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

February 11, 2016

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

RE: **Notice of Exempt Modification for AT&T / L700 Crown Site BU: 806362**
AT&T Site ID: CT1060
Located at: 347 East Street, Wolcott, CT 06716
Latitude: 41° 33' 34.41" / Longitude: -72° 56' 49.1"

Dear Ms. Bachman,

AT&T currently maintains nine (9) antennas at the 160 foot level of the existing 180 foot self-support tower located at 347 East Street, Wolcott, CT. The tower is owned by Crown Castle. The property is owned by Agostinho and Joanne Rodrigues. AT&T now proposes to replace three (3) antennas with three (3) new antennas; add three (3) RRHs (non-antennas), six (6) triplexers, two (2) DC power cables, one (1) fiber run, one (1) surge arrestor, and one (1) LTE DUS inside the existing equipment area; and, remove three (3) TMAs. The antennas would be installed at the same 160 foot level of the tower.

This facility was approved by the Connecticut Siting Council on April 14, 1986, Docket No.56. This approval included the condition(s) that:

1. The tower shall be constructed to meet Zone C wind loading with 1" of radial ice and shall not exceed 180' in height excluding antennas.
2. The certificate holder shall submit a development and management plan pursuant to sections 16-50j-75 through 16-50j-77 of the RSA, except that irrelevant items in section 16-50j-76 need only be identified as such. In addition to the requirements of section 16-50j-76, the D&M plan shall provide plans for evergreen screening around the fenced perimeter. The D&M plan shall include

a proposal for painting the approved structures to blend with the sky. Any changes to specifications in the D&M plan must be approved by the Council prior to facility operation.

3. All certified facilities shall be constructed, operated, and maintained as specified in the Council's record and in the site development and management plan required by order 8.
4. The certificate holder shall permit public or private entities to share space on the towers approved herein, for due consideration received, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing. In addition to complying with 16-50j-73, the certificate holder shall notify the Council of the addition of any equipment to any approved tower.
5. A fence not lower than 8' shall surround each tower and associated equipment.
6. Unless necessary to comply with order 13, below, no lights shall be installed on any of these towers.
7. The facility construction and any further tower sharing shall be in accordance with all applicable federal, state, and municipal laws and regulations. Shared uses by entities not subject to jurisdiction pursuant to section 16-50i and 16-50k of the CGS shall be subject to all applicable federal, state, and municipal laws and regulations.
8. Construction activities shall take place during daylight working hours.
9. This decision and order shall be void and the towers and associated equipment shall be dismantled and removed, or reapplication for any new use shall be made to the CSC before any such new use is made, if the towers do not provide or permanently cease to provide cellular service following completion of construction.
10. This decision and order shall be void if all construction authorized herein is not completed within three years of the issuance of this decision, or within three years of the completion of any appeal if appeal of this decision is taken, unless otherwise approved by the Council.

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 Thomas G. Dunn, Mayor for the Town of Wolcott, as well as the property owner and the tower owner.

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

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

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

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

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

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

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

Sincerely,

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

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

cc: Thomas G. Dunn, Mayor
Town of Wolcott
10 Kenea Avenue
Wolcott, CT 06716

Crown Castle, Tower Owner
12 Gill Street, Suite 5800
Woburn, Ma 01801

Agostinho and Joanne Rodrigues, Property Owner
347 East Street
Wolcott, CT 06716

DOCKET NO. 56

AN APPLICATION OF METRO MOBILE CTS OF NEW HAVEN, INC., FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION, MAINTENANCE, AND OPERATION OF FACILITIES TO PROVIDE CELLULAR SERVICE IN NEW HAVEN COUNTY.	:	CONNECTICUT SITING COUNCIL April 14, 1986

D E C I S I O N A N D O R D E R

Pursuant to the foregoing opinion, the Council hereby directs that a certificate of environmental compatibility and public need as required by section 16-50k of the General Statutes of Connecticut (CGS) be issued to Metro Mobile CTS of New Haven, Inc., for the construction, maintenance, and operation of cellular mobile phone telecommunication towers and associated equipment in the towns of Wolcott, Naugatuck, West Haven (existing tower), Milford, Hamden (existing tower), Guilford, and North Branford subject to the conditions below.

1. The proposed and alternate Beacon Falls sites are rejected without prejudice.
2. The Wolcott tower shall be constructed to meet Zone C wind loading with 1" of radial ice and shall not exceed 180' in height excluding antennas.
3. The Naugatuck tower shall not exceed 160' in height, excluding antennas. The certificate holder shall offer to remove the existing privately owned, unused tower now on the site.
4. Any future actions requiring the removal of the existing West Haven or Hamden towers to be shared by the certificate holder shall also apply to the equipment mounted on those towers by the certificate holder, regardless of that equipment's status under Chapter 277a of the CGS.

5. The Milford tower shall be a monopole structure not to exceed 100' in height, excluding antennas.
6. The Guilford tower shall be a monopole structure not to exceed 150' in height, excluding antennas.
7. The North Branford Route 17 site is rejected. The North Branford East Reeds Gap Road tower shall not exceed 160' in height, excluding antennas.
8. The certificate holder shall submit a development and management plan for the Wolcott, Naugatuck, Milford, Hamden, Guilford, and North Branford sites pursuant to sections 16-50j-75 through 16-50j-77 of the RSA, except that irrelevant items in section 16-50j-76 need only be identified as such. In addition to the requirements of section 16-50j-76, the D&M plan shall provide plans for evergreen screening around the fenced perimeter at the Wolcott, Milford, Hamden, Guilford, and North Branford sites. The D&M plan shall include a proposal for painting the approved monopole structures to blend with the sky. Any changes to specifications in the D&M plan must be approved by the Council prior to facility operation.
9. All certified facilities shall be constructed, operated, and maintained as specified in the Council's record and in the site development and management plan required by order 8.
10. The certificate holder shall permit public or private entities to share space on the towers approved herein, for due consideration received, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing. In addition to complying with 16-50j-73, the

certificate holder shall notify the Council of the addition of any equipment to any approved tower.

11. A fence not lower than 8' shall surround each tower and associated equipment.

12. Unless necessary to comply with order 13, below, no lights shall be installed on any of these towers.

13. The facilities' construction and any future tower sharing shall be in accordance with all applicable federal, state, and municipal laws and regulations. Shared uses by entities not subject to jurisdiction pursuant to sections 16-50i and 16-50k of the CGS shall be subject to all applicable federal, state, and municipal laws and regulations.

14. Construction activities shall take place during daylight working hours.

15. This decision and order shall be void and the towers and associated equipment shall be dismantled and removed, or reapplication for any new use shall be made to the CSC before any such new use is made, if the towers do not provide or permanently cease to provide cellular service following completion of construction.

16. This decision and order shall be void if all construction authorized herein is not completed within three years of the issuance of this decision, or within three years of the completion of any appeal if appeal of this decision is taken, unless otherwise approved by the Council.

Pursuant to CGS section 16-50p, we hereby direct that a copy of the decision and order shall be served on each person listed below. A notice

of the issuance shall be published in The Record-Journal, The New Haven Register, The Branford Review, The Evening Sentinel, The Waterbury American, and The Waterbury Republican.

The parties to this proceeding are:

Metro Mobile CTS of New Haven, Inc. (Applicant)
5 Eversley Avenue
Norwalk, Connecticut 06855

ATTN: Armand Mascioli
General Manager

Mr. Kevin B. Sullivan, Esq. (its attorneys)
Byrne, Slater, Sandler, Shulman & Rouse, P.C.
111 Pearl Street
P.O. Box 3216
Hartford, Connecticut 06103

Mr. Richard Rubin, Esq.
Fleischman and Walsh, P.C.
1725 N Street, N.W.
Washington, D.C. 20036

Guilford Conservation Commission represented by:

Mr. David B. Damer
Chairman
Guilford Conservation Commission
440 Great Hill Road
Guilford, Connecticut 06437

Mr. Robert W. Griswold, Jr.
100 Rimmon Hill Road
Beacon Falls, Connecticut 06403

Town of Hamden
Memorial Town Hall
2372 Whitney Avenue
Hamden, Connecticut 06518

ATTN: Shirley Gonzales
Town Planner

Guilford Planning and Zoning Commission — represented by:

Mr. David W. Fisher
Chairman
Town Hall
31 Park Street
Guilford, Connecticut 06437

Town of Hamden — represented by:

John DeNicola, Jr.
Mayor
Town of Hamden
Memorial Town Hall
2372 Whitney Avenue
New Haven, Connecticut 06518

Citizens Park Council of New Haven — represented by:

Mr. John J. Ciarleglio
President
Citizens Park Council
of New Haven
36 Elmwood Road
New Haven, Connecticut 06515

Mr. Thomas V. Keating
343 Rimmon Hill Road
Beacon Falls, Connecticut 06403

Ms. Evelyn M. Sirowich
245 Rimmon Hill Road
Beacon Falls, Connecticut 06403

Mr. Jack B. Levine
11 White Birch Lane
Beacon Falls, Connecticut 06403

Southern New England Telephone Company — represented by:

Mr. Peter J. Tyrrell, Esq.
227 Church Street
New Haven, Connecticut 06506

Mr. Dennis Bialecki
96 West Road
Beacon Falls, Connecticut 06403

Brittany Woods Homeowner's Association

represented by:

Mr. Stephen P. Del Sole, Esq.
Del Sole & Del Sole
152 Temple Street
P.O. Box 405
New Haven, Connecticut 06502-0405

Ms. Barbara G. Schlein
Box 2993 Westville Station
New Haven, Connecticut 06515

Mr. & Mrs. Joseph T. Farrell, Jr.
334 Rimmon Hill Road
Beacon Falls, Connecticut 06403

Town of Beacon Falls

represented by:

The Honorable Leonard F. D'Amico
First Selectman
10 Maple Avenue
Beacon Falls, Connecticut 06403

West Rock Ridge Park Association

represented by:

Mr. William L. Doheny Jr., D.D.S.
President
220 Mountain Road
Hamden, Connecticut 06514

Department of Parks,
Recreation & Trees

represented by:

Mr. Robert G. Sheeley
Director
Parks, Recreation & Trees
P.O. Box 1416
New Haven, Connecticut 06506

Town of Wallingford

represented by:

William W. Dickinson, Jr.
Mayor
Municipal Building
350 Center Street
P.O. Box 427
Wallingford, Connecticut 06492

New Haven Sierra Club

represented by:

Ms. Laurie Klein
270 Edgewood Avenue
New Haven, Connecticut 06511

Peter M. Lerner
State Representative
8 Merritt Avenue
Woodbridge, Connecticut 06525

Carleton J. Benson
State Representative
161 Scott Road
Prospect, Connecticut 06712

Dr. Stephen Collins (service waived)
Vice Chairman
West Rock State Park
Advisory Council
Bethany, Connecticut

Mr. Louis Melillo (service wavied)
985 Wintergreen Avenue
Hamden, Connecticut

Mr. John McGeever (service waived)
339 Rimmon Hill
Beacon Falls, Connecticut 06403

Senator John Consoli (service waived)
51 Luke Hill Road
Bethany, Connecticut 06525

Representative George P. Bassing (service waived)
14 Oakwood Drive
Seymour, Connecticut 06483

Dr. George D. Whitney (service waived)
858 Oakwood Road
Orange, Connecticut

Mr. Steve Molnar (service waived)
205 West Road
Beacon Falls, Connecticut

Mr. James W. Grandy (service waived)
President
Hamden Land Conservation Trust
Hamden, Connecticut

Senator Richard S. Eaton (service waived)
269 Mulberry Point Road
Guilford, Connecticut 06437

Representative Robert M. Ward
719 Totoket Road
Northford, Connecticut 06472

Town of North Branford — represented by:

John Gesmonde, Esquire
3127 Whitney Avenue
Hamden, Connecticut 06518

Regina Smith
1887 Middletown Avenue
Northford, Connecticut 06472 — (service waived)

Richard A. Nizolek
The Restland Farm Corporation
Route 17
Northford, Connecticut 06472

Mary Liska
83 Reeds Gap Road
Northford, Connecticut 06472

Ben Bullard
50 Christmas Hill Road
Guilford, Connecticut 06437 — (service waived)

Roland Robichaud
31 Berncliff Drive
North Branford, Connecticut 06471 — (service waived)

Irene Flynn
1926 Middletown Avenue
Northford, Connecticut 06472 — (service waived)

Charles Pope
199 Donalds Road
Guilford, Connecticut 06437

Richard Abate
131 Manor Road
Guilford, Connecticut 06437 — (service waived)

City of Milford — represented by:

Mayor Alberta Jagoe
Alderman Maurice Condon
Alderman Frederick Lisman
City Hall
River Street
Milford, Connecticut 06460

Thomas Scelfo
81 Berncliff Drive
North Branford, Connecticut 06471 — (service waived)

Senator Thomas Scott (service waived)
22 Meyers Court
Milford, Connecticut 06460

Helen Moore (service waived)
385 Oronoque Road
Milford, Connecticut 06460

William Barberi (service waived)
298 Oronoque Road
Milford, Connecticut 06460

C E R T I F I C A T I O N

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut, this 14th day of April, 1986.

Council Members	Vote Cast
Gloria Dibble Pond Chairperson	Yes
Commissioner John Downey Designee: Commissioner Peter G. Boucher	Absent
Commissioner Stanley Pac Designee: Christopher Cooper	No
Owen L. Clark	Yes
Mortimer A. Gelston	Yes
James G. Horsfall	Yes
Pamela B. Katz	Yes
William H. Smith	No
Colin C. Tait	No

STATE OF CONNECTICUT)
: ss. New Britain, April 14, 1986
COUNTY OF HARTFORD)

I hereby certify that the foregoing is a true and correct copy of the decision and order issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:

Christopher S. Wood

Christopher S. Wood, Executive Director
Connecticut Siting Council

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING TOWER:
(3) LTE–3C ANTENNAS, (3) RRH'S, (6) TRIPLEXERS, (1) SURGE ARRESTOR, (2) DC POWER LINES, & (1) FIBER RUN.

ITEMS TO BE INSTALLED INSIDE THE EXISTING AT&T EQUIPMENT AREA:
(1) LTE DUS

ITEMS TO REMAIN:
(6) ANTENNAS, (6) RRH'S, (3) TMAS, (1) SURGE ARRESTOR, (12) LINES OF COAX, (2) DC POWER LINES, (1) FIBER RUN.

ITEMS TO BE REMOVED:
(3) ANTENNAS, (3) TMAS

PTN: 2051A03JJD

SITE ADDRESS:	347 EAST STREET WOLCOTT, CT 06716
LATITUDE:	41.55954 41° 33' 34.37"
LONGITUDE:	72.94697 72° 56' 49.09"
USID:	61146
LANDLORD:	CROWN CASTLE
TYPE OF SITE:	LATTICE TOWER / EQUIPMENT SHELTER
TOWER HEIGHT:	180'–0"±
RAD CENTER:	160'–0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

FA NUMBER: 10035040
SITE NUMBER: CTL01060

SITE NAME: WOLCOTT-EAST STREET
347 EAST STREET
WOLCOTT, CT 06716
CROWN SITE #: 806362
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:	33 BOSTON POST ROAD WEST SUITE 210
CITY, STATE, ZIP:	MARLBOROUGH, MA 01752
CONTACT:	TODD OLIVER
PHONE:	(774) 369–3618
E–MAIL:	todd.oliver@smartlink.com

CONSTRUCTION MANAGER

COMPANY:	SMARTLINK, LLC.
ADDRESS:	33 BOSTON POST ROAD WEST SUITE 210
CITY, STATE, ZIP:	MARLBOROUGH, MA 01752
CONTACT:	ROBERT PICARD
PHONE:	(774) 369–3618
E–MAIL:	robert.picard@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

APPROVALS

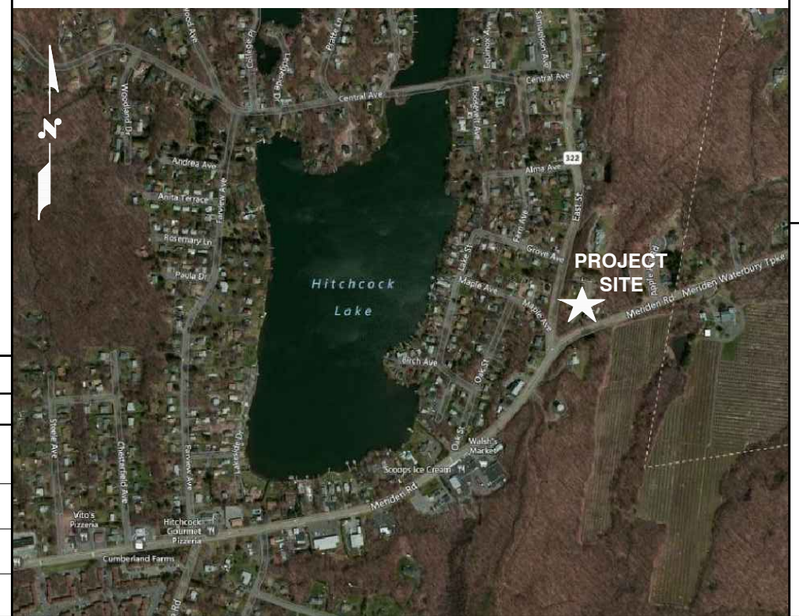
THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS & AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT & MAY IMPOSE CHANGES OR MODIFICATIONS.

DISCIPLINE:	SIGNATURE:	DATE:
SMARTLINK SITE ACQUISITION:		
SMARTLINK CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		

VICINITY MAP

DIRECTIONS TO SITE:

FROM ROCKY HILL, CT: MERGE ONTO I–91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN. 9.1 MILES MERGE ONTO I–691 W VIA EXIT 18 TOWARD MERIDEN / WATERBURY. 6.8 MILES TAKE THE CT–10 EXIT, EXIT 3 TOWARD MILLDALE / CHESHIRE. 0.3 MILES TURN RIGHT ONTO HIGHLAND AVE / CT–10. 0.3 MILES STAY STRAIGHT TO GO ONTO OLD TURNPIKE RD. 0.1 MILES TAKE FIRST LEFT ONTO MERIDEN WATERBURY TURNPIKE / CT–322. 3.1 MILES TURN SHARP RIGHT ONTO EAST ST / CT–322.



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

STATE OF CONNECTICUT · DANIEL P. HAMM · No.24178 · LICENSED PROFESSIONAL ENGINEER

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

SITE NUMBER: CTL01060
SITE NAME: WOLCOTT-EAST STREET
CROWN SITE #: 806362
347 EAST STREET
WOLCOTT, CT 06716
NEW HAVEN COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	02/03/16	ISSUED FOR PERMITTING	SB	DR	DC
0	12/18/15	ISSUED FOR REVIEW	SB	DR	DC

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

AT&T

TITLE SHEET
(LTE 3C)

SITE NUMBER	DRAWING NUMBER	REV
CTL01060	T–1	1

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		

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CROWN SITE #: 806362
347 EAST STREET
WOLCOTT, CT 06716
NEW HAVEN COUNTY

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

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

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

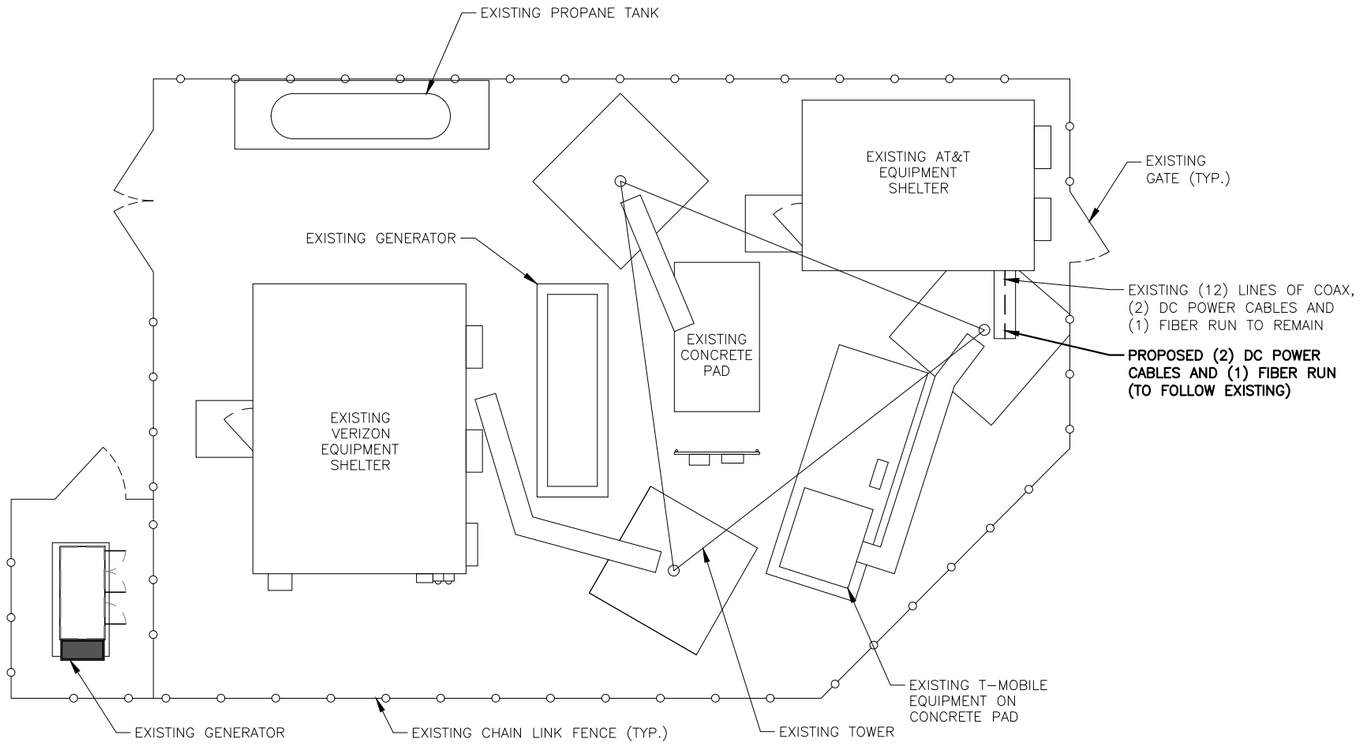
AT&T

GENERAL NOTES
(LTE 3C)

SITE NUMBER	DRAWING NUMBER	REV
CTL01060	GN-1	1

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.

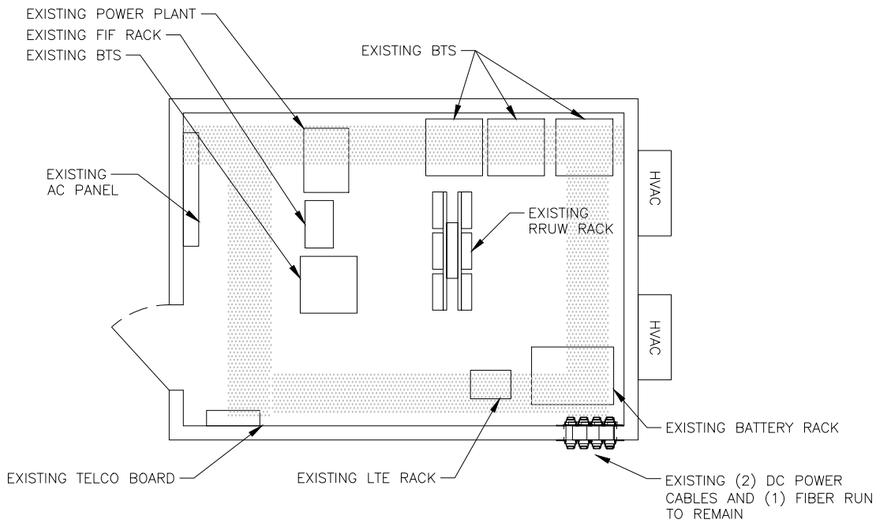
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



MAGNETIC NORTH 13°42' TRUE NORTH

COMPOUND PLAN (1 / A-1)
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

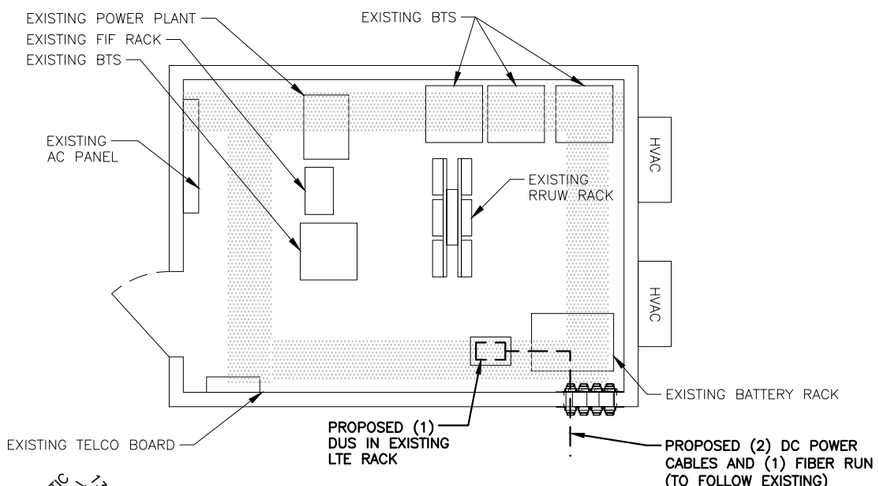
0 2'-8" 5'-4" 10'-8" 16'-0"



MAGNETIC NORTH 13°42' TRUE NORTH

EXISTING 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"



MAGNETIC NORTH 13°42' TRUE NORTH

PROPOSED EQUIPMENT PLAN (3 / A-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

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

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No. 24178
LICENSED PROFESSIONAL ENGINEER

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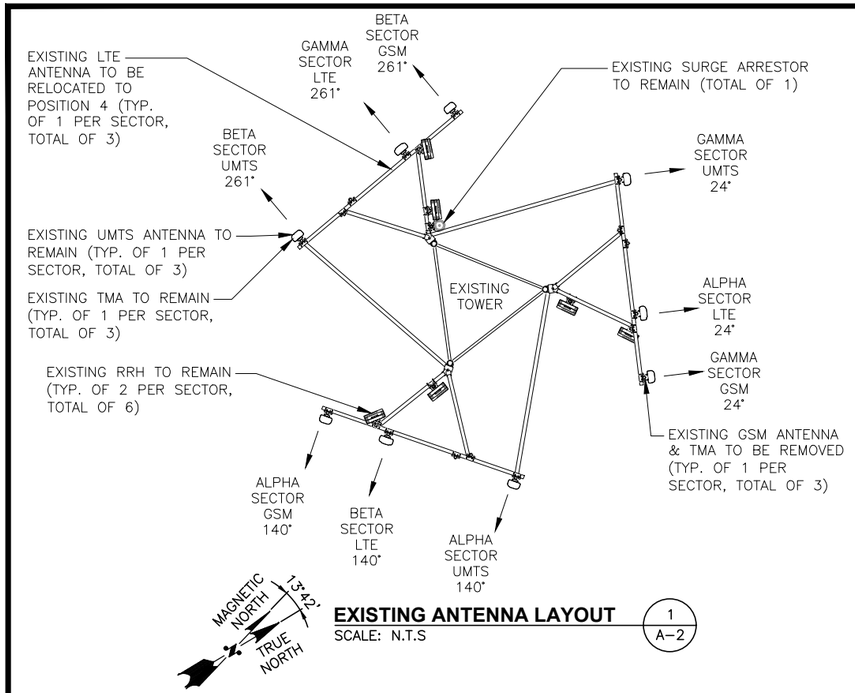
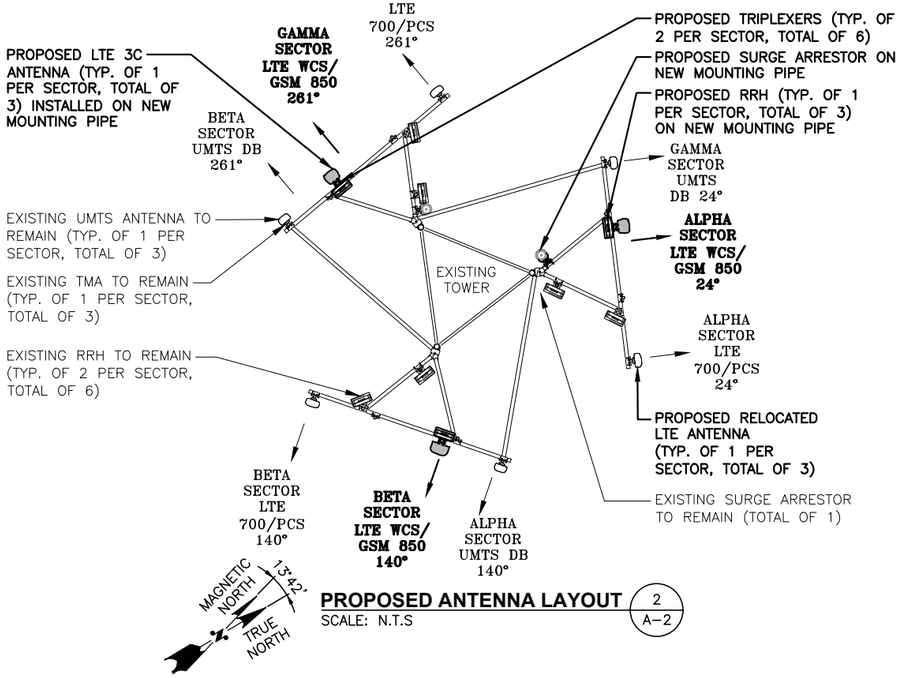
COMPOUND & EQUIPMENT PLANS
(LTE 3C)

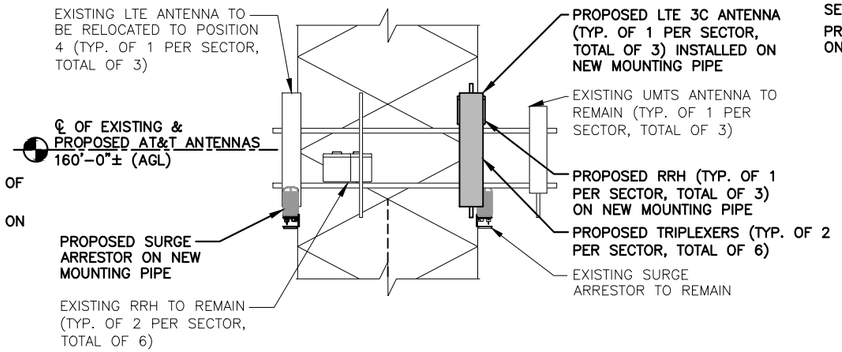
SITE NUMBER	DRAWING NUMBER	REV
CTL01060	A-1	1



EXISTING ANTENNA LAYOUT (1 / A–2)
SCALE: N.T.S



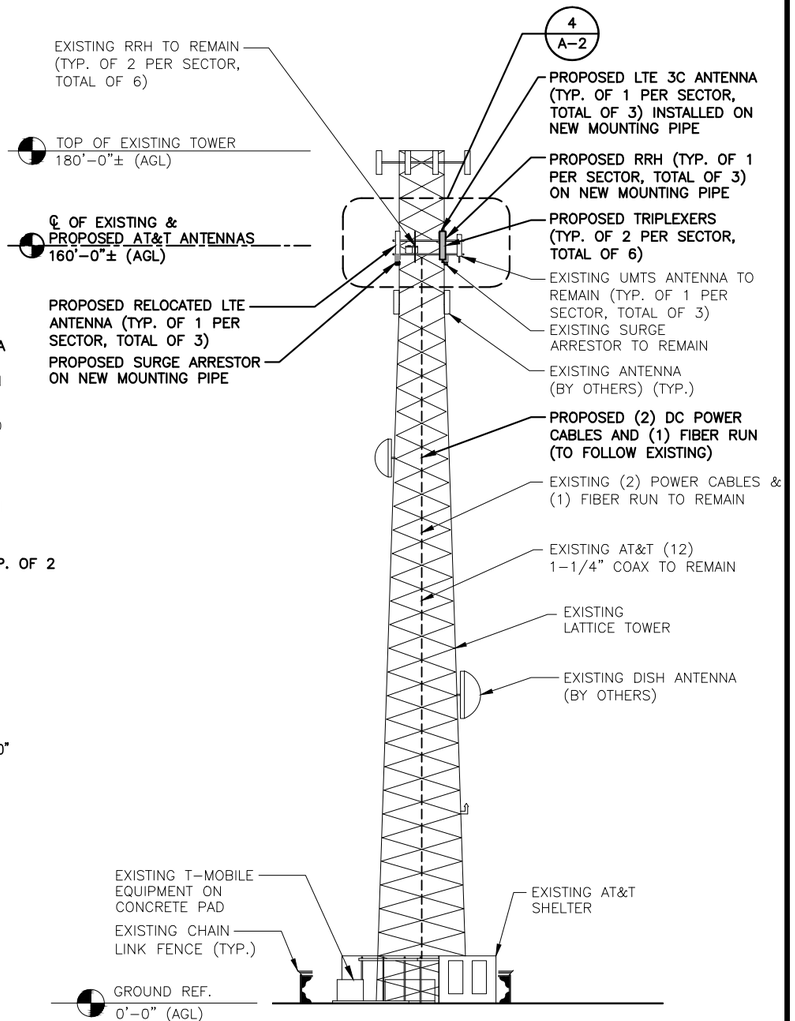
PROPOSED ANTENNA LAYOUT (2 / A–2)
SCALE: N.T.S



ENLARGED ANTENNA ELEVATION (4 / A–2)
22x34 SCALE: 1/4"=1'–0"
11x17 SCALE: 1/8"=1'–0"
0 2'–0" 4'–0" 8'–0" 12'–0"

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.



PROPOSED EAST ELEVATION (3 / A–2)
22x34 SCALE: 1/8"=1'–0"
11x17 SCALE: 1/16"=1'–0"
0 4'–0" 8'–0" 16'–0" 24'–0"

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ANTENNA LAYOUTS & ELEVATION (LTE 3C)

SITE NUMBER	DRAWING NUMBER	REV
CTL01060	A–2	1

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

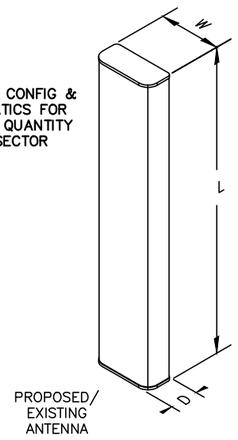
SECTOR	TECHNOLOGY	EXISTING/PROPOSED	RAD CENTER	AZIMUTH	MAKE	MODEL#	SIZE (INCHES) (L x W x D)
ALPHA	UMTS	EXISTING	160'-0"±	140°	POWERWAVE	7770	55.0x11.0x5.0
	LTE 3C	PROPOSED	160'-0"±	24°	QUINTEL	QS66512-3	72.0x12.0x9.6
	LTE	EXISTING	160'-0"±	24°	KMW	AM-X-CD-16-65-00T-RET	72.0x11.8x5.9
BETA	UMTS	EXISTING	160'-0"±	261°	POWERWAVE	7770	55.0x11.0x5.0
	LTE 3C	PROPOSED	160'-0"±	140°	CCI	TPA-65R-LCUUUU-H8	96.0x14.4x8.6
	LTE	EXISTING	160'-0"±	140°	ANDREW	SBNH-1D6565C	96.4x11.9x7.1
GAMMA	UMTS	EXISTING	160'-0"±	24°	POWERWAVE	7770	55.0x11.0x5.0
	LTE 3C	PROPOSED	160'-0"±	261°	QUINTEL	QS66512-3	72.0x12.0x9.6
	LTE	EXISTING	160'-0"±	261°	KMW	AM-X-CD-16-65-00T-RET	72.0x11.8x5.9

EXISTING & PROPOSED RRU SCHEDULE

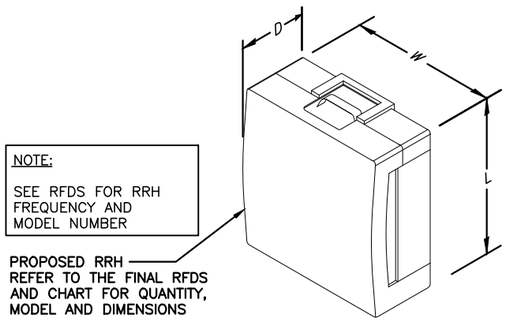
SECTOR	EXISTING/PROPOSED	MAKE	MODEL#	SIZE (INCHES) (L x W x D)
ALPHA				
	PROPOSED	ERICSSON	RRUS-32	26.7x12.1x6.7
	EXISTING	ERICSSON ERICSSON	RRUS-12 RRUS-11	20.4x18.5x7.5 19.7x17.0x7.2
BETA				
	PROPOSED	ERICSSON	RRUS-32	26.7x12.1x6.7
	EXISTING	ERICSSON ERICSSON	RRUS-12 RRUS-11	20.4x18.5x7.5 19.7x17.0x7.2
GAMMA				
	PROPOSED	ERICSSON	RRUS-32	26.7x12.1x6.7
	EXISTING	ERICSSON ERICSSON	RRUS-12 RRUS-11	20.4x18.5x7.5 19.7x17.0x7.2

NOTES:

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

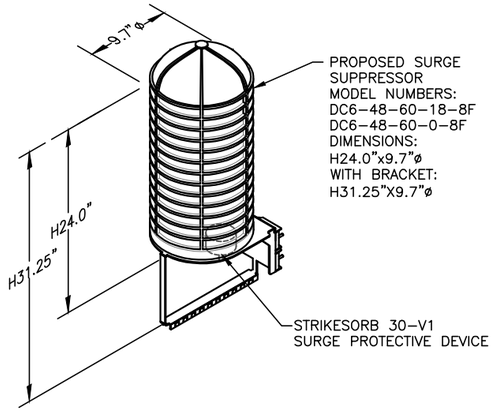


PROPOSED ANTENNA DETAIL (1 / A-3)
SCALE: N.T.S



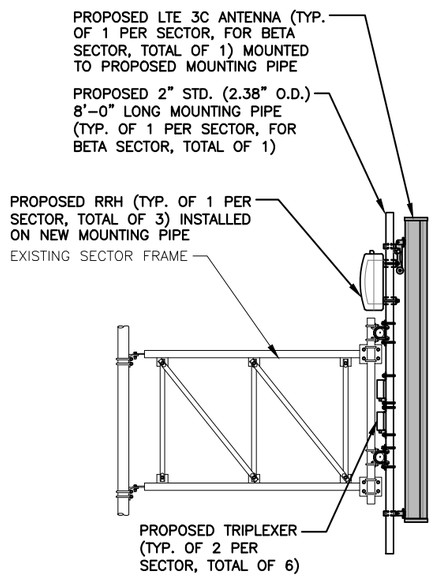
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

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

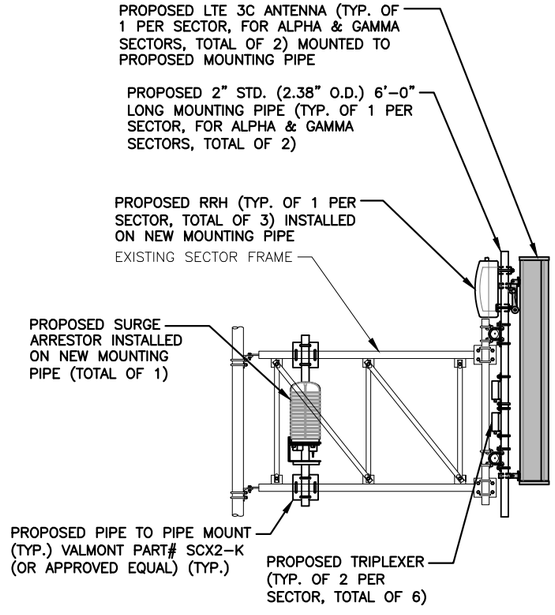


NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

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



PROPOSED LTE ANTENNA AND RRH MOUNTING DETAIL (BETA SECTOR) (4 / A-3)
SCALE: N.T.S



PROPOSED LTE ANTENNA, SURGE ARRESTOR, AND RRH MOUNTING DETAIL (ALPHA & GAMMA SECTORS) (5 / A-3)
SCALE: N.T.S

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STATE OF CONNECTICUT — DANIEL P. HAMM — No. 24178 — LICENSED PROFESSIONAL ENGINEER

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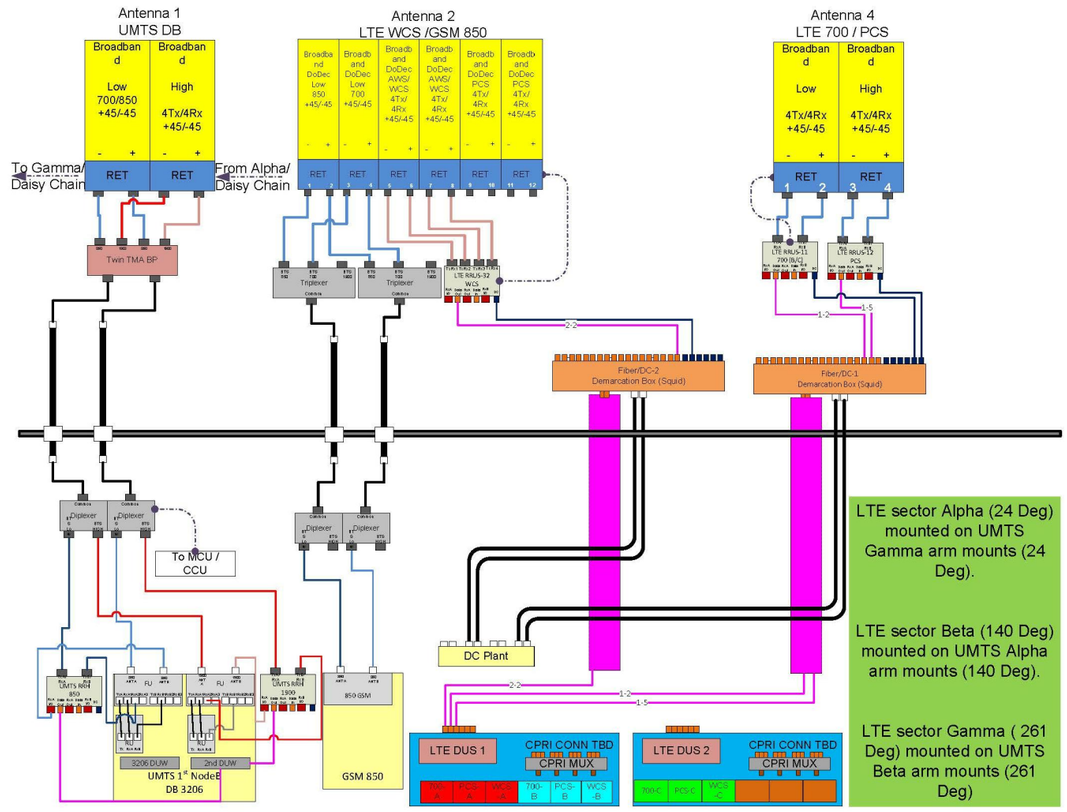
DETAILS
(LTE 3C)

SITE NUMBER	DRAWING NUMBER	REV
CTL01060	A-3	1



RF PLUMBING DIAGRAM 1
SCALE: N.T.S RF–1

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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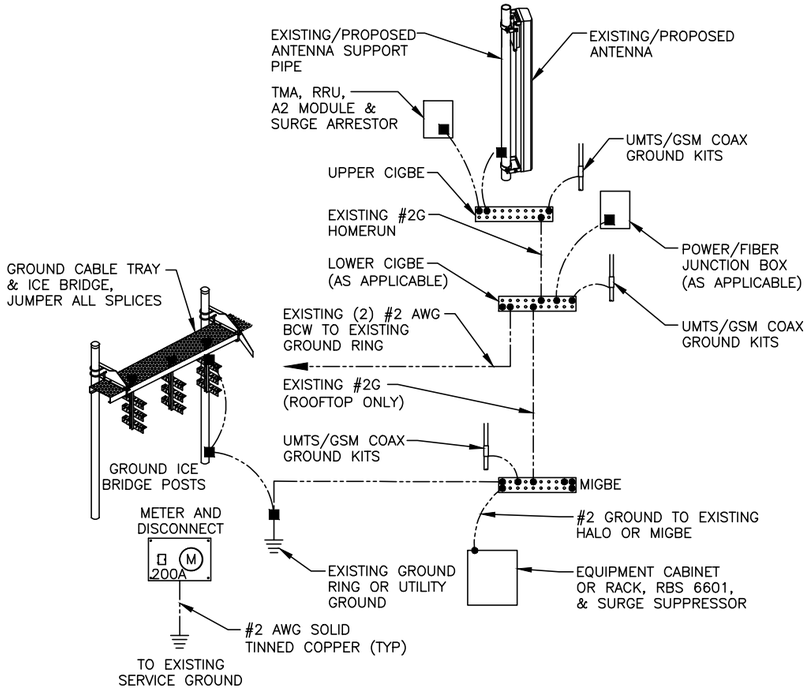
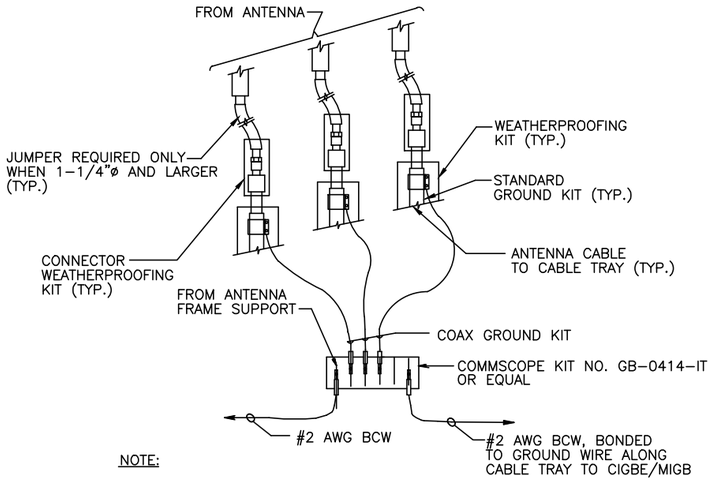
RF PLUMBING DIAGRAM
(LTE 3C)

SITE NUMBER	DRAWING NUMBER	REV
CTL01060	RF–1	1



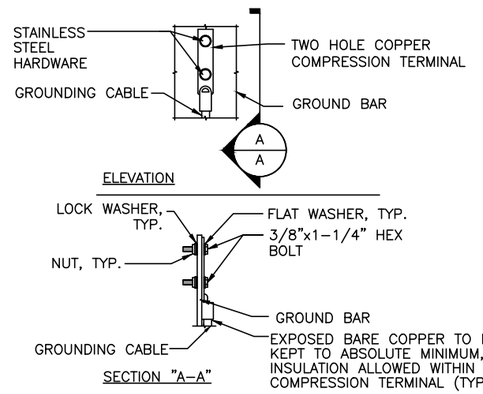
GROUNDING RISER DIAGRAM 1 G–1
SCALE: N.T.S



NOTE:

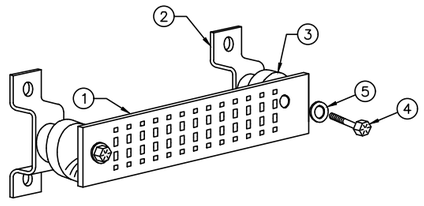
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

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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ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	02/03/16	ISSUED FOR PERMITTING	SB	DR	DC
0	12/18/15	ISSUED FOR REVIEW	SB	DR	DC

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

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
(LTE 3C)

SITE NUMBER	DRAWING NUMBER	REV
CTL01060	G–1	1

December 30, 2015

Charles Trask
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(980) 209-8228

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
btwo@btgrp.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT1060
	Carrier Site Name:	Wolcott-East St
Crown Castle Designation:	**Crown Castle BU Number:**	806362
	Crown Castle Site Name:	NHV 108 943133
	Crown Castle JDE Job Number:	361003
	Crown Castle Work Order Number:	1171016
	Crown Castle Application Number:	325742 Rev. 1
Engineering Firm Designation:	**B+T Group Project Number:**	104053.001.01
Site Data:	**Intersection Of Rte 322/Meridian Rdwolcott Site, Wolcott, New Haven County, CT** **Latitude *41° 33' 34.41"*, Longitude *-72° 56' 49.1"*** **180 Foot - Self Support Tower**	

Dear Charles Trask,

B+T Group is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 858588, in accordance with application 325742, revision 1.

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

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment based upon a wind speed of 85 mph fastest mile.

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

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

Respectfully submitted by:
B+T Engineering, Inc.

Jacob Johnson, E.I.T.
Project Engineer

Chad E. Tuttle, P.E.
Engineer of Record
COA: PEC.0001564 Expires: 02/10/2016

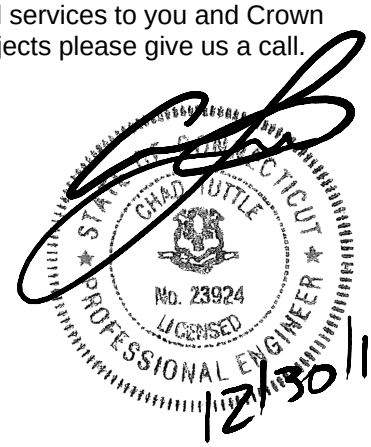


TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 180 ft. Self-Support tower designed by ROHN in September of 1986. The tower was originally designed for EIA Zone C with 1" radial ice. This tower has been modified by All Points Technology Corp in 2002 and those modifications incorporated in this analysis.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 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
158.0	160.0	1	CCI Antennas	TPA-65R-LCUUUU-H8	2 1	3/4 3/8	--
		6	CCI Antennas	TPX-070821			
		3	Ericsson	RRUS 12			
		3	Ericsson	RRUS 32			
		2	Quintel Tech.	QS66512-3			
		1	Raycap	DC6-48-60-18-8F			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
180.0	186.0	3	Commscope	ATBT-BOTTOM-24V	6	1-5/8	2
		3	Commscope	SBNHH-1D65A			
		3	Rfs Celwave	ATMAA1412D-1A20	12	1-5/8	1
	182.0	3	Rfs Celwave	ATMAA1412D-1A20	--	--	2
177.0	177.0	3	Alcatel Lucent	RRH2X60-AWS	2	1-5/8	2
		3	Alcatel Lucent	RRH2X60-PCS			
		3	Alcatel Lucent	RRH2x60-700			
		3	Commscope	HBXX-6517DS-A2M			
		6	Commscope	SBNHH-1D65B			
		1	RFS Celwave	DB-T1-6Z-8AB-0Z			
		2	Andrew	DB846F65ZAXY	12	1-5/8	**1**
		2	Antel	LPA-80063/6CFx5			
		1	RFS Celwave	DB-T1-6Z-8AB-0Z			
		2	Swedcom	SC-E 6014 rev2			
		1	--	Sector Mount [SM 504-3]			
168.0	168.0	1	Dragonwave	A-ANT-18G-2-C	3 1	5/16 1/2	1
		3	Argus Tech.	LLPX310R			
		3	Samsung Telecom.	FDD_R6_RRH			
		1	--	Pipe Mount [PM 602-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
158.0	160.0	**6**	**Adc**	**DUAL BAND 800/1900 FULL BAND MASTHEAD**	**--**	**--**	**3**
		1	**Andrew**	**SBNH-1D6565C**			
		3	**Ericsson**	**RRUS 11**			
		2	**Kmw Comm.**	**AM-X-CD-16-65-00T-RET**			
		6	**Powerwave Tech.**	**LGP13519**			
		1	Andrew	SBNH-1D6565C	12 2 1	1-1/4 3/4 3/8	1
		2	Kmw Comm.	AM-X-CD-16-65-00T-RET			
		3	Communication Components Inc.	DTMABP7819VG12A			
		3	Powerwave Tech.	7020.00			
		3	Powerwave Tech.	7770.00			
		3	Ericsson	RRUS 11			
		1	Raycap	DC6-48-60-18-8F			
	158.0	1	--	Sector Mount [SM 504-3]			
148.0	148.0	3	RFS Celwave	APXV18-206517S-C	6	1-5/8	1
40.0	40.0	1	Gps	GPS_A	1	1/2	1
		1	--	Side Arm Mount [SO 308-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed; Not Considered in This Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
180	180	3	Generic	3' Side Arms	--	--
		4	Rfs Celwave	PD10017		
170	170	3	Generic	6' Side Arms	--	--
		3	Rfs Celwave	PD1132D		
160	160	2	Generic	6' STD Dish	--	--

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	AT&T Mobility Co-Locate, Rev# 1	325742	CCI Sites
Tower Manufacturer Drawing	ROHN, File No. 21817JC	529684	CCI Sites
Tower Modification Drawing	All Points Technology Corp, Job No.CT105680	903539	CCI Sites
Foundation Drawing	ROHN, File No. 21817JC	217670	CCI Sites
Geotech Report	FDH, Project No. 08-01300G	2303630	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 12/23/2015	CCI Sites

3.1) Analysis Method

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

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
5) Mount areas and weights are assumed based on photographs provided.
6) The redundant diagonals from 0 to 20 ft. have been determined to be insufficient but unnecessary to brace the leg members from 0 to 20 ft. These redundant have been determined to be sufficient to brace the main diagonal members from 0 to 20 ft.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	180 - 160	Leg	ROHN 2.5 STD	1	-14.434	41.137	35.1	Pass
T2	160 - 140	Leg	ROHN 3 X-STR	40	-48.019	83.780	57.3	Pass
T3	140 - 120	Leg	ROHN 4 X-STR	79	-80.046	139.068	57.6	Pass
T4	120 - 100	Leg	ROHN 5 X-STR	118	-104.018	177.417	58.6	Pass
T5	100 - 80	Leg	ROHN 5 X-STR	145	-129.377	177.354	72.9	Pass
T6	80 - 60	Leg	ROHN 6 EHS	172	-152.542	212.128	71.9	Pass
T7	60 - 40	Leg	ROHN 6 X-STR	199	-175.564	264.217	66.4	Pass
T8	40 - 20	Leg	ROHN 6 X-STR	226	-197.596	264.187	74.8	Pass
T9	20 - 0	Leg	ROHN 8 EHS	253	-229.621	240.926	95.3	Pass
T1	180 - 160	Diagonal	ROHN 2 STD	9	-6.468	15.541	41.6	Pass
T2	160 - 140	Diagonal	ROHN 2 STD	45	-8.329	13.382	62.2	Pass
T3	140 - 120	Diagonal	ROHN 2 STD	84	-8.008	11.514	69.5	Pass
T4	120 - 100	Diagonal	ROHN 2.5 STD	123	-9.649	14.430	66.9	Pass
T5	100 - 80	Diagonal	ROHN 2.5 STD	149	-8.731	12.598	69.3	Pass
T6	80 - 60	Diagonal	ROHN 2.5 STD	176	-9.173	11.148	82.3	Pass
T7	60 - 40	Diagonal	ROHN 2.5 X-STR	203	-9.469	12.305	77.0	Pass
T8	40 - 20	Diagonal	ROHN 3 STD	230	-9.328	16.858	55.3	Pass
T9	20 - 0	Diagonal	ROHN 3 STD	257	-14.732	28.346	52.0	Pass
T1	180 - 160	Horizontal	ROHN 1.5 STD	7	-3.447	20.288	17.0 20.3 (b)	Pass
T2	160 - 140	Horizontal	ROHN 1.5 STD	43	-5.146	17.381	29.6 30.1 (b)	Pass
T3	140 - 120	Horizontal	ROHN 2 STD	82	-5.461	24.654	22.1 32.0 (b)	Pass
T4	120 - 100	Horizontal	ROHN 2 STD	121	-5.703	20.426	27.9 33.3 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T5	100 - 80	Horizontal	ROHN 2 STD	148	-5.649	14.771	38.2	Pass
T6	80 - 60	Horizontal	ROHN 2.5 STD	175	-6.321	25.422	24.9 37.4 (b)	Pass
T7	60 - 40	Horizontal	ROHN 2.5 STD	202	-6.807	19.663	34.6 40.7 (b)	Pass
T8	40 - 20	Horizontal	ROHN 2.5 STD	229	-6.943	15.569	44.6	Pass
T9	20 - 0	Horizontal	ROHN 3 STD	256	-7.794	27.512	28.3 32.1 (b)	Pass
T1	180 - 160	Top Girt	ROHN 1.5 STD	4	-1.566	20.345	7.7	Pass
T9	20 - 0	Redund Horz 1 Bracing	ROHN 1.5 x 11GA	258	-0.755	4.897	15.4	Pass
T9	20 - 0	Redund Diag 1 Bracing	ROHN 1.5 STD	259	-0.760	3.600	21.1	Pass
T9	20 - 0	Redund Hip 1 Bracing	ROHN 1.5 x 11GA	281	-0.023	4.354	0.5	Pass
T9	20 - 0	Redund Hip Diagonal Bracing	ROHN 2.5 STD	282	-0.051	7.007	0.7	Pass
T1	180 - 160	Inner Bracing	L2x2x1/8	16	-0.003	5.820	0.3	Pass
T2	160 - 140	Inner Bracing	L2x2x1/8	52	-0.005	4.292	0.3	Pass
T3	140 - 120	Inner Bracing	L2x2x1/8	93	-0.005	2.933	0.4	Pass
T4	120 - 100	Inner Bracing	L2x2x1/8	130	-0.004	1.659	0.5	Pass
T5	100 - 80	Inner Bracing	L2 1/2x2 1/2x3/16	158	-0.006	3.472	0.5	Pass
T6	80 - 60	Inner Bracing	L3x3x3/16	184	-0.007	4.548	0.5	Pass
T7	60 - 40	Inner Bracing	L3 1/2x3 1/2x1/4	211	-0.009	7.448	0.3	Pass
T8	40 - 20	Inner Bracing	L3 1/2x3 1/2x1/4	239	-0.010	5.931	0.4	Pass
T9	20 - 0	Inner Bracing	ROHN 3 STD	285	-0.011	19.744	0.4	Pass
							Summary	
						Leg (T9)	95.3	Pass
						Diagonal (T6)	82.3	Pass
						Horizontal (T8)	44.6	Pass
						Top Girt (T1)	7.7	Pass
						Redund Horz 1 Bracing (T9)	15.4	Pass
						Redund Diag 1 Bracing (T9)	21.1	Pass
						Redund Hip 1 Bracing (T9)	0.5	Pass
						Redund Hip Diagonal Bracing (T9)	0.7	Pass
						Inner Bracing (T4)	0.5	Pass
						Bolt Checks	57.5	Pass
						RATING =	95.3	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
--	Anchor Rods	Base	57.5	Pass
1	Base Foundation (Structure)	Base	48.0	Pass
1	Base Foundation (Soil Interaction)	Base	64.0	Pass

Structure Rating (max from all components) =	95.3%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
2) Capacities up to 100% are considered acceptable based on analysis methods used.

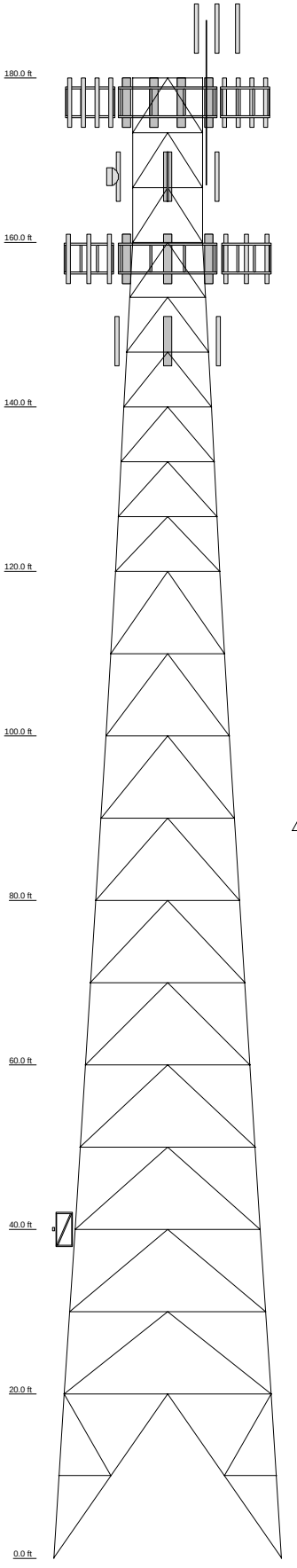
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 8 EHS		ROHN 6 X-STR	ROHN 6 EHS	ROHN 5 X-STR	ROHN 4 X-STR	ROHN 3 X-STR	ROHN 2.5 STD
Leg Grade					A572-50			
Diagonals		ROHN 3 STD		ROHN 2.5 STD			ROHN 2 STD	
Diagonal Grade			ROHN 2.5 X-STR		A572-50			
Top Girts					N.A.			ROHN 1.5 STD
Horizontals	ROHN 3 STD		ROHN 2.5 STD			ROHN 2 STD	ROHN 1.5 STD	
Red. Horizontals	ROHN 1.5 x 11GA				N.A.			
Red. Diagonals	ROHN 1.5 STD				N.A.			
Red. Hips	ROHN 1.5 x 11GA				N.A.			
Inner Bracing	ROHN 3 STD		L3 1/2x3 1/2x1/4	L3x3x3/16	L2 1/2x2 1/2x3/16		L2x2x1/8	
Face Width (ft)	27.6771	25.1771	22.5417	20.0417	17.5417	14.9583	12.7083	10.625	8.54167
# Panels @ (ft)	1 @ 19.9167			10 @ 10			9 @ 6.66667		8.5
Weight (K)	27.4	4.7	4.6	4.4	3.3	2.8	2.6	2.0	1.5	1.2



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
ATMAA1412D-1A20 (E)	180	6' x 2" Mount Pipe (E-PHOTO)	168
ATMAA1412D-1A20 (E)	180	6' x 2" Mount Pipe (E-PHOTO)	168
ATMAA1412D-1A20 (E)	180	Pipe Mount [PM 602-3] (E)	168
SBNHH-1D65A w/ Mount Pipe (R)	180	Dragonwave A-ANT-18G-2-C (E)	168
SBNHH-1D65A w/ Mount Pipe (R)	180	7770.00 w/ Mount Pipe (E)	158
SBNHH-1D65A w/ Mount Pipe (R)	180	7770.00 w/ Mount Pipe (E)	158
ATBT-BOTTOM-24V (R)	180	AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	158
ATBT-BOTTOM-24V (R)	180	SBNH-1D6565C w/ Mount Pipe (E)	158
ATBT-BOTTOM-24V (R)	180	AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	158
ATMAA1412D-1A20 (R)	180	7020.00 (E)	158
ATMAA1412D-1A20 (R)	180	7020.00 (E)	158
ATMAA1412D-1A20 (R)	180	7020.00 (E)	158
18' x 2 1/2" Mount Pipe (E-As per photo „Previous SA)	180	DTMABP7819VG12A (E)	158
		DTMABP7819VG12A (E)	158
(2) DB846F65ZAXY w/ Mount Pipe (E)	177	DTMABP7819VG12A (E)	158
(2) LPA-80063/6CFx5 w/ Mount Pipe (E)	177	RRUS 11 (E)	158
(2) SC-E 6014 rev2 w/ Mount Pipe (E)	177	RRUS 11 (E)	158
DB-T1-6Z-8AB-0Z (E)	177	RRUS 11 (E)	158
(2) SBNHH-1D65B w/ Mount Pipe (R)	177	DC6-48-60-18-8F (E)	158
(2) SBNHH-1D65B w/ Mount Pipe (R)	177	QS66512-3 w/ Mount Pipe (P)	158
(2) SBNHH-1D65B w/ Mount Pipe (R)	177	TPA-65R-LCUUUU-H8 w/ Mount Pipe (P)	158
HBXX-6517DS-A2M w/ Mount Pipe (R)	177	QS66512-3 w/ Mount Pipe (P)	158
HBXX-6517DS-A2M w/ Mount Pipe (R)	177	RRUS 32 (P)	158
HBXX-6517DS-A2M w/ Mount Pipe (R)	177	RRUS 32 (P)	158
RRH2x60-700 (R)	177	RRUS 32 (P)	158
RRH2x60-700 (R)	177	(2) TPX-070821 (P)	158
RRH2x60-700 (R)	177	(2) TPX-070821 (P)	158
RRH2X60-PCS (R)	177	(2) TPX-070821 (P)	158
RRH2X60-PCS (R)	177	RRUS 12 (P)	158
RRH2X60-PCS (R)	177	RRUS 12 (P)	158
RRH2X60-AWS (R)	177	RRUS 12 (P)	158
RRH2X60-AWS (R)	177	DC6-48-60-18-8F (P)	158
RRH2X60-AWS (R)	177	5' x 2' Pipe Mount (E)	158
DB-T1-6Z-8AB-0Z (R)	177	5' x 2' Pipe Mount (E)	158
Sector Mount [SM 504-3] (E)	177	5' x 2' Pipe Mount (E)	158
LLPX310R w/ Mount Pipe (E)	168	Sector Mount [SM 504-3] (E-14')	158
LLPX310R w/ Mount Pipe (E)	168	7770.00 w/ Mount Pipe (E)	158
LLPX310R w/ Mount Pipe (E)	168	APXV18-206517S-C w/ Mount Pipe (E)	148
FDD_R6_RRH (E)	168	APXV18-206517S-C w/ Mount Pipe (E)	148
FDD_R6_RRH (E)	168	APXV18-206517S-C w/ Mount Pipe (E)	148
FDD_R6_RRH (E)	168	Side Arm Mount [SO 308-1] (E)	40
6' x 2" Mount Pipe (E-PHOTO)	168	GPS_A (E)	40

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 95.3%

MAX. CORNER REACTIONS AT BASE:
DOWN: 228 K
SHEAR: 28 K

UPLIFT: -189 K
SHEAR: 24 K

AXIAL
100 K

SHEAR
14 K

MOMENT
1576 kip-ft

TORQUE 11 kip-ft
38 mph WIND - 0.750 in ICE

AXIAL
53 K

SHEAR
46 K

MOMENT
5050 kip-ft

TORQUE 37 kip-ft
REACTIONS - 85 mph WIND

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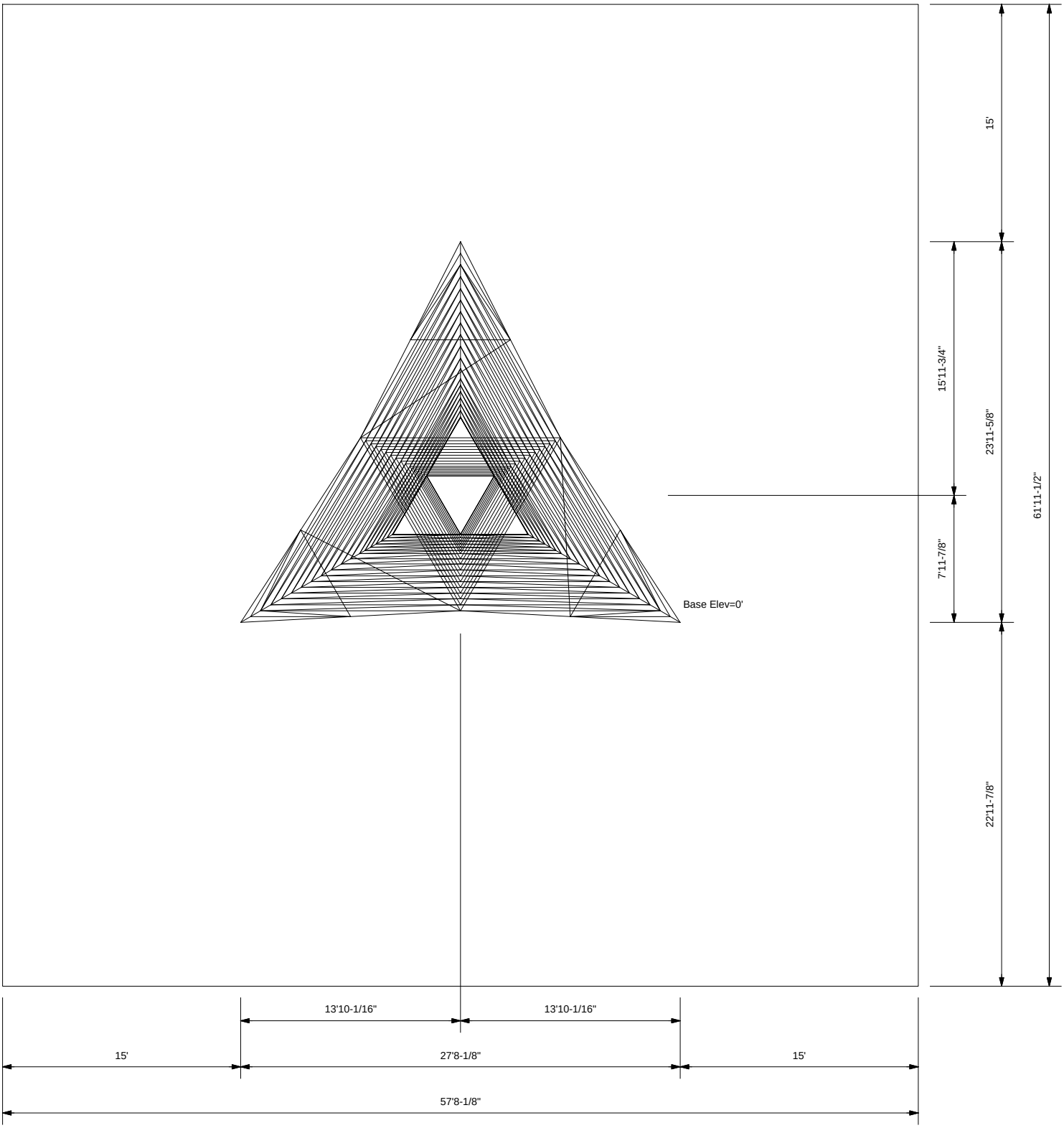
Job:	***104053.001.01 - NHV 108 943133,CT (BU# 806362***		
Project:			
Client: Crown Castle		Drawn by: jjohnson	App'd:
Code: TIA/EIA-222-F		Date: 12/30/15	Scale: NTS
Path:			Dwg No. E-1

Plot Plan

Total Area - 0.08 Acres



B+T GRP

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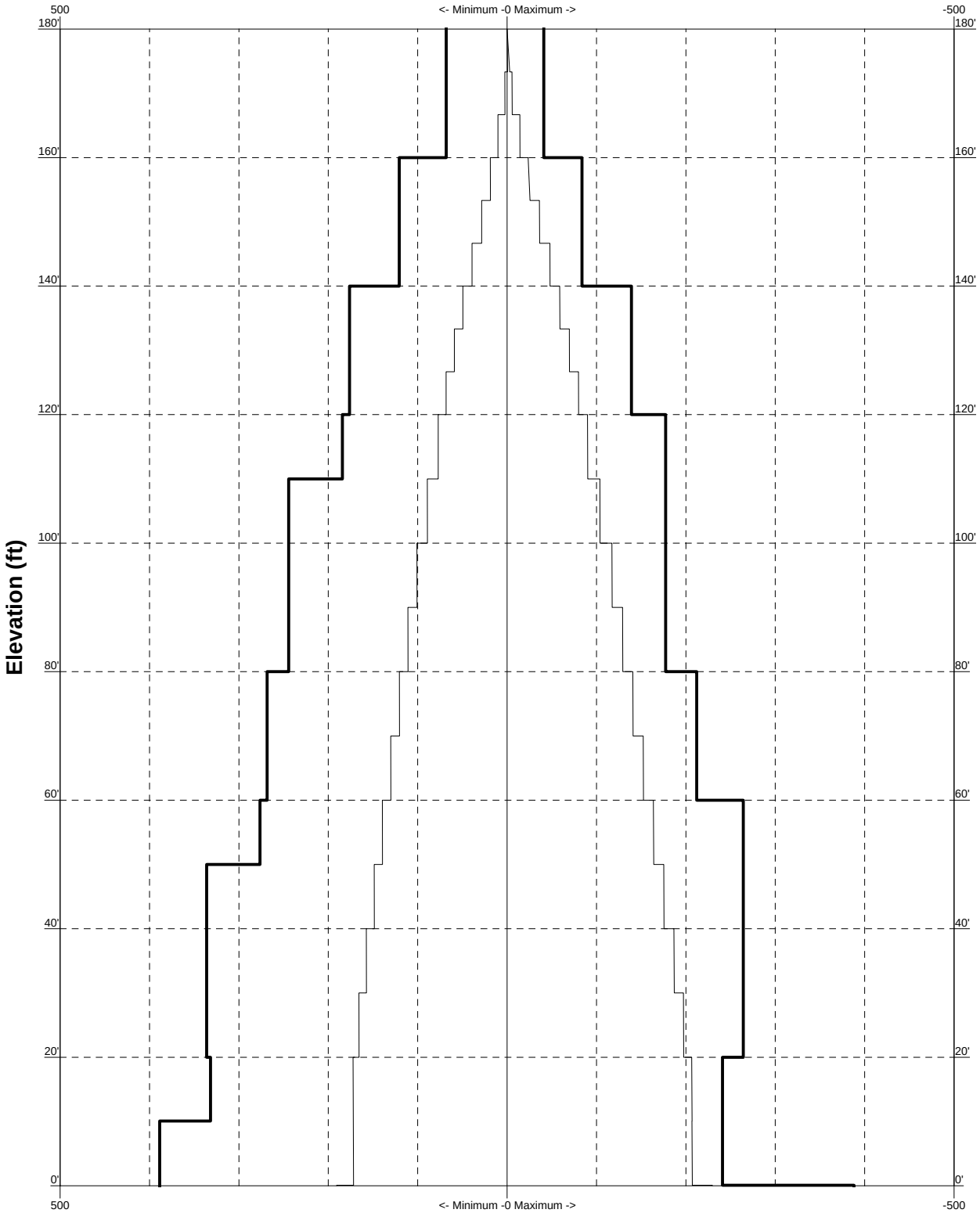
Path: S:\Projects\Crown Castle\104000\104053_806362_NHV 108 943133\Engineering\tnxTower\104053_001_01_NHV 108 943133_CT.eri		Dwg No. E-2	

TIA/EIA-222-F - 85 mph/38 mph 0.750 in Ice

Leg Capacity ——— **Leg Compression (K)**



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Path: S:\Projects\Crown Castle\104000\104053_806362_NHV 108 943133\Engineering\tnxTower\104053_001_01_NHV 108 943133_CT.eri		Dwg No. E-3

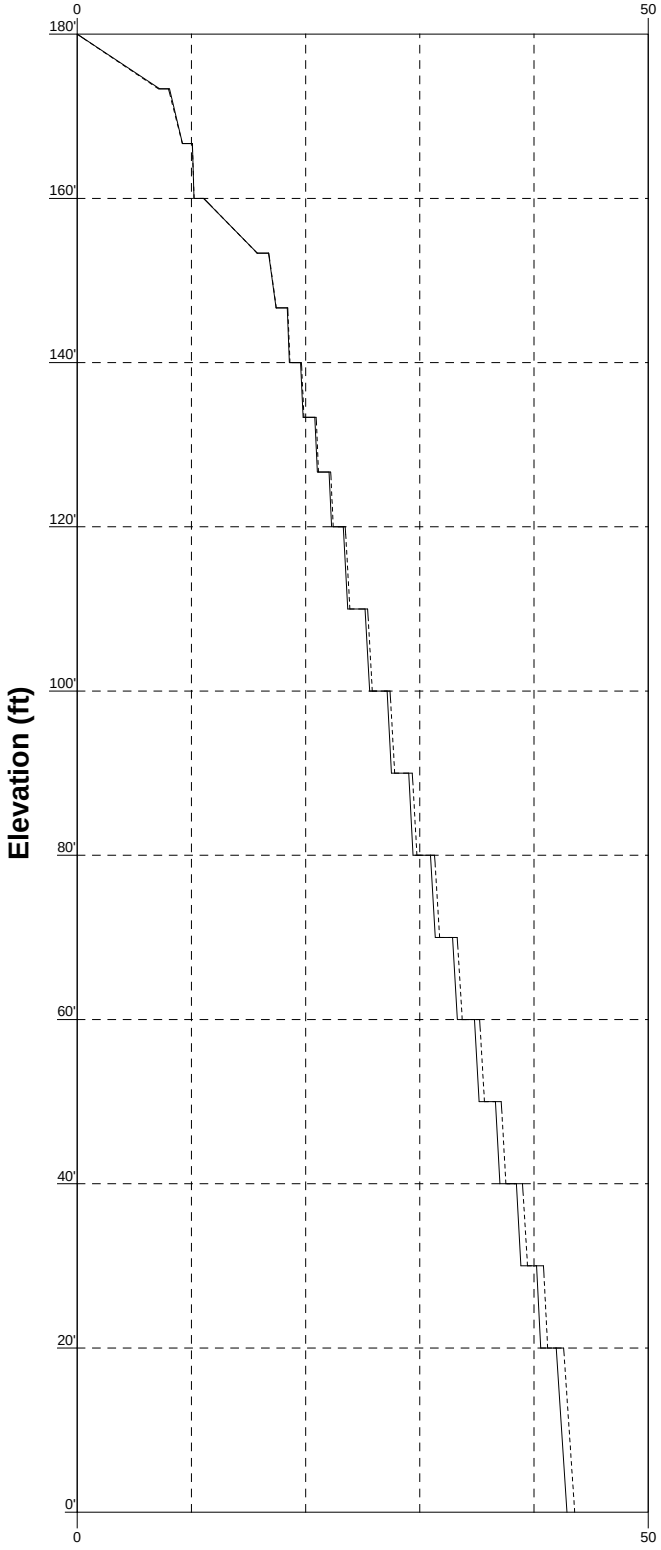
TIA/EIA-222-F - 85 mph/38 mph 0.750 in Ice

Vx Vz

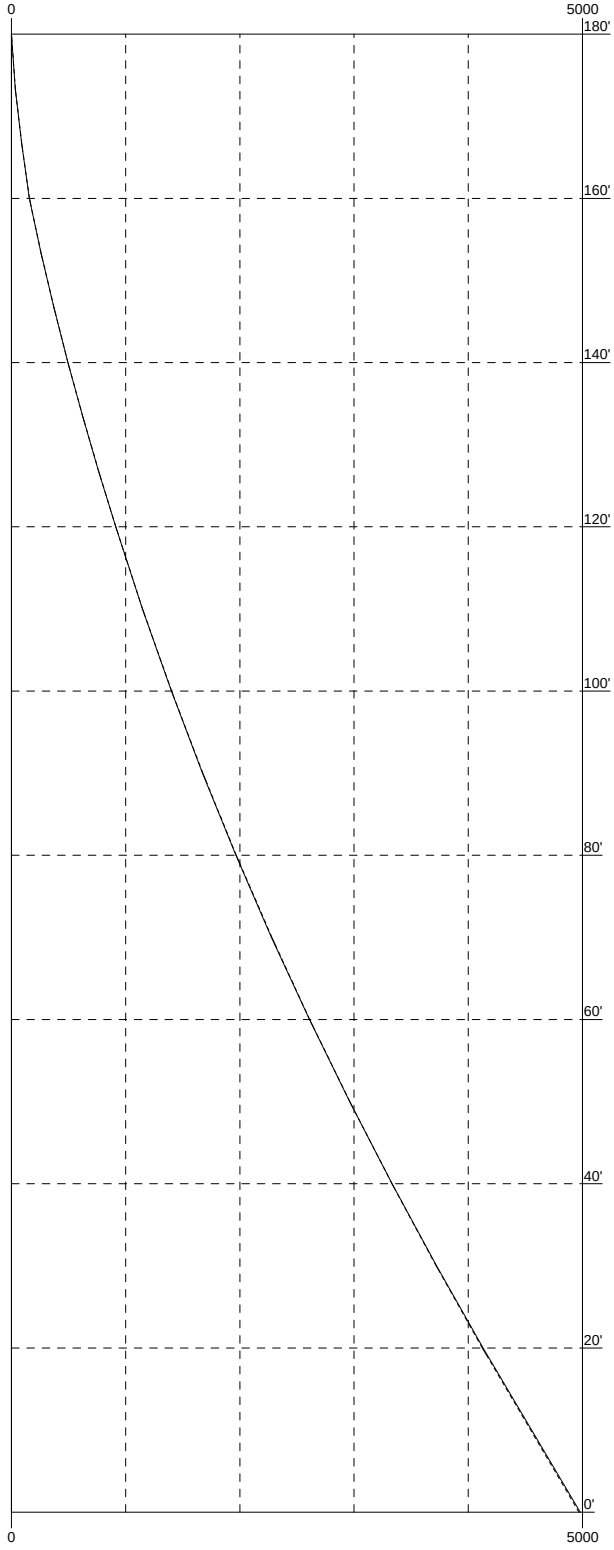
Maximum Values

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



B+T Group
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Phone: (918) 587-4630
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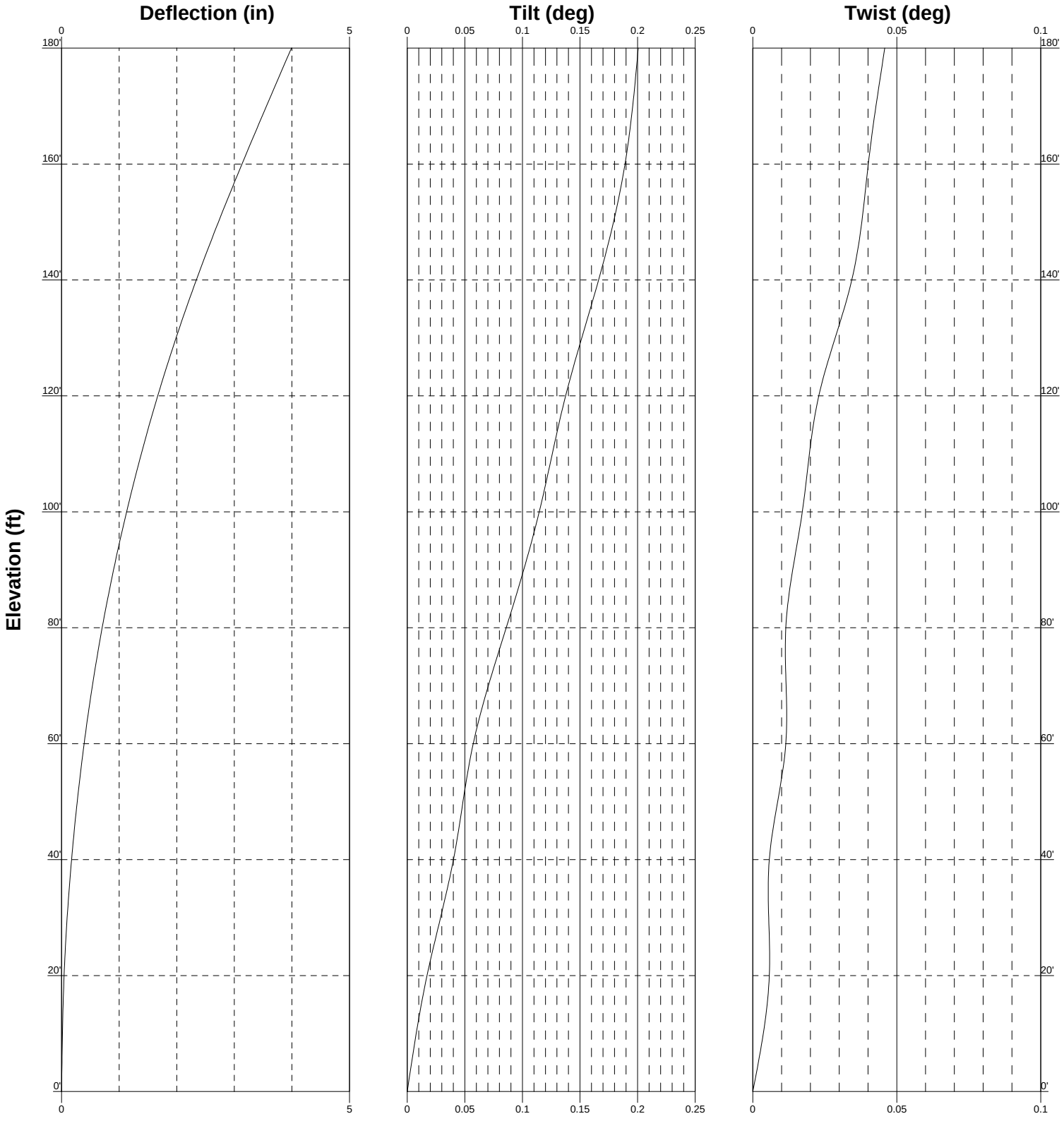
Job: 104053.001.01 - NHV 108 943133,CT (BU# 806362		
Project:		
Client: Crown Castle	Drawn by: jjohnson	App'd:
Code: TIA/EIA-222-F	Date: 12/30/15	Scale: NTS
Path: S:\Projects\Crown Castle\104000\104053_806362_NHV 108 943133\Engineering\tnxTower\104053_001_01_NHV 108 943133_CT.eri		Dwg No. E-4

TIA/EIA-222-F - Service - 50 mph

Maximum Values



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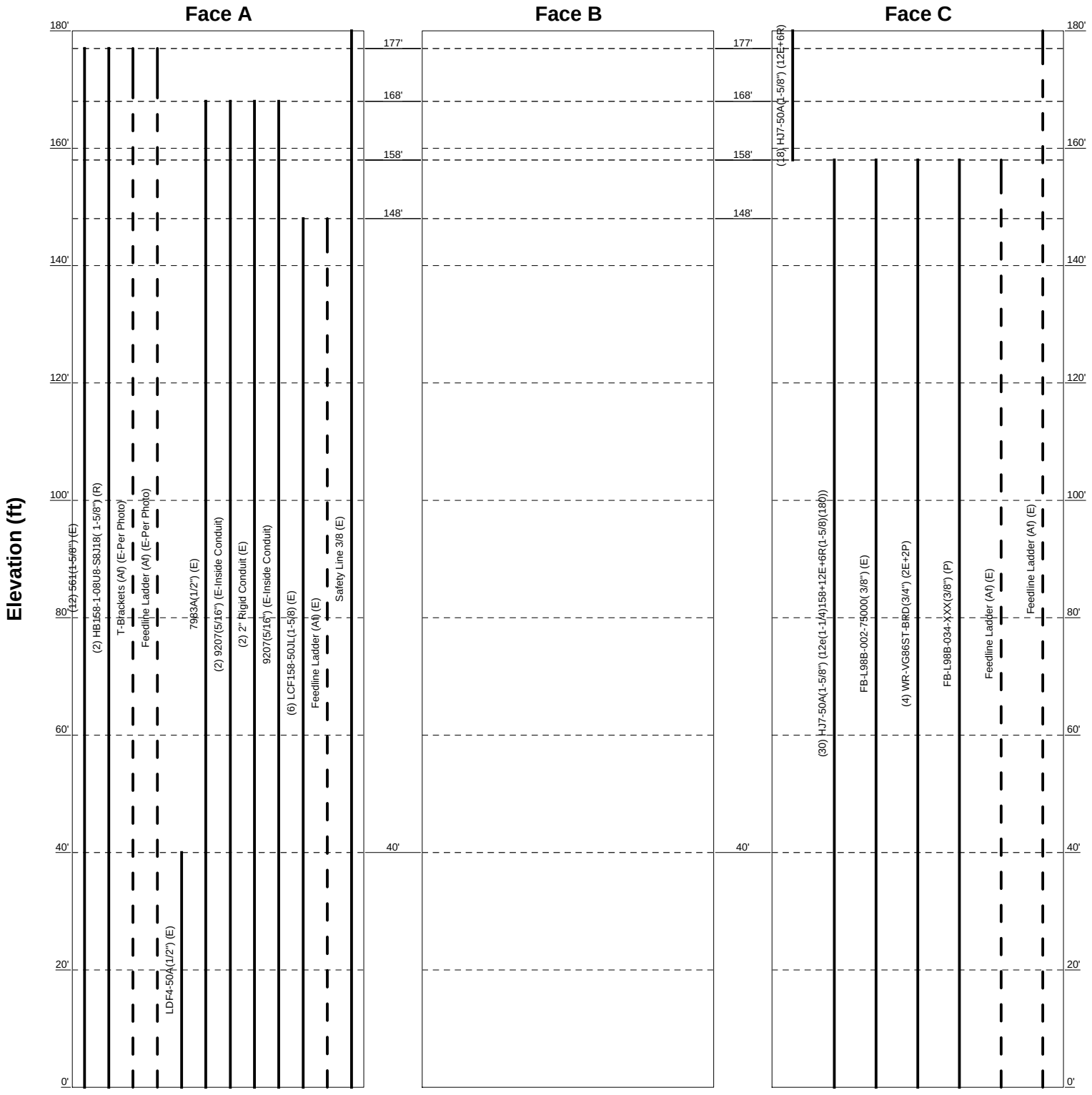
Path: S:\Projects\Crown Castle\104000\104053_806362_NHV 108 943133\Engineering\tnxTower\104053_001_01_NHV 108 943133_CT.eri		Dwg No. E-5

Feed Line Distribution Chart
0' - 180'

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



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Job:	***104053.001.01 - NHV 108 943133,CT (BU# 806362***		
Project:			
Client: Crown Castle		Drawn by: jjohnson	App'd:
Code: TIA/EIA-222-F		Date: 12/30/15	Scale: NTS
Path: S:\Projects\Crown Castle\104000\104053_806362_NHV 108 943133\Engineering\tnxTower\104053_001_01_NHV 108 943133_CT.eri			Dwg No. E-7

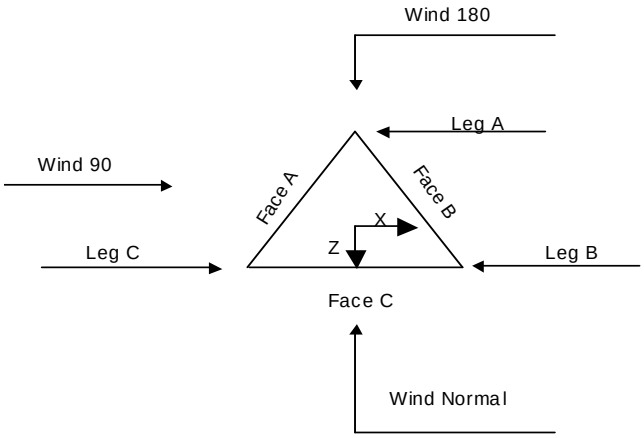
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180' above the ground line.
The base of the tower is set at an elevation of 0' above the ground line.
The face width of the tower is 8'6" at the top and 27'8-1/8" at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.750 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 50 mph.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180'-160'			8'6"	1	20'
T2	160'-140'			8'6-1/2"	1	20'
T3	140'-120'			10'7-1/2"	1	20'
T4	120'-100'			12'8-1/2"	1	20'
T5	100'-80'			14'11-1/2"	1	20'
T6	80'-60'			17'6-1/2"	1	20'
T7	60'-40'			20'1/2"	1	20'
T8	40'-20'			22'6-1/2"	1	20'
T9	20'-0'			25'2-1/8"	1	20'

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	180'-160'	6'8"	K Brace Down	No	Yes	0.000	0.000
T2	160'-140'	6'8"	K Brace Down	No	Yes	0.000	0.000
T3	140'-120'	6'8"	K Brace Down	No	Yes	0.000	0.000
T4	120'-100'	10'	K Brace Down	No	Yes	0.000	0.000
T5	100'-80'	10'	K Brace Down	No	Yes	0.000	0.000
T6	80'-60'	10'	K Brace Down	No	Yes	0.000	0.000
T7	60'-40'	10'	K Brace Down	No	Yes	0.000	0.000
T8	40'-20'	10'	K Brace Down	No	Yes	0.000	0.000
T9	20'-0'	19'11"	K1 Down	No	Yes	0.000	1.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180'-160'	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T2 160'-140'	Pipe	ROHN 3 X-STR	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T3 140'-120'	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T4 120'-100'	Pipe	ROHN 5 X-STR	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T5 100'-80'	Pipe	ROHN 5 X-STR	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T6 80'-60'	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T7 60'-40'	Pipe	ROHN 6 X-STR	A572-50 (50 ksi)	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)
T8 40'-20'	Pipe	ROHN 6 X-STR	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T9 20'-0'	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 180'-160'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T2 160'-140'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T3 140'-120'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T4 120'-100'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T5 100'-80'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T6 80'-60'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T7 60'-40'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T8 40'-20'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T9 20'-0'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 180'-160'	Pipe		A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T2 160'-140'	Pipe		A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T3 140'-120'	Pipe		A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T4 120'-100'	Pipe		A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T5 100'-80'	Pipe		A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 80'-60'	Pipe		A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T7 60'-40'	Pipe		A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T8 40'-20'	Pipe		A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T9 20'-0'	Pipe		A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T9 20'-0'	A572-50 (50 ksi)	Horizontal (1)	Pipe	ROHN 1.5 x 11GA	1
		Diagonal (1)	Pipe	ROHN 1.5 STD	1
		Hip (1)	Pipe	ROHN 1.5 x 11GA	1
		Hip Diagonal		ROHN 2.5 STD	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 180'-160'	0.000	0.000	A36 (36 ksi)	1	1.05	1.05	0.000	0.000
T2 160'-140'	0.000	0.000	A36 (36 ksi)	1	1.05	1.05	0.000	0.000
T3 140'-120'	0.000	0.000	A36 (36 ksi)	1	1.05	1.05	0.000	0.000
T4 120'-100'	0.000	0.000	A36 (36 ksi)	1	1.05	1.05	0.000	0.000
T5 100'-80'	0.000	0.000	A36 (36 ksi)	1	1.05	1.05	0.000	0.000
T6 80'-60'	0.000	0.000	A36 (36 ksi)	1	1.05	1.05	0.000	0.000
T7 60'-40'	0.000	0.000	A36 (36 ksi)	1	1.05	1.05	0.000	0.000
T8 40'-20'	0.000	0.000	A36 (36 ksi)	1	1.05	1.05	0.000	0.000
T9 20'-0'	0.000	0.000	A36 (36 ksi)	1	1.05	1.05	0.000	0.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T1 180'-160'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T2 160'-140'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T3 140'-120'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T4 120'-100'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T5 100'-80'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T6 80'-60'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T7 60'-40'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T8 40'-20'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T9 20'-0'	No	No	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 180'-160'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T2 160'-140'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T3 140'-120'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T4 120'-100'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T5 100'-80'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T6 80'-60'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T7 60'-40'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T8 40'-20'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T9 20'-0'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T1 180'-160'	Flange	0.750 A325N	4	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T2 160'-140'	Flange	0.875 A325N	4	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T3 140'-120'	Flange	1.000 A325N	4	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T4 120'-100'	Flange	1.000 A325N	4	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T5 100'-80'	Flange	1.000 A325N	6	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T6 80'-60'	Flange	1.000 A325N	6	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T7 60'-40'	Flange	1.000 A325N	6	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T8 40'-20'	Flange	1.000 A325N	8	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T9 20'-0'	Flange	1.000 A449	8	0.750 A325N	3	0.000 A325N	0	0.000 A325N	0	0.750 A325N	0	0.750 A325N	2	0.625 A325N	1

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
Face A 561(1-5/8") (E)	A	Yes	Ar (CfAe)	177' - 0'	0.000	-0.4	12	2	0.850 0.750	1.625		0.001
HB158-1-08U8-S8J18(1-5/8") (R)	A	Yes	Ar (CfAe)	177' - 0'	0.000	-0.38	2	2	0.850 0.750	1.980		0.001
T-Brackets (Af) (E-Per Photo)	A	Yes	Af (CfAe)	177' - 0'	0.000	-0.4	1	1	1.000	1.000	4.000	0.008
Feedline Ladder (Af) (E-Per Photo)	A	Yes	Af (CfAe)	177' - 0'	0.000	-0.42	1	1	3.000	3.000	12.000	0.008
s LDF4-50A(1/2") (E)	A	Yes	Ar (CfAe)	40' - 0'	0.000	-0.45	1	1	0.750	0.630		0.000
s 7983A(1/2") (E)	A	Yes	Ar (CfAe)	168' - 0'	0.000	0.43	1	1	0.750	0.580		0.000
9207(5/16") (E-Inside Conduit)	A	Yes	Ar (CfAe)	168' - 0'	0.000	0.45	2	2	0.250	0.000		0.001
2" Rigid Conduit (E)	A	Yes	Ar (CfAe)	168' - 0'	0.000	0.45	2	2	1.000 0.750	2.000		0.003
9207(5/16") (E-Inside Conduit)	A	Yes	Ar (CfAe)	168' - 0'	0.000	0.44	1	1	0.250	0.000		0.001
s LCF158-50JL(1-5/8) (E)	A	Yes	Ar (CfAe)	148' - 0'	0.000	0.41	6	3	0.750	1.980		0.001
Feedline Ladder (Af) (E)	A	Yes	Af (CfAe)	148' - 0'	0.000	0.43	1	1	3.000	3.000	12.000	0.008
s												

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
Safety Line 3/8 (E) *s*	A	Yes	Ar (CfAe)	180' - 0'	0.000	0.5	1	1	0.375	0.375		0.000
Face C												
HJ7-50A(1-5/8") (12E+6R)	C	Yes	Ar (CfAe)	180' - 158'	-3.000	-0.38	18	12	0.750	1.980		0.001
HJ7-50A(1-5/8") (12e(1-1/4)158+12E+6R(1-5/8)(180))	C	Yes	Ar (CfAe)	158' - 0'	-3.000	-0.4	30	12	0.750	1.980		0.001
FB-L98B-002-75000(3/8") (E)	C	Yes	Ar (CfAe)	158' - 0'	2.000	-0.36	1	1	0.750	0.394		0.000
WR-VG86ST-BRD(3/4") (2E+2P)	C	Yes	Ar (CfAe)	158' - 0'	0.000	-0.35	4	4	0.750	0.795		0.001
FB-L98B-034-XXX(3/8") (P)	C	Yes	Ar (CfAe)	158' - 0'	0.000	-0.33	1	1	0.750	0.394		0.000
Feedline Ladder (Af) (E) *s*	C	Yes	Af (CfAe)	158' - 0'	0.000	-0.38	1	1	3.000	3.000	12.000	0.008
Feedline Ladder (Af) (E) *s*	C	Yes	Af (CfAe)	180' - 0'	-0.500	-0.4	1	1	3.000	3.000	12.000	0.008

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 klf
s							
s							

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
T1	180'-160'	A	13.893	5.667	0.000	0.000	0.669
		B	0.000	0.000	0.000	0.000	0.000
		C	39.600	5.000	0.000	0.000	0.542
T2	160'-140'	A	24.235	8.667	0.000	0.000	0.958
		B	0.000	0.000	0.000	0.000	0.000
		C	45.551	9.500	0.000	0.000	0.962
T3	140'-120'	A	30.175	11.667	0.000	0.000	1.096
		B	0.000	0.000	0.000	0.000	0.000
		C	46.212	10.000	0.000	0.000	1.009
T4	120'-100'	A	30.175	11.667	0.000	0.000	1.096
		B	0.000	0.000	0.000	0.000	0.000
		C	46.212	10.000	0.000	0.000	1.009
T5	100'-80'	A	30.175	11.667	0.000	0.000	1.096

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
		B	0.000	0.000	0.000	0.000	0.000
		C	46.212	10.000	0.000	0.000	1.009
T6	80'-60'	A	30.175	11.667	0.000	0.000	1.096
		B	0.000	0.000	0.000	0.000	0.000
		C	46.212	10.000	0.000	0.000	1.009
T7	60'-40'	A	30.175	11.667	0.000	0.000	1.096
		B	0.000	0.000	0.000	0.000	0.000
		C	46.212	10.000	0.000	0.000	1.009
T8	40'-20'	A	31.225	11.667	0.000	0.000	1.099
		B	0.000	0.000	0.000	0.000	0.000
		C	46.212	10.000	0.000	0.000	1.009
T9	20'-0'	A	31.225	11.667	0.000	0.000	1.099
		B	0.000	0.000	0.000	0.000	0.000
		C	46.212	10.000	0.000	0.000	1.009

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
T1	180'-160'	A	0.913	20.539	18.798	0.000	0.000	1.444
		B		0.000	0.000	0.000	0.000	0.000
		C		6.343	57.079	0.000	0.000	1.563
T2	160'-140'	A	0.899	34.439	31.362	0.000	0.000	2.124
		B		0.000	0.000	0.000	0.000	0.000
		C		16.767	70.300	0.000	0.000	2.616
T3	140'-120'	A	0.884	37.810	40.919	0.000	0.000	2.486
		B		0.000	0.000	0.000	0.000	0.000
		C		17.726	71.704	0.000	0.000	2.716
T4	120'-100'	A	0.867	37.342	40.802	0.000	0.000	2.462
		B		0.000	0.000	0.000	0.000	0.000
		C		17.492	71.626	0.000	0.000	2.696
T5	100'-80'	A	0.846	36.792	40.665	0.000	0.000	2.434
		B		0.000	0.000	0.000	0.000	0.000
		C		17.217	71.535	0.000	0.000	2.672
T6	80'-60'	A	0.821	36.122	40.497	0.000	0.000	2.400
		B		0.000	0.000	0.000	0.000	0.000
		C		16.882	71.423	0.000	0.000	2.643
T7	60'-40'	A	0.788	35.256	40.281	0.000	0.000	2.357
		B		0.000	0.000	0.000	0.000	0.000
		C		16.449	71.279	0.000	0.000	2.606
T8	40'-20'	A	0.750	37.783	40.025	0.000	0.000	2.335
		B		0.000	0.000	0.000	0.000	0.000
		C		15.937	71.108	0.000	0.000	2.562
T9	20'-0'	A	0.750	37.783	40.025	0.000	0.000	2.335
		B		0.000	0.000	0.000	0.000	0.000
		C		15.937	71.108	0.000	0.000	2.562

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	180'-160'	A	1.542	5.915	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.517	9.281	0.000	0.000
T2	160'-140'	A	2.420	9.122	0.000	0.000

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
		B	0.000	0.000	0.000	0.000
		C	4.049	11.899	0.000	0.000
T3	140'-120'	A	3.100	10.557	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	4.165	11.813	0.000	0.000
T4	120'-100'	A	2.545	8.103	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.419	9.105	0.000	0.000
T5	100'-80'	A	2.382	7.457	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.200	8.419	0.000	0.000
T6	80'-60'	A	2.442	7.276	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.281	8.264	0.000	0.000
T7	60'-40'	A	2.360	6.826	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.170	7.814	0.000	0.000
T8	40'-20'	A	2.642	7.247	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.463	8.005	0.000	0.000
T9	20'-0'	A	2.674	7.902	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.505	8.729	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	180'-160'	6.815	9.194	5.914	5.428
T2	160'-140'	8.033	7.407	7.599	5.009
T3	140'-120'	8.328	4.990	8.292	3.911
T4	120'-100'	9.515	5.742	9.880	4.694
T5	100'-80'	10.977	6.661	11.412	5.480
T6	80'-60'	11.552	7.039	12.349	6.000
T7	60'-40'	12.787	7.816	13.751	6.766
T8	40'-20'	12.772	8.424	13.358	7.881
T9	20'-0'	12.880	8.510	13.527	8.001

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
ATMAA1412D-1A20 (E)	A	From Leg	2.000 0' 6'	0.000	180'	No Ice	1.167	0.467	0.013
						1/2" Ice	1.314	0.575	0.021
						1" Ice	1.469	0.691	0.030
						2" Ice	1.806	0.951	0.056
						4" Ice	2.584	1.573	0.137
ATMAA1412D-1A20 (E)	B	From Leg	2.000 0' 6'	0.000	180'	No Ice	1.167	0.467	0.013
						1/2" Ice	1.314	0.575	0.021
						1" Ice	1.469	0.691	0.030
						2" Ice	1.806	0.951	0.056

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice	2.584	1.573	0.137
ATMAA1412D-1A20 (E)	C	From Leg	2.000 0'	0.000	180'	No Ice	1.167	0.467	0.013
			6'			1/2" Ice	1.314	0.575	0.021
						1" Ice	1.469	0.691	0.030
						2" Ice	1.806	0.951	0.056
						4" Ice	2.584	1.573	0.137
SBNHH-1D65A w/ Mount Pipe (R)	A	From Leg	2.000 0'	0.000	180'	No Ice	6.601	5.190	0.054
			6'			1/2" Ice	7.113	5.961	0.108
						1" Ice	7.621	6.705	0.168
						2" Ice	8.669	8.279	0.312
						4" Ice	10.888	11.643	0.720
SBNHH-1D65A w/ Mount Pipe (R)	B	From Leg	2.000 0'	0.000	180'	No Ice	6.601	5.190	0.054
			6'			1/2" Ice	7.113	5.961	0.108
						1" Ice	7.621	6.705	0.168
						2" Ice	8.669	8.279	0.312
						4" Ice	10.888	11.643	0.720
SBNHH-1D65A w/ Mount Pipe (R)	C	From Leg	2.000 0'	0.000	180'	No Ice	6.601	5.190	0.054
			6'			1/2" Ice	7.113	5.961	0.108
						1" Ice	7.621	6.705	0.168
						2" Ice	8.669	8.279	0.312
						4" Ice	10.888	11.643	0.720
ATBT-BOTTOM-24V (R)	A	From Leg	2.000 0'	0.000	180'	No Ice	0.121	0.075	0.003
			6'			1/2" Ice	0.172	0.119	0.004
						1" Ice	0.232	0.172	0.006
						2" Ice	0.377	0.303	0.013
						4" Ice	0.771	0.668	0.045
ATBT-BOTTOM-24V (R)	B	From Leg	2.000 0'	0.000	180'	No Ice	0.121	0.075	0.003
			6'			1/2" Ice	0.172	0.119	0.004
						1" Ice	0.232	0.172	0.006
						2" Ice	0.377	0.303	0.013
						4" Ice	0.771	0.668	0.045
ATBT-BOTTOM-24V (R)	C	From Leg	2.000 0'	0.000	180'	No Ice	0.121	0.075	0.003
			6'			1/2" Ice	0.172	0.119	0.004
						1" Ice	0.232	0.172	0.006
						2" Ice	0.377	0.303	0.013
						4" Ice	0.771	0.668	0.045
ATMAA1412D-1A20 (R)	A	From Leg	2.000 0'	0.000	180'	No Ice	1.167	0.467	0.013
			2'			1/2" Ice	1.314	0.575	0.021
						1" Ice	1.469	0.691	0.030
						2" Ice	1.806	0.951	0.056
						4" Ice	2.584	1.573	0.137
ATMAA1412D-1A20 (R)	B	From Leg	2.000 0'	0.000	180'	No Ice	1.167	0.467	0.013
			2'			1/2" Ice	1.314	0.575	0.021
						1" Ice	1.469	0.691	0.030
						2" Ice	1.806	0.951	0.056
						4" Ice	2.584	1.573	0.137
ATMAA1412D-1A20 (R)	C	From Leg	2.000 0'	0.000	180'	No Ice	1.167	0.467	0.013
			2'			1/2" Ice	1.314	0.575	0.021
						1" Ice	1.469	0.691	0.030
						2" Ice	1.806	0.951	0.056
						4" Ice	2.584	1.573	0.137
18' x 2 1/2" Mount Pipe (E-As per photo & Previous SA)	B	From Leg	0.500 0'	0.000	180'	No Ice	4.500	4.500	0.100
			-3'			1/2" Ice	6.329	6.329	0.133
						1" Ice	8.175	8.175	0.178
						2" Ice	11.917	11.917	0.302
						4" Ice	18.269	18.269	0.694
S									

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) DB846F65ZAXY w/ Mount Pipe (E)	A	From Leg	4.000 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.271 7.877 8.484 9.724 12.325	7.821 9.010 9.912 11.812 15.978	0.047 0.114 0.189 0.367 0.867
(2) LPA-80063/6CFx5 w/ Mount Pipe (E)	B	From Leg	4.000 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.545 11.209 11.839 13.130 15.830	10.646 11.906 12.884 14.894 19.128	0.052 0.144 0.245 0.475 1.086
(2) SC-E 6014 rev2 w/ Mount Pipe (E)	C	From Leg	4.000 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.783 4.182 4.591 5.442 7.293	4.396 5.009 5.640 6.956 9.897	0.032 0.071 0.116 0.225 0.544
DB-T1-6Z-8AB-0Z (E)	C	From Leg	4.000 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.600 5.915 6.240 6.914 8.365	2.333 2.558 2.791 3.284 4.373	0.044 0.080 0.120 0.213 0.455
(2) SBNHH-1D65B w/ Mount Pipe (R)	A	From Leg	4.000 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.637 9.293 9.917 11.190 13.855	7.071 8.260 9.170 11.006 15.043	0.066 0.135 0.212 0.394 0.903
(2) SBNHH-1D65B w/ Mount Pipe (R)	B	From Leg	4.000 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.637 9.293 9.917 11.190 13.855	7.071 8.260 9.170 11.006 15.043	0.066 0.135 0.212 0.394 0.903
(2) SBNHH-1D65B w/ Mount Pipe (R)	C	From Leg	4.000 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.637 9.293 9.917 11.190 13.855	7.071 8.260 9.170 11.006 15.043	0.066 0.135 0.212 0.394 0.903
HBXX-6517DS-A2M w/ Mount Pipe (R)	A	From Leg	4.000 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.976 9.647 10.291 11.595 14.321	6.963 8.182 9.144 11.022 15.027	0.067 0.137 0.215 0.398 0.914
HBXX-6517DS-A2M w/ Mount Pipe (R)	B	From Leg	4.000 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.976 9.647 10.291 11.595 14.321	6.963 8.182 9.144 11.022 15.027	0.067 0.137 0.215 0.398 0.914
HBXX-6517DS-A2M w/ Mount Pipe (R)	C	From Leg	4.000 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.976 9.647 10.291 11.595 14.321	6.963 8.182 9.144 11.022 15.027	0.067 0.137 0.215 0.398 0.914
RRH2x60-700 (R)	A	From Leg	4.000 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.957 4.272 4.596 5.271 6.722	1.816 2.075 2.360 2.957 4.253	0.060 0.083 0.109 0.173 0.354
RRH2x60-700 (R)	B	From Leg	4.000 0'	0.000	177'	No Ice 1/2" Ice	3.957 4.272	1.816 2.075	0.060 0.083

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0'			1" Ice	4.596	2.360	0.109
						2" Ice	5.271	2.957	0.173
						4" Ice	6.722	4.253	0.354
RRH2x60-700 (R)	C	From Leg	4.000 0'	0.000	177'	No Ice 1/2" Ice	3.957 4.272	1.816 2.075	0.060 0.083
			0'			1" Ice	4.596	2.360	0.109
						2" Ice	5.271	2.957	0.173
						4" Ice	6.722	4.253	0.354
RRH2X60-PCS (R)	A	From Leg	4.000 0'	0.000	177'	No Ice 1/2" Ice	2.567 2.791	2.011 2.218	0.055 0.075
			0'			1" Ice	3.025	2.435	0.099
						2" Ice	3.517	2.894	0.155
						4" Ice	4.606	3.915	0.313
RRH2X60-PCS (R)	B	From Leg	4.000 0'	0.000	177'	No Ice 1/2" Ice	2.567 2.791	2.011 2.218	0.055 0.075
			0'			1" Ice	3.025	2.435	0.099
						2" Ice	3.517	2.894	0.155
						4" Ice	4.606	3.915	0.313
RRH2X60-PCS (R)	C	From Leg	4.000 0'	0.000	177'	No Ice 1/2" Ice	2.567 2.791	2.011 2.218	0.055 0.075
			0'			1" Ice	3.025	2.435	0.099
						2" Ice	3.517	2.894	0.155
						4" Ice	4.606	3.915	0.313
RRH2X60-AWS (R)	A	From Leg	4.000 0'	0.000	177'	No Ice 1/2" Ice	3.957 4.272	1.816 2.075	0.060 0.083
			0'			1" Ice	4.596	2.360	0.109
						2" Ice	5.271	2.957	0.173
						4" Ice	6.722	4.253	0.354
RRH2X60-AWS (R)	B	From Leg	4.000 0'	0.000	177'	No Ice 1/2" Ice	3.957 4.272	1.816 2.075	0.060 0.083
			0'			1" Ice	4.596	2.360	0.109
						2" Ice	5.271	2.957	0.173
						4" Ice	6.722	4.253	0.354
RRH2X60-AWS (R)	C	From Leg	4.000 0'	0.000	177'	No Ice 1/2" Ice	3.957 4.272	1.816 2.075	0.060 0.083
			0'			1" Ice	4.596	2.360	0.109
						2" Ice	5.271	2.957	0.173
						4" Ice	6.722	4.253	0.354
DB-T1-6Z-8AB-0Z (R)	C	From Leg	4.000 0'	0.000	177'	No Ice 1/2" Ice	5.600 5.915	2.333 2.558	0.044 0.080
			0'			1" Ice	6.240	2.791	0.120
						2" Ice	6.914	3.284	0.213
						4" Ice	8.365	4.373	0.455
Sector Mount [SM 504-3] (E)	C	None		0.000	177'	No Ice 1/2" Ice	34.250 48.980	34.250 48.980	1.708 2.286
						1" Ice	63.710	63.710	2.864
						2" Ice	93.170	93.170	4.020
						4" Ice	152.090	152.090	6.333
s									
LLPX310R w/ Mount Pipe (E)	A	From Leg	2.000 0'	0.000	168'	No Ice 1/2" Ice	5.065 5.480	2.985 3.528	0.045 0.083
			0'			1" Ice	5.905	4.087	0.126
						2" Ice	6.788	5.314	0.232
						4" Ice	8.705	8.133	0.544
LLPX310R w/ Mount Pipe (E)	B	From Leg	2.000 0'	0.000	168'	No Ice 1/2" Ice	5.065 5.480	2.985 3.528	0.045 0.083
			0'			1" Ice	5.905	4.087	0.126

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	6.788	5.314	0.232
						4" Ice	8.705	8.133	0.544
LLPX310R w/ Mount Pipe (E)	C	From Leg	2.000 0' 0'	0.000	168'	No Ice	5.065	2.985	0.045
						1/2" Ice	5.480	3.528	0.083
						1" Ice	5.905	4.087	0.126
						2" Ice	6.788	5.314	0.232
						4" Ice	8.705	8.133	0.544
FDD_R6_RRH (E)	A	From Leg	2.000 0' 0'	0.000	168'	No Ice	1.789	0.778	0.033
						1/2" Ice	1.971	0.918	0.045
						1" Ice	2.163	1.067	0.058
						2" Ice	2.571	1.391	0.094
						4" Ice	3.491	2.143	0.200
FDD_R6_RRH (E)	B	From Leg	2.000 0' 0'	0.000	168'	No Ice	1.789	0.778	0.033
						1/2" Ice	1.971	0.918	0.045
						1" Ice	2.163	1.067	0.058
						2" Ice	2.571	1.391	0.094
						4" Ice	3.491	2.143	0.200
FDD_R6_RRH (E)	C	From Leg	2.000 0' 0'	0.000	168'	No Ice	1.789	0.778	0.033
						1/2" Ice	1.971	0.918	0.045
						1" Ice	2.163	1.067	0.058
						2" Ice	2.571	1.391	0.094
						4" Ice	3.491	2.143	0.200
6' x 2" Mount Pipe (E-PHOTO)	A	From Leg	2.000 0' 0'	0.000	168'	No Ice	1.425	1.425	0.022
						1/2" Ice	1.925	1.925	0.033
						1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe (E-PHOTO)	B	From Leg	2.000 0' 0'	0.000	168'	No Ice	1.425	1.425	0.022
						1/2" Ice	1.925	1.925	0.033
						1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe (E-PHOTO)	C	From Leg	2.000 0' 0'	0.000	168'	No Ice	1.425	1.425	0.022
						1/2" Ice	1.925	1.925	0.033
						1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
Pipe Mount [PM 602-3] (E)	C	None		0.000	168'	No Ice	7.680	7.680	0.279
						1/2" Ice	9.500	9.500	0.353
						1" Ice	11.320	11.320	0.427
						2" Ice	14.960	14.960	0.576
						4" Ice	22.240	22.240	0.873
s 7770.00 w/ Mount Pipe (E)	A	From Leg	4.000 0' 2'	0.000	158'	No Ice	6.119	4.254	0.055
						1/2" Ice	6.626	5.014	0.103
						1" Ice	7.128	5.711	0.157
						2" Ice	8.164	7.155	0.287
						4" Ice	10.360	10.412	0.665
7770.00 w/ Mount Pipe (E)	B	From Leg	4.000 0' 2'	0.000	158'	No Ice	6.119	4.254	0.055
						1/2" Ice	6.626	5.014	0.103
						1" Ice	7.128	5.711	0.157
						2" Ice	8.164	7.155	0.287
						4" Ice	10.360	10.412	0.665
7770.00 w/ Mount Pipe (E)	C	From Leg	4.000 0' 2'	0.000	158'	No Ice	6.119	4.254	0.055
						1/2" Ice	6.626	5.014	0.103
						1" Ice	7.128	5.711	0.157
						2" Ice	8.164	7.155	0.287

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice	10.360	10.412	0.665
AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	A	From Leg	4.000 0' 2'	0.000	158'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.304 7.479 8.368 10.179 14.024	0.074 0.139 0.212 0.385 0.874
SBNH-1D6565C w/ Mount Pipe (E)	B	From Leg	4.000 0' 2'	0.000	158'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.683 12.404 13.135 14.601 17.875	9.842 11.366 12.914 15.267 20.139	0.099 0.189 0.288 0.522 1.167
AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	C	From Leg	4.000 0' 2'	0.000	158'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.304 7.479 8.368 10.179 14.024	0.074 0.139 0.212 0.385 0.874
7020.00 (E)	A	From Leg	4.000 0' 2'	0.000	158'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.119 0.171 0.232 0.380 0.779	0.204 0.279 0.363 0.556 1.046	0.002 0.005 0.009 0.022 0.071
7020.00 (E)	B	From Leg	4.000 0' 2'	0.000	158'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.119 0.171 0.232 0.380 0.779	0.204 0.279 0.363 0.556 1.046	0.002 0.005 0.009 0.022 0.071
7020.00 (E)	C	From Leg	4.000 0' 2'	0.000	158'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.119 0.171 0.232 0.380 0.779	0.204 0.279 0.363 0.556 1.046	0.002 0.005 0.009 0.022 0.071
DTMABP7819VG12A (E)	A	From Leg	4.000 0' 2'	0.000	158'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.139 1.284 1.437 1.769 2.538	0.391 0.488 0.595 0.833 1.414	0.019 0.026 0.036 0.060 0.140
DTMABP7819VG12A (E)	B	From Leg	4.000 0' 2'	0.000	158'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.139 1.284 1.437 1.769 2.538	0.391 0.488 0.595 0.833 1.414	0.019 0.026 0.036 0.060 0.140
DTMABP7819VG12A (E)	C	From Leg	4.000 0' 2'	0.000	158'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.139 1.284 1.437 1.769 2.538	0.391 0.488 0.595 0.833 1.414	0.019 0.026 0.036 0.060 0.140
RRUS 11 (E)	A	From Leg	4.000 0' 2'	0.000	158'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.249 3.491 3.741 4.268 5.426	1.373 1.551 1.738 2.138 3.042	0.048 0.068 0.092 0.150 0.310
RRUS 11 (E)	B	From Leg	4.000 0' 2'	0.000	158'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.249 3.491 3.741 4.268 5.426	1.373 1.551 1.738 2.138 3.042	0.048 0.068 0.092 0.150 0.310
RRUS 11	C	From Leg	4.000	0.000	158'	No Ice	3.249	1.373	0.048

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(E)			0'			1/2" Ice	3.491	1.551	0.068
			2'			1" Ice	3.741	1.738	0.092
						2" Ice	4.268	2.138	0.150
						4" Ice	5.426	3.042	0.310
DC6-48-60-18-8F	A	From Leg	4.000	0.000	158'	No Ice	1.467	1.467	0.019
(E)			0'			1/2" Ice	1.667	1.667	0.037
			2'			1" Ice	1.878	1.878	0.057
						2" Ice	2.333	2.333	0.105
						4" Ice	3.378	3.378	0.239
QS66512-3 w/ Mount Pipe	A	From Leg	4.000	0.000	158'	No Ice	8.637	8.463	0.131
(P)			0'			1/2" Ice	9.290	9.657	0.206
			2'			1" Ice	9.910	10.620	0.290
						2" Ice	11.176	12.610	0.486
						4" Ice	13.829	16.806	1.023
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.000	0.000	158'	No Ice	13.678	10.960	0.114
(P)			0'			1/2" Ice	14.501	12.486	0.218
			2'			1" Ice	15.334	14.037	0.331
						2" Ice	16.941	16.391	0.593
						4" Ice	20.270	21.279	1.296
QS66512-3 w/ Mount Pipe	C	From Leg	4.000	0.000	158'	No Ice	8.637	8.463	0.131
(P)			0'			1/2" Ice	9.290	9.657	0.206
			2'			1" Ice	9.910	10.620	0.290
						2" Ice	11.176	12.610	0.486
						4" Ice	13.829	16.806	1.023
RRUS 32	A	From Leg	4.000	0.000	158'	No Ice	3.333	1.983	0.055
(P)			0'			1/2" Ice	3.597	2.214	0.077
			2'			1" Ice	3.869	2.453	0.103
						2" Ice	4.439	2.958	0.165
						4" Ice	5.684	4.072	0.336
RRUS 32	B	From Leg	4.000	0.000	158'	No Ice	3.333	1.983	0.055
(P)			0'			1/2" Ice	3.597	2.214	0.077
			2'			1" Ice	3.869	2.453	0.103
						2" Ice	4.439	2.958	0.165
						4" Ice	5.684	4.072	0.336
RRUS 32	C	From Leg	4.000	0.000	158'	No Ice	3.333	1.983	0.055
(P)			0'			1/2" Ice	3.597	2.214	0.077
			2'			1" Ice	3.869	2.453	0.103
						2" Ice	4.439	2.958	0.165
						4" Ice	5.684	4.072	0.336
(2) TPX-070821	A	From Leg	4.000	0.000	158'	No Ice	0.547	0.116	0.008
(P)			0'			1/2" Ice	0.652	0.172	0.011
			2'			1" Ice	0.765	0.236	0.016
						2" Ice	1.017	0.390	0.030
						4" Ice	1.626	0.801	0.083
(2) TPX-070821	B	From Leg	4.000	0.000	158'	No Ice	0.547	0.116	0.008
(P)			0'			1/2" Ice	0.652	0.172	0.011
			2'			1" Ice	0.765	0.236	0.016
						2" Ice	1.017	0.390	0.030
						4" Ice	1.626	0.801	0.083
(2) TPX-070821	C	From Leg	4.000	0.000	158'	No Ice	0.547	0.116	0.008
(P)			0'			1/2" Ice	0.652	0.172	0.011
			2'			1" Ice	0.765	0.236	0.016
						2" Ice	1.017	0.390	0.030
						4" Ice	1.626	0.801	0.083
RRUS 12	A	From Leg	4.000	0.000	158'	No Ice	3.669	1.488	0.058
(P)			0'			1/2" Ice	3.926	1.673	0.081
			2'			1" Ice	4.191	1.866	0.108

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	4.747	2.280	0.171
						4" Ice	5.963	3.211	0.344
RRUS 12	B	From Leg	4.000	0.000	158'	No Ice	3.669	1.488	0.058
(P)			0'			1/2" Ice	3.926	1.673	0.081
			2'			1" Ice	4.191	1.866	0.108
						2" Ice	4.747	2.280	0.171
						4" Ice	5.963	3.211	0.344
RRUS 12	C	From Leg	4.000	0.000	158'	No Ice	3.669	1.488	0.058
(P)			0'			1/2" Ice	3.926	1.673	0.081
			2'			1" Ice	4.191	1.866	0.108
						2" Ice	4.747	2.280	0.171
						4" Ice	5.963	3.211	0.344
DC6-48-60-18-8F	A	From Leg	4.000	0.000	158'	No Ice	1.467	1.467	0.019
(P)			0'			1/2" Ice	1.667	1.667	0.037
			2'			1" Ice	1.878	1.878	0.057
						2" Ice	2.333	2.333	0.105
						4" Ice	3.378	3.378	0.239
5' x 2' Pipe Mount	A	From Leg	4.000	0.000	158'	No Ice	1.188	1.188	0.018
(E)			0'			1/2" Ice	1.496	1.496	0.027
			0'			1" Ice	1.807	1.807	0.040
						2" Ice	2.458	2.458	0.076
						4" Ice	3.919	3.919	0.196
5' x 2' Pipe Mount	B	From Leg	4.000	0.000	158'	No Ice	1.188	1.188	0.018
(E)			0'			1/2" Ice	1.496	1.496	0.027
			0'			1" Ice	1.807	1.807	0.040
						2" Ice	2.458	2.458	0.076
						4" Ice	3.919	3.919	0.196
5' x 2' Pipe Mount	C	From Leg	4.000	0.000	158'	No Ice	1.188	1.188	0.018
(E)			0'			1/2" Ice	1.496	1.496	0.027
			0'			1" Ice	1.807	1.807	0.040
						2" Ice	2.458	2.458	0.076
						4" Ice	3.919	3.919	0.196
Sector Mount [SM 504-3]	C	None		0.000	158'	No Ice	34.250	34.250	1.708
(E-14')						1/2" Ice	48.980	48.980	2.286
						1" Ice	63.710	63.710	2.864
						2" Ice	93.170	93.170	4.020
						4" Ice	152.090	152.090	6.333
s									
APXV18-206517S-C w/	A	From Leg	1.500	0.000	148'	No Ice	5.404	4.700	0.052
Mount Pipe			0'			1/2" Ice	5.960	5.860	0.097
(E)			0'			1" Ice	6.481	6.734	0.150
						2" Ice	7.547	8.515	0.280
						4" Ice	9.919	12.277	0.679
APXV18-206517S-C w/	B	From Leg	1.500	0.000	148'	No Ice	5.404	4.700	0.052
Mount Pipe			0'			1/2" Ice	5.960	5.860	0.097
(E)			0'			1" Ice	6.481	6.734	0.150
						2" Ice	7.547	8.515	0.280
						4" Ice	9.919	12.277	0.679
APXV18-206517S-C w/	C	From Leg	1.500	0.000	148'	No Ice	5.404	4.700	0.052
Mount Pipe			0'			1/2" Ice	5.960	5.860	0.097
(E)			0'			1" Ice	6.481	6.734	0.150
						2" Ice	7.547	8.515	0.280
						4" Ice	9.919	12.277	0.679
s									
GPS_A	C	From Leg	3.000	0.000	40'	No Ice	0.297	0.297	0.001
(E)			0'			1/2" Ice	0.374	0.374	0.005
			0'			1" Ice	0.459	0.459	0.010

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Side Arm Mount [SO 308-1] (E) *S*	C	From Leg	1.500 0' 0'	0.000	40'	2" Ice 4" Ice No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.655 1.151 0.980 1.700 2.420 3.860 6.740	0.655 1.151 3.030 5.220 7.410 11.790 20.550	0.025 0.079 0.053 0.079 0.105 0.156 0.259

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
Dragonwave A-ANT-18G-2-C (E) *S*	C	Paraboloid w/Shroud (HP)	From Leg	2.000 0' 0'	-58.000		168'	2.175	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.715 4.006 4.296 4.876 6.037	0.027 0.048 0.068 0.109 0.192

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

Comb. No.	Description
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
T1	180 - 160	Leg	Max Tension	8	10.343	-0.571	0.078
			Max. Compression	10	-14.434	0.539	0.076
			Max. Mx	4	-0.796	2.798	-0.097
			Max. My	3	-1.291	0.015	2.993
			Max. Vy	4	-1.253	-0.000	-0.000
			Max. Vx	3	-1.387	-0.000	-0.000
		Diagonal	Max Tension	5	6.404	0.000	0.000
			Max. Compression	5	-6.468	0.000	0.000
			Max. Mx	14	-0.045	0.032	0.000
			Max. Vy	14	-0.016	0.000	0.000
		Horizontal	Max Tension	5	3.480	0.000	0.000
			Max. Compression	5	-3.447	0.000	0.000
			Max. Mx	21	0.061	-0.022	-0.002
			Max. My	4	-1.269	-0.011	-0.008
			Max. Vy	21	0.018	-0.022	-0.002
			Max. Vx	4	0.002	0.000	0.000
		Top Girt	Max Tension	4	1.565	0.000	0.000
			Max. Compression	10	-1.566	-0.008	-0.002
			Max. Mx	21	-0.145	-0.016	-0.001
			Max. My	10	0.840	-0.006	0.004
			Max. Vy	21	-0.017	-0.016	-0.001
			Max. Vx	10	-0.001	-0.006	0.004
		Inner Bracing	Max Tension	10	0.004	0.000	0.000
			Max. Compression	4	-0.004	0.000	0.000
			Max. Mx	14	-0.000	-0.013	0.000
			Max. Vy	14	0.012	0.000	0.000
T2	160 - 140	Leg	Max Tension	8	39.273	-0.133	0.029
			Max. Compression	10	-48.019	0.127	0.033
			Max. Mx	12	18.184	1.563	-0.011
			Max. My	3	-3.620	-0.033	1.636
			Max. Vy	12	-1.079	-0.578	-0.005
			Max. Vx	3	-1.145	-0.015	-0.623
		Diagonal	Max Tension	5	8.472	0.000	0.000
			Max. Compression	5	-8.544	0.000	0.000
			Max. Mx	14	0.004	0.042	0.000
			Max. Vy	14	-0.020	0.000	0.000
		Horizontal	Max Tension	5	5.165	0.000	0.000
			Max. Compression	5	-5.146	0.000	0.000
			Max. Mx	21	0.076	-0.027	-0.002
			Max. My	10	1.527	0.000	0.011
			Max. Vy	21	-0.020	-0.027	-0.002
			Max. Vx	10	0.002	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Inner Bracing	Max Tension	10	0.005	0.000	0.000
			Max. Compression	4	-0.006	0.000	0.000
			Max. Mx	14	-0.002	-0.018	0.000
			Max. Vy	14	-0.014	0.000	0.000
T3	140 - 120	Leg	Max Tension	8	68.234	-0.148	0.015
			Max. Compression	10	-80.046	0.356	0.047
			Max. Mx	4	67.841	-0.365	-0.048
			Max. My	9	-5.553	-0.009	0.402
			Max. Vy	12	0.073	-0.364	0.005
			Max. Vx	9	-0.096	-0.009	0.402
		Diagonal	Max Tension	5	8.094	0.000	0.000
			Max. Compression	5	-8.185	0.000	0.000
			Max. Mx	14	-0.009	0.054	0.000
			Max. Vy	14	0.023	0.000	0.000
		Horizontal	Max Tension	5	5.493	0.000	0.000
			Max. Compression	5	-5.461	0.000	0.000
			Max. Mx	21	0.118	-0.046	-0.003
			Max. My	2	-0.196	0.003	0.013
			Max. Vy	21	-0.030	-0.046	-0.003
			Max. Vx	2	0.002	0.003	0.013
		Inner Bracing	Max Tension	2	0.004	0.000	0.000
			Max. Compression	4	-0.006	0.000	0.000
			Max. Mx	14	-0.003	-0.026	0.000
			Max. Vy	14	0.017	0.000	0.000
T4	120 - 100	Leg	Max Tension	8	89.207	-0.371	0.048
			Max. Compression	10	-104.018	0.433	0.053
			Max. Mx	12	87.963	-0.449	0.004
			Max. My	9	-7.006	-0.014	0.466
			Max. Vy	12	0.082	-0.449	0.004
			Max. Vx	9	-0.107	-0.019	0.443
		Diagonal	Max Tension	5	9.608	0.000	0.000
			Max. Compression	5	-9.750	0.000	0.000
			Max. Mx	14	0.024	0.117	0.000
			Max. Vy	14	-0.038	0.000	0.000
		Horizontal	Max Tension	5	5.721	0.000	0.000
			Max. Compression	5	-5.703	0.000	0.000
			Max. Mx	21	-0.270	-0.057	-0.003
			Max. My	2	0.884	0.001	0.011
			Max. Vy	21	-0.033	-0.057	-0.003
			Max. Vx	2	-0.002	0.000	0.000
		Inner Bracing	Max Tension	2	0.002	0.000	0.000
			Max. Compression	4	-0.006	0.000	0.000
			Max. Mx	14	-0.004	-0.033	0.000
			Max. Vy	14	0.019	0.000	0.000
T5	100 - 80	Leg	Max Tension	8	110.900	-0.366	0.044
			Max. Compression	10	-129.377	0.441	0.057
			Max. Mx	12	109.456	-0.464	0.004
			Max. My	9	-8.692	-0.019	0.530
			Max. Vy	12	0.084	-0.464	0.004
			Max. Vx	3	0.112	-0.017	-0.527
		Diagonal	Max Tension	11	8.583	0.000	0.000
			Max. Compression	11	-8.763	0.000	0.000
			Max. Mx	14	0.014	0.145	0.000
			Max. Vy	14	0.044	0.000	0.000
		Horizontal	Max Tension	11	5.689	-0.035	0.000
			Max. Compression	11	-5.649	-0.035	0.000
			Max. Mx	21	0.131	-0.071	-0.002
			Max. My	2	0.100	-0.007	0.010
			Max. Vy	21	-0.038	-0.071	-0.002
			Max. Vx	2	0.001	-0.007	0.010
		Inner Bracing	Max Tension	1	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	25	-0.006	0.000	0.000
			Max. Mx	14	-0.006	-0.063	0.000
			Max. Vy	14	0.031	0.000	0.000
T6	80 - 60	Leg	Max Tension	8	130.106	-0.568	0.034
			Max. Compression	10	-152.542	0.520	0.064
			Max. Mx	4	119.806	-0.575	-0.039
			Max. My	9	-10.539	-0.022	0.619
			Max. Vy	12	0.094	-0.575	0.005
			Max. Vx	9	-0.111	-0.018	0.590
		Diagonal	Max Tension	11	8.896	0.000	0.000
			Max. Compression	11	-9.173	0.000	0.000
			Max. Mx	14	-0.045	0.174	0.000
			Max. Vy	14	-0.049	0.000	0.000
		Horizontal	Max Tension	11	6.419	-0.072	-0.000
			Max. Compression	11	-6.321	-0.072	-0.000
			Max. Mx	21	-0.250	-0.129	-0.004
			Max. My	2	0.913	-0.023	0.013
			Max. Vy	21	0.060	-0.129	-0.004
			Max. Vx	2	-0.001	-0.023	0.013
		Inner Bracing	Max Tension	1	0.000	0.000	0.000
			Max. Compression	25	-0.008	0.000	0.000
			Max. Mx	14	-0.007	-0.097	0.000
			Max. Vy	14	-0.041	0.000	0.000
T7	60 - 40	Leg	Max Tension	8	148.613	-0.539	0.031
			Max. Compression	10	-175.564	0.419	0.041
			Max. Mx	12	138.072	-0.547	0.005
			Max. My	9	-12.683	-0.037	0.630
			Max. Vy	12	-0.087	-0.546	0.004
			Max. Vx	9	-0.106	-0.037	0.630
		Diagonal	Max Tension	11	9.066	0.000	0.000
			Max. Compression	11	-9.469	0.000	0.000
			Max. Mx	14	-0.106	0.246	0.000
			Max. Vy	14	-0.065	0.000	0.000
		Horizontal	Max Tension	11	6.991	-0.090	-0.000
			Max. Compression	11	-6.807	-0.090	-0.000
			Max. Mx	21	0.280	-0.151	-0.003
			Max. My	2	1.056	-0.051	0.013
			Max. Vy	21	-0.065	-0.151	-0.003
			Max. Vx	2	0.001	0.000	0.000
		Inner Bracing	Max Tension	1	0.000	0.000	0.000
			Max. Compression	25	-0.010	0.000	0.000
			Max. Mx	14	-0.009	-0.160	0.000
			Max. Vy	14	0.060	0.000	0.000
T8	40 - 20	Leg	Max Tension	8	165.737	-0.871	0.009
			Max. Compression	10	-197.596	-1.478	0.126
			Max. Mx	6	-197.301	-1.480	-0.003
			Max. My	9	-14.988	-0.300	2.014
			Max. Vy	2	0.296	0.978	-0.010
			Max. Vx	9	-0.268	-0.300	2.014
		Diagonal	Max Tension	11	8.859	0.000	0.000
			Max. Compression	11	-9.328	0.000	0.000
			Max. Mx	14	-0.142	0.300	0.000
			Max. Vy	14	-0.075	0.000	0.000
		Horizontal	Max Tension	11	7.230	-0.112	-0.000
			Max. Compression	11	-6.943	-0.112	-0.000
			Max. Mx	21	0.402	-0.181	-0.003
			Max. My	2	1.305	-0.074	0.012
			Max. Vy	21	-0.071	-0.181	-0.003
			Max. Vx	2	-0.001	0.000	0.000
		Inner Bracing	Max Tension	1	0.000	0.000	0.000
			Max. Compression	25	-0.011	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	14	-0.010	-0.195	0.000
			Max. Vy	14	0.065	0.000	0.000
T9	20 - 0	Leg	Max Tension	8	190.743	0.898	-0.054
			Max. Compression	10	-229.621	0.000	-0.000
			Max. Mx	10	-206.840	5.806	-0.208
			Max. My	9	-15.926	-0.298	2.018
			Max. Vy	2	-11.627	0.000	0.000
			Max. Vx	3	5.095	0.000	0.003
		Diagonal	Max Tension	11	14.032	-0.156	-0.036
			Max. Compression	11	-14.732	0.000	0.000
			Max. Mx	8	10.360	-0.193	0.064
			Max. My	11	-14.020	0.020	-0.098
			Max. Vy	21	-0.052	-0.136	0.009
			Max. Vx	11	0.008	0.020	-0.098
		Horizontal	Max Tension	11	7.936	-0.170	0.000
			Max. Compression	11	-7.794	-0.170	0.000
			Max. Mx	21	-0.250	-0.248	-0.005
			Max. My	2	-0.113	-0.098	0.018
			Max. Vy	21	0.094	-0.248	-0.005
			Max. Vx	2	0.001	-0.098	0.018
		Redund Horz 1 Bracing	Max Tension	10	0.892	0.000	0.000
			Max. Compression	3	-0.755	0.000	0.000
			Max. Mx	14	0.092	0.019	0.000
			Max. Vy	14	-0.012	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	5	0.843	0.000	0.000
			Max. Compression	10	-0.760	0.000	0.000
			Max. Mx	14	0.138	0.043	0.000
			Max. Vy	14	0.015	0.000	0.000
		Redund Hip 1 Bracing	Max Tension	11	0.014	0.000	0.000
			Max. Compression	5	-0.023	0.000	0.000
			Max. Mx	14	-0.007	0.019	0.000
			Max. Vy	14	-0.012	0.000	0.000
		Redund Hip Diagonal Bracing	Max Tension	2	0.053	0.000	0.000
			Max. Compression	24	-0.058	0.000	0.000
			Max. Mx	14	0.043	0.200	0.000
			Max. Vy	14	0.053	0.000	0.000
		Inner Bracing	Max Tension	1	0.000	0.000	0.000
			Max. Compression	15	-0.013	0.000	0.000
			Max. Mx	14	-0.011	0.235	0.000
			Max. Vy	14	-0.075	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	10	228.197	24.630	-13.362
	Max. H_x	10	228.197	24.630	-13.362
	Max. H_z	3	-161.539	-17.600	11.776
	Min. Vert	4	-188.440	-21.543	11.664
	Min. H_x	4	-188.440	-21.543	11.664
	Min. H_z	10	228.197	24.630	-13.362
Leg B	Max. Vert	6	227.980	-24.273	-13.916
	Max. H_x	12	-187.374	21.188	12.181

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg A	Max. H_z	13	-160.377	17.001	12.706
	Min. Vert	12	-187.374	21.188	12.181
	Min. H_x	6	227.980	-24.273	-13.916
	Min. H_z	7	197.159	-19.577	-14.152
	Max. Vert	2	225.514	0.661	27.933
	Max. H_x	11	15.588	3.860	1.411
	Max. H_z	2	225.514	0.661	27.933
	Min. Vert	8	-189.472	-0.638	-24.453
	Min. H_x	5	16.360	-3.850	1.460
	Min. H_z	8	-189.472	-0.638	-24.453

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	52.570	0.000	0.000	35.188	-5.680	0.000
Dead+Wind 0 deg - No Ice	52.570	0.033	-46.323	-4985.333	-14.610	31.465
Dead+Wind 30 deg - No Ice	52.570	22.818	-39.467	-4261.493	-2495.535	37.203
Dead+Wind 60 deg - No Ice	52.570	39.257	-22.705	-2444.624	-4289.070	33.316
Dead+Wind 90 deg - No Ice	52.570	45.595	-0.023	27.881	-4972.543	21.411
Dead+Wind 120 deg - No Ice	52.570	40.138	23.143	2539.413	-4358.687	3.194
Dead+Wind 150 deg - No Ice	52.570	22.753	39.406	4318.253	-2478.641	-16.121
Dead+Wind 180 deg - No Ice	52.570	-0.032	45.247	4961.491	3.071	-30.731
Dead+Wind 210 deg - No Ice	52.570	-22.810	39.435	4326.583	2482.912	-37.394
Dead+Wind 240 deg - No Ice	52.570	-40.169	23.199	2554.701	4355.871	-34.534
Dead+Wind 270 deg - No Ice	52.570	-45.596	0.046	46.384	4961.400	-21.279
Dead+Wind 300 deg - No Ice	52.570	-39.224	-22.647	-2428.861	4268.653	-3.207
Dead+Wind 330 deg - No Ice	52.570	-22.759	-39.437	-4253.017	2468.277	15.948
Dead+Ice+Temp	99.738	0.000	0.000	82.274	-45.907	0.000
Dead+Wind 0 deg+Ice+Temp	99.738	0.009	-14.176	-1412.738	-48.682	10.135
Dead+Wind 30 deg+Ice+Temp	99.738	6.595	-11.416	-1137.939	-752.440	10.632
Dead+Wind 60 deg+Ice+Temp	99.738	11.123	-6.436	-610.260	-1241.213	8.856
Dead+Wind 90 deg+Ice+Temp	99.738	13.177	-0.007	79.862	-1454.754	5.314
Dead+Wind 120 deg+Ice+Temp	99.738	12.273	7.082	827.757	-1340.589	-0.049
Dead+Wind 150 deg+Ice+Temp	99.738	6.577	11.400	1298.665	-747.316	-5.392
Dead+Wind 180 deg+Ice+Temp	99.738	-0.009	12.832	1458.544	-43.172	-8.995
Dead+Wind 210 deg+Ice+Temp	99.738	-6.593	11.409	1301.306	660.344	-10.675
Dead+Wind 240 deg+Ice+Temp	99.738	-12.281	7.098	832.522	1251.464	-10.059
Dead+Wind 270 deg+Ice+Temp	99.738	-13.177	0.012	85.555	1362.989	-5.284
Dead+Wind 300 deg+Ice+Temp	99.738	-11.113	-6.420	-605.388	1146.596	-0.001
Dead+Wind 330 deg+Ice+Temp	99.738	-6.578	-11.407	-1135.266	655.725	5.353
Dead+Wind 0 deg - Service	52.570	0.011	-16.029	-1702.017	-8.770	10.888
Dead+Wind 30 deg - Service	52.570	7.895	-13.656	-1451.553	-867.221	12.873
Dead+Wind 60 deg - Service	52.570	13.584	-7.856	-822.879	-1487.822	11.528
Dead+Wind 90 deg - Service	52.570	15.777	-0.008	32.659	-1724.317	7.409
Dead+Wind 120 deg - Service	52.570	13.889	8.008	901.702	-1511.910	1.105
Dead+Wind 150 deg - Service	52.570	7.873	13.635	1517.217	-861.375	-5.578
Dead+Wind 180 deg - Service	52.570	-0.011	15.656	1739.791	-2.652	-10.633
Dead+Wind 210 deg - Service	52.570	-7.893	13.645	1520.100	855.425	-12.939
Dead+Wind 240 deg - Service	52.570	-13.899	8.027	906.992	1503.508	-11.950
Dead+Wind 270 deg - Service	52.570	-15.777	0.016	39.062	1713.033	-7.363
Dead+Wind 300 deg - Service	52.570	-13.572	-7.836	-817.424	1473.328	-1.110
Dead+Wind 330 deg - Service	52.570	-7.875	-13.646	-1448.620	850.361	5.518

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.000	-52.570	0.000	0.000	52.570	0.000	0.000%
2	0.033	-52.570	-46.323	-0.033	52.570	46.323	0.000%
3	22.818	-52.570	-39.467	-22.818	52.570	39.467	0.000%
4	39.257	-52.570	-22.705	-39.257	52.570	22.705	0.000%
5	45.595	-52.570	-0.023	-45.595	52.570	0.023	0.000%
6	40.138	-52.570	23.143	-40.138	52.570	-23.143	0.000%
7	22.753	-52.570	39.406	-22.753	52.570	-39.406	0.000%
8	-0.032	-52.570	45.247	0.032	52.570	-45.247	0.000%
9	-22.810	-52.570	39.435	22.810	52.570	-39.435	0.000%
10	-40.169	-52.570	23.199	40.169	52.570	-23.199	0.000%
11	-45.596	-52.570	0.046	45.596	52.570	-0.046	0.000%
12	-39.224	-52.570	-22.647	39.224	52.570	22.647	0.000%
13	-22.759	-52.570	-39.437	22.759	52.570	39.437	0.000%
14	0.000	-99.738	0.000	0.000	99.738	0.000	0.000%
15	0.009	-99.738	-14.176	-0.009	99.738	14.176	0.000%
16	6.595	-99.738	-11.416	-6.595	99.738	11.416	0.000%
17	11.123	-99.738	-6.436	-11.123	99.738	6.436	0.000%
18	13.177	-99.738	-0.007	-13.177	99.738	0.007	0.000%
19	12.273	-99.738	7.082	-12.273	99.738	-7.082	0.000%
20	6.577	-99.738	11.400	-6.577	99.738	-11.400	0.000%
21	-0.009	-99.738	12.832	0.009	99.738	-12.832	0.000%
22	-6.593	-99.738	11.409	6.593	99.738	-11.409	0.000%
23	-12.281	-99.738	7.098	12.281	99.738	-7.098	0.000%
24	-13.177	-99.738	0.012	13.177	99.738	-0.012	0.000%
25	-11.113	-99.738	-6.420	11.113	99.738	6.420	0.000%
26	-6.578	-99.738	-11.407	6.578	99.738	11.407	0.000%
27	0.011	-52.570	-16.029	-0.011	52.570	16.029	0.000%
28	7.895	-52.570	-13.656	-7.895	52.570	13.656	0.000%
29	13.584	-52.570	-7.856	-13.584	52.570	7.856	0.000%
30	15.777	-52.570	-0.008	-15.777	52.570	0.008	0.000%
31	13.889	-52.570	8.008	-13.889	52.570	-8.008	0.000%
32	7.873	-52.570	13.635	-7.873	52.570	-13.635	0.000%
33	-0.011	-52.570	15.656	0.011	52.570	-15.656	0.000%
34	-7.893	-52.570	13.645	7.893	52.570	-13.645	0.000%
35	-13.899	-52.570	8.027	13.899	52.570	-8.027	0.000%
36	-15.777	-52.570	0.016	15.777	52.570	-0.016	0.000%
37	-13.572	-52.570	-7.836	13.572	52.570	7.836	0.000%
38	-7.875	-52.570	-13.646	7.875	52.570	13.646	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	3.991	35	0.201	0.049
T2	160 - 140	3.133	35	0.191	0.042
T3	140 - 120	2.340	31	0.166	0.032
T4	120 - 100	1.670	31	0.138	0.024
T5	100 - 80	1.130	31	0.113	0.018
T6	80 - 60	0.705	31	0.085	0.013
T7	60 - 40	0.392	31	0.060	0.009
T8	40 - 20	0.174	35	0.039	0.006
T9	20 - 0	0.044	27	0.018	0.003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180'	ATMAA1412D-1A20	35	3.991	0.201	0.049	293129
177'	(2) DB846F65ZAXY w/ Mount Pipe	35	3.861	0.200	0.048	293129
168'	Dragonwave A-ANT-18G-2-C	35	3.472	0.197	0.045	122137
158'	7770.00 w/ Mount Pipe	35	3.050	0.190	0.042	66408
148'	APXV18-206517S-C w/ Mount Pipe	35	2.645	0.178	0.037	45254
40'	GPS_A	35	0.174	0.039	0.006	61293

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	11.460	10	0.575	0.140
T2	160 - 140	9.004	10	0.548	0.122
T3	140 - 120	6.729	10	0.477	0.094
T4	120 - 100	4.801	10	0.395	0.070
T5	100 - 80	3.250	10	0.323	0.053
T6	80 - 60	2.030	10	0.244	0.038
T7	60 - 40	1.128	10	0.171	0.026
T8	40 - 20	0.504	10	0.111	0.017
T9	20 - 0	0.126	2	0.051	0.009

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180'	ATMAA1412D-1A20	10	11.460	0.575	0.140	108878
177'	(2) DB846F65ZAXY w/ Mount Pipe	10	11.088	0.573	0.138	108878
168'	Dragonwave A-ANT-18G-2-C	10	9.976	0.563	0.131	45366
158'	7770.00 w/ Mount Pipe	10	8.766	0.543	0.120	24390
148'	APXV18-206517S-C w/ Mount Pipe	10	7.605	0.509	0.105	16109
40'	GPS_A	10	0.504	0.111	0.017	21358

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	180	Leg	A325N	0.750	4	2.586	19.438	0.133 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	2.156	6.443	0.335 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	1.740	6.443	0.270 ✔	1.333	Bolt Shear
T2	160	Leg	A325N	0.875	4	9.818	26.458	0.371 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	2.848	6.443	0.442 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	2.583	6.443	0.401 ✔	1.333	Bolt Shear
T3	140	Leg	A325N	1.000	4	17.058	34.557	0.494 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	2.728	6.443	0.423 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	2.747	6.443	0.426 ✔	1.333	Bolt Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T4	120	Leg	A325N	1.000	4	22.302	34.557	0.645 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	3.250	6.443	0.504 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	2.860	6.443	0.444 ✔	1.333	Bolt Shear
T5	100	Leg	A325N	1.000	6	18.483	34.557	0.535 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	2.921	6.443	0.453 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	2.845	6.443	0.442 ✔	1.333	Bolt Shear
T6	80	Leg	A325N	1.000	6	21.684	34.557	0.627 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	3.058	6.443	0.475 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	3.209	6.443	0.498 ✔	1.333	Bolt Shear
T7	60	Leg	A325N	1.000	6	24.769	34.557	0.717 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	3.156	6.443	0.490 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	3.496	6.443	0.543 ✔	1.333	Bolt Shear
T8	40	Leg	A325N	1.000	8	20.717	34.557	0.599 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	3.109	6.443	0.483 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	3.615	6.443	0.561 ✔	1.333	Bolt Shear
T9	20	Leg	A449	1.000	8	23.843	31.102	0.767 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.750	3	4.911	9.278	0.529 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.750	2	3.968	9.278	0.428 ✔	1.333	Bolt Shear

Compression Checks

Leg Design Data (Compression)

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 P / P_a
T1	180 - 160	ROHN 2.5 STD	20'	6'8"	84.4 K=1.00	18.110	1.704	-14.434	30.860	0.468 ✔
T2	160 - 140	ROHN 3 X-STR	20'7/16"	6'8-5/32"	70.5 K=1.00	20.840	3.016	-48.019	62.851	0.764 ✔
T3	140 - 120	ROHN 4 X-STR	20'7/16"	6'8-5/32"	54.3 K=1.00	23.671	4.407	-80.046	104.327	0.767 ✔
T4	120 - 100	ROHN 5 X-STR	20'1/2"	10'1/4"	65.4 K=1.00	21.776	6.112	-104.018	133.096	0.782 ✔
T5	100 - 80	ROHN 5 X-STR	20'11/16"	10'11/32"	65.4 K=1.00	21.769	6.112	-129.377	133.049	0.972 ✔
T6	80 - 60	ROHN 6 EHS	20'5/8"	10'5/16"	54.1 K=1.00	23.705	6.713	-152.542	159.136	0.959 ✔
T7	60 - 40	ROHN 6 X-STR	20'5/8"	10'5/16"	54.8 K=1.00	23.583	8.405	-175.564	198.212	0.886 ✔
T8	40 - 20	ROHN 6 X-STR	20'11/16"	10'11/32"	54.8 K=1.00	23.580	8.405	-197.596	198.190	0.997 ✔
T9	20 - 0	ROHN 8 EHS	20'5/8"	9'11-13/16"	82.1 K=2.00	18.596	9.719	-229.621	180.740	1.270 ✔

Diagonal Design Data (Compression)

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 2 STD	7'11"	7'8-11/32"	117.3 K=1.00	10.850	1.075	-6.468	11.659	0.555 ✔
T2	160 - 140	ROHN 2 STD	8'6-5/16"	8'3-17/32"	126.4 K=1.00	9.342	1.075	-8.329	10.039	0.830 ✔
T3	140 - 120	ROHN 2 STD	9'2-17/32"	8'11-9/32"	136.3 K=1.00	8.039	1.075	-8.008	8.638	0.927 ✔
T4	120 - 100	ROHN 2.5 STD	12'5-29/32"	12'1-1/4"	153.3 K=1.00	6.353	1.704	-9.649	10.825	0.891 ✔
T5	100 - 80	ROHN 2.5 STD	13'3-11/16"	12'11-15/32"	164.1 K=1.00	5.546	1.704	-8.731	9.451	0.924 ✔
T6	80 - 60	ROHN 2.5 STD	14'1-15/16"	13'9-1/4"	174.4 K=1.00	4.908	1.704	-9.173	8.363	1.097 ✔
T7	60 - 40	ROHN 2.5 X-STR	15'7/8"	14'8-7/16"	190.9 K=1.00	4.096	2.254	-9.469	9.231	1.026 ✔
T8	40 - 20	ROHN 3 STD	16'31/32"	15'8-3/4"	162.2 K=1.00	5.675	2.228	-9.328	12.647	0.738 ✔
T9	20 - 0	ROHN 3 STD	24'3-1/8"	12'1-9/16"	125.1 K=1.00	9.542	2.228	-14.732	21.265	0.693 ✔

Horizontal Design Data (Compression)

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 1.5 STD	8'6-11/32"	4'1-23/32"	79.9 K=1.00	19.038	0.799	-3.447	15.220	0.226 ✔
T2	160 - 140	ROHN 1.5 STD	9'11-3/16"	4'9-13/16"	92.9 K=1.00	16.310	0.799	-5.146	13.039	0.395 ✔
T3	140 - 120	ROHN 2 STD	12'5/32"	5'9-13/16"	88.7 K=1.00	17.212	1.075	-5.461	18.495	0.295 ✔
T4	120 - 100	ROHN 2 STD	13'10"	6'8-7/32"	101.9 K=1.00	14.260	1.075	-5.703	15.323	0.372 ✔
T5	100 - 80	ROHN 2 STD	16'3"	7'10-23/32"	120.3 K=1.00	10.313	1.075	-5.649	11.081	0.510 ✔
T6	80 - 60	ROHN 2.5 STD	18'9-1/2"	9'1-7/16"	115.5 K=1.00	11.192	1.704	-6.321	19.071	0.331 ✔
T7	60 - 40	ROHN 2.5 STD	21'3-1/2"	10'4-7/16"	131.3 K=1.00	8.656	1.704	-6.807	14.751	0.461 ✔
T8	40 - 20	ROHN 2.5 STD	23'10-5/16"	11'7-27/32"	147.6 K=1.00	6.854	1.704	-6.943	11.680	0.594 ✔
T9	20 - 0	ROHN 3 STD	25'2-1/8"	12'3-3/4"	127.0 K=1.00	9.262	2.228	-7.794	20.639	0.378 ✔

Top Girt Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	K	K	
T1	180 - 160	ROHN 1.5 STD	8'6"	4'1-9/16"	79.6 K=1.00	19.091	0.799	-1.566	15.262	0.103 ✔

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	K	K	
T9	20 - 0	ROHN 1.5 x 11GA	6'3-17/32"	5'11-7/32"	145.4 K=1.00	7.062	0.520	-0.755	3.674	0.206 ✔

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	K	K	
T9	20 - 0	ROHN 1.5 STD	11'5-19/32"	10'10-29/32"	210.3 K=1.00	3.378	0.799	-0.760	2.700	0.281 ✔

Redundant Hip (1) Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	K	K	
T9	20 - 0	ROHN 1.5 x 11GA	6'3-17/32"	6'3-17/32"	154.2 K=1.00	6.278	0.520	-0.023	3.266	0.007 ✔

Redundant Hip Diagonal Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	K	K	
T9	20 - 0	ROHN 2.5 STD	15'9/16"	15'9/16"	190.6 K=1.00	4.112	1.704	-0.051	7.007	0.007* ✔

* DL controls

Inner Bracing Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	K	K	
T1	180 - 160	L2x2x1/8	4'3-3/32"	4'3-3/32"	128.5 K=1.00	9.044	0.484	-0.004	4.381	0.001 ✔
T2	160 - 140	L2x2x1/8	4'7-13/32"	4'7-13/32"	139.4	7.685	0.484	-0.006	3.722	0.002

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 $\frac{P}{P_a}$
			'	'	K=1.00					✔
T3	140 - 120	L2x2x1/8	6'3/32"	6'3/32"	181.3 K=1.00	4.542	0.484	-0.005	2.200	0.002 ✔
T4	120 - 100	L2x2x1/8	6'11"	6'11"	208.8 K=1.00	3.426	0.484	-0.004	1.659	0.003* ✔
T5	100 - 80	L2 1/2x2 1/2x3/16	8'1-1/2"	8'1-1/2"	197.0 K=1.00	3.849	0.902	-0.006	3.472	0.002* ✔
T6	80 - 60	L3x3x3/16	9'4-3/4"	9'4-3/4"	189.2 K=1.00	4.173	1.090	-0.007	4.548	0.002* ✔
T7	60 - 40	L3 1/2x3 1/2x1/4	10'7-3/4"	10'7-3/4"	184.1 K=1.00	4.407	1.690	-0.009	7.448	0.001* ✔
T8	40 - 20	L3 1/2x3 1/2x1/4	11'11-5/32"	11'11-5/32"	206.3 K=1.00	3.510	1.690	-0.010	5.931	0.002* ✔
T9	20 - 0	ROHN 3 STD	12'7-1/16'	12'7-1/16'	129.8 K=1.00	8.860	2.228	-0.011	19.744	0.001* ✔

* DL controls

Tension Checks

Leg Design Data (Tension)

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 2.5 STD	20'	6'8"	84.4	30.000	1.704	10.343	51.121	0.202 ✔
T2	160 - 140	ROHN 3 X-STR	20'7/16"	6'8-5/32"	70.5	30.000	3.016	39.273	90.478	0.434 ✔
T3	140 - 120	ROHN 4 X-STR	20'7/16"	6'8-5/32"	54.3	30.000	4.407	68.234	132.223	0.516 ✔
T4	120 - 100	ROHN 5 X-STR	20'1/2"	10'1/4"	65.4	30.000	6.112	89.207	183.359	0.487 ✔
T5	100 - 80	ROHN 5 X-STR	20'11/16"	10'11/32"	65.4	30.000	6.112	110.900	183.359	0.605 ✔
T6	80 - 60	ROHN 6 EHS	20'5/8"	10'5/16"	54.1	30.000	6.713	130.106	201.398	0.646 ✔
T7	60 - 40	ROHN 6 X-STR	20'5/8"	10'5/16"	54.8	30.000	8.405	148.613	252.148	0.589 ✔
T8	40 - 20	ROHN 6 X-STR	20'11/16"	10'11/32"	54.8	30.000	8.405	165.737	252.148	0.657 ✔
T9	20 - 0	ROHN 8 EHS	20'5/8"	1"	0.3	30.000	9.719	190.743	291.579	0.654 ✔

Diagonal Design Data (Tension)

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 2 STD	7'11"	7'8-11/32"	117.3	30.000	1.075	6.404	32.236	0.199 ✔
T2	160 - 140	ROHN 2 STD	8'3-25/32"	8'31/32"	123.2	30.000	1.075	8.472	32.236	0.263 ✔
T3	140 - 120	ROHN 2 STD	8'8-31/32"	8'5-23/32"	129.2	30.000	1.075	8.094	32.236	0.251 ✔
T4	120 - 100	ROHN 2.5 STD	12'1-31/32"	11'9-5/16"	149.2	30.000	1.704	9.608	51.121	0.188 ✔
T5	100 - 80	ROHN 2.5 STD	12'10-11/16"	12'6-15/32"	158.8	30.000	1.704	8.583	51.121	0.168 ✔
T6	80 - 60	ROHN 2.5 STD	14'1-15/16"	13'9-1/4"	174.4	30.000	1.704	8.896	51.121	0.174 ✔
T7	60 - 40	ROHN 2.5 X-STR	15'7/8"	14'8-7/16"	190.9	30.000	2.254	9.066	67.606	0.134 ✔
T8	40 - 20	ROHN 3 STD	16'31/32"	15'8-3/4"	162.2	30.000	2.228	8.859	66.854	0.133 ✔
T9	20 - 0	ROHN 3 STD	24'3-1/8"	12'1-9/16"	125.1	30.000	2.228	14.032	66.854	0.210 ✔

Horizontal Design Data (Tension)

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 1.5 STD	8'6-11/32"	4'1-23/32"	79.9	30.000	0.799	3.480	23.984	0.145 ✔
T2	160 - 140	ROHN 1.5 STD	9'11-3/16"	4'9-13/16"	92.9	30.000	0.799	5.165	23.984	0.215 ✔
T3	140 - 120	ROHN 2 STD	12'5/32"	5'9-13/16"	88.7	30.000	1.075	5.493	32.236	0.170 ✔
T4	120 - 100	ROHN 2 STD	13'10"	6'8-7/32"	101.9	30.000	1.075	5.721	32.236	0.177 ✔
T5	100 - 80	ROHN 2 STD	16'3"	7'10-23/32"	120.3	30.000	1.075	5.689	32.236	0.176 ✔
T6	80 - 60	ROHN 2.5 STD	18'9-1/2"	9'1-7/16"	115.5	30.000	1.704	6.419	51.121	0.126 ✔
T7	60 - 40	ROHN 2.5 STD	21'3-1/2"	10'4-7/16"	131.3	30.000	1.704	6.991	51.121	0.137 ✔
T8	40 - 20	ROHN 2.5 STD	23'10-5/16"	11'7-27/32"	147.6	30.000	1.704	7.230	51.121	0.141 ✔
T9	20 - 0	ROHN 3 STD	25'2-1/8"	12'3-3/4"	127.0	30.000	2.228	7.936	66.854	0.119 ✔

Top Girt Design Data (Tension)

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 1.5 STD	8'6"	4'1-9/16"	79.6	30.000	0.799	1.565	23.984	0.065 ✔

Redundant Horizontal (1) Design Data (Tension)

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 $\frac{P}{P_a}$
T9	20 - 0	ROHN 1.5 x 11GA	6'3-17/32"	5'11-7/32"	145.4	30.000	0.520	0.892	15.607	0.057 ✔

Redundant Diagonal (1) Design Data (Tension)

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 $\frac{P}{P_a}$
T9	20 - 0	ROHN 1.5 STD	11'5-19/32"	10'10-29/32"	210.3	30.000	0.799	0.843	23.984	0.035 ✔

Redundant Hip (1) Design Data (Tension)

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 $\frac{P}{P_a}$
T9	20 - 0	ROHN 1.5 x 11GA	6'3-17/32"	6'3-17/32"	154.2	30.000	0.520	0.014	15.607	0.001 ✔

Redundant Hip Diagonal Design Data (Tension)

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 $\frac{P}{P_a}$
T9	20 - 0	ROHN 2.5 STD	15'9/16"	15'9/16"	190.6	30.000	1.704	0.043	51.121	0.001* ✔

* DL controls

Inner Bracing Design Data (Tension)

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 $\frac{P}{P_a}$
T1	180 - 160	L2x2x1/8	4'3-3/32"	4'3-3/32"	81.6	21.600	0.484	0.004	10.463	0.000 ✔
T2	160 - 140	L2x2x1/8	4'3-1/4"	4'3-1/4"	81.8	21.600	0.484	0.005	10.463	0.000 ✔

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 $\frac{P}{P_a}$
T3	140 - 120	L2x2x1/8	5'3-3/4"	5'3-3/4"	101.8	21.600	0.484	0.004	10.463	0.000 ✔
T4	120 - 100	L2x2x1/8	6'4-1/4"	6'4-1/4"	121.8	21.600	0.484	0.002	10.463	0.000 ✔

Section Capacity Table

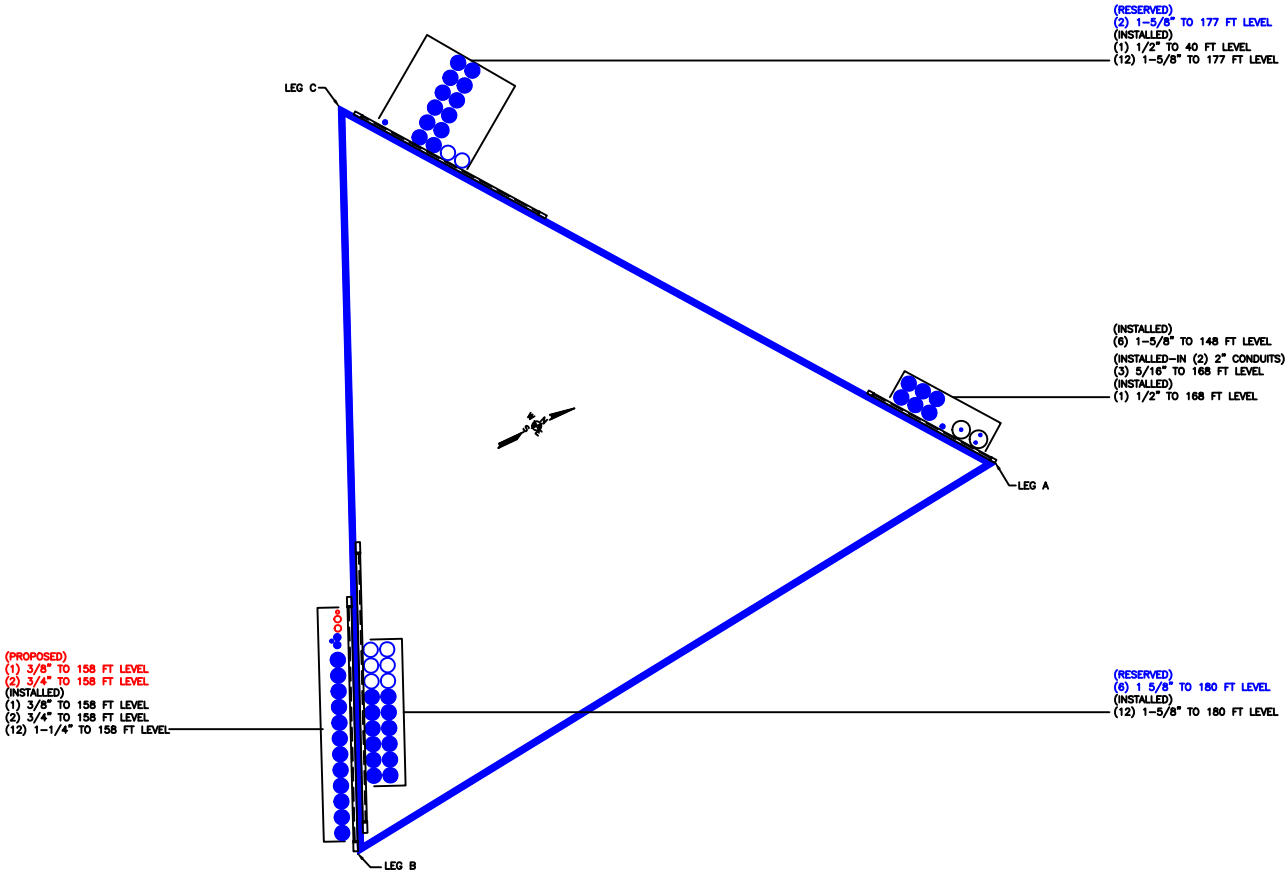
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	180 - 160	Leg	ROHN 2.5 STD	1	-14.434	41.137	35.1	Pass
T2	160 - 140	Leg	ROHN 3 X-STR	40	-48.019	83.780	57.3	Pass
T3	140 - 120	Leg	ROHN 4 X-STR	79	-80.046	139.068	57.6	Pass
T4	120 - 100	Leg	ROHN 5 X-STR	118	-104.018	177.417	58.6	Pass
T5	100 - 80	Leg	ROHN 5 X-STR	145	-129.377	177.354	72.9	Pass
T6	80 - 60	Leg	ROHN 6 EHS	172	-152.542	212.128	71.9	Pass
T7	60 - 40	Leg	ROHN 6 X-STR	199	-175.564	264.217	66.4	Pass
T8	40 - 20	Leg	ROHN 6 X-STR	226	-197.596	264.187	74.8	Pass
T9	20 - 0	Leg	ROHN 8 EHS	253	-229.621	240.926	95.3	Pass
T1	180 - 160	Diagonal	ROHN 2 STD	9	-6.468	15.541	41.6	Pass
T2	160 - 140	Diagonal	ROHN 2 STD	45	-8.329	13.382	62.2	Pass
T3	140 - 120	Diagonal	ROHN 2 STD	84	-8.008	11.514	69.5	Pass
T4	120 - 100	Diagonal	ROHN 2.5 STD	123	-9.649	14.430	66.9	Pass
T5	100 - 80	Diagonal	ROHN 2.5 STD	149	-8.731	12.598	69.3	Pass
T6	80 - 60	Diagonal	ROHN 2.5 STD	176	-9.173	11.148	82.3	Pass
T7	60 - 40	Diagonal	ROHN 2.5 X-STR	203	-9.469	12.305	77.0	Pass
T8	40 - 20	Diagonal	ROHN 3 STD	230	-9.328	16.858	55.3	Pass
T9	20 - 0	Diagonal	ROHN 3 STD	257	-14.732	28.346	52.0	Pass
T1	180 - 160	Horizontal	ROHN 1.5 STD	7	-3.447	20.288	17.0 20.3 (b)	Pass
T2	160 - 140	Horizontal	ROHN 1.5 STD	43	-5.146	17.381	29.6 30.1 (b)	Pass
T3	140 - 120	Horizontal	ROHN 2 STD	82	-5.461	24.654	22.1 32.0 (b)	Pass
T4	120 - 100	Horizontal	ROHN 2 STD	121	-5.703	20.426	27.9 33.3 (b)	Pass
T5	100 - 80	Horizontal	ROHN 2 STD	148	-5.649	14.771	38.2	Pass
T6	80 - 60	Horizontal	ROHN 2.5 STD	175	-6.321	25.422	24.9 37.4 (b)	Pass
T7	60 - 40	Horizontal	ROHN 2.5 STD	202	-6.807	19.663	34.6 40.7 (b)	Pass
T8	40 - 20	Horizontal	ROHN 2.5 STD	229	-6.943	15.569	44.6	Pass
T9	20 - 0	Horizontal	ROHN 3 STD	256	-7.794	27.512	28.3 32.1 (b)	Pass
T1	180 - 160	Top Girt	ROHN 1.5 STD	4	-1.566	20.345	7.7	Pass
T9	20 - 0	Redund Horz 1 Bracing	ROHN 1.5 x 11GA	258	-0.755	4.897	15.4	Pass
T9	20 - 0	Redund Diag 1 Bracing	ROHN 1.5 STD	259	-0.760	3.600	21.1	Pass
T9	20 - 0	Redund Hip 1 Bracing	ROHN 1.5 x 11GA	281	-0.023	4.354	0.5	Pass
T9	20 - 0	Redund Hip Diagonal Bracing	ROHN 2.5 STD	282	-0.051	7.007	0.7	Pass
T1	180 - 160	Inner Bracing	L2x2x1/8	16	-0.003	5.820	0.3	Pass
T2	160 - 140	Inner Bracing	L2x2x1/8	52	-0.005	4.292	0.3	Pass
T3	140 - 120	Inner Bracing	L2x2x1/8	93	-0.005	2.933	0.4	Pass
T4	120 - 100	Inner Bracing	L2x2x1/8	130	-0.004	1.659	0.5	Pass
T5	100 - 80	Inner Bracing	L2 1/2x2 1/2x3/16	158	-0.006	3.472	0.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P_{allow} K	% Capacity	Pass Fail
T6	80 - 60	Inner Bracing	L3x3x3/16	184	-0.007	4.548	0.5	Pass
T7	60 - 40	Inner Bracing	L3 1/2x3 1/2x1/4	211	-0.009	7.448	0.3	Pass
T8	40 - 20	Inner Bracing	L3 1/2x3 1/2x1/4	239	-0.010	5.931	0.4	Pass
T9	20 - 0	Inner Bracing	ROHN 3 STD	285	-0.011	19.744	0.4	Pass
							Summary	
						Leg (T9)	95.3	Pass
						Diagonal (T6)	82.3	Pass
						Horizontal (T8)	44.6	Pass
						Top Girt (T1)	7.7	Pass
						Redund Horz 1 Bracing (T9)	15.4	Pass
						Redund Diag 1 Bracing (T9)	21.1	Pass
						Redund Hip 1 Bracing (T9)	0.5	Pass
						Redund Hip Diagonal Bracing (T9)	0.7	Pass
						Inner Bracing (T4)	0.5	Pass
						Bolt Checks	57.5	Pass
						RATING =	**95.3**	**Pass**

Program Version 6.1.4.1

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806362

APPENDIX C

ADDITIONAL CALCULATIONS

Project:	**806362 - NHV 108 943133,CT**				
Subject	**Individual Pad and Pier Foundation**				
Date:	**12/30/15**	PAGE	**1**	OF	**1**

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

SST Pad & Pier Base Analysis

Rev. Type: F

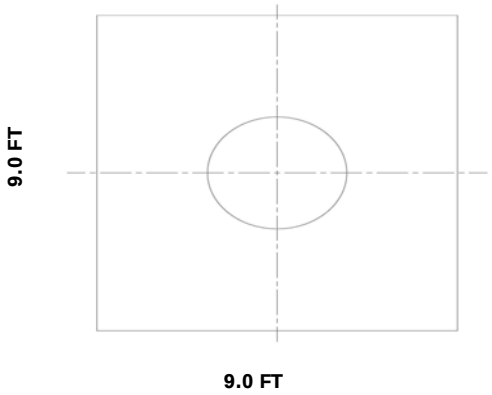
Design Loads:

	Input unfactored loads	
Shear:	46.0	kips
Uplift	189.0	kips
Compression/Leg	228.0	kips
Tower Height:	180.0	ft
Tower Weight:	53.0	kips
Base Width:	27.7	ft

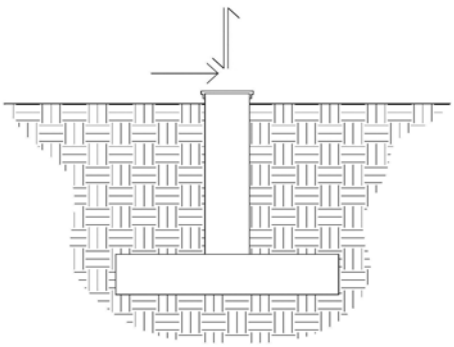
Pad & Pier Dimensions / Properties:

Pier Type:	Square	
Bearing Depth:	12.5	ft
Pad Width:	9.0	ft
Neglected Depth:	4.0	ft
Pad Thickness:	2.0	ft
Pier Width:	3.0	ft
Pier Height Above Grade:	0.5	ft
Clear Cover:	3.0	in
Pier Rebar Size:	10	
Pier Rebar Quanity:	16	
Pad Rebar Size:	7	
Pad Rebar Quanity:	10	
Pier Tie Size:	4	
Tie Quanity:	13	
Rebar Yield Strength:	60000	psi
Concrete Strength:	3000	psi
Concrete Unit Weight:	150	pcf

Plan View



Elevation Overview



Soil Data:

	Allowable Values	
Soil Unit Weight:	127.80	pcf
Ult. Bearing Capacity:	12.00	ksf
Angle of Friction:	40.00	deg
Cohesion:	0.00	ksf
Passive Pressure:	0.00	ksf
Base Friction:	0.40	

Summary of Results

Base Sliding	12.9%
Bearing (ksf):	37.4%
Uplift (kips):	64.0%
Pad Shear - 1-way	48.0%
Pad Shear - 2-way	28.1%
Pier Moment Capacity	36.4%

SITESAFE
RF COMPLIANCE EXPERTS
A BUSINESS OF FDH VELOCITEL

200 North Glebe Road, Suite 1000, Arlington, VA 22203-3728
703.276.1100 ● 703.276.1169 fax
info@sitesafe.com ● www.sitesafe.com

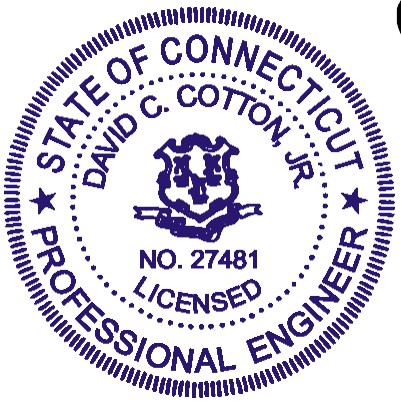
SmartLink, LLC on behalf of AT&T Mobility, LLC
Site FA – 10035040
Site ID – CTL01060 (3C)
USID – 61146
Site Name – Wolcott-East Street
Site Compliance Report

347 East Street
Wolcott, CT 06716

Latitude: N41-33-34.37
Longitude: W72-56-49.10
Structure Type: Self-Support

Report generated date: January 21, 2016
Report by: Leo Romero
Customer Contact: Kristen Smith

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



David C. Cotton, Jr.
Licensed Professional Engineer (Electrical)
State of Connecticut, PEN.0027481
Date: 2016-January-22

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 Radio Frequency Exposure (RFE) level on the Ground Level	<5% of General Public limit
FCC & AT&T Compliant?	Will Be Compliant.

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

RFDS: NEW-ENGLAND_CONNECTICUT_CTV1060_2016-LTE-Next-Carrier_LTE-3C_om636a_2051585405_10035040_61146_09-15-2015_Preliminary-Approved_v1.00

CD's: 10035040_AE201_121815_CTL01060_REV0 BP Redlined (2) KES 12-28-15

RF Configuration Datasheet: CT_33 sites with power density form_

2 Map of Site

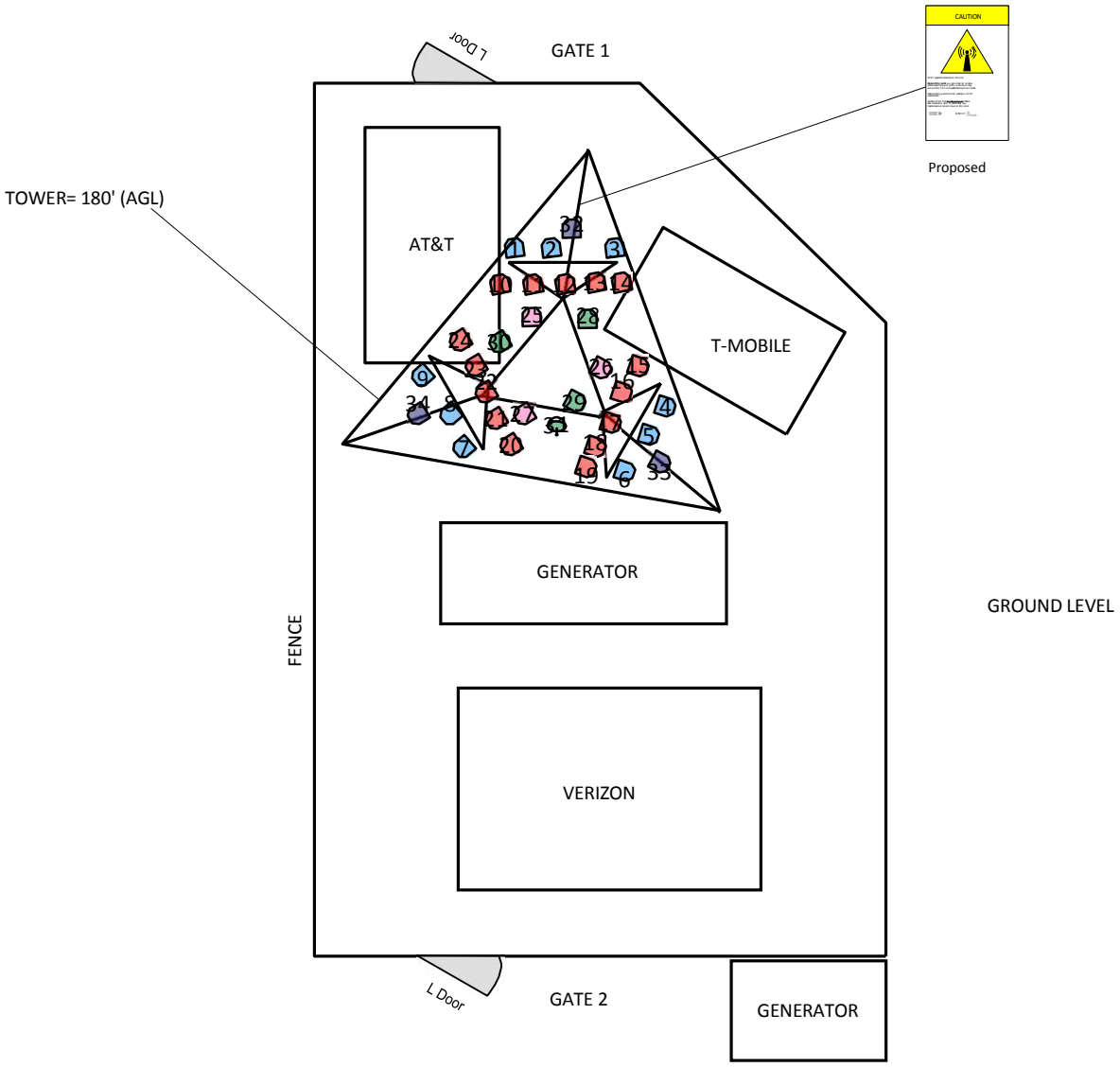
In the RF Emissions Simulations below all heights are reflected with respect to main site level. In most rooftop cases this is the height of the main rooftop and in other cases this can be ground level. Each different height area, rooftop, or platform level is labeled with its height relative to the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

The Antenna Inventory heights are referenced to the same level.

The following diagrams are included:

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

Site Map For: Wolcott-East Street



(Feet)

0 8.2 16.4

www.sitesafe.com
Site Name:Wolcott-East St

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

3 Antenna Inventory

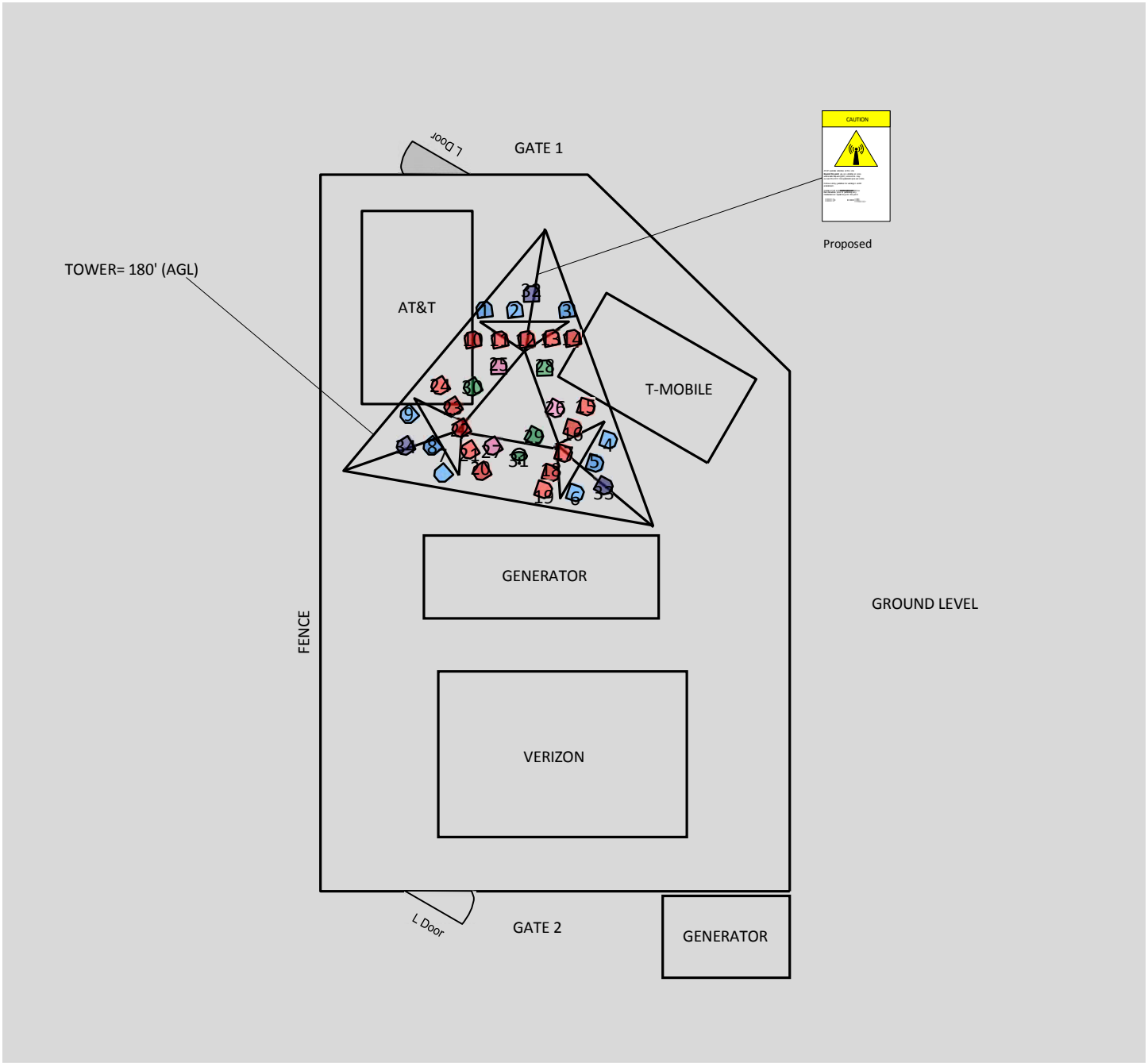
The following antenna inventory on this and the following page, were obtained by the customer and were utilized to create the site model diagrams:

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	Powerwave 7770	Panel	850	24	82	4.6	11.51	0	2	0	298	74.4'	167.1'	157.7'
1	AT&T MOBILITY LLC	Powerwave 7770	Panel	1900	24	86	4.6	13.41	0	1	0	194.6	74.4'	167.1'	157.7'
1	AT&T MOBILITY LLC	Powerwave 7770	Panel	1900	24	86	4.6	13.41	0	1	0	294.5	74.4'	167.1'	157.7'
2	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-3	Panel	2300	24	58	6	15.05	0	0	1	783.7	77.7'	167.1'	157'
2	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-3	Panel	850	24	67	6	11.35	1	0	0	37.3	77.7'	167.1'	157'
3	AT&T MOBILITY LLC	KMW AM-X-CD-16-65-00T	Panel	737	24	65	6	13.36	0	0	1	682.6	83.5'	167.1'	157'
3	AT&T MOBILITY LLC	KMW AM-X-CD-16-65-00T	Panel	1900	24	67	6	15.26	0	0	1	2014.5	83.5'	167.1'	157'
4	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	140	82	4.6	11.51	0	2	0	293.9	88.1'	152.7'	157.7'
4	AT&T MOBILITY LLC	Powerwave 7770	Panel	1900	140	86	4.6	13.41	0	1	0	190.6	88.1'	152.7'	157.7'
4	AT&T MOBILITY LLC	Powerwave 7770	Panel	1900	140	86	4.6	13.41	0	1	0	288.5	88.1'	152.7'	157.7'
5	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	2300	140	65	8	14.36	0	0	1	783.7	86.6'	150.2'	156'
5	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	850	140	63	8	13.56	1	0	0	36.8	86.6'	150.2'	156'
6	AT&T MOBILITY LLC	Andrew SBNH-1D6565C	Panel	737	140	71	8	13.733	0	0	1	899.8	84.4'	146.9'	156'
6	AT&T MOBILITY LLC	Andrew SBNH-1D6565C	Panel	1900	140	57	8	15.504	0	0	1	2234.4	84.4'	146.9'	156'
7	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	261	82	4.6	11.51	0	2	0	300.7	69.7'	149'	157.7'
7	AT&T MOBILITY LLC	Powerwave 7770	Panel	1900	261	86	4.6	13.41	0	1	0	198.2	69.7'	149'	157.7'
7	AT&T MOBILITY LLC	Powerwave 7770	Panel	1900	261	86	4.6	13.41	0	1	0	300	69.7'	149'	157.7'
8	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-3	Panel	2300	261	58	6	15.05	0	0	1	783.7	68.6'	152'	157'
8	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-3	Panel	850	261	67	6	11.35	1	0	0	37.7	68.6'	152'	157'
9	AT&T MOBILITY LLC	KMW AM-X-CD-16-65-00T	Panel	737	261	65	6	13.36	0	0	1	682.6	66'	155.5'	157'
9	AT&T MOBILITY LLC	KMW AM-X-CD-16-65-00T	Panel	1900	261	67	6	15.26	0	0	1	2014.5	66'	155.5'	157'
10	VERIZON WIRELESS	Andrew DB846F65ZAXY	Panel	850	20	65	6	14.51	-	-	-	1130	73.1'	163.8'	174'
11	VERIZON WIRELESS	Antel BXA-185063-12CF	Panel	1900	20	63	6	18.51	-	-	-	4257.5	76'	163.8'	174'
12	VERIZON WIRELESS	Antel BXA-70040-6CF	Panel	751	20	42	5.9	15.51	-	-	-	2133.8	79'	163.9'	174'
13	VERIZON WIRELESS	Antel BXA-171063-8CF	Panel	2100	20	60	4	15.31	-	-	-	2037.8	81.7'	164'	175'
14	VERIZON WIRELESS	Andrew DB846F65ZAXY	Panel	850	20	65	6	14.51	-	-	-	1130	84.1'	164'	174'
15	VERIZON WIRELESS	Antel LPA-80063-6CF	Panel	850	140	63	5.9	14.51	-	-	-	1130	85.6'	156.4'	174'

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)
16	VERIZON WIRELESS	Antel BXA-185063-12CF	Panel	1900	140	63	6	18.51	-	-	-	4257.5	84.1'	154'	174'
17	VERIZON WIRELESS	Antel BXA-70040-6CF	Panel	751	140	42	5.9	15.51	-	-	-	2133.8	83.1'	151.2'	174'
18	VERIZON WIRELESS	Antel BXA-171063-8CF	Panel	2100	140	60	4	15.31	-	-	-	2037.8	81.7'	149.1'	175'
19	VERIZON WIRELESS	Antel LPA-80063-6CF	Panel	850	140	63	5.9	14.51	-	-	-	1130	80.9'	147.2'	174'
20	VERIZON WIRELESS	Swedcom SC 6014	Panel	850	270	57	3.6	14.01	-	-	-	1007.1	74'	149.2'	175.2'
21	VERIZON WIRELESS	Antel BXA-185063-12CF	Panel	1900	270	63	6	18.51	-	-	-	4257.5	72.7'	151.6'	174'
22	VERIZON WIRELESS	Antel BXA-70040-6CF	Panel	751	270	42	5.9	15.51	-	-	-	2133.8	71.8'	154'	174'
23	VERIZON WIRELESS	Antel BXA-171063-8CF	Panel	2100	270	60	4	15.31	-	-	-	2037.8	70.9'	156.4'	175'
24	VERIZON WIRELESS	Swedcom SC 6014	Panel	850	270	57	3.6	14.01	-	-	-	1007.1	69.4'	158.7'	175.2'
25	T-MOBILE	Ericsson AIR 21 B2A B4P	Panel	1900	30	65	4.7	15.37	-	-	-	2066.1	75.9'	160.9'	185.7'
25	T-MOBILE	Ericsson AIR 21 B2A B4P	Panel	2100	30	65	4.7	15.37	-	-	-	2066.1	75.9'	160.9'	185.7'
26	T-MOBILE	Ericsson AIR 21 B2A B4P	Panel	1900	150	65	4.7	15.37	-	-	-	2066.1	82.2'	156.2'	185.7'
26	T-MOBILE	Ericsson AIR 21 B2A B4P	Panel	2100	150	65	4.7	15.37	-	-	-	2066.1	82.2'	156.2'	185.7'
27	T-MOBILE	Ericsson AIR 21 B2A B4P	Panel	1900	270	65	4.7	15.37	-	-	-	2066.1	75.2'	152'	185.7'
27	T-MOBILE	Ericsson AIR 21 B2A B4P	Panel	2100	270	65	4.7	15.37	-	-	-	2066.1	75.2'	152'	185.7'
28	CLEARWIRE	Andrew LLPX310R	Panel	2500	30	65	3.5	15.15	-	-	-	355	81'	160.7'	166.2'
29	CLEARWIRE	Andrew LLPX310R	Panel	2500	150	65	3.5	15.15	-	-	-	355	79.9'	153.2'	166.2'
30	CLEARWIRE	Andrew LLPX310R	Panel	2500	270	65	3.5	15.15	-	-	-	355	73'	158.5'	166.2'
31	CLEARWIRE	Generic Microwave	Aperture	10735	213	2	2	31.16	-	-	-	59.1	78.2'	151'	168'
32	METROPCS (Decommissioned)	RFS APXV18-206517S-C-A20	Panel	1900	30	65.9	6	16.97	-	-	-	0	79.6'	168.9'	145'
33	METROPCS (Decommissioned)	RFS APXV18-206517S-C-A20	Panel	1900	150	65.9	6	16.97	-	-	-	0	87.6'	147.7'	145'
34	METROPCS (Decommissioned)	RFS APXV18-206517S-C-A20	Panel	1900	270	65.9	6	16.97	-	-	-	0	65.6'	152'	145'

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.

RF Emissions Simulation For: Wolcott-East Street
Composite View



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

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

(Feet)

0 8.4 16.8

www.sitesafe.com
Site Name:Wolcott-East St

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

RF Emissions Simulation For: Wolcott-East Street

0 8.4 16.8

www.sitesafe.com

Site Name:Wolcott-East St

SitesafeTCVersion: 1.0.0.0

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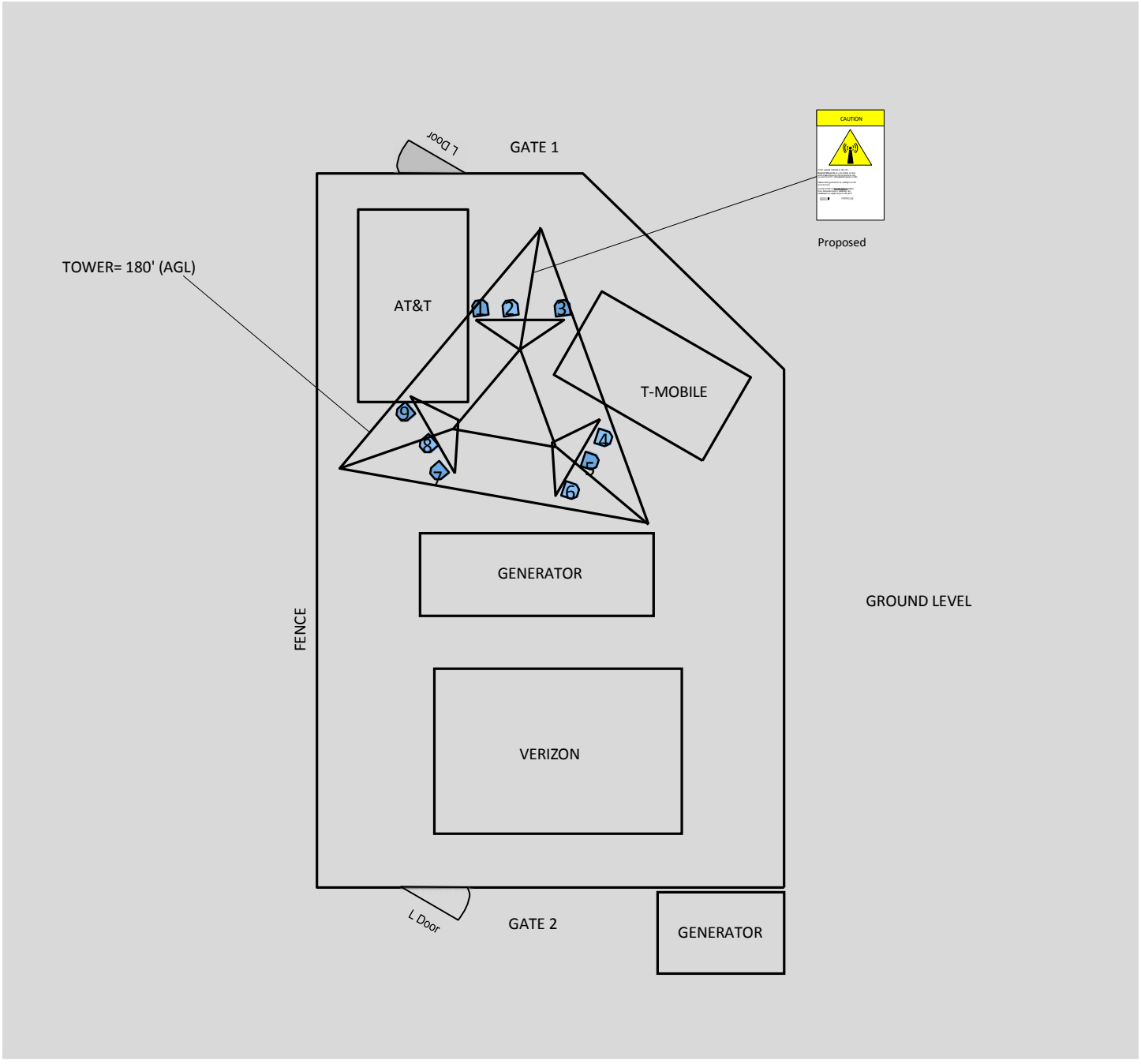
RF Emissions Simulation For: Wolcott-East Street
AT&T Mobility, LLC Contribution



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

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

(Feet)

0 8.4 16.8

www.sitesafe.com
Site Name:Wolcott-East St

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

RF Emissions Simulation For: Wolcott-East Street

0 8.4 16.8

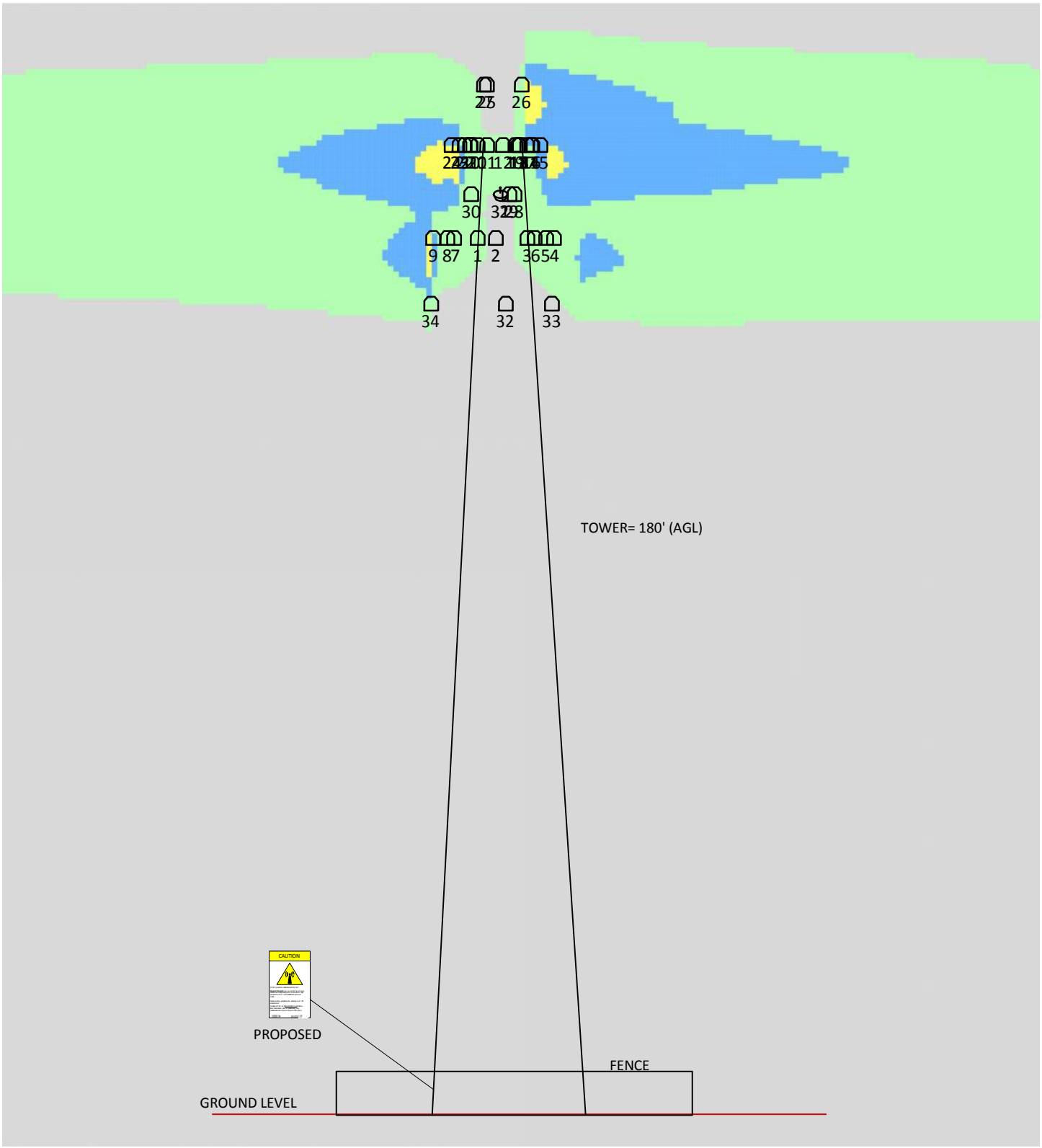
www.sitesafe.com

Site Name:Wolcott-East St

SitesafeTCVersion: 1.0.0.0

1/21/2016 5:42:07 PM

RF Emissions Simulation For: Wolcott-East Street
Elevation View



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

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

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

(Feet)

0 12.6 25.3

www.sitesafe.com
Site Name:Wolcott-East St

5 Site Compliance

5.1 Site Compliance Statement

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

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

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

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

5.2 Actions for Site Compliance

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

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

Tower Access Leg Location

Yellow caution 2 sign required.

AT&T Mobility, LLC Proposed Alpha Sector Location

No action required.

AT&T Mobility, LLC Proposed Beta Sector Location

No action required.

AT&T Mobility, LLC Proposed Gamma Sector Location

No action required.

6 Engineer Certification

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

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

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

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

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

January 21, 2016

Appendix A – Statement of Limiting Conditions

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

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

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

Appendix B – Regulatory Background Information

FCC Rules and Regulations

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

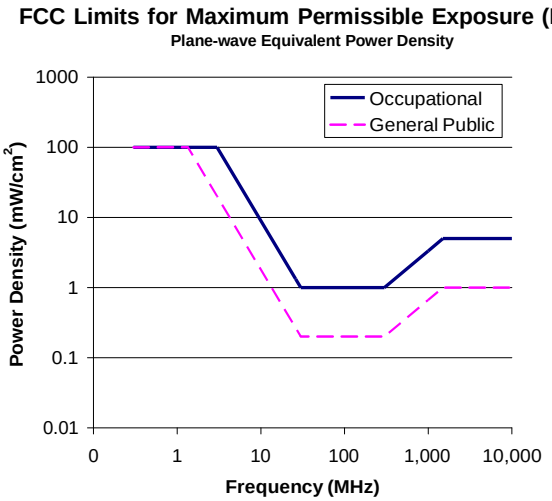
FCC regulations define two separate tiers of exposure limits: Occupational or "Controlled environment" and General Public or "Uncontrolled environment". The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to *accessible*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

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

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

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

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



Limits for Occupational/Controlled Exposure (MPE)

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

Limits for General Population/Uncontrolled Exposure (MPE)

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

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

OSHA Statement

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

(a) Each employer –

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

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

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

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

Appendix C – Safety Plan and Procedures

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

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

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

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

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

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

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

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

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

Appendix D – RF Emissions

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

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

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

Appendix E – Assumptions and Definitions

General Model Assumptions

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

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

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

Use of Generic Antennas

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

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

Definitions

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Appendix F – References

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

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