind. See coax layout in Appendix B.
(I) Coax mounted internally and shielded from the wind. See coax layout in Appendix B.

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti, 08/09/96	1529722	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Rohn, 34738SW, 10/11/96	1616549	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Rohn, 34738SW, 10/17/96	2158527	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Semaan Engineering, CT03SC076, 8/25/03	3386189	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Vertical Solutions, 080063.001, 1/18/08	2205450	CCISITES
4-POST-MODIFICATION INSPECTION	B&T, 79582, 11/3/08	2343686	CCISITES
4-POST-MODIFICATION INSPECTION	GPD, 2011111.27, 5/31/11	4092494	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) Monopole was reinforced in conformance with the referenced modification drawings.
5) The bridge stiffeners carry the entire load through the flange connection at 30'.
6) The existing "cut down" TS14x10 at 60' act as bridge stiffeners and carry the entire load through the flange connection.
7) In accordance with discussions with CCI Corporate Engineering: Based on the assumption that the monopole manufacturer (ROHN/PiRod) has designed the flange plates at splices to adequately develop the full capacity of the unreinforced shaft section using unpublished and/or proprietary methodologies, we are assuming that if our analysis shows that both the existing shaft and the existing flange bolts are at a usage capacity of 100% or less, then the existing flange plates are at a usage capacity of 100% or less and no additional analysis of the flange plate is required.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	120 - 90	Pole	P24x0.25	1	-8.39	589.19	89.1	Pass
L2	90 - 80	Pole	P24x0.375	2	-9.63	934.94	79.6	Pass
L3	80 - 68.5	Pole	RPS 24" x 0.62517"	3	-11.77	1212.06	89.3	Pass
L4	68.5 - 68	Pole	RPS 24" x 0.88003"	4	-11.90	1685.53	66.4	Pass
L5	68 - 63.5	Pole	RPS 24" x 0.61306"	5	-12.74	1362.11	90.0	Pass
L6	63.5 - 60	Pole	RPS 24" x 1.13718"	6	-13.81	2216.54	62.7	Pass
L7	60 - 56.5	Pole	RPS 30" x 0.90733"	7	-14.91	2335.32	49.8	Pass
L8	56.5 - 45.417	Pole	RPS 30" x 0.55714"	8	-17.24	1565.42	90.5	Pass
L9	45.417 - 36.417	Pole	RPS 30" x 0.70733"	9	-19.53	1975.72	84.5	Pass
L10	36.417 - 33.5	Pole	RPS 30" x 0.86188"	10	-20.40	2395.96	73.7	Pass
L11	33.5 - 30	Pole	RPS 30" x 1.23648"	11	-21.84	3145.60	60.8	Pass
L12	30 - 26.5	Pole	RPS 36" x 0.7835"	12	-22.98	2484.77	65.1	Pass
L13	26.5 - 20.583	Pole	RPS 36" x 0.62423"	13	-24.56	1990.28	87.7	Pass
L14	20.583 - 2	Pole	RPS 36" x 0.8638"	14	-31.19	2733.17	81.8	Pass
L15	2 - 0	Pole	RPS 36" x 0.94668"	15	-31.97	2932.48	78.3	Pass
							Summary	
						Pole (L8)	90.5	Pass
						RATING =	**90.5**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Flange Connection	90	89.1	Pass
1	Flange Connection	60	62.6	Pass
1	Flange Connection	30	96.4	Pass
1	Anchor Rods	0	78.3	Pass
1	Base Plate	0	67.8	Pass
1	Base Foundation – Structural Steel	0	72.9	Pass
1	Base Foundation Soil Interaction	0	33.5	Pass

Structure Rating (max from all components) =	**96.4%**

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
2) See Assumption #7.

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

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

Options

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

Pole Section Geometry

Section	*Elevation* ft	*Section Length* ft	*Pole Size*	*Pole Grade*	*Socket Length* ft
L1	120.00-90.00	30.00	P24x0.25	A36M-42 (42 ksi)	
L2	90.00-80.00	10.00	P24x0.375	A36M-42 (42 ksi)	
L3	80.00-68.50	11.50	RPS 24" x 0.62517"	Reinf 33.01 ksi (33 ksi)	
L4	68.50-68.00	0.50	RPS 24" x 0.88003"	Reinf 32.97 ksi (33 ksi)	
L5	68.00-63.50	4.50	RPS 24" x 0.61306"	Reinf 37.81 ksi (38 ksi)	

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L6	63.50-60.00	3.50	RPS 24" x 1.13718"	Reinf 33.93 ksi (34 ksi)	
L7	60.00-56.50	3.50	RPS 30" x 0.90733"	Reinf 35.21 ksi (35 ksi)	
L8	56.50-45.42	11.08	RPS 30" x 0.55714"	Reinf 37.98 ksi (38 ksi)	
L9	45.42-36.42	9.00	RPS 30" x 0.70733"	Reinf 37.95 ksi (38 ksi)	
L10	36.42-33.50	2.92	RPS 30" x 0.86188"	Reinf 37.97 ksi (38 ksi)	
L11	33.50-30.00	3.50	RPS 30" x 1.23648"	Reinf 35.20 ksi (35 ksi)	
L12	30.00-26.50	3.50	RPS 36" x 0.7835"	Reinf 35.84 ksi (36 ksi)	
L13	26.50-20.58	5.92	RPS 36" x 0.62423"	Reinf 35.87 ksi (36 ksi)	
L14	20.58-2.00	18.58	RPS 36" x 0.8638"	Reinf 35.84 ksi (36 ksi)	
L15	2.00-0.00	2.00	RPS 36" x 0.94668"	Reinf 35.17 ksi (35 ksi)	

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
***								
HB058-M12-XXXF(5/8")	C	No	Inside Pole	118.00 - 0.00	1	No Ice	0.00	0.24
						1/2" Ice	0.00	0.24
						1" Ice	0.00	0.24
						2" Ice	0.00	0.24
						4" Ice	0.00	0.24
HB114-1-08U4-M5J(1 1/4")	C	No	Inside Pole	118.00 - 0.00	3	No Ice	0.00	1.08
						1/2" Ice	0.00	1.08
						1" Ice	0.00	1.08
						2" Ice	0.00	1.08
						4" Ice	0.00	1.08
***								
FSJ4-50B(1/2")	C	No	CaAa (Out Of Face)	118.00 - 0.00	1	No Ice	0.05	0.14
						1/2" Ice	0.15	0.76
						1" Ice	0.25	2.00
						2" Ice	0.45	6.30
						4" Ice	0.85	22.23
FSJ4-50B(1/2")	C	No	CaAa (Out Of Face)	118.00 - 0.00	1	No Ice	0.00	0.14
						1/2" Ice	0.00	0.76
						1" Ice	0.00	2.00
						2" Ice	0.00	6.30
						4" Ice	0.00	22.23
***								
FLC 158-50J(1-5/8")	C	No	CaAa (Out Of Face)	107.00 - 0.00	2	No Ice	0.20	0.92
						1/2" Ice	0.30	2.46
						1" Ice	0.40	4.60
						2" Ice	0.60	10.73
						4" Ice	1.00	30.31
FLC 158-50J(1-5/8")	C	No	CaAa (Out Of Face)	107.00 - 0.00	5	No Ice	0.00	0.92
						1/2" Ice	0.00	2.46
						1" Ice	0.00	4.60

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						2" Ice	0.00	10.73
						4" Ice	0.00	30.31
FLC 158-50J(1-5/8")	C	No	Inside Pole	107.00 - 0.00	6	No Ice	0.00	0.92
						1/2" Ice	0.00	0.92
						1" Ice	0.00	0.92
						2" Ice	0.00	0.92
						4" Ice	0.00	0.92
***								
FB-L98B-034-XXX(3/8")	C	No	Inside Pole	99.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06
WR-VG86ST-BRD(3/4")	C	No	Inside Pole	99.00 - 0.00	2	No Ice	0.00	0.58
						1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
						2" Ice	0.00	0.58
						4" Ice	0.00	0.58
FB-L98B-002-75000(3/8")	C	No	Inside Pole	99.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	99.00 - 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
LDF5-50A(7/8")	C	No	Inside Pole	99.00 - 0.00	12	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33
***								
LDF4-50A(1/2")	C	No	CaAa (Out Of Face)	48.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.84
						1" Ice	0.00	2.14
						2" Ice	0.00	6.58
						4" Ice	0.00	22.78
LDF4-50A(1/2")	C	No	CaAa (Out Of Face)	48.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.84
						1" Ice	0.00	2.14
						2" Ice	0.00	6.58
						4" Ice	0.00	22.78
***								
C8x18.75	C	No	CaAa (Out Of Face)	33.50 - 0.00	2	No Ice	0.42	0.00
						1/2" Ice	0.53	0.00
						1" Ice	0.64	0.00
						2" Ice	0.87	0.00
						4" Ice	1.31	0.00
C8x11.5 brace	C	No	CaAa (Out Of Face)	70.00 - 33.50	2	No Ice	0.42	0.00
						1/2" Ice	0.53	0.00
						1" Ice	0.64	0.00
						2" Ice	0.87	0.00
						4" Ice	1.31	0.00
***								

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	120.00-90.00	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	8.307	0.37
L2	90.00-80.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

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
		C	0.000	0.000	0.000	4.550	0.22
L3	80.00-68.50	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	6.496	0.25
L4	68.50-68.00	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	0.649	0.01
L5	68.00-63.50	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	5.838	0.10
L6	63.50-60.00	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	4.541	0.08
L7	60.00-56.50	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	4.541	0.08
L8	56.50-45.42	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	14.378	0.25
L9	45.42-36.42	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	11.676	0.20
L10	36.42-33.50	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	3.784	0.07
L11	33.50-30.00	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	4.541	0.08
L12	30.00-26.50	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	4.541	0.08
L13	26.50-20.58	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	7.676	0.13
L14	20.58-2.00	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	24.108	0.42
L15	2.00-0.00	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	2.595	0.04

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	120.00-90.00	A	1.149	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	22.555	1.05
L2	90.00-80.00	A	1.120	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	11.271	0.58
L3	80.00-68.50	A	1.102	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	14.836	0.65
L4	68.50-68.00	A	1.091	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	1.218	0.03
L5	68.00-63.50	A	1.086	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	10.943	0.25
L6	63.50-60.00	A	1.078	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	8.482	0.19
L7	60.00-56.50	A	1.071	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	8.454	0.19

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
L8	56.50-45.42	A	1.054	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	26.573	0.62
L9	45.42-36.42	A	1.026	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	21.322	0.52
L10	36.42-33.50	A	1.007	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	6.852	0.16
L11	33.50-30.00	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	8.196	0.20
L12	30.00-26.50	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	8.196	0.20
L13	26.50-20.58	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	13.856	0.33
L14	20.58-2.00	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	43.517	1.04
L15	2.00-0.00	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	4.684	0.11

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	120.00-90.00	-0.3160	0.1824	-0.6636	0.3831
L2	90.00-80.00	-0.4815	0.2780	-0.8837	0.5102
L3	80.00-68.50	-0.5722	0.3304	-0.9649	0.5571
L4	68.50-68.00	-1.0222	0.5902	-1.3708	0.7914
L5	68.00-63.50	-1.0222	0.5902	-1.3697	0.7908
L6	63.50-60.00	-1.0222	0.5902	-1.3678	0.7897
L7	60.00-56.50	-1.1095	0.6406	-1.5400	0.8891
L8	56.50-45.42	-1.1095	0.6406	-1.5348	0.8861
L9	45.42-36.42	-1.1095	0.6406	-1.5265	0.8813
L10	36.42-33.50	-1.1095	0.6406	-1.5206	0.8779
L11	33.50-30.00	-1.1095	0.6406	-1.5185	0.8767
L12	30.00-26.50	-1.1765	0.6793	-1.6568	0.9565
L13	26.50-20.58	-1.1765	0.6793	-1.6568	0.9565
L14	20.58-2.00	-1.1765	0.6793	-1.6568	0.9565
L15	2.00-0.00	-1.1765	0.6793	-1.6568	0.9565

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
***									
APXVTM14-C-120 w/ Mount Pipe	A	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.08 0.13 0.19 0.34 0.75
(2) APXVTM14-C-120 w/ Mount Pipe	B	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	7.13 7.66 8.18 9.26	4.96 5.75 6.47 8.01	0.08 0.13 0.19 0.34

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	11.53	11.41	0.75
						4" Ice			
TD-RRH8x20-25	A	From Face	4.00	0.0000	118.00	No Ice	4.72	1.70	0.07
			0.00			1/2"	5.01	1.92	0.10
			2.00			Ice	5.32	2.15	0.13
						1" Ice	5.95	2.62	0.20
						2" Ice	7.31	3.68	0.40
						4" Ice			
(2) TD-RRH8x20-25	B	From Face	4.00	0.0000	118.00	No Ice	4.72	1.70	0.07
			0.00			1/2"	5.01	1.92	0.10
			2.00			Ice	5.32	2.15	0.13
						1" Ice	5.95	2.62	0.20
						2" Ice	7.31	3.68	0.40
						4" Ice			
APXV9ERR18-C-A20 w/ Mount Pipe	A	From Face	4.00	0.0000	118.00	No Ice	8.50	7.47	0.09
			0.00			1/2"	9.15	8.66	0.16
			2.00			Ice	9.77	9.56	0.24
						1" Ice	11.03	11.39	0.42
						2" Ice	13.68	15.53	0.94
						4" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	B	From Face	4.00	0.0000	118.00	No Ice	8.50	6.95	0.08
			0.00			1/2"	9.15	8.13	0.15
			2.00			Ice	9.77	9.02	0.23
						1" Ice	11.03	10.84	0.41
						2" Ice	13.68	14.85	0.91
						4" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	C	From Face	4.00	0.0000	118.00	No Ice	8.50	6.95	0.08
			0.00			1/2"	9.15	8.13	0.15
			2.00			Ice	9.77	9.02	0.23
						1" Ice	11.03	10.84	0.41
						2" Ice	13.68	14.85	0.91
						4" Ice			
IBC1900HG-2A	A	From Face	4.00	0.0000	118.00	No Ice	1.13	0.53	0.02
			0.00			1/2"	1.27	0.65	0.03
			2.00			Ice	1.43	0.77	0.04
						1" Ice	1.76	1.04	0.06
						2" Ice	2.53	1.69	0.15
						4" Ice			
IBC1900HG-2A	B	From Face	4.00	0.0000	118.00	No Ice	1.13	0.53	0.02
			0.00			1/2"	1.27	0.65	0.03
			2.00			Ice	1.43	0.77	0.04
						1" Ice	1.76	1.04	0.06
						2" Ice	2.53	1.69	0.15
						4" Ice			
IBC1900HG-2A	C	From Face	4.00	0.0000	118.00	No Ice	1.13	0.53	0.02
			0.00			1/2"	1.27	0.65	0.03
			2.00			Ice	1.43	0.77	0.04
						1" Ice	1.76	1.04	0.06
						2" Ice	2.53	1.69	0.15
						4" Ice			
IBC1900BB-1	A	From Face	4.00	0.0000	118.00	No Ice	1.13	0.53	0.02
			0.00			1/2"	1.27	0.65	0.03
			2.00			Ice	1.43	0.77	0.04
						1" Ice	1.76	1.04	0.06
						2" Ice	2.53	1.69	0.15
						4" Ice			
IBC1900BB-1	B	From Face	4.00	0.0000	118.00	No Ice	1.13	0.53	0.02
			0.00			1/2"	1.27	0.65	0.03
			2.00			Ice	1.43	0.77	0.04
						1" Ice	1.76	1.04	0.06
						2" Ice	2.53	1.69	0.15
						4" Ice			
IBC1900BB-1	C	From Face	4.00	0.0000	118.00	No Ice	1.13	0.53	0.02
			0.00			1/2"	1.27	0.65	0.03
			2.00			Ice	1.43	0.77	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	1.76	1.04	0.06
						2" Ice	2.53	1.69	0.15
						4" Ice			
(2) HORIZON COMPACT	B	From Face	4.00 0.00 -2.00	0.0000	118.00	No Ice	0.84	0.43	0.01
						1/2" Ice	0.97	0.52	0.02
						1" Ice	1.10	0.63	0.03
						2" Ice	1.39	0.86	0.05
						4" Ice	2.08	1.43	0.12
Platform Mount [LP 501-1]	C	None		0.0000	118.00	No Ice	32.04	32.04	0.98
						1/2" Ice	45.28	45.28	1.28
						1" Ice	58.51	58.51	1.57
						2" Ice	84.98	84.98	2.16
						4" Ice	137.92	137.92	3.33
***									
PCS 1900MHz 4x45W-65MHz	A	From Leg	2.00 0.00 1.00	0.0000	114.00	No Ice	2.71	2.61	0.06
						1/2" Ice	2.95	2.85	0.08
						1" Ice	3.20	3.09	0.11
						2" Ice	3.72	3.61	0.17
						4" Ice	4.86	4.74	0.35
PCS 1900MHz 4x45W-65MHz	B	From Leg	2.00 0.00 1.00	0.0000	114.00	No Ice	2.71	2.61	0.06
						1/2" Ice	2.95	2.85	0.08
						1" Ice	3.20	3.09	0.11
						2" Ice	3.72	3.61	0.17
						4" Ice	4.86	4.74	0.35
PCS 1900MHz 4x45W-65MHz	C	From Leg	2.00 0.00 1.00	0.0000	114.00	No Ice	2.71	2.61	0.06
						1/2" Ice	2.95	2.85	0.08
						1" Ice	3.20	3.09	0.11
						2" Ice	3.72	3.61	0.17
						4" Ice	4.86	4.74	0.35
800MHz 2X50W RRH W/FILTER	A	From Leg	2.00 0.00 -1.00	0.0000	114.00	No Ice	2.40	2.25	0.06
						1/2" Ice	2.61	2.46	0.09
						1" Ice	2.83	2.68	0.11
						2" Ice	3.30	3.13	0.17
						4" Ice	4.34	4.15	0.34
800MHz 2X50W RRH W/FILTER	B	From Leg	2.00 0.00 -1.00	0.0000	114.00	No Ice	2.40	2.25	0.06
						1/2" Ice	2.61	2.46	0.09
						1" Ice	2.83	2.68	0.11
						2" Ice	3.30	3.13	0.17
						4" Ice	4.34	4.15	0.34
800MHz 2X50W RRH W/FILTER	C	From Leg	2.00 0.00 -1.00	0.0000	114.00	No Ice	2.40	2.25	0.06
						1/2" Ice	2.61	2.46	0.09
						1" Ice	2.83	2.68	0.11
						2" Ice	3.30	3.13	0.17
						4" Ice	4.34	4.15	0.34
Pipe Mount [PM 601-3]	C	None		0.0000	114.00	No Ice	4.39	4.39	0.20
						1/2" Ice	5.48	5.48	0.24
						1" Ice	6.57	6.57	0.28
						2" Ice	8.75	8.75	0.36
						4" Ice	13.11	13.11	0.53
***									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81

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
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.82 7.34 7.85 8.92 11.17	5.63 6.47 7.25 8.85 12.28	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.82 7.34 7.85 8.92 11.17	5.63 6.47 7.25 8.85 12.28	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.82 7.34 7.85 8.92 11.17	5.63 6.47 7.25 8.85 12.28	0.11 0.17 0.23 0.38 0.81
KRY 112 144/1	A	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.59 0.81 1.36	0.20 0.27 0.35 0.53 1.00	0.01 0.01 0.02 0.03 0.08
KRY 112 144/1	B	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.59 0.81 1.36	0.20 0.27 0.35 0.53 1.00	0.01 0.01 0.02 0.03 0.08
KRY 112 144/1	C	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.59 0.81 1.36	0.20 0.27 0.35 0.53 1.00	0.01 0.01 0.02 0.03 0.08
Platform Mount [LP 712-1]	C	None		0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	24.53 29.94 35.35 46.17 67.81	24.53 29.94 35.35 46.17 67.81	1.34 1.65 1.96 2.58 3.82
****									
DTMABP7819VG12A	A	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.14 1.28 1.44 1.77 2.54	0.39 0.49 0.59 0.83 1.41	0.02 0.03 0.04 0.06 0.14
DTMABP7819VG12A	B	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice	1.14 1.28 1.44 1.77	0.39 0.49 0.59 0.83	0.02 0.03 0.04 0.06

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	2.54	1.41	0.14
						4" Ice			
DTMABP7819VG12A	B	From Leg	4.00	0.0000	99.00	No Ice	1.14	0.39	0.02
			0.00			1/2" Ice	1.28	0.49	0.03
			1.00			1" Ice	1.44	0.59	0.04
						2" Ice	1.77	0.83	0.06
						4" Ice	2.54	1.41	0.14
(2) RRUS-11	A	From Leg	4.00	0.0000	99.00	No Ice	3.26	1.38	0.05
			0.00			1/2" Ice	3.50	1.56	0.07
			1.00			1" Ice	3.75	1.74	0.09
						2" Ice	4.28	2.15	0.15
						4" Ice	5.44	3.05	0.31
(2) RRUS-11	B	From Leg	4.00	0.0000	99.00	No Ice	3.26	1.38	0.05
			0.00			1/2" Ice	3.50	1.56	0.07
			1.00			1" Ice	3.75	1.74	0.09
						2" Ice	4.28	2.15	0.15
						4" Ice	5.44	3.05	0.31
(2) RRUS-11	C	From Leg	4.00	0.0000	99.00	No Ice	3.26	1.38	0.05
			0.00			1/2" Ice	3.50	1.56	0.07
			1.00			1" Ice	3.75	1.74	0.09
						2" Ice	4.28	2.15	0.15
						4" Ice	5.44	3.05	0.31
(2) 782-10250	A	From Leg	4.00	0.0000	99.00	No Ice	0.52	0.27	0.01
			0.00			1/2" Ice	0.63	0.36	0.01
			1.00			1" Ice	0.75	0.46	0.02
						2" Ice	1.01	0.69	0.03
						4" Ice	1.63	1.24	0.09
(2) 782-10250	B	From Leg	4.00	0.0000	99.00	No Ice	0.52	0.27	0.01
			0.00			1/2" Ice	0.63	0.36	0.01
			1.00			1" Ice	0.75	0.46	0.02
						2" Ice	1.01	0.69	0.03
						4" Ice	1.63	1.24	0.09
(2) 782-10250	C	From Leg	4.00	0.0000	99.00	No Ice	0.52	0.27	0.01
			0.00			1/2" Ice	0.63	0.36	0.01
			1.00			1" Ice	0.75	0.46	0.02
						2" Ice	1.01	0.69	0.03
						4" Ice	1.63	1.24	0.09
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	99.00	No Ice	1.47	1.47	0.02
			0.00			1/2" Ice	1.67	1.67	0.04
			1.00			1" Ice	1.88	1.88	0.06
						2" Ice	2.33	2.33	0.11
						4" Ice	3.38	3.38	0.24
(2) QS66512-2 w/ Mount Pipe	A	From Leg	4.00	0.0000	99.00	No Ice	8.64	8.46	0.14
			0.00			1/2" Ice	9.29	9.66	0.21
			1.00			1" Ice	9.91	10.62	0.30
						2" Ice	11.18	12.61	0.49
						4" Ice	13.83	16.81	1.03
(2) QS66512-2 w/ Mount Pipe	B	From Leg	4.00	0.0000	99.00	No Ice	8.64	8.46	0.14
			0.00			1/2" Ice	9.29	9.66	0.21
			1.00			1" Ice	9.91	10.62	0.30
						2" Ice	11.18	12.61	0.49
						4" Ice	13.83	16.81	1.03
(2) QS66512-2 w/ Mount Pipe	C	From Leg	4.00	0.0000	99.00	No Ice	8.64	8.46	0.14
			0.00			1/2" Ice	9.29	9.66	0.21
			1.00			1" Ice	9.91	10.62	0.30

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	11.18	12.61	0.49
						2" Ice	13.83	16.81	1.03
						4" Ice			
(2) TPX-070821	A	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice	0.55	0.12	0.01
						1/2" Ice	0.65	0.17	0.01
						1" Ice	0.76	0.24	0.02
						2" Ice	1.02	0.39	0.03
						4" Ice	1.63	0.80	0.08
(2) TPX-070821	B	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice	0.55	0.12	0.01
						1/2" Ice	0.65	0.17	0.01
						1" Ice	0.76	0.24	0.02
						2" Ice	1.02	0.39	0.03
						4" Ice	1.63	0.80	0.08
(2) TPX-070821	C	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice	0.55	0.12	0.01
						1/2" Ice	0.65	0.17	0.01
						1" Ice	0.76	0.24	0.02
						2" Ice	1.02	0.39	0.03
						4" Ice	1.63	0.80	0.08
RRUS 32	A	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice	3.33	1.98	0.06
						1/2" Ice	3.60	2.21	0.08
						1" Ice	3.87	2.45	0.10
						2" Ice	4.44	2.96	0.16
						4" Ice	5.68	4.07	0.34
RRUS 32	B	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice	3.33	1.98	0.06
						1/2" Ice	3.60	2.21	0.08
						1" Ice	3.87	2.45	0.10
						2" Ice	4.44	2.96	0.16
						4" Ice	5.68	4.07	0.34
RRUS 32	C	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice	3.33	1.98	0.06
						1/2" Ice	3.60	2.21	0.08
						1" Ice	3.87	2.45	0.10
						2" Ice	4.44	2.96	0.16
						4" Ice	5.68	4.07	0.34
DC6-48-60-18-8F	A	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice	1.47	1.47	0.02
						1/2" Ice	1.67	1.67	0.04
						1" Ice	1.88	1.88	0.06
						2" Ice	2.33	2.33	0.11
						4" Ice	3.38	3.38	0.24
Platform Mount [LP 501-1]	C	None		0.0000	99.00	No Ice	32.04	32.04	0.98
						1/2" Ice	45.28	45.28	1.28
						1" Ice	58.51	58.51	1.57
						2" Ice	84.98	84.98	2.16
						4" Ice	137.92	137.92	3.33
***									
Side Arm Mount [SO 702-1]	A	None		0.0000	59.00	No Ice	1.00	1.43	0.03
						1/2" Ice	1.00	2.05	0.04
						1" Ice	1.00	2.67	0.05
						2" Ice	1.00	3.91	0.07
						4" Ice	1.00	6.39	0.12
***									
GPS_A	A	From Leg	4.00 0.00 2.00	0.0000	48.00	No Ice	0.30	0.30	0.00
						1/2" Ice	0.37	0.37	0.00
						1" Ice	0.46	0.46	0.01
						2" Ice	0.65	0.65	0.02
						4" Ice	1.15	1.15	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
KS24019-L112A	A	From Leg	4.00 0.00 2.00	0.0000	48.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.16 0.22 0.30 0.48 0.95	0.16 0.22 0.30 0.48 0.95	0.01 0.01 0.01 0.02 0.06
Side Arm Mount [SO 702-1]	A	None		0.0000	48.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.00 1.00 1.00 1.00 1.00	1.43 2.05 2.67 3.91 6.39	0.03 0.04 0.05 0.07 0.12
***									

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
VHLP1-23-DW1	B	Paraboloid w/o Radome	From Leg	4.00 0.00 -2.00	-6.0000		118.00	1.27	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.28 1.45 1.62 1.97 2.66	0.01 0.02 0.03 0.04 0.07
VHLP1-18	B	Paraboloid w/o Radome	From Leg	4.00 0.00 -2.00	20.0000		118.00	1.27	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.28 1.45 1.62 1.97 2.66	0.01 0.02 0.03 0.04 0.07
***											

Tower Pressures - No Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % 	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 120.00-90.00	105.00	1.392	23	60.000	A	0.000	60.000	60.000	100.00	0.000	0.000
					B	0.000	60.000		100.00	0.000	0.000
					C	0.000	60.000		100.00	0.000	8.307
L2 90.00-80.00	85.00	1.31	21	20.000	A	0.000	20.000	20.000	100.00	0.000	0.000
					B	0.000	20.000		100.00	0.000	0.000
					C	0.000	20.000		100.00	0.000	4.550
L3 80.00-68.50	74.25	1.261	21	23.000	A	0.000	23.000	23.000	100.00	0.000	0.000
					B	0.000	23.000		100.00	0.000	0.000
					C	0.000	23.000		100.00	0.000	6.496
L4 68.50-68.00	68.25	1.231	20	1.000	A	0.000	1.000	1.000	100.00	0.000	0.000
					B	0.000	1.000		100.00	0.000	0.000
					C	0.000	1.000		100.00	0.000	0.649
L5 68.00-63.50	65.75	1.218	20	9.000	A	0.000	9.000	9.000	100.00	0.000	0.000
					B	0.000	9.000		100.00	0.000	0.000
					C	0.000	9.000		100.00	0.000	5.838
L6 63.50-60.00	61.75	1.196	20	7.000	A	0.000	7.000	7.000	100.00	0.000	0.000
					B	0.000	7.000		100.00	0.000	0.000
					C	0.000	7.000		100.00	0.000	4.541
L7 60.00-56.50	58.25	1.176	19	8.750	A	0.000	8.750	8.750	100.00	0.000	0.000
					B	0.000	8.750		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	8.750		100.00	0.000	4.541
L8 56.50-45.42	50.96	1.132	19	27.708	A	0.000	27.708	27.708	100.00	0.000	0.000
					B	0.000	27.708		100.00	0.000	0.000
					C	0.000	27.708		100.00	0.000	14.378
L9 45.42-36.42	40.92	1.063	17	22.500	A	0.000	22.500	22.500	100.00	0.000	0.000
					B	0.000	22.500		100.00	0.000	0.000
					C	0.000	22.500		100.00	0.000	11.676
L10 36.42-33.50	34.96	1.017	17	7.293	A	0.000	7.293	7.293	100.00	0.000	0.000
					B	0.000	7.293		100.00	0.000	0.000
					C	0.000	7.293		100.00	0.000	3.784
L11 33.50-30.00	31.75	1	16	8.750	A	0.000	8.750	8.750	100.00	0.000	0.000
					B	0.000	8.750		100.00	0.000	0.000
					C	0.000	8.750		100.00	0.000	4.541
L12 30.00-26.50	28.25	1	16	10.500	A	0.000	10.500	10.500	100.00	0.000	0.000
					B	0.000	10.500		100.00	0.000	0.000
					C	0.000	10.500		100.00	0.000	4.541
L13 26.50-20.58	23.54	1	16	17.751	A	0.000	17.751	17.751	100.00	0.000	0.000
					B	0.000	17.751		100.00	0.000	0.000
					C	0.000	17.751		100.00	0.000	7.676
L14 20.58-2.00	11.29	1	16	55.749	A	0.000	55.749	55.749	100.00	0.000	0.000
					B	0.000	55.749		100.00	0.000	0.000
					C	0.000	55.749		100.00	0.000	24.108
L15 2.00-0.00	1.00	1	16	6.000	A	0.000	6.000	6.000	100.00	0.000	0.000
					B	0.000	6.000		100.00	0.000	0.000
					C	0.000	6.000		100.00	0.000	2.595

Tower Pressure - With Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 120.00-90.00	105.00	1.392	5	1.1490	65.745	A	0.000	65.745	65.745	100.00	0.000	0.000
						B	0.000	65.745		100.00	0.000	0.000
						C	0.000	65.745		100.00	0.000	22.555
L2 90.00-80.00	85.00	1.31	5	1.1202	21.867	A	0.000	21.867	21.867	100.00	0.000	0.000
						B	0.000	21.867		100.00	0.000	0.000
						C	0.000	21.867		100.00	0.000	11.271
L3 80.00-68.50	74.25	1.261	5	1.1022	25.113	A	0.000	25.113	25.113	100.00	0.000	0.000
						B	0.000	25.113		100.00	0.000	0.000
						C	0.000	25.113		100.00	0.000	14.836
L4 68.50-68.00	68.25	1.231	4	1.0911	1.091	A	0.000	1.091	1.091	100.00	0.000	0.000
						B	0.000	1.091		100.00	0.000	0.000
						C	0.000	1.091		100.00	0.000	1.218
L5 68.00-63.50	65.75	1.218	4	1.0862	9.815	A	0.000	9.815	9.815	100.00	0.000	0.000
						B	0.000	9.815		100.00	0.000	0.000
						C	0.000	9.815		100.00	0.000	10.943
L6 63.50-60.00	61.75	1.196	4	1.0781	7.629	A	0.000	7.629	7.629	100.00	0.000	0.000
						B	0.000	7.629		100.00	0.000	0.000
						C	0.000	7.629		100.00	0.000	8.482
L7 60.00-56.50	58.25	1.176	4	1.0706	9.374	A	0.000	9.374	9.374	100.00	0.000	0.000
						B	0.000	9.374		100.00	0.000	0.000
						C	0.000	9.374		100.00	0.000	8.454
L8 56.50-45.42	50.96	1.132	4	1.0535	29.654	A	0.000	29.654	29.654	100.00	0.000	0.000
						B	0.000	29.654		100.00	0.000	0.000
						C	0.000	29.654		100.00	0.000	26.573
L9 45.42-36.42	40.92	1.063	4	1.0261	24.039	A	0.000	24.039	24.039	100.00	0.000	0.000
						B	0.000	24.039		100.00	0.000	0.000
						C	0.000	24.039		100.00	0.000	21.322
L10 36.42-33.50	34.96	1.017	4	1.0069	7.782	A	0.000	7.782	7.782	100.00	0.000	0.000
						B	0.000	7.782		100.00	0.000	0.000
						C	0.000	7.782		100.00	0.000	6.852
L11 33.50-30.00	31.75	1	4	1.0000	9.333	A	0.000	9.333	9.333	100.00	0.000	0.000
						B	0.000	9.333		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	0.000	9.333		100.00	0.000	8.196
L12 30.00-26.50	28.25	1	4	1.0000	11.083	A	0.000	11.083	11.083	100.00	0.000	0.000
						B	0.000	11.083		100.00	0.000	0.000
						C	0.000	11.083		100.00	0.000	8.196
L13 26.50-20.58	23.54	1	4	1.0000	18.737	A	0.000	18.737	18.737	100.00	0.000	0.000
						B	0.000	18.737		100.00	0.000	0.000
						C	0.000	18.737		100.00	0.000	13.856
L14 20.58-2.00	11.29	1	4	1.0000	58.846	A	0.000	58.846	58.846	100.00	0.000	0.000
						B	0.000	58.846		100.00	0.000	0.000
						C	0.000	58.846		100.00	0.000	43.517
L15 2.00-0.00	1.00	1	4	1.0000	6.333	A	0.000	6.333	6.333	100.00	0.000	0.000
						B	0.000	6.333		100.00	0.000	0.000
						C	0.000	6.333		100.00	0.000	4.684

Tower Pressure - Service

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 120.00-90.00	105.00	1.392	9	60.000	A	0.000	60.000	60.000	100.00	0.000	0.000
					B	0.000	60.000		100.00	0.000	0.000
					C	0.000	60.000		100.00	0.000	8.307
L2 90.00-80.00	85.00	1.31	8	20.000	A	0.000	20.000	20.000	100.00	0.000	0.000
					B	0.000	20.000		100.00	0.000	0.000
					C	0.000	20.000		100.00	0.000	4.550
L3 80.00-68.50	74.25	1.261	8	23.000	A	0.000	23.000	23.000	100.00	0.000	0.000
					B	0.000	23.000		100.00	0.000	0.000
					C	0.000	23.000		100.00	0.000	6.496
L4 68.50-68.00	68.25	1.231	8	1.000	A	0.000	1.000	1.000	100.00	0.000	0.000
					B	0.000	1.000		100.00	0.000	0.000
					C	0.000	1.000		100.00	0.000	0.649
L5 68.00-63.50	65.75	1.218	8	9.000	A	0.000	9.000	9.000	100.00	0.000	0.000
					B	0.000	9.000		100.00	0.000	0.000
					C	0.000	9.000		100.00	0.000	5.838
L6 63.50-60.00	61.75	1.196	8	7.000	A	0.000	7.000	7.000	100.00	0.000	0.000
					B	0.000	7.000		100.00	0.000	0.000
					C	0.000	7.000		100.00	0.000	4.541
L7 60.00-56.50	58.25	1.176	8	8.750	A	0.000	8.750	8.750	100.00	0.000	0.000
					B	0.000	8.750		100.00	0.000	0.000
					C	0.000	8.750		100.00	0.000	4.541
L8 56.50-45.42	50.96	1.132	7	27.708	A	0.000	27.708	27.708	100.00	0.000	0.000
					B	0.000	27.708		100.00	0.000	0.000
					C	0.000	27.708		100.00	0.000	14.378
L9 45.42-36.42	40.92	1.063	7	22.500	A	0.000	22.500	22.500	100.00	0.000	0.000
					B	0.000	22.500		100.00	0.000	0.000
					C	0.000	22.500		100.00	0.000	11.676
L10 36.42-33.50	34.96	1.017	7	7.293	A	0.000	7.293	7.293	100.00	0.000	0.000
					B	0.000	7.293		100.00	0.000	0.000
					C	0.000	7.293		100.00	0.000	3.784
L11 33.50-30.00	31.75	1	6	8.750	A	0.000	8.750	8.750	100.00	0.000	0.000
					B	0.000	8.750		100.00	0.000	0.000
					C	0.000	8.750		100.00	0.000	4.541
L12 30.00-26.50	28.25	1	6	10.500	A	0.000	10.500	10.500	100.00	0.000	0.000
					B	0.000	10.500		100.00	0.000	0.000
					C	0.000	10.500		100.00	0.000	4.541
L13 26.50-20.58	23.54	1	6	17.751	A	0.000	17.751	17.751	100.00	0.000	0.000
					B	0.000	17.751		100.00	0.000	0.000
					C	0.000	17.751		100.00	0.000	7.676
L14 20.58-2.00	11.29	1	6	55.749	A	0.000	55.749	55.749	100.00	0.000	0.000
					B	0.000	55.749		100.00	0.000	0.000
					C	0.000	55.749		100.00	0.000	24.108
L15 2.00-0.00	1.00	1	6	6.000	A	0.000	6.000	6.000	100.00	0.000	0.000
					B	0.000	6.000		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	6.000		100.00	0.000	2.595

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	120 - 90	Pole	Max Tension	27	0.00	0.00	-0.00
			Max. Compression	14	-17.58	-1.70	3.01
			Max. Mx	5	-8.39	-250.78	4.29
			Max. My	2	-8.42	-0.97	242.35
			Max. Vy	11	-13.64	250.39	0.61
			Max. Vx	2	-13.29	-0.97	242.35
			Max. Torque	12			-3.06
L2	90 - 80	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-19.45	-1.34	2.82
			Max. Mx	11	-9.63	389.73	0.68
			Max. My	2	-9.67	-0.69	378.10
			Max. Vy	11	-14.22	389.73	0.68
			Max. Vx	2	-13.87	-0.69	378.10
			Max. Torque	12			-3.05
L3	80 - 68.5	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	14	-22.29	-0.92	2.59
			Max. Mx	11	-11.77	557.37	0.75
			Max. My	2	-11.81	-0.36	541.62
			Max. Vy	11	-14.92	557.37	0.75
			Max. Vx	2	-14.57	-0.36	541.62
			Max. Torque	12			-3.02
L4	68.5 - 68	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-22.44	-0.91	2.58
			Max. Mx	11	-11.90	564.84	0.76
			Max. My	2	-11.93	-0.34	548.92
			Max. Vy	11	-14.96	564.84	0.76
			Max. Vx	2	-14.61	-0.34	548.92
			Max. Torque	12			-2.99
L5	68 - 63.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-23.53	-0.74	2.48
			Max. Mx	11	-12.74	632.99	0.78
			Max. My	2	-12.76	-0.21	615.46
			Max. Vy	11	-15.32	632.99	0.78
			Max. Vx	2	-14.97	-0.21	615.46
			Max. Torque	12			-2.98
L6	63.5 - 60	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-24.82	-0.62	2.40
			Max. Mx	11	-13.81	687.14	0.80
			Max. My	2	-13.84	-0.11	668.35
			Max. Vy	11	-15.62	687.14	0.80
			Max. Vx	2	-15.27	-0.11	668.35
			Max. Torque	12			-2.95
L7	60 - 56.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-26.19	-0.47	2.31
			Max. Mx	11	-14.91	742.51	0.82
			Max. My	2	-14.94	0.00	722.46
			Max. Vy	11	-16.00	742.51	0.82
			Max. Vx	2	-15.65	0.00	722.46
			Max. Torque	12			-2.92
L8	56.5 - 45.417	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-29.26	0.02	2.12
			Max. Mx	11	-17.24	925.04	0.89
			Max. My	2	-17.26	0.35	901.04
			Max. Vy	11	-16.96	925.04	0.89
			Max. Vx	2	-16.61	0.35	901.04
			Max. Torque	12			-2.89
L9	45.417 - 36.417	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-32.12	0.43	1.87
			Max. Mx	11	-19.53	1080.68	0.92
			Max. My	2	-19.54	0.63	1053.45
			Max. Vy	11	-17.62	1080.68	0.92
			Max. Vx	2	-17.28	0.63	1053.45
			Max. Torque	12			-2.87
L10	36.417 - 33.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-33.18	0.56	1.79
			Max. Mx	11	-20.40	1132.38	0.93
			Max. My	2	-20.42	0.72	1104.11
			Max. Vy	11	-17.83	1132.38	0.93
			Max. Vx	2	-17.48	0.72	1104.11
			Max. Torque	12			-2.80
L11	33.5 - 30	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-34.84	0.72	1.70
			Max. Mx	11	-21.84	1195.23	0.94
			Max. My	2	-21.85	0.84	1165.71
			Max. Vy	11	-18.08	1195.23	0.94
			Max. Vx	2	-17.74	0.84	1165.71
			Max. Torque	12			-2.78
L12	30 - 26.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-36.23	0.90	1.59
			Max. Mx	11	-22.98	1259.01	0.95
			Max. My	2	-22.99	0.95	1228.24

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	11	-18.36	1259.01	0.95
			Max. Vx	2	-18.02	0.95	1228.24
			Max. Torque	12			-2.75
L13	26.5 - 20.583	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-38.22	1.22	1.40
			Max. Mx	11	-24.56	1368.97	0.97
			Max. My	2	-24.57	1.15	1336.07
			Max. Vy	11	-18.80	1368.97	0.97
			Max. Vx	2	-18.46	1.15	1336.07
			Max. Torque	12			-2.72
L14	20.583 - 2	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-46.13	2.20	0.80
			Max. Mx	11	-31.19	1731.13	1.00
			Max. My	2	-31.19	1.77	1691.65
			Max. Vy	11	-20.15	1731.13	1.00
			Max. Vx	2	-19.81	1.77	1691.65
			Max. Torque	12			-2.67
L15	2 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-47.04	2.31	0.74
			Max. Mx	11	-31.97	1771.56	1.00
			Max. My	2	-31.97	1.83	1731.37
			Max. Vy	11	-20.28	1771.56	1.00
			Max. Vx	2	-19.95	1.83	1731.37
			Max. Torque	12			-2.52

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	47.04	0.00	-0.00
	Max. H_x	11	31.97	20.27	0.01
	Max. H_z	2	31.97	0.02	19.94
	Max. M_x	2	1731.37	0.02	19.94
	Max. M_z	5	1766.02	-20.22	0.08
	Max. Torsion	6	2.38	-17.49	-9.89
	Min. Vert	8	31.97	0.07	-19.89
	Min. H_x	5	31.97	-20.22	0.08
	Min. H_z	8	31.97	0.07	-19.89
	Min. M_x	8	-1724.12	0.07	-19.89
	Min. M_z	11	-1771.56	20.27	0.01
	Min. Torsion	12	-2.50	17.52	9.93

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	31.97	-0.00	0.00	-0.93	-0.18	-0.00
Dead+Wind 0 deg - No Ice	31.97	-0.02	-19.94	-1731.37	1.83	0.86
Dead+Wind 30 deg - No Ice	31.97	10.14	-17.29	-1503.44	-887.39	-0.27
Dead+Wind 60 deg - No Ice	31.97	17.55	-10.00	-870.53	-1534.09	-1.51
Dead+Wind 90 deg - No Ice	31.97	20.22	-0.08	-11.84	-1766.02	-2.17
Dead+Wind 120 deg - No Ice	31.97	17.49	9.89	853.56	-1525.64	-2.38
Dead+Wind 150 deg - No Ice	31.97	10.04	17.20	1489.43	-874.15	-1.99
Dead+Wind 180 deg - No Ice	31.97	-0.07	19.89	1724.12	9.56	-0.96
Dead+Wind 210 deg - No Ice	31.97	-10.18	17.25	1496.57	891.45	0.33
Dead+Wind 240 deg - No Ice	31.97	-17.61	9.95	862.20	1540.89	1.60
Dead+Wind 270 deg - No Ice	31.97	-20.27	-0.01	-1.00	1771.56	2.47
Dead+Wind 300 deg - No Ice	31.97	-17.52	-9.93	-860.75	1529.63	2.50
Dead+Wind 330 deg - No Ice	31.97	-10.12	-17.22	-1493.30	883.13	1.85
Dead+Ice+Temp	47.04	-0.00	0.00	-0.74	2.31	-0.00
Dead+Wind 0	47.04	-0.01	-6.31	-563.23	3.89	0.17

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
deg+Ice+Temp						
Dead+Wind 30 deg+Ice+Temp	47.04	3.19	-5.47	-488.56	-282.87	-0.13
Dead+Wind 60 deg+Ice+Temp	47.04	5.52	-3.16	-282.53	-491.80	-0.44
Dead+Wind 90 deg+Ice+Temp	47.04	6.37	-0.02	-3.18	-567.23	-0.59
Dead+Wind 120 deg+Ice+Temp	47.04	5.51	3.14	277.89	-490.28	-0.62
Dead+Wind 150 deg+Ice+Temp	47.04	3.17	5.45	484.08	-280.65	-0.49
Dead+Wind 180 deg+Ice+Temp	47.04	-0.01	6.30	559.79	4.21	-0.19
Dead+Wind 210 deg+Ice+Temp	47.04	-3.20	5.46	485.22	288.79	0.15
Dead+Wind 240 deg+Ice+Temp	47.04	-5.54	3.14	278.75	498.54	0.47
Dead+Wind 270 deg+Ice+Temp	47.04	-6.39	-0.01	-1.94	573.59	0.68
Dead+Wind 300 deg+Ice+Temp	47.04	-5.52	-3.15	-281.33	496.18	0.65
Dead+Wind 330 deg+Ice+Temp	47.04	-3.19	-5.46	-486.53	288.03	0.44
Dead+Wind 0 deg - Service	31.97	-0.01	-7.79	-677.20	0.59	0.34
Dead+Wind 30 deg - Service	31.97	3.96	-6.76	-588.19	-346.95	-0.10
Dead+Wind 60 deg - Service	31.97	6.85	-3.91	-340.84	-599.70	-0.59
Dead+Wind 90 deg - Service	31.97	7.90	-0.03	-5.24	-690.36	-0.85
Dead+Wind 120 deg - Service	31.97	6.83	3.86	332.98	-596.39	-0.94
Dead+Wind 150 deg - Service	31.97	3.92	6.72	581.49	-341.77	-0.78
Dead+Wind 180 deg - Service	31.97	-0.03	7.77	673.18	3.61	-0.38
Dead+Wind 210 deg - Service	31.97	-3.98	6.74	584.29	348.27	0.13
Dead+Wind 240 deg - Service	31.97	-6.88	3.88	336.37	602.11	0.63
Dead+Wind 270 deg - Service	31.97	-7.92	-0.00	-1.00	692.27	0.97
Dead+Wind 300 deg - Service	31.97	-6.84	-3.88	-337.03	597.72	0.98
Dead+Wind 330 deg - Service	31.97	-3.95	-6.72	-584.22	345.02	0.73

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-31.97	0.00	0.00	31.97	-0.00	0.001%
2	-0.02	-31.97	-19.94	0.02	31.97	19.94	0.001%
3	10.14	-31.97	-17.29	-10.14	31.97	17.29	0.000%
4	17.55	-31.97	-10.00	-17.55	31.97	10.00	0.000%
5	20.22	-31.97	-0.08	-20.22	31.97	0.08	0.001%
6	17.49	-31.97	9.89	-17.49	31.97	-9.89	0.000%
7	10.04	-31.97	17.20	-10.04	31.97	-17.20	0.000%
8	-0.07	-31.97	19.89	0.07	31.97	-19.89	0.003%
9	-10.18	-31.97	17.25	10.18	31.97	-17.25	0.000%
10	-17.61	-31.97	9.95	17.61	31.97	-9.95	0.000%
11	-20.27	-31.97	-0.01	20.27	31.97	0.01	0.001%
12	-17.52	-31.97	-9.93	17.52	31.97	9.93	0.000%
13	-10.12	-31.97	-17.22	10.12	31.97	17.22	0.000%
14	0.00	-47.04	0.00	0.00	47.04	-0.00	0.003%
15	-0.01	-47.04	-6.31	0.01	47.04	6.31	0.000%
16	3.19	-47.04	-5.47	-3.19	47.04	5.47	0.000%
17	5.52	-47.04	-3.16	-5.52	47.04	3.16	0.000%
18	6.37	-47.04	-0.02	-6.37	47.04	0.02	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
19	5.51	-47.04	3.14	-5.51	47.04	-3.14	0.000%
20	3.17	-47.04	5.45	-3.17	47.04	-5.45	0.000%
21	-0.01	-47.04	6.30	0.01	47.04	-6.30	0.000%
22	-3.20	-47.04	5.46	3.20	47.04	-5.46	0.000%
23	-5.54	-47.04	3.14	5.54	47.04	-3.14	0.000%
24	-6.39	-47.04	-0.01	6.39	47.04	0.01	0.000%
25	-5.52	-47.04	-3.15	5.52	47.04	3.15	0.000%
26	-3.19	-47.04	-5.46	3.19	47.04	5.46	0.000%
27	-0.01	-31.97	-7.79	0.01	31.97	7.79	0.004%
28	3.96	-31.97	-6.76	-3.96	31.97	6.76	0.001%
29	6.86	-31.97	-3.91	-6.85	31.97	3.91	0.001%
30	7.90	-31.97	-0.03	-7.90	31.97	0.03	0.001%
31	6.83	-31.97	3.86	-6.83	31.97	-3.86	0.001%
32	3.92	-31.97	6.72	-3.92	31.97	-6.72	0.001%
33	-0.03	-31.97	7.77	0.03	31.97	-7.77	0.004%
34	-3.98	-31.97	6.74	3.98	31.97	-6.74	0.001%
35	-6.88	-31.97	3.89	6.88	31.97	-3.88	0.001%
36	-7.92	-31.97	-0.00	7.92	31.97	0.00	0.001%
37	-6.84	-31.97	-3.88	6.84	31.97	3.88	0.000%
38	-3.95	-31.97	-6.73	3.95	31.97	6.72	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000677
2	Yes	14	0.00000001	0.00006233
3	Yes	16	0.00000001	0.00008217
4	Yes	16	0.00000001	0.00008871
5	Yes	14	0.00000001	0.00012678
6	Yes	16	0.00000001	0.00007189
7	Yes	16	0.00000001	0.00008773
8	Yes	13	0.00000001	0.00014987
9	Yes	16	0.00000001	0.00008182
10	Yes	16	0.00000001	0.00007724
11	Yes	14	0.00000001	0.00013112
12	Yes	16	0.00000001	0.00009263
13	Yes	16	0.00000001	0.00007439
14	Yes	6	0.00000001	0.00006159
15	Yes	15	0.00000001	0.00006727
16	Yes	15	0.00000001	0.00007930
17	Yes	15	0.00000001	0.00008038
18	Yes	15	0.00000001	0.00006813
19	Yes	15	0.00000001	0.00007738
20	Yes	15	0.00000001	0.00007802
21	Yes	15	0.00000001	0.00006574
22	Yes	15	0.00000001	0.00007770
23	Yes	15	0.00000001	0.00007794
24	Yes	15	0.00000001	0.00006823
25	Yes	15	0.00000001	0.00008058
26	Yes	15	0.00000001	0.00007850
27	Yes	12	0.00000001	0.00009913
28	Yes	13	0.00000001	0.00010834
29	Yes	13	0.00000001	0.00013284
30	Yes	13	0.00000001	0.00006473
31	Yes	13	0.00000001	0.00008553
32	Yes	13	0.00000001	0.00013923
33	Yes	12	0.00000001	0.00009894
34	Yes	13	0.00000001	0.00010674
35	Yes	13	0.00000001	0.00009171
36	Yes	13	0.00000001	0.00006924
37	Yes	14	0.00000001	0.00006241
38	Yes	13	0.00000001	0.00008989

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 90	20.868	29	1.5696	0.0155
L2	90 - 80	11.452	36	1.3266	0.0074
L3	80 - 68.5	8.855	36	1.1421	0.0051
L4	68.5 - 68	6.323	36	0.9497	0.0036
L5	68 - 63.5	6.224	36	0.9425	0.0035
L6	63.5 - 60	5.380	36	0.8453	0.0029
L7	60 - 56.5	4.778	36	0.7974	0.0026
L8	56.5 - 45.417	4.205	36	0.7657	0.0024
L9	45.417 - 36.417	2.633	36	0.5821	0.0016
L10	36.417 - 33.5	1.668	36	0.4385	0.0011
L11	33.5 - 30	1.413	36	0.3957	0.0010
L12	30 - 26.5	1.137	36	0.3566	0.0008
L13	26.5 - 20.583	0.888	36	0.3211	0.0007
L14	20.583 - 2	0.539	36	0.2415	0.0005
L15	2 - 0	0.005	36	0.0243	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
118.00	APXVTM14-C-120 w/ Mount Pipe	29	20.203	1.5615	0.0149	19928
116.00	VHLP1-23-DW1	29	19.539	1.5531	0.0144	19928
114.00	PCS 1900MHz 4x45W-65MHz	29	18.878	1.5443	0.0138	16606
107.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	29	16.591	1.5071	0.0119	7664
99.00	DTMABP7819VG12A	36	14.079	1.4429	0.0097	4744
59.00	Side Arm Mount [SO 702-1]	36	4.611	0.7884	0.0026	4757
48.00	GPS_A	36	2.963	0.6295	0.0018	3483

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 90	53.340	11	3.9929	0.0401
L2	90 - 80	29.309	11	3.3924	0.0190
L3	80 - 68.5	22.662	11	2.9243	0.0132
L4	68.5 - 68	16.180	11	2.4312	0.0091
L5	68 - 63.5	15.927	11	2.4125	0.0090
L6	63.5 - 60	13.769	11	2.1638	0.0074
L7	60 - 56.5	12.227	11	2.0409	0.0067
L8	56.5 - 45.417	10.761	11	1.9599	0.0063
L9	45.417 - 36.417	6.738	11	1.4897	0.0041
L10	36.417 - 33.5	4.267	11	1.1223	0.0028
L11	33.5 - 30	3.615	11	1.0128	0.0024
L12	30 - 26.5	2.909	11	0.9127	0.0021
L13	26.5 - 20.583	2.273	11	0.8218	0.0019
L14	20.583 - 2	1.379	11	0.6181	0.0013
L15	2 - 0	0.013	11	0.0622	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
118.00	APXVTM14-C-120 w/ Mount Pipe	11	51.648	3.9736	0.0386	7976
116.00	VHLP1-23-DW1	11	49.959	3.9539	0.0371	7976
114.00	PCS 1900MHz 4x45W-65MHz	11	48.274	3.9330	0.0357	6647
107.00	ERICSSON AIR 21 B2A B4P w/	11	42.450	3.8431	0.0306	3067

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
	Mount Pipe					
99.00	DTMABP7819VG12A	11	36.034	3.6846	0.0250	1897
59.00	Side Arm Mount [SO 702-1]	11	11.801	2.0179	0.0066	1864
48.00	GPS_A	11	7.582	1.6111	0.0047	1362

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	120 - 90 (1)	P24x0.25	30.00	0.00	0.0	23.696	18.6532	-8.39	442.00	0.019
L2	90 - 80 (2)	P24x0.375	10.00	0.00	0.0	25.200	27.8325	-9.63	701.38	0.014
L3	80 - 68.5 (3)	RPS 24" x 0.62517"	11.50	0.00	0.0	19.806	45.9089	-11.77	909.27	0.013
L4	68.5 - 68 (4)	RPS 24" x 0.88003"	0.50	0.00	0.0	19.782	63.9197	-11.90	1264.46	0.009
L5	68 - 63.5 (5)	RPS 24" x 0.61306"	4.50	0.00	0.0	22.686	45.0429	-12.74	1021.84	0.012
L6	63.5 - 60 (6)	RPS 24" x 1.13718"	3.50	0.00	0.0	20.358	81.6787	-13.81	1662.82	0.008
L7	60 - 56.5 (7)	RPS 30" x 0.90733"	3.50	0.00	0.0	21.126	82.9275	-14.91	1751.93	0.009
L8	56.5 - 45.417 (8)	RPS 30" x 0.55714"	11.08	0.00	0.0	22.788	51.5340	-17.24	1174.36	0.015
L9	45.417 - 36.417 (9)	RPS 30" x 0.70733"	9.00	0.00	0.0	22.770	65.0925	-19.53	1482.16	0.013
L10	36.417 - 33.5 (10)	RPS 30" x 0.86188"	2.92	0.00	0.0	22.782	78.8966	-20.40	1797.42	0.011
L11	33.5 - 30 (11)	RPS 30" x 1.23648"	3.50	0.00	0.0	21.120	111.7320	-21.84	2359.79	0.009
L12	30 - 26.5 (12)	RPS 36" x 0.7835"	3.50	0.00	0.0	21.504	86.6832	-22.98	1864.04	0.012
L13	26.5 - 20.583 (13)	RPS 36" x 0.62423"	5.92	0.00	0.0	21.522	69.3746	-24.56	1493.08	0.016
L14	20.583 - 2 (14)	RPS 36" x 0.8638"	18.58	0.00	0.0	21.504	95.3494	-31.19	2050.39	0.015
L15	2 - 0 (15)	RPS 36" x 0.94668"	2.00	0.00	0.0	21.102	104.2510	-31.97	2199.91	0.015

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	120 - 90 (1)	P24x0.25	251.04	27.483	23.696	1.160	0.00	0.000	23.696	0.000
L2	90 - 80 (2)	P24x0.375	389.73	28.894	27.720	1.042	0.00	0.000	27.720	0.000
L3	80 - 68.5 (3)	RPS 24" x 0.62517"	557.37	25.579	21.787	1.174	0.00	0.000	21.787	0.000
L4	68.5 - 68 (4)	RPS 24" x 0.88003"	564.84	19.017	21.760	0.874	0.00	0.000	21.760	0.000
L5	68 - 63.5 (5)	RPS 24" x 0.61306"	633.00	29.579	24.955	1.185	0.00	0.000	24.955	0.000
L6	63.5 - 60 (6)	RPS 24" x 1.13718"	687.14	18.495	22.394	0.826	0.00	0.000	22.394	0.000
L7	60 - 56.5 (7)	RPS 30" x 0.90733"	742.51	15.219	23.239	0.655	0.00	0.000	23.239	0.000
L8	56.5 - 45.417 (8)	RPS 30" x 0.55714"	925.04	29.807	25.067	1.189	0.00	0.000	25.067	0.000
L9	45.417 - 36.417 (9)	RPS 30" x 0.70733"	1080.68	27.846	25.047	1.112	0.00	0.000	25.047	0.000
L10	36.417 - 33.5 (10)	RPS 30" x 0.86188"	1132.38	24.322	25.060	0.971	0.00	0.000	25.060	0.000
L11	33.5 - 30 (11)	RPS 30" x 1.23648"	1195.22	18.584	23.232	0.800	0.00	0.000	23.232	0.000
L12	30 - 26.5 (12)	RPS 36" x 0.7835"	1259.02	20.227	23.654	0.855	0.00	0.000	23.654	0.000
L13	26.5 - 20.583 (13)	RPS 36" x 0.62423"	1368.97	27.239	23.674	1.151	0.00	0.000	23.674	0.000
L14	20.583 - 2 (14)	RPS 36" x 0.8638"	1731.13	25.397	23.654	1.074	0.00	0.000	23.654	0.000
L15	2 - 0 (15)	RPS 36" x 0.94668"	1771.56	23.880	23.212	1.029	0.00	0.000	23.212	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	120 - 90 (1)	P24x0.25	13.56	1.454	16.800	0.087	1.45	0.079	11.901	0.007
L2	90 - 80 (2)	P24x0.375	14.22	1.022	16.800	0.061	2.74	0.102	16.800	0.006
L3	80 - 68.5 (3)	RPS 24" x 0.62517"	14.92	0.650	13.204	0.049	2.72	0.062	13.204	0.005
L4	68.5 - 68 (4)	RPS 24" x 0.88003"	14.96	0.468	13.188	0.036	2.72	0.046	13.188	0.003
L5	68 - 63.5 (5)	RPS 24" x 0.61306"	15.32	0.680	15.124	0.045	2.70	0.063	15.124	0.004
L6	63.5 - 60 (6)	RPS 24" x 1.13718"	15.62	0.382	13.572	0.028	2.69	0.036	13.572	0.003
L7	60 - 56.5 (7)	RPS 30" x 0.90733"	16.00	0.386	14.084	0.027	2.67	0.027	14.084	0.002
L8	56.5 - 45.417 (8)	RPS 30" x 0.55714"	16.96	0.658	15.192	0.043	2.69	0.043	15.192	0.003
L9	45.417 - 36.417 (9)	RPS 30" x 0.70733"	17.62	0.541	15.180	0.036	2.65	0.034	15.180	0.002
L10	36.417 - 33.5 (10)	RPS 30" x 0.86188"	17.83	0.452	15.188	0.030	2.64	0.028	15.188	0.002
L11	33.5 - 30 (11)	RPS 30" x 1.23648"	18.08	0.324	14.080	0.023	2.62	0.020	14.080	0.001
L12	30 - 26.5 (12)	RPS 36" x 0.7835"	18.36	0.424	14.336	0.030	2.61	0.021	14.336	0.001
L13	26.5 - 20.583 (13)	RPS 36" x 0.62423"	18.80	0.542	14.348	0.038	2.58	0.026	14.348	0.002
L14	20.583 - 2 (14)	RPS 36" x 0.8638"	20.15	0.423	14.336	0.029	2.49	0.018	14.336	0.001
L15	2 - 0 (15)	RPS 36" x 0.94668"	20.28	0.389	14.068	0.028	2.48	0.017	14.068	0.001

Pole Interaction Design Data

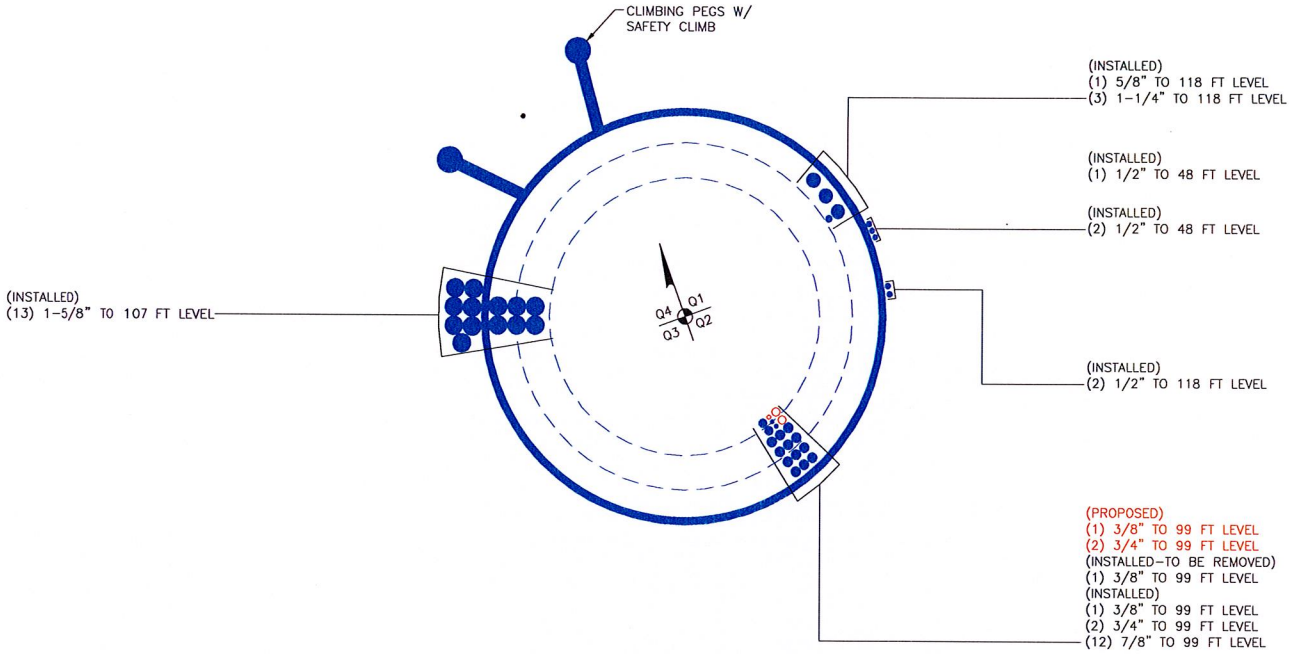
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	120 - 90 (1)	0.019	1.160	0.000	0.087	0.007	1.187 ✔	1.333	H1-3+VT ✔
L2	90 - 80 (2)	0.014	1.042	0.000	0.061	0.006	1.061 ✔	1.333	H1-3+VT ✔
L3	80 - 68.5 (3)	0.013	1.174	0.000	0.049	0.005	1.190 ✔	1.333	H1-3+VT ✔
L4	68.5 - 68 (4)	0.009	0.874	0.000	0.036	0.003	0.885 ✔	1.333	H1-3+VT ✔
L5	68 - 63.5 (5)	0.012	1.185	0.000	0.045	0.004	1.200 ✔	1.333	H1-3+VT ✔
L6	63.5 - 60 (6)	0.008	0.826	0.000	0.028	0.003	0.835 ✔	1.333	H1-3+VT ✔
L7	60 - 56.5 (7)	0.009	0.655	0.000	0.027	0.002	0.664 ✔	1.333	H1-3+VT ✔
L8	56.5 - 45.417 (8)	0.015	1.189	0.000	0.043	0.003	1.206 ✔	1.333	H1-3+VT ✔
L9	45.417 - 36.417 (9)	0.013	1.112	0.000	0.036	0.002	1.126 ✔	1.333	H1-3+VT ✔
L10	36.417 - 33.5 (10)	0.011	0.971	0.000	0.030	0.002	0.983 ✔	1.333	H1-3+VT ✔
L11	33.5 - 30 (11)	0.009	0.800	0.000	0.023	0.001	0.810 ✔	1.333	H1-3+VT ✔
L12	30 - 26.5 (12)	0.012	0.855	0.000	0.030	0.001	0.868 ✔	1.333	H1-3+VT ✔
L13	26.5 - 20.583 (13)	0.016	1.151	0.000	0.038	0.002	1.169 ✔	1.333	H1-3+VT ✔
L14	20.583 - 2 (14)	0.015	1.074	0.000	0.029	0.001	1.090 ✔	1.333	H1-3+VT ✔
L15	2 - 0 (15)	0.015	1.029	0.000	0.028	0.001	1.044 ✔	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	120 - 90	Pole	P24x0.25	1	-8.39	589.19	89.1	Pass
L2	90 - 80	Pole	P24x0.375	2	-9.63	934.94	79.6	Pass
L3	80 - 68.5	Pole	RPS 24" x 0.62517"	3	-11.77	1212.06	89.3	Pass
L4	68.5 - 68	Pole	RPS 24" x 0.88003"	4	-11.90	1685.53	66.4	Pass
L5	68 - 63.5	Pole	RPS 24" x 0.61306"	5	-12.74	1362.11	90.0	Pass
L6	63.5 - 60	Pole	RPS 24" x 1.13718"	6	-13.81	2216.54	62.7	Pass
L7	60 - 56.5	Pole	RPS 30" x 0.90733"	7	-14.91	2335.32	49.8	Pass
L8	56.5 - 45.417	Pole	RPS 30" x 0.55714"	8	-17.24	1565.42	90.5	Pass
L9	45.417 - 36.417	Pole	RPS 30" x 0.70733"	9	-19.53	1975.72	84.5	Pass
L10	36.417 - 33.5	Pole	RPS 30" x 0.86188"	10	-20.40	2395.96	73.7	Pass
L11	33.5 - 30	Pole	RPS 30" x 1.23648"	11	-21.84	3145.60	60.8	Pass
L12	30 - 26.5	Pole	RPS 36" x 0.7835"	12	-22.98	2484.77	65.1	Pass
L13	26.5 - 20.583	Pole	RPS 36" x 0.62423"	13	-24.56	1990.28	87.7	Pass
L14	20.583 - 2	Pole	RPS 36" x 0.8638"	14	-31.19	2733.17	81.8	Pass
L15	2 - 0	Pole	RPS 36" x 0.94668"	15	-31.97	2932.48	78.3	Pass
							Summary	
						Pole (L8)	90.5	Pass
						RATING =	**90.5**	**Pass**

APPENDIX B

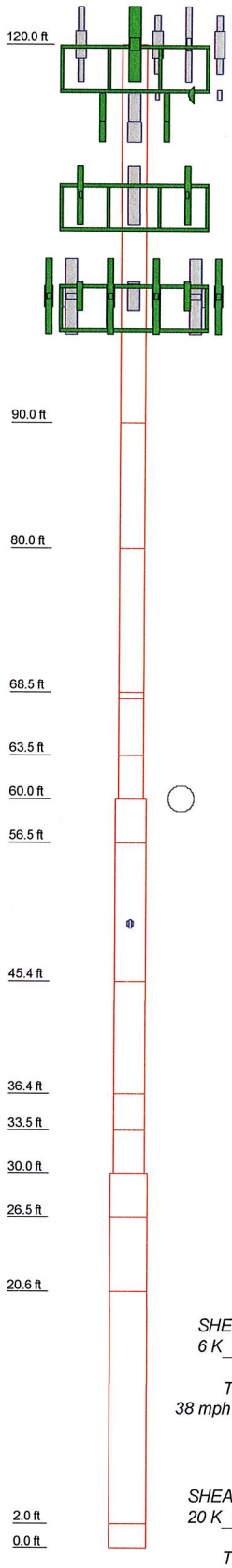
BASE LEVEL DRAWING

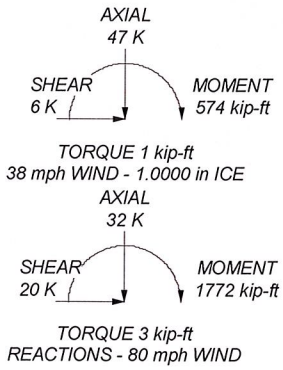


APPENDIX C

ADDITIONAL CALCULATIONS

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Size	P24x0.25	P24x0.375	RPS 36" x 0.62517"	RPS 36" x 0.5625"	RPS 36" x 0.5"	RPS 36" x 0.4375"	RPS 36" x 0.375"	RPS 30" x 0.5577"	RPS 30" x 0.70733"	RPS 30" x 0.5"	RPS 30" x 0.4375"	RPS 30" x 0.375"	RPS 36" x 0.5625"	RPS 36" x 0.8638"	RPS 36" x 0.94668"
Length (ft)	30.00	10.00	11.50	0.50	4.50	3.50	3.50	11.08	9.00	2.92	3.50	3.50	5.92	18.58	2.00
Grade	A36M-42		Reinf 33.01 ksi	Reinf 33.01 ksi	Reinf 33.01 ksi	Reinf 33.01 ksi	Reinf 37.95 ksi	Reinf 37.98 ksi	Reinf 37.95 ksi	Reinf 37.97 ksi	Reinf 37.97 ksi	Reinf 37.97 ksi	Reinf 35.87 ksi	Reinf 35.84 ksi	Reinf 35.17 ksi
Weight (K)	1.9	0.9	1.8	0.1	0.7	1.0	1.0	1.9	2.0	0.8	1.3	1.0	1.4	6.0	0.7





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
APXVTM14-C-120 w/ Mount Pipe	118	KRY 112 144/1	107
(2) APXVTM14-C-120 w/ Mount Pipe	118	KRY 112 144/1	107
TD-RRH8x20-25	118	Platform Mount [LP 712-1]	107
(2) TD-RRH8x20-25	118	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	107
APXV9ERR18-C-A20 w/ Mount Pipe	118	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	107
APXVSPP18-C-A20 w/ Mount Pipe	118	DTMABP7819VG12A	99
APXVSPP18-C-A20 w/ Mount Pipe	118	(2) RRUS-11	99
IBC1900HG-2A	118	(2) RRUS-11	99
IBC1900HG-2A	118	(2) RRUS-11	99
IBC1900HG-2A	118	(2) 782-10250	99
IBC1900BB-1	118	(2) 782-10250	99
IBC1900BB-1	118	(2) 782-10250	99
IBC1900BB-1	118	DC6-48-60-18-8F	99
(2) HORIZON COMPACT	118	(2) QS66512-2 w/ Mount Pipe	99
Platform Mount [LP 501-1]	118	(2) QS66512-2 w/ Mount Pipe	99
VHLP1-23-DW1	118	(2) QS66512-2 w/ Mount Pipe	99
VHLP1-18	118	(2) TPX-070821	99
PCS 1900MHz 4x45W-65MHz	114	(2) TPX-070821	99
800MHz 2X50W RRH W/FILTER	114	(2) TPX-070821	99
800MHz 2X50W RRH W/FILTER	114	RRUS 32	99
800MHz 2X50W RRH W/FILTER	114	RRUS 32	99
Pipe Mount [PM 601-3]	114	RRUS 32	99
PCS 1900MHz 4x45W-65MHz	114	DC6-48-60-18-8F	99
PCS 1900MHz 4x45W-65MHz	114	Platform Mount [LP 501-1]	99
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	107	DTMABP7819VG12A	99
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	107	DTMABP7819VG12A	99
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	107	Side Arm Mount [SO 702-1]	59
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	107	Side Arm Mount [SO 702-1]	48
KRY 112 144/1	107	KS24019-L112A	48
		GPS_A	48

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36M-42	42 ksi	60 ksi	Reinf 37.95 ksi	38 ksi	48 ksi
Reinf 33.01 ksi	33 ksi	42 ksi	Reinf 37.97 ksi	38 ksi	48 ksi
Reinf 32.97 ksi	33 ksi	42 ksi	Reinf 35.20 ksi	35 ksi	44 ksi
Reinf 37.81 ksi	38 ksi	48 ksi	Reinf 35.84 ksi	36 ksi	45 ksi
Reinf 33.93 ksi	34 ksi	43 ksi	Reinf 35.87 ksi	36 ksi	45 ksi
Reinf 35.21 ksi	35 ksi	45 ksi	Reinf 35.17 ksi	35 ksi	44 ksi
Reinf 37.98 ksi	38 ksi	48 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: 90.5%

Paul J. Ford and Company
250 East Broad St., Suite 600
Columbus, Ohio
Phone: 614.221.6679
FAX:

Job: 120 ft. Monopole / Mtn. View Cem. (Filley Park)
Project: BU876329 / PJF# 37516-0115
Client: Crown Castle USA | Drawn by: jjohnson | App'd:
Code: TIA/EIA-222-F | Date: 06/20/16 | Scale: NTS
Path: | Dwg No. E-1

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

Site Data

BU#: *876329*
Site Name:
App #:

Pole Manufacturer:	Other

Reactions		
Moment:	251.04	ft-kips
Axial:	8.39	kips
Shear:	13.56	kips
Elevation:	90	feet

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

Bolt Data			
Qty:	20		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle (in.):	29		

Plate Data		
Diam:	32	in
Thick, t:	1.5	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.77	in

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

Pole Data		
Diam:	24	in
Thick:	0.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	60	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

		Rigid
Bolt Tension Capacity, **B**:	46.07 kips	Service, ASD
Max Bolt directly applied T:	20.36 Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	2.018 in	
Min PL "treq" for actual **T w/ Pry**:	1.024 in	
Min PL "t1" for actual **T w/o Pry**:	1.342 in	
T allowable with Prying:	35.75 kips	0≤α'≤1 case
Prying Force, Q:	0.00 kips	
Total Bolt Tension=T+Q:	20.36 kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	44.2% **Pass**	

Exterior Flange Plate Results Flexural Check

		Rigid
Compression Side Plate Stress:	21.6 ksi	Service ASD
Allowable Plate Stress:	36.0 ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	60.1% **Pass**	Comp. Y.L. Length:
No Prying		16.28
Tension Side Stress Ratio, (treq/t)^2:	46.6% **Pass**	

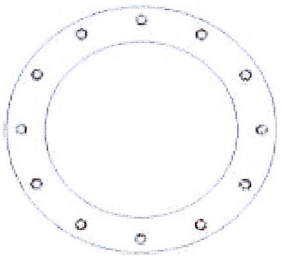
n/a

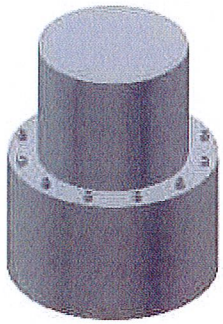
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





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

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

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

v4.4 - Effective 7-12-13

Date: 6/20/2016
PJF Project: 37516-0115.004.7805 (60' Flange)
Client Ref. # 876329
Site Name: MTN. View Cem. (Filley Park)
Description: 60' Flange
Owner: CCI
Engineer: JRJ

Asymmetric Bolt Analysis

Moment =	687	k-ft	TIA Ref.	F	Location =	Flange Plate		
Axial =	13.8	kips	ASIF =	1.3333	η =	N/A	for BP, Rev. G Sect. 4.9.9	
Shear =	15.6	kips	Max Ratio =	100.0%	Threads =	N-Included	for FP, Rev. G	
Anchor Qty =	16							

**** For Flange Plates: Prying action is not considered in the bolt loads. ****

Item	Nominal Bolt Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Bolt Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	0.000				0.0	46.19	8.00	8.00	181.98	175.07	181.98	290.77	290.77	62.6%
2	0.000				90.0	46.19	8.00	8.00	181.98	175.07	181.98	290.77	290.77	62.6%
3	0.000				180.0	46.19	8.00	8.00	181.98	175.07	181.98	290.77	290.77	62.6%
4	0.000				270.0	46.19	8.00	8.00	181.98	175.07	181.98	290.77	290.77	62.6%
5	0.000	A325	0	0	0.0	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
6	0.000	A325	0	0	30.0	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
7	0.000	A325	0	0	60.0	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
8	0.000	A325	0	0	90.0	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
9	0.000	A325	0	0	120.0	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
10	0.000	A325	0	0	150.0	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
11	0.000	A325	0	0	180.0	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
12	0.000	A325	0	0	210.0	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
13	0.000	A325	0	0	240.0	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
14	0.000	A325	0	0	270.0	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
15	0.000	A325	0	0	300.0	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
16	0.000	A325	0	0	330.0	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
								32.00						

PAUL J. FORD & COMPANY
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Phone 614.221.6679 www.pauljford.com

v4.4 - Effective 7-12-13

Date: 6/20/2016
PJF Project: 37516-0115.004.7805
Client Ref. # 876329
Site Name: MTN. View Cem. (Filley Park)
Description: 120' Pole
Owner: CCI
Engineer: JRJ

Asymmetric Anchor Rod Analysis

Moment =	1772	k-ft	TIA Ref.	F	Location =	Base Plate	
Axial =	32.0	kips	ASIF =	1.3333	η =	0.55	for BP, Rev. G Sect. 4.9.9
Shear =	20.0	kips	Max Ratio =	100.0%	Threads =	N/A	for FP, Rev. G
Anchor Qty =	24						

**** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. ****

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	1.500	A354 Gr BC	109	125	0.0	41.00	0.00	1.77	77.51	74.80	74.80	0.00	97.19	77.0%
2	1.500	A354 Gr BC	109	125	22.5	41.00	0.00	1.77	77.51	74.80	74.80	0.00	97.19	77.0%
3	1.500	A354 Gr BC	109	125	45.0	41.00	0.00	1.77	77.51	74.80	74.80	0.00	97.19	77.0%
4	1.500	A354 Gr BC	109	125	67.5	41.00	0.00	1.77	77.51	74.80	74.80	0.00	97.19	77.0%
5	1.500	A354 Gr BC	109	125	90.0	41.00	0.00	1.77	77.51	74.80	74.80	0.00	97.19	77.0%
6	1.500	A354 Gr BC	109	125	112.5	41.00	0.00	1.77	77.51	74.80	74.80	0.00	97.19	77.0%
7	1.500	A354 Gr BC	109	125	135.0	41.00	0.00	1.77	77.51	74.80	74.80	0.00	97.19	77.0%
8	1.500	A354 Gr BC	109	125	157.5	41.00	0.00	1.77	77.51	74.80	74.80	0.00	97.19	77.0%
9	1.500	A354 Gr BC	109	125	180.0	41.00	0.00	1.77	77.51	74.80	74.80	0.00	97.19	77.0%
10	1.500	A354 Gr BC	109	125	202.5	41.00	0.00	1.77	77.51	74.80	74.80	0.00	97.19	77.0%
11	1.500	A354 Gr BC	109	125	225.0	41.00	0.00	1.77	77.51	74.80	74.80	0.00	97.19	77.0%
12	1.500	A354 Gr BC	109	125	247.5	41.00	0.00	1.77	77.51	74.80	74.80	0.00	97.19	77.0%
13	1.500	A354 Gr BC	109	125	270.0	41.00	0.00	1.77	77.51	74.80	74.80	0.00	97.19	77.0%
14	1.500	A354 Gr BC	109	125	292.5	41.00	0.00	1.77	77.51	74.80	74.80	0.00	97.19	77.0%
15	1.500	A354 Gr BC	109	125	315.0	41.00	0.00	1.77	77.51	74.80	74.80	0.00	97.19	77.0%
16	1.500	A354 Gr BC	109	125	337.5	41.00	0.00	1.77	77.51	74.80	74.80	0.00	97.19	77.0%
17	1.375	Williams R71	127.7	150	33.8	49.88	0.00	1.68	89.25	86.68	86.68	0.00	110.75	78.3%
18	1.375	Williams R71	127.7	150	56.3	49.88	0.00	1.68	89.25	86.68	86.68	0.00	110.75	78.3%
19	1.375	Williams R71	127.7	150	123.8	49.88	0.00	1.68	89.25	86.68	86.68	0.00	110.75	78.3%
20	1.375	Williams R71	127.7	150	146.3	49.88	0.00	1.68	89.25	86.68	86.68	0.00	110.75	78.3%
21	1.375	Williams R71	127.7	150	213.8	49.88	0.00	1.68	89.25	86.68	86.68	0.00	110.75	78.3%
22	1.375	Williams R71	127.7	150	236.3	49.88	0.00	1.68	89.25	86.68	86.68	0.00	110.75	78.3%
23	1.375	Williams R71	127.7	150	303.8	49.88	0.00	1.68	89.25	86.68	86.68	0.00	110.75	78.3%
24	1.375	Williams R71	127.7	150	326.3	49.88	0.00	1.68	89.25	86.68	86.68	0.00	110.75	78.3%
								41.70						

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

TIA Rev F

Site Data

BU#: *876329*
Site Name: *MTN View CEM (Filley Park*
App #:

Pole Manufacturer:	*Other*

Reactions		
Moment:	1041	ft-kips
Axial:	21.7	kips
Shear:	13.6	kips

Moment adjusted to account for post installed anchor rods.

Anchor Rod Data		
Qty:	16	
Diam:	1.5	in
Rod Material:	Other	
Strength (Fu):	125	ksi
Yield (Fy):	109	ksi
Bolt Circle:	41	in

Plate Data		
Diam:	47	in
Thick:	2	in
Grade:	36	ksi
Single-Rod B-eff:	7.07	in

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:	0.5	<-- Disregard
Groove Angle:	45	<-- Disregard
Fillet H. Weld:	0.75	in
Fillet V. Weld:	0.375	in
Width:	5.5	in
Height:	20.5	in
Thick:	0.75	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	36	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	60	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

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

Anchor Rod Results

		Stiffened
Maximum Rod Tension:	74.8 Kips	Service, ASD
Allowable Tension:	97.2 Kips	Fty*ASIF
Anchor Rod Stress Ratio:	77.0% **Pass**	

Base Plate Results

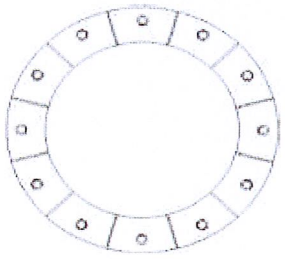
	Flexural Check	Stiffened
Base Plate Stress:	24.4 ksi	Service, ASD
Allowable Plate Stress:	36.0 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	67.8% **Pass**	Y.L. Length: N/A, Roark

Stiffener Results

Horizontal Weld :	35.7% **Pass**
Vertical Weld:	18.3% **Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	5.2% **Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	35.9% **Pass**
Plate Comp. (AISC Bracket):	33.6% **Pass**

Pole Results

Pole Punching Shear Check:	6.5% **Pass**



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

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

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

Job Number:	37516-0115.003.7805	Page:	1
Site Number:	876329	By:	JRJ
Site Name:	MTN. View CEM. (Filley Park)	Date:	6/20/2016

DRILLED PIER SOIL AND STEEL ANALYSIS - TIA/EIA-222-F

Unfactored Base Reactions from RISA

	Comp. (+)	Tension (-)	
Moment, M =	1772.0		k-ft
Shear, V =	20.0		kips
Axial Load, P =	32.0		kips
OTM =	1782.0	0.0	k-ft @ Ground

Safety Factors / Load Factors / Φ Factors

Tower Type =	Monopole DP
ACI Code =	ACI 318-02
Seismic Design Category =	D
Reference Standard =	TIA/EIA-222-F
Use 1.3 Load Factor?	Yes
Load Factor =	1.30

Drilled Pier Parameters

Diameter =	6	ft
Height Above Grade =	0.5	ft
Depth Below Grade =	25	ft
fc' =	3	ksi
εc =	0.003	in/in
L / D Ratio =	4.25	
Mat Ftdn. Cap Width =		ft
Mat Ftdn. Cap Length =		ft
Depth Below Grade =		ft

	Safety Factor	Φ Factor
Soil Lateral Resistance =	2.00	0.75
Skin Friction =	2.00	0.75
End Bearing =	2.00	0.75
Concrete Wt. Resist Uplift =	1.25	

Load Combinations Checked per TIA/EIA-222-F

1. Ult. Skin Friction/2.00 + Ult. End Bearing/2.00 + Effective Soil Wt. - Buoyant Conc. Wt. ≥ Comp.
2. Ult. Skin Friction/2.00 + Buoyant Conc. Wt./1.25 ≥ Uplift
3. Ult. Skin Friction/1.50 + Buoyant Conc. Wt./1.50 ≥ Uplift

Steel Parameters

Number of Bars =	24	
Rebar Size =	#9	
Rebar Fy =	60	ksi
Rebar MOE =	29000	ksi
Tie Size =	#5	
Side Clear Cover to Ties =	3	in

Soil Parameters

Water Table Depth =	15.00	ft
Depth to Ignore Soil =	3.00	ft
Depth to Full Cohesion =	0	ft
Full Cohesion Starts at?*	Ground	

Above Full Cohesion Lateral Resistance = 4(Cohesion)(Dia)(H)
Below Full Cohesion Lateral Resistance = 8(Cohesion)(Dia)(H)

Direct Embed Pole Shaft Parameters

Dia @ Grade =		in
Dia @ Depth Below Grade =		in
Number of Sides =		
Thickness =		in
Fy =		ksi
Backfill Condition =		

Maximum Capacity Ratios

Maximum Soil Ratio =	100.0%
Maximum Steel Ratio =	100.0%

*Note: The drilled pier foundation was analyzed using the methodology in the software 'PLS-Caisson' (Version 8.10, or newer, by Power Line Systems, Inc.). Per the methods in PLS-Caisson, the soil reactions of cohesive soils are calculated using 8CD independent of the depth of the soil layer. The depth of soil to be ignored at the top of the drilled pier is based the recommendations of the site specific geotechnical report. In the absence of any recommendations, the frost depth at the site or one half of the drilled pier diameter (whichever is greater) shall be ignored.

Define Soil Layers

Note: Cohesion = Undrained Shear Strengh = Unconfined Compressive Strength / 2

Layer	Thickness ft	Unit Weight pcf	Cohesion psf	Friction Angle degrees	Soil Type	Ultimate End Bearing psf	Comp. Ult. Skin Friction psf	Tension Ult. Skin Friction psf	Depth ft
1	15	135		36	Sand	8000			15
2	15	137.4		36	Sand	8000			30
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

Soil Results: Overturning

Depth to COR =	17.62	ft, from Grade
Bending Moment, M =	2134.48	k-ft, from COR
Resisting Moment, Ma =	6377.49	k-ft, from COR

MOMENT RATIO = 33.5% OK

Shear, V =	20.00	kips
Resisting Shear, Va =	59.76	kips

SHEAR RATIO = 33.5% OK

Soil Results: Uplift

Uplift, T =	0.00	kips
Allowable Uplift Cap., Ta =	72.40	kips

UPLIFT RATIO = 0.0% OK

Soil Results: Compression

Compression, C =	32.00	kips
Allowable Comp. Cap., Ca =	101.05	kips

COMPRESSION RATIO = 31.7% OK

Steel Results (ACI 318-02):

Minimum Steel Area =	13.57	sq in
Actual Steel Area =	24.00	sq in
Allowable Min Axial, Pa =	-996.92	kips, Where Ma = 0 k-ft
Allowable Max Axial, Pa =	4704.45	kips, Where Ma = 0 k-ft

Axial Load, P =	55.33	kips @ 5.00 ft Below Grade
Moment, M =	1870.51	k-ft @ 5.00 ft Below Grade
Allowable Moment, Ma =	2566.44	k-ft

MOMENT RATIO = 72.9% OK

Moment Capacity of Drilled Concrete Shaft (Caisson) for TIA Rev F or G

Note: Shaft assumed to have ties, not spiral, transverse reinforcing

Site Data

BU#: *876329*
Site Name: *MTN. View CEM. (Filley Park)*
App #:

Enter Load Factors Below:		
For M (WL)	1.3	<---- Enter Factor
For P (DL)	1.3	<---- Enter Factor

Pier Properties		
Concrete:		
Pier Diameter =	6.0	ft
Concrete Area =	4071.5	in^2
Reinforcement:		
Clear Cover to **Tie**=	3.00	in
Horiz. **Tie** Bar Size=	5	
Vert. Cage Diameter =	5.30	ft
Vert. Cage Diameter =	63.62	in
Vertical Bar Size =	9	
Bar Diameter =	1.13	in
Bar Area =	1	in^2
Number of Bars =	24	
As Total=	24	in^2
A s/ Aconc, Rho:	0.0059	0.59%

ACI 10.5 , ACI 21.10.4, and IBC 1810.
Min As for Flexural, Tension Controlled, Shafts:
(3)*(Sqrt(f'c)/Fy: 0.0027
200 / Fy: 0.0033

Minimum Rho Check:
Actual Req'd Min. Rho: 0.33% Flexural
Provided Rho: 0.59% OK

Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):		
Max Pu = (φ=0.65) Pn.		
Pn per ACI 318 (10-2)	6115.79	kips
at Mu=(ϕ=0.65)Mn=	3187.43	ft-kips
Max Tu, (φ=0.9) Tn =	1296	kips
at Mu=ϕ=(0.90)Mn=	0.00	ft-kips

Maximum Shaft Superimposed Forces		
TIA Revision:	F	
Max. Service Shaft M:	1870.51	ft-kips (* **Note**)
Max. Service Shaft P:	55.33	kips
Max Axial Force Type:	Comp.	

(*) Note: Max Shaft Superimposed Moment does not necessarily equal to the shaft top reaction moment

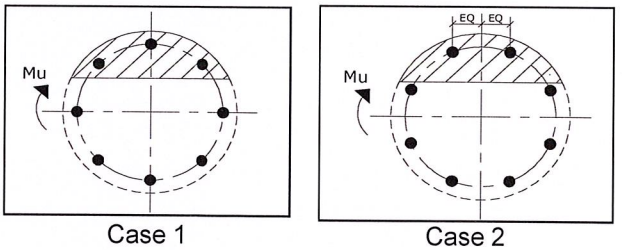
Load Factor	Shaft Factored Loads		
1.30	Mu:	2431.663	ft-kips
1.30	Pu:	71.929	kips

Material Properties		
Concrete Comp. strength, f'c =	3000	psi
Reinforcement yield strength, Fy =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	
ACI 318 Code		
Select Analysis ACI Code=	2002	
Seismic Properties		
Seismic Design Category =	D	
Seismic Risk =	**High**	

Solve (Run) <-- Press Upon Completing All Input

Results:

Governing Orientation Case: **2**



Case 1 Case 2

Dist. From Edge to Neutral Axis: **12.08** in
Extreme Steel Strain, εt: **0.0138**
εt > 0.0050, Tension Controlled
Reduction Factor,φ: **0.900**

Output Note: Negative Pu=Tension

For Axial Compression, φ Pn = Pu:	71.93	kips
Drilled Shaft Moment Capacity, φMn:	**3336.39**	ft-kips
Drilled Shaft Superimposed Mu:	**2431.66**	ft-kips

(Mu/φMn, Drilled Shaft Flexure CSR:	**72.9%**

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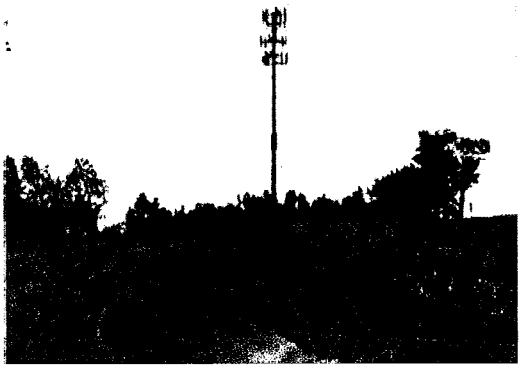
703.276.1100 • 703.276.1169 fax
info@sitesafe.com • www.sitesafe.com



Smartlink LLC on behalf of AT&T Mobility, LLC
Site FA – 10035118
Site ID – CT1193
USID – 59397
Site Name – Bloomfield Cemetery
Site Compliance Report

28 Brewer Drive
Bloomfield, CT 06002

Latitude: N41-50-06.57
Longitude: W72-44-28.20
Structure Type: Monopole

Report generated date: August 24, 2016
Report by: Leo Romero
Customer Contact: Mike Bernheisel

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

Registered Professional Engineer (Electrical)
CERTIFICATE NO.
45335
KLAUS
BENDER
Signed: 8/25/2016
Date Signed
ARIZONA U.S.A.

Klaus Bender
Registered Professional Engineer (Electrical)
Expires December 31, 2018

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Table of Contents

1 General Site Summary

1.1 Report Summary

AT&T Mobility, LLC	Summary
Access to Antennas Locked?	Yes
RF Sign(s) @ access point(s)	No
RF Sign(s) @ antennas	No
Barrier(s) @ sectors	No
Max cumulative simulated RFE level on the Ground Level	<1% General Public Limit at AT&T Mobility, LLC Alpha, Beta and Gamma Sectors
FCC & AT&T Compliant?	Will Be Compliant

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

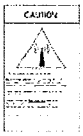
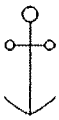
CD's: 10035118_AE201_160819_CTL01193_REV3

RF Configuration Datasheet: CT_33 sites with power density form

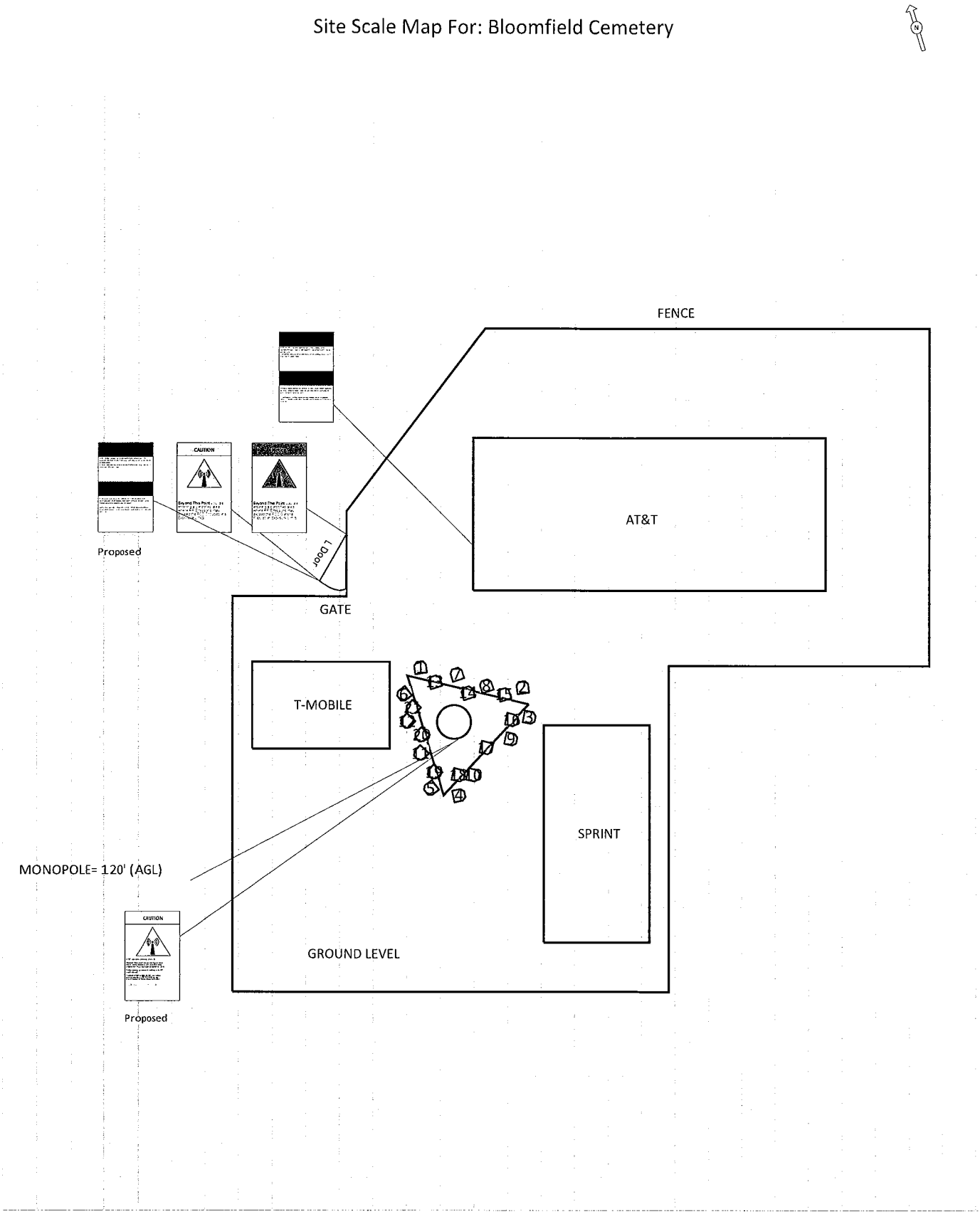
2 Scale Maps of Site

The following diagrams are included:

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

Scale Map Key		
 Existing Sign	Proposed Barrier	GPS Reading
 PROPOSED Proposed Sign	Existing Barrier	 Anchor Point

Site Scale Map For: Bloomfield Cemetery



(Feet)

0 4.9 9.7

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Site Name:Bloomfield Cemetery
8/24/2016 2:24:03 PM

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

3 Antenna Inventory

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

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (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 (Watts)	X	Y	Z (AGL)
1	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	850	10	63	6	10.96	1	0	0	193.3	44.7'	68.7'	97'
1	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	737	10	69	6	11.46	0	0	1	899.8	44.7'	68.7'	97'
1	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	1900	10	68	6	14.16	1	0	0	375	44.7'	68.7'	97'
1	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	2300	10	64	6	14.56	0	0	1	698.5	44.7'	68.7'	97'
2	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	850	10	63	6	10.96	0	2	0	386.6	52.3'	67.2'	97'
2	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	1900	10	68	6	14.16	0	2	0	750	52.3'	67.2'	97'
2	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	737	10	69	6	11.46	0	0	1	899.8	52.3'	67.2'	97'
2	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	1900	10	68	6	14.16	0	0	1	2234.4	52.3'	67.2'	97'
3	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	850	120	63	6	10.96	1	0	0	193.3	52.8'	65'	97'
3	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	737	120	69	6	11.46	0	0	1	682.6	52.8'	65'	97'
3	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	1900	120	68	6	14.16	1	0	0	375	52.8'	65'	97'
3	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	2300	120	64	6	14.56	0	0	1	2014.5	52.8'	65'	97'
4	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	850	120	63	6	10.96	0	2	0	386.6	47.6'	59.2'	97'
4	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	1900	120	68	6	14.16	0	2	0	750	47.6'	59.2'	97'
4	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	737	120	69	6	11.46	0	0	1	682.6	47.6'	59.2'	97'
4	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	1900	120	68	6	14.16	0	0	1	2014.5	47.6'	59.2'	97'
5	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	850	250	63	6	10.96	1	0	0	193.3	45.5'	59.7'	97'
5	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	737	250	69	6	11.46	0	0	1	483.2	45.5'	59.7'	97'

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 (Watts)	X	Y	Z (AGL)
5	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	1900	250	68	6	14.16	1	0	0	375	45.5'	59.7'	97'
5	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	2300	250	64	6	14.56	0	0	1	594.5	45.5'	59.7'	97'
6	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	850	250	63	6	10.96	0	2	0	386.6	43.5'	66.7'	97'
6	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	1900	250	68	6	14.16	0	2	0	750	43.5'	66.7'	97'
6	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	737	250	69	6	11.46	0	0	1	483.2	43.5'	66.7'	97'
6	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	1900	250	68	6	14.16	0	0	1	1600.1	43.5'	66.7'	97'
7	SPRINT	Generic Panel	Panel	862	0	65	6.3	13.43	-	-	-	881.2	47.4'	68.2'	106.9'
7	SPRINT	Generic Panel	Panel	1900	0	65	6.3	16.26	-	-	-	2536	47.4'	68.2'	106.9'
8	SPRINT	Generic Panel	Panel	2500	0	65	4.1	15.01	-	-	-	1600	49.6'	67.3'	108'
9	SPRINT	Generic Panel	Panel	862	120	65	6.3	13.43	-	-	-	881.2	51.5'	63.4'	106.9'
9	SPRINT	Generic Panel	Panel	1900	120	65	6.3	16.26	-	-	-	2536	51.5'	63.4'	106.9'
10	SPRINT	Generic Panel	Panel	2500	120	65	4.1	15.01	-	-	-	1600	48.6'	60.7'	108'
11	SPRINT	Generic Panel	Panel	1900	240	65	6.3	16.26	-	-	-	2536	44.7'	62.3'	106.9'
11	SPRINT	Generic Panel	Panel	862	240	65	6.3	13.43	-	-	-	881.2	44.7'	62.3'	106.9'
12	SPRINT	Generic Panel	Panel	2500	240	65	4.1	15.01	-	-	-	1600	43.7'	64.7'	108'
13	T-MOBILE	Generic Panel	Panel	1900	0	65	4.6	15.43	-	-	-	2094.8	45.8'	67.6'	117.7'
14	T-MOBILE	Generic Panel	Panel	2100	0	65	4.6	15.23	-	-	-	2000.6	48.2'	66.8'	117.7'
15	T-MOBILE	Generic Panel	Panel	1900	0	65	4.6	15.43	-	-	-	2094.8	50.9'	66.7'	117.7'
16	T-MOBILE	Generic Panel	Panel	1900	120	65	4.6	15.43	-	-	-	2094.8	51.5'	64.8'	117.7'
17	T-MOBILE	Generic Panel	Panel	2100	120	65	4.6	15.23	-	-	-	2000.6	49.6'	62.7'	117.7'
18	T-MOBILE	Generic Panel	Panel	1900	120	65	4.6	15.43	-	-	-	2094.8	47.6'	60.7'	117.7'
19	T-MOBILE	Generic Panel	Panel	1900	240	65	4.6	15.43	-	-	-	2094.8	45.7'	60.9'	117.7'
20	T-MOBILE	Generic Panel	Panel	2100	240	65	4.6	15.23	-	-	-	2000.6	44.8'	63.7'	117.7'
21	T-MOBILE	Generic Panel	Panel	1900	240	65	4.6	15.43	-	-	-	2094.8	44.2'	65.7'	117.7'

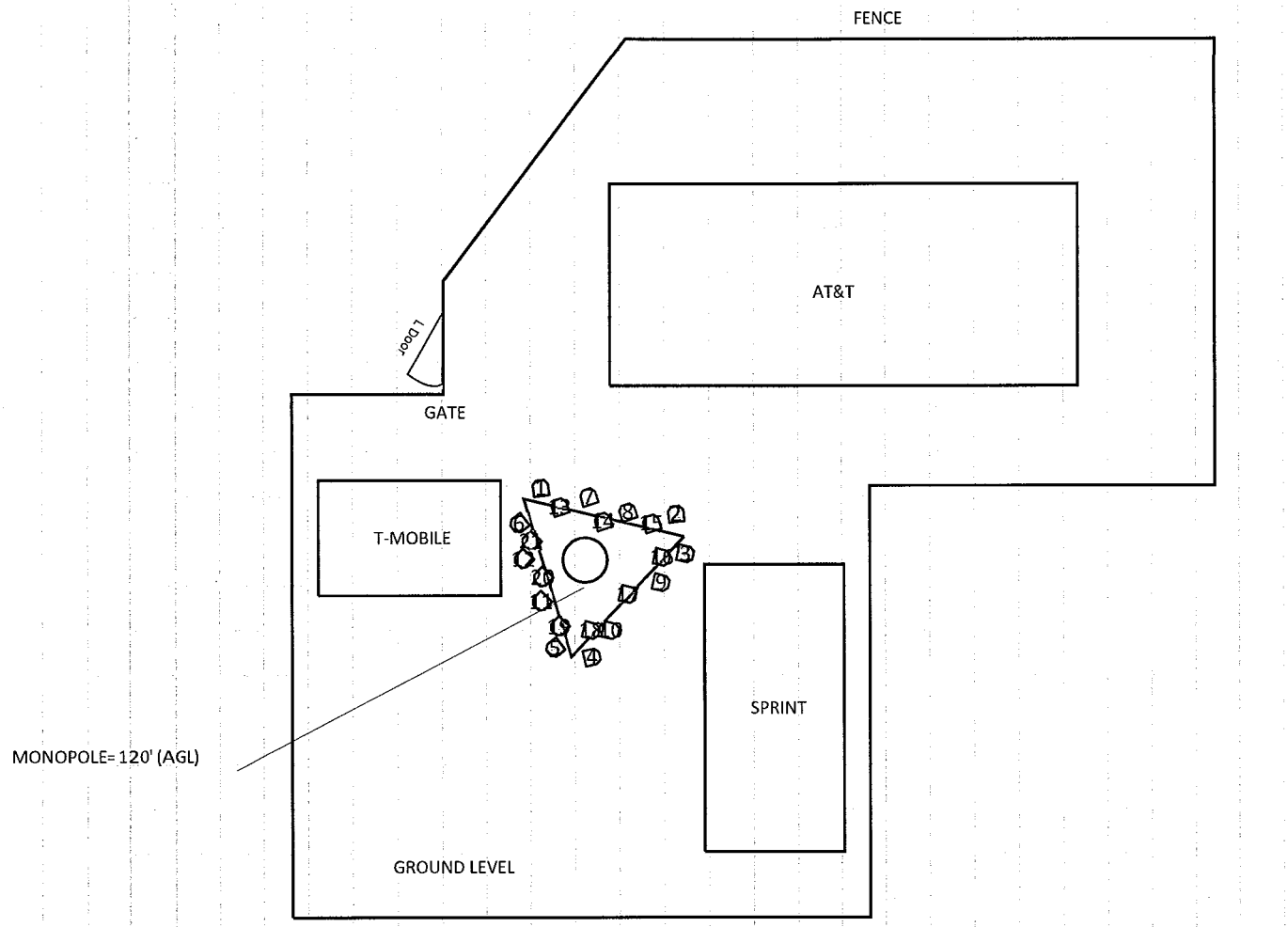
NOTE: X, Y and Z indicate relative position of the bottom of the antenna to the origin location on the site, displayed in the model results diagram. Specifically, the Z reference indicates the bottom of the antenna height **above ground level (AGL).** The distance to the bottom of the antenna is calculated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

4 Emission Predictions

In the RF Exposure 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.

RF Exposure Simulation For: Bloomfield Cemetery



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

(Feet)

0 4.8 9.7

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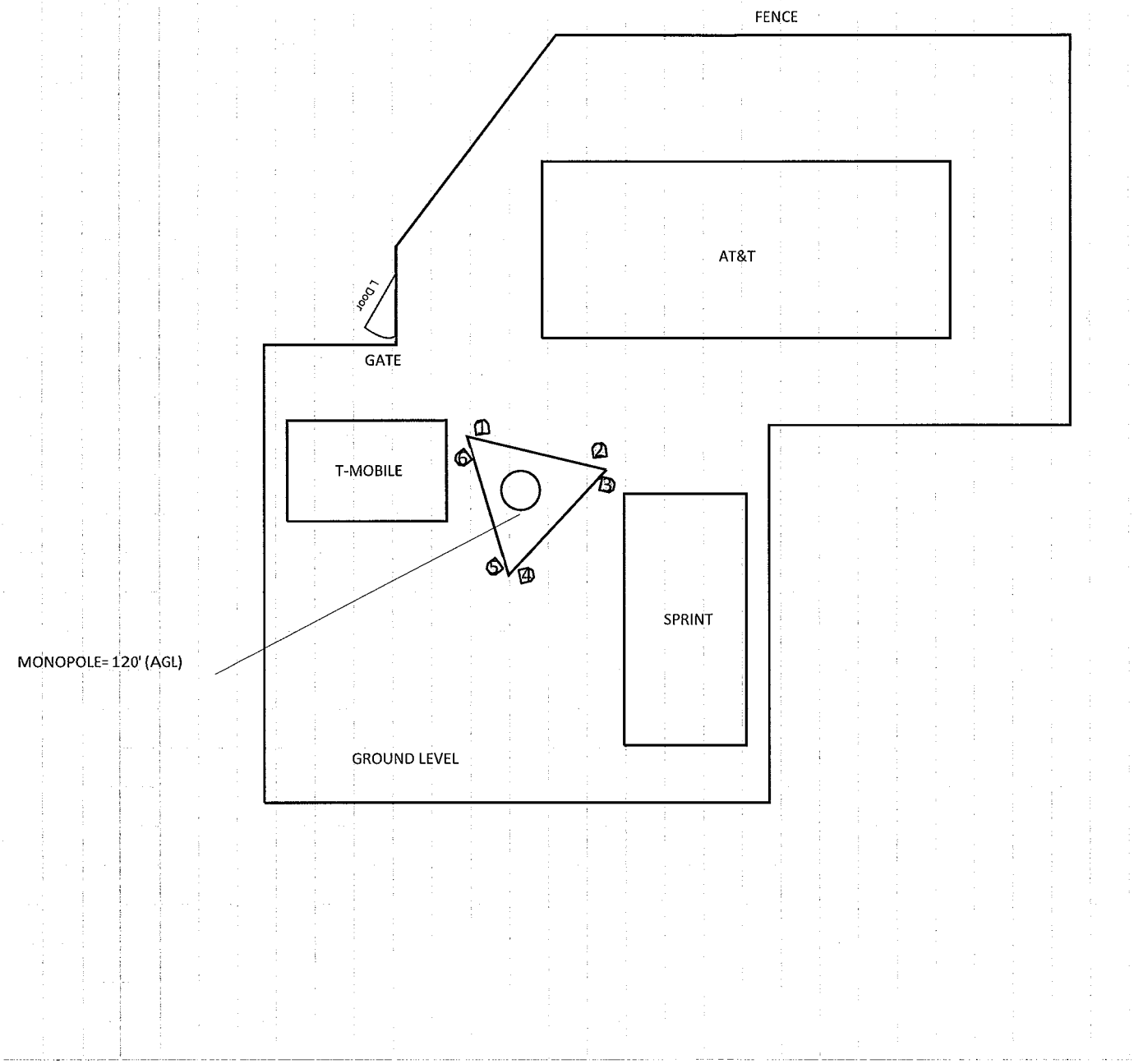
Site Name:Bloomfield Cemetery
8/24/2016 2:11:48 PM

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

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

SitesafeTC Version:1.0.0.0 - 0.0.0.249
Sitesafe OET-65 Model
Near Field Boundary: 1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: Bloomfield Cemetery
AT&T Mobility, LLC Contribution



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

(Feet)
0 4.8 9.7

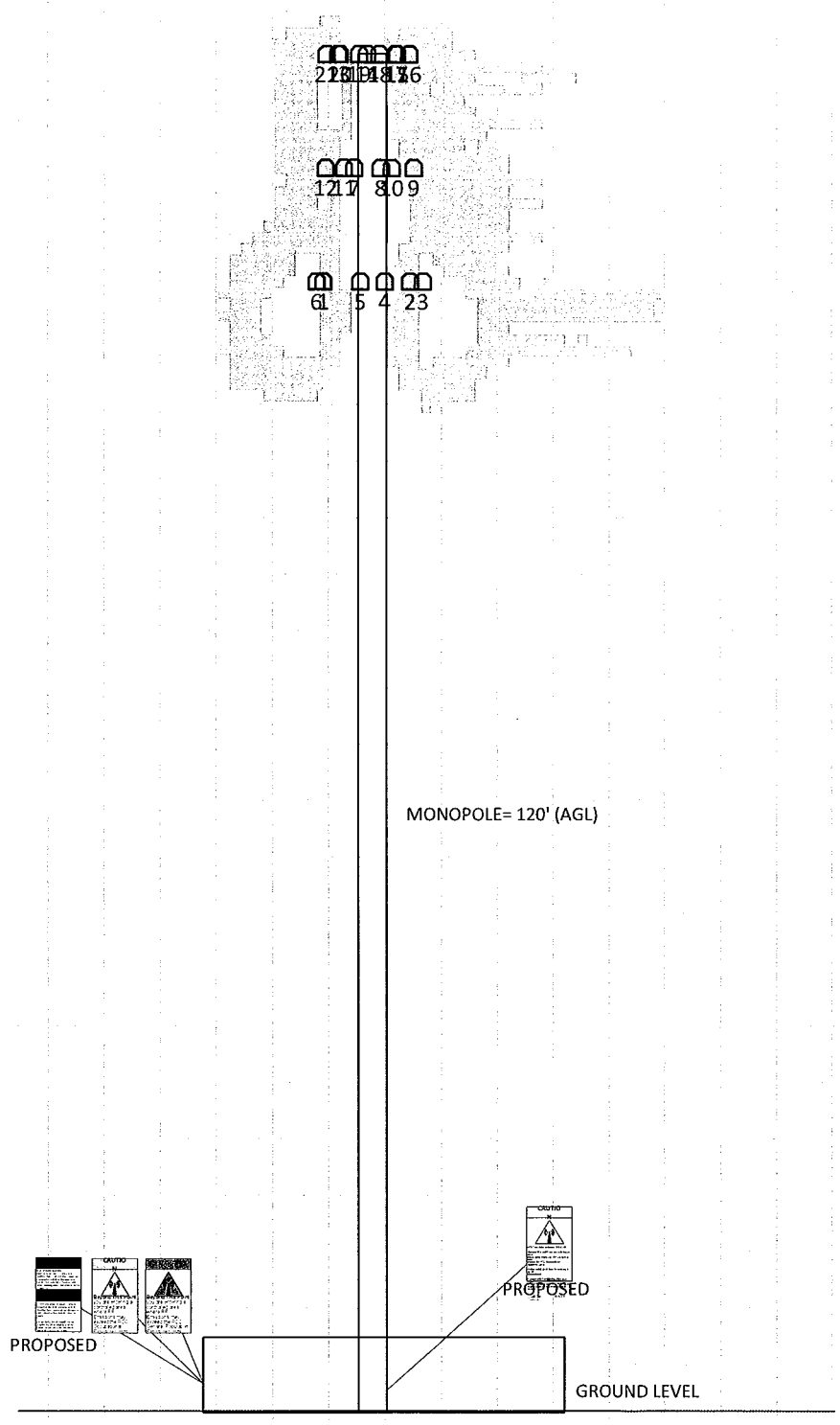
>= 5000 >= 500 >= 100 >= 5 < 5

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

www.sitesafe.com
Site Name:Bloomfield Cemetery
8/24/2016 2:13:50 PM

SitesafeTC Version:1.0.0.0 - 0.0.0.249
Sitesafe OET-65 Model
Near Field Boundary: 1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: Bloomfield Cemetery
Elevation View



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

(Feet)

0 7.8 15.6

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

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

www.sitesafe.com
Site Name:Bloomfield Cemetery
8/24/2016 2:29:55 PM

SitesafeTC Version:1.0.0.0 - 0.0.0.249
Sitesafe OET-65 Model
Near Field Boundary: 1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

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.

AT&T Mobility, LLC will be made compliant if the following changes are implemented:

Monopole Access Location

Yellow caution 2 sign required.

Compound Gate Location

Information 1 sign required.

Note: Ensure all existing signage documented in this report still exist at the site.

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 Leo Romero.

August 24, 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.

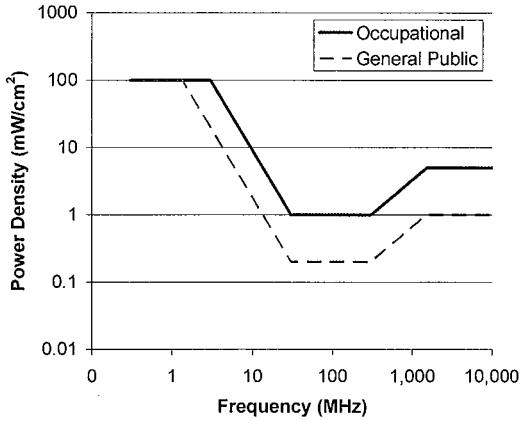
Occupational or Controlled limits apply in situations in which persons are exposed as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

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:

FCC Limits for Maximum Permissible Exposure (MPE)
Plane-wave Equivalent Power Density



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 modeling is based on recommendations from the FCC's OET-65 bulletin with the following variances per AT&T guidance. Reflection has not been considered in the modeling, i.e. the reflection factor is 1.0. The near / far field boundary has been set to 1.5 times the aperture height of the antenna and modeling beyond that point is the lesser of the near field cylindrical model and the far field model taking into account the gain of the antenna.

The site has been modeled with these assumptions to show the maximum RF energy density. Areas modeled with exposure greater than 100% of the General Public MPE level may not actually occur, but are shown as a prediction that could be realized. Sitesafe believes these areas to be safe for entry by occupationally trained personnel utilizing appropriate personal protective equipment (in most cases, a personal monitor).

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