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

February 25, 2016

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

RE: **Notice of Exempt Modification for AT&T/ LTE 3C Crown Site BU: 806378**
AT&T Site ID: CT1079
126 Pioneer Heights Road, Somers, CT 06071
Latitude: 41° 56' 55.98"/ Longitude: -72° 29' 31.55"

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 136-foot level of the existing 160-foot self-support tower at 126 Pioneer Heights Road in Somers, CT. The tower is owned by Crown Castle. The property is owned by The Clarence & Lena Farnham Living Trust. AT&T now intends to replace three (3) antennas with three (3) new 1.9 GHz antennas. These antennas would be installed at the 136-foot level of the tower. AT&T also intends to install three (3) RRU's, three (3) A2 modules, and one (1) squid.

This facility was approved by the by the Connecticut Siting Council in Docket No. 58 on July 11, 1986. This approval included the conditions that:

1. The proposed Bloomfield and Middlefield sites are rejected without prejudice.
2. The antennas on the Glastonbury tower shall be mounted no higher than 180' level of this existing tower.
3. The Portland and Rocky Hill towers shall be monopoles.
4. The towers shall be no taller than necessary to provide the proposed service, and in no event shall exceed total heights, including antennas, of
    a. 190' at the Haddam site;
    b. 173' at the Portland site;
    c. 153' at the Rocky Hill site;
    d. 173' at the Somers site;
    e. 153' at the Vernon site;
    f. 153' at the Willington site;
    g. 173' at the Windsor site.
5. The Hartford site receive antennas shall be mounted below the top of the high point of the building to preclude visibility.

6. Any future actions requiring the removal of the existing Glastonbury tower to be shared by the certificate holder shall also apply to the equipment mounted on that tower by the certificate holder, regardless of that equipment's status under Chapter 27a of the CGS.
7. The certificate holder shall submit a development and management plan for the Haddam, Portland, Rocky Hill, Somers, Vernon, and Windsor sites pursuant to the Sections 16-50j-75 through 16-50j-77 of Regulations of the State Agencies (RSA), except that irrelevant items in Section 16-50j-76 need only be identified as such. In addition to the requirements of o Section 16-50j-76, the D&M plan shall provide plans for ever green screening around the fenced perimeter at the Haddam, Somers, Vernon, and Windsor sites. The D&M plan shall include a proposal for painting the approved monopole structures to blend with the sky. The D&M plan must be approved prior to facility construction. Any changes to specifications in the D&M plan must be approved by the Council prior to facility operation.
8. All certified facilities shall be constructed, operated, and maintained as specified in the Council's record and in the site plan required by order number 7.
9. The certificate holder shall comply with any future radiofrequency (RF) standard promulgated by state or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facilities granted in this decision shall continue to be in compliance with such standards.
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 Section 16-50j-73 of the RSA, 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, 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 sues by entities not subject to jurisdiction pursuant to Section 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 associate equipment shall be dismantled and removed, or reapplication for any new use shall be made to the Council 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 appall 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 Ms. Lisa Pellegrini, First Selectman, Town of Somers, as well as the property owner, and Crown Castle is the tower owner.

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

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

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

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

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

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

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

Sincerely,

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

Attachments:

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

cc: Ms. Lisa Pellegrini
Town of Somers
600 Main Street
Somers, CT 06071

The Clarence & Lena Farnham Living Trust
126 Pioneer Heights Road
Somers, CT 06071

DOCKET NO. 58

AN APPLICATION OF HARTFORD CELLULAR COPANY FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION, MAINTENANCE, AND OPERATION OF FACILITIES TO PROVIDE CELLULAR SERVICE IN HARTFORD, TOLLAND AND MIDDLESEX COUNTIES.	CONNECTICUT SITING COUNCIL
	July 11, 1986.

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

Pursuant to the foregoing opinion, the Connecticut Siting Council (Council) hereby directs that a Certificate of Environmental Compatibility and Public Need as provided by Section 16-50k of the General Statutes of Connecticut (CGS) be issued to the Hartford Cellular Company for the construction, maintenance, and operation of cellular mobile phone telecommunication towers and associated equipment in the towns of Glastonbury, Haddam, Hartford, Portland, Rocky Hill, Somers, Vernon, Windsor, and Willington subject to the conditions below.

1) The proposed Bloomfield and Middlefield sites are rejected without prejudice.

2) The antennas on the Glastonbury tower shall be mounted no higher than the 180' level of this existing tower.

3) The Portland and Rocky Hill towers shall be monopoles.

4) The towers shall be no taller than necessary to provide the proposed service, and in no event shall exceed total heights, including antennas, of

a) 193' at the Haddam site;

b) 173' at the Portland site;

c) 153' at the Rocky Hill site;

d) 173' at the Somers site;

e) 173' at the Vernon site;

f) 153' at the Willington site;

g) 173' at the Windsor site.

5) The Hartford site receive antennas shall be mounted below the top of the high point of the building to preclude visibility.

6) Any future actions requiring the removal of the existing Glastonbury tower to be shared by the certificate holder shall also apply to the equipment mounted on that tower by the certificate holder, regardless of that equipment's status under Chapter 277a of the CGS.

7) The certificate holder shall submit a development and management (D&M) plan for the Haddam, Portland, Rocky Hill, Somers, Vernon and Windsor sites pursuant to Sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies (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 Haddam, Somers, Vernon, and Windsor sites. The D&M plan shall include a proposal for painting the approved monopole structures to blend with the sky. The D&M plan must be approved prior to facility construction. Any changes to specifications in the D&M plan must be approved by the Council prior to facility operation.

8) All certified facilities shall be constructed, operated, and maintained as specified in the Council's record and in the

site plan required by order number 7.

9) The certificate holder shall comply with any future radiofrequency (RF) standards promulgated by state or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facilities granted in this decison shall continue to be in compliance with such standards.

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 Section 16-50j-73 of the RSA, 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, 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 Section 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 associate equipment shall be dismantled and removed, or reapplication for any new use shall be made to the Council 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 Hartford Courant, Middletown Press, Manchester Journal Inquirer, and the Willimantic Chronicle.

The parties to the proceeding are:

Metro Mobile (applicant)
5 Eversley Avenue
Norwalk, Connecticut 06855
ATTN: Armand Mascioli
General Manager

Howard L. Slater, Esq. (its attorneys)
Scott A. Gursky, Esq.
Byrne, Slater,Sandler,
Shulman & Rouse, P.C.
111 Pearl Street
Hartford, Connecticut 06103

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

Mr. William Wamester
1225 Randolph Road
Middletown, Connecticut 06457

The Southern New England Telephone Company
227 Church Street
New Haven, Connecticut 06506
ATTN: Peter J. Tyrrell, Esq.

Mr. James W. Tilney — represented by:
Patricia A. Ayars
Samuel Baily, Jr.
Robinson & Cole
One Commercial Plaza
Hartford, CT. 06103-3597

Mr. Samuel DuBosar, Chairman
Bessie Bennett, Esq.
Town Plan & Zoning Commission
P.O. Box 337
Bloomfield, Connecticut 06002

Town of Somers — represented by:

Mr. Robert F. Peters
Town Counsel
Tatoian, Devline, Peters
& Davis
11 South Road
P.O. Box 415
Somers, CT. 06071

Town of Haddam
represented by:

Lucy R. Petrella
Chairperson
Town Office Building
Route 9A
P.O. Box 87
Haddam, CT. 06438

Midstate Regional Planning Agency

represented by:

Thomas M.Gilligan
Regional Planner
P.O. Box 139
Middletown, CT. 06457

Dr. Donald P. LaSalle
Director
Talcott Mountain Science Center
Montevideo Road
Avon, Connecticut 06001

Barnard Tilson (service waived)
Secretary
Avon Planning and Zoning
60 West Main Street
Avon, Connecticut 06001

Alden Giddings
33 Privelege Road
Bloomfield, Connecticut 06002

Town of Bloomfield

represented by:

Joseph M.Suggs, Jr.
Deputy Mayor
Town Hall
880 Bloomfield Avenue
P.O. Box 337
Bloomfield, CT. 06002
(service waived)

Town of Middlefield represented by:

David Silverstone, Esq.
Silverstone & Koontz
37 Lewis Street
Hartford, CT. 06103

with a copy to:

Geoffrey Colegrove
Midstate Regional Planning Agency
100 DeKoven Drive
Middletown, CT. 06457

Zoning Commission represented by:
Town of Somers

Joseph A. Paradis
Chairman
Town Hall
600 Main Street
P.O. Box 803
Somers, CT. 06071

Barbara Sirwilo, Secretary (service waived)
Planning & Zoning Commission
Town of Rocky Hill
600 Old Main Street
P.O. Box 657
Rocky Hill, Connecticut 06067

H. Robert Goodrich (service waived)
Goodrich Lane
Portland, Connecticut 06480

The Honorable Richard P. Antonetti
State Representative (service waived)
5 Sachem Circle
Meriden, Connecticut 06450

John Hevrin
R.D. #1 - Plains Road
Haddam, Connecticut 06438

Norman and Darlene Manning (represented by)

Elizabeth Allen, Esq.
P.O. Box 467
Higganum, CT. 06441
(service waived)

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 11th day of July, 1986.

Council Members	Vote Cast
Gloria Dibble Pond Chairperson	Absent
Commissioner John Downey Designee: Patricia Shea	Yes
Commissioner Stanley Pac Designee: Christopher Cooper	Yes
Owen L. Clark	Yes
Mortimer A. Gelston	Yes
James G. Horsfall	Yes
Pamela B. Katz	Absent
William H. Smith	Yes
Colin C. Tait	Yes

STATE OF CONNECTICUT)
: ss. New Britain, July 11, 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, Executive Director
Connecticut Siting Council

PROJECT INFORMATION

SCOPE OF WORK:
- AT&T ANTENNAS: REPLACE (1) EXISTING ANTENNA PER SECTOR FOR 3 SECTORS, FOR A TOTAL OF (3) NEW ANTENNAS; (2) EXISTING ANTENNAS TO REMAIN PER SECTOR FOR 3 SECTORS, FOR A TOTAL OF (6) EXISTING ANTENNAS.
- AT&T RRUs: (1) NEW RRU & A2 MODULE PER SECTOR FOR (3) SECTORS, FOR A TOTAL OF (3) NEW RRUs AND (3) NEW A2 MODULES; (1) EXISTING RRU PER SECTOR TO REMAIN, FOR A TOTAL OF (3) EXISTING RRUs.
- AT&T SQUID: (1) EXISTING DC-6 SQUIDS TO REMAIN.

SITE ADDRESS:	126 PIONEER HEIGHTS ROAD SOMERS, CT 06071
LATITUDE: LONGITUDE:	41.9488811 41° 56' 55.97196"N -72.4921100 -72° 29' 31.596"W
USID:	59368
TOWER OWNER:	
TYPE OF SITE:	SELF-SUPPORT TOWER/INDOOR EQUIPMENT
TOWER HEIGHT:	160'-0"±
RAD CENTER:	136'-0"±
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

DRAWING INDEX

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A-3	ANTENNA LAYOUTS & ELEVATIONS	0
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APPROVALS

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

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

at&t MOBILITY

FA CODE: 10035066
SITE NUMBER: CT1079
SITE NAME: SOMERS
BUN# 806378

VICINITY MAP

FROM ROCKY HILL, HEAD SOUTHWEST ON CONCRIB LN. TURN LEFT ONTO SOLO DR. TURN RIGHT ONTO GILBERT AVE. TURN RIGHT ONTO STATE HWY 411. TURN LEFT TO MERGE ONTO I-91 N. TAKE EXIT 45 FOR CT-140. TURN RIGHT ONTO CT-10 E. TURN LEFT ONTO REEVES RD. SITE WILL BE ON LEFT.

PROJECT TEAM

CLIENT REPRESENTATIVE
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

SITE ACQUISITION:
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

ENGINEERING:
COMPANY: COM-EX CONSULTANTS, LLC
ADDRESS: 115 ROUTE 46, SUITE E39, MOUNTAIN LAKES, NJ 07046
CONTACT: NICHOLAS D. BARILE, P.E.
PHONE: 862-209-4300
EMAIL: nbarile@comexconsultants.com

RF ENGINEER:
COMPANY: AT&T MOBILITY - NEW ENGLAND
ADDRESS: 550 COCHITUATE ROAD, SUITE 550 13 & 14, FRAMINGHAM, MA 01701
CONTACT: CAMERON SYME
PHONE: 508-596-7146
EMAIL: cs6970@att.com

CONSTRUCTION MANAGEMENT:
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: GRZEGORZ "GREG" DORMAN
PHONE: 484-683-1750
EMAIL: gdorman@empiretelecomm.com

GENERAL NOTES

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

CONNECTICUT ONE CALL SYSTEM, INC. 1-800-922-4455 STOP - CALL BEFORE YOU DIG!

CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811

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

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT1079
SITE NAME: SOMERS
126 PIONEER HEIGHTS ROAD
SOMERS, CT 06071
HARTFORD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/22/16	ISSUED AS FINAL	NJM	NDB	NDB

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

SEAL: STATE OF CONNECTICUT, DOUGLAS D. BARILE, LICENSED PROFESSIONAL ENGINEER, No. 25643, PROFESSIONAL ENGINEER, CT No. 25643

AT&T

DRAWING TITLE: TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV.
15210-EMP	T-1	0

GROUNDING NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').

14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE ½" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR – EMPIRE TELECOM
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY
   OEM – ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR (EMPIRE TELECOM).

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR

9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

14. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy=36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."

16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

18. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
   - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
   - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
   - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS

20. SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
   - AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION
   - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
   - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
   - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
   - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
   - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
   - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

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

22. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

23. INFORMATION SHOWN ON THIS SET OF PLANS TAKEN FROM DRAWINGS PREPARED BY HUDSON DESIGN GROUP FOR A RECENT UPGRADE DATED 11/10/2011. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.

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16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT1079
SITE NAME: SOMERS

126 PIONEER HEIGHTS ROAD
SOMERS, CT 06071
HARTFORD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/22/16	ISSUED AS FINAL	NJM	NDB	NDB

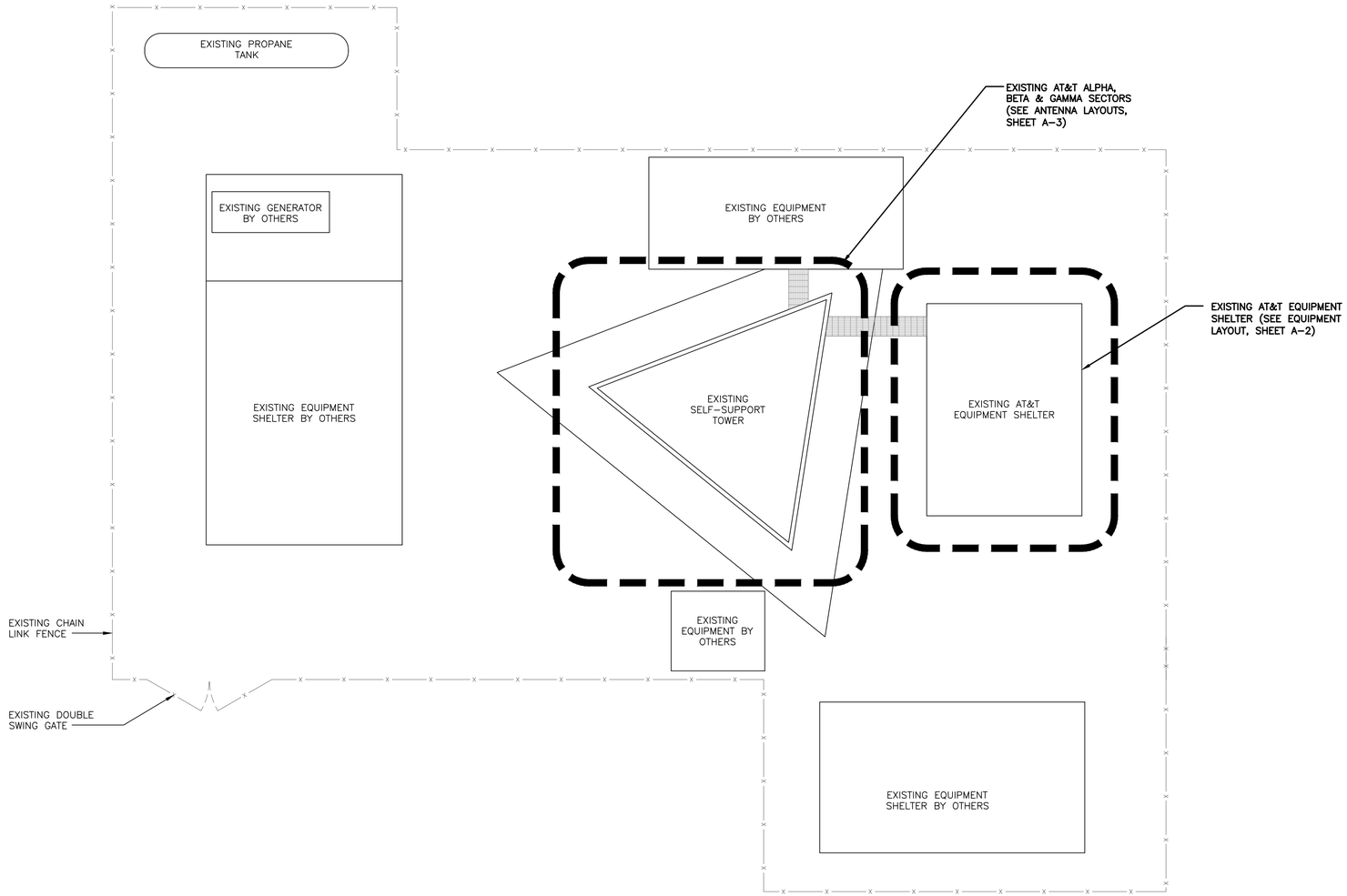
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: AM

SEAL:
STATE OF CONNECTICUT
DOUGLAS G. BASIL
LICENSE NUMBER
PROFESSIONAL ENGINEER
PRELIMINARY
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
GROUNDING & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
15210-EMP	GN-1	0



NORTH

COMPOUND LAYOUT

SCALE: 3/16" = 1'-0"

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

GRAPHIC SCALE: 3/16"=1'-0"

NOTE:
CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

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NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/22/16	ISSUED AS FINAL	NJM	NDB	NDB

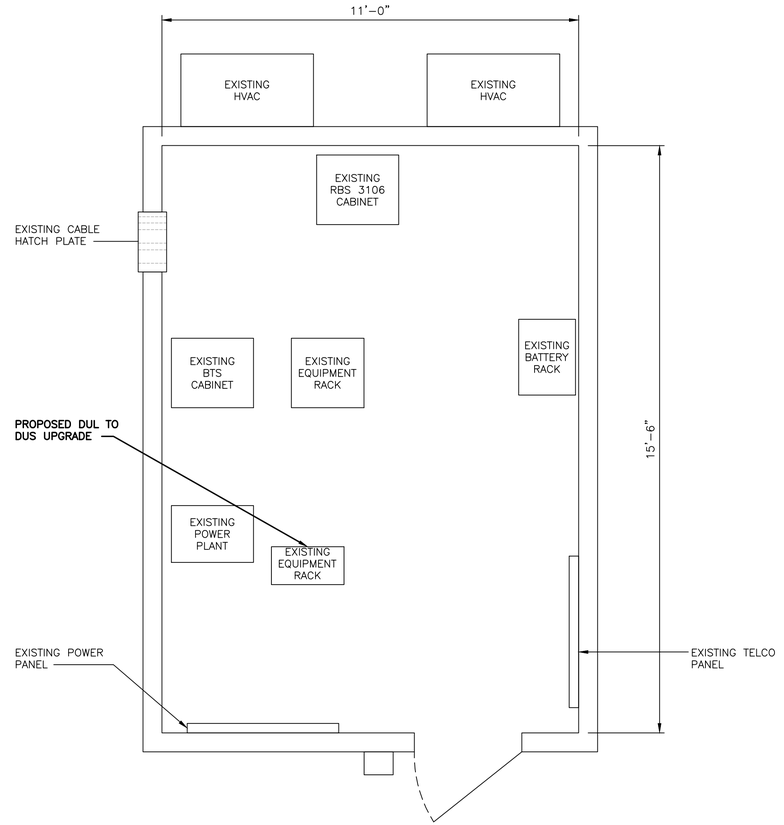
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: AM

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

AT&T

DRAWING TITLE:
COMPOUND LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
15210-EMP	A-1	0

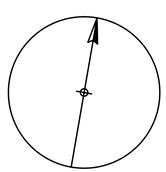


EXISTING EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot



NORTH

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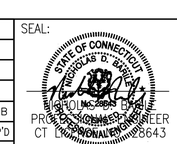
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: AM

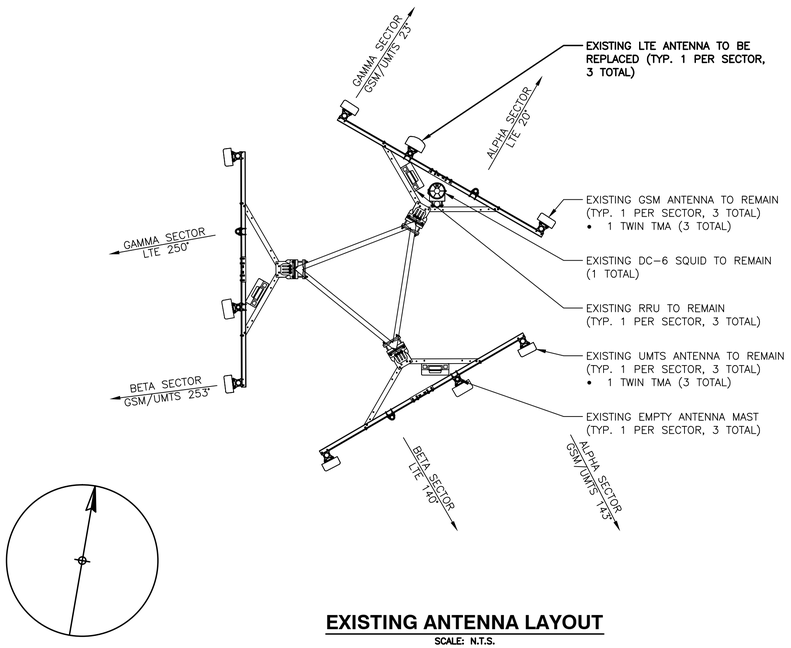
SEAL:



AT&T

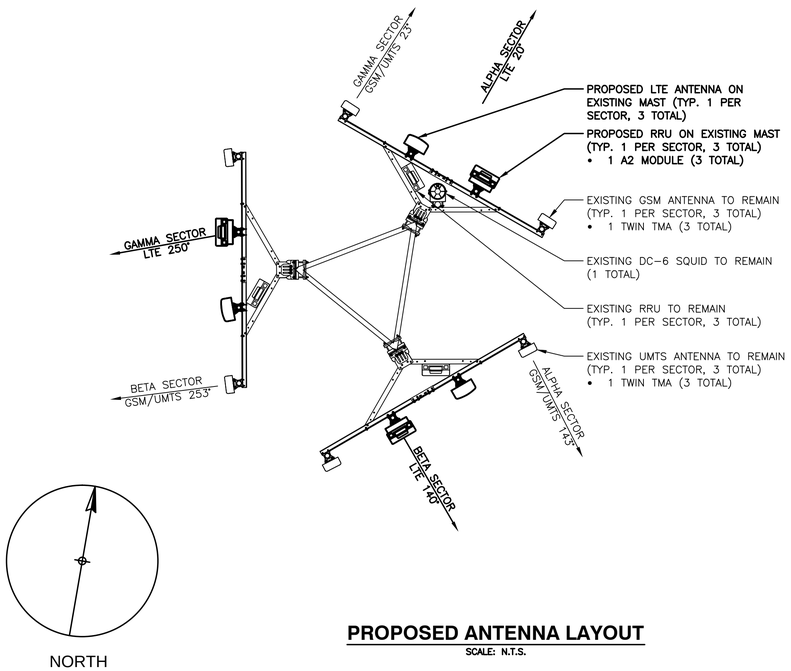
DRAWING TITLE:
EQUIPMENT LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
15210-EMP	A-2	0



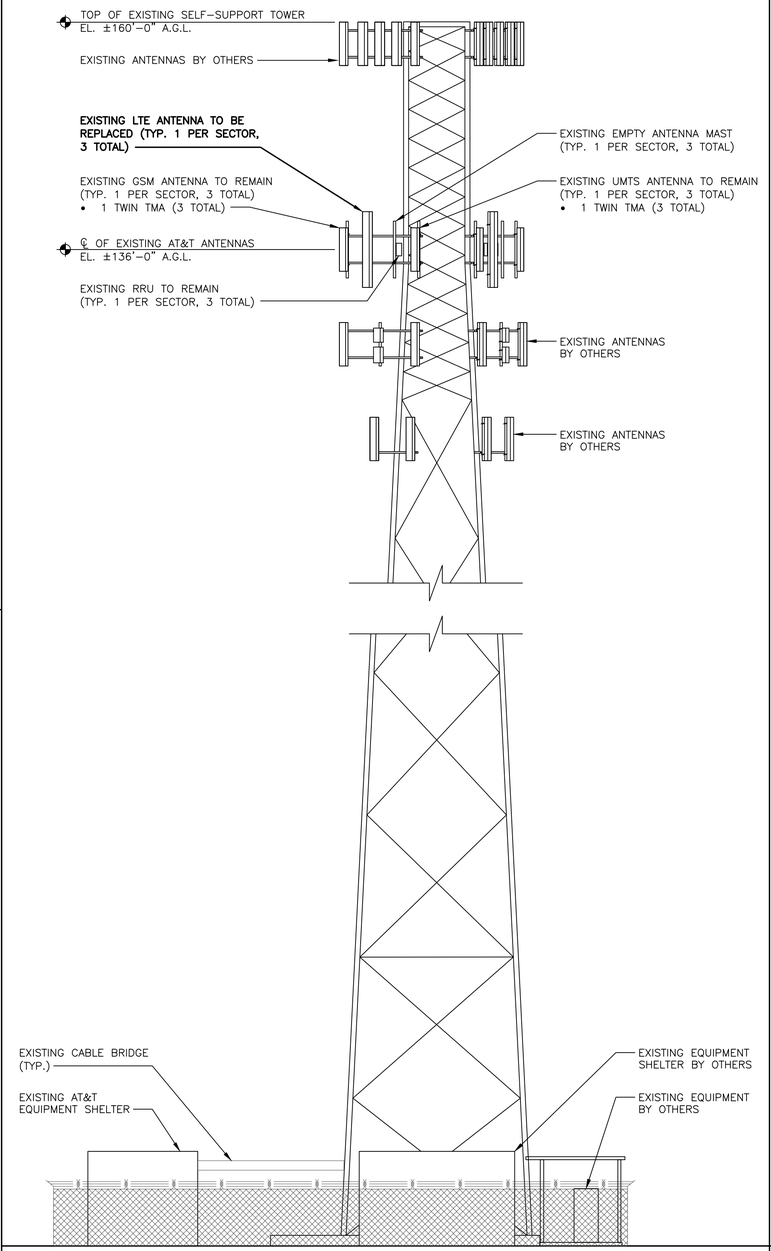
EXISTING ANTENNA LAYOUT

SCALE: N.T.S.



PROPOSED ANTENNA LAYOUT

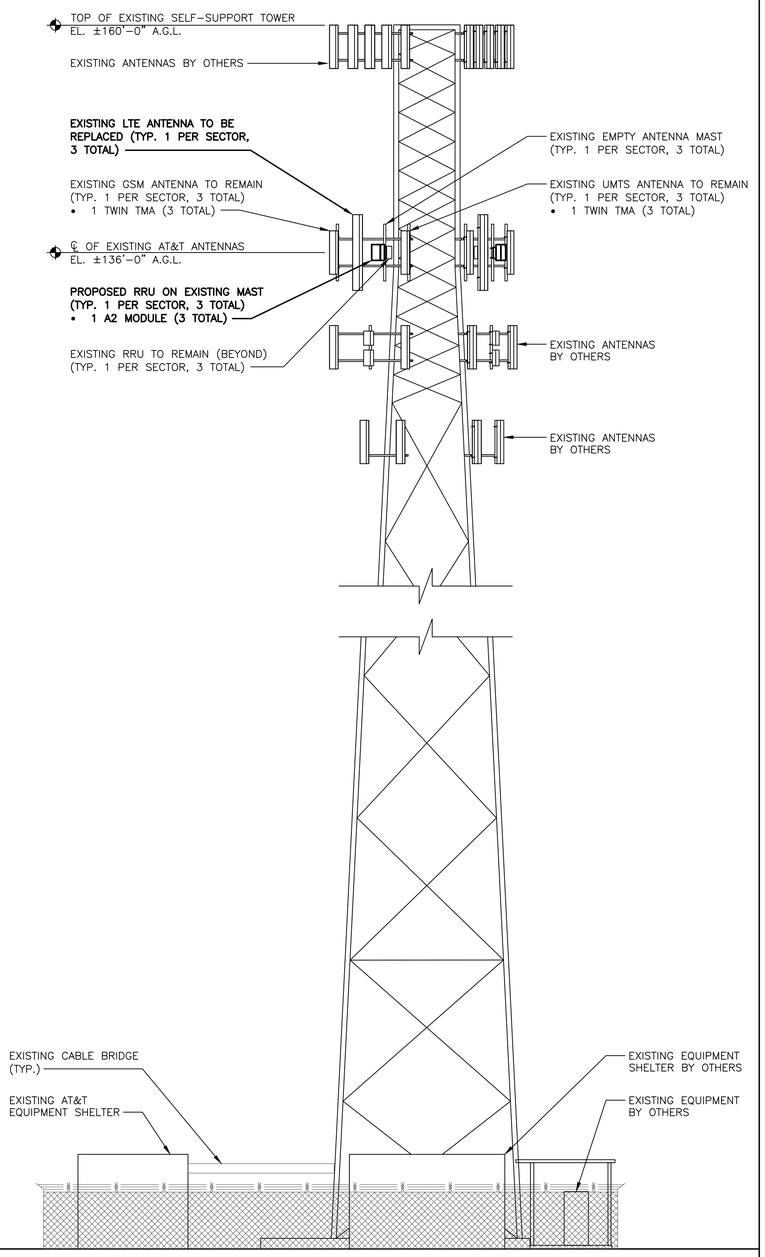
SCALE: N.T.S.



EXISTING TOWER ELEVATION

SCALE: NTS

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.



PROPOSED TOWER ELEVATION

SCALE: NTS

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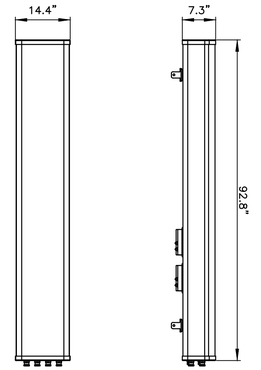
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: AM

SEAL:
STATE OF CONNECTICUT
DOUGLAS B. BASHAM
12/31/2016
PROFESSIONAL ENGINEER
CT PROFESSIONAL ENGINEER 23643

AT&T

DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
15210-EMP	A-3	0

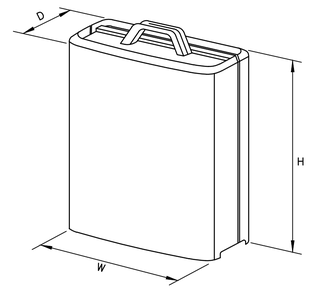


FRONT VIEW SIDE VIEW

BOTTOM VIEW

MANUFACTURER	CCI
MODEL	HPA-65R-LCUU-H8
WEIGHT	53 LBS

LTE ANTENNA DETAIL
SCALE: N.T.S.



MODEL	H x W x D	WEIGHT
RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS

*DENOTES EXISTING.

RRUS DETAIL
SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	POWERWAVE	SBNH-1D6565C	96.4"x11.9"x7.1"
	A3	–	–	–
	A4	POWERWAVE	7770	55"x11"x5"
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	POWERWAVE	P65-17-XLH-RR	96"x12"x6"
	B3	–	–	–
	B4	POWERWAVE	7770	55"x11"x5"
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	POWERWAVE	P65-17-XLH-RR	96"x12"x6"
	G3	–	–	–
	G4	POWERWAVE	7770	55"x11"x5"

FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	**CCI**	**HPA-65R-BUU-H8**	**92.4"x14.8"x7.4"**
	A3	–	–	–
	A4	POWERWAVE	7770	55"x11"x5"
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	**CCI**	**HPA-65R-BUU-H8**	**92.4"x14.8"x7.4"**
	B3	–	–	–
	B4	POWERWAVE	7770	55"x11"x5"
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	**CCI**	**HPA-65R-BUU-H8**	**92.4"x14.8"x7.4"**
	G3	–	–	–
	G4	POWERWAVE	7770	55"x11"x5"

PROPOSED RRU SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	**ERICSSON**	**RRUS-11**	**19.7"x16.9"x7.2"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	–	–
BETA	**ERICSSON**	**RRUS-11**	**19.7"x16.9"x7.2"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**
	ERICSSON	RRUS-12 (EXISTING)	20.4"x18.5"x9.5"	–	–
GAMMA	**ERICSSON**	**RRUS-11**	**19.7"x16.9"x7.2"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**
	ERICSSON	RRUS-12 (EXISTING)	20.4"x18.5"x9.5"	–	–

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.

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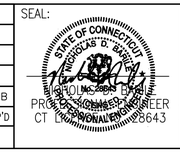
at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/22/16	ISSUED AS FINAL	NJM	NDB	NDB

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

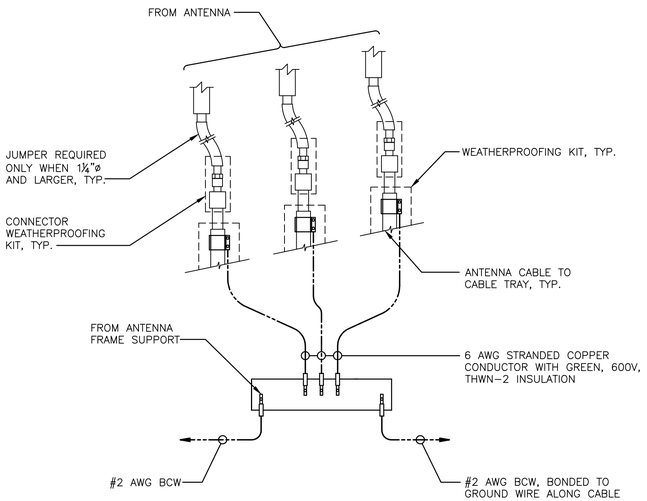
SEAL:


PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

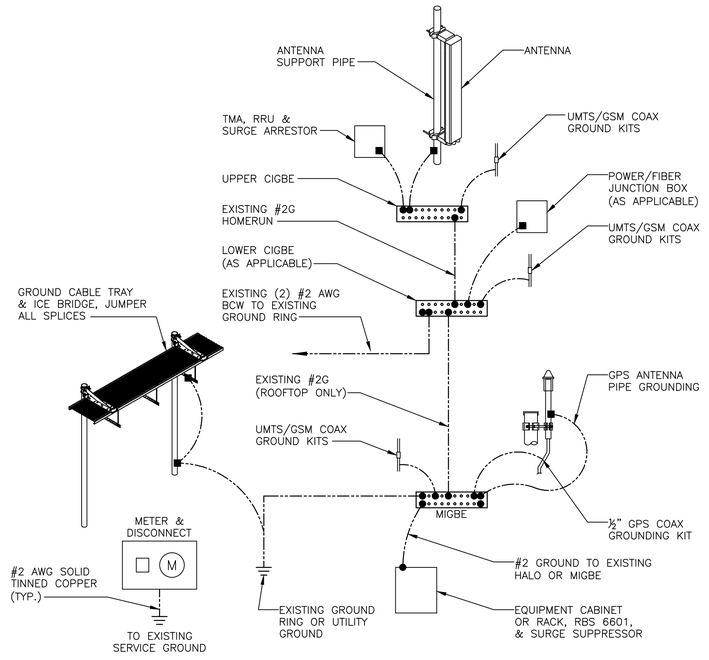
DRAWING TITLE:
DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15210-EMP	A-4	0



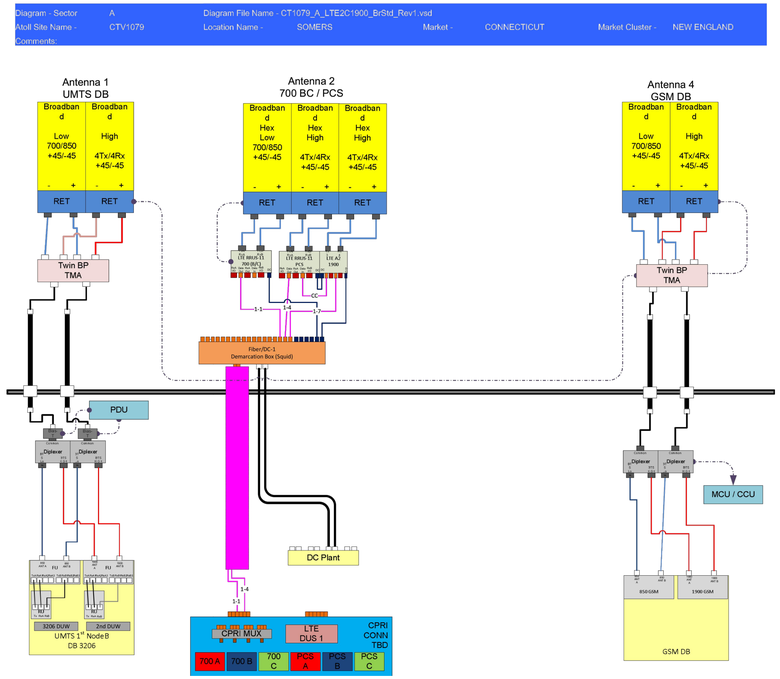
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



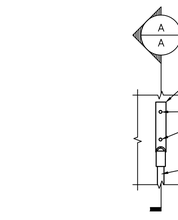
GROUNDING RISER DIAGRAM

SCALE: N.T.S.

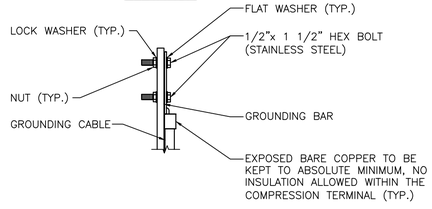


TYPICAL PLUMBING DIAGRAM (PER SECTOR)

SCALE: N.T.S.



ELEVATION



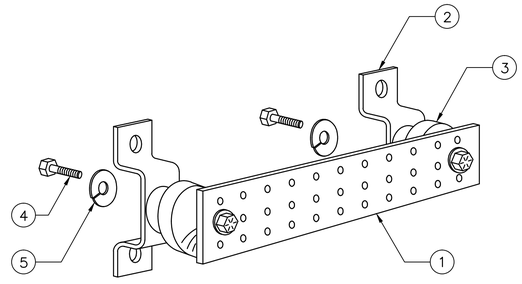
SECTION "A–A"

NOTE:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x ¼")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	⅝"–11x1" H.H.C.S.
5	4	⅝" LOCK WASHER

NOTES:

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

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

SECTION "A" – SURGE ABSORBERS
- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)

GROUND BAR DETAIL

SCALE: N.T.S.

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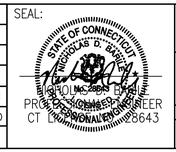
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: AM

SEAL:



AT&T

DRAWING TITLE: GROUNDING, ONE–LINE DIAGRAM & DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15210–EMP	G–1	0

Date: **January 27, 2016**

Sean Dempsey
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6565

Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, KY 40475
(859) 624-8360
dward@verticalstructures.com

Subject: **Structural Analysis Report**

Carrier Designation:	***AT&T Mobility* Change-Out**	
	Carrier Site Number:	CT1079
	Carrier Site Name:	Somers
Crown Castle Designation:	**Crown Castle BU Number:**	806378
	Crown Castle Site Name:	HRT 086 943248
	Crown Castle JDE Job Number:	359674
	Crown Castle Work Order Number:	1181135
	Crown Castle Application Number:	324401 Rev. 4
Engineering Firm Designation:	**Vertical Structures, Inc. Project Number:**	2016-004-008
Site Data:	**126 Pioneer Heights Road, Somers, CT, Tolland County** **Latitude *41° 56' 55.98"*, Longitude *-72° 29' 31.55"*** **161.375 Foot - Self Support Tower**	

Dear Sean Dempsey,

Vertical Structures, Inc. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 865350.

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

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

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

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

Respectfully submitted by:

Daryn Ward, P.E.
Project Engineer

STATE OF CONNECTICUT
JOHN IRVING MATHES
LICENSED
PROFESSIONAL ENGINEER

1/27/16

Date: **January 27, 2016**

Sean Dempsey
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6565

Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, KY 40475
(859) 624-8360
dward@verticalstructures.com

Subject: Structural Analysis Report

Carrier Designation:	***AT&T Mobility* Change-Out**	
	Carrier Site Number:	CT1079
	Carrier Site Name:	Somers
Crown Castle Designation:	**Crown Castle BU Number:**	806378
	Crown Castle Site Name:	HRT 086 943248
	Crown Castle JDE Job Number:	359674
	Crown Castle Work Order Number:	1181135
	Crown Castle Application Number:	324401 Rev. 4
Engineering Firm Designation:	**Vertical Structures, Inc. Project Number:**	2016-004-008
Site Data:	**126 Pioneer Heights Road, Somers, CT, Tolland County**	
	Latitude *41° 56' 55.98"*, Longitude *-72° 29' 31.55"*	
	161.375 Foot - Self Support Tower	

Dear Sean Dempsey,

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

Respectfully submitted by:

Daryn Ward, P.E.
Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 161.375 ft Self Support tower designed by Rohn in 1986. The tower was originally designed for a 30 psf wind pressure in accordance with a previous revision of the EIA Standard. The tower has been reworked multiple times to accommodate additional loading.

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 and 50 mph under service loads. Also, per Crown Castle's direction and in accordance with ASCE-7-05 we have considered a fastest mile wind speed of 38 mph with an escalating 1.0 inch ice thickness.

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
135.0	137.0	3	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe			
		3	ericsson	RRUS 11 BTS			
		3	ericsson	RRUS A2 BTS			

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
157.0	158.0	3	alcatel lucent	RRH2X60-PCS BTS			2
		3	alcatel lucent	RRH2x60-AWS BTS			
		3	andrew	LNX-6514DS-VTM w/ Mount Pipe			
		2	antel	LPA-80063/4CF w/ Mount Pipe	18	1 5/8	1
		2	antel	LPA-80063/4CFx5 w/ Mount Pipe			
		2	celwave	APL866513-42T6 w/ 8' Pipe Mount			
		1	celwave	DB-T1-6Z-8AB-0Z BTS	2	1 5/8	2
		6	commscope	HBXX-6517DS-VTM w/ Mount Pipe			
	157.0	1		Sector Mount [SM 504-3]			1
135.0	137.0	1	andrew	SBNH-1D6565C w/ Mount Pipe			1
		1	andrew	SBNH-1D6565C w/ Mount Pipe			3
		3	communications components	DTMABP7819VG12A TMA			1
		3	ericsson	RRUS-11 BTS			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		3	powerwave technologies	LGP13519 Diplexer			3
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe	1 2 12	3/8 3/4 1 1/4	1
		3	powerwave technologies	TT19-08BP111-001 TMA			
		1	raycap	DC6-48-60-18-8F			
	135.0	1		Sector Mount [SM 504-3]			
125.0	126.0	3	alcatel lucent	1900MHz RRH (65MHz) TMA	1 3	5/8 1 1/4	1
		3	alcatel lucent	800MHz 2x50W RRH w/ Filter			
		3	alcatel lucent	TD-RRH8x20-25 BTS			
		1	celwave	APXV9ERR18-C-A20 w/ Mount Pipe			
		2	celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	celwave	APXVTM14-C-120 w/ Mount Pipe			
	125.0	1		Pipe Mount [PM 601-3]			
		1		Sector Mount [SM 402-3]			
113.0	113.0	1		T-Arm Mount [TA 702-3]	2 1 6	3/4 1 3/16 1 5/8	1
		3	ericsson	AIR 21 B2A B4P w/ Mount Pipe			
		3	ericsson	AIR 21 B4A B2P w/ Mount Pipe			
57.0	60.0	1		GPS	1	1/2	1
	57.0	1		Side Arm Mount [SO 202-1]			
48.0	50.0	1	lucent	KS24019-L112A	1	1/2	1
	48.0	1		Side Arm Mount [SO 202-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed

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	4	celwave	PD10017		
		4	rohn	3' Sidearm		
171	171	6	celwave	PD1132		
		3	rohn	6' Sidearm		
161	161	2		6' Std. Dish		
100	100	1	celwave	PD1109		
		1	rohn	6' Sidearm		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	AT&T Mobility Change-Out Revision #4	324401	CCIsites
Tower Drawing	Rohn Drawing No. A861589-1	1918334	CCIsites
Foundation Drawing	Rohn Drawing No. C820155	1918334	CCIsites
Tower Leg Information	HEB September 3, 1999 Letter	821786	CCIsites
Geotechnical Report	FDH Project No. 06-10109G	1275233	CCIsites
Rework Design	All-Points Technology Job No. CT105160	262063	CCIsites
Rework Drawings	Vertical Structures Job No. 2006-004-066, Rev. B	1278690	CCIsites
Rework Drawings	Vertical Structures Job No. 2011-004-006	2961397	CCIsites
Rework Drawings	Vertical Structures Job No. 2012-004-047	3265393	CCIsites
Post-Modification Inspection	TEP Project No. 127290	3684249	CCIsites
Rework Drawings	Vertical Structures Job No. 2015-004-007	5615504	CCIsites

3.1) Analysis Method

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

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T1	161.375 - 141.25	Leg	ROHN 2 STD	1	-21683.50	32298.46	67.1	Pass
T2	141.25 - 136.188	Leg	ROHN 2.5 EH	37	-23803.10	65601.99	36.3	Pass
T3	136.188 - 131.188	Leg	ROHN 2.5 EH	49	-32740.20	65600.53	49.9	Pass
T4	131.188 - 126.188	Leg	ROHN 2.5 EH	58	-40397.90	65600.53	61.6	Pass
T5	126.188 - 121.125	Leg	ROHN 2.5 EH	67	-54612.70	65601.99	83.2	Pass
T6	121.125 - 114.396	Leg	ROHN 3 EH	76	-60045.30	83786.24	71.7	Pass
T7	114.396 - 107.729	Leg	ROHN 3 EH	85	-71992.60	83784.51	85.9	Pass
T8	107.729 - 100.979	Leg	ROHN 3 EH	94	-89824.30	105836.47	84.9	Pass
T9	100.979 - 94.2292	Leg	ROHN 3.5 EH	106	-94842.80	110272.15	86.0	Pass
T10	94.2292 - 87.5625	Leg	ROHN 3.5 EH	115	-105503.00	110269.22	95.7	Pass
T11	87.5625 - 80.8125	Leg	ROHN 3.5 EH	124	-121549.00	132220.66	91.9	Pass
T12	80.8125 - 74.0625	Leg	ROHN 4 EH	136	-126112.00	139069.22	90.7	Pass
T13	74.0625 - 67.3958	Leg	ROHN 4 EH	145	-135580.00	161079.71	84.2	Pass
T14	67.3958 - 60.625	Leg	ROHN 4 EH	157	-150655.00	161110.37	93.5	Pass
T15	60.625 - 50.5208	Leg	ROHN 5 EH	169	-157465.00	177462.28	88.7	Pass
T16	50.5208 - 40.4167	Leg	ROHN 5 EH	178	-179614.00	217425.62	82.6 85.5 (b)	Pass
T17	40.4167 - 30.3125	Leg	ROHN 5 EH	190	-185675.00	217442.95	85.4	Pass
T18	30.3125 - 20.2083	Leg	ROHN 5 EH	202	-207151.00	233601.58	88.7	Pass
T19	20.2083 - 0	Leg	ROHN 6 STD w/ 2" B7 (Composite Controls) (VSI)	244	-233960.00	251897.00	92.9	Pass
T1	161.375 - 141.25	Diagonal	L1 3/4x1 3/4x3/16	7	-3211.31	8233.69	39.0 59.8 (b)	Pass
T2	141.25 - 136.188	Diagonal	L1 3/4x1 3/4x3/16	44	-3005.30	6292.83	47.8 54.7 (b)	Pass
T3	136.188 - 131.188	Diagonal	L1 3/4x1 3/4x3/16	53	-4050.40	5692.96	71.1 74.0 (b)	Pass
T4	131.188 - 126.188	Diagonal	L1 3/4x1 3/4x3/16	62	-4330.28	5163.16	83.9	Pass
T5	126.188 - 121.125	Diagonal	L2x2x3/16	71	-5150.14	7121.45	72.3 93.7 (b)	Pass
T6	121.125 - 114.396	Diagonal	L2 1/2x2 1/2x1/4	80	-5774.14	13636.32	42.3 89.5 (b)	Pass
T7	114.396 - 107.729	Diagonal	L2 1/2x2 1/2x1/4	89	-5998.30	12364.21	48.5 92.7 (b)	Pass
T8	107.729 - 100.979	Diagonal	L2 1/2x2 1/2x1/4	98	-6312.29	11251.04	56.1 98.0 (b)	Pass
T9	100.979 - 94.2292	Diagonal	L2 1/2x2 1/2x3/16	110	-6296.27	7928.39	79.4	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T10	94.2292 - 87.5625	Diagonal	L2 1/2x2 1/2x1/4	119	-6272.52	9386.40	66.8	Pass
T11	87.5625 - 80.8125	Diagonal	2L2 1/2x2 1/2x3/16x1/4	128	-6580.09	28255.60	23.3 29.9 (b)	Pass
T12	80.8125 - 74.0625	Diagonal	L3x3x3/16	140	-6565.65	10664.01	61.6	Pass
T13	74.0625 - 67.3958	Diagonal	L3x3x3/16	149	-6588.85	9783.97	67.3	Pass
T14	67.3958 - 60.625	Diagonal	L3x3x3/16	161	-6870.36	9013.80	76.2	Pass
T15	60.625 - 50.5208	Diagonal	2L3x3x3/16x1/4	173	-7983.36	29304.00	27.2 67.3 (b)	Pass
T16	50.5208 - 40.4167	Diagonal	2L3x3x3/16x1/4	182	-8154.30	27080.03	30.1 69.2 (b)	Pass
T17	40.4167 - 30.3125	Diagonal	2L3x3x1/4x1/4	194	-8270.75	32519.33	25.4 69.8 (b)	Pass
T18	30.3125 - 20.2083	Diagonal	2L3x3x1/4x1/4	209	-9433.21	51914.48	18.2 75.3 (b)	Pass
T19	20.2083 - 0	Diagonal	2L3 1/2x3 1/2x1/4x1/4	248	-9218.72	40256.47	22.9 76.2 (b)	Pass
T18	30.3125 - 20.2083	Horizontal	L3x3x3/16	205	-3592.71	3955.01	90.8	Pass
T8	107.729 - 100.979	Secondary Horizontal	L1 3/4x1 3/4x1/4	103	-1557.76	4951.99	31.5	Pass
T11	87.5625 - 80.8125	Secondary Horizontal	L2x2x3/16	133	-2107.95	4040.92	52.2	Pass
T13	74.0625 - 67.3958	Secondary Horizontal	L1 3/4x1 3/4x1/4	154	-2351.52	2783.06	84.5	Pass
T14	67.3958 - 60.625	Secondary Horizontal	L2x2x3/16	168	-2612.88	2956.31	88.4	Pass
T16	50.5208 - 40.4167	Secondary Horizontal	L2 1/2x2 1/2x3/16	189	-3114.81	4627.60	67.3	Pass
T17	40.4167 - 30.3125	Secondary Horizontal	L3x3x1/4	199	-3220.26	9343.57	34.5 37.5 (b)	Pass
T1	161.375 - 141.25	Top Girt	L2x2x1/8	5	-673.97	2488.54	27.1	Pass
T2	141.25 - 136.188	Top Girt	L2x2x1/8	40	-398.10	2452.43	16.2	Pass
T18	30.3125 - 20.2083	Redund Horz 1 Bracing	L2x2x3/16	207	-3592.71	7308.17	49.2	Pass
T18	30.3125 - 20.2083	Redund Diag 1 Bracing	L2x2x3/16	243	-2091.04	5393.49	38.8	Pass
							Summary	
						Leg (T10)	95.7	Pass
						Diagonal (T8)	98.0	Pass
						Horizontal (T18)	90.8	Pass
						Secondary Horizontal (T14)	88.4	Pass
						Top Girt (T1)	27.1	Pass
						Redund Horz 1 Bracing (T18)	49.2	Pass
						Redund Diag 1	38.8	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
						Bracing (T18)		
						Bolt Checks	98.0	Pass
						Rating =	98.0	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	80.0	Pass
1	Base Foundation	0	37.1	Pass
1	Base Foundation Soil Interaction	0	85.7	Pass
1	Diagonal Connection Reinforcement	100 – 60	78.3	Pass
1	Redundant Member End Connections	30 – 20	49.6	Pass

Structure Rating (max from all components) =	98.0%

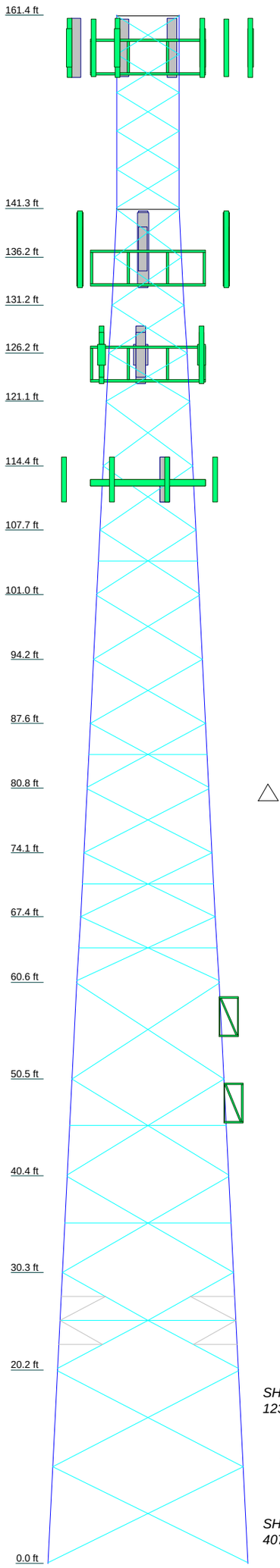
Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity.

4.1) Recommendations

N/A

APPENDIX A

TNXTOWER OUTPUT



Section	T19	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	A		ROHN 5 EH			ROHN 4 EH			A572-50	ROHN 3.5 EH			ROHN 3 EH			ROHN 2.5 EH			ROHN 2 STD
Leg Grade	A572-50																		
Diagonals	2L3 1/2x3 1/2x1/4x1/4		2L3x3x1/4x1/4		2L3x3x3/16x1/4		L3x3x3/16		E	D	C	F	L2 1/2x2 1/2x1/4	B	L1 3/4x1 3/4x3/16				
Diagonal Grade										A36									
Top Girts							N.A.								L2x2x1/8				
Horizontals	N.A.	L3x3x3/16									N.A.								
Sec. Horizontals		N.A.	L3x3x1/4	L2 1/2x2 1/2x3/16	N.A.	L2x2x3/16	F	N.A.	L2x2x3/16	N.A.		F				N.A.			
Red. Horizontals	N.A.	L2x2x3/16								N.A.									
Red. Diagonals	N.A.	L2x2x3/16								N.A.									
Face Width (ft)	20.8646	18.8542	16.7708	15.7708	14.7708	14.0729	13.375	12.6771	11.9974	11.3151	10.6354	9.95833	9.28125	8.60417	8.09375	7.58333	7.0729	6.5625	6.52083
# Panels @ (ft)		2 @ 5		3 @ 10						9 @ 6.66667						4 @ 5		5 @ 4	
Weight (lb)	20111.5	2316.8	2027.9	1613.4	1419.6	866.9	879.8	733.0	961.2	702.2	597.3	581.1	479.7	468.4	256.0	231.8	226.3	255.0	733.0
	2 @ 10																		
	4762.0																		

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Sector Mount [SM 504-3]	157	RRUS 11 BTS (ATI Mobility)	135
(2) APL866513-42T6 w/ 8' Pipe Mount (VSI)	157	RRUS 11 BTS (ATI Mobility)	135
		RRUS 11 BTS (ATI Mobility)	135
(2) LPA-80063/4CF w/ Mount Pipe (VSI)	157	DTMABP7819VG12A TMA (ATI Mobility)	135
(2) LPA-80063/4CFx5 w/Mount Pipe	157	DTMABP7819VG12A TMA (ATI Mobility)	135
(2) HBXX-6517DS-VTM w/ Mount Pipe	157		
(2) HBXX-6517DS-VTM w/ Mount Pipe	157	DTMABP7819VG12A TMA (ATI Mobility)	135
(2) HBXX-6517DS-VTM w/ Mount Pipe	157		
LNX-6514DS-VTM w/ Mount Pipe	157	TT19-08BP111-001 TMA (ATI Mobility)	135
LNX-6514DS-VTM w/ Mount Pipe	157		
LNX-6514DS-VTM w/ Mount Pipe	157	TT19-08BP111-001 TMA (ATI Mobility)	135
RRH2x60-AWS BTS	157	TT19-08BP111-001 TMA (ATI Mobility)	135
RRH2x60-AWS BTS	157		
RRH2x60-AWS BTS	157	DC6-48-60-18-8F (24 x 11 x 11) (ATI Mobility)	135
RRH2X60-PCS BTS	157		
RRH2X60-PCS BTS	157	Sector Mount [SM 402-3]	125
RRH2X60-PCS BTS	157	APXVSPP18-C-A20 w/ Mount Pipe	125
DB-T1-6Z-8AB-0Z BTS	157	APXV9ERR18-C-A20 w/ Mount Pipe	125
Sector Mount [SM 504-3] (ATI Mobility)	135	APXVSPP18-C-A20 w/ Mount Pipe	125
		APXVTM14-C-120 w/ Mount Pipe	125
HPA-65R-BUU-H8 w/ Mount Pipe (ATI Mobility)	135	APXVTM14-C-120 w/ Mount Pipe	125
		APXVTM14-C-120 w/ Mount Pipe	125
HPA-65R-BUU-H8 w/ Mount Pipe (ATI Mobility)	135	Pipe Mount [PM 601-3]	125
HPA-65R-BUU-H8 w/ Mount Pipe (ATI Mobility)	135	1900MHz RRH (65MHz) TMA	125
		1900MHz RRH (65MHz) TMA	125
7770.00 w/ mount pipe (ATI Mobility)	135	1900MHz RRH (65MHz) TMA	125
7770.00 w/ mount pipe (ATI Mobility)	135	800MHz 2x50W RRH w/ Filter	125
7770.00 w/ mount pipe (ATI Mobility)	135	800MHz 2x50W RRH w/ Filter	125
SBNH-1D6565C w/ Mount Pipe (ATI Mobility)	135	800MHz 2x50W RRH w/ Filter	125
		TD-RRH8x20-25 BTS	125
P65-17-XLH-RR w/ Mount Pipe (ATI Mobility)	135	TD-RRH8x20-25 BTS	125
		TD-RRH8x20-25 BTS	125
P65-17-XLH-RR w/ Mount Pipe (ATI Mobility)	135	T-Arm Mount [TA 702-3]	113
		Pipe Mount [PM 601-3]	113
RRUS-11 BTS (19.7 x 17.0 x 7.2 50.0 lbs) (ATI Mobility)	135	AIR 21 B2A B4P w/ Mount Pipe	113
		AIR 21 B4A B2P w/ Mount Pipe	113
RRUS-11 BTS (19.7 x 17.0 x 7.2 50.0 lbs) (ATI Mobility)	135	(2) AIR 21 B2A B4P w/ Mount Pipe	113
		(2) AIR 21 B4A B2P w/ Mount Pipe	113
RRUS-11 BTS (19.7 x 17.0 x 7.2 50.0 lbs) (ATI Mobility)	135	Side Arm Mount [SO 202-1]	57
RRUS A2 BTS (ATI Mobility)	135	Generic GPS (VSI)	57
RRUS A2 BTS (ATI Mobility)	135	KS24019-L112A	48
RRUS A2 BTS (ATI Mobility)	135	Side Arm Mount [SO 202-1]	48

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	ROHN 6 STD w/ 2" B7 (Composite Controls) (VSI)	D	L2 1/2x2 1/2x1/4
B	L2x2x3/16	E	2L2 1/2x2 1/2x3/16x1/4
C	L2 1/2x2 1/2x3/16	F	L1 3/4x1 3/4x1/4

MATERIAL STRENGTH

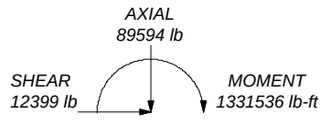
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

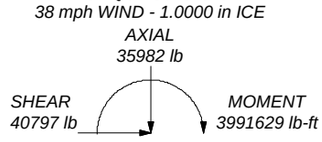
1. Tower is located in Tolland County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 98%

MAX. CORNER REACTIONS AT BASE:
DOWN: 232901 lb
SHEAR: 25405 lb

UPLIFT: -198916 lb
SHEAR: 21947 lb



TORQUE 8648 lb-ft
38 mph WIND - 1.0000 in ICE



TORQUE 36782 lb-ft
REACTIONS - 85 mph WIND

Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, KY 40475
Phone: (859) 624-8360
FAX: (859) 624-8369

Job:	***HRT 086 943248, CT BU#806378***		
Project:	***Vertical Structures Job No. 2016-004-008***		
Client:	Crown Castle	Drawn by: Bryce Collins	App'd:
Code:	TIA/EIA-222-F	Date: 01/27/16	Scale: NTS
Path:	\\nas1\BCollins\2016-004-008 HRT 086, CT\TNX\806378.eri		Dwg No. E-1

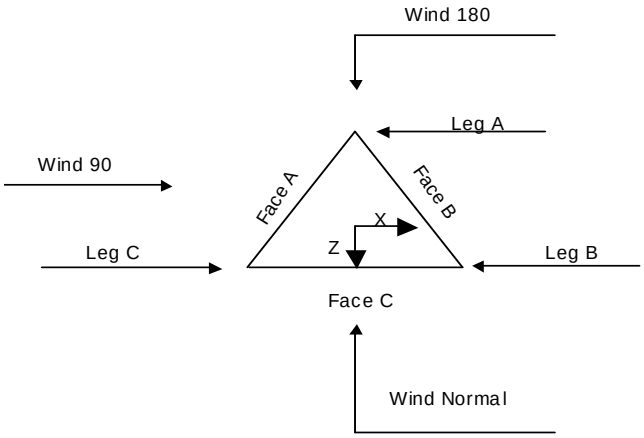
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 161.38 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 6.52 ft at the top and 20.86 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Tolland County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in 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 ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	161.38-141.25			6.52	1	20.13
T2	141.25-136.19			6.56	1	5.06
T3	136.19-131.19			7.07	1	5.00
T4	131.19-126.19			7.58	1	5.00
T5	126.19-121.13			8.09	1	5.06
T6	121.13-114.40			8.60	1	6.73
T7	114.40-107.73			9.28	1	6.67
T8	107.73-100.98			9.96	1	6.75
T9	100.98-94.23			10.64	1	6.75
T10	94.23-87.56			11.32	1	6.67
T11	87.56-80.81			12.00	1	6.75
T12	80.81-74.06			12.68	1	6.75
T13	74.06-67.40			13.38	1	6.67
T14	67.40-60.62			14.07	1	6.77
T15	60.62-50.52			14.77	1	10.10
T16	50.52-40.42			15.77	1	10.10
T17	40.42-30.31			16.77	1	10.10
T18	30.31-20.21			17.81	1	10.10
T19	20.21-0.00			18.85	1	20.21

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	161.38-141.25	4.00	X Brace	No	No	0.7500	0.7500
T2	141.25-136.19	5.00	X Brace	No	No	0.7500	0.0000
T3	136.19-131.19	5.00	X Brace	No	No	0.0000	0.0000
T4	131.19-126.19	5.00	X Brace	No	No	0.0000	0.0000
T5	126.19-121.13	5.00	X Brace	No	No	0.0000	0.7500
T6	121.13-114.40	6.67	X Brace	No	No	0.7500	0.0000
T7	114.40-107.73	6.67	X Brace	No	No	0.0000	0.0000
T8	107.73-100.98	6.67	X Brace	No	Yes	0.0000	1.0000
T9	100.98-94.23	6.67	X Brace	No	No	1.0000	0.0000
T10	94.23-87.56	6.67	X Brace	No	No	0.0000	0.0000
T11	87.56-80.81	6.67	X Brace	No	Yes	0.0000	1.0000
T12	80.81-74.06	6.67	X Brace	No	No	1.0000	0.0000
T13	74.06-67.40	6.67	X Brace	No	Yes	0.0000	0.0000
T14	67.40-60.62	6.67	X Brace	No	Yes	0.0000	1.2500
T15	60.62-50.52	10.00	X Brace	No	No	1.2500	0.0000
T16	50.52-40.42	10.00	X Brace	No	Yes	0.0000	1.2500
T17	40.42-30.31	10.00	X Brace	No	Yes	1.2500	0.0000
T18	30.31-20.21	5.00	Double K1	No	Yes	0.0000	1.2500
T19	20.21-0.00	10.00	X Brace	No	No	1.2500	1.2500

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 161.38-141.25	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 141.25-136.19	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T3 136.19-131.19	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T4 131.19-126.19	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T5 126.19-121.13	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T6 121.13-114.40	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T7 114.40-107.73	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T8 107.73-100.98	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T9 100.98-94.23	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T10 94.23-87.56	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T11 87.56-80.81	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Double Angle	2L2 1/2x2 1/2x3/16x1/4	A36 (36 ksi)
T12 80.81-74.06	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T13 74.06-67.40	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T14 67.40-60.62	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T15 60.62-50.52	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Angle	2L3x3x3/16x1/4	A36 (36 ksi)
T16 50.52-40.42	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Angle	2L3x3x3/16x1/4	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T17 40.42-30.31	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Angle	2L3x3x1/4x1/4	A572-50 (50 ksi)
T18 30.31-20.21	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Angle	2L3x3x1/4x1/4	A572-50 (50 ksi)
T19 20.21-0.00	Arbitrary Shape	ROHN 6 STD w/ 2" B7 (Composite Controls) (VSI)	A572-50 (50 ksi)	Double Angle	2L3 1/2x3 1/2x1/4x1/4	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 161.38-141.25	Equal Angle	L2x2x1/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T2 141.25-136.19	Equal Angle	L2x2x1/8	A36 (36 ksi)	Single Angle		A36 (36 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
T18 30.31-20.21	None	Single Angle		A36 (36 ksi)	Equal Angle	L3x3x3/16	A36 (36 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
T8 107.73-100.98	Equal Angle	L1 3/4x1 3/4x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T11 87.56-80.81	Equal Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 74.06-67.40	Equal Angle	L1 3/4x1 3/4x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T14 67.40-60.62	Equal Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 50.52-40.42	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T17 40.42-30.31	Equal Angle	L3x3x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T18	A36	Horizontal (1)	Equal Angle	L2x2x3/16	1
30.31-20.21	(36 ksi)	Diagonal (1)	Equal Angle	L2x2x3/16	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	1.62	0.1875	A36	1	1	1	30.0000	30.0000
161.38-141.25			(36 ksi)					
T2	0.34	0.1875	A36	1	1	1	30.0000	30.0000
141.25-136.19			(36 ksi)					
T3	0.34	0.1875	A36	1	1	1	30.0000	30.0000
136.19-131.19			(36 ksi)					
T4	0.34	0.1875	A36	1	1	1	30.0000	30.0000
131.19-126.19			(36 ksi)					
T5	0.34	0.1875	A36	1	1	1	30.0000	30.0000
126.19-121.13			(36 ksi)					
T6	0.36	0.1875	A36	1	1	1	30.0000	30.0000
121.13-114.40			(36 ksi)					
T7	0.36	0.1875	A36	1	1	1	30.0000	30.0000
114.40-107.73			(36 ksi)					
T8	0.36	0.1875	A36	1	1	1	30.0000	30.0000
107.73-100.98			(36 ksi)					
T9	1.99	0.5000	A572-50	1	1	1	30.0000	30.0000
100.98-94.23			(50 ksi)					
T10	2.36	0.5000	A572-50	1	1	1	30.0000	30.0000
94.23-87.56			(50 ksi)					
T11	2.13	0.5000	A572-50	1	1	1	Mid-Pt	30.0000
87.56-80.81			(50 ksi)					
T12	1.99	0.5000	A572-50	1	1	1	30.0000	30.0000
80.81-74.06			(50 ksi)					
T13	2.36	0.5000	A572-50	1	1	1	30.0000	30.0000
74.06-67.40			(50 ksi)					
T14	1.99	0.5000	A572-50	1	1	1	30.0000	30.0000
67.40-60.62			(50 ksi)					
T15	0.52	0.2500	A36	1	1	1	Mid-Pt	30.0000
60.62-50.52			(36 ksi)					
T16	0.75	0.2500	A36	1	1	1	Mid-Pt	30.0000
50.52-40.42			(36 ksi)					
T17	0.75	0.2500	A36	1	1	1	Mid-Pt	30.0000
40.42-30.31			(36 ksi)					
T18	0.75	0.2500	A36	1	1	1	Mid-Pt	60.0000
30.31-20.21			(36 ksi)					
T19 20.21-0.00	1.04	0.2500	A36	1	1	1	Mid-Pt	30.0000
			(36 ksi)					

Tower Section Geometry *(cont'd)*

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
ft										
T1	No	No	1	1	1	1	1	1	1	1
161.38-141.25				1	1	1	1	1	1	1
T2	No	No	1	1	1	1	1	1	1	1
141.25-136.19				1	1	1	1	1	1	1
T3	No	No	1	1	1	1	1	1	1	1
136.19-131.19				1	1	1	1	1	1	1
T4	No	No	1	1	1	1	1	1	1	1
131.19-126.19				1	1	1	1	1	1	1
T5	No	No	1	1	1	1	1	1	1	1
126.19-121.13				1	1	1	1	1	1	1
T6	No	No	1	1	1	1	1	1	1	1
121.13-114.40				1	1	1	1	1	1	1
T7	No	No	1	1	1	1	1	1	1	1
114.40-107.73				1	1	1	1	1	1	1
T8	No	No	1	1	1	1	1	1	0.5	1
107.73-100.98				1	1	1	1	1	0.5	1
T9	No	No	1	1	1	1	1	1	1	1
100.98-94.23				1	1	1	1	1	1	1
T10	No	No	1	1	1	1	1	1	1	1
94.23-87.56				1	1	1	1	1	1	1
T11	No	No	1	1	1	1	1	1	0.5	1
87.56-80.81				1	1	1	1	1	0.5	1
T12	No	No	1	1	1	1	1	1	1	1
80.81-74.06				1	1	1	1	1	1	1
T13	No	No	1	1	1	1	1	1	0.5	1
74.06-67.40				1	1	1	1	1	0.5	1
T14	No	No	1	1	1	1	1	1	0.5	1
67.40-60.62				1	1	1	1	1	0.5	1
T15	No	No	1	1	1	1	1	1	1	1
60.62-50.52				1	1	1	1	1	1	1
T16	No	No	1	1	1	1	1	1	0.5	1
50.52-40.42				1	1	1	1	1	0.5	1
T17	No	No	1	1	1	1	1	1	0.5	1
40.42-30.31				1	1	1	1	1	0.5	1
T18	No	No	1	1	1	1	1	1	1	1
30.31-20.21				1	1	1	1	1	1	1
T19	No	No	1	1	1	1	1	1	1	1
20.21-0.00				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		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 161.38-141.25	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 141.25-136.19	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 136.19-131.19	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 131.19-126.19	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 126.19-121.13	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 121.13-114.40	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 114.40-107.73	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 107.73-100.98	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 100.98-94.23	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 94.23-87.56	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 87.56-80.81	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 80.81-74.06	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 74.06-67.40	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 67.40-60.62	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 60.62-50.52	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 50.52-40.42	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 40.42-30.31	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T18 30.31-20.21	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T19 20.21-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1 161.38-141.25	2.5000	3.2813	2.5000	3.2813	0.0000	0.0000	0.0000	0.0000
T2 141.25-136.19	2.5000	3.5313	2.5000	3.5313	0.0000	0.0000	0.0000	0.0000

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T3 136.19-131.19	2.5000	3.5313	2.5000	3.5313	0.0000	0.0000	0.0000	0.0000
T4 131.19-126.19	2.5000	3.5313	2.5000	3.5313	0.0000	0.0000	0.0000	0.0000
T5 126.19-121.13	2.5000	3.5313	2.5000	3.5313	0.0000	0.0000	0.0000	0.0000
T6 121.13-114.40	2.5000	3.8438	2.5000	3.8438	0.0000	0.0000	0.0000	0.0000
T7 114.40-107.73	2.5000	3.8438	2.5000	3.8438	0.0000	0.0000	0.0000	0.0000
T8 107.73-100.98	2.5000	3.8438	2.5000	3.8438	0.0000	0.0000	0.0000	0.0000
T9 100.98-94.23	2.5000	4.0938	2.5000	4.0938	0.0000	0.0000	0.0000	0.0000
T10 94.23-87.56	2.5000	4.0938	2.5000	4.0938	0.0000	0.0000	0.0000	0.0000
T11 87.56-80.81	2.5000	4.0938	2.5000	4.0938	0.0000	0.0000	0.0000	0.0000
T12 80.81-74.06	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000
T13 74.06-67.40	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000
T14 67.40-60.62	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000
T15 60.62-50.52	2.5000	4.8753	2.5000	4.8753	0.0000	0.0000	0.0000	0.0000
T16 50.52-40.42	2.5000	4.8753	2.5000	4.8753	0.0000	0.0000	0.0000	0.0000
T17 40.42-30.31	2.5000	4.8753	2.5000	4.8753	0.0000	0.0000	0.0000	0.0000
T18 30.31-20.21	0.0000	0.0000	0.0000	0.0000	1.2500	2.4376	1.2500	2.4376
T19 20.21-0.00	2.5000	5.4063	2.5000	5.4063	0.0000	0.0000	0.0000	0.0000

Tower Section Geometry *(cont'd)*

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.
T1 161.38-141.25	Flange	0.6250 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 141.25-136.19	Flange	0.7500 A325N	0	0.5000 A325N	1	0.5000 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 136.19-131.19	Flange	0.7500 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 131.19-126.19	Flange	0.7500 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 126.19-121.13	Flange	0.7500 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 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.
T6 121.13-114.40	Flange	0.8750 A325N	0	0.5000 A325X	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 114.40-107.73	Flange	0.8750 A325N	0	0.5000 A325X	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 107.73-100.98	Flange	0.8750 A325N	4	0.5000 A325X	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T9 100.98-94.23	Flange	0.8750 A325N	0	0.5000 A325N	2	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 94.23-87.56	Flange	0.8750 A325N	0	0.5000 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 87.56-80.81	Flange	0.8750 A325N	4	0.5000 A325N	2	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T12 80.81-74.06	Flange	1.0000 A325N	0	0.5000 A325N	2	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T13 74.06-67.40	Flange	1.0000 A325N	0	0.5000 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T14 67.40-60.62	Flange	1.0000 A325N	4	0.5000 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T15 60.62-50.52	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T16 50.52-40.42	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T17 40.42-30.31	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T18 30.31-20.21	Flange	1.0000 A325N	6	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1	0.6250 A325N	0
T19 20.21-0.00	Flange	1.0000 A449	0	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

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 plf
LDF4-50A (1/2 FOAM)	C	Yes	Ar (CfAe)	60.00 - 8.00	1.0000	0.45	1	1	0.6300	0.6300		0.15
LDF7-50A (1-5/8 FOAM)	C	Yes	Ar (CfAe)	158.00 - 8.00	1.0000	0.4	20	7	0.2700 1.0000	1.9800		0.82
Feedline Ladder (1-1/2" Rails) (Af) **	C	Yes	Af (CfAe)	161.38 - 8.00	0.5000	0.4	1	1	3.0000	1.5000	12.0000	3.66
Feedline Ladder (1-1/2" Rails) (Af)	A	Yes	Af (CfAe)	137.00 - 10.00	0.5000	-0.4	1	1	3.0000	1.5000	12.0000	3.66
Feedline Ladder (1-1/2" Rails) (Af)	A	Yes	Af (CfAe)	161.38 - 137.00	0.5000	-0.4	1	1	3.0000	3.0000	12.0000	3.66
HB114-1-08U4-M5J (1-1/4")	A	Yes	Ar (CfAe)	126.00 - 10.00	1.0000	-0.3	3	3	1.0000	1.5400		0.66
HB058-M12-XXXF (5/8")	A	Yes	Ar (CfAe)	126.00 - 10.00	1.0000	-0.3	1	1	0.8400	0.8400		0.25
LDF4-50A (1/2 FOAM)	A	Yes	Ar (CfAe)	50.00 - 8.00	2.0000	-0.32	1	1	0.6300	0.6300		0.15

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 plf
**												
LDF6-50A (1-1/4 FOAM) (AT&T Mobility)	A	Yes	Ar (CfAe)	137.00 - 10.00	1.0000	-0.4	12	6	1.4500	1.5500		0.66
FB-L98-002-XXX (3/8") (AT&T Mobility)	A	Yes	Ar (CfAe)	137.00 - 10.00	1.0000	-0.4	1	1	0.3937	0.3937		0.10
WR-VG86ST-BRD (Power Cable) (AT&T Mobility)	A	Yes	Ar (CfAe)	137.00 - 10.00	1.0000	-0.4	2	2	1.0000	0.7760		0.15
**												
Feedline Ladder (1-1/2" Rails) (Af)	B	Yes	Af (CfAe)	147.00 - 10.00	0.5000	0.4	1	1	3.0000	3.0000	12.0000	3.66
***												
2" Solid Rod Reinf (Ar) (VSI)	A	No	Ar (Leg)	25.00 - 0.00	0.0000	-0.05	1	1	2.3330	2.3330		0.00
2" Solid Rod Reinf (Ar) (VSI)	B	No	Ar (Leg)	25.00 - 0.00	0.0000	-0.05	1	1	2.3330	2.3330		0.00
2" Solid Rod Reinf (Ar) (VSI)	C	No	Ar (Leg)	25.00 - 0.00	0.0000	-0.05	1	1	2.3330	2.3330		0.00
***												
Feedline Ladder (1-1/2" Rails) (Af)	C	Yes	Af (CfAe)	113.00 - 8.00	0.5000	-0.4	1	1	3.0000	3.0000	12.0000	3.66
CR 50 1873 (1-5/8 FOAM)	C	Yes	Ar (CfAe)	113.00 - 8.00	1.0000	-0.4	6	6	1.0000	1.9800		0.83
1.2 Masterline Extreme Hybrid (1 3/16")	C	Yes	Ar (CfAe)	113.00 - 8.00	1.0000	-0.4	1	1	1.2000	0.0001		0.10
WR-VG86ST-BRD (Power Cable)	C	Yes	Ar (CfAe)	113.00 - 8.00	1.0000	-0.4	2	2	0.7760	0.0001		0.15

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 lb
T1	161.38-141.25	A	0.000	5.031	0.000	0.000	73.66
		B	0.000	1.438	0.000	0.000	21.04
		C	19.346	2.516	0.000	0.000	348.36
T2	141.25-136.19	A	0.761	1.164	0.000	0.000	25.29
		B	0.000	1.266	0.000	0.000	18.53
		C	5.847	0.633	0.000	0.000	101.55
T3	136.19-131.19	A	4.686	0.625	0.000	0.000	59.90
		B	0.000	1.250	0.000	0.000	18.30
		C	5.775	0.625	0.000	0.000	100.30
T4	131.19-126.19	A	4.686	0.625	0.000	0.000	59.90

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 lb
		B	0.000	1.250	0.000	0.000	18.30
		C	5.775	0.625	0.000	0.000	100.30
T5	126.19-121.13	A	6.962	0.633	0.000	0.000	71.52
		B	0.000	1.266	0.000	0.000	18.53
		C	5.847	0.633	0.000	0.000	101.55
T6	121.13-114.40	A	9.368	0.841	0.000	0.000	95.62
		B	0.000	1.682	0.000	0.000	24.63
		C	7.772	0.841	0.000	0.000	134.99
T7	114.40-107.73	A	9.281	0.833	0.000	0.000	94.73
		B	0.000	1.667	0.000	0.000	24.40
		C	12.918	2.151	0.000	0.000	181.38
T8	107.73-100.98	A	9.397	0.844	0.000	0.000	95.92
		B	0.000	1.688	0.000	0.000	24.70
		C	14.479	2.531	0.000	0.000	196.43
T9	100.98-94.23	A	9.397	0.844	0.000	0.000	95.92
		B	0.000	1.688	0.000	0.000	24.70
		C	14.479	2.531	0.000	0.000	196.43
T10	94.23-87.56	A	9.281	0.833	0.000	0.000	94.73
		B	0.000	1.667	0.000	0.000	24.40
		C	14.300	2.500	0.000	0.000	194.00
T11	87.56-80.81	A	9.397	0.844	0.000	0.000	95.92
		B	0.000	1.688	0.000	0.000	24.70
		C	14.479	2.531	0.000	0.000	196.43
T12	80.81-74.06	A	9.397	0.844	0.000	0.000	95.92
		B	0.000	1.688	0.000	0.000	24.70
		C	14.479	2.531	0.000	0.000	196.43
T13	74.06-67.40	A	9.281	0.833	0.000	0.000	94.73
		B	0.000	1.667	0.000	0.000	24.40
		C	14.300	2.500	0.000	0.000	194.00
T14	67.40-60.62	A	9.426	0.846	0.000	0.000	96.21
		B	0.000	1.693	0.000	0.000	24.78
		C	14.524	2.539	0.000	0.000	197.03
T15	60.62-50.52	A	14.066	1.263	0.000	0.000	143.58
		B	0.000	2.526	0.000	0.000	36.98
		C	22.171	3.789	0.000	0.000	295.45
T16	50.52-40.42	A	14.570	1.263	0.000	0.000	145.02
		B	0.000	2.526	0.000	0.000	36.98
		C	22.204	3.789	0.000	0.000	295.55
T17	40.42-30.31	A	14.597	1.263	0.000	0.000	145.10
		B	0.000	2.526	0.000	0.000	36.98
		C	22.204	3.789	0.000	0.000	295.55
T18	30.31-20.21	A	16.460	1.263	0.000	0.000	145.10
		B	1.863	2.526	0.000	0.000	36.98
		C	24.067	3.789	0.000	0.000	295.55
T19	20.21-0.00	A	22.710	1.276	0.000	0.000	146.89
		B	7.858	2.552	0.000	0.000	37.36
		C	34.686	4.578	0.000	0.000	357.09

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 lb
T1	161.38-141.25	A	1.201	0.000	7.716	0.000	0.000	229.10
		B		0.000	2.204	0.000	0.000	65.46
		C		6.115	24.044	0.000	0.000	1300.77
T2	141.25-136.19	A	1.188	0.667	2.968	0.000	0.000	102.90
		B		0.000	1.934	0.000	0.000	57.12

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 lb
		C		1.838	6.996	0.000	0.000	379.75
T3	136.19-131.19	A	1.183	4.090	8.272	0.000	0.000	337.20
		B		0.000	1.907	0.000	0.000	56.20
		C		1.811	6.907	0.000	0.000	374.32
T4	131.19-126.19	A	1.177	4.077	8.269	0.000	0.000	336.24
		B		0.000	1.904	0.000	0.000	55.98
		C		1.806	6.904	0.000	0.000	373.56
T5	126.19-121.13	A	1.172	6.984	10.433	0.000	0.000	413.61
		B		0.000	1.925	0.000	0.000	56.44
		C		1.824	6.987	0.000	0.000	377.42
T6	121.13-114.40	A	1.165	9.392	13.968	0.000	0.000	551.36
		B		0.000	2.553	0.000	0.000	74.65
		C		2.417	9.282	0.000	0.000	500.38
T7	114.40-107.73	A	1.157	9.260	13.832	0.000	0.000	543.64
		B		0.000	2.524	0.000	0.000	73.52
		C		6.304	18.071	0.000	0.000	724.54
T8	107.73-100.98	A	1.148	9.327	13.999	0.000	0.000	547.66
		B		0.000	2.549	0.000	0.000	73.97
		C		7.394	20.665	0.000	0.000	791.92
T9	100.98-94.23	A	1.139	9.275	13.992	0.000	0.000	544.72
		B		0.000	2.542	0.000	0.000	73.47
		C		7.353	20.651	0.000	0.000	788.26
T10	94.23-87.56	A	1.129	9.107	13.812	0.000	0.000	534.93
		B		0.000	2.503	0.000	0.000	72.05
		C		7.219	20.382	0.000	0.000	774.72
T11	87.56-80.81	A	1.119	9.163	13.977	0.000	0.000	538.31
		B		0.000	2.527	0.000	0.000	72.39
		C		7.263	20.621	0.000	0.000	780.31
T12	80.81-74.06	A	1.108	9.100	13.969	0.000	0.000	534.76
		B		0.000	2.518	0.000	0.000	71.79
		C		7.213	20.604	0.000	0.000	775.89
T13	74.06-67.40	A	1.096	8.921	13.787	0.000	0.000	524.41
		B		0.000	2.478	0.000	0.000	70.28
		C		7.070	20.332	0.000	0.000	761.65
T14	67.40-60.62	A	1.083	8.987	13.993	0.000	0.000	528.48
		B		0.000	2.507	0.000	0.000	70.68
		C		7.122	20.630	0.000	0.000	768.41
T15	60.62-50.52	A	1.065	13.258	20.861	0.000	0.000	780.09
		B		0.000	3.721	0.000	0.000	104.03
		C		12.685	30.746	0.000	0.000	1158.34
T16	50.52-40.42	A	1.039	15.207	20.833	0.000	0.000	790.02
		B		0.000	3.693	0.000	0.000	102.05
		C		12.615	30.689	0.000	0.000	1144.21
T17	40.42-30.31	A	1.008	15.013	20.798	0.000	0.000	775.91
		B		0.000	3.658	0.000	0.000	99.65
		C		12.355	30.620	0.000	0.000	1125.35
T18	30.31-20.21	A	1.000	18.389	20.789	0.000	0.000	791.32
		B		3.460	3.649	0.000	0.000	118.52
		C		15.746	30.601	0.000	0.000	1139.80
T19	20.21-0.00	A	1.000	30.115	21.003	0.000	0.000	866.34
		B		14.594	3.686	0.000	0.000	182.32
		C		29.437	36.974	0.000	0.000	1435.87

Feed Line Shielding

Section	Elevation	Face	A_R	A_R Ice	A_F	A_F Ice
	ft		ft^2	ft^2	ft^2	ft^2
T1	161.38-141.25	A	0.000	1.146	0.469	0.844
		B	0.000	0.327	0.134	0.241
		C	0.000	3.984	2.038	2.937
T2	141.25-136.19	A	0.000	0.540	0.201	0.414
		B	0.000	0.309	0.132	0.237
		C	0.000	1.248	0.676	0.957
T3	136.19-131.19	A	0.000	1.211	0.375	0.896
		B	0.000	0.213	0.088	0.158
		C	0.000	0.863	0.452	0.639
T4	131.19-126.19	A	0.000	1.180	0.367	0.877
		B	0.000	0.208	0.086	0.154
		C	0.000	0.841	0.443	0.625
T5	126.19-121.13	A	0.000	1.596	0.583	1.362
		B	0.000	0.203	0.097	0.173
		C	0.000	0.822	0.497	0.702
T6	121.13-114.40	A	0.000	1.712	0.788	1.837
		B	0.000	0.215	0.130	0.231
		C	0.000	0.873	0.665	0.937
T7	114.40-107.73	A	0.000	1.655	0.769	1.788
		B	0.000	0.208	0.127	0.224
		C	0.000	1.769	1.146	1.912
T8	107.73-100.98	A	0.000	2.278	0.974	2.260
		B	0.000	0.286	0.161	0.283
		C	0.000	2.773	1.618	2.752
T9	100.98-94.23	A	0.000	1.559	0.740	1.711
		B	0.000	0.195	0.122	0.214
		C	0.000	1.899	1.228	2.084
T10	94.23-87.56	A	0.000	1.518	0.728	1.680
		B	0.000	0.190	0.120	0.210
		C	0.000	1.850	1.210	2.047
T11	87.56-80.81	A	0.000	2.131	0.971	2.235
		B	0.000	0.266	0.160	0.279
		C	0.000	2.598	1.614	2.725
T12	80.81-74.06	A	0.000	1.443	0.852	1.954
		B	0.000	0.180	0.140	0.244
		C	0.000	1.760	1.415	2.384
T13	74.06-67.40	A	0.000	2.041	1.065	2.433
		B	0.000	0.255	0.175	0.304
		C	0.000	2.491	1.768	2.970
T14	67.40-60.62	A	0.000	1.997	1.089	2.478
		B	0.000	0.249	0.179	0.309
		C	0.000	2.439	1.808	3.027
T15	60.62-50.52	A	0.000	1.457	0.907	2.053
		B	0.000	0.181	0.149	0.255
		C	0.000	1.873	1.535	2.639
T16	50.52-40.42	A	0.000	2.102	1.246	2.882
		B	0.000	0.245	0.199	0.337
		C	0.000	2.552	2.046	3.500
T17	40.42-30.31	A	0.000	2.003	1.299	2.979
		B	0.000	0.233	0.207	0.346
		C	0.000	2.428	2.129	3.612
T18	30.31-20.21	A	0.000	4.523	2.406	5.504
		B	0.000	0.525	0.383	0.639
		C	0.000	5.486	3.943	6.676
T19	20.21-0.00	A	0.000	1.370	1.043	2.398
		B	0.000	0.157	0.165	0.275
		C	0.000	1.964	2.030	3.438

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	161.38-141.25	-8.2800	7.0182	-4.1373	3.4476
T2	141.25-136.19	-7.8575	7.6736	-3.8609	3.8787
T3	136.19-131.19	-13.3089	10.0710	-8.4818	6.0035
T4	131.19-126.19	-14.0331	10.5892	-8.9564	6.3341
T5	126.19-121.13	-15.9244	10.6610	-10.3311	6.4971
T6	121.13-114.40	-16.0385	10.6771	-11.2561	7.0429
T7	114.40-107.73	-9.5032	14.0930	-6.3814	9.6756
T8	107.73-100.98	-7.6133	14.2197	-4.6616	9.2234
T9	100.98-94.23	-7.6231	14.2322	-5.2885	10.3884
T10	94.23-87.56	-7.7672	14.4960	-5.4352	10.6811
T11	87.56-80.81	-7.4576	13.9136	-4.8314	9.5663
T12	80.81-74.06	-8.0005	14.9221	-5.7169	11.2545
T13	74.06-67.40	-7.3661	13.7351	-4.8831	9.6862
T14	67.40-60.62	-7.7208	14.3929	-5.1352	10.1833
T15	60.62-50.52	-10.7521	19.5597	-8.6838	15.6817
T16	50.52-40.42	-10.3741	18.3091	-8.6779	14.3595
T17	40.42-30.31	-10.6053	18.6843	-8.9911	14.8496
T18	30.31-20.21	-8.6072	15.1601	-6.0850	10.1351
T19	20.21-0.00	-6.5132	12.8743	-5.8167	10.8994

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 lb
Sector Mount [SM 504-3]	A	None		0.0000	157.00	No Ice	34.25	34.25	1707.90
						1/2" Ice	48.98	48.98	2286.00
						1" Ice	63.71	63.71	2864.10
						2" Ice	93.17	93.17	4020.30
						4" Ice	152.09	152.09	6332.70
(2) APL866513-42T6 w/ 8' Pipe Mount (VSI)	A	From Leg	4.25 -2.50 1.00	-35.0000	157.00	No Ice	5.24	5.63	44.90
						1/2" Ice	6.03	6.83	97.28
						1" Ice	6.75	7.88	156.17
						2" Ice	8.04	9.65	297.44
						4" Ice	10.78	13.41	711.44
(2) LPA-80063/4CF w/ Mount Pipe (VSI)	B	From Leg	4.25 -2.50 1.00	-25.0000	157.00	No Ice	7.02	6.95	34.60
						1/2" Ice	7.43	7.59	97.91
						1" Ice	7.86	8.25	167.60
						2" Ice	8.73	9.63	328.69
						4" Ice	10.57	12.73	761.38
(2) LPA-80063/4CFx5 w/Mount Pipe	C	From Leg	4.25 -2.50 1.00	-25.0000	157.00	No Ice	7.73	7.75	45.55
						1/2" Ice	8.46	8.87	116.68
						1" Ice	9.07	9.71	194.79
						2" Ice	10.32	11.43	375.62
						4" Ice	12.96	15.08	869.71
(2) HBXX-6517DS-VTM w/ Mount Pipe	A	From Leg	4.25 -2.50 1.00	-35.0000	157.00	No Ice	9.16	7.14	72.20
						1/2" Ice	9.91	8.44	143.79
						1" Ice	10.63	9.58	223.71
						2" Ice	12.03	11.55	412.53

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 lb
						4" Ice	14.95	15.73	943.57
(2) HBXX-6517DS-VTM w/ Mount Pipe	B	From Leg	4.25 -2.50 1.00	-25.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	9.16 9.91 10.63 12.03 14.95	7.14 8.44 9.58 11.55 15.73	72.20 143.79 223.71 412.53 943.57
(2) HBXX-6517DS-VTM w/ Mount Pipe	C	From Leg	4.25 -2.50 1.00	-25.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	9.16 9.91 10.63 12.03 14.95	7.14 8.44 9.58 11.55 15.73	72.20 143.79 223.71 412.53 943.57
LNX-6514DS-VTM w/ Mount Pipe	A	From Leg	4.25 -2.50 1.00	-35.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.80 9.56 10.29 11.67 14.58	7.24 8.52 9.66 11.59 15.85	62.30 133.45 212.78 399.94 925.80
LNX-6514DS-VTM w/ Mount Pipe	B	From Leg	4.25 -2.50 1.00	-25.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.80 9.56 10.29 11.67 14.58	7.24 8.52 9.66 11.59 15.85	62.30 133.45 212.78 399.94 925.80
LNX-6514DS-VTM w/ Mount Pipe	C	From Leg	4.25 -2.50 1.00	-25.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.80 9.56 10.29 11.67 14.58	7.24 8.52 9.66 11.59 15.85	62.30 133.45 212.78 399.94 925.80
RRH2x60-AWS BTS	A	From Leg	4.25 -2.50 1.00	-35.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.96 4.27 4.60 5.27 6.72	1.82 2.08 2.36 2.96 4.25	60.00 82.72 109.06 173.43 354.26
RRH2x60-AWS BTS	B	From Leg	4.25 -2.50 1.00	-25.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.96 4.27 4.60 5.27 6.72	1.82 2.08 2.36 2.96 4.25	60.00 82.72 109.06 173.43 354.26
RRH2x60-AWS BTS	C	From Leg	4.25 -2.50 1.00	-25.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.96 4.27 4.60 5.27 6.72	1.82 2.08 2.36 2.96 4.25	60.00 82.72 109.06 173.43 354.26
RRH2X60-PCS BTS	A	From Leg	4.25 -2.50 1.00	-35.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.57 2.79 3.02 3.52 4.61	1.55 1.74 1.95 2.38 3.34	55.00 72.91 93.69 144.64 289.50
RRH2X60-PCS BTS	B	From Leg	4.25 -2.50 1.00	-25.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.57 2.79 3.02 3.52 4.61	1.55 1.74 1.95 2.38 3.34	55.00 72.91 93.69 144.64 289.50
RRH2X60-PCS BTS	C	From Leg	4.25 -2.50 1.00	-25.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.57 2.79 3.02 3.52 4.61	1.55 1.74 1.95 2.38 3.34	55.00 72.91 93.69 144.64 289.50
DB-T1-6Z-8AB-0Z BTS	C	From Leg	4.25	-25.0000	157.00	No Ice	5.60	2.33	44.00

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 lb
			-2.50 1.00			1/2" Ice 1" Ice 2" Ice 4" Ice	5.92 6.24 6.91 8.37	2.56 2.79 3.28 4.37	80.13 120.22 213.04 454.67
**									
Sector Mount [SM 504-3] (AT&T Mobility)	A	None		0.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	34.25 48.98 63.71 93.17 152.09	34.25 48.98 63.71 93.17 152.09	1707.90 2286.00 2864.10 4020.30 6332.70
HPA-65R-BUU-H8 w/ Mount Pipe (AT&T Mobility)	A	From Leg	5.00 -0.50 2.00	-5.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	13.37 14.10 14.83 16.31 19.37	9.42 10.82 12.07 14.24 18.79	97.20 192.07 296.65 538.90 1193.28
HPA-65R-BUU-H8 w/ Mount Pipe (AT&T Mobility)	B	From Leg	5.00 -0.50 2.00	-5.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	13.37 14.10 14.83 16.31 19.37	9.42 10.82 12.07 14.24 18.79	97.20 192.07 296.65 538.90 1193.28
HPA-65R-BUU-H8 w/ Mount Pipe (AT&T Mobility)	C	From Leg	4.75 -1.25 2.00	-15.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	13.37 14.10 14.83 16.31 19.37	9.42 10.82 12.07 14.24 18.79	97.20 192.07 296.65 538.90 1193.28
7770.00 w/ mount pipe (AT&T Mobility)	A	From Leg	5.00 -0.50 2.00	-5.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.22 6.77 7.30 8.38 10.69	4.35 5.20 5.92 7.41 10.76	56.90 105.42 160.42 293.10 679.83
7770.00 w/ mount pipe (AT&T Mobility)	B	From Leg	5.00 -0.50 2.00	-5.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.22 6.77 7.30 8.38 10.69	4.35 5.20 5.92 7.41 10.76	56.90 105.42 160.42 293.10 679.83
7770.00 w/ mount pipe (AT&T Mobility)	C	From Leg	4.75 -1.25 2.00	-15.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.22 6.77 7.30 8.38 10.69	4.35 5.20 5.92 7.41 10.76	56.90 105.42 160.42 293.10 679.83
SBNH-1D6565C w/ Mount Pipe (AT&T Mobility)	A	From Leg	5.00 -0.50 2.00	-5.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.45 12.06 12.69 14.03 17.05	9.60 11.02 12.29 14.51 19.14	95.30 182.27 278.99 505.69 1129.60
P65-17-XLH-RR w/ Mount Pipe (AT&T Mobility)	B	From Leg	5.00 -0.50 2.00	-5.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.47 12.08 12.71 14.07 17.08	8.70 10.11 11.38 13.58 18.18	88.20 171.36 264.18 482.82 1089.49
P65-17-XLH-RR w/ Mount Pipe (AT&T Mobility)	C	From Leg	4.75 -1.25 2.00	-15.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.47 12.08 12.71 14.07 17.08	8.70 10.11 11.38 13.58 18.18	88.20 171.36 264.18 482.82 1089.49
RRUS-11 BTS (19.7 x 17.0 x 7.2 50.0 lbs)	A	From Leg	5.00 -0.50	-5.0000	135.00	No Ice 1/2" Ice	3.26 3.50	1.38 1.56	50.00 70.87

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 lb
(AT&T Mobility)			2.00			1" Ice	3.75	1.74	94.78
						2" Ice	4.28	2.15	152.50
						4" Ice	5.44	3.05	312.98
RRUS-11 BTS (19.7 x 17.0 x 7.2 50.0 lbs)	B	From Leg	5.00 -0.50	-5.0000	135.00	No Ice 1/2" Ice	3.26 3.50	1.38 1.56	50.00 70.87
(AT&T Mobility)			2.00			1" Ice	3.75	1.74	94.78
						2" Ice	4.28	2.15	152.50
						4" Ice	5.44	3.05	312.98
RRUS-11 BTS (19.7 x 17.0 x 7.2 50.0 lbs)	C	From Leg	4.75 -1.25	-15.0000	135.00	No Ice 1/2" Ice	3.26 3.50	1.38 1.56	50.00 70.87
(AT&T Mobility)			2.00			1" Ice	3.75	1.74	94.78
						2" Ice	4.28	2.15	152.50
						4" Ice	5.44	3.05	312.98
RRUS A2 BTS	A	From Leg	5.00	-5.0000	135.00	No Ice	2.41	0.53	22.04
(AT&T Mobility)			-0.50			1/2" Ice	2.62	0.67	34.65
			2.00			1" Ice	2.84	0.81	49.71
						2" Ice	3.30	1.11	87.98
						4" Ice	4.32	1.83	202.51
RRUS A2 BTS	B	From Leg	5.00	-5.0000	135.00	No Ice	2.41	0.53	22.04
(AT&T Mobility)			-0.50			1/2" Ice	2.62	0.67	34.65
			2.00			1" Ice	2.84	0.81	49.71
						2" Ice	3.30	1.11	87.98
						4" Ice	4.32	1.83	202.51
RRUS A2 BTS	C	From Leg	4.75	-15.0000	135.00	No Ice	2.41	0.53	22.04
(AT&T Mobility)			-1.25			1/2" Ice	2.62	0.67	34.65
			2.00			1" Ice	2.84	0.81	49.71
						2" Ice	3.30	1.11	87.98
						4" Ice	4.32	1.83	202.51
RRUS 11 BTS	A	From Leg	5.00	-5.0000	135.00	No Ice	3.25	1.37	50.70
(AT&T Mobility)			-0.50			1/2" Ice	3.49	1.55	71.50
			2.00			1" Ice	3.74	1.74	95.33
						2" Ice	4.27	2.14	152.89
						4" Ice	5.43	3.04	312.97
RRUS 11 BTS	B	From Leg	5.00	-5.0000	135.00	No Ice	3.25	1.37	50.70
(AT&T Mobility)			-0.50			1/2" Ice	3.49	1.55	71.50
			2.00			1" Ice	3.74	1.74	95.33
						2" Ice	4.27	2.14	152.89
						4" Ice	5.43	3.04	312.97
RRUS 11 BTS	C	From Leg	4.75	-15.0000	135.00	No Ice	3.25	1.37	50.70
(AT&T Mobility)			-1.25			1/2" Ice	3.49	1.55	71.50
			2.00			1" Ice	3.74	1.74	95.33
						2" Ice	4.27	2.14	152.89
						4" Ice	5.43	3.04	312.97
DTMABP7819VG12A TMA	A	From Leg	5.00	-5.0000	135.00	No Ice	1.14	0.40	19.18
(AT&T Mobility)			-0.50			1/2" Ice	1.28	0.51	26.48
			2.00			1" Ice	1.44	0.61	35.63
						2" Ice	1.77	0.86	60.23
						4" Ice	2.54	1.45	140.10
DTMABP7819VG12A TMA	B	From Leg	5.00	-5.0000	135.00	No Ice	1.14	0.40	19.18
(AT&T Mobility)			-0.50			1/2" Ice	1.28	0.51	26.48
			2.00			1" Ice	1.44	0.61	35.63
						2" Ice	1.77	0.86	60.23
						4" Ice	2.54	1.45	140.10
DTMABP7819VG12A TMA	C	From Leg	4.75	-15.0000	135.00	No Ice	1.14	0.40	19.18
(AT&T Mobility)			-1.25			1/2" Ice	1.28	0.51	26.48
			2.00			1" Ice	1.44	0.61	35.63
						2" Ice	1.77	0.86	60.23

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
						4" Ice	2.54	1.45	140.10
TT19-08BP111-001 TMA (AT&T Mobility)	A	From Leg	5.00 -0.50 2.00	-5.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.64 0.76 0.88 1.14 1.78	0.52 0.62 0.74 0.99 1.59	16.00 21.80 29.22 49.70 118.66
TT19-08BP111-001 TMA (AT&T Mobility)	B	From Leg	5.00 -0.50 2.00	-5.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.64 0.76 0.88 1.14 1.78	0.52 0.62 0.74 0.99 1.59	16.00 21.80 29.22 49.70 118.66
TT19-08BP111-001 TMA (AT&T Mobility)	C	From Leg	4.75 -1.25 2.00	-15.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.64 0.76 0.88 1.14 1.78	0.52 0.62 0.74 0.99 1.59	16.00 21.80 29.22 49.70 118.66
DC6-48-60-18-8F (24 x 11 x 11) (AT&T Mobility)	A	From Leg	5.00 -0.50 2.00	-5.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.47 1.67 1.88 2.33 3.38	1.47 1.67 1.88 2.33 3.38	18.90 36.62 56.82 105.34 239.02
**									
Sector Mount [SM 402-3]	A	None		0.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	18.91 26.78 34.65 50.39 81.87	18.91 26.78 34.65 50.39 81.87	850.68 1233.15 1615.62 2380.56 3910.44
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	1.28 -0.75 1.00	-45.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	82.55 150.56 226.53 405.98 908.95
APXV9ERR18-C-A20 w/ Mount Pipe	B	From Leg	1.28 -0.75 1.00	-5.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	7.47 8.66 9.56 11.39 15.53	87.55 158.03 236.54 421.23 935.37
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	1.28 -0.75 1.00	-5.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	82.55 150.56 226.53 405.98 908.95
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	1.28 -0.75 1.00	-45.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.68 8.48 9.21 10.57 13.43	5.51 6.69 7.73 9.54 13.47	82.20 142.82 210.60 371.59 832.80
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	1.28 -0.75 1.00	-5.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.68 8.48 9.21 10.57 13.43	5.51 6.69 7.73 9.54 13.47	82.20 142.82 210.60 371.59 832.80
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	1.28 -0.75 1.00	-5.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.68 8.48 9.21 10.57 13.43	5.51 6.69 7.73 9.54 13.47	82.20 142.82 210.60 371.59 832.80

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 lb
Pipe Mount [PM 601-3]	C	None		0.0000	125.00	No Ice	4.39	4.39	195.00
						1/2" Ice	5.48	5.48	237.41
						1" Ice	6.57	6.57	279.82
						2" Ice	8.75	8.75	364.65
						4" Ice	13.11	13.11	534.30
1900MHz RRH (65MHz) TMA	A	From Leg	1.28 -0.75 1.00	-45.0000	125.00	No Ice	2.77	2.70	60.00
						1/2" Ice	3.01	2.94	83.90
						1" Ice	3.26	3.18	111.08
						2" Ice	3.78	3.70	176.02
						4" Ice	4.93	4.85	353.75
1900MHz RRH (65MHz) TMA	B	From Leg	1.28 -0.75 1.00	-5.0000	125.00	No Ice	2.77	2.70	60.00
						1/2" Ice	3.01	2.94	83.90
						1" Ice	3.26	3.18	111.08
						2" Ice	3.78	3.70	176.02
						4" Ice	4.93	4.85	353.75
1900MHz RRH (65MHz) TMA	C	From Leg	1.28 -0.75 1.00	-5.0000	125.00	No Ice	2.77	2.70	60.00
						1/2" Ice	3.01	2.94	83.90
						1" Ice	3.26	3.18	111.08
						2" Ice	3.78	3.70	176.02
						4" Ice	4.93	4.85	353.75
800MHz 2x50W RRH w/ Filter	A	From Leg	1.28 -0.75 1.00	-45.0000	125.00	No Ice	2.40	2.25	64.00
						1/2" Ice	2.61	2.46	86.12
						1" Ice	2.83	2.68	111.30
						2" Ice	3.30	3.13	171.62
						4" Ice	4.34	4.15	337.52
800MHz 2x50W RRH w/ Filter	B	From Leg	1.28 -0.75 1.00	-5.0000	125.00	No Ice	2.40	2.25	64.00
						1/2" Ice	2.61	2.46	86.12
						1" Ice	2.83	2.68	111.30
						2" Ice	3.30	3.13	171.62
						4" Ice	4.34	4.15	337.52
800MHz 2x50W RRH w/ Filter	C	From Leg	1.28 -0.75 1.00	-5.0000	125.00	No Ice	2.40	2.25	64.00
						1/2" Ice	2.61	2.46	86.12
						1" Ice	2.83	2.68	111.30
						2" Ice	3.30	3.13	171.62
						4" Ice	4.34	4.15	337.52
TD-RRH8x20-25 BTS	A	From Leg	1.28 -0.75 1.00	-45.0000	125.00	No Ice	4.72	1.70	70.00
						1/2" Ice	5.01	1.92	97.15
						1" Ice	5.32	2.15	127.83
						2" Ice	5.95	2.62	200.54
						4" Ice	7.31	3.68	396.84
TD-RRH8x20-25 BTS	B	From Leg	1.28 -0.75 1.00	-5.0000	125.00	No Ice	4.72	1.70	70.00
						1/2" Ice	5.01	1.92	97.15
						1" Ice	5.32	2.15	127.83
						2" Ice	5.95	2.62	200.54
						4" Ice	7.31	3.68	396.84
TD-RRH8x20-25 BTS	C	From Leg	1.28 -0.75 1.00	-5.0000	125.00	No Ice	4.72	1.70	70.00
						1/2" Ice	5.01	1.92	97.15
						1" Ice	5.32	2.15	127.83
						2" Ice	5.95	2.62	200.54
						4" Ice	7.31	3.68	396.84
**									
T-Arm Mount [TA 702-3]	C	None		0.0000	113.00	No Ice	5.64	5.64	339.00
						1/2" Ice	6.55	6.55	429.00
						1" Ice	7.46	7.46	519.00
						2" Ice	9.28	9.28	699.00
						4" Ice	12.92	12.92	1059.00
Pipe Mount [PM 601-3]	C	None		0.0000	113.00	No Ice	4.39	4.39	195.00

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* °	*Placement* *ft*		*C_AA_A Front* *ft²*	*C_AA_A Side* *ft²*	*Weight* *lb*
						1/2" Ice	5.48	5.48	237.41
						1" Ice	6.57	6.57	279.82
						2" Ice	8.75	8.75	364.65
						4" Ice	13.11	13.11	534.30
AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	0.75 1.75 0.00	65.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.14 7.83 8.43 9.66 12.25	5.96 7.09 7.96 9.72 13.45	117.05 177.37 244.68 403.93 854.96
AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	0.75 1.75 0.00	65.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.14 7.83 8.43 9.66 12.25	5.96 7.09 7.96 9.72 13.45	117.05 177.37 244.68 403.93 854.96
(2) AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	0.75 1.75 0.00	65.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.14 7.83 8.43 9.66 12.25	5.96 7.09 7.96 9.72 13.45	117.05 177.37 244.68 403.93 854.96
(2) AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	0.75 1.75 0.00	65.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.14 7.83 8.43 9.66 12.25	5.96 7.09 7.96 9.72 13.45	117.05 177.37 244.68 403.93 854.96
**									
Side Arm Mount [SO 202-1]	B	From Leg	1.00 0.00 0.00	0.0000	57.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.96 4.10 5.24 7.52 12.08	2.53 3.51 4.49 6.45 10.37	110.00 133.55 157.10 204.20 298.40
Generic GPS (VSI)	B	From Leg	2.00 0.00 3.00	0.0000	57.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.40 1.70 1.90 2.20 2.50	1.40 1.70 1.90 2.20 2.50	25.00 30.00 35.00 40.00 45.00
KS24019-L112A	B	From Leg	2.00 0.00 2.00	0.0000	48.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.10 0.18 0.26 0.42 0.74	0.10 0.18 0.26 0.42 0.74	5.00 6.50 8.00 11.00 17.00
Side Arm Mount [SO 202-1]	B	From Leg	1.00 0.00 0.00	0.0000	48.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.96 4.10 5.24 7.52 12.08	2.53 3.51 4.49 6.45 10.37	110.00 133.55 157.10 204.20 298.40

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	161.375	Leg	A325N	0.6250	4	4586.51	13357.70	0.343 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	3250.96	4078.13	0.797 ✔	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	640.33	2718.75	0.236 ✔	1.333	Member Bearing
T2	141.25	Diagonal	A325N	0.5000	1	3005.30	4123.34	0.729 ✔	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	544.21	2718.75	0.200 ✔	1.333	Member Bearing
T3	136.188	Diagonal	A325N	0.5000	1	4021.34	4078.13	0.986 ✔	1.333	Member Bearing
T4	131.188	Diagonal	A325N	0.5000	1	4330.28	4123.34	1.050 ✔	1.333	Bolt Shear
T5	126.188	Leg	A325N	0.7500	4	11510.90	19166.40	0.601 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	5150.14	4123.34	1.249 ✔	1.333	Bolt Shear
T6	121.125	Diagonal	A325X	0.5000	1	5676.54	4757.81	1.193 ✔	1.333	Gusset Bearing
T7	114.396	Diagonal	A325X	0.5000	1	5880.44	4757.81	1.236 ✔	1.333	Gusset Bearing
T8	107.729	Leg	A325N	0.8750	4	19443.20	26203.20	0.742 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	6218.13	4757.81	1.307 ✔	1.333	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	1557.76	4757.81	0.327 ✔	1.333	Gusset Bearing
T9	100.979	Diagonal	A325N	0.5000	2	3148.13	4123.34	0.763 ✔	1.333	Bolt Shear
T10	94.2292	Diagonal	A325N	0.5000	2	3136.26	4123.34	0.761 ✔	1.333	Bolt Shear
T11	87.5625	Leg	A325N	0.8750	4	26530.40	26162.40	1.014 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	2	3290.04	8246.68	0.399 ✔	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	2107.95	5437.50	0.388 ✔	1.333	Member Bearing
T12	80.8125	Diagonal	A325N	0.5000	2	3282.83	4123.34	0.796 ✔	1.333	Bolt Shear
T13	74.0625	Diagonal	A325N	0.5000	2	3294.43	4123.34	0.799 ✔	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	2351.52	5800.00	0.405 ✔	1.333	Member Bearing
T14	67.3958	Leg	A325N	1.0000	4	32869.20	34306.70	0.958 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	2	3435.18	4123.34	0.833 ✔	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	2612.88	5437.50	0.481 ✔	1.333	Member Bearing
T15	60.625	Diagonal	A325N	0.6250	1	7725.67	8609.38	0.897 ✔	1.333	Gusset Bearing
T16	50.5208	Leg	A325N	1.0000	4	39026.70	34245.70	1.140 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	7938.58	8609.38	0.922 ✔	1.333	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	3114.81	5437.50	0.573 ✔	1.333	Member Bearing
T17	40.4167	Diagonal	A325N	0.6250	1	8012.59	8609.38	0.931 ✔	1.333	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	3220.26	6442.72	0.500 ✔	1.333	Bolt Shear
T18	30.3125	Leg	A325N	1.0000	6	29726.80	34395.30	0.864 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	8638.16	8609.38	1.003 ✔	1.333	Gusset Bearing
		Horizontal	A325N	0.6250	1	3592.71	5437.50	0.661 ✔	1.333	Member Bearing
T19	20.2083	Diagonal	A325N	0.6250	1	8742.07	8609.38	1.015 ✔	1.333	Gusset Bearing

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 lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	161.375 - 141.25	ROHN 2 STD	20.13	4.00	61.0 K=1.00	22.549	1.0745	-21683.50	24229.90	0.895 ✔
T2	141.25 - 136.188	ROHN 2.5 EH	5.07	5.01	65.0 K=1.00	21.838	2.2535	-23803.10	49213.80	0.484 ✔
T3	136.188 - 131.188	ROHN 2.5 EH	5.01	5.01	65.0 K=1.00	21.838	2.2535	-32740.20	49212.70	0.665 ✔
T4	131.188 - 126.188	ROHN 2.5 EH	5.01	5.01	65.0 K=1.00	21.838	2.2535	-40397.90	49212.70	0.821 ✔
T5	126.188 - 121.125	ROHN 2.5 EH	5.07	5.01	65.0 K=1.00	21.838	2.2535	-54612.70	49213.80	1.110 ✔
T6	121.125 - 114.396	ROHN 3 EH	6.74	6.68	70.5 K=1.00	20.841	3.0159	-60045.30	62855.40	0.955 ✔
T7	114.396 - 107.729	ROHN 3 EH	6.68	6.68	70.5 K=1.00	20.841	3.0159	-71992.60	62854.10	1.145 ✔
T8	107.729 - 100.979	ROHN 3 EH	6.76	3.45	36.4 K=1.00	26.326	3.0159	-89824.30	79397.20	1.131 ✔
T9	100.979 - 94.2292	ROHN 3.5 EH	6.76	6.68	61.3 K=1.00	22.489	3.6784	-94842.80	82724.80	1.146 ✔
T10	94.2292 - 87.5625	ROHN 3.5 EH	6.68	6.68	61.3 K=1.00	22.489	3.6784	-105503.00	82722.60	1.275 ✔
T11	87.5625 - 80.8125	ROHN 3.5 EH	6.76	3.43	31.5 K=1.00	26.965	3.6784	-121549.00	99190.30	1.225 ✔
T12	80.8125 - 74.0625	ROHN 4 EH	6.76	6.68	54.3 K=1.00	23.671	4.4074	-126112.00	104328.00	1.209 ✔
T13	74.0625 - 67.3958	ROHN 4 EH	6.68	3.42	27.8 K=1.00	27.417	4.4074	-135580.00	120840.00	1.122 ✔
T14	67.3958 - 60.625	ROHN 4 EH	6.78	3.42	27.8 K=1.00	27.423	4.4074	-150655.00	120863.00	1.246 ✔
T15	60.625 - 50.5208	ROHN 5 EH	10.12	10.02	65.4 K=1.00	21.782	6.1120	-157465.00	133130.00	1.183 ✔
T16	50.5208 - 40.4167	ROHN 5 EH	10.12	5.16	33.7 K=1.00	26.687	6.1120	-179614.00	163110.00	1.101 ✔
T17	40.4167 - 30.3125	ROHN 5 EH	10.12	5.16	33.7 K=1.00	26.689	6.1120	-185675.00	163123.00	1.138 ✔
T18	30.3125 - 20.2083	ROHN 5 EH	10.12	2.50	16.3 K=1.00	28.672	6.1120	-207151.00	175245.00	1.182 ✔
T19	20.2083 - 0	ROHN 6 STD w/ 2" B7 (Composite Controls) (VSI)	20.24	10.02	66.0 K=1.00	21.666	8.7220	-233960.00	188970.00	1.238 ✔

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	161.375 - 141.25	L1 3/4x1 3/4x3/16	7.00	3.50	122.3 K=1.00	9.945	0.6211	-3211.31	6176.81	0.520 ✔
T2	141.25 - 136.188	L1 3/4x1 3/4x3/16	7.74	4.01	140.2 K=1.00	7.601	0.6211	-3005.30	4720.80	0.637 ✔
T3	136.188 - 131.188	L1 3/4x1 3/4x3/16	8.15	4.22	147.4 K=1.00	6.876	0.6211	-4050.40	4270.79	0.948 ✔
T4	131.188 - 126.188	L1 3/4x1 3/4x3/16	8.58	4.43	154.7 K=1.00	6.236	0.6211	-4330.28	3873.34	1.118 ✔
T5	126.188 - 121.125	L2x2x3/16	9.01	4.64	141.4 K=1.00	7.472	0.7150	-5150.14	5342.42	0.964 ✔
T6	121.125 - 114.396	L2 1/2x2 1/2x1/4	10.40	5.39	131.8 K=1.00	8.596	1.1900	-5774.14	10229.80	0.564 ✔
T7	114.396 - 107.729	L2 1/2x2 1/2x1/4	10.94	5.66	138.4 K=1.00	7.795	1.1900	-5998.30	9275.48	0.647 ✔
T8	107.729 - 100.979	L2 1/2x2 1/2x1/4	11.50	5.94	145.1 K=1.00	7.093	1.1900	-6312.29	8440.39	0.748 ✔
T9	100.979 - 94.2292	L2 1/2x2 1/2x3/16	12.05	6.21	150.5 K=1.00	6.594	0.9020	-6296.27	5947.78	1.059 ✔
T10	94.2292 - 87.5625	L2 1/2x2 1/2x1/4	12.63	6.50	158.9 K=1.00	5.917	1.1900	-6272.52	7041.56	0.891 ✔
T11	87.5625 - 80.8125	2L2 1/2x2 1/2x3/16x1/4 2L 'a' > 38.8661 in - 128	13.22	6.79	109.5 K=1.00	11.746	1.8047	-6580.09	21197.00	0.310 ✔
T12	80.8125 - 74.0625	L3x3x3/16	13.80	7.08	142.6 K=1.00	7.339	1.0900	-6565.65	8000.01	0.821 ✔
T13	74.0625 - 67.3958	L3x3x3/16	14.43	7.40	148.9 K=1.00	6.734	1.0900	-6588.85	7339.81	0.898 ✔
T14	67.3958 - 60.625	L3x3x3/16	15.05	7.71	155.1 K=1.00	6.204	1.0900	-6870.36	6762.04	1.016 ✔
T15	60.625 - 50.5208	2L3x3x3/16x1/4 2L 'a' > 51.1759 in - 173	17.35	8.96	121.0 K=1.00	10.086	2.1797	-7983.36	21983.50	0.363 ✔
T16	50.5208 - 40.4167	2L3x3x3/16x1/4 2L 'a' > 53.5306 in - 182	18.19	9.37	126.5 K=1.00	9.320	2.1797	-8154.30	20315.10	0.401 ✔
T17	40.4167 - 30.3125	2L3x3x1/4x1/4 2L 'a' > 56.2683 in - 194	19.07	9.82	132.7 K=1.00	8.485	2.8750	-8270.75	24395.60	0.339 ✔
T18	30.3125 - 20.2083	2L3x3x1/4x1/4	10.21	10.21	104.9 K=1.00	13.546	2.8750	-9433.21	38945.60	0.242 ✔
T19	20.2083 - 0	2L3 1/2x3 1/2x1/4x1/4 2L 'a' > 63.5487 in - 248	21.69	11.11	129.2 K=1.00	8.948	3.3750	-9218.72	30199.90	0.305 ✔

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T18	30.3125 - 20.2083	L3x3x3/16	18.33	18.33	234.2 K=1.00	2.722	1.0900	-3592.71	2967.00	1.211

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
										✔

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T8	107.729 - 100.979	L1 3/4x1 3/4x1/4	10.28	10.28	180.7 K=0.50	4.572	0.8125	-1557.76	3714.92	0.419 ✔
T11	87.5625 - 80.8125	L2x2x3/16	12.32	12.32	187.7 K=0.50	4.240	0.7150	-2107.95	3031.45	0.695 ✔
T13	74.0625 - 67.3958	L1 3/4x1 3/4x1/4	13.72	13.72	241.1 K=0.50	2.570	0.8125	-2351.52	2087.82	1.126 ✔
T14	67.3958 - 60.625	L2x2x3/16	14.41	14.41	219.4 K=0.50	3.102	0.7150	-2612.88	2217.79	1.178 ✔
T16	50.5208 - 40.4167	L2 1/2x2 1/2x3/16	16.25	16.25	197.0 K=0.50	3.849	0.9020	-3114.81	3471.57	0.897 ✔
T17	40.4167 - 30.3125	L3x3x1/4	17.28	17.28	175.2 K=0.50	4.868	1.4400	-3220.26	7009.43	0.459 ✔

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	161.375 - 141.25	L2x2x1/8	6.52	6.52	196.8 K=1.00	3.854	0.4844	-673.97	1866.87	0.361 ✔
T2	141.25 - 136.188	L2x2x1/8	6.57	6.57	198.3 K=1.00	3.798	0.4844	-398.10	1839.78	0.216 ✔

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T18	30.3125 - 20.2083	L2x2x3/16	4.58	4.58	139.6 K=1.00	7.668	0.7150	-3592.71	5482.50	0.655 ✔

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T18	30.3125 - 20.2083	L2x2x3/16	5.33	5.33	162.4 K=1.00	5.659	0.7150	-2091.04	4046.13	0.517 ✔

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 lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	161.375 - 141.25	ROHN 2 STD	20.13	0.06	1.0	30.000	1.0745	18346.00	32235.90	0.569 ✔
T2	141.25 - 136.188	ROHN 2.5 EH	5.07	5.01	65.0	30.000	2.2535	20179.10	67606.20	0.298 ✔
T3	136.188 - 131.188	ROHN 2.5 EH	5.01	5.01	65.0	30.000	2.2535	26745.30	67606.20	0.396 ✔
T4	131.188 - 126.188	ROHN 2.5 EH	5.01	5.01	65.0	30.000	2.2535	33994.90	67606.20	0.503 ✔
T5	126.188 - 121.125	ROHN 2.5 EH	5.07	0.06	0.8	30.000	2.2535	46043.60	67606.20	0.681 ✔
T6	121.125 - 114.396	ROHN 3 EH	6.74	6.68	70.5	30.000	3.0159	51048.10	90477.90	0.564 ✔
T7	114.396 - 107.729	ROHN 3 EH	6.68	6.68	70.5	30.000	3.0159	61713.20	90477.90	0.682 ✔
T8	107.729 - 100.979	ROHN 3 EH	6.76	0.08	0.9	30.000	3.0159	77772.70	90477.90	0.860 ✔
T9	100.979 - 94.2292	ROHN 3.5 EH	6.76	6.68	61.3	30.000	3.6784	82286.00	110352.00	0.746 ✔
T10	94.2292 - 87.5625	ROHN 3.5 EH	6.68	6.68	61.3	30.000	3.6784	91996.30	110352.00	0.834 ✔
T11	87.5625 - 80.8125	ROHN 3.5 EH	6.76	0.08	0.8	30.000	3.6784	106122.00	110352.00	0.962 ✔
T12	80.8125 - 74.0625	ROHN 4 EH	6.76	6.68	54.3	30.000	4.4074	110075.00	132223.00	0.832 ✔
T13	74.0625 - 67.3958	ROHN 4 EH	6.68	3.25	26.4	30.000	4.4074	118398.00	132223.00	0.895 ✔
T14	67.3958 - 60.625	ROHN 4 EH	6.78	0.10	0.8	30.000	4.4074	131477.00	132223.00	0.994 ✔
T15	60.625 - 50.5208	ROHN 5 EH	10.12	10.02	65.4	30.000	6.1120	137298.00	183359.00	0.749 ✔
T16	50.5208 - 40.4167	ROHN 5 EH	10.12	0.10	0.7	30.000	6.1120	156107.00	183359.00	0.851 ✔
T17	40.4167 - 30.3125	ROHN 5 EH	10.12	4.86	31.7	30.000	6.1120	161092.00	183359.00	0.879 ✔
T18	30.3125 - 20.2083	ROHN 5 EH	10.12	0.10	0.7	30.000	6.1120	178361.00	183359.00	0.973 ✔
T19	20.2083 - 0	ROHN 6 STD w/ 2" B7 (Composite Controls) (VSI)	20.24	0.10	0.7	30.000	8.7220	199860.00	261660.00	0.764 ✔

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	lb	lb	

Diagonal Design Data (Tension)

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	lb	lb	
T1	161.375 - 141.25	L1 3/4x1 3/4x3/16	7.00	3.50	78.3	29.000	0.3779	3250.96	10960.00	0.297 ✔
T2	141.25 - 136.188	L1 3/4x1 3/4x3/16	7.74	4.01	89.7	29.000	0.3779	2817.94	10960.00	0.257 ✔
T3	136.188 - 131.188	L1 3/4x1 3/4x3/16	8.15	4.22	94.3	29.000	0.3779	4021.34	10960.00	0.367 ✔
T4	131.188 - 126.188	L1 3/4x1 3/4x3/16	8.58	4.43	99.0	29.000	0.3779	4255.10	10960.00	0.388 ✔
T5	126.188 - 121.125	L2x2x3/16	9.01	4.64	90.3	29.000	0.4484	5078.73	13002.40	0.391 ✔
T6	121.125 - 114.396	L2 1/2x2 1/2x1/4	10.40	5.39	84.2	29.000	0.7753	5676.54	22484.10	0.252 ✔
T7	114.396 - 107.729	L2 1/2x2 1/2x1/4	10.94	5.66	88.4	29.000	0.7753	5880.44	22484.10	0.262 ✔
T8	107.729 - 100.979	L2 1/2x2 1/2x1/4	11.50	5.94	92.6	29.000	0.7753	6218.13	22484.10	0.277 ✔
T9	100.979 - 94.2292	L2 1/2x2 1/2x3/16	12.05	6.21	95.7	29.000	0.5886	6225.76	17069.70	0.365 ✔
T10	94.2292 - 87.5625	L2 1/2x2 1/2x1/4	12.63	6.50	101.4	29.000	0.7753	6071.95	22484.10	0.270 ✔
T11	87.5625 - 80.8125	2L2 1/2x2 1/2x3/16x1/4	13.22	6.79	104.7	29.000	1.1777	6476.31	34154.30	0.190 ✔
T12	80.8125 - 74.0625	2L 'a' > 38.8661 in - 127 L3x3x3/16	13.80	7.08	90.5	29.000	0.7296	6482.59	21158.70	0.306 ✔
T13	74.0625 - 67.3958	L3x3x3/16	14.43	7.40	94.5	29.000	0.7296	6452.60	21158.70	0.305 ✔
T14	67.3958 - 60.625	L3x3x3/16	15.05	7.71	98.5	29.000	0.7296	6774.91	21158.70	0.320 ✔
T15	60.625 - 50.5208	2L3x3x3/16x1/4	17.35	8.96	114.4	29.000	1.4238	7725.67	41291.00	0.187 ✔
T16	50.5208 - 40.4167	2L 'a' > 51.1759 in - 172 2L3x3x3/16x1/4	18.19	9.37	119.7	29.000	1.4238	7938.58	41291.00	0.192 ✔
T17	40.4167 - 30.3125	2L 'a' > 53.5306 in - 181 2L3x3x1/4x1/4	19.07	9.82	126.7	32.500	1.8750	8012.59	60937.50	0.131 ✔
T18	30.3125 - 20.2083	2L 'a' > 56.2683 in - 193 2L3x3x1/4x1/4	10.21	10.21	91.3	32.500	1.8750	8638.16	60937.50	0.142 ✔
T19	20.2083 - 0	2L3 1/2x3 1/2x1/4x1/4 2L 'a' > 63.5487 in - 247	21.69	11.11	122.2	32.500	2.2500	8742.07	73125.00	0.120 ✔

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T18	30.3125 - 20.2083	L3x3x3/16	18.33	18.33	234.2	29.000	0.7120	3592.71	20648.90	0.174 ✔

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T8	107.729 - 100.979	L1 3/4x1 3/4x1/4	10.28	10.28	233.3	29.000	0.4688	1557.76	13593.80	0.115 ✔
T11	87.5625 - 80.8125	L2x2x3/16	12.32	12.32	239.7	29.000	0.4308	2107.95	12492.70	0.169 ✔
T13	74.0625 - 67.3958	L1 3/4x1 3/4x1/4	13.72	13.72	311.2	29.000	0.4688	2351.52	13593.80	0.173 ✔
T14	67.3958 - 60.625	L2x2x3/16	14.41	14.41	280.2	29.000	0.4308	2612.88	12492.70	0.209 ✔
T16	50.5208 - 40.4167	L2 1/2x2 1/2x3/16	16.25	16.25	250.7	29.000	0.5710	3114.81	16559.90	0.188 ✔
T17	40.4167 - 30.3125	L3x3x1/4	17.28	17.28	223.0	29.000	0.9394	3220.26	27241.90	0.118 ✔

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 lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	161.375 - 141.25	L2x2x1/8	6.52	6.52	125.0	29.000	0.3047	640.33	8835.94	0.072 ✔
T2	141.25 - 136.188	L2x2x1/8	6.57	6.57	125.9	29.000	0.3047	544.21	8835.94	0.062 ✔

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 lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T18	30.3125 - 20.2083	L2x2x3/16	4.58	4.58	89.1	21.600	0.7150	3592.71	15444.00	0.233 ✔

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 lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T18	30.3125 - 20.2083	L2x2x3/16	5.33	5.33	103.7	21.600	0.7150	2091.04	15444.00	0.135 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	161.375 - 141.25	Leg	ROHN 2 STD	1	-21683.50	32298.46	67.1	Pass
T2	141.25 - 136.188	Leg	ROHN 2.5 EH	37	-23803.10	65601.99	36.3	Pass
T3	136.188 - 131.188	Leg	ROHN 2.5 EH	49	-32740.20	65600.53	49.9	Pass
T4	131.188 - 126.188	Leg	ROHN 2.5 EH	58	-40397.90	65600.53	61.6	Pass
T5	126.188 - 121.125	Leg	ROHN 2.5 EH	67	-54612.70	65601.99	83.2	Pass
T6	121.125 - 114.396	Leg	ROHN 3 EH	76	-60045.30	83786.24	71.7	Pass
T7	114.396 - 107.729	Leg	ROHN 3 EH	85	-71992.60	83784.51	85.9	Pass
T8	107.729 - 100.979	Leg	ROHN 3 EH	94	-89824.30	105836.47	84.9	Pass
T9	100.979 - 94.2292	Leg	ROHN 3.5 EH	106	-94842.80	110272.15	86.0	Pass
T10	94.2292 - 87.5625	Leg	ROHN 3.5 EH	115	-105503.00	110269.22	95.7	Pass
T11	87.5625 - 80.8125	Leg	ROHN 3.5 EH	124	-121549.00	132220.66	91.9	Pass
T12	80.8125 - 74.0625	Leg	ROHN 4 EH	136	-126112.00	139069.22	90.7	Pass
T13	74.0625 - 67.3958	Leg	ROHN 4 EH	145	-135580.00	161079.71	84.2	Pass
T14	67.3958 - 60.625	Leg	ROHN 4 EH	157	-150655.00	161110.37	93.5	Pass
T15	60.625 - 50.5208	Leg	ROHN 5 EH	169	-157465.00	177462.28	88.7	Pass
T16	50.5208 - 40.4167	Leg	ROHN 5 EH	178	-179614.00	217425.62	82.6 85.5 (b)	Pass
T17	40.4167 - 30.3125	Leg	ROHN 5 EH	190	-185675.00	217442.95	85.4	Pass
T18	30.3125 - 20.2083	Leg	ROHN 5 EH	202	-207151.00	233601.58	88.7	Pass
T19	20.2083 - 0	Leg	ROHN 6 STD w/ 2" B7 (Composite Controls) (VSI)	244	-233960.00	251897.00	92.9	Pass
T1	161.375 - 141.25	Diagonal	L1 3/4x1 3/4x3/16	7	-3211.31	8233.69	39.0 59.8 (b)	Pass
T2	141.25 - 136.188	Diagonal	L1 3/4x1 3/4x3/16	44	-3005.30	6292.83	47.8 54.7 (b)	Pass
T3	136.188 - 131.188	Diagonal	L1 3/4x1 3/4x3/16	53	-4050.40	5692.96	71.1 74.0 (b)	Pass
T4	131.188 - 126.188	Diagonal	L1 3/4x1 3/4x3/16	62	-4330.28	5163.16	83.9	Pass
T5	126.188 - 121.125	Diagonal	L2x2x3/16	71	-5150.14	7121.45	72.3 93.7 (b)	Pass

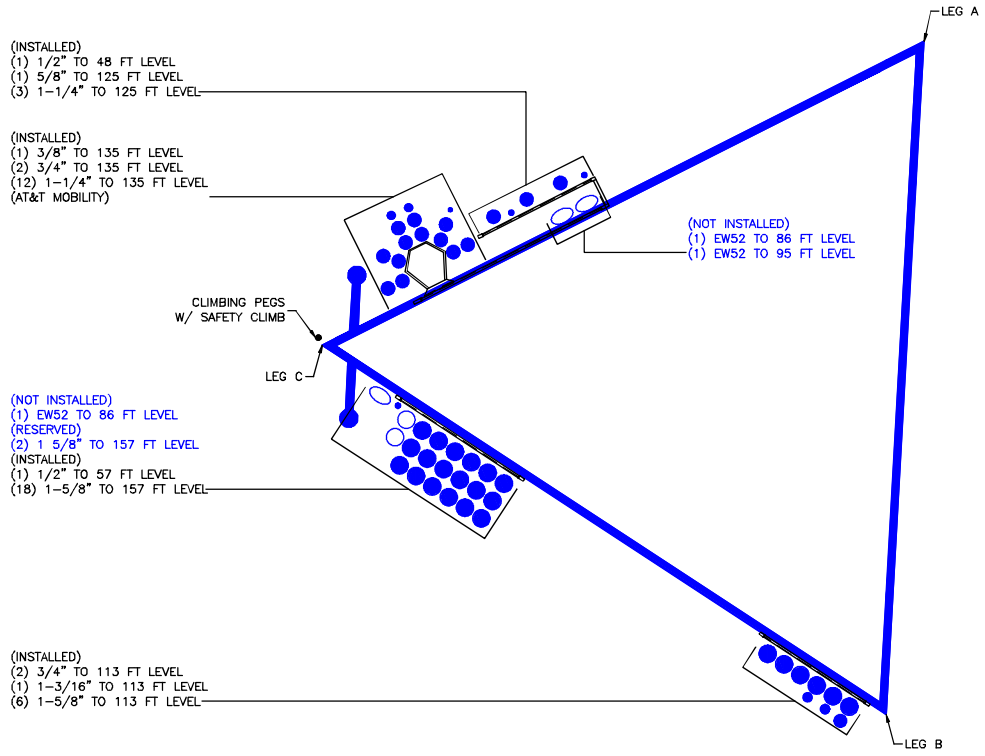
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T6	121.125 - 114.396	Diagonal	L2 1/2x2 1/2x1/4	80	-5774.14	13636.32	42.3 89.5 (b)	Pass
T7	114.396 - 107.729	Diagonal	L2 1/2x2 1/2x1/4	89	-5998.30	12364.21	48.5 92.7 (b)	Pass
T8	107.729 - 100.979	Diagonal	L2 1/2x2 1/2x1/4	98	-6312.29	11251.04	56.1 98.0 (b)	Pass
T9	100.979 - 94.2292	Diagonal	L2 1/2x2 1/2x3/16	110	-6296.27	7928.39	79.4	Pass
T10	94.2292 - 87.5625	Diagonal	L2 1/2x2 1/2x1/4	119	-6272.52	9386.40	66.8	Pass
T11	87.5625 - 80.8125	Diagonal	2L2 1/2x2 1/2x3/16x1/4	128	-6580.09	28255.60	23.3 29.9 (b)	Pass
T12	80.8125 - 74.0625	Diagonal	L3x3x3/16	140	-6565.65	10664.01	61.6	Pass
T13	74.0625 - 67.3958	Diagonal	L3x3x3/16	149	-6588.85	9783.97	67.3	Pass
T14	67.3958 - 60.625	Diagonal	L3x3x3/16	161	-6870.36	9013.80	76.2	Pass
T15	60.625 - 50.5208	Diagonal	2L3x3x3/16x1/4	173	-7983.36	29304.00	27.2 67.3 (b)	Pass
T16	50.5208 - 40.4167	Diagonal	2L3x3x3/16x1/4	182	-8154.30	27080.03	30.1 69.2 (b)	Pass
T17	40.4167 - 30.3125	Diagonal	2L3x3x1/4x1/4	194	-8270.75	32519.33	25.4 69.8 (b)	Pass
T18	30.3125 - 20.2083	Diagonal	2L3x3x1/4x1/4	209	-9433.21	51914.48	18.2 75.3 (b)	Pass
T19	20.2083 - 0	Diagonal	2L3 1/2x3 1/2x1/4x1/4	248	-9218.72	40256.47	22.9 76.2 (b)	Pass
T18	30.3125 - 20.2083	Horizontal	L3x3x3/16	205	-3592.71	3955.01	90.8	Pass
T8	107.729 - 100.979	Secondary Horizontal	L1 3/4x1 3/4x1/4	103	-1557.76	4951.99	31.5	Pass
T11	87.5625 - 80.8125	Secondary Horizontal	L2x2x3/16	133	-2107.95	4040.92	52.2	Pass
T13	74.0625 - 67.3958	Secondary Horizontal	L1 3/4x1 3/4x1/4	154	-2351.52	2783.06	84.5	Pass
T14	67.3958 - 60.625	Secondary Horizontal	L2x2x3/16	168	-2612.88	2956.31	88.4	Pass
T16	50.5208 - 40.4167	Secondary Horizontal	L2 1/2x2 1/2x3/16	189	-3114.81	4627.60	67.3	Pass
T17	40.4167 - 30.3125	Secondary Horizontal	L3x3x1/4	199	-3220.26	9343.57	34.5 37.5 (b)	Pass
T1	161.375 - 141.25	Top Girt	L2x2x1/8	5	-673.97	2488.54	27.1	Pass
T2	141.25 - 136.188	Top Girt	L2x2x1/8	40	-398.10	2452.43	16.2	Pass
T18	30.3125 - 20.2083	Redund Horz 1 Bracing	L2x2x3/16	207	-3592.71	7308.17	49.2	Pass
T18	30.3125 - 20.2083	Redund Diag 1 Bracing	L2x2x3/16	243	-2091.04	5393.49	38.8	Pass

Summary		
Leg (T10)	95.7	Pass
Diagonal (T8)	98.0	Pass
Horizontal (T18)	90.8	Pass
Secondary Horizontal (T14)	88.4	Pass
Top Girt (T1)	27.1	Pass
Redund Horz 1 Bracing (T18)	49.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
						Redund Diag 1 Bracing (T18)	38.8	Pass
						Bolt Checks	98.0	Pass
						RATING =	**98.0**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806378 TOWER ID: C_BASELEVEL

BASE LEVEL DRAWING

CROWN REGION ADDRESS

USA

25/04/12	UPDATED PER WORK ORDER #484581	SF
04/06/12	UPDATED PER WORK ORDER # 498222	ATF
12/07/12	UPDATED PER WORK ORDER # 508609	MAJ
11/10/12	UPDATED PER WORK ORDER # 540705	DAH
18/07/13	UPDATED PER WORK ORDER # 633030	ARR
15/11/13	UPDATED PER WORK ORDER # 668095	KW
15/11/13	UPDATED PER WORK ORDER # 670174	KW
23/12/13	UPDATED PER WORK ORDER # 692800 681480	TKS
21/01/15	UPDATED PER WORK ORDER # 997006	VL

DRAWN BY: KD/MDB
CHECKED BY: SL
DRAWING DATE: 04/05/06

SITE NUMBER:
SITE NAME:

SITE NAME

HRT 086 943248

BUSINESS UNIT NUMBER

806378

SITE ADDRESS

126 PIONEER HEIGHTS ROAD
SOMERS, CT 06071
TOLLAND COUNTY
USA

SHEET TITLE

BASE LEVEL

SHEET NUMBER

A1-0

PLOT DATE: 2/21/2015 FILE NAME: 806378_BASELEVEL.dwg
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APPENDIX C

ADDITIONAL CALCULATIONS

ANCHOR BOLT CALCULATIONS

Customer:	Crown Castle
Site Name:	HRT 086 943248, CT BU#806378
Job Number:	2016-004-008
Tower Model:	160' Rohn SSV Self-Supporting Tower
Date:	1/27/2016

Input Information:

# Bolts	6	
Bolt Diameter	1	in
Bolt Ultimate Tensile Strength, F_u	120	ksi
Steel Grade	A449	
Applied Shear	21.947	kips
Uplift per Leg	198.916	kips

Bolt Cross-Sectional Area, **A**	0.785	in^2
Applied Shear, f_v	4.66	ksi
Maximum Allowable Tensile Stress, F_t	39.6	ksi
Allowable Tension Force	186.61	kips
Maximum Allowable	248.75	kips
% Capacity	**80.0%**	

The Bolt Group is sufficient for the applied Uplift Force

Maximum Allowable Tensile Stress, F_t

$$0.43F_u - 1.8f_v \leq 0.33F_u$$

This equation is for threaded parts, A449 bolts over 1 1/2" dia. (threads included in shear plane) Manual of Steel Construction ASD, 9th Edition, pg. 5-74, Table J3.3

S. S. TOWER FOOTING ANALYSIS

HRT 086 943248, CT BU#806378
VSI Job No. 2016-004-008

RICHMOND, KENTUCKY
1/27/2016 11:25:11 AM

REACTION LOADS	P-DOWN = 232.901 KIPS
	P-SIDE = 25.405 KIPS
	P-UP = 198.916 KIPS
FOOTING DIMENSIONS	DEPTH = 12.5 FT. (OVERALL)
	PEDESTAL WIDTH = 42 IN.
	PAD WIDTH = 10. FT.
	PAD THICK. = 24 IN.
PEDESTAL PROJECTION ABOVE GRADE	0.5 FT.
CONCRETE STRENGTH	3.000 K.S.I.
PASSIVE SOIL PRESSURE	0.400 K.S.F./FT. DEPTH
ANGLE OF SOIL RESISTANCE	34 DEG.
WEIGHT OF SOIL, DRY	105 LB./CU.FT.
REINFORCING STEEL	PEDESTAL 8 NUMBER 12 BARS
	PAD, TOP 11 NUMBER 7 BARS BOTH WAYS
	PAD, BOTTOM 11 NUMBER 7 BARS BOTH WAYS
MAX. VERT. SOIL PRESSURE	APPLIED = 4.234 K.S.F.
	ALLOW. = 8.250 K.S.F.
UPLIFT RESISTANCE	See Hand Calcs on Next Page
PEDESTAL STEEL PERCENTAGE	0.80%
PEDESTAL, LEEWARD	DOWN LOAD = 302.77 KIPS
	BIAXIAL FACTOR = 1.046
	MOMENT APPLIED = 4161.3 IN. KIPS
	MOMENT RESISTING = 19046.0 IN. KIPS
PEDESTALS, SIDE	DOWN LOAD = 22.09 KIPS
	BIAXIAL FACTOR =1.01
	MOMENT APPLIED = 4161.3 IN. KIPS
	MOMENT RESISTING = 14570.6 IN. KIPS
PEDESTAL, WINDWARD	UP LOAD = 233.51 KIPS
	MOMENT APPLIED = 2840.3 IN. KIPS
	MOMENT RESISTING = 10266.1 IN. KIPS
PAD PUNCHING SHEAR,	APPLIED = 0.059 K.S.I.
	ALLOW. = 0.219 K.S.I
PAD, UPLOAD COND.	MOMENT APPLIED = 1859.8 IN. KIPS
	MOMENT RESISTING = 7899.9 IN. KIPS
PAD, DOWNLOAD COND.	MOMENT APPLIED = 2644.1 IN. KIPS
	MOMENT RESISTING = 7128.7 IN. KIPS
CONCRETE VOLUME REQUIRED	12.171 CU. YARDS PER FOOTING

VERTICAL STRUCTURES, INC.
309 Spangler Drive, Suite E
Richmond, Kentucky 40475
Phone: (859) 624-8360
Fax: (859) 624-8369

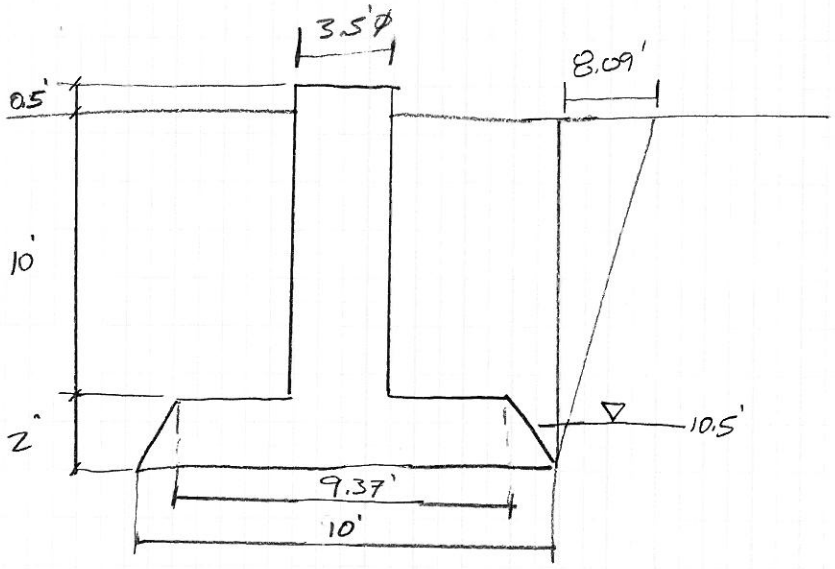
Subject: FOUNDATION CALCS

Cust: CROWN

Location: HRT 086, CT

Job No.

Design By: DLW
Date: 1/27/2016
Chk'd By: BG
Page



$\gamma_s = 105 pcf$

$\phi = 34°$

$\sigma_{ALL} = 8.25 ksf$

CONSERVATIVELY NEGLECT ADDITIONAL BALLAST FROM TRIANGULAR MAT

$$V_s = \frac{12}{3}\left(100 + 685.4 + \sqrt{100 \times 685.4}\right) - V_c = 4188.8 - V_c$$

$$V_c = \frac{3.5^2\pi}{4} \times 10.5 + 9.37^2 \times 2 = 276.6\ FT^3$$

$$\therefore V_s = 3912.2\ FT^3$$

$$W_s = 0.105\,(3912.2) = 410.8^k$$

$$W_c = 0.150\left[\frac{3.5^2\pi}{4} \times 10.5 + 9.37^2 \times 0.5\right] + (0.15 - 0.0624)(9.37^2 \times 1.5) = 33.3^k$$

$$U_{12} = \frac{33.3^k}{1.25} + \frac{410.8^k}{2} = 232.0^k$$

DIAGONAL CONNECTIONS WITH GUSSET REINFORCEMENT (TOP AND BOTTOM GUSSETS OF EACH SECTION)

(Intermediate gusset connections are modeled in tnxTower)

Customer: Crown Castle
Site Name: HRT 086 943248, CT BU#806378
Job Number: 2016-004-008
Tower Model: 160' Rohn SSV Self-Supporting Tower
Date: 1/27/2016

Section No.	Elevation	Member Size	Bolt Grade	Bolt Size	Bolts Double or Single Shear	tnx Member Tensile Load	tnx Member Compressive Load	Bay Height	Top of Bay Face Width	Bottom of Bay Face Width	Diagonal Angle to Leg	Horizontal Component of Tensile Force in Original End Bolt	Vertical Component of Tensile Force in Original End Bolt	Resultant Tensile Force in Original End Bolt	Horizontal Component of Compressive Force in Original End Bolt	Vertical Component of Compressive Force in Original End Bolt	Resultant Compressive Force in Original End Bolt	Rohn Gusset Tensile Allow. w/ 4/3 Incr.	Rohn Gusset Compressive Allow. w/ 4/3 Incr.	Rohn Gusset Bolt Allow. w/ 4/3 Incr.	Member % Capacity
	ft			in		lb	lb	ft	ft	ft	degrees	lb	lb	lb	lb	lb	lb	lb	lb	lb	
T9 (AT TOP)	100.98-94.23	L2 1/2x2 1/2x3/16	A325N	0.5	DS	6225.76	-6296.27	6.67	10.64	11.32	60.84	4530.40	1011.32	4641.90	4581.71	1022.77	4694.47	6344.00	8700.00	10996.00	71.4%
T11 (AT BOTTOM)	87.56-80.81	2L2 1/2x2 1/2x3/16	A325N	0.5	DS	6476.31	-6580.09	6.67	12.00	12.68	58.02	4577.61	1143.49	4718.27	4650.96	1161.81	4793.88	6344.00	8700.00	10996.00	72.2%
T12 (AT TOP)	80.81-74.06	L3x3x3/16	A325N	0.5	DS	6482.59	-6565.65	6.67	12.68	13.38	65.26	4906.26	904.38	4988.92	4969.12	915.97	5052.84	6344.00	8700.00	10996.00	77.3%
T14 (AT BOTTOM)	67.40-60.62	L3x3x3/16	A325N	0.5	DS	6774.91	-6870.36	6.67	14.07	14.77	61.63	4967.81	1072.97	5082.36	5037.80	1088.09	5153.96	6344.00	8700.00	10996.00	78.3%

REDUNDANT MEMBER END CONNECTION CALCULATIONS

Customer: Crown Castle
Site Name: HRT 086 943248, CT BU#806378
Job Number: 2016-004-008
Tower Model: 160' Rohn SSV Self-Supporting Tower
Date: 1/27/2016

Redundant Horizontals

Section No.	*Elevation (ft)*	*Size*	*Bolt Grade*	*Bolt Size in*	*Number Of Bolts*	*Connection Tensile Load lb*	*Connection Compressive Load lb*	*Connection Tension Allowable w/ 4/3 lb*	*Connection Compression Allowable w/ 4/3 lb*	*Bolt Shear Allawable w/ 4/3 lb*	*Member % Capacity*
T18	30.31 - 20.21	L2x2x3/16	A325N	0.625	1	3592.7	-3592.7	7250.0	10875.0	8590.0	49.6%

Redundant Diagonals

Section No.	*Elevation (ft)*	*Size*	*Bolt Grade*	*Bolt Size in*	*Number Of Bolts*	*Connection Tensile Load lb*	*Connection Compressive Load lb*	*Connection Tension Allowable w/ 4/3 lb*	*Connection Compression Allowable w/ 4/3 lb*	*Bolt Shear Allawable w/ 4/3 lb*	*Member % Capacity*
T18	30.31 - 20.21	L2x2x3/16	A325N	0.625	1	2091.0	-2091.0	7250.0	10875.0	8590.0	28.8%

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

AT&T Existing Facility

Site ID: CT1079

Somers
126 Pioneer Heights Road
Somers, CT 06071

February 17, 2016

EBI Project Number: 6216000881

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	6.29 %

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

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February 17, 2016

AT&T Mobility – New England
Attn: Cameron Syme, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT1079 – Somers**

EBI Consulting was directed to analyze the proposed AT&T facility located at **126 Pioneer Heights Road, Somers, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **126 Pioneer Heights Road, Somers, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

2) 2 LTE channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 GSM channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel

5) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

6) 2 UMTS channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

8) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antennas used in this modeling are the **CCI HPA-65R-BUU-H8 and the Powerwave 7770.00** for transmission in the 700 MHz, 850 MHz and1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

10) The antenna mounting height centerline of the proposed antennas is **137 feet** above ground level (AGL).

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

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

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AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	CCI OPA-65R-BUU-H8	Make / Model:	CCI OPA-65R-BUU-H8	Make / Model:	CCI OPA-65R-BUU-H8
Gain:	13.15 / 14.95 dBd	Gain:	13.15 / 14.95 dBd	Gain:	13.15 / 14.95 dBd
Height (AGL):	137 feet	Height (AGL):	137 feet	Height (AGL):	137 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	6,229.75	ERP (W):	6,229.75	ERP (W):	6,229.75
Antenna A1 MPE%	**1.90**	Antenna B1 MPE%	**1.90**	Antenna C1 MPE%	**1.90**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	137 feet	Height (AGL):	137 feet	Height (AGL):	137 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A2 MPE%	**0.58**	Antenna B2 MPE%	**0.58**	Antenna C2 MPE%	**0.58**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	137 feet	Height (AGL):	137 feet	Height (AGL):	137 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A3 MPE%	**0.58**	Antenna B3 MPE%	**0.58**	Antenna C3 MPE%	**0.58**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**3.06 %**
MetroPCS	0.03 %
Nextel	0.26 %
Verizon Wireless	2.23 %
Sprint	0.71 %
Site Total MPE %:	**6.29 %**

AT&T Sector 1 Total:	3.06 %
AT&T Sector 2 Total:	3.06 %
AT&T Sector 3 Total:	3.06 %
Site Total:	6.29 %

AT&T _ Max Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 700 MHz LTE	2	1239.23	137	5.19	700	467	1.11 %
AT&T 1900 MHz (PCS) LTE	2	1875.65	137	7.86	1900	1000	0.79 %
AT&T 850 MHz GSM	2	414.12	137	1.74	850	567	0.31 %
AT&T 1900 MHz (PCS) GSM	2	656.32	137	2.75	1900	1000	0.27 %
AT&T 850 MHz UMTS	2	414.12	137	1.74	850	567	0.31 %
AT&T 1900 MHz (PCS) UMTS	2	656.32	137	2.75	1900	1000	0.27 %
						Total:	3.06 %

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Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector 1:	3.06 %
Sector 2:	3.06 %
Sector 3 :	3.06 %
AT&T Maximum Total (per sector):	3.06 %
Site Total:	6.29 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **6.29%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

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RF Engineering Director

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