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

March 22, 2017

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: 876380**
AT&T Site ID: CT2066
Great Hollow Road, Woodbury, CT 06798
Latitude: 41° 31' 19.2"/ Longitude: -73° 13' 15.6"

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 139-foot level of the existing 139-foot monopole at Great Hollow Road in Woodbury, CT. The tower is owned by Crown Castle. The property is owned by the O&G Industries. AT&T now intends to replace three (3) existing antennas with three (3) new models. These antennas would be installed at the 139-foot level of the tower. AT&T also intends to install three (3) RRUs, six (6) triplexers, three (3) BiasT, one (1) Raycap, two (2) additional DC lines and (1) fiber cable.

This facility was approved by the by the Connecticut Siting Council in Docket No. 236 on June 19, 2003. This approval included the conditions that:

1. The tower shall be constructed no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Sprint PCS, AT&T Wireless PCS, LLC and other entities, both public and private, but such tower shall not exceed a height of 110 feet above ground level.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include:

   a. Visual simulations of the monopole and stealth options for a 110-foot tower at the site including a flagpole and tree tower;
   b. a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment building, access road, utility line, and landscaping; and

c. construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.
4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
6. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
7. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.

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 Mr. William J. Butterly, Jr., First Selectman, Town of Woodbury, 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: Mr. William J. Butterly, Jr.
Town of Woodbury
281 Main Street South
Woodbury, CT 06798

Planning and Zoning
Town of Woodbury
281 Main Street South
Woodbury, CT 06798

O&G Industries
112 Wall Street
Torrington, CT 06790

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@po.state.ct.us
Web Site: www.state.ct.us/csc/index.htm

June 24, 2003

TO: Parties and Intervenors

FROM: S. Derek Phelps, Executive Director

RE: **DOCKET NO. 236** - Sprint Spectrum L.P. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a wireless telecommunications facility off Great Hollow Road or at 103 Great Hollow Road, South Woodbury, Connecticut.

By its Decision and Order dated June 19, 2003, the Connecticut Siting Council granted a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a wireless telecommunications facility located at Site A off of Great Hollow Road, Woodbury, Connecticut.

Enclosed are the Council's Findings of Fact, Opinion, and Decision and Order.

SDP/laf

Enclosures (4)

c: Albert Palko, State Documents Librarian
Council Members

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
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Web Site: www.state.ct.us/csc/index.htm

CERTIFICATE

OF

ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED

DOCKET NO. 236

Pursuant to General Statutes § 16-50k, as amended, the Connecticut Siting Council hereby issues a Certificate of Environmental Compatibility and Public Need to Sprint Spectrum, L.P. d/b/a Sprint PCS for the construction, maintenance and operation of a wireless telecommunications facility located at Site A off of Great Hollow Road, Woodbury, Connecticut. This Certificate is issued in accordance with and subject to the terms and conditions set forth in the Decision and Order of the Council on June 19, 2003.

By order of the Council,

Pamela B. Katz, P.E., Chairman

June 19, 2003

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@po.state.ct.us
Web Site: www.state.ct.us/csc/index.htm

June 24, 2003

Thomas J. Regan, Esq.
Brown Rudnick Berlack Israels LLP
185 Asylum Street, CityPlace I
Hartford, CT 06103-3402

RE: **DOCKET NO. 236** - Sprint Spectrum L.P. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a wireless telecommunications facility off Great Hollow Road or at 103 Great Hollow Road, South Woodbury, Connecticut.

Dear Attorney Regan:

By its Decision and Order dated June 19, 2003, the Connecticut Siting Council (Council) granted a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a wireless telecommunications facility at Site A off of Great Hollow Road in Woodbury to Sprint Spectrum.

Enclosed are the Council's Certificate, Findings of Fact, Opinion, and Decision and Order.

Very truly yours,

S. Derek Phelps
Executive Director

SDP/CML

Enclosures (4)

Town of Woodbury

Zoning Permit

Number 8156 Date: **February 3, 2004**

Permission granted to: O & G Ind. (owner) / Peter Maxwell (agent)

To Construct: Telecommunications facilities

Address: Great Hollow Road

District OS-80 Map 34 Lot 15

Set back distance from lot lines

Front:: N/A

Right Side: N/A

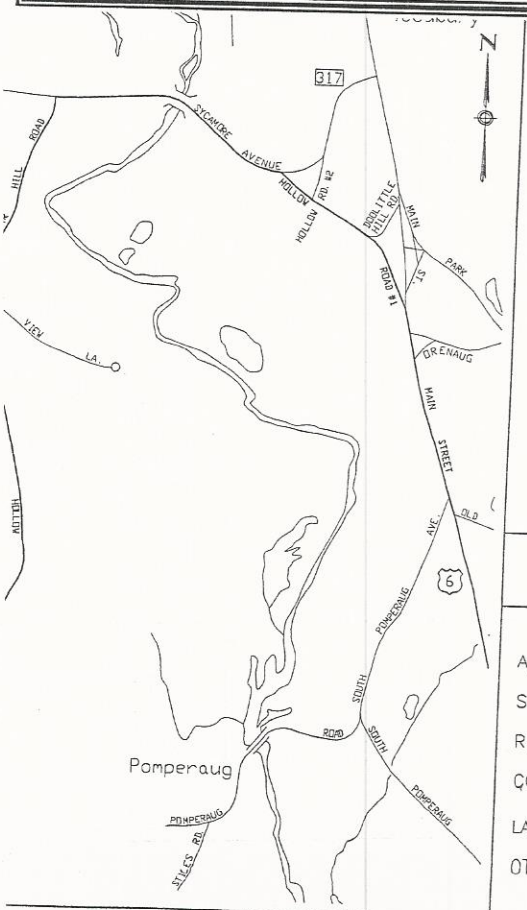
Left Side: N/A

Rear: N/A

A-2 Requirements ☐ Foundation N/A ☐ Final N/A ☐ Both Required

Reviewed and approved: ~~Judi Lynch, Land Use Administrator~~ Mark Dunn Town Planner

Building Height must be shown and indicated on the final.



PROPERTY OWNER:	ROBERT CHASE, TRUSTEE C/O O&G INDUSTRIES WOODBURY, CT
PROPERTY LESSEE:	SPRINT SITES USA 535 EAST CRESCENT AVENUE RAMSEY, NEW JERSEY 07446
APPLICANT/SUBLESSEE:	AT&T WIRELESS PCS LLC 12 OMEGA DRIVE STAMFORD, CONNECTICUT 06902
LATITUDE:	41.52201° (NAD 83)
LONGITUDE:	73.22074° (NAD 83)
ELEVATION:	590' AMSL
JURISDICTION:	TOWN OF WOODBURY, CONNECTICUT
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

B

SITE QUALIFICATION PARTICIPANTS

	NAME	COMPANY	NUMBER
A/E	IGNACIO C ARTAIZ	URS CORPORATION AES	(860) 529-8882
SAC	HOLLIS REDDING	OPTASITE, INC.	(860) 657-1460
RF	KUMAR RUGHOOBUR	BECHTEL	(203) 630-9930
CON	ALI HEMMATI	BECHTEL	(201) 707-8161
LANDLORD	RUSS VAN OUDENAREN	SPRINT SITES USA	(201) 995-4023
OTHER	–		–

STATE OF CONNECTICUT IGNACIO C. ARTAIZ

0	10/01/03	ISSUED FOR CONSTRUCTION	JCF
A	09/16/03	100% REVIEW	

URS CORPORATION AES

TITLE SHEET

Town of Woodbury

Date: 1/30/04 Zoning Permit Number 8156

Address of property: Great Hollow Road

Map No. 34 **Lot No.** 15 Subdivision Name:

Name of Owner: O & G Industries Phone Number: 860-489-9261

Address of Owner: 112 Wall Street

DESCRIPTION OF WORK PROPOSED

concrete pad & telecommunications equipment cabinets within existing fenced enclosure; antennas on existing monopole

Size of structure: Height of structure: 110'

Square footage: Number of stories:

Type of construction: 100x100 SF leased area

Zone: ☐ R-40 ☐ OS-60 ☑ OS-80 ☐ OS-100 ☐ GA ☐ MSD ☐ PI ☐ EE ☐ MQ

Width of lot: Depth of lot: Total Acreage:

Setback distances from property lines

Front yard: 223 Rear yard:

Right side yard: NA Left side yard:

Name of Agent: Peter N. Maxwell Phone Number: 860-202-0219

Address of Agent: URS Corp, 795 Brook St. Bldg 5, Rocky Hill, CT 06067

Please Note:
An agent must provide an approval letter from the owner of the subject property before application will be approved.

Check all applicable

Is this property in the Historic District?	☐ Yes	☑ No
Does this application involve any grading or filling?	☐ Yes	☐ No
Will there be construction in or within 100 feet of a wetland watercourse?	☐ Yes	☐ No
Will this require approval from the Pomperaug Health District	☑ Yes	☐ No

Other

Signature of Owner/Agent:

Approved by: Mark Dalton Date: 2-3-04

Please Note

This issued permit is based upon the plot plan submitted. Falsification by misrepresentation or omission, or failure to comply with the conditions of approval of this permit shall constitute a violation of the Town of Woodbury Zoning Regulations.

120203

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2013.

Town of Woodbury

First Deed from the Indians 1659

Information on the Property Records for the Municipality of Woodbury was last updated on 3/18/2017.

Parcel Information

Location:	202 GREAT HOLLOW RD	Property Use:	Residential	Primary Use:	Residential
Unique ID:	45300	Map Block Lot:	034-015	Acres:	210.30
490 Acres:	208.46	Zone:	OS80	Volume / Page:	360/ 104
Developers Map / Lot:		Census:	3621		

Value Information

	Appraised Value	70% Assessed Value
Land	151,119	105,780

	Appraised Value	70% Assessed Value
Buildings	0	0
Detached Outbuildings	337,155	236,010
Total	488,274	341,790

Owner's Information

Owner's Data
O & G INDUSTRIES INC 112 WALL STREET TORRINGTON CT 06790

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Building/Equipment Cell Towers	2010			300
Building/Equipment Cell Towers	2010			64
Building/Equipment Cell Towers	2010			160
Building/Equipment Cell Towers	2010			200
Fencing Cell Towers	2010			600
Mono Pole Cell Towers	2002			150
Pad Cell Towers	2010			160
Pad Cell Towers	2002	20	10	200

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
O & G INDUSTRIES INC	360	104	03/20/2008		No	$0
CHASE ROBERT L-TTEE	241	210	05/28/1999		No	$0

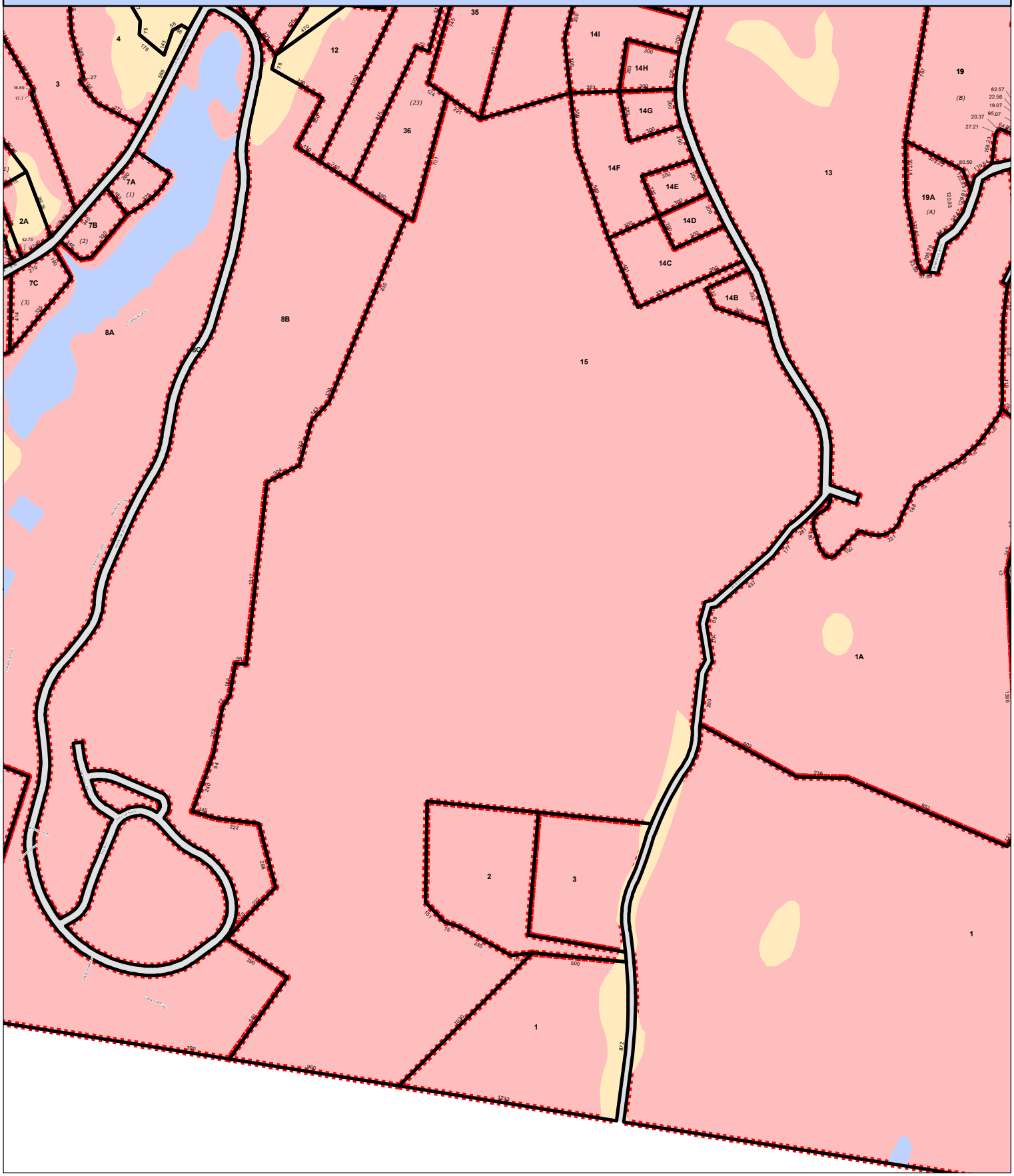
Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
B036-16	Other	03/17/2016		Closed	AT&T TO REMOVE AND REPLACE 3 ANTENNAS & ADD 3 RRU'S TO EXISTING EQUIPMENT
B067-15	Other	05/11/2015		Closed	REMOVING & REPLACING 3 ATTENNAS W/3 NEW + ADD I NEW CABINET ON THE EXISTING CONCRETE PAD
B004-15	Other	01/15/2015		Closed	REPLACING ANTENNA PANELS ON EXISTING TOWER ADDING REMOTE RADIO HEADS
B226-14	Other	12/11/2014		Closed	SPRINT TO ADD 3 ATENNA'S & 3 RRH &1 FIBER CABLES TO ANTENNA
B013-14	Other	02/09/2014		Closed	ADD 50 K DIESEL GENERATORS ON 4'X 8' CONCRETE PAD, CONDUIT TO A T A MOUNTED ON EXISTING SHELTER. AL
B145-13	Comm Renovations	08/19/2013		Closed	INSTALL 1 ANTENNA & RELOCATE GROUND EQUIPMENT & ELECTRICAL
B241-12	Comm Renovations	12/19/2012		Closed	CELL TOWER-INSTALL 3 NEW ANTENNAS & ONE CABINET ON GROUND
B225-12	Comm Renovations	12/12/2012		Closed	REPLACE R EXISTING ANTENNAS W/3 NEW SPRINT ANTENNAS ON EXISTING TOWER ADDING 6 REMOTE RADIO HEADS T

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
8555		07/29/2003		Closed	CELL TOWER(140');OPEN SPACE-1990 (69.46 AC);FOREST LAND-1991(123.0 AC); FOREST LAND REVISED-1996(CER

Town of Woodbury, Connecticut - Assessment Parcel Map

Parcel: 034-015 Address: 202 GREAT HOLLOW RD



Approximate Scale: 1 inch = 700 feet

0 360 720 1,080 1,440 Feet

Map Produced: 2/14/2017

Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of Woodbury and its mapping contractors assume no legal responsibility for the information contained herein.

PROJECT INFORMATION

SCOPE OF WORK:
- AT&T ANTENNAS: (2) EXISTING ANTENNAS PER SECTOR TO REMAIN FOR 3 SECTORS, FOR A TOTAL OF (6) EXISTING ANTENNAS TO REMAIN; (1) EXISTING ANTENNA PER SECTOR TO BE REMOVED AND REPLACED, FOR A TOTAL OF (3) ANTENNAS.
- AT&T RRUs: (1) NEW RRUs PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUs; (2) EXISTING RRUS PER SECTOR TO BE REUSED, FOR A TOTAL OF (6) EXISTING RRUs.
- (1) EXISTING A2 MODULE PER SECTOR TO REMAIN WITH (3) SECTORS, FOR A TOTAL OF (3) EXISTING A2 MODULES.
- AT&T SQUID: (1) EXISTING DC-6 SQUID TO REMAIN; (1) NEW DC-6 SQUID, FOR A TOTAL OF (2) DC-6 SQUIDS.
- (2) NEW DC TRUNKS & (1) NEW FIBER TRUNK

SITE ADDRESS:	GREAT HOLLOW ROAD WOODBURY, CT 06798
LATITUDE:	41.5219981 41° 31' 19.19316"N
LONGITUDE:	-73.2207350 -73° 13' 14.646"W
USID:	71303
TOWER OWNER:	CROWN CASTLE 876380
TYPE OF SITE:	MONOPOLE/INDOOR EQUIPMENT
MONOPOLE HEIGHT:	139'-0"±
RAD CENTER:	139'-0"±
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

DRAWING INDEX

		REV.
T-1	TITLE SHEET	0
GN-1	GROUNDING & GENERAL NOTES	0
A-1	COMPOUND LAYOUT	0
A-2	EQUIPMENT LAYOUT	0
A-3	ANTENNA LAYOUTS & ELEVATIONS	0
A-4	DETAILS	0
G-1	GROUNDING, ONE-LINE DIAGRAM & DETAILS	0

APPROVALS

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

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

at&t MOBILITY

FA CODE: 10035444
SITE NUMBER: CT2066
SITE NAME:
WOODBURY CT GREAT HOLLOW ROAD
PROJECT: LTE 3C WCS
CROWN BU: 876380

VICINITY MAP

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 2 LANES TO TURN LEFT ONTO STATE HWY 411 (0.3 MI). 4. TURN LEFT TO MERGE ONTO I-91 S (0.3 MI). 5. MERGE ONTO I-91 S (8.8 MI). 6. TAKE EXIT 18 FOR I-691 W TOWARD MERIDEN/WATERBURY (0.2 MI). 7. CONTINUE ONTO I-691 W (7.7 MI). 8. USE THE LEFT 2 LANES TO TAKE EXIT 1 FOR I-84 W TOWARD WATERBURY/DANBURY (1.0 MI). 9. MERGE ONTO I-84 (9.5 MI). 10. TAKE EXIT 17 FOR CT-64 TOWARD CT-63/MIDDLEBURY/WATERTOWN (0.2 MI). 11. CONTINUE ON CT-64 W. DRIVE TO GREAT HOLLOW RD IN WOODBURY (10.4 MI). 12. CONTINUE TO FOLLOW CT-64 W 3.4 MI). 13. TURN RIGHT TO STAY ON CT-64 W (4.2 MI). 14. TURN RIGHT ONTO US-6 E/MAIN ST S (0.6 MI). 15. TURN LEFT ONTO HOLLOW RD (0.2 MI). 16. CONTINUE ONTO CT-317 W (0.4 MI). 17. TURN LEFT ONTO BEAR HILL RD (0.3 MI). 18. TURN LEFT ONTO GREAT HOLLOW RD (1.1 MI).

PROJECT TEAM

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

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

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

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

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

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

GENERAL NOTES

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

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

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

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

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT2066
SITE NAME: WOODBURY CT GREAT HOLLOW RD
GREAT HOLLOW ROAD
WOODBURY, CT 06798
LITCHFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	03/20/17	ISSUED AS FINAL	KCD	NDB	NDB

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

SEAL: STATE OF CONNECTICUT · NICHOLAS D. BARILE · 28643 · REGISTERED PROFESSIONAL ENGINEER

AT&T

DRAWING TITLE: TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV
17002-EMP	T-1	0

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

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

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

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

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

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

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

19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
   - CONNECTICUT BUILDING CODE: IBC 2016 WITH LOCAL & COUNTY AMENDMENTS
   - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
   - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS

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

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

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

23. INFORMATION SHOWN ON THIS SET OF PLANS TAKEN FROM DRAWINGS PREPARED BY CENTEK ENGINEERING FOR A RECENT UPGRADE DATED 11/26/2012. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.

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BILLERICA, MA 01821

SITE NUMBER: CT2066
SITE NAME: WOODBURY CT GREAT HOLLOW RD

GREAT HOLLOW ROAD
WOODBURY, CT 06798
LITCHFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	03/20/17	ISSUED AS FINAL	KCD	NDB	NDB

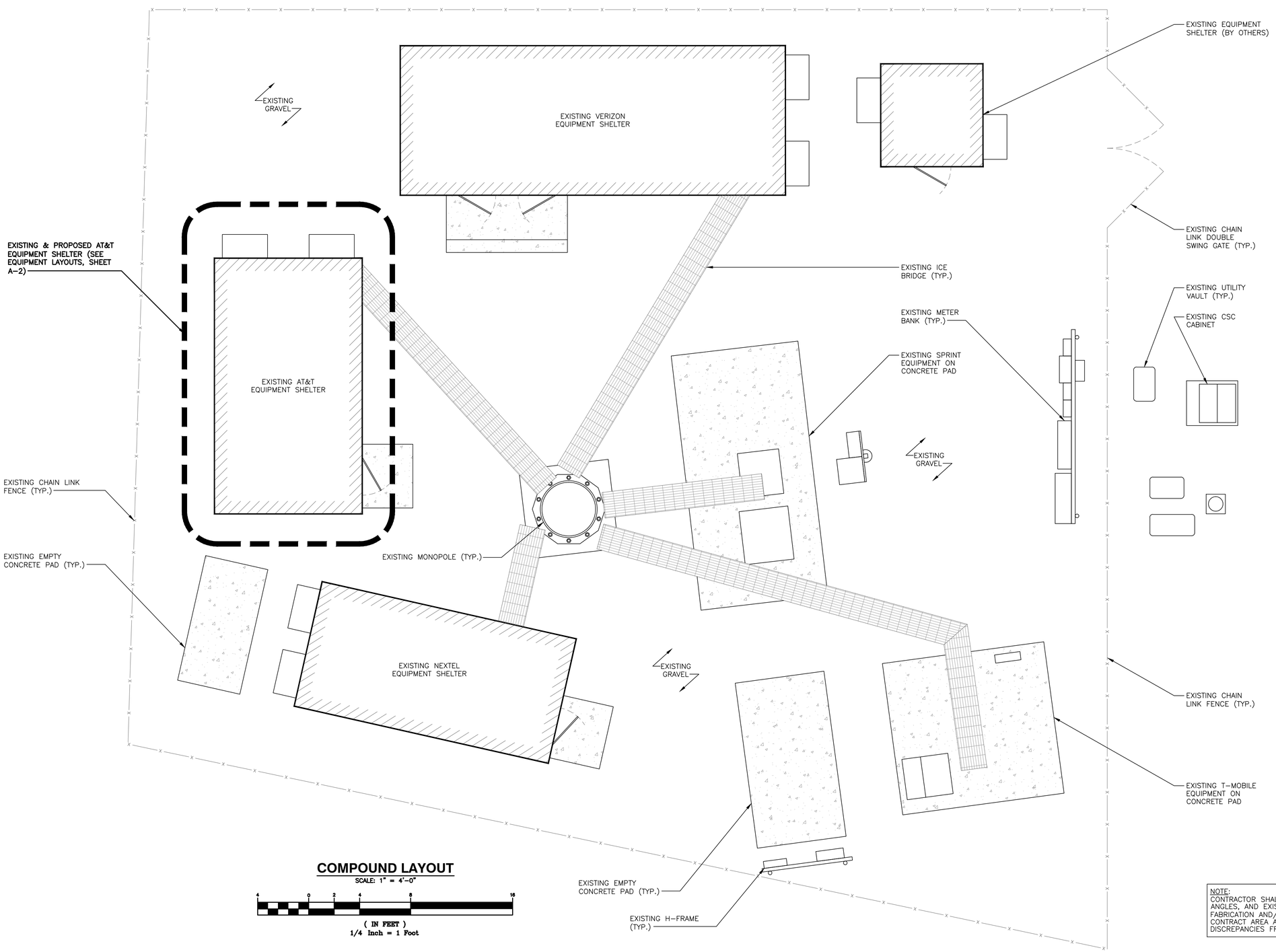
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: CJT

SEAL:
STATE OF CONNECTICUT
NICHOLAS J. MOLINARO
PROFESSIONAL ENGINEER
CERTIFICATE NO. 30643
PROFESSIONAL ENGINEER

AT&T

DRAWING TITLE:
GROUNDING & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
17002-EMP	GN-1	0



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

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0	03/20/17	ISSUED AS FINAL	KCD	NDB	NDB

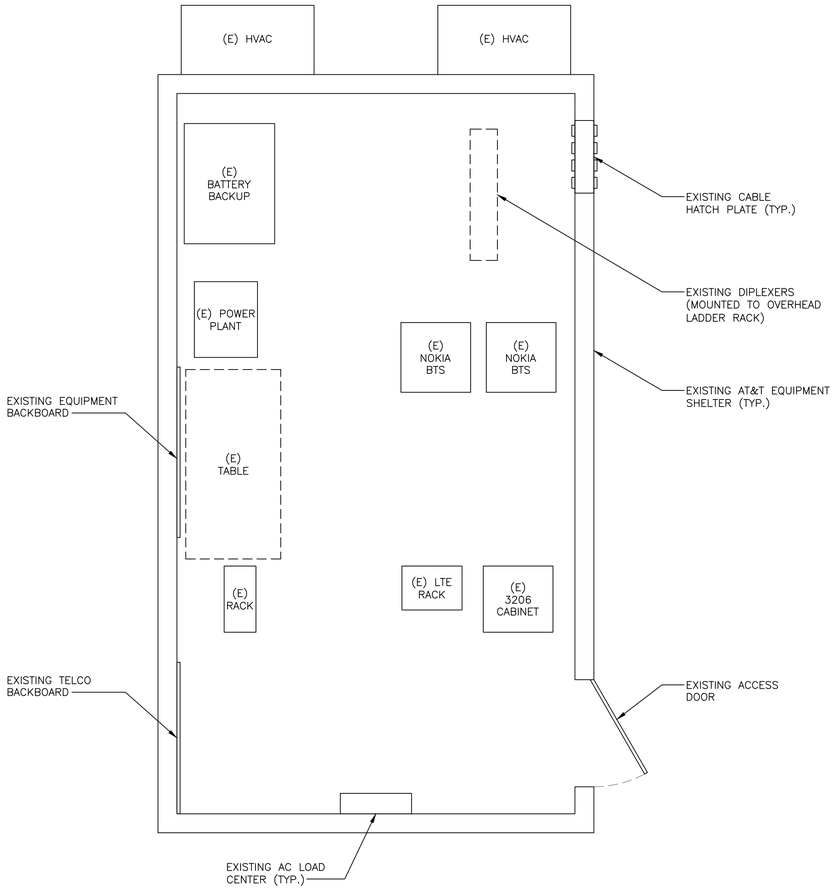
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: CJT

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

AT&T

DRAWING TITLE:
COMPOUND LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
17002-EMP	A-1	0

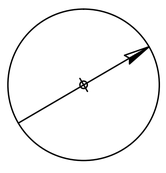


EXISTING EQUIPMENT LAYOUT

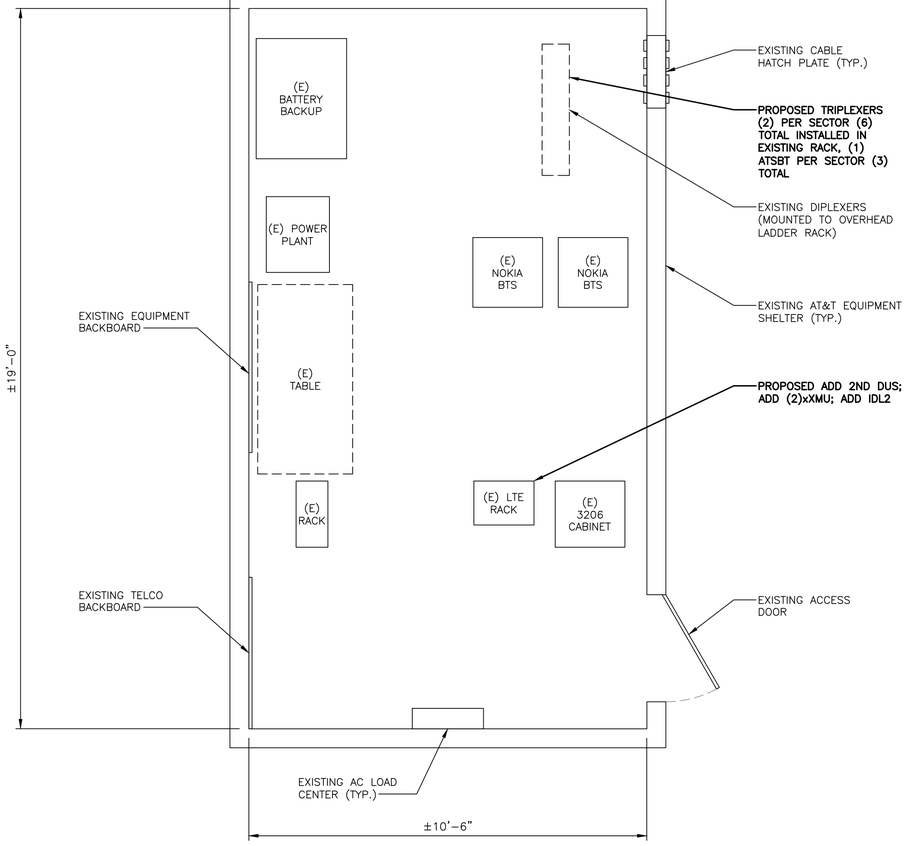
SCALE: 1/2" = 1'-0"

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot



NORTH

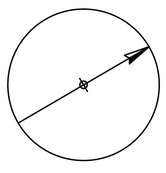


PROPOSED EQUIPMENT LAYOUT

SCALE: 1/2" = 1'-0"

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot



NORTH

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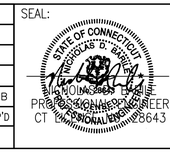
0	03/20/17	ISSUED AS FINAL	KCD	NDB	NDB

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

SEAL:



AT&T

DRAWING TITLE:
EQUIPMENT LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
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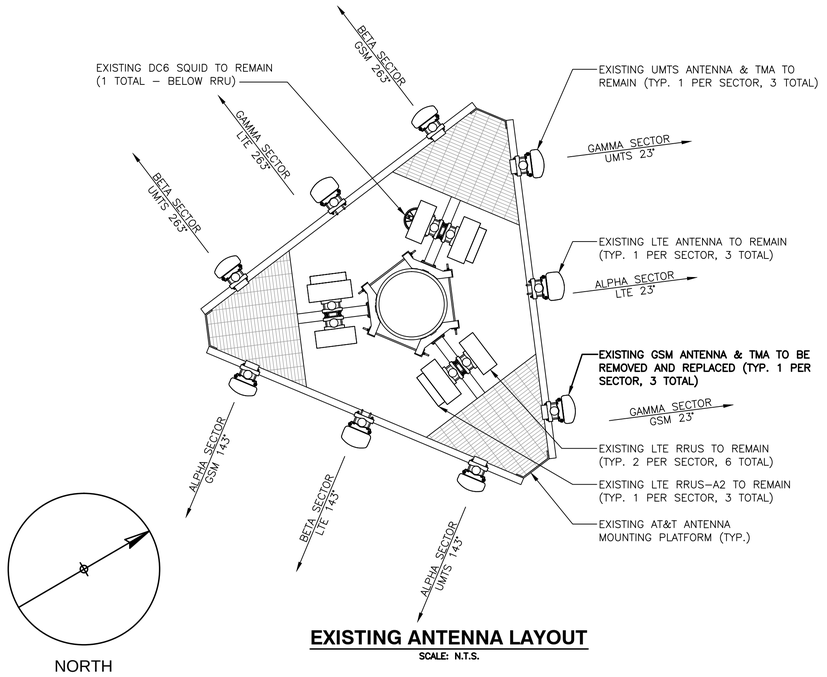
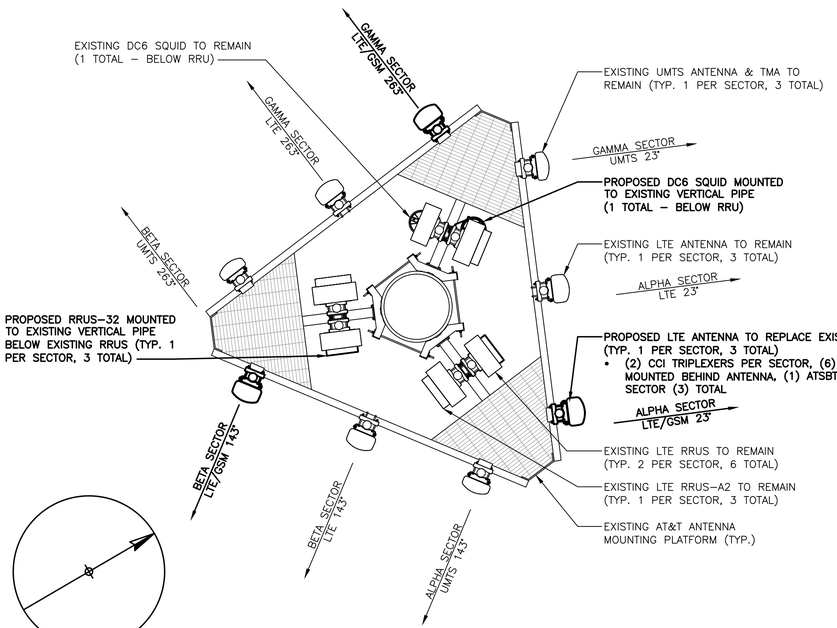


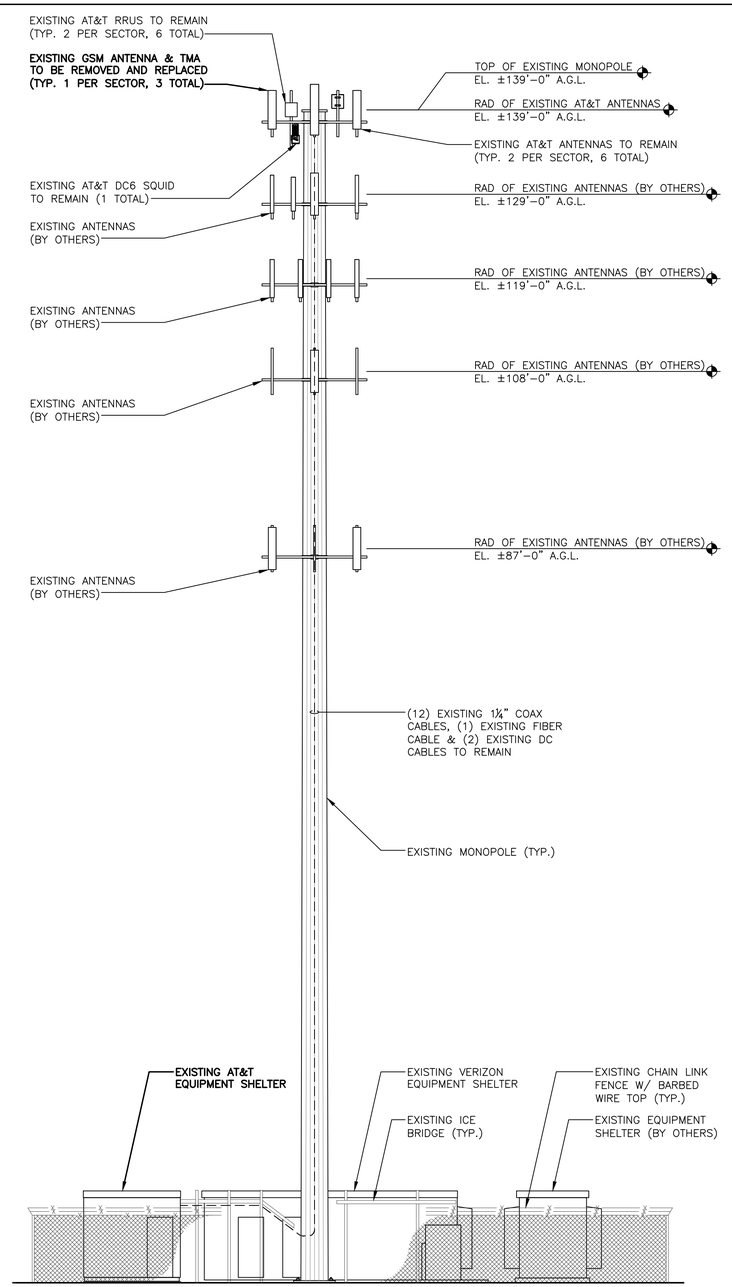
EXISTING ANTENNA LAYOUT

SCALE: N.T.S.



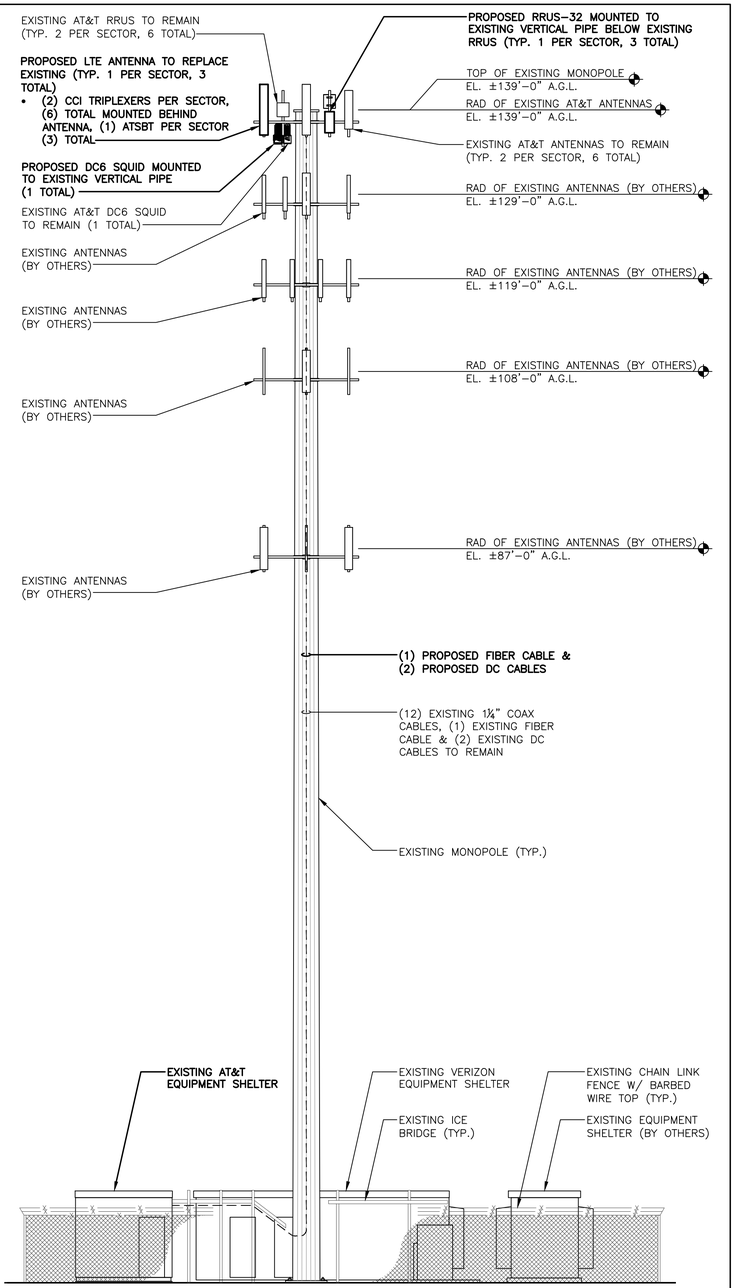
PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.



EXISTING TOWER ELEVATION

SCALE: NTS



PROPOSED TOWER ELEVATION

SCALE: NTS

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

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

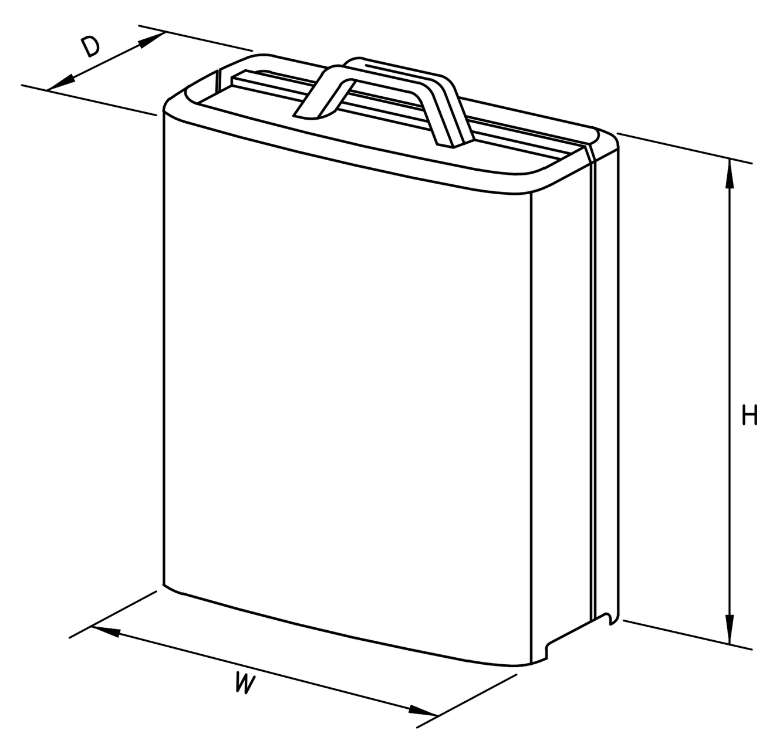
SEAL:

STATE OF CONNECTICUT
NICHOLAS D. BARTILUCCI
12/31/2018
LICENSED
PROFESSIONAL ENGINEER
CT PROFESSIONAL ENGINEER #28643

AT&T

DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
17002–EMP	A–3	0

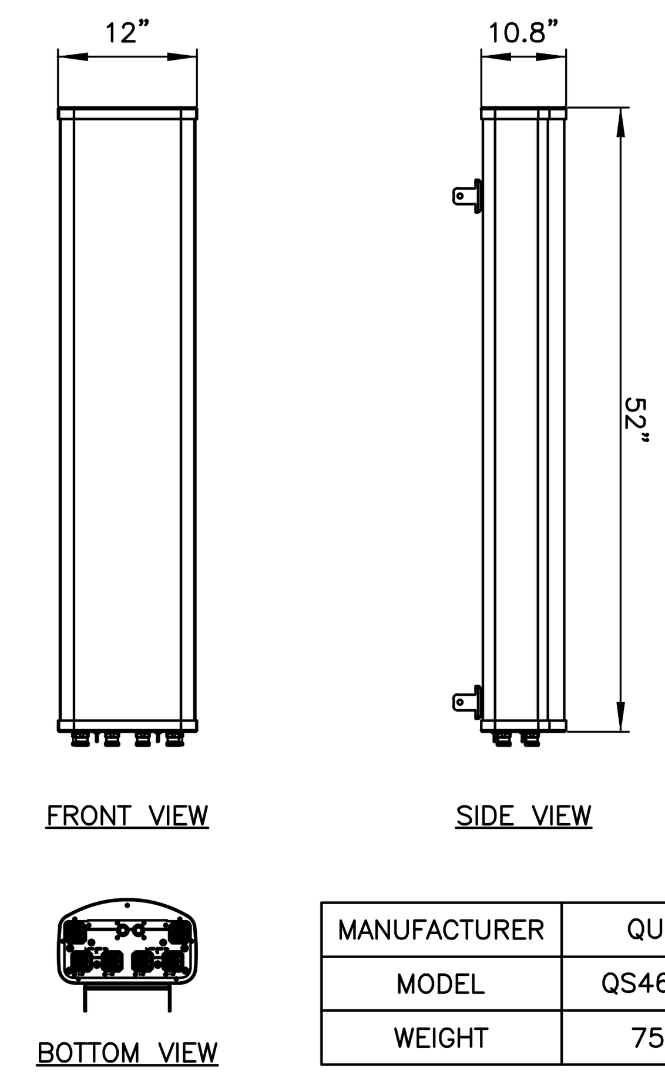


MODEL	L x W x H	WEIGHT
*RRUS−11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS−32	29.9"x13.3"x9.5"	77 LBS

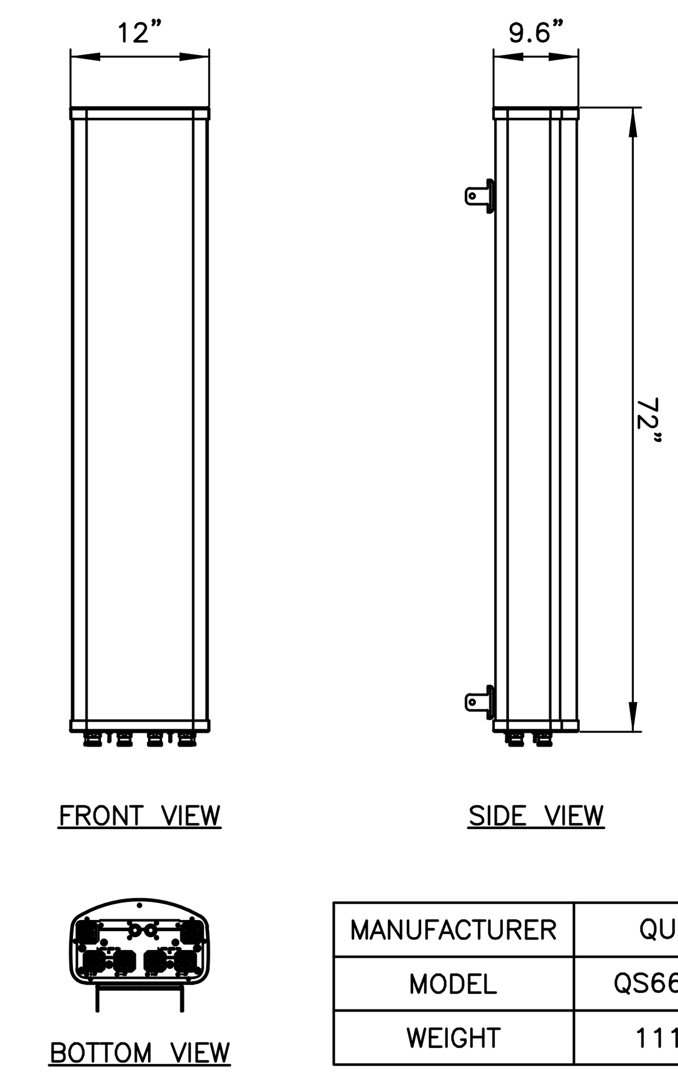
*DENOTES EXISTING.

RRUS DETAIL

SCALE: N.T.S.



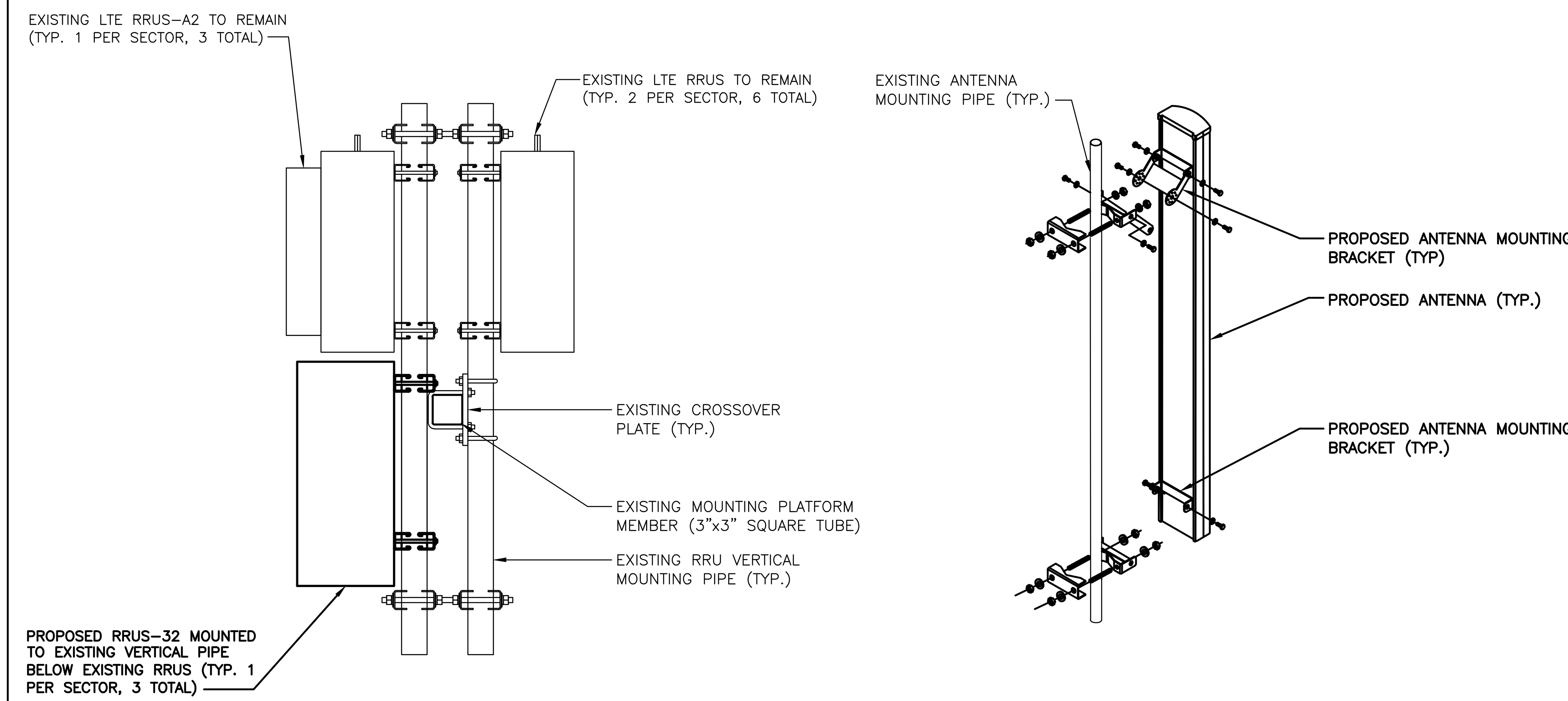
MANUFACTURER	QUINTEL
MODEL	QS46512−2
WEIGHT	75 LBS



MANUFACTURER	QUINTEL
MODEL	QS66512−2
WEIGHT	111 LBS

ANTENNA DETAIL

SCALE: N.T.S.



RRU MOUNTING DETAIL

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	−	−	−
	A3	CCI	HPA−65R−BUU−H6	72"x14.8"x9"
	A4	POWERWAVE	7770	55"x11"x5"
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	−	−	−
	B3	ANDREW	SBNHH−1D65A	55"X11.9"X7.1"
	B4	POWERWAVE	7770	55"x11"x5"
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	−	−	−
	G3	ANDREW	SBNHH−1D65A	55"X11.9"X7.1"
	G4	POWERWAVE	7770	55"x11"x5"

FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	−	−	−
	A3	CCI	HPA−65R−BUU−H6	72"x14.8"x9"
	A4	**QUINTEL**	**QS66512−2**	**72"x12"x9.6"**
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	−	−	−
	B3	ANDREW	SBNHH−1D65A	55"X11.9"X7.1"
	B4	**QUINTEL**	**QS46512−2**	**52"x12"x10.8"**
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	−	−	−
	G3	ANDREW	SBNHH−1D65A	55"X11.9"X7.1"
	G4	**QUINTEL**	**QS46512−2**	**52"x12"x10.8"**

PROPOSED RRU SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	ERICSSON	RRUS−11 (EXISTING)	20.4"x18.5"x9.5"	A2 MODULE	16.4"x15.2"x3.4"
	ERICSSON	RRUS−11 (EXISTING)	19.7"x16.9"x7.2"	−	−
	ERICSSON	**RRUS−32**	**29.9"x13.3"x9.5"**		
BETA	ERICSSON	RRUS−11 (EXISTING)	20.4"x18.5"x9.5"	A2 MODULE	16.4"x15.2"x3.4"
	ERICSSON	RRUS−11 (EXISTING)	19.7"x16.9"x7.2"	−	−
	ERICSSON	**RRUS−32**	**29.9"x13.3"x9.5"**		
GAMMA	ERICSSON	RRUS−11 (EXISTING)	20.4"x18.5"x9.5"	A2 MODULE	16.4"x15.2"x3.4"
	ERICSSON	RRUS−11 (EXISTING)	19.7"x16.9"x7.2"	−	−
	ERICSSON	**RRUS−32**	**29.9"x13.3"x9.5"**		

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0	03/20/17	ISSUED AS FINAL	KCD	NDB	NDB

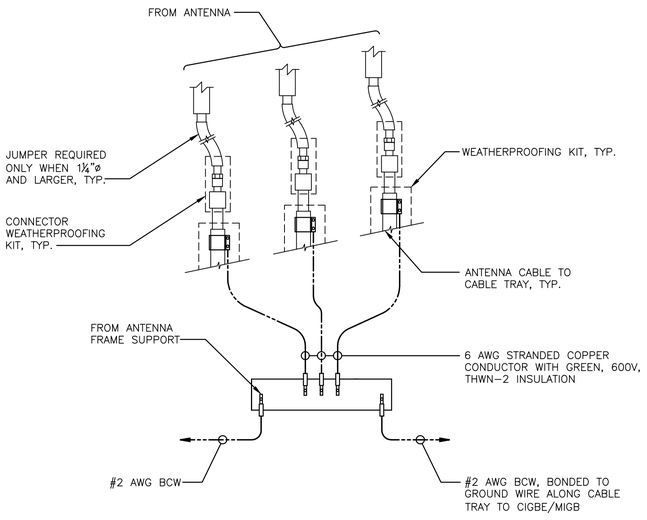
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: CJT

SEAL: STATE OF CONNECTICUT NICHOLAS D. BARILE PROFESSIONAL ENGINEER CT 28643

AT&T

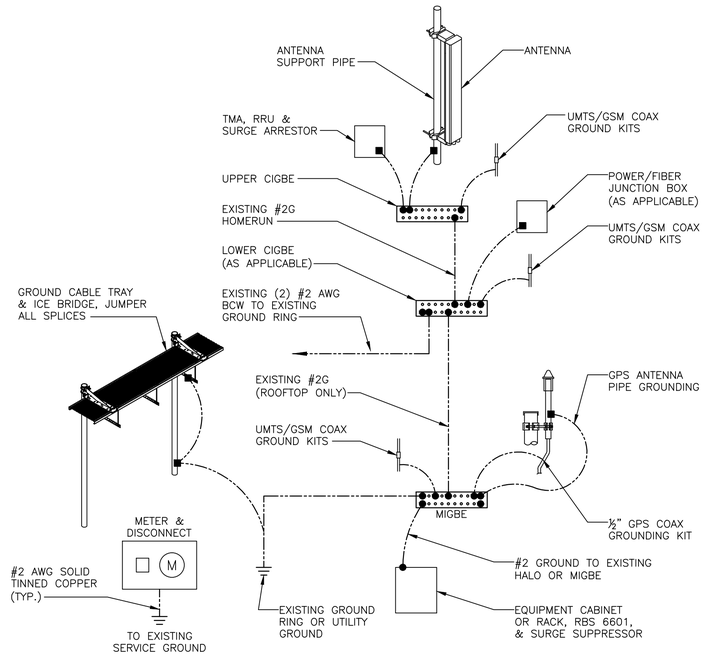
DRAWING TITLE: DETAILS

JOB NUMBER	DRAWING NUMBER	REV
17002−EMP	A−4	0



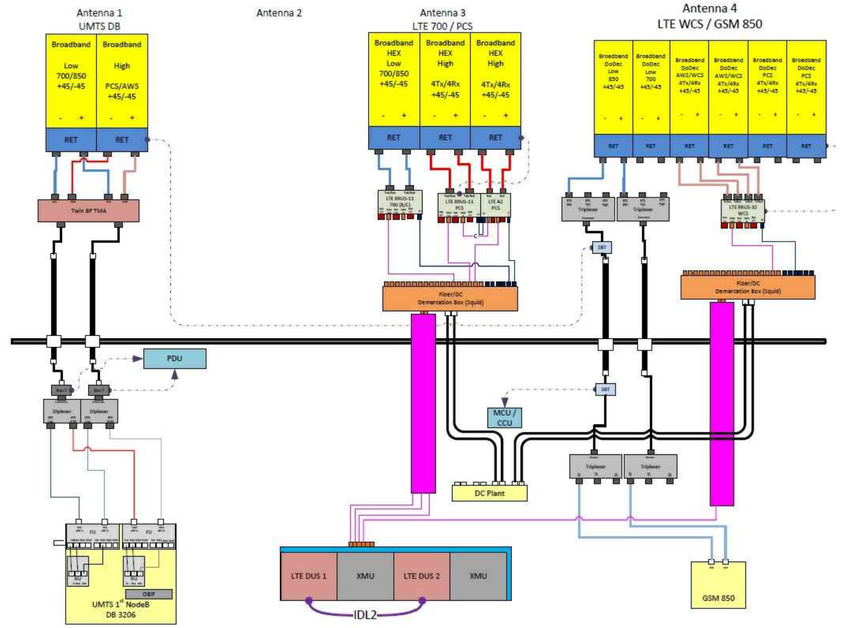
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



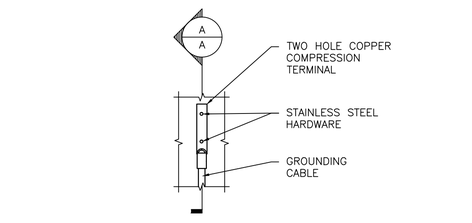
GROUNDING RISER DIAGRAM

SCALE: N.T.S.

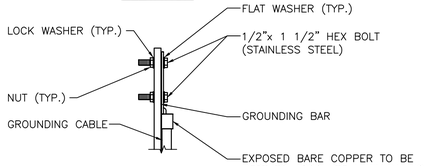


TYPICAL PLUMBING DIAGRAM (PER SECTOR)

SCALE: N.T.S.



ELEVATION



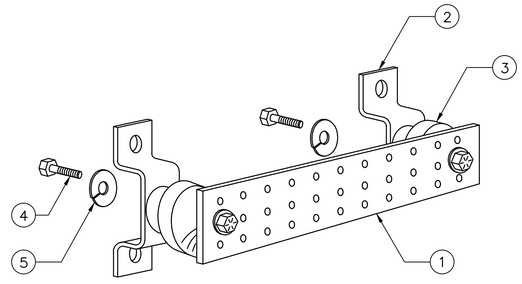
SECTION "A–A"

NOTE:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



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

NOTES:

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

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

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

GROUND BAR DETAIL

SCALE: N.T.S.

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

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT2066
SITE NAME: WOODBURY CT GREAT HOLLOW RD

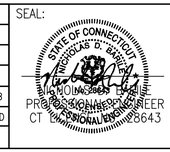
GREAT HOLLOW ROAD
WOODBURY, CT 06798
LITCHFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	03/20/17	ISSUED AS FINAL	KCD	NDB	NDB

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

SEAL:



AT&T

DRAWING TITLE:
GROUNDING, ONE–LINE DIAGRAM & DETAILS

JOB NUMBER	DRAWING NUMBER	REV
17002–EMP	G–1	0

Date: **February 22, 2017**

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

Black & Veatch Corp.
6800 W. 115th Street, Suite 2292
Overland Park, KS 66211
(913) 458-8145

Subject: **Structural Analysis Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT2066
	Carrier Site Name:	Woodbury CT
Crown Castle Designation:	**Crown Castle BU Number:**	876380
	Crown Castle Site Name:	O&G WOODBURY
	Crown Castle JDE Job Number:	418460
	Crown Castle Work Order Number:	1364906
	Crown Castle Application Number:	376398 Rev. 1
Engineering Firm Designation:	**Black & Veatch Corp. Project Number:**	194393
Site Data:	**Great Hollow Road, Woodbury, Litchfield County, CT** **Latitude *41° 31' 19.2"*, Longitude *-73° 13' 15.6"*** **138.5 Foot - Monopole Tower**	

Dear Charles McGuirt,

Black & Veatch Corp. 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 1004055, in accordance with application 376398, revision 1.

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

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, K_{zt}, of 1.000 and Risk Category II were used in this analysis. Seismic forces have been evaluated based on Site Class D with spectral response factors S_s of 0.196g and S_1 of 0.065g.

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

Structural analysis prepared by: T Sindhuri / Jason Wong

Respectfully submitted by:

Ping Jiang, P.E.
Professional Engineer

STATE OF CONNECTICUT
PING JIANG
30767
LICENSED
PROFESSIONAL ENGINEER

Feb 22, 2017

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 138.5 ft Monopole tower designed by Engineered Endeavors, Inc. in July of 2003. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

The Tower has been modified two times in the past to accommodate additional loading.

The tower has been modified per reinforcement drawings prepared by Semaan Engineering Solutions, Inc in November of 2005. Reinforcement consists of addition of gusset plates to baseplate. As there is no Post Modification Inspection Report available, this modification is considered ineffective in current analysis.

The tower has been modified per reinforcement drawings prepared by GPD Group, Inc. in December of 2011. Reinforcement consists of addition of new anchor bolts to existing baseplate. These modifications are considered effective per Post modification Inspection Report by GPD Group, Inc in January of 2013.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Antenna Supporting Structures and Antennas using a 3-second gust wind speed of 93 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B with topographic category 1 and crest height of 0 feet. Seismic forces have been evaluated based on Site Class D with spectral response factors S_s of 0.196g and S_1 of 0.065g.

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
138.0	139.0	2	andrew	SBNHH-1D65A w/ Mount Pipe	1 2	3/8 7/16	1
		1	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe			
		2	quintel technology	QS46512-2 w/ Mount Pipe			
		1	quintel technology	QS66512-2 w/ Mount Pipe			
		6	cci antennas	TPX-070821			
		3	commscope	ATSBT-TOP-FF-4G			
		3	ericsson	RRUS 11			
		3	ericsson	RRUS 32			
		3	ericsson	RRUS A2			
		1	raycap	DC6-48-60-18-8F			

Note:
1) Refer Appendix B for detailed coax layout.

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
138.0	139.0	1	dbspectra	DS9A09F36D-N	-	-	2
		3	ericsson	RRUS 11			
		1	kathrein	800 10764 w/ Mount Pipe			
		1	kmw	AM-X-CD-14-65-00T-RET			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
			communications	w/ Mount Pipe			
		1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	LGP2140X			
		6	powerwave technologies	LGP21901			
		12	powerwave technologies	7020.00	2 12 1	7/16 1 1/4 3/8	1
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	TT19-08BP111-001			
		1	raycap	DC6-48-60-18-8F			
	138.0	1	cci tower mounts	Platform Mount [LP 303-1]			
137.0	140.0	3	ericsson	TME-RRUS 11	-	-	1
	137.0	1	cci tower mounts	Pipe Mount [PM 601-3]			
136.0	148.0	1	telewave	ANT150F6	1	1 1/4	1
	136.0	1	cci tower mounts	Pipe Mount [PM 601-1]			
129.0	129.0	3	alcatel lucent	RRH2X60-AWS	19	1 5/8	1
		6	andrew	HBXX-6517DS-A2M w/ Mount Pipe			
		3	andrew	LNX-8513DS-A1M w/ Mount Pipe			
		3	antel	BXA-70063/6CF-2 w/ Mount Pipe			
		1	rfs celwave	DB-B1-6C-12AB-0Z			
		1	cci tower mounts	Platform Mount [LP 304-1]			
105.0	105.0	1	cci tower mounts	Side Arm Mount [SO 102-3]	-	-	1
		3	ericsson	TME-1900MHz RRH			
104.0	108.0	3	alcatel lucent	800 EXTERNAL NOTCH FILTER	3	1 1/4	1
		3	alcatel lucent	800MHZ RRH			
		9	rfs celwave	ACU-A20-N			
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
	104.0	1	cci tower mounts	Miscellaneous [NA 510-1]			
		1	cci tower mounts	Platform Mount [LP 714-1]			
87.0	87.0	6	andrew	ETM19V2S12UB	2 18	3/8 1 5/8	1
		1	cci tower mounts	Platform Mount [LP 305-1]			
		3	commscope	ATBT-BOTTOM-24V			
		3	commscope	LNX-6515DS-VTM w/ Mount Pipe			
		6	rfs celwave	APXV18-209014-C 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
70.0	71.0	1	lucent	KS24019-L112A	1	1/2	1
	70.0	1	cci tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Equipment To Be Removed; Not Considered In This Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
150	150	12	decibel	DB980F90	-	-
140	140	12	decibel	DB980F90	-	-
130	130	12	decibel	DB980F90	-	-
120	120	12	decibel	DB980F90	-	-
109	109	12	decibel	DB980F90	-	-
100	100	12	decibel	DB980F90	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr.Clarence Welti, P.E.	1531967	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Engineered Endeavors, Inc.	2122534	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Engineered Endeavors, Inc.	1533002	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD Group, Inc.	3030835	CCISITES
4-POST-MODIFICATION INSPECTION	GPD Group, Inc.	3420974	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	FDH Velocitel	6074629	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) This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, existing/proposed appurtenance

loading, tower/foundation details, and geotechnical data. The existing/proposed loading on the structure is based on CAD level drawings and carrier applications provided by the owner. If any of this information is not current and correct, this report should be considered obsolete and further analysis will be required.

This analysis may be affected if any assumptions are not valid or have been made in error. Black & Veatch Corp. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

4.1) Wind Results

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	138.5 - 108.5	Pole	TP24.5x17.38x0.19	1	-7.86	995.17	54.2	Pass
L2	108.5 - 83.75	Pole	TP31.88x24.5x0.25	2	-13.37	1691.15	53.5	Pass
L3	83.75 - 43	Pole	TP43.42x30.04x0.31	3	-23.86	2799.92	55.4	Pass
L4	43 - 0	Pole	TP55.5x41.02x0.31	4	-37.34	3286.31	64.2	Pass
							Summary	
						Pole (L4)	64.2	Pass
						RATING =	64.2	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Bolts	108.5	34.2	Pass
1	Top Flange Plate		19.6	Pass
1	Bottom Flange Plate		19.6	Pass
1	Anchor Rods	0	44.5	Pass
1	Base Plate		88.6	Pass
1	Base Foundation	0	41.6	Pass
1	Base Foundation Soil Interaction		44.6	Pass

4.2) Seismic Results

Tower and foundation have been analyzed based on the seismic criteria outlined in section 2 of this report. Based on the analysis, seismic loading is not governing the tower and foundation stress. Wind loading governing the tower and foundation stress.

Structure Rating (max from all components) =	88.6%

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

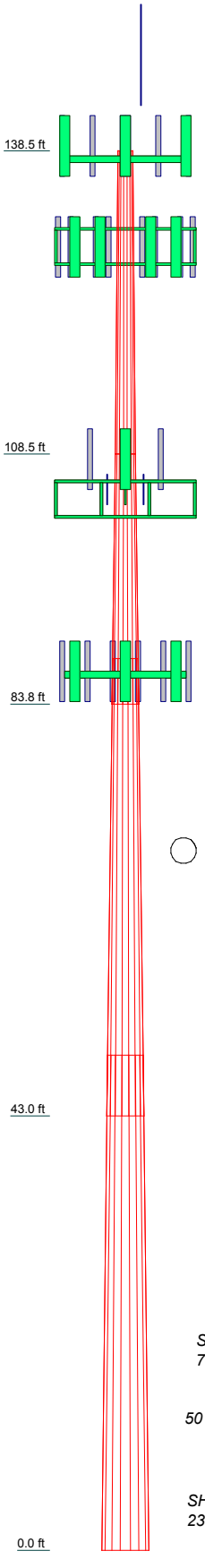
4.3) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4
Length (ft)	30.00	24.75	45.25	49.00
Number of Sides	18	18	18	18
Thickness (in)	0.19	0.25	0.31	0.31
Socket Length (ft)		4.50	6.00	
Top Dia (in)	17.38	24.50	30.04	41.02
Bot Dia (in)	24.50	31.88	43.42	55.50
Grade	A572-65			
Weight (K)	1.3	1.9	5.6	7.9



ALL REACTIONS ARE FACTORED

AXIAL 68 K

SHEAR 7 K *MOMENT 742 kip-ft*

TORQUE 0 kip-ft
50 mph WIND - 0.75 in ICE

AXIAL 37 K

SHEAR 23 K *MOMENT 2355 kip-ft*

TORQUE 1 kip-ft
REACTIONS - 93 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 303-1]	138	LNX-8513DS-A1M w/ Mount Pipe	129
7770.00 w/ Mount Pipe	138	(2) HBXX-6517DS-A2M w/ Mount Pipe	129
7770.00 w/ Mount Pipe	138	BXA-70063/6CF-2 w/ Mount Pipe	129
7770.00 w/ Mount Pipe	138	LNX-8513DS-A1M w/ Mount Pipe	129
SBNHH-1D65A w/ Mount Pipe	138	DB-B1-6C-12AB-0Z	129
HPA-65R-BUU-H6 w/ Mount Pipe	138	RRH2X60-AWS	129
SBNHH-1D65A w/ Mount Pipe	138	RRH2X60-AWS	129
QS46512-2 w/ Mount Pipe	138	RRH2X60-AWS	129
QS46512-2 w/ Mount Pipe	138	Side Arm Mount [SO 102-3]	105
QS66512-2 w/ Mount Pipe	138	3' x 2" Pipe Mount	105
(2) TT19-08BP111-001	138	3' x 2" Pipe Mount	105
(2) TT19-08BP111-001	138	3' x 2" Pipe Mount	105
(2) TT19-08BP111-001	138	TME-1900MHz RRH	105
(4) 7020.00	138	TME-1900MHz RRH	105
(4) 7020.00	138	TME-1900MHz RRH	105
(4) 7020.00	138	Platform Mount [LP 714-1]	104
RRUS A2	138	Miscellaneous [NA 510-1]	104
RRUS A2	138	APXVSPP18-C-A20 w/ Mount Pipe	104
RRUS A2	138	APXVSPP18-C-A20 w/ Mount Pipe	104
RRUS 11	138	APXVSPP18-C-A20 w/ Mount Pipe	104
RRUS 11	138	(3) ACU-A20-N	104
RRUS 11	138	(3) ACU-A20-N	104
(2) TPX-070821	138	(3) ACU-A20-N	104
(2) TPX-070821	138	800 EXTERNAL NOTCH FILTER	104
(2) TPX-070821	138	800 EXTERNAL NOTCH FILTER	104
ATSBT-TOP-FF-4G	138	800 EXTERNAL NOTCH FILTER	104
ATSBT-TOP-FF-4G	138	800MHZ RRH	104
ATSBT-TOP-FF-4G	138	800MHZ RRH	104
RRUS 32	138	800MHZ RRH	104
RRUS 32	138	Platform Mount [LP 305-1]	87
RRUS 32	138	(2) APXV18-209014-C w/ Mount Pipe	87
DC6-48-60-18-8F	138	LNX-6515DS-VTM w/ Mount Pipe	87
DC6-48-60-18-8F	138	(2) APXV18-209014-C w/ Mount Pipe	87
(2) TME-RRUS 11	137	LNX-6515DS-VTM w/ Mount Pipe	87
TME-RRUS 11	137	(2) APXV18-209014-C w/ Mount Pipe	87
TME-RRUS 11	137	LNX-6515DS-VTM w/ Mount Pipe	87
Pipe Mount [PM 601-1]	137	(2) ETM19V2S12UB	87
Pipe Mount [PM 601-3]	136	(2) ETM19V2S12UB	87
ANT150F6	136	(2) ETM19V2S12UB	87
Platform Mount [LP 304-1]	129	ATBT-BOTTOM-24V	87
(2) HBXX-6517DS-A2M w/ Mount Pipe	129	ATBT-BOTTOM-24V	87
BXA-70063/6CF-2 w/ Mount Pipe	129	ATBT-BOTTOM-24V	87
LNX-8513DS-A1M w/ Mount Pipe	129	Side Arm Mount [SO 701-1]	70
(2) HBXX-6517DS-A2M w/ Mount Pipe	129	KS24019-L112A	70
BXA-70063/6CF-2 w/ Mount Pipe	129		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 64.2%

BLACK & VEATCH
Building a world of difference.

Black & Veatch Corp.
6800 W. 115th Street, Suite 2292
Overland Park, KS 66211
Phone: (913) 458-8145
FAX: -

Job: *O&G WOODBURY (BU#876380)*			
Project: *194393 (876380.1364906)*			
Client: Crown Castle	Drawn by: T. Sindhuri		App'd:
Code: TIA-222-G	Date: 02/21/17		Scale: NTS
Path: Y:\TELECOM\2017\Engineering\Projects\CC\SA Sites\876380\876380.1364906 - TSA\Structural\876380.1364906 Structural Analysis.eri			Dwg No. E-1

Tower Input Data

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

Tower is located in Litchfield County, Connecticut.
Basic wind speed of 93 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.75 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
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				

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	138.50-108.50	30.00	0.00	18	17.38	24.50	0.19	0.75	A572-65 (65 ksi)
L2	108.50-83.75	24.75	4.50	18	24.50	31.88	0.25	1.00	A572-65 (65 ksi)
L3	83.75-43.00	45.25	6.00	18	30.04	43.42	0.31	1.25	A572-65 (65 ksi)
L4	43.00-0.00	49.00		18	41.02	55.50	0.31	1.25	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	17.64	10.23	381.75	6.10	8.83	43.25	764.01	5.12	2.73	14.549
	24.88	14.47	1080.52	8.63	12.45	86.82	2162.47	7.24	3.98	21.237
L2	24.88	19.24	1429.62	8.61	12.45	114.87	2861.11	9.62	3.87	15.488
	32.37	25.10	3172.36	11.23	16.20	195.88	6348.89	12.55	5.17	20.684
L3	31.85	29.48	3291.47	10.55	15.26	215.70	6587.27	14.74	4.74	15.158
	44.09	42.76	10038.13	15.30	22.06	455.09	20089.47	21.38	7.09	22.694
L4	43.45	40.38	8453.52	14.45	20.84	405.67	16918.16	20.19	6.67	21.343
	56.36	54.74	21062.82	19.59	28.19	747.07	42153.36	27.37	9.22	29.498

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
L1 138.50-108.50				1	1	1			
L2 108.50-83.75				1	1	1			
L3 83.75-43.00				1	1	1			
L4 43.00-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	A	Surface Ar (CaAa)	138.50 - 4.00	1	1	0.000 0.020	0.38		0.22
LDF7-50A(1-5/8)	C	Surface Ar (CaAa)	129.00 - 4.00	7	7	0.000 0.364	1.98		0.82
LDF4-50A(1/2)	C	Surface Ar (CaAa)	70.00 - 4.00	1	1	-0.500 -0.486	0.63		0.15

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
**********								
LDF2-50(3/8)	A	No	Inside Pole	87.00 - 4.00	2	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08
LDF7-50A(1-5/8)	A	No	Inside Pole	87.00 - 4.00	18	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
HB114-1-0813U4-M5J(1-1/4)	A	No	Inside Pole	104.00 - 4.00	3	No Ice	0.00	1.20
						1/2" Ice	0.00	1.20
						1" Ice	0.00	1.20
AVA6-50(1-1/4)	B	No	Inside Pole	136.00 - 4.00	1	No Ice	0.00	0.46
						1/2" Ice	0.00	0.46
						1" Ice	0.00	0.46

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LCF114-50J(1-1/4)	B	No	Inside Pole	138.00 - 4.00	2	No Ice	0.00	0.70
						1/2" Ice	0.00	0.70
						1" Ice	0.00	0.70
LDF7-50A(1-5/8)	C	No	Inside Pole	129.00 - 4.00	11	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	129.00 - 4.00	1	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
FB-L98B-002-75000(3/8)	C	No	Inside Pole	138.00 - 10.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
WR-VG122ST-BRDA(7/16)	C	No	Inside Pole	138.00 - 10.00	2	No Ice	0.00	0.14
						1/2" Ice	0.00	0.14
						1" Ice	0.00	0.14
FB-L98B-002-75000(3/8)	C	No	Inside Pole	138.00 - 4.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
WR-VG122ST-BRDA(7/16)	C	No	Inside Pole	138.00 - 4.00	2	No Ice	0.00	0.14
						1/2" Ice	0.00	0.14
						1" Ice	0.00	0.14
LCF114-50J(1-1/4)	C	No	Inside Pole	138.00 - 10.00	10	No Ice	0.00	0.70
						1/2" Ice	0.00	0.70
						1" Ice	0.00	0.70

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	138.50-108.50	A	0.000	0.000	1.125	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.05
		C	0.000	0.000	28.413	0.000	0.56
L2	108.50-83.75	A	0.000	0.000	0.928	0.000	0.13
		B	0.000	0.000	0.000	0.000	0.05
		C	0.000	0.000	34.304	0.000	0.59
L3	83.75-43.00	A	0.000	0.000	1.528	0.000	0.76
		B	0.000	0.000	0.000	0.000	0.08
		C	0.000	0.000	58.167	0.000	0.97
L4	43.00-0.00	A	0.000	0.000	1.462	0.000	0.73
		B	0.000	0.000	0.000	0.000	0.07
		C	0.000	0.000	56.491	0.000	0.89

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	138.50-108.50	A	1.710	0.000	0.000	11.388	0.000	0.14
		B		0.000	0.000	0.000	0.000	0.05
		C		0.000	0.000	44.282	0.000	1.08
L2	108.50-83.75	A	1.668	0.000	0.000	9.186	0.000	0.23
		B		0.000	0.000	0.000	0.000	0.05
		C		0.000	0.000	53.202	0.000	1.20
L3	83.75-43.00	A	1.600	0.000	0.000	15.125	0.000	0.93

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	0.000	0.000	0.08
		C		0.000	0.000	98.292	0.000	2.11
L4	43.00-0.00	A	1.431	0.000	0.000	13.939	0.000	0.88
		B		0.000	0.000	0.000	0.000	0.07
		C		0.000	0.000	98.077	0.000	1.98

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	138.50-108.50	-0.42	0.94	-0.58	0.82
L2	108.50-83.75	-0.54	1.26	-0.71	1.17
L3	83.75-43.00	-0.54	1.37	-0.62	1.39
L4	43.00-0.00	-0.51	1.35	-0.58	1.50

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Safety Line 3/8	108.50 - 138.50	1.0000	1.0000
L1	12	LDF7-50A(1-5/8)	108.50 - 129.00	1.0000	1.0000
L2	1	Safety Line 3/8	83.75 - 108.50	1.0000	1.0000
L2	12	LDF7-50A(1-5/8)	83.75 - 108.50	1.0000	1.0000
L2	20	LDF4-50A(1/2)	83.75 - 70.00	1.0000	1.0000
L3	1	Safety Line 3/8	43.00 - 83.75	1.0000	1.0000
L3	12	LDF7-50A(1-5/8)	43.00 - 83.75	1.0000	1.0000
L3	20	LDF4-50A(1/2)	43.00 - 70.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Platform Mount [LP 303-1]	C	None		0.00	138.00	No Ice	14.66	14.66	1.25
						1/2" Ice	18.87	18.87	1.48
						1" Ice	23.08	23.08	1.71
7770.00 w/ Mount Pipe	A	From Face	3.00 -6.00 1.00	23.00	138.00	No Ice	5.75	4.25	0.06
						1/2" Ice	6.18	5.01	0.10
						1" Ice	6.61	5.71	0.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
7770.00 w/ Mount Pipe	B	From Face	3.00 -6.00 1.00	23.00	138.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	C	From Face	3.00 -6.00 1.00	23.00	138.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
SBNHH-1D65A w/ Mount Pipe	A	From Face	3.00 0.00 1.00	23.00	138.00	No Ice 1/2" Ice 1" Ice	6.19 6.64 7.07	5.25 6.04 6.74	0.05 0.11 0.17
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Face	3.00 0.00 1.00	23.00	138.00	No Ice 1/2" Ice 1" Ice	9.90 10.47 11.01	8.11 9.30 10.21	0.08 0.16 0.25
SBNHH-1D65A w/ Mount Pipe	C	From Face	3.00 0.00 1.00	23.00	138.00	No Ice 1/2" Ice 1" Ice	6.19 6.64 7.07	5.25 6.04 6.74	0.05 0.11 0.17
QS46512-2 w/ Mount Pipe	A	From Face	3.00 6.00 1.00	23.00	138.00	No Ice 1/2" Ice 1" Ice	5.79 6.21 6.62	5.88 6.58 7.25	0.12 0.18 0.24
QS46512-2 w/ Mount Pipe	C	From Face	3.00 6.00 1.00	23.00	138.00	No Ice 1/2" Ice 1" Ice	5.79 6.21 6.62	5.88 6.58 7.25	0.12 0.18 0.24
QS66512-2 w/ Mount Pipe	B	From Face	3.00 6.00 1.00	23.00	138.00	No Ice 1/2" Ice 1" Ice	8.37 8.93 9.46	8.46 9.66 10.55	0.14 0.21 0.30
(2) TT19-08BP111-001	A	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	0.55 0.65 0.75	0.45 0.53 0.63	0.02 0.02 0.03
(2) TT19-08BP111-001	B	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	0.55 0.65 0.75	0.45 0.53 0.63	0.02 0.02 0.03
(2) TT19-08BP111-001	C	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	0.55 0.65 0.75	0.45 0.53 0.63	0.02 0.02 0.03
(4) 7020.00	A	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	0.10 0.15 0.20	0.17 0.24 0.31	0.00 0.01 0.01
(4) 7020.00	B	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	0.10 0.15 0.20	0.17 0.24 0.31	0.00 0.01 0.01
(4) 7020.00	C	From Face	1.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	0.10 0.15 0.20	0.17 0.24 0.31	0.00 0.01 0.01

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 K
RRUS A2	A	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	1.60 1.76 1.92	0.39 0.48 0.58	0.02 0.03 0.04
RRUS A2	B	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	1.60 1.76 1.92	0.39 0.48 0.58	0.02 0.03 0.04
RRUS A2	C	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	1.60 1.76 1.92	0.39 0.48 0.58	0.02 0.03 0.04
RRUS 11	A	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.10
RRUS 11	B	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.10
RRUS 11	C	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.10
(2) TPX-070821	A	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	0.47 0.56 0.66	0.10 0.15 0.20	0.01 0.01 0.02
(2) TPX-070821	B	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	0.47 0.56 0.66	0.10 0.15 0.20	0.01 0.01 0.02
(2) TPX-070821	C	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	0.47 0.56 0.66	0.10 0.15 0.20	0.01 0.01 0.02
ATSBT-TOP-FF-4G	A	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	0.17 0.23 0.29	0.09 0.14 0.19	0.00 0.00 0.01
ATSBT-TOP-FF-4G	B	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	0.17 0.23 0.29	0.09 0.14 0.19	0.00 0.00 0.01
ATSBT-TOP-FF-4G	C	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	0.17 0.23 0.29	0.09 0.14 0.19	0.00 0.00 0.01
RRUS 32	A	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	2.86 3.08 3.32	1.78 1.97 2.17	0.06 0.08 0.10
RRUS 32	B	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	2.86 3.08 3.32	1.78 1.97 2.17	0.06 0.08 0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRUS 32	C	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	2.86 3.08 3.32	1.78 1.97 2.17	0.06 0.08 0.10
DC6-48-60-18-8F	B	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	0.92 1.46 1.64	0.92 1.46 1.64	0.02 0.04 0.06
DC6-48-60-18-8F	C	From Face	3.00 0.00 1.00	0.00	138.00	No Ice 1/2" Ice 1" Ice	0.92 1.46 1.64	0.92 1.46 1.64	0.02 0.04 0.06
**********									
Pipe Mount [PM 601-3]	C	None		0.00	136.00	No Ice 1/2" Ice 1" Ice	4.39 5.48 6.57	4.39 5.48 6.57	0.20 0.24 0.28
(2) TME-RRUS 11	A	From Face	1.00 0.00 3.00	0.00	137.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.10
TME-RRUS 11	B	From Face	1.00 0.00 3.00	0.00	137.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.10
TME-RRUS 11	C	From Face	1.00 0.00 3.00	0.00	137.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.10
**********									
Pipe Mount [PM 601-1]	C	None		0.00	137.00	No Ice 1/2" Ice 1" Ice	3.00 3.74 4.48	0.90 1.12 1.34	0.07 0.08 0.09
ANT150F6	B	From Face	1.00 0.00 12.00	0.00	136.00	No Ice 1/2" Ice 1" Ice	4.80 6.83 8.87	4.80 6.83 8.87	0.03 0.07 0.11
**********									
Platform Mount [LP 304-1]	A	None		0.00	129.00	No Ice 1/2" Ice 1" Ice	17.46 22.44 27.42	17.46 22.44 27.42	1.35 1.62 1.90
(2) HBXX-6517DS-A2M w/ Mount Pipe	A	From Face	4.00 0.00 0.00	30.00	129.00	No Ice 1/2" Ice 1" Ice	8.77 9.34 9.89	6.96 8.18 9.14	0.07 0.14 0.21
BXA-70063/6CF-2 w/ Mount Pipe	A	From Face	4.00 -2.50 0.00	30.00	129.00	No Ice 1/2" Ice 1" Ice	7.81 8.36 8.87	5.40 6.55 7.41	0.04 0.10 0.17
LNX-8513DS-A1M w/ Mount Pipe	A	From Face	4.00 2.50 0.00	30.00	129.00	No Ice 1/2" Ice 1" Ice	8.41 8.97 9.50	7.08 8.27 9.18	0.06 0.13 0.21
(2) HBXX-6517DS-A2M w/	B	From Face	4.00	30.00	129.00	No Ice	8.77	6.96	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.00 0.00			1/2" Ice 1" Ice	9.34 9.89	8.18 9.14	0.14 0.21
BXA-70063/6CF-2 w/ Mount Pipe	B	From Face	4.00 -2.50 0.00	30.00	129.00	No Ice 1/2" Ice 1" Ice	7.81 8.36 8.87	5.40 6.55 7.41	0.04 0.10 0.17
LNX-8513DS-A1M w/ Mount Pipe	B	From Face	4.00 2.50 0.00	30.00	129.00	No Ice 1/2" Ice 1" Ice	8.41 8.97 9.50	7.08 8.27 9.18	0.06 0.13 0.21
(2) HBXX-6517DS-A2M w/ Mount Pipe	C	From Face	4.00 0.00 0.00	30.00	129.00	No Ice 1/2" Ice 1" Ice	8.77 9.34 9.89	6.96 8.18 9.14	0.07 0.14 0.21
BXA-70063/6CF-2 w/ Mount Pipe	C	From Face	4.00 -2.50 0.00	30.00	129.00	No Ice 1/2" Ice 1" Ice	7.81 8.36 8.87	5.40 6.55 7.41	0.04 0.10 0.17
LNX-8513DS-A1M w/ Mount Pipe	C	From Face	4.00 2.50 0.00	30.00	129.00	No Ice 1/2" Ice 1" Ice	8.41 8.97 9.50	7.08 8.27 9.18	0.06 0.13 0.21
DB-B1-6C-12AB-0Z	A	From Face	4.00 0.00 0.00	0.00	129.00	No Ice 1/2" Ice 1" Ice	3.36 3.60 3.84	2.19 2.39 2.61	0.02 0.05 0.08
RRH2X60-AWS	A	From Face	4.00 0.00 0.00	0.00	129.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	2.10 2.34 2.58	0.06 0.08 0.11
RRH2X60-AWS	B	From Face	4.00 0.00 0.00	0.00	129.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	2.10 2.34 2.58	0.06 0.08 0.11
RRH2X60-AWS	C	From Face	4.00 0.00 0.00	0.00	129.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	2.10 2.34 2.58	0.06 0.08 0.11
**********									
Side Arm Mount [SO 102-3]	C	None		0.00	105.00	No Ice 1/2" Ice 1" Ice	3.00 3.48 3.96	3.00 3.48 3.96	0.08 0.11 0.14
3' x 2" Pipe Mount	A	From Face	1.00 0.00 0.00	0.00	105.00	No Ice 1/2" Ice 1" Ice	0.58 0.77 0.97	0.58 0.77 0.97	0.01 0.02 0.02
3' x 2" Pipe Mount	B	From Face	1.00 0.00 0.00	0.00	105.00	No Ice 1/2" Ice 1" Ice	0.58 0.77 0.97	0.58 0.77 0.97	0.01 0.02 0.02
3' x 2" Pipe Mount	C	From Face	1.00 0.00 0.00	0.00	105.00	No Ice 1/2" Ice 1" Ice	0.58 0.77 0.97	0.58 0.77 0.97	0.01 0.02 0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
TME-1900MHz RRH	A	From Face	1.00 0.00 0.00	0.00	105.00	No Ice 1/2" Ice 1" Ice	2.49 2.70 2.91	3.26 3.48 3.72	0.04 0.08 0.11
TME-1900MHz RRH	B	From Face	1.00 0.00 0.00	0.00	105.00	No Ice 1/2" Ice 1" Ice	2.49 2.70 2.91	3.26 3.48 3.72	0.04 0.08 0.11
TME-1900MHz RRH	C	From Face	1.00 0.00 0.00	0.00	105.00	No Ice 1/2" Ice 1" Ice	2.49 2.70 2.91	3.26 3.48 3.72	0.04 0.08 0.11
**********									
Platform Mount [LP 714-1]	C	None		0.00	104.00	No Ice 1/2" Ice 1" Ice	37.47 44.23 50.99	37.47 44.23 50.99	1.60 2.04 2.48
Miscellaneous [NA 510-1]	C	None		0.00	104.00	No Ice 1/2" Ice 1" Ice	6.00 8.50 11.00	6.00 8.50 11.00	0.26 0.34 0.42
APXVSPP18-C-A20 w/ Mount Pipe	A	From Face	3.00 0.00 4.00	30.00	104.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	6.95 8.13 9.02	0.08 0.15 0.23
APXVSPP18-C-A20 w/ Mount Pipe	B	From Face	3.00 0.00 4.00	30.00	104.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	6.95 8.13 9.02	0.08 0.15 0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From Face	3.00 0.00 4.00	30.00	104.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	6.95 8.13 9.02	0.08 0.15 0.23
(3) ACU-A20-N	A	From Face	3.00 0.00 4.00	0.00	104.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.12 0.16 0.21	0.00 0.00 0.00
(3) ACU-A20-N	B	From Face	3.00 0.00 4.00	0.00	104.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.12 0.16 0.21	0.00 0.00 0.00
(3) ACU-A20-N	C	From Face	3.00 0.00 4.00	0.00	104.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.12 0.16 0.21	0.00 0.00 0.00
800 EXTERNAL NOTCH FILTER	A	From Face	3.00 0.00 4.00	0.00	104.00	No Ice 1/2" Ice 1" Ice	0.66 0.76 0.87	0.32 0.40 0.48	0.01 0.02 0.02
800 EXTERNAL NOTCH FILTER	B	From Face	3.00 0.00 4.00	0.00	104.00	No Ice 1/2" Ice 1" Ice	0.66 0.76 0.87	0.32 0.40 0.48	0.01 0.02 0.02
800 EXTERNAL NOTCH FILTER	C	From Face	3.00 0.00 4.00	0.00	104.00	No Ice 1/2" Ice	0.66 0.76 0.87	0.32 0.40 0.48	0.01 0.02 0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
800MHZ RRH	A	From Face	3.00	0.00	104.00	No Ice	2.13	1.77	0.05
			0.00			1/2" Ice	2.32	1.95	0.07
			4.00			1" Ice	2.51	2.13	0.10
800MHZ RRH	B	From Face	3.00	0.00	104.00	No Ice	2.13	1.77	0.05
			0.00			1/2" Ice	2.32	1.95	0.07
			4.00			1" Ice	2.51	2.13	0.10
800MHZ RRH	C	From Face	3.00	0.00	104.00	No Ice	2.13	1.77	0.05
			0.00			1/2" Ice	2.32	1.95	0.07
			4.00			1" Ice	2.51	2.13	0.10
**********									
Platform Mount [LP 305-1]	C	None		0.00	87.00	No Ice	18.01	18.01	1.12
						1/2" Ice	23.33	23.33	1.35
						1" Ice	28.65	28.65	1.58
(2) APXV18-209014-C w/ Mount Pipe	A	From Face	3.00	0.00	87.00	No Ice	3.72	3.31	0.04
			0.00			1/2" Ice	4.13	4.02	0.07
			0.00			1" Ice	4.54	4.68	0.11
LNX-6515DS-VTM w/ Mount Pipe	B	From Face	3.00	0.00	87.00	No Ice	11.68	9.84	0.08
			0.00			1/2" Ice	12.40	11.37	0.17
			0.00			1" Ice	13.14	12.91	0.27
(2) APXV18-209014-C w/ Mount Pipe	B	From Face	3.00	0.00	87.00	No Ice	3.72	3.31	0.04
			0.00			1/2" Ice	4.13	4.02	0.07
			0.00			1" Ice	4.54	4.68	0.11
LNX-6515DS-VTM w/ Mount Pipe	A	From Face	3.00	0.00	87.00	No Ice	11.68	9.84	0.08
			0.00			1/2" Ice	12.40	11.37	0.17
			0.00			1" Ice	13.14	12.91	0.27
(2) APXV18-209014-C w/ Mount Pipe	C	From Face	3.00	0.00	87.00	No Ice	3.72	3.31	0.04
			0.00			1/2" Ice	4.13	4.02	0.07
			0.00			1" Ice	4.54	4.68	0.11
LNX-6515DS-VTM w/ Mount Pipe	C	From Face	3.00	0.00	87.00	No Ice	11.68	9.84	0.08
			0.00			1/2" Ice	12.40	11.37	0.17
			0.00			1" Ice	13.14	12.91	0.27
(2) ETM19V2S12UB	A	From Face	3.00	0.00	87.00	No Ice	0.72	0.20	0.01
			0.00			1/2" Ice	0.82	0.27	0.02
			0.00			1" Ice	0.94	0.35	0.02
(2) ETM19V2S12UB	B	From Face	3.00	0.00	87.00	No Ice	0.72	0.20	0.01
			0.00			1/2" Ice	0.82	0.27	0.02
			0.00			1" Ice	0.94	0.35	0.02
(2) ETM19V2S12UB	C	From Face	3.00	0.00	87.00	No Ice	0.72	0.20	0.01
			0.00			1/2" Ice	0.82	0.27	0.02
			0.00			1" Ice	0.94	0.35	0.02
ATBT-BOTTOM-24V	A	From Face	3.00	0.00	87.00	No Ice	0.10	0.06	0.00
			0.00			1/2"	0.15	0.10	0.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			Ice	0.20	0.15	0.01
						1" Ice			
ATBT-BOTTOM-24V	B	From Face	3.00	0.00	87.00	No Ice	0.10	0.06	0.00
			0.00			1/2"	0.15	0.10	0.00
			0.00			Ice	0.20	0.15	0.01
						1" Ice			
ATBT-BOTTOM-24V	C	From Face	3.00	0.00	87.00	No Ice	0.10	0.06	0.00
			0.00			1/2"	0.15	0.10	0.00
			0.00			Ice	0.20	0.15	0.01
						1" Ice			
**********									
Side Arm Mount [SO 701-1]	B	From Leg	0.00	0.00	70.00	No Ice	0.85	1.67	0.07
			0.00			1/2"	1.14	2.34	0.08
			0.00			Ice	1.43	3.01	0.09
						1" Ice			
KS24019-L112A	B	From Leg	3.00	0.00	70.00	No Ice	0.14	0.14	0.01
			0.00			1/2"	0.20	0.20	0.01
			1.00			Ice	0.26	0.26	0.01
						1" Ice			

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp

Comb. No.	Description
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	138.5 - 108.5	Pole	Max Tension	36	0.00	-0.00	-0.00
			Max. Compression	26	-20.31	-0.49	-0.04
			Max. Mx	8	-7.86	-265.44	-1.13
			Max. My	14	-7.87	-1.19	-262.89
			Max. Vy	8	10.90	-265.44	-1.13
			Max. Vx	14	10.82	-1.19	-262.89
			Max. Torque	15			1.35
L2	108.5 - 83.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.26	-0.09	-0.82
			Max. Mx	8	-13.37	-553.68	-2.13
			Max. My	14	-13.38	-1.97	-549.62
			Max. Vy	8	15.29	-553.68	-2.13
			Max. Vx	14	15.21	-1.97	-549.62
			Max. Torque	13			1.04
L3	83.75 - 43	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.86	0.52	-2.83
			Max. Mx	8	-23.86	-1296.64	-3.97
			Max. My	14	-23.87	-3.31	-1289.99
			Max. Vy	20	-20.18	1296.57	2.60
			Max. Vx	14	20.11	-3.31	-1289.99
			Max. Torque	15			1.11
L4	43 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.03	1.55	-5.47
			Max. Mx	20	-37.34	2353.35	3.39
			Max. My	14	-37.34	-4.45	-2343.66
			Max. Vy	20	-22.94	2353.35	3.39
			Max. Vx	14	22.87	-4.45	-2343.66
			Max. Torque	15			1.11

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	33	68.03	-0.00	-7.08
	Max. H_x	20	37.36	22.91	0.03
	Max. H_z	3	28.02	0.03	22.84
	Max. M_x	2	2341.11	0.03	22.84
	Max. M_z	8	2352.93	-22.91	-0.03
	Max. Torsion	15	1.11	-0.03	-22.84
	Min. Vert	5	28.02	-11.43	19.77
	Min. H_x	8	37.36	-22.91	-0.03
	Min. H_z	14	37.36	-0.03	-22.84
	Min. M_x	14	-2343.66	-0.03	-22.84
	Min. M_z	20	-2353.35	22.91	0.03
	Min. Torsion	3	-1.10	0.03	22.84

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	31.13	0.00	0.00	1.03	0.17	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	37.36	-0.03	-22.84	-2341.11	4.89	1.09
0.9 Dead+1.6 Wind 0 deg - No Ice	28.02	-0.03	-22.84	-2317.90	4.77	1.10
1.2 Dead+1.6 Wind 30 deg - No Ice	37.36	11.43	-19.77	-2024.96	-1172.34	0.83
0.9 Dead+1.6 Wind 30 deg - No Ice	28.02	11.43	-19.77	-2004.94	-1160.61	0.83
1.2 Dead+1.6 Wind 60 deg - No Ice	37.36	19.83	-11.40	-1165.87	-2035.37	0.34
0.9 Dead+1.6 Wind 60 deg - No Ice	28.02	19.83	-11.40	-1154.48	-2014.95	0.34
1.2 Dead+1.6 Wind 90 deg - No Ice	37.36	22.91	0.03	5.95	-2352.93	-0.24
0.9 Dead+1.6 Wind 90 deg - No Ice	28.02	22.91	0.03	5.56	-2329.32	-0.24
1.2 Dead+1.6 Wind 120 deg - No Ice	37.36	19.86	11.45	1176.50	-2040.00	-0.76
0.9 Dead+1.6 Wind 120 deg - No Ice	28.02	19.86	11.45	1164.35	-2019.53	-0.77
1.2 Dead+1.6 Wind 150 deg - No Ice	37.36	11.48	19.80	2032.16	-1180.40	-1.08
0.9 Dead+1.6 Wind 150 deg - No Ice	28.02	11.48	19.80	2011.42	-1168.57	-1.09
1.2 Dead+1.6 Wind 180 deg - No Ice	37.36	0.03	22.84	2343.66	-4.45	-1.11
0.9 Dead+1.6 Wind 180 deg - No Ice	28.02	0.03	22.84	2319.80	-4.44	-1.11
1.2 Dead+1.6 Wind 210 deg - No Ice	37.36	-11.43	19.77	2027.50	1172.77	-0.83
0.9 Dead+1.6 Wind 210 deg - No Ice	28.02	-11.43	19.77	2006.83	1160.93	-0.83
1.2 Dead+1.6 Wind 240 deg - No Ice	37.36	-19.83	11.40	1168.42	2035.78	-0.33

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.6 Wind 240 deg - No Ice	28.02	-19.83	11.40	1156.38	2015.26	-0.33
1.2 Dead+1.6 Wind 270 deg - No Ice	37.36	-22.91	-0.03	-3.39	2353.35	0.26
0.9 Dead+1.6 Wind 270 deg - No Ice	28.02	-22.91	-0.03	-3.66	2329.64	0.26
1.2 Dead+1.6 Wind 300 deg - No Ice	37.36	-19.86	-11.45	-1173.93	2040.43	0.77
0.9 Dead+1.6 Wind 300 deg - No Ice	28.02	-19.86	-11.45	-1162.44	2019.85	0.77
1.2 Dead+1.6 Wind 330 deg - No Ice	37.36	-11.48	-19.80	-2029.60	1180.84	1.07
0.9 Dead+1.6 Wind 330 deg - No Ice	28.02	-11.48	-19.80	-2009.52	1168.90	1.07
1.2 Dead+1.0 Ice+1.0 Temp	68.03	-0.00	0.00	5.47	1.55	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	68.03	-0.00	-7.08	-730.28	2.54	0.35
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	68.03	3.54	-6.13	-631.21	-365.94	0.26
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	68.03	6.14	-3.54	-361.50	-635.94	0.10
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	68.03	7.09	0.00	6.59	-735.11	-0.09
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	68.03	6.14	3.55	374.42	-636.88	-0.26
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	68.03	3.55	6.14	643.44	-367.57	-0.35
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	68.03	0.00	7.08	741.56	0.65	-0.35
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	68.03	-3.54	6.13	642.50	369.12	-0.26
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	68.03	-6.14	3.54	372.79	639.12	-0.09
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	68.03	-7.09	-0.00	4.70	738.29	0.09
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	68.03	-6.14	-3.55	-363.13	640.06	0.26
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	68.03	-3.55	-6.14	-632.15	370.76	0.35
Dead+Wind 0 deg - Service	31.13	-0.01	-5.32	-541.08	1.25	0.26
Dead+Wind 30 deg - Service	31.13	2.66	-4.60	-467.91	-271.21	0.20
Dead+Wind 60 deg - Service	31.13	4.62	-2.65	-269.08	-470.96	0.08
Dead+Wind 90 deg - Service	31.13	5.33	0.01	2.14	-544.46	-0.06
Dead+Wind 120 deg - Service	31.13	4.62	2.66	273.06	-472.03	-0.18
Dead+Wind 150 deg - Service	31.13	2.67	4.61	471.10	-273.08	-0.25
Dead+Wind 180 deg - Service	31.13	0.01	5.32	543.20	-0.91	-0.26
Dead+Wind 210 deg - Service	31.13	-2.66	4.60	470.02	271.56	-0.20
Dead+Wind 240 deg - Service	31.13	-4.62	2.65	271.19	471.30	-0.08
Dead+Wind 270 deg - Service	31.13	-5.33	-0.01	-0.02	544.81	0.06
Dead+Wind 300 deg - Service	31.13	-4.62	-2.66	-270.94	472.38	0.18
Dead+Wind 330 deg - Service	31.13	-2.67	-4.61	-468.98	273.42	0.25

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-31.13	0.00	0.00	31.13	0.00	0.000%
2	-0.03	-37.36	-22.84	0.03	37.36	22.84	0.000%
3	-0.03	-28.02	-22.84	0.03	28.02	22.84	0.000%
4	11.43	-37.36	-19.77	-11.43	37.36	19.77	0.000%
5	11.43	-28.02	-19.77	-11.43	28.02	19.77	0.000%
6	19.83	-37.36	-11.40	-19.83	37.36	11.40	0.000%
7	19.83	-28.02	-11.40	-19.83	28.02	11.40	0.000%
8	22.91	-37.36	0.03	-22.91	37.36	-0.03	0.000%
9	22.91	-28.02	0.03	-22.91	28.02	-0.03	0.000%
10	19.86	-37.36	11.45	-19.86	37.36	-11.45	0.000%
11	19.86	-28.02	11.45	-19.86	28.02	-11.45	0.000%
12	11.48	-37.36	19.80	-11.48	37.36	-19.80	0.000%
13	11.48	-28.02	19.80	-11.48	28.02	-19.80	0.000%
14	0.03	-37.36	22.84	-0.03	37.36	-22.84	0.000%
15	0.03	-28.02	22.84	-0.03	28.02	-22.84	0.000%
16	-11.43	-37.36	19.77	11.43	37.36	-19.77	0.000%
17	-11.43	-28.02	19.77	11.43	28.02	-19.77	0.000%
18	-19.83	-37.36	11.40	19.83	37.36	-11.40	0.000%
19	-19.83	-28.02	11.40	19.83	28.02	-11.40	0.000%
20	-22.91	-37.36	-0.03	22.91	37.36	0.03	0.000%
21	-22.91	-28.02	-0.03	22.91	28.02	0.03	0.000%
22	-19.86	-37.36	-11.45	19.86	37.36	11.45	0.000%
23	-19.86	-28.02	-11.45	19.86	28.02	11.45	0.000%
24	-11.48	-37.36	-19.80	11.48	37.36	19.80	0.000%
25	-11.48	-28.02	-19.80	11.48	28.02	19.80	0.000%
26	0.00	-68.03	0.00	0.00	68.03	-0.00	0.000%
27	-0.00	-68.03	-7.08	0.00	68.03	7.08	0.000%
28	3.54	-68.03	-6.13	-3.54	68.03	6.13	0.000%
29	6.14	-68.03	-3.54	-6.14	68.03	3.54	0.000%
30	7.09	-68.03	0.00	-7.09	68.03	-0.00	0.000%
31	6.14	-68.03	3.55	-6.14	68.03	-3.55	0.000%
32	3.55	-68.03	6.14	-3.55	68.03	-6.14	0.000%
33	0.00	-68.03	7.08	-0.00	68.03	-7.08	0.000%
34	-3.54	-68.03	6.13	3.54	68.03	-6.13	0.000%
35	-6.14	-68.03	3.54	6.14	68.03	-3.54	0.000%
36	-7.09	-68.03	-0.00	7.09	68.03	0.00	0.000%
37	-6.14	-68.03	-3.55	6.14	68.03	3.55	0.000%
38	-3.55	-68.03	-6.14	3.55	68.03	6.14	0.000%
39	-0.01	-31.13	-5.32	0.01	31.13	5.32	0.000%
40	2.66	-31.13	-4.60	-2.66	31.13	4.60	0.000%
41	4.62	-31.13	-2.65	-4.62	31.13	2.65	0.000%
42	5.33	-31.13	0.01	-5.33	31.13	-0.01	0.000%
43	4.62	-31.13	2.66	-4.62	31.13	-2.66	0.000%
44	2.67	-31.13	4.61	-2.67	31.13	-4.61	0.000%
45	0.01	-31.13	5.32	-0.01	31.13	-5.32	0.000%
46	-2.66	-31.13	4.60	2.66	31.13	-4.60	0.000%
47	-4.62	-31.13	2.65	4.62	31.13	-2.65	0.000%
48	-5.33	-31.13	-0.01	5.33	31.13	0.01	0.000%
49	-4.62	-31.13	-2.66	4.62	31.13	2.66	0.000%
50	-2.67	-31.13	-4.61	2.67	31.13	4.61	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00007186
3	Yes	4	0.00000001	0.00094606
4	Yes	6	0.00000001	0.00006972
5	Yes	5	0.00000001	0.00065095
6	Yes	6	0.00000001	0.00006755
7	Yes	5	0.00000001	0.00063004
8	Yes	4	0.00000001	0.00040195
9	Yes	4	0.00000001	0.00019588
10	Yes	6	0.00000001	0.00006746
11	Yes	5	0.00000001	0.00062881
12	Yes	6	0.00000001	0.00007118
13	Yes	5	0.00000001	0.00066449
14	Yes	5	0.00000001	0.00009032
15	Yes	5	0.00000001	0.00004250
16	Yes	6	0.00000001	0.00006660
17	Yes	5	0.00000001	0.00062093
18	Yes	6	0.00000001	0.00006890
19	Yes	5	0.00000001	0.00064264
20	Yes	4	0.00000001	0.00067934
21	Yes	4	0.00000001	0.00040389
22	Yes	6	0.00000001	0.00007060
23	Yes	5	0.00000001	0.00065888
24	Yes	6	0.00000001	0.00006675
25	Yes	5	0.00000001	0.00062242
26	Yes	4	0.00000001	0.00003350
27	Yes	5	0.00000001	0.00064325
28	Yes	5	0.00000001	0.00094760
29	Yes	5	0.00000001	0.00093655
30	Yes	5	0.00000001	0.00064598
31	Yes	5	0.00000001	0.00095468
32	Yes	5	0.00000001	0.00097195
33	Yes	5	0.00000001	0.00065123
34	Yes	5	0.00000001	0.00094706
35	Yes	5	0.00000001	0.00095789
36	Yes	5	0.00000001	0.00064614
37	Yes	5	0.00000001	0.00095523
38	Yes	5	0.00000001	0.00093871
39	Yes	4	0.00000001	0.00011423
40	Yes	4	0.00000001	0.00051836
41	Yes	4	0.00000001	0.00047024
42	Yes	4	0.00000001	0.00006231
43	Yes	4	0.00000001	0.00046551
44	Yes	4	0.00000001	0.00054461
45	Yes	4	0.00000001	0.00011924
46	Yes	4	0.00000001	0.00045538
47	Yes	4	0.00000001	0.00049843
48	Yes	4	0.00000001	0.00006438
49	Yes	4	0.00000001	0.00052711
50	Yes	4	0.00000001	0.00045341

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	138.5 - 108.5	18.58	43	1.34	0.01
L2	108.5 - 83.75	10.83	43	1.05	0.00
L3	88.25 - 43	6.94	43	0.79	0.00
L4	49 - 0	2.04	43	0.39	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
138.00	Platform Mount [LP 303-1]	43	18.44	1.33	0.01	20417
137.00	(2) TME-RRUS 11	43	18.16	1.32	0.01	20417
136.00	Pipe Mount [PM 601-3]	43	17.89	1.32	0.01	20417
129.00	Platform Mount [LP 304-1]	43	15.97	1.25	0.00	10746
105.00	Side Arm Mount [SO 102-3]	43	10.07	1.00	0.00	3677
104.00	Platform Mount [LP 714-1]	43	9.86	0.99	0.00	3758
87.00	Platform Mount [LP 305-1]	43	6.73	0.77	0.00	5812
70.00	Side Arm Mount [SO 701-1]	43	4.24	0.58	0.00	5493

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	138.5 - 108.5	80.20	10	5.78	0.03
L2	108.5 - 83.75	46.79	10	4.53	0.01
L3	88.25 - 43	29.98	10	3.40	0.00
L4	49 - 0	8.83	10	1.70	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
138.00	Platform Mount [LP 303-1]	10	79.61	5.76	0.03	4812
137.00	(2) TME-RRUS 11	10	78.42	5.72	0.03	4812
136.00	Pipe Mount [PM 601-3]	10	77.23	5.68	0.02	4812
129.00	Platform Mount [LP 304-1]	10	68.98	5.42	0.02	2532
105.00	Side Arm Mount [SO 102-3]	10	43.52	4.34	0.01	862
104.00	Platform Mount [LP 714-1]	10	42.61	4.28	0.01	880
87.00	Platform Mount [LP 305-1]	10	29.08	3.33	0.00	1352
70.00	Side Arm Mount [SO 701-1]	10	18.33	2.53	0.00	1275

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	138.5 - 108.5 (1)	TP24.5x17.38x0.19	30.00	0.00	0.0	14.47	-7.86	995.17	0.008
L2	108.5 - 83.75 (2)	TP31.88x24.5x0.25	24.75	0.00	0.0	24.03	-13.37	1691.15	0.008
L3	83.75 - 43 (3)	TP43.42x30.04x0.31	45.25	0.00	0.0	41.00	-23.86	2799.92	0.009
L4	43 - 0 (4)	TP55.5x41.02x0.31	49.00	0.00	0.0	54.74	-37.34	3286.31	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	138.5 - 108.5 (1)	TP24.5x17.38x0.19	265.76	497.60	0.534	0.00	497.60	0.000
L2	108.5 - 83.75 (2)	TP31.88x24.5x0.25	554.38	1052.88	0.527	0.00	1052.88	0.000
L3	83.75 - 43 (3)	TP43.42x30.04x0.31	1297.98	2380.48	0.545	0.00	2380.48	0.000
L4	43 - 0 (4)	TP55.5x41.02x0.31	2354.94	3737.57	0.630	0.00	3737.57	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	138.5 - 108.5 (1)	TP24.5x17.38x0.19	10.92	497.58	0.022	0.77	996.42	0.001
L2	108.5 - 83.75 (2)	TP31.88x24.5x0.25	15.31	845.57	0.018	0.77	2108.32	0.000
L3	83.75 - 43 (3)	TP43.42x30.04x0.31	20.19	1399.96	0.014	0.77	4766.79	0.000
L4	43 - 0 (4)	TP55.5x41.02x0.31	22.94	1643.15	0.014	0.76	7484.27	0.000

Pole Interaction Design Data

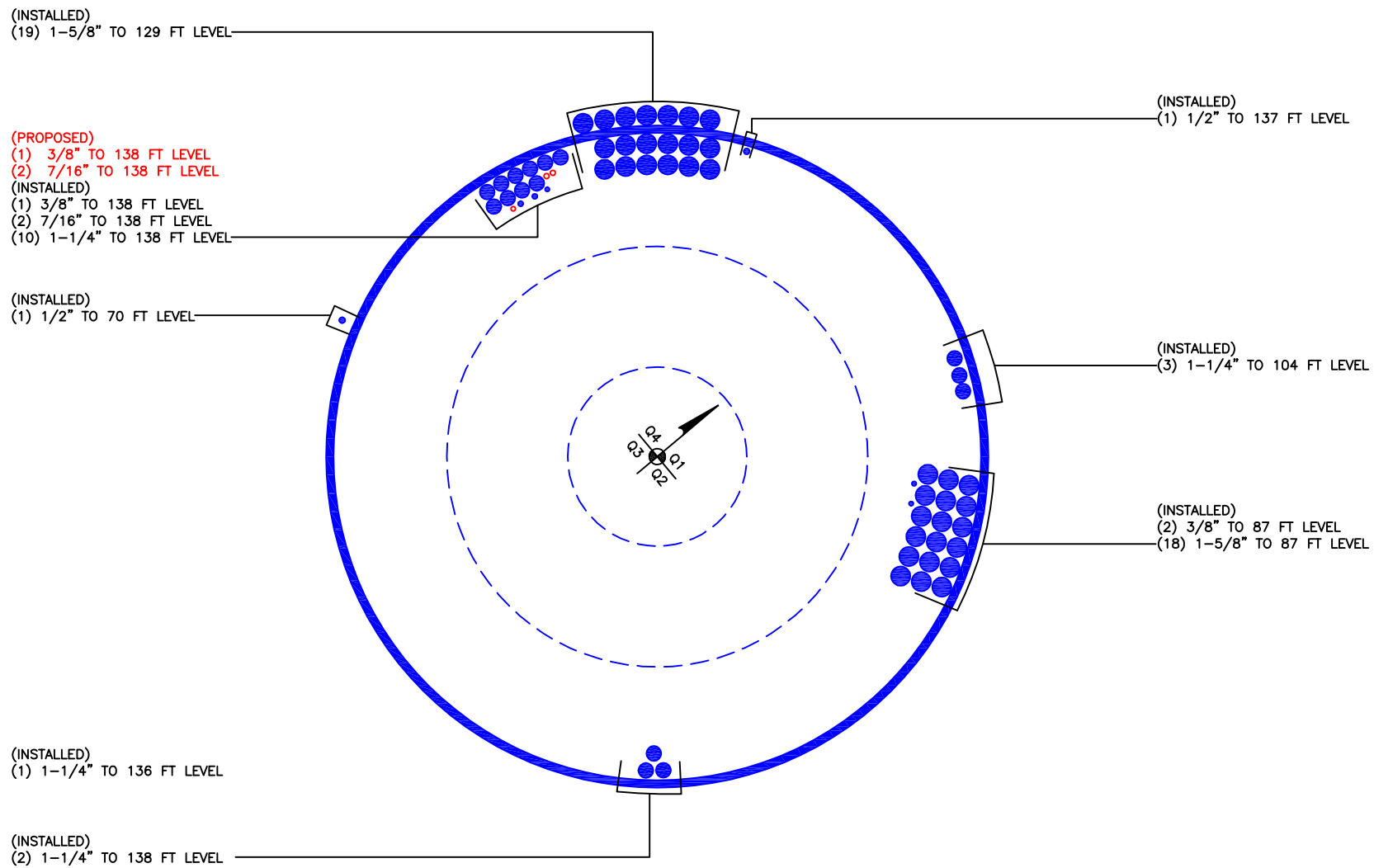
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	138.5 - 108.5 (1)	0.008	0.534	0.000	0.022	0.001	0.542 ✔	1.000	4.8.2 ✔
L2	108.5 - 83.75 (2)	0.008	0.527	0.000	0.018	0.000	0.535 ✔	1.000	4.8.2 ✔
L3	83.75 - 43 (3)	0.009	0.545	0.000	0.014	0.000	0.554 ✔	1.000	4.8.2 ✔
L4	43 - 0 (4)	0.011	0.630	0.000	0.014	0.000	0.642 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	138.5 - 108.5	Pole	TP24.5x17.38x0.19	1	-7.86	995.17	54.2	Pass
L2	108.5 - 83.75	Pole	TP31.88x24.5x0.25	2	-13.37	1691.15	53.5	Pass
L3	83.75 - 43	Pole	TP43.42x30.04x0.31	3	-23.86	2799.92	55.4	Pass
L4	43 - 0	Pole	TP55.5x41.02x0.31	4	-37.34	3286.31	64.2	Pass
							Summary	
						Pole (L4)	64.2	Pass
						RATING =	**64.2**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876380 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

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

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data	
BU#:	*876380*
Site Name:	*O&G WOODBURY*
App #:	*376398 Rev 1*
Pole Manufacturer:	*Other*

Reactions		
Mu:	2355	ft-kips
Axial, Pu:	37	kips
Shear, Vu:	23	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

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

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	64	in

Anchor Rod Results

Max Rod (Cu+ Vu/ŕ):	115.6	Kips
Allowable Axial, Φ*Fu*Anet:	260.0	Kips
Anchor Rod Stress Ratio:	44.5%	**Pass**

Non-Rigid
AISC LRFD
φ*Tn

Plate Data		
Diam:	70	in
Thick:	1.5	in
Grade:	60	ksi
Single-Rod B-eff:	11.01	in

Base Plate Results Flexural Check

Base Plate Stress:	47.8	ksi
Allowable Plate Stress:	54.0	ksi
Base Plate Stress Ratio:	88.6%	**Pass**

Non-Rigid
AISC LRFD
φ*Fy
Y.L. Length: 31.87

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

n/a

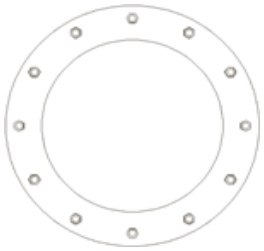
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a

Pole Data		
Diam:	55.5	in
Thick:	0.3125	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



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

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

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

Site Data

BU#: *876380*
Site Name: *O&G WOODBURY*
App #: *376398 Rev 1*

Reactions		
Mu	265.76	ft-kips
Axial, Pu:	7.86	kips
Shear, Vu:	10.92	kips
Elevation:	108.5	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Pole Manufacturer:	Other

If No stiffeners, Criteria:	TIA G	<-Only Applcable to Unstiffened Cases

Bolt Data				
Qty:	24			
Diameter (in.):	1	Bolt Fu:	120	
Bolt Material:	A325	Bolt Fy:	92	
N/A:	100	<-- Disregard		
N/A:	75	<-- Disregard		
Circle (in.):	28			

Plate Data		
Diam:	31	in
Thick, t:	1.5	in
Grade (Fy):	60	ksi
Strength, Fu:	75	ksi
Single-Rod B-eff:	3.24	in

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

Pole Data		
Diam:	24.5	in
Thick:	0.1875	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

				Rigid
Bolt Tension Capacity, φ*Tn,**B1**:	54.54	kips		φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	54.54	kips		φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	18.66	Kips		
Min. PL "tc" for **B** cap. **w/o** Pry:	1.122	in		
Min PL "treq" for actual **T w/ Pry**:	0.508	in		
Min PL "t1" for actual **T w/o Pry**:	0.656	in		
T allowable w/o Prying:	54.54	kips	α'<0 case	
Prying Force, q:	0.00	kips		
Total Bolt Tension=Tu+q:	18.66	kips		
Non-Prying Bolt Stress Ratio, Tu/B:	34.2%	**Pass**		

Exterior Flange Plate Results Flexural Check

				Rigid
Compression Side Plate Stress:	10.6	ksi		TIA G
Allowable Plate Stress:	54.0	ksi		φ*Fy
Compression Plate Stress Ratio:	19.6%	**Pass**		Comp. Y.L. Length:
No Prying				13.56
Tension Side Stress Ratio, (treq/t)^2:	11.5%	**Pass**		

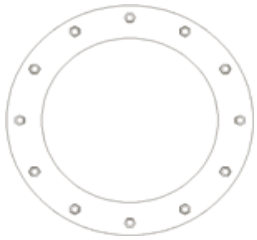
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



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

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

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

Site Data

BU#: *876380*
Site Name: *O&G WOODBURY*
App #: *376398 Rev 1*

Reactions		
Mu	265.76	ft-kips
Axial, Pu:	7.86	kips
Shear, Vu:	10.92	kips
Elevation:	108.5	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Pole Manufacturer:	Other

If No stiffeners, Criteria:	TIA G	<-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	24		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	
N/A:	75	<-- Disregard	
Circle (in.):	28		

Plate Data		
Diam:	31	in
Thick, t:	1.5	in
Grade (Fy):	60	ksi
Strength, Fu:	75	ksi
Single-Rod B-eff:	3.24	in

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

Pole Data		
Diam:	24.5	in
Thick:	0.25	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

Bolt Tension Capacity, φ*Tn, **B1**:	54.54	kips	Rigid: φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	54.54	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	18.66	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	1.122	in	
Min PL "treq" for actual **T w/ Pry**:	0.508	in	
Min PL "t1" for actual **T w/o Pry**:	0.656	in	
T allowable w/o Prying:	54.54	kips	α'<0 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	18.66	kips	
Non-Prying Bolt Stress Ratio, Tu/B:	34.2%	**Pass**	

Exterior Flange Plate Results — Flexural Check

Compression Side Plate Stress:	10.6	ksi	Rigid: TIA G
Allowable Plate Stress:	54.0	ksi	φ*Fy
Compression Plate Stress Ratio:	19.6%	**Pass**	Comp. Y.L. Length: 13.56
No Prying			
Tension Side Stress Ratio, (treq/t)^2:	11.5%	**Pass**	

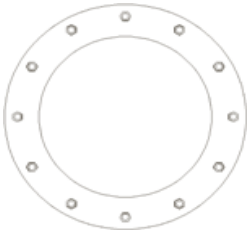
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



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

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

Monopole Pier and Pad Foundation

BU # : 876380
Site Name: O&G WOODBURY
App. Number: 376398 Rev 1
TIA-222 Revision: G

Design Reactions		
Shear, **S**:	23	kips
Moment, **M**:	2355	ft-kips
Tower Height, **H**:	138.5	ft
Tower Weight, **Wt**:	40	kips
Base Diameter, **BD**:	4.63	ft

Foundation Dimensions		
Pad Bearing Depth, **D**:	6.5	ft
Pad Width, **W**:	23	ft
Neglected Depth, **N**:	3.5	ft
Thickness, **T**:	3.00	ft
Pier Diameter, **Pd**:	7.00	ft
Ext. Above Grade, **E**:	1.00	ft
BP Dist. Above Pier:	3	in.
Clear Cover, **Cc**:	3.0	in

Soil Properties		
Soil Unit Weight, **γ**:	0.135	kcf
Ult. Bearing Capacity, Bc:	12.0	ksf
Angle of Friction, **Φ**:	34	deg
Cohesion, **Co**:	0.000	ksf
Passive Pressure, **Pp**:	0.000	ksf
Base Friction, **μ**:	0.25	

Material Properties		
Rebar Yield Strength, **Fy**:	60000	psi
Concrete Strength, **F'c**:	4000	psi
Concrete Unit Weight, **δc**:	0.150	kcf
Seismic Zone, **z**:	1	

Rebar Properties		
Pier Rebar Size, **Sp**:	8	
Pier Rebar Quanity, **mp**:	46	36
Pad Rebar Size, **Spad**:	8	
Pad Rebar Quanity, **mpad**:	21	12
Pier Tie Size, **St**:	4	3
Tie Quanity, **mt**:	8	6

Design Checks	Capacity/ Availability	Demand/ Limits	Check
Req'd Pier Diam.(ft)	7	6.125	**OK**
Overturning (ft-kips)	5275.98	2355.00	**44.6%**
Shear Capacity (kips)	110.74	23.00	**20.8%**
Bearing (ksf)	9.00	2.09	**23.2%**
Pad Shear - 1-way (kips)	824.79	256.74	**31.1%**
Pad Shear - 2-way (kips)	2168.67	83.30	**3.8%**
Pad Moment Capacity (k-ft)	2312.04	764.10	**33.0%**
Pier Moment Capacity (k-ft)	5908.53	2458.50	**41.6%**

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT2066

Woodbury CT Great Hollow Rd
103 Great Hollow Road
Woodbury, CT 6798

March 15, 2017

Centerline Communications Project Number: 950006-045

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**13.22 %**

March 15, 2017

AT&T Mobility – New England
Attn: John Benedetto, RF Manager
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Emissions Analysis for Site: **CT2066 – Woodbury CT Great Hollow Rd**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **103 Great Hollow Road, Woodbury, 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 population 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 population 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.

Population 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 performed for the proposed AT&T Wireless antenna facility located at **103 Great Hollow Road, Woodbury, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves.

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
UMTS	1900 MHz (PCS)	2	30
LTE	700 MHz	2	60
LTE	1900 MHz (PCS)	2	60
GSM	850 MHz	2	30
LTE	2300 MHz (WCS)	2	60

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	139
A	2	CCI HPA-65R-BUU-H6	139
A	3	Quintel QS66512-2	139
B	1	Powerwave 7770	139
B	2	Commscope SBNHH-1D65A	139
B	3	Quintel QS46512-2	139
C	1	Powerwave 7770	139
C	2	Commscope SBNHH-1D65A	139
C	3	Quintel QS46512-2	139

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.56
Antenna A2	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	1.55
Antenna A3	Quintel QS66512-2	850 MHz / 2300 MHz (WCS)	11.35 / 14.85	4	180	4,484.66	1.04
						Sector A Composite MPE%	**3.15**
Antenna B1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.56
Antenna B2	Commscope SBNHH-1D65A	700 MHz / 1900 MHz (PCS)	10.85 / 14.55	4	240	4,880.65	1.33
Antenna B3	Quintel QS46512-2	850 MHz / 2300 MHz (WCS)	10.35 / 14.05	4	180	3,699.52	0.85
						Sector B Composite MPE%	**2.75**
Antenna C1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.56
Antenna C2	Commscope SBNHH-1D65A	700 MHz / 1900 MHz (PCS)	10.85 / 14.55	4	240	4,880.65	1.33
Antenna C3	Quintel QS46512-2	850 MHz / 2300 MHz (WCS)	10.35 / 14.05	4	180	3,699.52	0.85
						Sector C Composite MPE%	**2.75**

Table 3: AT&T Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, the sector with the largest calculated MPE% is Sector A. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max Sector Value	**3.15 %**
Sprint	1.20 %
Verizon Wireless	3.50 %
Nextel	0.59 %
T-Mobile	4.64 %
CL&P	0.14 %
Site Total MPE %:	**13.22 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	3.15 %
AT&T Sector B Total:	2.75 %
AT&T Sector C Total:	2.75 %
Site Total:	13.22 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, the sector with the largest calculated MPE% is Sector C.

AT&T _ Max Values per Frequency Band / Technology (Sector A)	# 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	139	1.68	850 MHz	567	0.30%
AT&T 1900 MHz (PCS) UMTS	2	656.33	139	2.67	1900 MHz (PCS)	1000	0.27%
AT&T 700 MHz LTE	2	940.05	139	3.82	700 MHz	467	0.82%
AT&T 1900 MHz (PCS) LTE	2	1,791.23	139	7.28	1900 MHz (PCS)	1000	0.73%
AT&T 850 MHz GSM	2	409.37	139	1.66	850 MHz	567	0.29%
AT&T 2300 MHz (WCS) LTE	2	1,832.95	139	7.45	2300 MHz (WCS)	1000	0.75%
						Total:	3.15%

Table 6: AT&T Maximum Sector MPE Power Values

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population 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 population exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	3.15 %
Sector B:	2.75 %
Sector C:	2.75 %
AT&T Maximum Total (per sector):	3.15 %
Site Total:	13.22 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **13.22 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

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