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

August 17, 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 and property is owned by Crown Castle. AT&T now intends to replace three (3) RRU-11s with three (3) RRU-12s.

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.

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, First Selectman
Town of Somers
600 Main Street
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

126 PIONEER HEIGHTS

Location	126 PIONEER HEIGHTS	**Mblu**	01/ 13/ A/ /
Acct#	00228200	**Owner**	FARNHAM LENA G & FAYE F GATELY
Assessment	$134,200	**Appraisal**	$191,600
PID	1814	**Building Count**	1
Dev Lot		**Dev Map**	
Exempt Code			

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$111,600	$80,000	$191,600
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$78,200	$56,000	$134,200

Owner of Record

Owner	FARNHAM LENA G & FAYE F GATELY	**Sale Price**	$0
Co-Owner	C/O CROWN ATLANTIC CO LLC	**Certificate**	
Address	PMB 353 4017 WASHINGTON R MCMURRAY, PA 15317	**Book & Page**	280/ 125
		Sale Date	08/21/2008

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
FARNHAM LENA G & FAYE F GATELY	$0		280/ 125	08/21/2008
FARNHAM CLARENCE D JR ET AL	$0		255/ 671	11/28/2005

Building Information

Building 1 : Section 1

Year Built:	
Living Area:	0
Replacement Cost:	$0
Building Percent Good:	

Building Photo

Replacement Cost
Less Depreciation: $0

Building Attributes	
Field	**Description**
Style	Outbuildings
Model	
Grade:	
Stories:	
Occupancy:	
Exterior Wall 1:	
Exterior Wall 2:	
Roof Structure:	
Roof Cover:	
Interior Wall 1:	
Interior Wall 2:	
Interior Flr 1:	
Interior Flr 2	
Heat Fuel:	
Heat Type:	
AC Type:	
Total Bedrooms	
Total Full Baths	
Total Half Baths	
Total Xtra Fixtrs:	
Total Rooms	
Bath Style:	
Kitchen Style:	
Fireplace, Plain	
Basement garage	
Extra Kitchens	
Fin Bsmt Area	
Fin Bsmt Quality	
Whirlpool Tub	
Foundation	

(http://images.vgsi.com/photos/SomersCTPhotos//\00\00\76/46.jpg)

Building Layout

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use		Land Line Valuation	
Use Code	299	**Size (Acres)**	0.5

Description	Vac Comm Lnd	**Frontage**	
Zone	A-1	**Depth**	
Neighborhood	C	**Assessed Value**	$56,000
Alt Land Appr	No	**Appraised Value**	$80,000
Category			

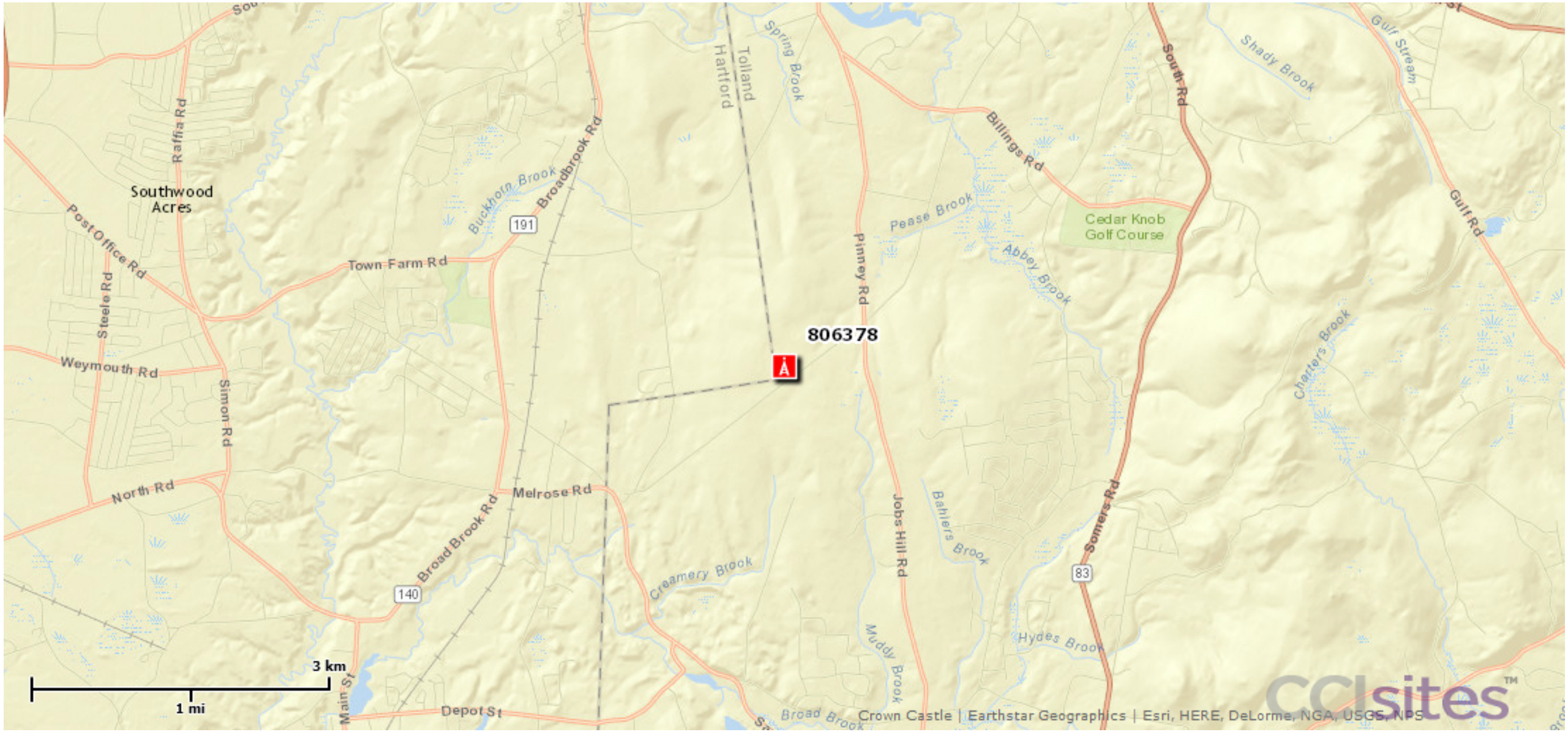
Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN1	Fence, Chain	8	8 ft	400 LF	$5,500	1
CB1	PreCast Cell Shed	CB		315 SF	$47,300	1
CB1	PreCast Cell Shed	CB		192 SF	$28,800	1
TWR	Tower			160 LF	$0	1
CB1	PreCast Cell Shed	CB		200 SF	$30,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$111,900	$85,000	$196,900
2013	$111,900	$85,000	$196,900
2012	$111,900	$85,000	$196,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$78,400	$59,500	$137,900
2013	$78,400	$59,500	$137,900
2012	$78,400	$59,500	$137,900


806378
Southwood Acres
Post Office Rd
Raffia Rd
Steele Rd
Weymouth Rd
Simon Rd
North Rd
Town Farm Rd
Buckhorn Brook
Broadbrook Rd
191
Tolland
Hartford
Spring Brook
Pease Brook
Billings Rd
Pinney Rd
Abbey Brook
Cedar Knob Golf Course
South Rd
Shady Brook
Gulf Stream
Gulf Rd
Charters Brook
Melrose Rd
Broad Brook Rd
140
Creamery Brook
Jobs Hill Rd
Bahlers Brook
Muddy Brook
Somers Rd
83
Hydes Brook
Broad Brook
Main St
Depot St
3 km
1 mi
Crown Castle | Earthstar Geographics | Esri, HERE, DeLorme, NGA, USGS, NPS
CCIsites™

WIRELESS COMMUNICATIONS FACILITY
CT1079 - LTE 2C
SOMERS
CROWN CASTLE SITE NO.: 806378
126 PIONEER HEIGHTS ROAD
SOMERS, CT 06071

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMENDMENTS, INCLUDING THE TIA/EIA-222 REVISION "F" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2005 CONNECTICUT FIRE SAFETY CODE AND 2009 AMENDMENTS, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE 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.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

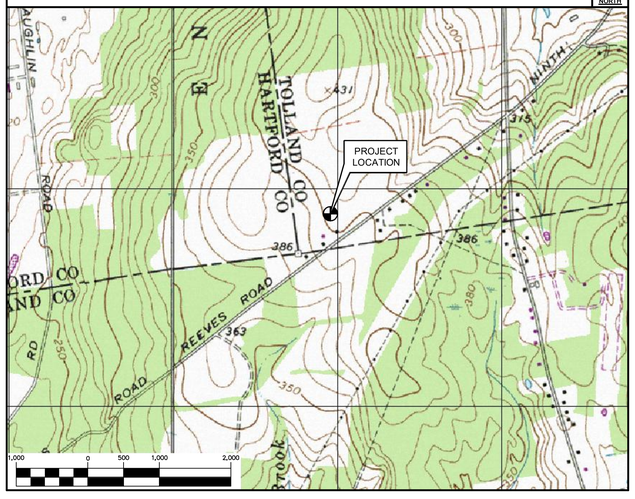
SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT
TO: 126 PIONEER HEIGHTS ROAD, SOMERS, CONNECTICUT

1.	HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.3 MI
2.	TURN LEFT ONTO CAPITAL BLVD	0.2 MI
3.	USE THE LEFT LANE TO TURN LEFT ONTO STATE HWY 411	0.2 MI
4.	TURN LEFT TO MERGE ONTO I-91 N	0.4 MI
5.	FOLLOW I-91 N TO CT-140 E IN EAST WINDSOR. TAKE EXIT 45 FROM I-91 N	21.7 MI
6.	MERGE ONTO I-91 N	21.6 MI
7.	TAKE EXIT 45 FOR CT-140 TOWARD WAREHOUSE POINT/ELLINGTON	0.2 MI
8.	CONTINUE ON CT-140 E. DRIVE TO PIONEER HEIGHTS IN SOMERS	7.6 MI
9.	USE THE RIGHT 2 LANES TO TURN RIGHT ONTO CT-140 E	5.0 MI
10.	TURN RIGHT ONTO CT-140 E/MELROSE RD CONTINUE TO FOLLOW CT-140 E	0.8 MI
11.	TURN LEFT ONTO REEVES RD	1.4 MI
12.	CONTINUE ONTO PIONEER HEIGHTS	0.4 MI

VICINITY MAP

SCALE: 1" = 1000'



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
   A. REMOVE AND REPLACE (3) EXISTING RRUS-11+A2 AND INSTALL (3) NEW RRUS-12+A2.

PROJECT INFORMATION

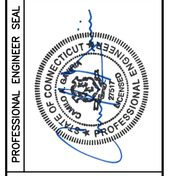
AT&T SITE NUMBER:	CT1079
AT&T SITE NAME:	SOMERS
SITE ADDRESS:	CROWN CASTLE SITE NO.: 806378 126 PIONEER HEIGHTS ROAD SOMERS, CT 06071
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT. 06405
PROJECT COORDINATES:	LATITUDE: 41°-56'-55.971" N LONGITUDE: 72°-29'-31.596" W GROUND ELEVATION: ±85' AMSL GROUND ELEVATION REFERENCED FROM GOOGLE EARTH. COORDINATES REFERENCED FROM RFDS DOCUMENTS.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	NOTES AND SPECIFICATIONS	0
C-1	PLANS, ELEVATION AND DETAILS	0
C-2	LTE 2C EQUIPMENT DETAILS	0
E-1	LTE SCHEMATIC DIAGRAM AND NOTES	0
E-2	LTE WIRING DIAGRAM	0
E-3	TYPICAL ELECTRICAL DETAILS	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	07/13/16	DRA	JTD	CONSTRUCTION DOCUMENTS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL



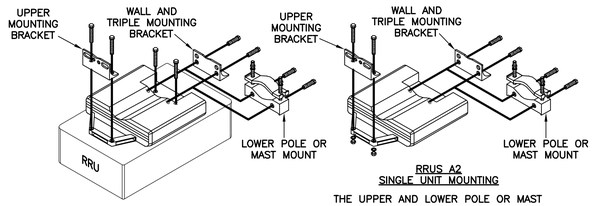
CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
SOMERS
CT1079 - LTE 2C
126 PIONEER HEIGHTS ROAD
SOMERS, CT 06071

DATE: 07/06/16
SCALE: AS NOTED
JOB NO. 16071.31

TITLE SHEET

T-1



RRUS A2 W/ASSOCIATED RRU MOUNTING

RRUS A2 SINGLE UNIT MOUNTING

THE UPPER AND LOWER POLE OR MAST MOUNTS DIFFER, BE SURE TO CORRECTLY POSITION THE MOUNTS BEFORE INSTALLUATION.

1 / N-1 **ERICSSON RRU A2 MOUNTING DETAILS**

NOT TO SCALE

NOTES AND SPECIFICATIONS

DESIGN BASIS:

GOVERNING CODE: 2003 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2005 CT STATE BUILDING CODE AND 2009 AMENDMENTS.

1. DESIGN CRITERIA:

- WIND LOAD: PER EIA/TIA 222 F–96 (ANTENNA MOUNTS): 85 MPH (FASTEST MILE), EQUIVALENT TO 105 MPH (3 SECOND GUST)
- BUILDING CLASSIFICATION: II (BASED ON IBC TABLE 1604.5)
- BASIC WIND SPEED (OTHER STRUCTURE): 95 MPH (3 SECOND GUST) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7–02) PER 2003 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMMENDMENT.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7–02 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
3. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
10. THE STRUCTURE IS DESIGNED TO BE SELF–SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
12. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
13. NO DRILLING WELDING OR TAPING ON CL&P OWNED EQUIPMENT.
14. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

   A. STRUCTURAL STEEL (W SHAPES)–––ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)–––ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)–––ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)–––ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE–––ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS–––ASTM A325–N
   G. U–BOLTS–––ASTM A36
   H. ANCHOR RODS–––ASTM F 1554
   I. WELDING ELECTRODE–––ASTM E 70XX

2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON–GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT–DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

PAINT NOTES

PAINTING SCHEDULE:

1. ANTENNA PANELS:

   A. SHERWIN WILLIAMS POLANE–B
   B. COLOR TO BE MATCHED WITH EXISTING TOWER STRUCTURE.

2. COAXIAL CABLES:

   A. ONE COAT OF DTM BONDING PRIMER (2–5 MILS. DRY FINISH)
   B. TWO COATS OF DTM ACRYLIC PRIMER/FINISH (2.5–5 MILS. DRY FINISH)
   C. COLOR TO BE FIELD MATCHED WITH EXISTING STRUCTURE.

EXAMINATION AND PREPARATION:

1. DO NOT APPLY PAINT IN SNOW, RAIN, FOG OR MIST OR WHEN RELATIVE HUMIDITY EXCEEDS 85%. DO NOT APPLY PAINT TO DAMP OR WET SURFACES.
2. VERIFY THAT SUBSTRATE CONDITIONS ARE READY TO RECEIVE WORK. EXAMINE SURFACE SCHEDULED TO BE FINISHED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY CONDITION THAT MAY POTENTIALLY AFFECT PROPER APPLICATION.
3. TEST SHOP APPLIED PRIMER FOR COMPATIBILITY WITH SUBSEQUENT COVER MATERIALS.
4. PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.
5. CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.
6. IMPERVIOUS SURFACE: REMOVE MILDEW BY SCRUBBING WITH SOLUTION OF TRI–SODIUM PHOSPHATE AND BLEACH. RINSE WITH CLEAN WATER AND ALLOW SURFACE TO DRY.
7. ALUMINUM SURFACE SCHEDULED FOR PAINT FINISH: REMOVE SURFACE CONTAMINATION BY STEAM OR HIGH–PRESSURE WATER. REMOVE OXIDATION WITH ACID ETCH AND SOLVENT WASHING. APPLY ETCHING PRIMER IMMEDIATELY FOLLOWING CLEANING.
8. FERROUS METALS: CLEAN UNGALVANIZED FERROUS METAL SURFACES THAT HAVE NOT BEEN SHOP COATED; REMOVE OIL, GREASE, DIRT, LOOSE MILL SCALE, AND OTHER FOREIGN SUBSTANCES. USE SOLVENT OR MECHANICAL CLEANING METHODS THAT COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL'S (SSPC) RECOMMENDATIONS. TOUCH UP BARE AREAS AND SHOP APPLIED PRIME COATS THAT HAVE BEEN DAMAGED. WIRE BRUSH, CLEAN WITH SOLVENTS RECOMMENDED BY PAINT MANUFACTURER, AND TOUCH UP WITH THE SAME PRIMER AS THE SHOP COAT.
9. GALVANIZED SURFACES: CLEAN GALVANIZED SURFACES WITH NON–PETROLEUM–BASED SOLVENTS SO SURFACE IS FREE OF OIL AND SURFACE CONTAMINANTS. REMOVE PRETREATMENT FROM GALVANIZED SHEET METAL FABRICATED FROM COIL STOCK BY MECHANICAL METHODS.
10. ANTENNA PANELS: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION. PANELS MUST BE WIPED WITH METHYL ETHYL KETONE (MEK).
11. COAXIAL CABLES: REMOVE ALL OIL, DUST, GREASE. DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION.

CLEANING:

1. COLLECT WASTE MATERIAL, WHICH MAY CONSTITUTE A FIRE HAZARD, PLACE IN CLOSED METAL CONTAINERS AND REMOVE DAILY FROM SITE.

APPLICATION:

1. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY.
3. APPLY EACH COAT TO UNIFORM FINISH.
4. APPLY EACH COAT OF PAINT SLIGHTLY DARKER THAN PRECEDING COAT UNLESS OTHERWISE APPROVED.
5. SAND METAL LIGHTLY BETWEEN COATS TO ACHIEVE REQUIRED FINISH.
6. VACUUM CLEAN SURFACES FREE OF LOOSE PARTICLES. USE TACK CLOTH JUST PRIOR TO APPLYING NEXT COAT.
7. ALLOW APPLIED COAT TO DRY BEFORE NEXT COAT IS APPLIED.

COMPLETED WORK:

1. SAMPLES: PREPARE 24" X 24" SAMPLE AREA FOR REVIEW.
2. MATCH APPROVED SAMPLES FOR COLOR, TEXTURE AND COVERAGE. REMOVE REFINISH OR REPAINT WORK NOT IN COMPLIANCE WITH SPECIFIED REQUIREMENTS.

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SCALE: AS NOTED
JOB NO. 16071.31

NOTES AND SPECIFICATIONS

N–1

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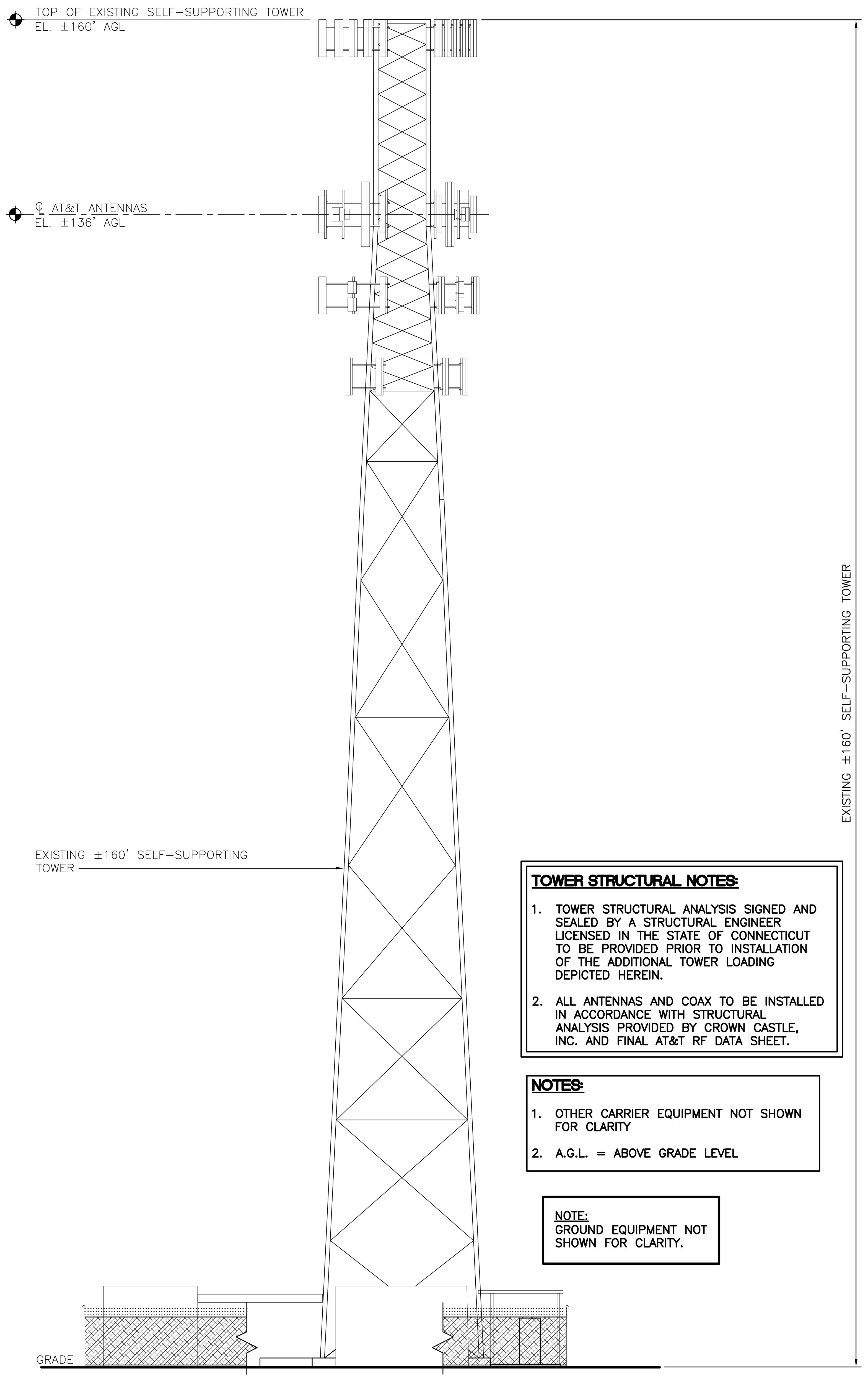


TOWER STRUCTURAL NOTES:

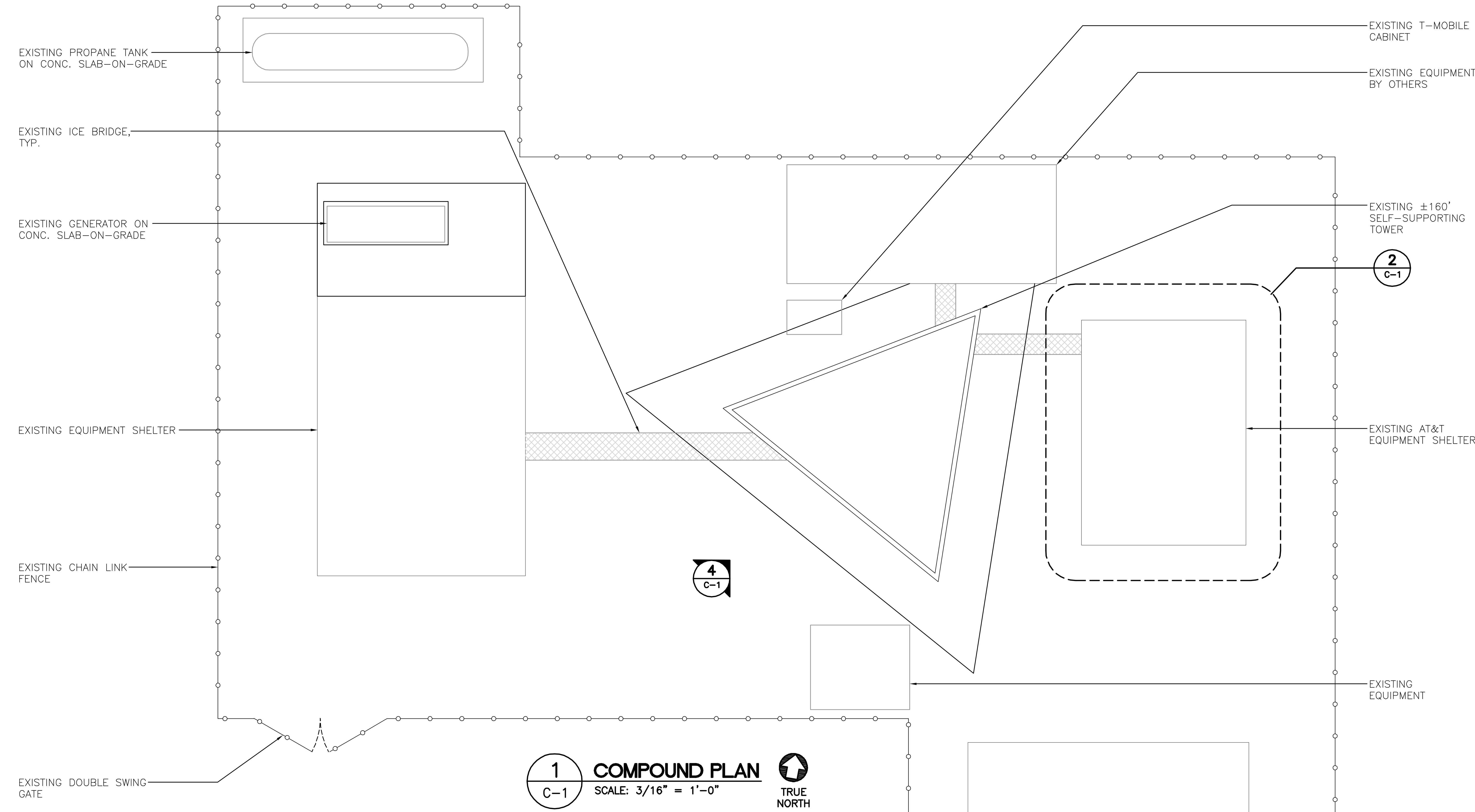
1. TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE, INC. AND FINAL AT&T RF DATA SHEET.

NOTES:

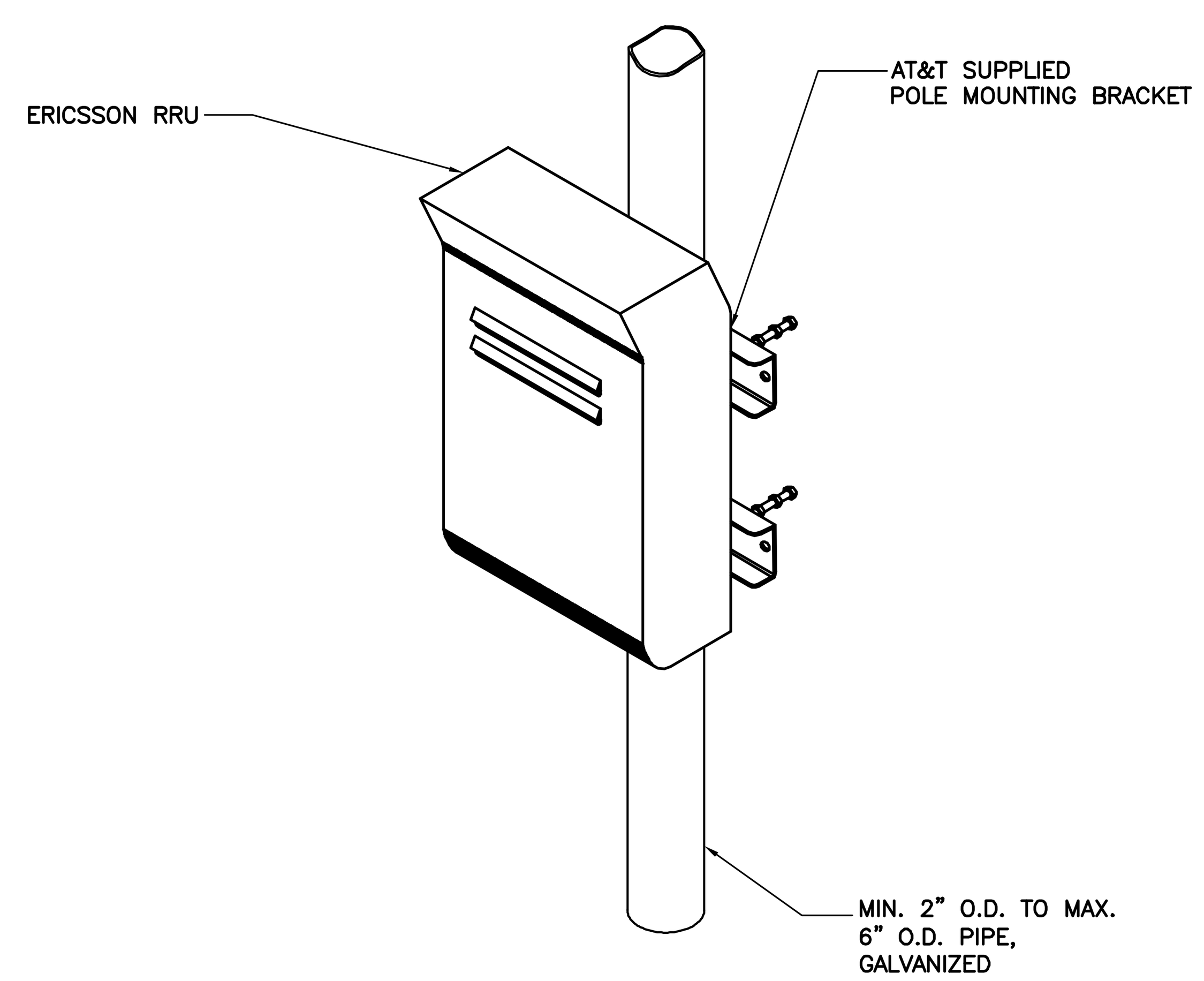
1. OTHER CARRIER EQUIPMENT NOT SHOWN FOR CLARITY
2. A.G.L. = ABOVE GRADE LEVEL

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

4 / C-1 **EXISTING TOWER ELEVATION**
SCALE: 1" = 10'



1 / C-1 **COMPOUND PLAN**
SCALE: 3/16" = 1'-0"

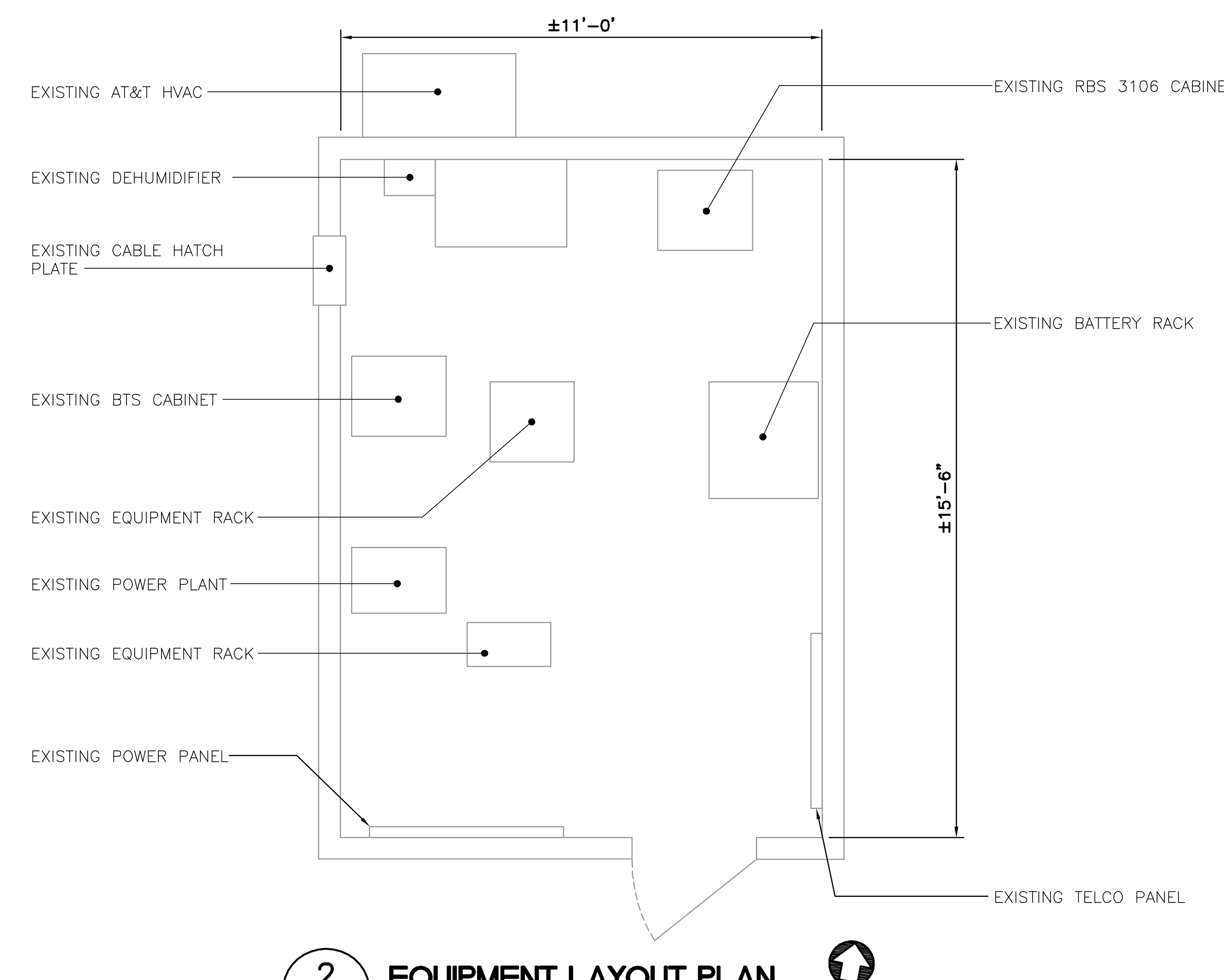


ISOMETRIC VIEW

NOTES:

1. AT&T SHALL SUPPLY RRU, AND RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
3. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

3 / C-1 **TYPICAL RRUS MOUNTING DETAILS**
SCALE: 1 1/2" = 1'-0"



2 / C-1 **EQUIPMENT LAYOUT PLAN**
SCALE: 3/8" = 1'-0"

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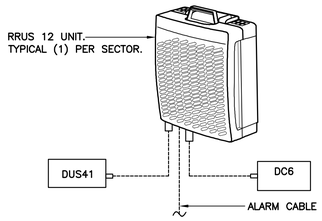
PLANS, ELEVATION AND DETAILS

C-1

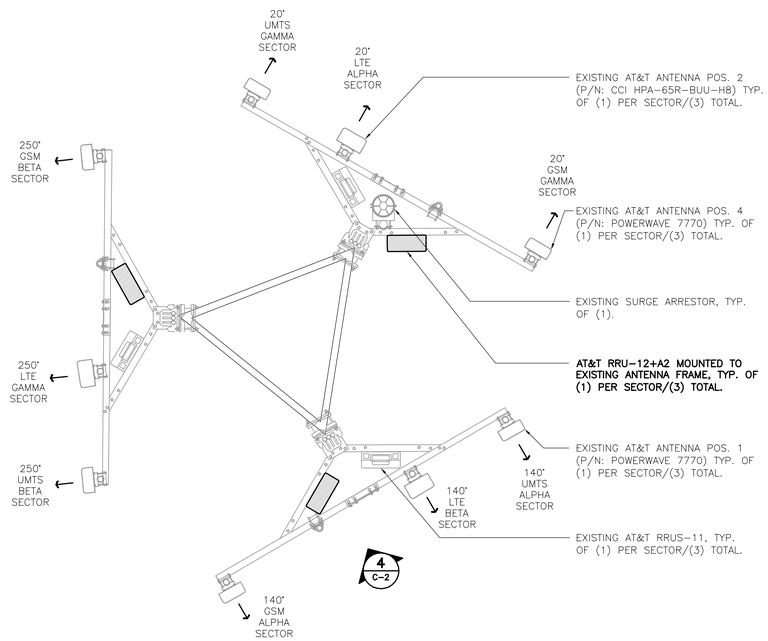
Sheet No. 3 of 7



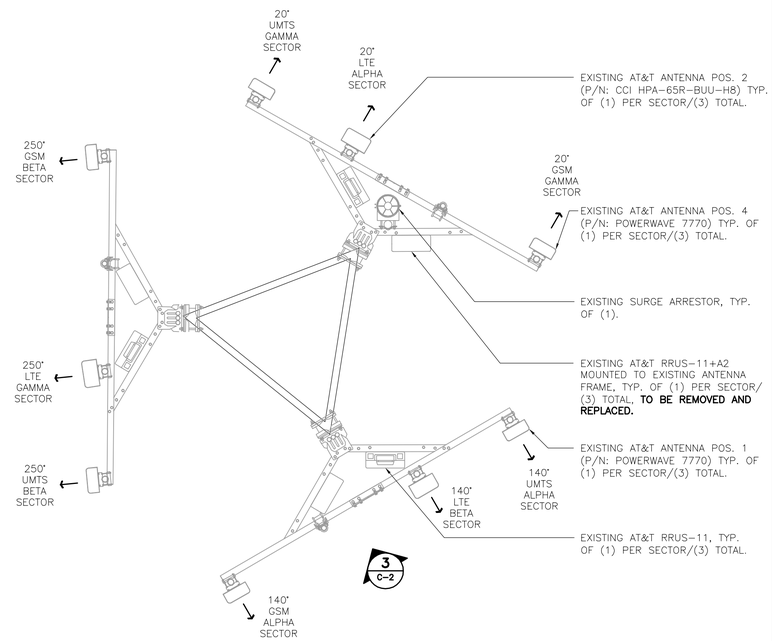
RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 12	20.4"L x 18.5"W x 7.5"D	50 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

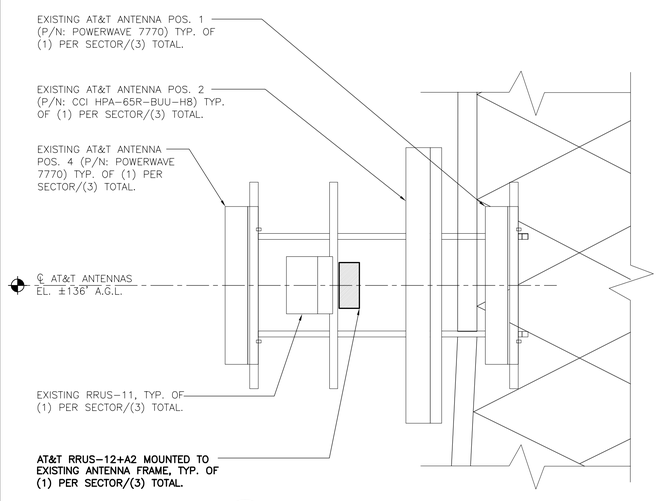
5 / C-2 **ERICSSON RRUS 12 DETAIL**
SCALE: 1" = 1'-0"



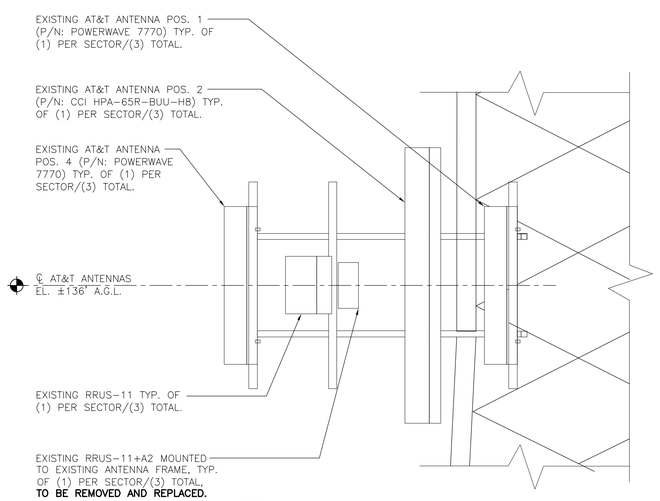
2 / C-2 **PROPOSED ANTENNA PLAN** NORTH
SCALE: 3/8" = 1'-0"



1 / C-2 **EXISTING ANTENNA PLAN** NORTH
SCALE: 3/8" = 1'-0"



4 / C-2 **PROPOSED ANTENNA PLAN**
SCALE: 1/2" = 1'-0"



3 / C-2 **EXISTING ANTENNA PLAN**
SCALE: 1/2" = 1'-0"

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LTE 2C EQUIPMENT DETAILS

C-2

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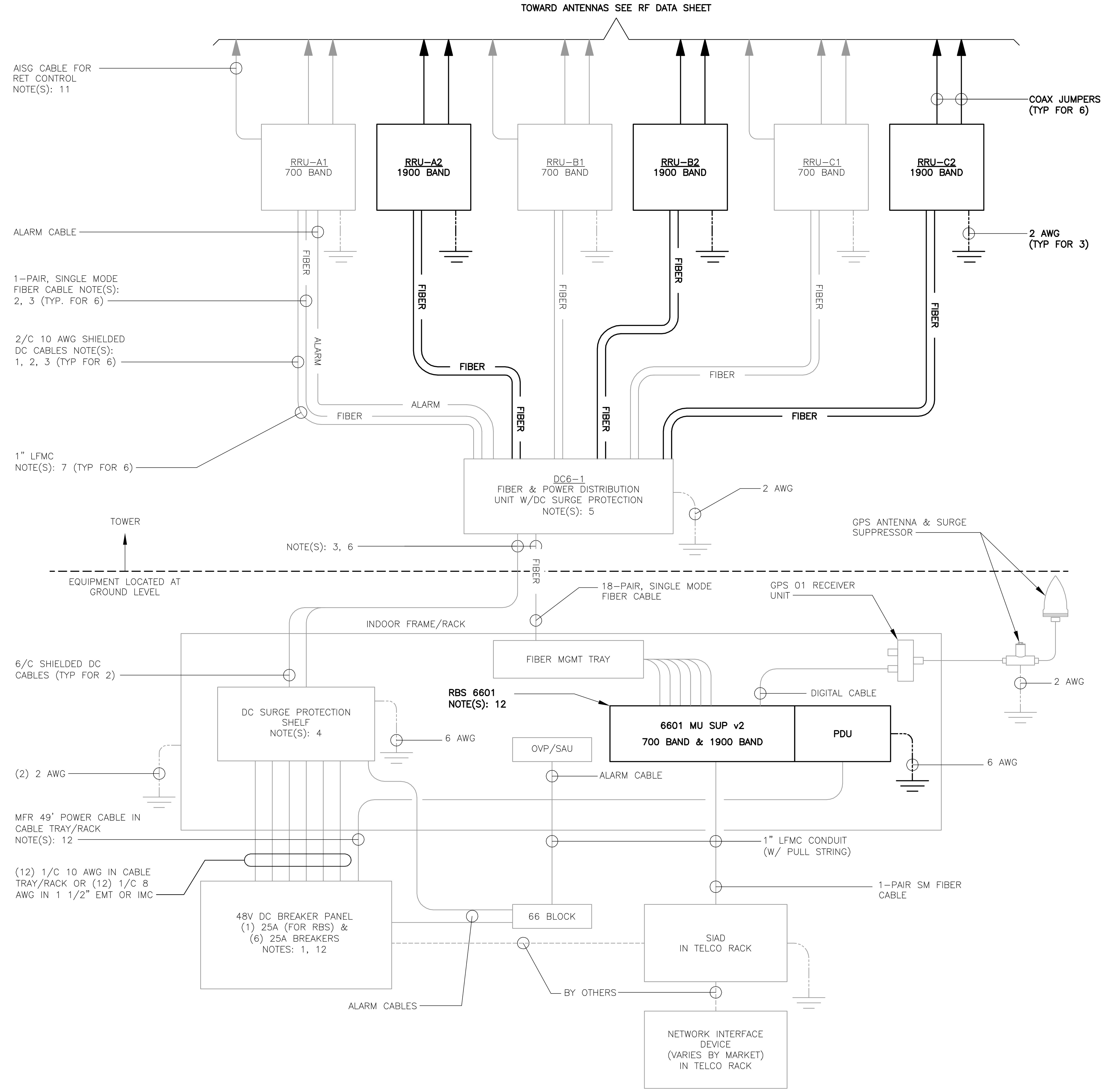

1
E-1

LTE SCHEMATIC DIAGRAM

NOT TO SCALE

LTE SCHEMATIC DIAGRAM NOTES:

1. BREAKERS TO BE TAGGED AND LOCKED OUT. A 20A (MIN.) OR 30A (MAX.) BREAKER FOR RRUs MAY BE SUBSTITUTED FOR THE RECOMMENDED 25A BREAKER. SIZE 12 CONDUCTORS MAY BE USED ONLY WITH 20A BREAKERS.
2. LEAVE COILED AND PROTECTED UNTIL TERMINATED.
3. DC AND FIBER CABLE SHALL BE ROUTED WITH THE EXISTING COAX CABLE.
4. DC SURGE PROTECTION SHELF SHALL BE RAYCAP DCx-48-60-RM.
5. FIBER & DC DISTRIBUTION BOX W/DC SURGE PROTECTION SHALL BE RAYCAP DC6-48-60-18-8F.
6. SUPPORT FIBER & DC POWER CABLES WITH SNAP-IN HANGERS SPACED NO GREATER THAN 3 FEET APART ON TOWER. SUPPORT FIBER AND DC POWER CABLES INSIDE MONOPOLE WITH CABLE HOISTING GRIPS AT 250 FT MAXIMUM INTERVALS. DRESS CABLES TO PREVENT CONTACT WITH ENTRANCE AND EXIT OPENINGS.
7. CONDUIT TO BE USED ON A TOWER IF THE RRU IS MORE THAN 10' FROM THE DISTRIBUTION UNITS. MAX CABLE LENGTH IS 16 FEET.
8. SINGLE-CONDUCTOR DC POWER CABLES SHALL BE TELCOFLEX® OR KS24194™, COPPER, UL LISTED RHH NON-HALOGEN, LOW SMOKE WITH BRAIDED COVER, TYPE TC (1/0 AND LARGER). UNLESS OTHERWISE NOTED, STRANDING SHALL BE CLASS B (TYPE III) FOR CABLES SIZES 14, 12 & 10 AWG AND CLASS I (TYPE IV) FOR SIZES 8 AWG AND LARGER. CABLES SHALL BE COLOR CODED RED FOR +24V, BLUE FOR -48V AND GRAY FOR 24V AND 48V RETURN CONDUCTORS. MULTI-CONDUCTOR DC POWER CABLES SHALL BE COPPER, CLASS B STRANDING WITH FLAME RETARDANT PVC JACKET, TYPE TC, UL LISTED FOR 90°C DRY/ 75°C WET INSTALLATION.
9. GROUNDING WIRES SHALL BE COPPER, GREEN THHN/THWN UL LISTED FOR 90°C DRY/75°C WET INSTALLATION. MINIMUM SIZE IS 6 AWG UNLESS NOTED OTHERWISE.
10. FIBER OPTIC CABLES SHALL BE INSTALLED IN FLEXIBLE CONDUIT AS SCOPED BY MARKET.
11. RET CONTROL FROM THE RRU IS AN OPTIONAL METHOD OF CONNECTION. REFER TO RF DATA SHEET FOR APPLICABILITY.
12. RBS 6601 VARIANT 2 REQUIRES A 25A BREAKER AND 10 AWG (MIN.) CONDUCTORS. REPLACE EXISTING 15A OR 20A BREAKERS AND 12 AWG CONDUCTORS WHEN UPGRADING AN EXISTING RBS 6601 VARIANT 1.

ELECTRICAL NOTES

1. PRIOR TO START OF CONSTRUCTION CONTRACTOR SHALL COORDINATE WITH OWNER FOR ALL CONSTRUCTION STANDARDS AND SPECIFICATIONS, AND ALL MANUFACTURER DOCUMENTATION FOR ALL EQUIPMENT TO BE INSTALLED.
2. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
3. CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
4. MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
5. PRIOR TO INSTALLATION CONTRACTOR SHALL MEASURE EXISTING ELECTRICAL LOAD AND VERIFY EXISTING AVAILABLE CAPACITY FOR PROPOSED INSTALLATION. IF INADEQUATE CAPACITY IS AVAILABLE, CONTRACTOR SHALL COORDINATE WITH LOCAL ELECTRIC UTILITY COMPANY TO UPGRADE EXISTING ELECTRIC SERVICE.
6. CONTRACTOR SHALL INSPECT EXISTING GROUNDING AND LIGHTNING PROTECTION SYSTEM AND ENSURE THAT IT IS IN COMPLIANCE WITH NEC, AND SITE OWNER'S SPECIFICATIONS. THE RESULTS OF THIS INSPECTION SHALL BE PRESENTED TO OWNERS REPRESENTATIVE, AND ANY DEFICIENCIES SHALL BE CORRECTED.
7. ALL TRANSMISSION TOWER SITES CONTAIN AN EXTENSIVE BURIED GROUNDING SYSTEM. ALL GROUNDING WORK MUST BE COORDINATED WITH, AND APPROVED BY, THE TOWER OWNER'S SITE REPRESENTATIVE. ALL OF THE TOWER OWNER'S SPECIFICATIONS MUST BE STRICTLY FOLLOWED.
8. PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
9. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION.
10. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
11. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
12. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNER'S REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
15. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
16. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
17. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
18. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
19. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
20. CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

TEST 1: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. TESTING SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNERS CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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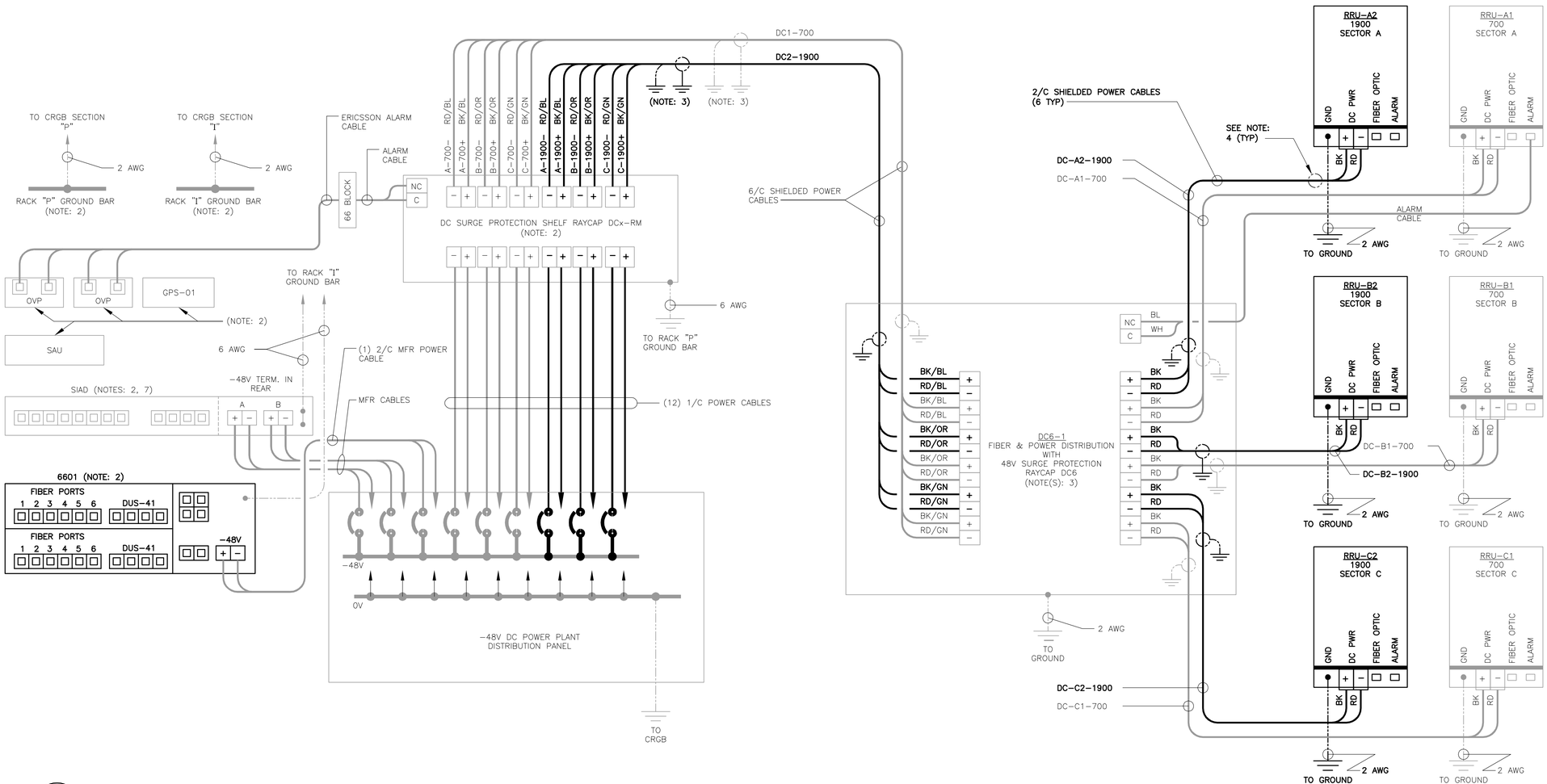
CT1079 - LTE 2C
126 PIONEER HEIGHTS ROAD
SOMERS, CT 06071

DATE:	07/06/16
SCALE:	AS NOTED
JOB NO.	16071.31

LTE SCHEMATIC DIAGRAM AND NOTES

E-1



1 E-2 LTE WIRING DIAGRAM

NOT TO SCALE

LTE WIRING DIAGRAM NOTES:

1. LABEL THE DC POWER CABLES AT BOTH ENDS OF EVERY WIRE AND IN ANY PULL BOX IF USED. LABEL SHALL BE DURABLE, SELF ADHESIVE, WRAPPED LONGITUDINALLY ALONG THE CABLE AND STATE THE SECTOR, FREQUENCY BAND AND POLARITY; I.E. "A-1900+". CABLE AND WIRE LABELS SHOWN ARE REPRESENTATIVE AND MAY BE MODIFIED AS DIRECTED BY AT&T.
2. INSTALL ON BASEBAND EQUIPMENT RACK.
3. THE BARE GROUND WIRE OF EACH MULTI-CONDUCTOR CABLE SHALL BE CONNECTED TO THE "P" GROUND BAR ON THE RACK. WHEN A SHIELDED CABLE IS USED, THE DRAIN WIRE ALSO SHALL BE CONNECTED TO THE "P" GROUND BAR.
4. CABLE GROUND WIRE AND SHIELD DRAIN WIRE TO BE LEFT UN-TERMINATED AT RRU AND DC POWER PLANT.
5. SEE LTE SCHEMATIC DIAGRAM DETAIL 1/E-1 FOR BREAKER RATING.

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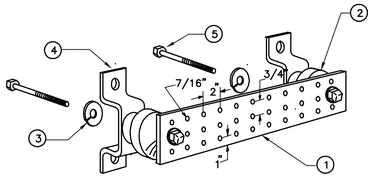
LTE WIRING DIAGRAM

E-2

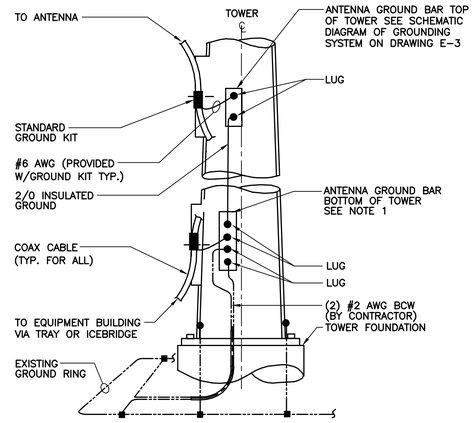
Sheet No. 6 of 7



LEGEND

1. TINNED COPPER GROUND BAR, 1/4"x 4"x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG .
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 2. 3061-4.
3. 3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. 4. CAT NO. A-6056.
5. STAINLESS STEEL SECURITY SCREWS.

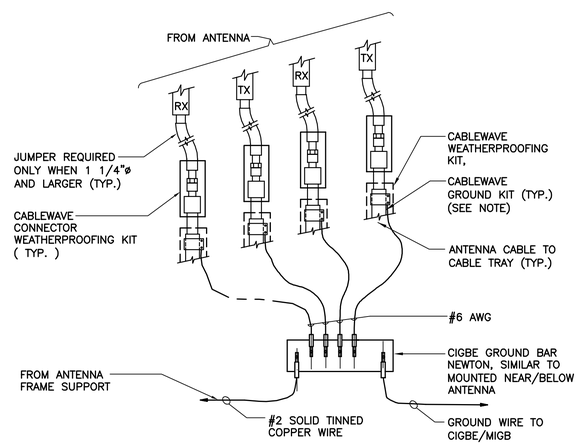
3 E-3 **GROUND BAR DETAIL**
NOT TO SCALE



NOTES:

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

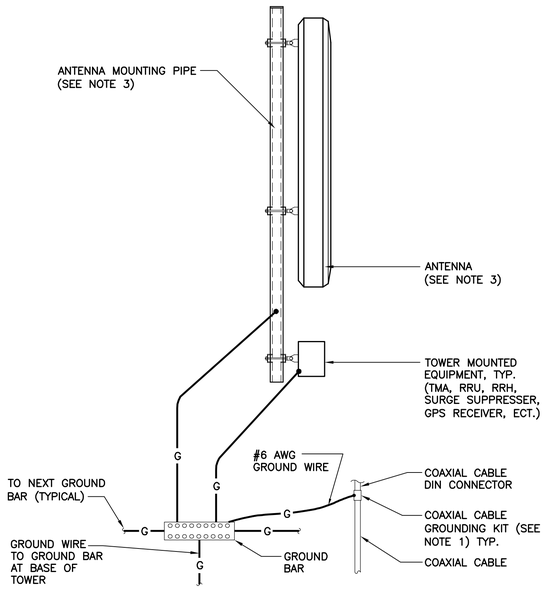
2 E-3 **ANTENNA CABLE GROUNDING - TOWER**
NOT TO SCALE



NOTE:

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

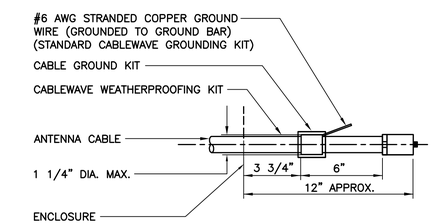
5 E-3 **CONNECTION OF GROUND WIRES TO GROUND BAR**
NOT TO SCALE



NOTES:

1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

1 E-3 **TYPICAL ANTENNA GROUNDING DETAIL**
NOT TO SCALE



NOTE:

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

4 E-3 **ANTENNA CABLE GROUNDING DETAIL**
NOT TO SCALE

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DATE:	07/06/16
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JOB NO.	16071.31

TYPICAL ELECTRICAL DETAILS

E-3

Sheet No. 7 of 7

Date: **July 22, 2016**

Charles McGuirt
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6607

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:	CTL01079
	Carrier Site Name:	Somers
Crown Castle Designation:	**Crown Castle BU Number:**	806378
	Crown Castle Site Name:	HRT 086 943248
	Crown Castle JDE Job Number:	384291
	Crown Castle Work Order Number:	1272337
	Crown Castle Application Number:	352831 Rev. 0
Engineering Firm Designation:	**Vertical Structures, Inc. Project Number:**	2016-004-014
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 Charles McGuirt,

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 927002.

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

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

The 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 IRVIN
NO. 18220
LICENSED
PROFESSIONAL ENGINEER
7/22/16

Date: **July 22, 2016**

Charles McGuirt
Crown Castle
3530 Toringdon Way, Suite 300
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(704) 405-6607

Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, KY 40475
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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 12 BTS			
		3	ericsson	RRUS A2 BTS			

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
157.0	157.0	1		Sector Mount [SM 504-3]	1 18	1 1/4 1 5/8	1
		3	alcatel lucent	RRH2X60-PCS BTS			
		3	alcatel lucent	RRH2x60-AWS BTS			
		3	andrew	LNX-6514DS-VTM w/ Mount Pipe			
		2	antel	LPA-80063/4CF w/ Mount Pipe			
		2	antel	LPA-80063/4CFx5 w/Mount Pipe			
		2	celwave	APL866513-42T6 w/ 8' Pipe Mount			
		1	celwave	DB-T1-6Z-8AB-0Z BTS			
		6	commscope	HBXX-6517DS-VTM w/ Mount Pipe			
135.0	137.0	1	andrew	SBNH-1D6565C w/ Mount Pipe			2
		3	ericsson	RRUS-11 BTS			
		3	powerwave technologies	LGP13519 Diplexer			
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		3	powerwave technologies	TT19-08BP111-001 TMA	1 2 12	3/8 3/4 1 1/4	1
		1	andrew	SBNH-1D6565C 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
		3	communications components	DTMABP7819VG12A TMA			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		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			
		2	celwave	APXVSPP18-C-A20			
		3	celwave	APXVTM14-C-120			
	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	48.0	1		Side Arm Mount [SO 202-1]			1

Notes:
1) Existing Equipment
2) 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 #0	352831	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 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) 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	-18162.40	32298.46	56.2	Pass
T2	141.25 - 136.188	Leg	ROHN 2.5 EH	37	-22991.50	65601.99	35.0	Pass
T3	136.188 - 131.188	Leg	ROHN 2.5 EH	49	-31909.60	65600.53	48.6	Pass
T4	131.188 - 126.188	Leg	ROHN 2.5 EH	58	-39578.10	65600.53	60.3	Pass
T5	126.188 - 121.125	Leg	ROHN 2.5 EH	67	-48798.60	65601.99	74.4	Pass
T6	121.125 - 114.396	Leg	ROHN 3 EH	76	-59009.80	83786.24	70.4	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T7	114.396 - 107.729	Leg	ROHN 3 EH	85	-70856.30	83784.51	84.6	Pass
T8	107.729 - 100.979	Leg	ROHN 3 EH	94	-82174.00	105836.47	77.6	Pass
T9	100.979 - 94.2292	Leg	ROHN 3.5 EH	106	-93468.20	110272.15	84.8	Pass
T10	94.2292 - 87.5625	Leg	ROHN 3.5 EH	115	-103944.00	110269.22	94.3	Pass
T11	87.5625 - 80.8125	Leg	ROHN 3.5 EH	124	-113880.00	132220.66	86.1	Pass
T12	80.8125 - 74.0625	Leg	ROHN 4 EH	136	-124254.00	139069.22	89.3	Pass
T13	74.0625 - 67.3958	Leg	ROHN 4 EH	145	-133461.00	161079.71	82.9	Pass
T14	67.3958 - 60.625	Leg	ROHN 4 EH	157	-142977.00	161110.37	88.7	Pass
T15	60.625 - 50.5208	Leg	ROHN 5 EH	169	-155039.00	177462.28	87.4	Pass
T16	50.5208 - 40.4167	Leg	ROHN 5 EH	178	-168617.00	217425.62	77.6 83.8 (b)	Pass
T17	40.4167 - 30.3125	Leg	ROHN 5 EH	190	-182581.00	217442.95	84.0	Pass
T18	30.3125 - 20.2083	Leg	ROHN 5 EH	202	-195256.00	233601.58	83.6	Pass
T19	20.2083 - 0	Leg	ROHN 6 STD w/ 2" B7 (Composite Controls) (VSI)	244	-222136.00	251897.00	88.2	Pass
T1	161.375 - 141.25	Diagonal	L1 3/4x1 3/4x3/16	7	-3317.80	8233.69	40.3 61.7 (b)	Pass
T2	141.25 - 136.188	Diagonal	L1 3/4x1 3/4x3/16	44	-3172.92	6292.83	50.4 57.7 (b)	Pass
T3	136.188 - 131.188	Diagonal	L1 3/4x1 3/4x3/16	53	-4188.77	5692.96	73.6 76.3 (b)	Pass
T4	131.188 - 126.188	Diagonal	L1 3/4x1 3/4x3/16	62	-4458.55	5163.16	86.4	Pass
T5	126.188 - 121.125	Diagonal	L2x2x3/16	71	-5183.14	7121.45	72.8 94.3 (b)	Pass
T6	121.125 - 114.396	Diagonal	L2 1/2x2 1/2x1/4	80	-5780.91	13636.32	42.4 89.6 (b)	Pass
T7	114.396 - 107.729	Diagonal	L2 1/2x2 1/2x1/4	89	-6025.14	12364.21	48.7 93.3 (b)	Pass
T8	107.729 - 100.979	Diagonal	L2 1/2x2 1/2x1/4	98	-6438.85	11251.04	57.2 99.0 (b)	Pass
T9	100.979 - 94.2292	Diagonal	L2 1/2x2 1/2x3/16	110	-6205.73	7928.39	78.3	Pass
T10	94.2292 - 87.5625	Diagonal	L2 1/2x2 1/2x1/4	119	-6274.08	9386.40	66.8	Pass
T11	87.5625 - 80.8125	Diagonal	2L2 1/2x2 1/2x3/16x1/4	128	-6693.29	28255.60	23.7 30.4 (b)	Pass
T12	80.8125 - 74.0625	Diagonal	L3x3x3/16	140	-6457.81	10664.01	60.6	Pass
T13	74.0625 - 67.3958	Diagonal	L3x3x3/16	149	-6734.88	9783.97	68.8	Pass
T14	67.3958 - 60.625	Diagonal	L3x3x3/16	161	-6894.89	9013.80	76.5	Pass
T15	60.625 - 50.5208	Diagonal	2L3x3x3/16x1/4	173	-7868.76	29304.00	26.9 66.6 (b)	Pass
T16	50.5208 - 40.4167	Diagonal	2L3x3x3/16x1/4	182	-8394.66	27080.03	31.0 69.7 (b)	Pass
T17	40.4167 - 30.3125	Diagonal	2L3x3x1/4x1/4	194	-8265.02	32519.33	25.4 67.6 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T18	30.3125 - 20.2083	Diagonal	2L3x3x1/4x1/4	209	-9257.37	51914.48	17.8 73.8 (b)	Pass
T19	20.2083 - 0	Diagonal	2L3 1/2x3 1/2x1/4x1/4	248	-9040.19	40256.47	22.5 74.7 (b)	Pass
T18	30.3125 - 20.2083	Horizontal	L3x3x3/16	205	-3386.42	3955.01	85.6	Pass
T8	107.729 - 100.979	Secondary Horizontal	L1 3/4x1 3/4x1/4	103	-1425.08	4951.99	28.8	Pass
T11	87.5625 - 80.8125	Secondary Horizontal	L2x2x3/16	133	-1974.96	4040.92	48.9	Pass
T13	74.0625 - 67.3958	Secondary Horizontal	L1 3/4x1 3/4x1/4	156	-2314.77	2783.06	83.2	Pass
T14	67.3958 - 60.625	Secondary Horizontal	L2x2x3/16	166	-2479.71	2956.31	83.9	Pass
T16	50.5208 - 40.4167	Secondary Horizontal	L2 1/2x2 1/2x3/16	187	-2924.11	4627.60	63.2	Pass
T17	40.4167 - 30.3125	Secondary Horizontal	L3x3x1/4	199	-3166.59	9343.57	33.9 36.9 (b)	Pass
T1	161.375 - 141.25	Top Girt	L2x2x1/8	5	-676.26	2488.54	27.2	Pass
T2	141.25 - 136.188	Top Girt	L2x2x1/8	42	-394.86	2452.43	16.1	Pass
T18	30.3125 - 20.2083	Redund Horz 1 Bracing	L2x2x3/16	224	-3386.42	7308.17	46.3	Pass
T18	30.3125 - 20.2083	Redund Diag 1 Bracing	L2x2x3/16	243	-1970.97	5393.49	36.5	Pass
							Summary	
						Leg (T10)	94.3	Pass
						Diagonal (T8)	99.0	Pass
						Horizontal (T18)	85.6	Pass
						Secondary Horizontal (T14)	83.9	Pass
						Top Girt (T1)	27.2	Pass
						Redund Horz 1 Bracing (T18)	46.3	Pass
						Redund Diag 1 Bracing (T18)	36.5	Pass
						Bolt Checks	99.0	Pass
						Rating =	99.0	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	78.3	Pass
1	Base Foundation	0	49.6	Pass
1	Base Foundation Soil Interaction	0	83.9	Pass
1	Diagonal Connection Reinforcement	100 – 60	77.6	Pass
1	Redundant Member End Connections	30 – 20	46.7	Pass

Structure Rating (max from all components) =	**99.0%**

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

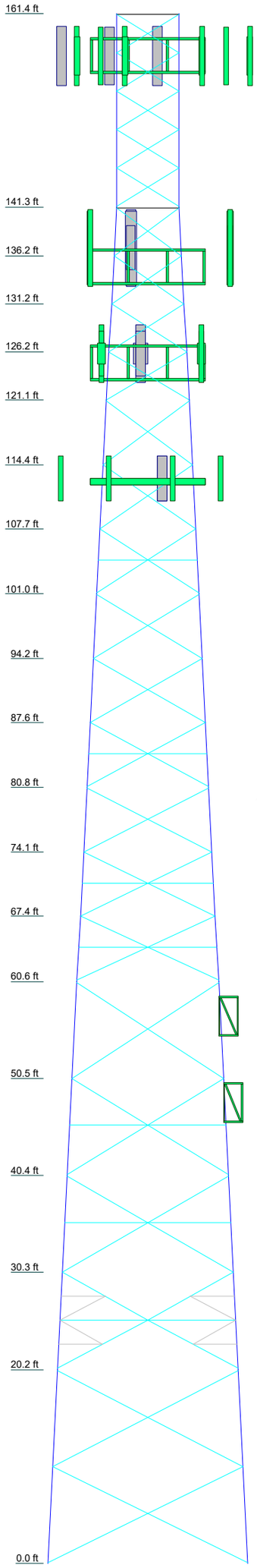
4.1) Recommendations

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			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		L2 1/2x2 1/2x1/4		B		L1 3/4x1 3/4x3/16		
Diagonal Grade	A572-50										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	7.07292	6.5625	6.52083
# Panels @ (ft)		2 @ 5		3 @ 10						9 @ 6.66667						4 @ 5		5 @ 4	
Weight (lb)	20111.5	4762.0	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																		



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Sector Mount [SM 504-3]	157	RRUS 12 BTS (ATI Mobility)	135
(2) APL866513-42T6 w/ 8' Pipe Mount (VSI)	157	RRUS 12 BTS (ATI Mobility)	135
(2) LPA-80063/4CF w/ Mount Pipe (VSI)	157	RRUS 12 BTS (ATI Mobility)	135
(2) LPA-80063/4CFx5 w/Mount Pipe	157	DTMABP7819VG12A TMA (ATI Mobility)	135
(2) HBXX-6517DS-VTM w/ Mount Pipe	157	DTMABP7819VG12A TMA (ATI Mobility)	135
(2) HBXX-6517DS-VTM w/ Mount Pipe	157	DTMABP7819VG12A TMA (ATI Mobility)	135
(2) HBXX-6517DS-VTM w/ Mount Pipe	157	TT19-08BP111-001 TMA (ATI Mobility)	135
LNX-6514DS-VTM w/ Mount Pipe	157	TT19-08BP111-001 TMA (ATI Mobility)	135
LNX-6514DS-VTM w/ Mount Pipe	157	TT19-08BP111-001 TMA (ATI Mobility)	135
LNX-6514DS-VTM w/ Mount Pipe	157	DC6-48-60-18-8F (24 x 11 x 11) (ATI Mobility)	135
RRH2x60-AWS BTS	157	Sector Mount [SM 402-3]	125
RRH2x60-AWS BTS	157	APXVSPP18-C-A20	125
RRH2x60-AWS BTS	157	APXV9ERR18-C-A20	125
RRH2X60-PCS BTS	157	APXVSPP18-C-A20	125
RRH2X60-PCS BTS	157	APXVTM14-C-120	125
RRH2X60-PCS BTS	157	APXVTM14-C-120	125
DB-T1-6Z-8AB-0Z BTS	157	APXVTM14-C-120	125
Sector Mount [SM 504-3] (ATI Mobility)	135	Pipe Mount [PM 601-3]	125
HPA-65R-BUU-H8 w/ Mount Pipe (ATI Mobility)	135	1900MHz RRH (65MHz) TMA	125
HPA-65R-BUU-H8 w/ Mount Pipe (ATI Mobility)	135	1900MHz RRH (65MHz) TMA	125
HPA-65R-BUU-H8 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
7770.00 w/ mount pipe (ATI Mobility)	135	800MHz 2x50W RRH w/ Filter	125
SBNH-1D6565C w/ Mount Pipe (ATI Mobility)	135	TD-RRH8x20-25 BTS	125
P65-17-XLH-RR w/ Mount Pipe (ATI Mobility)	135	TD-RRH8x20-25 BTS	125
P65-17-XLH-RR w/ Mount Pipe (ATI Mobility)	135	TD-RRH8x20-25 BTS	125
RRUS A2 BTS (ATI Mobility)	135	T-Arm Mount [TA 702-3]	113
RRUS A2 BTS (ATI Mobility)	135	Pipe Mount [PM 601-3]	113
RRUS A2 BTS (ATI Mobility)	135	AIR 21 B2A B4P w/ Mount Pipe	113
RRUS 11 BTS (19.7 x 17.0 x 7.2 50.7 lbs) (ATI Mobility)	135	AIR 21 B4A B2P w/ Mount Pipe	113
RRUS 11 BTS (19.7 x 17.0 x 7.2 50.7 lbs) (ATI Mobility)	135	(2) AIR 21 B2A B4P w/ Mount Pipe	113
RRUS 11 BTS (19.7 x 17.0 x 7.2 50.7 lbs) (ATI Mobility)	135	(2) AIR 21 B4A B2P w/ Mount Pipe	113
		Side Arm Mount [SO 202-1]	57
		Generic GPS (VSI)	57
		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

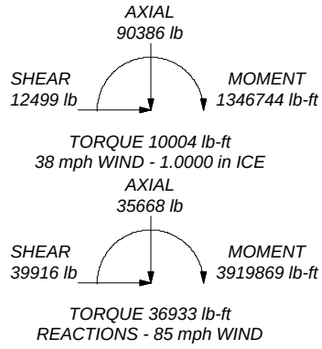
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

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: 99%

MAX. CORNER REACTIONS AT BASE:
DOWN: 228825 lb
SHEAR: 24901 lb

UPLIFT: -194748 lb
SHEAR: 21489 lb



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. 2016-004-014			
Client: Crown Castle	Drawn by: Bryce Collins	App'd:	
Code: TIA/EIA-222-F	Date: 07/22/16	Scale: NTS	
Path: \\nas1\BCollins\2016-004-014 HRT 086, CT\TNX\806378.eri		Dwg No. E-1	

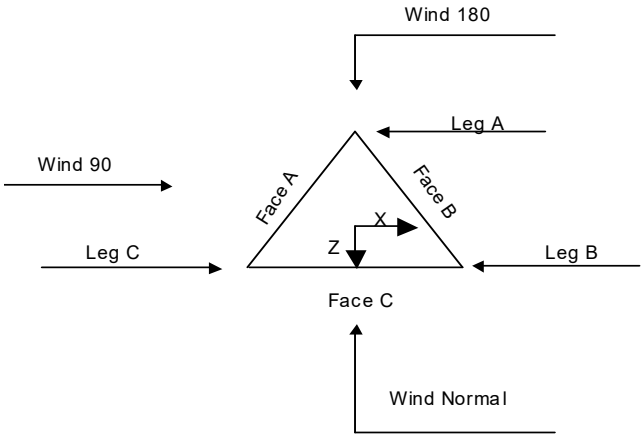
Tower Input Data

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



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	Double Angle Stitch Bolt Spacing Redundants in
T1	1.62	0.1875	A36	1	1	1	30.0000	30.0000	36.0000
161.38-141.25			(36 ksi)						
T2	0.34	0.1875	A36	1	1	1	30.0000	30.0000	36.0000
141.25-136.19			(36 ksi)						
T3	0.34	0.1875	A36	1	1	1	30.0000	30.0000	36.0000
136.19-131.19			(36 ksi)						
T4	0.34	0.1875	A36	1	1	1	30.0000	30.0000	36.0000
131.19-126.19			(36 ksi)						
T5	0.34	0.1875	A36	1	1	1	30.0000	30.0000	36.0000
126.19-121.13			(36 ksi)						
T6	0.36	0.1875	A36	1	1	1	30.0000	30.0000	36.0000
121.13-114.40			(36 ksi)						
T7	0.36	0.1875	A36	1	1	1	30.0000	30.0000	36.0000
114.40-107.73			(36 ksi)						
T8	0.36	0.1875	A36	1	1	1	30.0000	30.0000	36.0000
107.73-100.98			(36 ksi)						
T9	1.99	0.5000	A572-50	1	1	1	30.0000	30.0000	36.0000
100.98-94.23			(50 ksi)						
T10	2.36	0.5000	A572-50	1	1	1	30.0000	30.0000	36.0000
94.23-87.56			(50 ksi)						
T11	2.13	0.5000	A572-50	1	1	1	Mid-Pt	30.0000	36.0000
87.56-80.81			(50 ksi)						
T12	1.99	0.5000	A572-50	1	1	1	30.0000	30.0000	36.0000
80.81-74.06			(50 ksi)						
T13	2.36	0.5000	A572-50	1	1	1	30.0000	30.0000	36.0000
74.06-67.40			(50 ksi)						
T14	1.99	0.5000	A572-50	1	1	1	30.0000	30.0000	36.0000
67.40-60.62			(50 ksi)						
T15	0.52	0.2500	A36	1	1	1	Mid-Pt	30.0000	36.0000
60.62-50.52			(36 ksi)						
T16	0.75	0.2500	A36	1	1	1	Mid-Pt	30.0000	36.0000
50.52-40.42			(36 ksi)						
T17	0.75	0.2500	A36	1	1	1	Mid-Pt	30.0000	36.0000
40.42-30.31			(36 ksi)						
T18	0.75	0.2500	A36	1	1	1	Mid-Pt	60.0000	36.0000
30.31-20.21			(36 ksi)						
T19 20.21-0.00	1.04	0.2500	A36	1	1	1	Mid-Pt	30.0000	36.0000
			(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	1	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	1	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	1	1
74.06-67.40				1	1	1	1	1	0.5	1
T14	No	No	1	1	1	1	1	1	1	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	1	1
50.52-40.42				1	1	1	1	1	0.5	1
T17	No	No	1	1	1	1	1	1	1	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
LDF6-50A (1-1/4 FOAM)	C	Yes	Ar (CfAe)	157.00 - 8.00	1.0000	0.46	1	1	1.5500	1.5500		0.66
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)	157.00 - 8.00	1.0000	0.4	18	6	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

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-L98B-002-75000 (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	1.5000	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	17.627	2.516	0.000	0.000	316.52
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	5.666	0.633	0.000	0.000	96.59
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	5.596	0.625	0.000	0.000	95.40
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	5.596	0.625	0.000	0.000	95.40
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	5.666	0.633	0.000	0.000	96.59
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	7.531	0.841	0.000	0.000	128.39
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	12.679	1.492	0.000	0.000	174.85
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	14.237	1.688	0.000	0.000	189.81
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	14.237	1.688	0.000	0.000	189.81
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	14.061	1.667	0.000	0.000	187.47
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	14.237	1.688	0.000	0.000	189.81
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	14.237	1.688	0.000	0.000	189.81
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	14.061	1.667	0.000	0.000	187.47
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	14.281	1.693	0.000	0.000	190.40
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	21.809	2.526	0.000	0.000	285.55
T16	50.52-40.42	A	14.066	1.263	0.000	0.000	143.58
		B	0.000	2.526	0.000	0.000	36.98
		C	21.842	2.526	0.000	0.000	285.64
T17	40.42-30.31	A	14.066	1.263	0.000	0.000	143.58
		B	0.000	2.526	0.000	0.000	36.98
		C	21.842	2.526	0.000	0.000	285.64
T18	30.31-20.21	A	15.930	1.263	0.000	0.000	143.58
		B	1.863	2.526	0.000	0.000	36.98
		C	23.705	2.526	0.000	0.000	285.64
T19	20.21-0.00	A	22.069	1.276	0.000	0.000	145.06
		B	7.858	2.552	0.000	0.000	37.36
		C	34.248	3.052	0.000	0.000	345.13

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		10.936	24.756	0.000	0.000	1392.04
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		3.494	7.587	0.000	0.000	429.25
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		3.442	7.490	0.000	0.000	423.05
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		3.433	7.487	0.000	0.000	422.12
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		3.467	7.578	0.000	0.000	426.42
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		4.592	10.068	0.000	0.000	565.22
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		8.450	18.190	0.000	0.000	788.44
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		9.558	20.609	0.000	0.000	856.26
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		9.506	20.595	0.000	0.000	852.22
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		9.335	20.326	0.000	0.000	837.50
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		9.394	20.565	0.000	0.000	843.44
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		9.331	20.548	0.000	0.000	838.57
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		9.149	20.277	0.000	0.000	823.07
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		9.218	20.574	0.000	0.000	830.26
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		15.783	30.662	0.000	0.000	1249.56
T16	50.52-40.42	A	1.039	13.044	20.833	0.000	0.000	768.28
		B		0.000	3.693	0.000	0.000	102.05
		C		15.670	30.605	0.000	0.000	1233.92
T17	40.42-30.31	A	1.008	12.784	20.798	0.000	0.000	754.01
		B		0.000	3.658	0.000	0.000	99.65
		C		15.359	30.536	0.000	0.000	1213.24
T18	30.31-20.21	A	1.000	16.175	20.789	0.000	0.000	769.69
		B		3.460	3.649	0.000	0.000	118.52
		C		18.735	30.517	0.000	0.000	1227.20
T19	20.21-0.00	A	1.000	27.439	21.003	0.000	0.000	840.20
		B		14.594	3.686	0.000	0.000	182.32
		C		33.049	36.872	0.000	0.000	1541.47

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	4.684	1.878	3.452
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	1.554	0.657	1.191
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	1.075	0.439	0.795
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	1.047	0.430	0.778
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	1.023	0.483	0.873
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	1.086	0.646	1.166
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	1.928	1.078	2.084
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	2.976	1.515	2.952
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	2.037	1.150	2.235
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	1.984	1.132	2.196
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	2.785	1.511	2.921
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	1.887	1.325	2.555
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	2.670	1.655	3.183
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	2.613	1.693	3.244
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	2.000	1.439	2.817
T16	50.52-40.42	A	0.000	1.977	1.206	2.712
		B	0.000	0.245	0.199	0.337
		C	0.000	2.722	1.918	3.734
T17	40.42-30.31	A	0.000	1.880	1.255	2.797
		B	0.000	0.233	0.207	0.346
		C	0.000	2.589	1.996	3.851
T18	30.31-20.21	A	0.000	4.247	2.326	5.168
		B	0.000	0.525	0.383	0.639
		C	0.000	5.848	3.697	7.117
T19	20.21-0.00	A	0.000	1.271	1.001	2.225
		B	0.000	0.157	0.165	0.275
		C	0.000	2.094	1.903	3.664

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	-7.9706	6.5876	-5.0056	4.0426
T2	141.25-136.19	-7.8145	7.4789	-4.9506	4.6285
T3	136.19-131.19	-13.2917	9.8789	-9.5472	6.7699
T4	131.19-126.19	-14.0137	10.3921	-10.0841	7.1394
T5	126.19-121.13	-15.9112	10.4771	-11.3870	7.2711
T6	121.13-114.40	-16.0203	10.4949	-12.3819	7.8643
T7	114.40-107.73	-10.1238	13.6893	-7.9144	10.2361
T8	107.73-100.98	-8.3166	13.7717	-6.1596	9.7104
T9	100.98-94.23	-8.3204	13.7730	-6.9264	10.9086
T10	94.23-87.56	-8.4738	14.0223	-7.1224	11.2172
T11	87.56-80.81	-8.1256	13.4422	-6.3940	10.0790
T12	80.81-74.06	-8.7204	14.4223	-7.5062	11.8228
T13	74.06-67.40	-8.0155	13.2532	-6.4773	10.2117
T14	67.40-60.62	-8.4022	13.8896	-6.8068	10.7304
T15	60.62-50.52	-11.7117	18.9544	-10.9800	16.3628
T16	50.52-40.42	-10.9447	17.6846	-10.0291	14.9027
T17	40.42-30.31	-11.1645	18.0349	-10.3551	15.3978
T18	30.31-20.21	-9.0243	14.5739	-7.0936	10.5452
T19	20.21-0.00	-6.8553	12.3176	-6.8768	11.3269

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft ft ft	°	ft		ft^2	ft^2	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	2.75 -4.00 0.00	-50.0000	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	3.75 -3.25 0.00	-40.0000	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	3.75 -3.25 0.00	-40.0000	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	2.75 -4.00 0.00	-50.0000	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	3.75 -3.25 0.00	-40.0000	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	3.75 -3.25 0.00	-40.0000	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	2.75 -4.00 0.00	-50.0000	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	3.75 -3.25 0.00	-40.0000	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	3.75 -3.25 0.00	-40.0000	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	2.75 -4.00 0.00	-50.0000	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	3.75 -3.25 0.00	-40.0000	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	3.75 -3.25 0.00	-40.0000	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	2.75 -4.00 0.00	-50.0000	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	3.75 -3.25 0.00	-40.0000	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	3.75 -3.25 0.00	-40.0000	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	3.75	-40.0000	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
			-3.25 0.00			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	4.75 -1.75 2.00	-20.0000	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	4.75 -1.75 2.00	-20.0000	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	4.25 -2.50 2.00	-30.0000	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	4.75 -1.75 2.00	-20.0000	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	4.75 -1.75 2.00	-20.0000	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	4.25 -2.50 2.00	-30.0000	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	4.75 -1.75 2.00	-20.0000	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	4.75 -1.75 2.00	-20.0000	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	4.25 -2.50 2.00	-30.0000	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 A2 BTS (AT&T Mobility)	A	From Leg	4.75 -1.75	-20.0000	135.00	No Ice 1/2" Ice	2.41 2.62	0.53 0.67	22.04 34.65

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
			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 (AT&T Mobility)	B	From Leg	4.75 -1.75 2.00	-20.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.41 2.62 2.84 3.30 4.32	0.53 0.67 0.81 1.11 1.83	22.04 34.65 49.71 87.98 202.51
RRUS A2 BTS (AT&T Mobility)	C	From Leg	4.25 -2.50 2.00	-30.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.41 2.62 2.84 3.30 4.32	0.53 0.67 0.81 1.11 1.83	22.04 34.65 49.71 87.98 202.51
RRUS 11 BTS (19.7 x 17.0 x 7.2 50.7 lbs) (AT&T Mobility)	A	From Leg	4.75 -1.75 2.00	-20.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.26 3.50 3.75 4.28 5.44	1.38 1.56 1.74 2.15 3.05	50.70 71.57 95.48 153.20 313.68
RRUS 11 BTS (19.7 x 17.0 x 7.2 50.7 lbs) (AT&T Mobility)	B	From Leg	4.75 -1.75 2.00	-20.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.26 3.50 3.75 4.28 5.44	1.38 1.56 1.74 2.15 3.05	50.70 71.57 95.48 153.20 313.68
RRUS 11 BTS (19.7 x 17.0 x 7.2 50.7 lbs) (AT&T Mobility)	C	From Leg	4.25 -2.50 2.00	-30.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.26 3.50 3.75 4.28 5.44	1.38 1.56 1.74 2.15 3.05	50.70 71.57 95.48 153.20 313.68
RRUS 12 BTS (AT&T Mobility)	A	From Leg	4.75 -1.75 2.00	-20.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.93 4.19 4.75 5.96	1.49 1.67 1.87 2.28 3.21	58.00 81.22 107.64 170.88 344.31
RRUS 12 BTS (AT&T Mobility)	B	From Leg	4.75 -1.75 2.00	-20.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.93 4.19 4.75 5.96	1.49 1.67 1.87 2.28 3.21	58.00 81.22 107.64 170.88 344.31
RRUS 12 BTS (AT&T Mobility)	C	From Leg	4.25 -2.50 2.00	-30.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.93 4.19 4.75 5.96	1.49 1.67 1.87 2.28 3.21	58.00 81.22 107.64 170.88 344.31
DTMABP7819VG12A TMA (AT&T Mobility)	A	From Leg	4.75 -1.75 2.00	-20.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.14 1.28 1.44 1.77 2.54	0.40 0.51 0.61 0.86 1.45	19.18 26.48 35.63 60.23 140.10
DTMABP7819VG12A TMA (AT&T Mobility)	B	From Leg	4.75 -1.75 2.00	-20.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.14 1.28 1.44 1.77 2.54	0.40 0.51 0.61 0.86 1.45	19.18 26.48 35.63 60.23 140.10
DTMABP7819VG12A TMA (AT&T Mobility)	C	From Leg	4.25 -2.50 2.00	-30.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.14 1.28 1.44 1.77	0.40 0.51 0.61 0.86	19.18 26.48 35.63 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	4.75 -1.75 2.00	-20.0000	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	4.75 -1.75 2.00	-20.0000	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	4.25 -2.50 2.00	-30.0000	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	4.75 -1.75 2.00	-20.0000	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	A	From Leg	1.28 -0.75 1.00	-60.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.26 8.81 9.36 10.50 12.88	5.28 5.74 6.20 7.14 9.27	57.00 106.52 162.12 292.33 634.27
APXV9ERR18-C-A20	B	From Leg	1.28 -0.75 1.00	-20.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.26 8.81 9.36 10.50 12.88	5.81 6.27 6.73 7.68 9.95	62.00 113.99 172.12 307.57 660.69
APXVSPP18-C-A20	C	From Leg	1.28 -0.75 1.00	-20.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.26 8.81 9.36 10.50 12.88	5.28 5.74 6.20 7.14 9.27	57.00 106.52 162.12 292.33 634.27
APXVTM14-C-120	A	From Leg	1.28 -0.75 1.00	-60.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.90 7.35 7.81 8.75 10.75	3.61 3.97 4.33 5.14 6.97	53.00 92.53 137.12 242.29 522.01
APXVTM14-C-120	B	From Leg	1.28 -0.75 1.00	-20.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.90 7.35 7.81 8.75 10.75	3.61 3.97 4.33 5.14 6.97	53.00 92.53 137.12 242.29 522.01
APXVTM14-C-120	C	From Leg	1.28 -0.75 1.00	-20.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.90 7.35 7.81 8.75 10.75	3.61 3.97 4.33 5.14 6.97	53.00 92.53 137.12 242.29 522.01

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
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	-60.0000	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	-20.0000	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	-20.0000	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	-60.0000	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	-20.0000	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	-20.0000	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	-60.0000	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	-20.0000	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	-20.0000	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 ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	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	1.25 1.50 0.00	50.0000	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	1.25 1.50 0.00	50.0000	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	1.25 1.50 0.00	50.0000	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	1.25 1.50 0.00	50.0000	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
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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
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	4404.43	13358.90	0.330 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	3355.70	4078.13	0.823 ✔	1.333	Member Bearing

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
		Top Girt	A325N	0.5000	1	639.44	2718.75	0.235 ✔	1.333	Member Bearing
T2	141.25	Diagonal	A325N	0.5000	1	3172.92	4123.34	0.770 ✔	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	536.79	2718.75	0.197 ✔	1.333	Member Bearing
T3	136.188	Diagonal	A325N	0.5000	1	4146.98	4078.13	1.017 ✔	1.333	Member Bearing
T4	131.188	Diagonal	A325N	0.5000	1	4458.55	4123.34	1.081 ✔	1.333	Bolt Shear
T5	126.188	Leg	A325N	0.7500	4	11318.60	19177.60	0.590 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	5183.14	4123.34	1.257 ✔	1.333	Bolt Shear
T6	121.125	Diagonal	A325X	0.5000	1	5680.54	4757.81	1.194 ✔	1.333	Gusset Bearing
T7	114.396	Diagonal	A325X	0.5000	1	5917.64	4757.81	1.244 ✔	1.333	Gusset Bearing
T8	107.729	Leg	A325N	0.8750	4	19112.40	26213.80	0.729 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	6279.99	4757.81	1.320 ✔	1.333	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	1425.08	4757.81	0.300 ✔	1.333	Gusset Bearing
T9	100.979	Diagonal	A325N	0.5000	2	3102.87	4123.34	0.753 ✔	1.333	Bolt Shear
T10	94.2292	Diagonal	A325N	0.5000	2	3137.04	4123.34	0.761 ✔	1.333	Bolt Shear
T11	87.5625	Leg	A325N	0.8750	4	26072.30	26167.40	0.996 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	2	3346.65	8246.68	0.406 ✔	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	1974.96	5437.50	0.363 ✔	1.333	Member Bearing
T12	80.8125	Diagonal	A325N	0.5000	2	3228.91	4123.34	0.783 ✔	1.333	Bolt Shear
T13	74.0625	Diagonal	A325N	0.5000	2	3367.44	4123.34	0.817 ✔	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	2314.77	5800.00	0.399 ✔	1.333	Member Bearing
T14	67.3958	Leg	A325N	1.0000	4	32273.90	34310.70	0.941 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	2	3447.45	4123.34	0.836 ✔	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	2479.71	5437.50	0.456 ✔	1.333	Member Bearing
T15	60.625	Diagonal	A325N	0.6250	1	7648.84	8609.38	0.888 ✔	1.333	Gusset Bearing
T16	50.5208	Leg	A325N	1.0000	4	38288.60	34262.80	1.117 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	7995.81	8609.38	0.929 ✔	1.333	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	2924.11	5437.50	0.538 ✔	1.333	Member Bearing
T17	40.4167	Diagonal	A325N	0.6250	1	7758.40	8609.38	0.901 ✔	1.333	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	3166.59	6442.72	0.491 ✔	1.333	Bolt Shear
T18	30.3125	Leg	A325N	1.0000	6	29117.90	34401.80	0.846 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	8470.81	8609.38	0.984 ✔	1.333	Gusset Bearing
		Horizontal	A325N	0.6250	1	3386.42	5437.50	0.623 ✔	1.333	Member Bearing
T19	20.2083	Diagonal	A325N	0.6250	1	8572.40	8609.38	0.996 ✔	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	-18162.40	24229.90	0.750 ✔
T2	141.25 - 136.188	ROHN 2.5 EH	5.07	5.01	65.0 K=1.00	21.838	2.2535	-22991.50	49213.80	0.467 ✔
T3	136.188 - 131.188	ROHN 2.5 EH	5.01	5.01	65.0 K=1.00	21.838	2.2535	-31909.60	49212.70	0.648 ✔
T4	131.188 - 126.188	ROHN 2.5 EH	5.01	5.01	65.0 K=1.00	21.838	2.2535	-39578.10	49212.70	0.804 ✔
T5	126.188 - 121.125	ROHN 2.5 EH	5.07	5.01	65.0 K=1.00	21.838	2.2535	-48798.60	49213.80	0.992 ✔
T6	121.125 - 114.396	ROHN 3 EH	6.74	6.68	70.5 K=1.00	20.841	3.0159	-59009.80	62855.40	0.939 ✔
T7	114.396 - 107.729	ROHN 3 EH	6.68	6.68	70.5 K=1.00	20.841	3.0159	-70856.30	62854.10	1.127 ✔
T8	107.729 - 100.979	ROHN 3 EH	6.76	3.45	36.4 K=1.00	26.326	3.0159	-82174.00	79397.20	1.035 ✔
T9	100.979 - 94.2292	ROHN 3.5 EH	6.76	6.68	61.3 K=1.00	22.489	3.6784	-93468.20	82724.80	1.130 ✔
T10	94.2292 - 87.5625	ROHN 3.5 EH	6.68	6.68	61.3 K=1.00	22.489	3.6784	-103944.00	82722.60	1.257 ✔
T11	87.5625 - 80.8125	ROHN 3.5 EH	6.76	3.43	31.5 K=1.00	26.965	3.6784	-113880.00	99190.30	1.148 ✔
T12	80.8125 - 74.0625	ROHN 4 EH	6.76	6.68	54.3 K=1.00	23.671	4.4074	-124254.00	104328.00	1.191 ✔
T13	74.0625 - 67.3958	ROHN 4 EH	6.68	3.42	27.8 K=1.00	27.417	4.4074	-133461.00	120840.00	1.104 ✔
T14	67.3958 - 60.625	ROHN 4 EH	6.78	3.42	27.8 K=1.00	27.423	4.4074	-142977.00	120863.00	1.183 ✔
T15	60.625 - 50.5208	ROHN 5 EH	10.12	10.02	65.4 K=1.00	21.782	6.1120	-155039.00	133130.00	1.165 ✔
T16	50.5208 - 40.4167	ROHN 5 EH	10.12	5.16	33.7 K=1.00	26.687	6.1120	-168617.00	163110.00	1.034 ✔
T17	40.4167 - 30.3125	ROHN 5 EH	10.12	5.16	33.7 K=1.00	26.689	6.1120	-182581.00	163123.00	1.119 ✔
T18	30.3125 - 20.2083	ROHN 5 EH	10.12	2.50	16.3 K=1.00	28.672	6.1120	-195256.00	175245.00	1.114 ✔
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	-222136.00	188970.00	1.176 ✔

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 -	L1 3/4x1 3/4x3/16	7.00	3.50	122.3	9.945	0.6211	-3317.80	6176.81	0.537

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 $\frac{P}{P_a}$
	141.25				K=1.00					✔
T2	141.25 - 136.188	L1 3/4x1 3/4x3/16	7.74	4.01	140.2 K=1.00	7.601	0.6211	-3172.92	4720.80	0.672 ✔
T3	136.188 - 131.188	L1 3/4x1 3/4x3/16	8.15	4.22	147.4 K=1.00	6.876	0.6211	-4188.77	4270.79	0.981 ✔
T4	131.188 - 126.188	L1 3/4x1 3/4x3/16	8.58	4.43	154.7 K=1.00	6.236	0.6211	-4458.55	3873.34	1.151 ✔
T5	126.188 - 121.125	L2x2x3/16	9.01	4.64	141.4 K=1.00	7.472	0.7150	-5183.14	5342.42	0.970 ✔
T6	121.125 - 114.396	L2 1/2x2 1/2x1/4	10.40	5.39	131.8 K=1.00	8.596	1.1900	-5780.91	10229.80	0.565 ✔
T7	114.396 - 107.729	L2 1/2x2 1/2x1/4	10.94	5.66	138.4 K=1.00	7.795	1.1900	-6025.14	9275.48	0.650 ✔
T8	107.729 - 100.979	L2 1/2x2 1/2x1/4	11.50	5.94	145.1 K=1.00	7.093	1.1900	-6438.85	8440.39	0.763 ✔
T9	100.979 - 94.2292	L2 1/2x2 1/2x3/16	12.05	6.21	150.5 K=1.00	6.594	0.9020	-6205.73	5947.78	1.043 ✔
T10	94.2292 - 87.5625	L2 1/2x2 1/2x1/4	12.63	6.50	158.9 K=1.00	5.917	1.1900	-6274.08	7041.56	0.891 ✔
T11	87.5625 - 80.8125	2L2 1/2x2 1/2x3/16x1/4	13.22	6.79	109.5 K=1.00	11.746	1.8047	-6693.29	21197.00	0.316 ✔
T12	80.8125 - 74.0625	2L 'a' > 38.8661 in - 128 L3x3x3/16	13.80	7.08	142.6 K=1.00	7.339	1.0900	-6457.81	8000.01	0.807 ✔
T13	74.0625 - 67.3958	L3x3x3/16	14.43	7.40	148.9 K=1.00	6.734	1.0900	-6734.88	7339.81	0.918 ✔
T14	67.3958 - 60.625	L3x3x3/16	15.05	7.71	155.1 K=1.00	6.204	1.0900	-6894.89	6762.04	1.020 ✔
T15	60.625 - 50.5208	2L3x3x3/16x1/4	17.35	8.96	121.0 K=1.00	10.086	2.1797	-7868.76	21983.50	0.358 ✔
T16	50.5208 - 40.4167	2L 'a' > 51.1759 in - 173 2L3x3x3/16x1/4	18.19	9.37	126.5 K=1.00	9.320	2.1797	-8394.66	20315.10	0.413 ✔
T17	40.4167 - 30.3125	2L 'a' > 53.5306 in - 182 2L3x3x1/4x1/4	19.07	9.82	132.7 K=1.00	8.485	2.8750	-8265.02	24395.60	0.339 ✔
T18	30.3125 - 20.2083	2L 'a' > 56.2683 in - 194 2L3x3x1/4x1/4	10.21	10.21	104.9 K=1.00	13.546	2.8750	-9257.37	38945.60	0.238 ✔
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	-9040.19	30199.90	0.299 ✔

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	-3386.42	2967.00	1.141 ✔

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	

Secondary Horizontal Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	lb	lb	
T8	107.729 - 100.979	L1 3/4x1 3/4x1/4	10.28	5.14	180.7 K=1.00	4.572	0.8125	-1425.08	3714.92	0.384 ✔
T11	87.5625 - 80.8125	L2x2x3/16	12.32	6.16	187.7 K=1.00	4.240	0.7150	-1974.96	3031.45	0.651 ✔
T13	74.0625 - 67.3958	L1 3/4x1 3/4x1/4	13.72	6.86	241.1 K=1.00	2.570	0.8125	-2314.77	2087.82	1.109 ✔
T14	67.3958 - 60.625	L2x2x3/16	14.41	7.20	219.4 K=1.00	3.102	0.7150	-2479.71	2217.79	1.118 ✔
T16	50.5208 - 40.4167	L2 1/2x2 1/2x3/16	16.25	8.13	197.0 K=1.00	3.849	0.9020	-2924.11	3471.57	0.842 ✔
T17	40.4167 - 30.3125	L3x3x1/4	17.28	8.64	175.2 K=1.00	4.868	1.4400	-3166.59	7009.43	0.452 ✔

Top Girt Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	lb	lb	
T1	161.375 - 141.25	L2x2x1/8	6.52	6.52	196.8 K=1.00	3.854	0.4844	-676.26	1866.87	0.362 ✔
T2	141.25 - 136.188	L2x2x1/8	6.57	6.57	198.3 K=1.00	3.798	0.4844	-394.86	1839.78	0.215 ✔

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	lb	lb	
T18	30.3125 - 20.2083	L2x2x3/16	4.58	4.58	139.6 K=1.00	7.668	0.7150	-3386.42	5482.50	0.618 ✔

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	-1970.97	4046.13	0.487 ✔

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	17617.70	32235.90	0.547 ✔
T2	141.25 - 136.188	ROHN 2.5 EH	5.07	5.01	65.0	30.000	2.2535	19471.20	67606.20	0.288 ✔
T3	136.188 - 131.188	ROHN 2.5 EH	5.01	5.01	65.0	30.000	2.2535	26031.10	67606.20	0.385 ✔
T4	131.188 - 126.188	ROHN 2.5 EH	5.01	5.01	65.0	30.000	2.2535	33333.80	67606.20	0.493 ✔
T5	126.188 - 121.125	ROHN 2.5 EH	5.07	0.06	0.8	30.000	2.2535	45274.40	67606.20	0.670 ✔
T6	121.125 - 114.396	ROHN 3 EH	6.74	6.68	70.5	30.000	3.0159	50162.80	90477.90	0.554 ✔
T7	114.396 - 107.729	ROHN 3 EH	6.68	6.68	70.5	30.000	3.0159	60651.50	90477.90	0.670 ✔
T8	107.729 - 100.979	ROHN 3 EH	6.76	0.08	0.9	30.000	3.0159	76449.40	90477.90	0.845 ✔
T9	100.979 - 94.2292	ROHN 3.5 EH	6.76	6.68	61.3	30.000	3.6784	80831.10	110352.00	0.732 ✔
T10	94.2292 - 87.5625	ROHN 3.5 EH	6.68	6.68	61.3	30.000	3.6784	90407.40	110352.00	0.819 ✔
T11	87.5625 - 80.8125	ROHN 3.5 EH	6.76	0.08	0.8	30.000	3.6784	104289.00	110352.00	0.945 ✔
T12	80.8125 - 74.0625	ROHN 4 EH	6.76	6.68	54.3	30.000	4.4074	108176.00	132223.00	0.818 ✔
T13	74.0625 - 67.3958	ROHN 4 EH	6.68	3.25	26.4	30.000	4.4074	116275.00	132223.00	0.879 ✔
T14	67.3958 - 60.625	ROHN 4 EH	6.78	0.10	0.8	30.000	4.4074	129096.00	132223.00	0.976 ✔
T15	60.625 - 50.5208	ROHN 5 EH	10.12	10.02	65.4	30.000	6.1120	134852.00	183359.00	0.735 ✔
T16	50.5208 - 40.4167	ROHN 5 EH	10.12	0.10	0.7	30.000	6.1120	153154.00	183359.00	0.835 ✔
T17	40.4167 - 30.3125	ROHN 5 EH	10.12	4.86	31.7	30.000	6.1120	157815.00	183359.00	0.861 ✔
T18	30.3125 - 20.2083	ROHN 5 EH	10.12	0.10	0.7	30.000	6.1120	174708.00	183359.00	0.953 ✔
T19	20.2083 - 0	ROHN 6 STD w/ 2" B7 (Composite Controls) (VSI)	20.24	0.10	0.7	30.000	8.7220	195678.00	261660.00	0.748 ✔

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	3355.70	10960.00	0.306 ✔
T2	141.25 - 136.188	L1 3/4x1 3/4x3/16	7.74	4.01	89.7	29.000	0.3779	2980.87	10960.00	0.272 ✔
T3	136.188 - 131.188	L1 3/4x1 3/4x3/16	8.15	4.22	94.3	29.000	0.3779	4146.98	10960.00	0.378 ✔
T4	131.188 - 126.188	L1 3/4x1 3/4x3/16	8.58	4.43	99.0	29.000	0.3779	4394.30	10960.00	0.401 ✔
T5	126.188 - 121.125	L2x2x3/16	9.01	4.64	90.3	29.000	0.4484	5126.15	13002.40	0.394 ✔
T6	121.125 - 114.396	L2 1/2x2 1/2x1/4	10.40	5.39	84.2	29.000	0.7753	5680.54	22484.10	0.253 ✔
T7	114.396 - 107.729	L2 1/2x2 1/2x1/4	10.94	5.66	88.4	29.000	0.7753	5917.64	22484.10	0.263 ✔
T8	107.729 - 100.979	L2 1/2x2 1/2x1/4	11.50	5.94	92.6	29.000	0.7753	6279.99	22484.10	0.279 ✔
T9	100.979 - 94.2292	L2 1/2x2 1/2x3/16	12.05	6.21	95.7	29.000	0.5886	6168.39	17069.70	0.361 ✔
T10	94.2292 - 87.5625	L2 1/2x2 1/2x1/4	12.63	6.50	101.4	29.000	0.7753	6060.43	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	6491.92	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	6395.03	21158.70	0.302 ✔
T13	74.0625 - 67.3958	L3x3x3/16	14.43	7.40	94.5	29.000	0.7296	6482.87	21158.70	0.306 ✔
T14	67.3958 - 60.625	L3x3x3/16	15.05	7.71	98.5	29.000	0.7296	6711.87	21158.70	0.317 ✔
T15	60.625 - 50.5208	2L3x3x3/16x1/4	17.35	8.96	114.4	29.000	1.4238	7648.84	41291.00	0.185 ✔
T16	50.5208 - 40.4167	2L 'a' > 51.1759 in - 172 2L3x3x3/16x1/4	18.19	9.37	119.7	29.000	1.4238	7995.81	41291.00	0.194 ✔
T17	40.4167 - 30.3125	2L 'a' > 53.5306 in - 181 2L3x3x1/4x1/4	19.07	9.82	126.7	32.500	1.8750	7758.40	60937.50	0.127 ✔
T18	30.3125 - 20.2083	2L 'a' > 56.2683 in - 193 2L3x3x1/4x1/4	10.21	10.21	91.3	32.500	1.8750	8470.81	60937.50	0.139 ✔
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	8572.40	73125.00	0.117 ✔

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	3386.42	20648.90	0.164 ✔

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	5.14	233.3	29.000	0.4688	1425.08	13593.80	0.105 ✔
T11	87.5625 - 80.8125	L2x2x3/16	12.32	6.16	239.7	29.000	0.4308	1974.96	12492.70	0.158 ✔
T13	74.0625 - 67.3958	L1 3/4x1 3/4x1/4	13.72	6.86	311.2	29.000	0.4688	2314.77	13593.80	0.170 ✔
T14	67.3958 - 60.625	L2x2x3/16	14.41	7.20	280.2	29.000	0.4308	2479.71	12492.70	0.198 ✔
T16	50.5208 - 40.4167	L2 1/2x2 1/2x3/16	16.25	8.13	250.7	29.000	0.5710	2924.11	16559.90	0.177 ✔
T17	40.4167 - 30.3125	L3x3x1/4	17.28	8.64	223.0	29.000	0.9394	3166.59	27241.90	0.116 ✔

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	639.44	8835.94	0.072 ✔
T2	141.25 - 136.188	L2x2x1/8	6.57	6.57	125.9	29.000	0.3047	536.79	8835.94	0.061 ✔

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	3386.42	15444.00	0.219 ✔

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	1970.97	15444.00	0.128 ✔

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	-18162.40	32298.46	56.2	Pass
T2	141.25 - 136.188	Leg	ROHN 2.5 EH	37	-22991.50	65601.99	35.0	Pass
T3	136.188 - 131.188	Leg	ROHN 2.5 EH	49	-31909.60	65600.53	48.6	Pass
T4	131.188 - 126.188	Leg	ROHN 2.5 EH	58	-39578.10	65600.53	60.3	Pass
T5	126.188 - 121.125	Leg	ROHN 2.5 EH	67	-48798.60	65601.99	74.4	Pass
T6	121.125 - 114.396	Leg	ROHN 3 EH	76	-59009.80	83786.24	70.4	Pass
T7	114.396 - 107.729	Leg	ROHN 3 EH	85	-70856.30	83784.51	84.6	Pass
T8	107.729 - 100.979	Leg	ROHN 3 EH	94	-82174.00	105836.47	77.6	Pass
T9	100.979 - 94.2292	Leg	ROHN 3.5 EH	106	-93468.20	110272.15	84.8	Pass
T10	94.2292 - 87.5625	Leg	ROHN 3.5 EH	115	-103944.00	110269.22	94.3	Pass
T11	87.5625 - 80.8125	Leg	ROHN 3.5 EH	124	-113880.00	132220.66	86.1	Pass
T12	80.8125 - 74.0625	Leg	ROHN 4 EH	136	-124254.00	139069.22	89.3	Pass
T13	74.0625 - 67.3958	Leg	ROHN 4 EH	145	-133461.00	161079.71	82.9	Pass
T14	67.3958 - 60.625	Leg	ROHN 4 EH	157	-142977.00	161110.37	88.7	Pass
T15	60.625 - 50.5208	Leg	ROHN 5 EH	169	-155039.00	177462.28	87.4	Pass
T16	50.5208 - 40.4167	Leg	ROHN 5 EH	178	-168617.00	217425.62	77.6 83.8 (b)	Pass
T17	40.4167 - 30.3125	Leg	ROHN 5 EH	190	-182581.00	217442.95	84.0	Pass
T18	30.3125 - 20.2083	Leg	ROHN 5 EH	202	-195256.00	233601.58	83.6	Pass
T19	20.2083 - 0	Leg	ROHN 6 STD w/ 2" B7 (Composite Controls) (VSI)	244	-222136.00	251897.00	88.2	Pass
T1	161.375 - 141.25	Diagonal	L1 3/4x1 3/4x3/16	7	-3317.80	8233.69	40.3 61.7 (b)	Pass
T2	141.25 - 136.188	Diagonal	L1 3/4x1 3/4x3/16	44	-3172.92	6292.83	50.4 57.7 (b)	Pass
T3	136.188 - 131.188	Diagonal	L1 3/4x1 3/4x3/16	53	-4188.77	5692.96	73.6 76.3 (b)	Pass
T4	131.188 - 126.188	Diagonal	L1 3/4x1 3/4x3/16	62	-4458.55	5163.16	86.4	Pass
T5	126.188 - 121.125	Diagonal	L2x2x3/16	71	-5183.14	7121.45	72.8 94.3 (b)	Pass

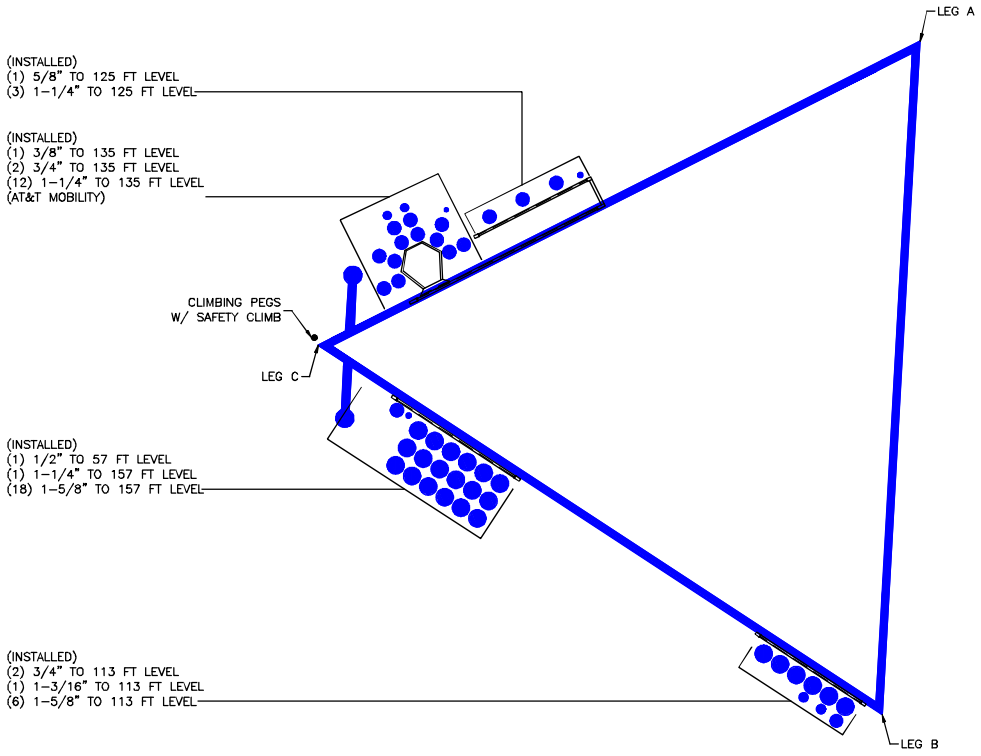
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T6	121.125 - 114.396	Diagonal	L2 1/2x2 1/2x1/4	80	-5780.91	13636.32	42.4 89.6 (b)	Pass
T7	114.396 - 107.729	Diagonal	L2 1/2x2 1/2x1/4	89	-6025.14	12364.21	48.7 93.3 (b)	Pass
T8	107.729 - 100.979	Diagonal	L2 1/2x2 1/2x1/4	98	-6438.85	11251.04	57.2 99.0 (b)	Pass
T9	100.979 - 94.2292	Diagonal	L2 1/2x2 1/2x3/16	110	-6205.73	7928.39	78.3	Pass
T10	94.2292 - 87.5625	Diagonal	L2 1/2x2 1/2x1/4	119	-6274.08	9386.40	66.8	Pass
T11	87.5625 - 80.8125	Diagonal	2L2 1/2x2 1/2x3/16x1/4	128	-6693.29	28255.60	23.7 30.4 (b)	Pass
T12	80.8125 - 74.0625	Diagonal	L3x3x3/16	140	-6457.81	10664.01	60.6	Pass
T13	74.0625 - 67.3958	Diagonal	L3x3x3/16	149	-6734.88	9783.97	68.8	Pass
T14	67.3958 - 60.625	Diagonal	L3x3x3/16	161	-6894.89	9013.80	76.5	Pass
T15	60.625 - 50.5208	Diagonal	2L3x3x3/16x1/4	173	-7868.76	29304.00	26.9 66.6 (b)	Pass
T16	50.5208 - 40.4167	Diagonal	2L3x3x3/16x1/4	182	-8394.66	27080.03	31.0 69.7 (b)	Pass
T17	40.4167 - 30.3125	Diagonal	2L3x3x1/4x1/4	194	-8265.02	32519.33	25.4 67.6 (b)	Pass
T18	30.3125 - 20.2083	Diagonal	2L3x3x1/4x1/4	209	-9257.37	51914.48	17.8 73.8 (b)	Pass
T19	20.2083 - 0	Diagonal	2L3 1/2x3 1/2x1/4x1/4	248	-9040.19	40256.47	22.5 74.7 (b)	Pass
T18	30.3125 - 20.2083	Horizontal	L3x3x3/16	205	-3386.42	3955.01	85.6	Pass
T8	107.729 - 100.979	Secondary Horizontal	L1 3/4x1 3/4x1/4	103	-1425.08	4951.99	28.8	Pass
T11	87.5625 - 80.8125	Secondary Horizontal	L2x2x3/16	133	-1974.96	4040.92	48.9	Pass
T13	74.0625 - 67.3958	Secondary Horizontal	L1 3/4x1 3/4x1/4	156	-2314.77	2783.06	83.2	Pass
T14	67.3958 - 60.625	Secondary Horizontal	L2x2x3/16	166	-2479.71	2956.31	83.9	Pass
T16	50.5208 - 40.4167	Secondary Horizontal	L2 1/2x2 1/2x3/16	187	-2924.11	4627.60	63.2	Pass
T17	40.4167 - 30.3125	Secondary Horizontal	L3x3x1/4	199	-3166.59	9343.57	33.9 36.9 (b)	Pass
T1	161.375 - 141.25	Top Girt	L2x2x1/8	5	-676.26	2488.54	27.2	Pass
T2	141.25 - 136.188	Top Girt	L2x2x1/8	42	-394.86	2452.43	16.1	Pass
T18	30.3125 - 20.2083	Redund Horz 1 Bracing	L2x2x3/16	224	-3386.42	7308.17	46.3	Pass
T18	30.3125 - 20.2083	Redund Diag 1 Bracing	L2x2x3/16	243	-1970.97	5393.49	36.5	Pass

Summary		
Leg (T10)	94.3	Pass
Diagonal (T8)	99.0	Pass
Horizontal (T18)	85.6	Pass
Secondary Horizontal (T14)	83.9	Pass
Top Girt (T1)	27.2	Pass
Redund Horz 1 Bracing (T18)	46.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
						Redund Diag 1 Bracing (T18)	36.5	Pass
						Bolt Checks	99.0	Pass
						RATING =	**99.0**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806378 TOWER ID: C_BASELEVEL

BASE LEVEL DRAWING

PLOT DATE: 4/8/2015 - FILE NAME: 806378_BASELEVEL.dwg

Xref R:\Standards — URE\CAD Standards V5.0\Templates\Typical Blocks For Templates\TITLE BLOCK STD-VER 5.1.dwg

CROWN REGION ADDRESS

USA

25/04/12	UPDATED PER WORK ORDER # 484581	SF
04/06/12	UPDATED PER WORK ORDER # 488222	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: **KDM/MDB**
CHECKED BY: **SL**
DRAWING DATE: **04/05/06**

SITE NUMBER:
SITE NAME:

SITE NAME

HRT 606 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

APPENDIX C

ADDITIONAL CALCULATIONS

ANCHOR BOLT CALCULATIONS

Customer:	Crown Castle
Site Name:	HRT 086 943248, CT BU#806378
Job Number:	2016-004-014
Tower Model:	160' Rohn SSV Self-Supporting Tower
Date:	7/22/2016

Input Information:

# Bolts	6	
Bolt Diameter	1	in
Bolt Ultimate Tensile Strength, F_u	120	ksi
Steel Grade	A449	
Applied Shear	21.489	kips
Uplift per Leg	194.748	kips

Bolt Cross-Sectional Area, **A**	0.785	in^2
Applied Shear, f_v	4.56	ksi
Maximum Allowable Tensile Stress, F_t	39.6	ksi
Allowable Tension Force	186.61	kips
Maximum Allowable	248.75	kips
% Capacity	**78.3%**	

The Bolt Group is sufficient for the applied Uplift Force

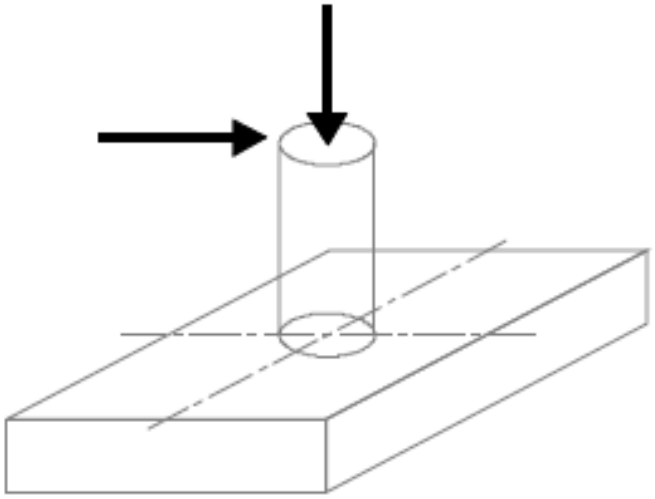
Maximum Allowable Tensile Stress, F_t

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

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

TOWER FOOTING STEEL CALCULATIONS

Customer: Crown Castle
Site Name: HRT 086 943248, CT BU#806378
Job Number: 2016-004-014
Tower Model: 160' Rohn SSV Self-Supporting Tower
Date: 07/22/2016



Mat Properties:

Pad thickness: $t = 2\,ft$
Bearing Depth: $d_f = 12\,ft$
Pad Width: $b = 10\,ft$
Pad Reinforcement Size: $r_m = 7$
Pad Reinforcement Number: $n_m = 11$
Area of Steel: $A_s = 6.6\cdot in^2$
Clear Cover: $cc = 3\cdot in$

Pier Properties:

Pier Shape (0 = square, 1= round): $Shape = 1$
Pier Width/Diameter: $w = 3.5\,ft$
Pier Height: $h = 10.5\,ft$

$\gamma_c = 150\cdot pcf$ $\gamma_s = 105\cdot pcf$ $f_y = 60\cdot ksi$ $f_c = 3\cdot ksi$

$P_u = 297.473\,kip$ $v_u = 32.371\cdot kip$

(tnx loads are factored up by 1.3 for use in this program)

Check One-Way Shear:

$\Phi_s := 0.75$

$V_{u1} := q_{1way}\cdot L_1\cdot b - w_{s1} - w_{c1} = 81.635\,kip$

$\Phi Vn_1 := \Phi_s\cdot 2\sqrt{F_c}\cdot b\cdot d = 194.099\,kip$

$\%_1 := \frac{V_{u1}}{\Phi Vn_1} = 42.1\cdot\%$

Check Two-Way Shear (Punching Shear)

$v_{u2} := q_{avg}\cdot\left(A_f - A_p\right) - w_{s2} - w_{c2} = 240.536\,kip$

$\sigma_v := \frac{v_{u2}}{d\cdot b_o} + \frac{\gamma_v\cdot v_u\cdot h\cdot\left(\frac{b_1}{2}\right)}{J_c} = 0.082\cdot ksi$

$\Phi\sigma_v := \Phi_s\cdot\omega\cdot\sqrt{F_c} = 0.164\,ksi$

$\%_2 := \frac{\sigma_v}{\Phi\sigma_v} = 49.6\,\%$

Check Mat Flexural Steel:

$\Phi_f := 0.9$

$M_u := \frac{b\cdot L_2^2}{6}\cdot\left(2\cdot q_{max} + q_{column}\right) - M_s - M_c = 3128.9\,kip\cdot in$

$\Phi M_n := \Phi_f\cdot A_s\cdot f_y\cdot\left(d - \frac{a}{2}\right) = 6786.01\cdot kip\cdot in$

$\%_3 := \frac{M_u}{\Phi M_n} = 46.1\cdot\%$

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

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

Site Data

BU#: *806378*
Site Name: *HRT 086 943248, CT*
App #: *352831, Revision #0*

Maximum Shaft Superimposed Forces		
TIA Revision:	F	
Max. Service Shaft M:	225.6345	ft-kips **(* Note)**
Max. Service Shaft P:	194.748	kips
Max Axial Force Type:	Tension	

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

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

Load Factor	Shaft Factored Loads		
1.30	Mu:	293.3249	ft-kips
1.30	Pu:	253.1724	kips

Pier Properties		
Concrete:		
Pier Diameter =	3.5	ft
Concrete Area =	1385.4	in^2
Reinforcement:		
Clear Cover to **Tie**=	3.00	in
Horiz. **Tie** Bar Size=	3	
Vert. Cage Diameter =	2.84	ft
Vert. Cage Diameter =	34.12	in
Vertical Bar Size =	9	
Bar Diameter =	1.13	in
Bar Area =	1	in^2
Number of Bars =	16	
As Total=	16	in^2
A s/ Aconc, Rho:	0.0115	1.15%

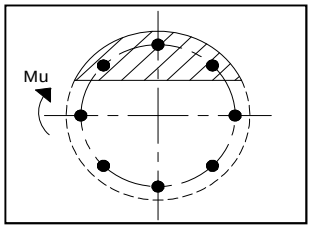
Material Properties		
Concrete Comp. strength, f'c =	3000	psi
Reinforcement yield strength, Fy =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	
ACI 318 Code		
Select Analysis ACI Code=	2005	
Seismic Properties		
Seismic Design Category =	C	
Seismic Risk =	**Moderate**	

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

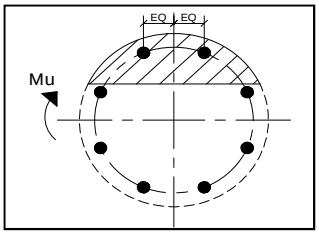
ACI 10.5 , ACI 21.10.4, and IBC 1810.
Min As for Flexural, Tension Controlled, Shafts:
(3)*(Sqrt(f'c)/Fy: 0.0027
200 / Fy: 0.0033

Results:

Governing Orientation Case: **1**



Case 1



Case 2

Dist. From Edge to Neutral Axis: **7.39** in
Extreme Steel Strain, ϵt: **0.0124**
ϵt > 0.0050, Tension Controlled
Reduction Factor,φ: **0.900**

Minimum Rho Check:
Actual Req'd Min. Rho: 0.33% Flexural
Provided Rho: 1.15% **OK**

Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):		
Max Pu = (φ=0.65) Pn.		
Pn per ACI 318 (10-2)	2315.08	kips
at Mu=(ϕ=0.65)Mn=	669.75	ft-kips
Max Tu, (φ=0.9) Tn =	864	kips
at Mu=ϕ=(0.90)Mn=	0.00	ft-kips

Output Note: Negative Pu=Tension

For Axial Compression, φ Pn = Pu:	-253.17	kips
Drilled Shaft Moment Capacity, φMn:	**825.97**	ft-kips
Drilled Shaft Superimposed Mu:	**293.32**	ft-kips

(Mu/φMn, Drilled Shaft Flexure CSR:	**35.5%**

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

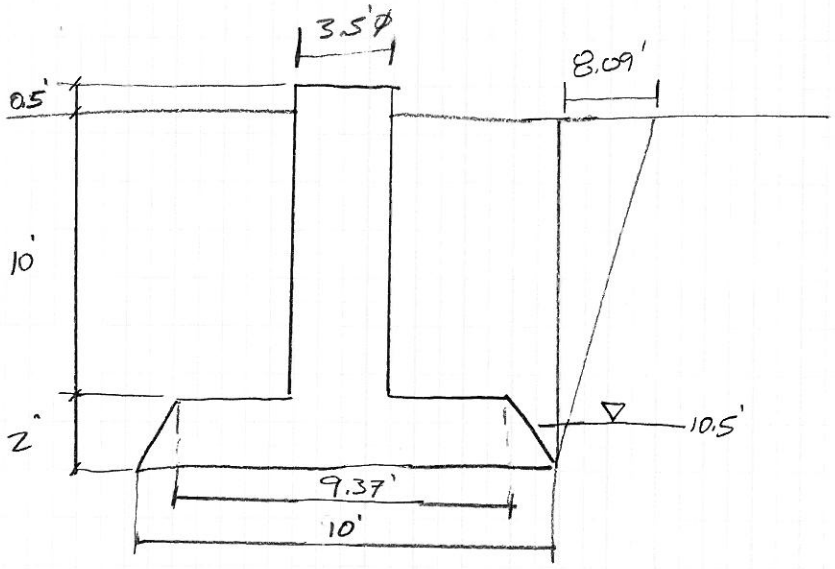
Subject: FOUNDATION CALCS

Cust: CROWN

Location: HZT 086, CT

Job No.

Design By: DLW
Date: 7/22/2016
Chk'd By: BG
Page



$\gamma_s = 105 pcf$

$\phi = 34°$

$\sigma_{ALL} = 8.25 ksf$

CONSERVATIVELY NEGLECT ADDITIONAL BALLAST FROM TRIANGULAR MAT

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

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

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

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

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

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

(Bearing and Stability Checks) Tool for TIA Rev F or G - Application (MP, SST with unitbase)

Site Data

BU#: *806378*
Site Name: *HRT 086 943248, CT*
App #: *352831, Revision #0*

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

Pad & Pier Data		
Base PL Dist. Above Pier:	0	in
Pier Dist. Above Grade:	6	in
Pad Bearing Depth, D:	12	ft
Pad Thickness, T:	2	ft
Pad Width=Length, L:	10	ft
Pier Cross Section Shape:	Round	<--Pull Down
Enter Pier Diameter:	3.5	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	9.62	ft^2
Pier Height:	10.50	ft
Soil (above pad) Height:	10.00	ft

Soil Parameters		
Unit Weight, γ:	105.0	pcf
Ultimate Bearing Capacity, qn:	16.50	ksf
Strength Reduct. factor, ϕ:	0.75	
Angle of Friction, Φ:	0.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: ϕ*qn:	12.38	ksf
Passive Pres. Coeff., Kp	1.00	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	17.3	kips
Pad Force Location Above D:	0.97	ft
ϕ(Passive Pressure Moment):	16.80	ft-kips
Factored O.T. M(WL), "1.6W":	420.2	ft-kips
Factored OT (MW-Msoil), M1	403.40	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	0.00	ft
Sum of Soil Wedges Wt:	0.00	kips
Soil Wedges ecc, K1:	0.00	ft
Ftg+Soil above Pad wt:	140.1	kips
Unfactored (Total ftg-soil Wt):	140.05	kips
1.2D. **No Soil Wedges**.	442.65	kips
0.9D. **With Soil Wedges**	331.99	kips

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

Monopole Base Reaction Forces		
TIA Revision:	F	<--Pull Down
Unfactored DL Axial, PD:	228.824	kips
Unfactored WL Axial, PW:	0	kips
Unfactored WL Shear, V:	24.901	kips
Unfactored WL Moment, M:	0	ft-kips

Load Factor	Shaft Factored Loads		
1.20	1.2D+1.6W, Pu:	274.5888	kips
0.90	0.9D+1.6W, Pu:	205.9416	kips
1.35	Vu:	33.61635	kips
	Mu:	0	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(**No Soil Wedges**) [Reaction+Conc+Soil]	442.65	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	403.40	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	0.91	ft
Orthogonal qu=	6.04	ksf
qu/ϕ*qn Ratio=	**48.81%**	**Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	0.64	ft
Diagonal qu=	5.83	ksf
qu/ϕ*qn Ratio=	**47.13%**	**Pass**

Run <-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(**w/ Soil Wedges**) [Reaction+Conc+Soil]	331.99	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	403.40	ft-kips

Orthogonal ecc3 = M2/P2 =	1.22	ft
Ortho Non Bearing Length,NBL=	2.43	ft
Orthogonal qu=	4.93	ksf
Diagonal qu=	4.84	ksf

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	0.00		
M Orthogonal:	600.90	**0.00%**	**Pass**
M Diagonal:	539.41	**0.00%**	**Pass**

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: 2016-004-014
Tower Model: 160' Rohn SSV Self-Supporting Tower
Date: 7/22/2016

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	6168.39	-6205.73	6.67	10.64	11.32	60.84	4488.65	1002.00	4599.13	4515.82	1008.06	4626.97	6344.00	8700.00	10996.00	70.8%
T11 (AT BOTTOM)	87.56-80.81	2L2 1/2x2 1/2x3/16	A325N	0.5	DS	6491.92	-6693.29	6.67	12.00	12.68	58.02	4588.64	1146.25	4729.64	4730.97	1181.80	4876.35	6344.00	8700.00	10996.00	72.3%
T12 (AT TOP)	80.81-74.06	L3x3x3/16	A325N	0.5	DS	6395.03	-6457.81	6.67	12.68	13.38	65.26	4839.99	892.17	4921.53	4887.51	900.93	4969.85	6344.00	8700.00	10996.00	76.3%
T14 (AT BOTTOM)	67.40-60.62	L3x3x3/16	A325N	0.5	DS	6711.87	-6894.89	6.67	14.07	14.77	61.63	4921.58	1062.99	5035.07	5055.79	1091.98	5172.37	6344.00	8700.00	10996.00	77.6%

REDUNDANT MEMBER END CONNECTION CALCULATIONS

Customer: Crown Castle
Site Name: HRT 086 943248, CT BU#806378
Job Number: 2016-004-014
Tower Model: 160' Rohn SSV Self-Supporting Tower
Date: 7/22/2016

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	3386.4	-3386.4	7250.0	10875.0	8590.0	46.7%

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	1971.0	-1971.0	7250.0	10875.0	8590.0	27.2%

EBI Consulting
environmental | engineering | due diligence

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

August 4, 2016

EBI Project Number: 6216003499

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	6.34 %

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

EBI Consulting
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August 4, 2016

AT&T Mobility – New England
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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 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

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

3) 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.

4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 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.

6) 2 GSM channels (1900 MHz (PCS)) 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 6-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 **Powerwave 7770 and the CCI HPA-65R-BUU-H8** for transmission in the 700 MHz, 850 MHz and 1900 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 centerlines of the proposed antennas are **136 feet** above ground level (AGL) for **Sector A**, **136 feet** above ground level (AGL) for **Sector B** and **136 feet** above ground level (AGL) for Sector C.

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.

AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	**136 feet**	Height (AGL):	**136 feet**	Height (AGL):	**136 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 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A1 MPE%	**0.59 %**	Antenna B1 MPE%	**0.59 %**	Antenna C1 MPE%	**0.59 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	CCI HPA-65R-BUU-H8	Make / Model:	CCI HPA-65R-BUU-H8	Make / Model:	CCI HPA-65R-BUU-H8
Gain:	13.15 / 14.95 dBd	Gain:	13.15 / 14.95 dBd	Gain:	13.15 / 14.95 dBd
Height (AGL):	**136 feet**	Height (AGL):	**136 feet**	Height (AGL):	**136 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 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	6,229.75	ERP (W):	6,229.75	ERP (W):	6,229.75
Antenna A2 MPE%	**1.93 %**	Antenna B2 MPE%	**1.93 %**	Antenna C2 MPE%	**1.93 %**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	**136 feet**	Height (AGL):	**136 feet**	Height (AGL):	**136 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 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A3 MPE%	**0.59 %**	Antenna B3 MPE%	**0.59 %**	Antenna C3 MPE%	**0.59 %**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**3.11 %**
MetroPCS	0.03 %
Nextel	0.26 %
Verizon Wireless	2.23 %
Sprint	0.71 %
Site Total MPE %:	**6.34 %**

AT&T Sector A Total:	3.11 %
AT&T Sector B Total:	3.11 %
AT&T Sector C Total:	3.11 %
Site Total:	6.34 %

AT&T _ Max Values 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 850 MHz UMTS	2	414.12	136	1.76	850 MHz	567	0.31 %
AT&T 1900 MHz (PCS) UMTS	2	656.33	136	2.79	1900 MHz (PCS)	1000	0.28 %
AT&T 700 MHz LTE	2	1,239.23	136	5.27	700 MHz	467	1.13 %
AT&T 1900 MHz (PCS) LTE	2	1,875.65	136	7.98	1900 MHz (PCS)	1000	0.80 %
AT&T 850 MHz GSM	2	414.12	136	1.76	850 MHz	567	0.31 %
AT&T 1900 MHz (PCS) GSM	2	656.33	136	2.79	1900 MHz (PCS)	1000	0.28 %
						Total:	**3.11 %**

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 A:	3.11 %
Sector B:	3.11 %
Sector C:	3.11 %
AT&T Maximum Total (per sector):	3.11 %
Site Total:	6.34 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **6.34 %** 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.