



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

February 19, 2016

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

**RE: Notice of Exempt Modification for AT&T/ LTE 3C Crown Site BU: 842879**  
**AT&T Site ID: CT5163**  
**50 Woodfield Road, Woodbridge, CT 06525**  
**Latitude: 41° 19' 39.5" / Longitude: -72° 59' 36.84"**

Dear Ms. Bachman:

AT&T currently maintains six (6) antennas at the 99-foot level of the existing 100-foot monopole at 50 Woodfield Road in Woodbridge, CT. The tower is owned by Crown Castle. The property is owned by the T2 GS Cell Site Management LLC. AT&T now intends to install three (3) RRHs.

This facility was approved by the by the Town of Woodbridge, Town Plan and Zoning Commission in a Special Permit on July 3, 2000. This approval included the conditions that:

1. As offered at the Public Hearing the lower base will be designed to provide for future co-location transmission equipment which could be added upon an enlargement of the pole.
2. Any such enlargement would be subject to an application to and approval by the Town Plan and Zoning Commission.

This modification complies with the aforementioned condition(s).

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to Ms. Ellen Scalettar, First Selectman, Town of Woodbridge, 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.

Melanie A. Bachman

February 19, 2016

Page 2

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](mailto:Jeff.Barbadora@crowncastle.com)

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: Ms. Ellen Scalettar, First Selectman  
11 Meetinghouse Lane  
Woodbridge, CT 06525

T2 GS Cell Site Management LLC  
Dept 3339  
Carol Stream, IL 60132-3339



TOWN PLAN AND ZONING COMMISSION  
TOWN OF WOODBRIDGE  
WOODBRIDGE, CONNECTICUT

TEL. (203) 309-3404

July 12, 2000

Christopher B. Fisher, Esq.  
Cuddy & Feder & Worby LLP  
733 Summer St.,  
Stamford, CT. 06901

Re: Special Permit/Site Plan Application  
Telecommunication Facility  
Woodbridge Country Club,  
50 Woodfield Road, Woodbridge, CT.

Dear Mr. Fisher:

The Commission at its meeting on July 3, 2000 reviewed your application for AT&T of a Special Permit/Site Plan approval for an unmanned telecommunication facility consisting of a one hundred foot monopole, equipment shelter and other related improvements on a portion of lot owned by the Woodbridge Country Club, 50 Woodfield Road, Woodbridge, CT.

After discussion the Commission voted to approve the application subject to the following stipulations:

1. As offered at the Public Hearing the tower base will be designed to provide for future co-location transmission equipment which could be added upon an enlargement of the pole.
2. Any such enlargement would be subject to an application to and approval by the Town Plan & Zoning Commission.
3. AT&T will submit an estimate, based on unit cost, for the completion bond of the site improvements for the installation of the facility as shown on site plans T-1 and Z-1 prepared by URS Greiner Woodward Clyde revised to January 13, 2000.
4. This approval is conditioned upon compliance with all applicable provisions of the Woodbridge Zoning Regulations for telecommunication facilities.

Upon receipt of a completion bond satisfactory to the Commission the Enforcement Officer will be authorized to issue the necessary permits.

Sincerely yours,

Charles B. Swanson  
Chairman

cc: Terry Gilbertson, Enforcement Officer

CERTIFIED MAIL RETURN RECEIPT NO. 720 381 193

WOOD1(WF)01

**PROJECT INFORMATION**

SCOPE OF WORK: • ADD 1 RRH PER SECTOR (TOTAL OF 3 NEW RRHS)

SITE ADDRESS: 50 WOODFIELD ROAD  
WOODBRIDGE, CT 06525

LATITUDE: 41.3277919 41°-19'-40.05084"N  
LONGITUDE: -72.9938989 72°-59'-38.03604"W

USID: 14243

TOWER OWNER: TBD

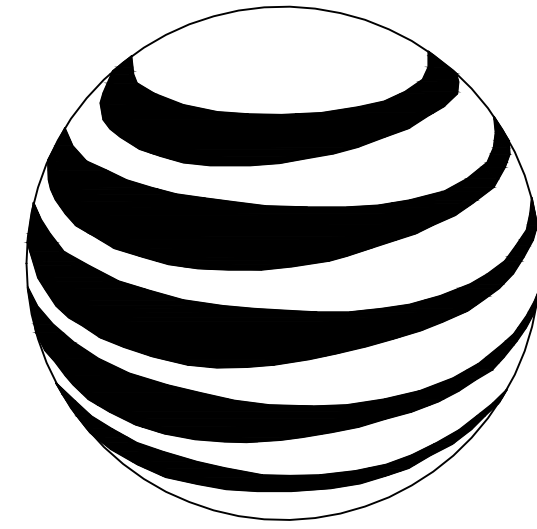
TYPE OF SITE: MONOPOLE/OUTDOOR EQUIPMENT

STRUCTURE HEIGHT: 104'-0"± (TOP OF MONOPOLE)

RAD CENTER: 101'-6"±

CURRENT USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

PROPOSED USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

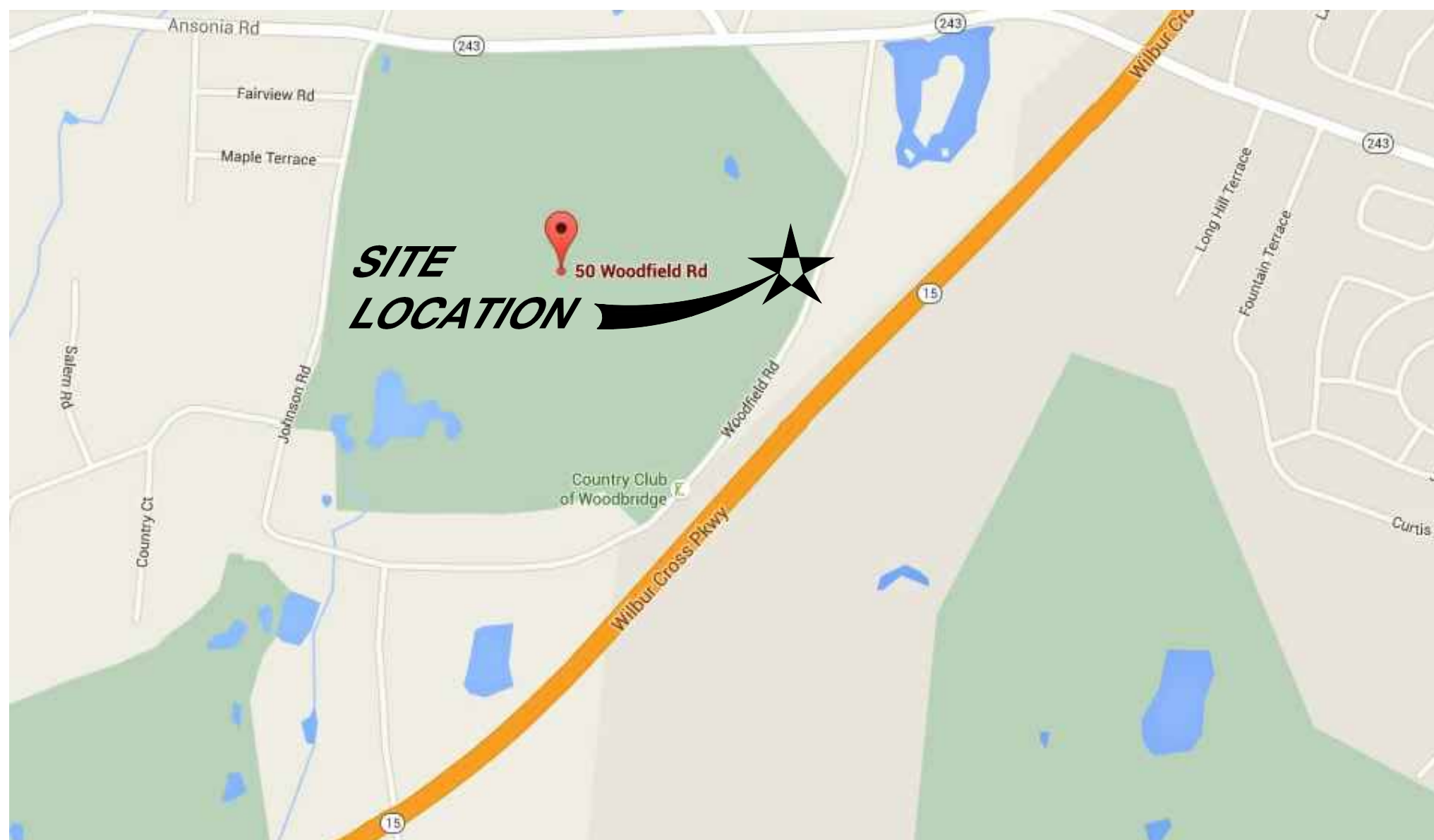


**at&t**  
MOBILITY

**FA CODE: 10071344**  
**SITE NUMBER: CTV5163**  
**SITE NAME: WOODBRIDGE**  
**COUNTRY CLUB**  
**CROWN BU# 842879**

**VICINITY MAP**

FROM ROCKY HILL, HEAD SOUTHWEST ON CONCRIB LN. TURN LEFT ONTO SOLO DR. TURN RIGHT ONTO GILBERT AVE. TURN RIGHT ONTO STATE HWY 411. TURN LEFT TO MERGE ONTO I-191 S. TAKE EXIT 17 TO MERGE ONTO CT-15 S. TURN RIGHT ONTO CT-69 S. SLIGHT LEFT ONTO WHALLEY AVE. TURN RIGHT ONTO RAMSDELL ST. TURN RIGHT ONTO CT-243. TURN LEFT ONTO WOODFIELD RD. DRIVE 0.7MI, SITE WILL BE ON RIGHT.



**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

**ZONING:**

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

**DRAWING INDEX**

**REV.**

T-1	TITLE SHEET	0
GN-1	GROUNDING & GENERAL NOTES	0
A-1	SITE PLAN	0
A-2	EQUIPMENT LAYOUTS	0
A-3	ANTENNA LAYOUTS & ELEVATIONS	0
A-4	DETAILS	0
A-5	ANTENNA MOUNTING 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:	DATE:
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		

**GENERAL NOTES**

- 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.
- 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.
- 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.



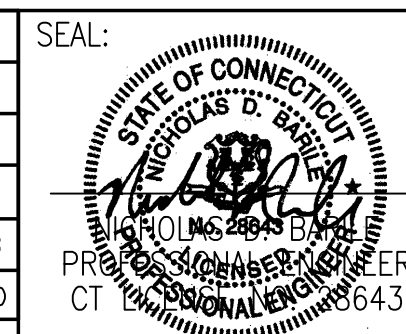
CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811



**SITE NUMBER: CTV5163**  
**SITE NAME: WOODBRIDGE**  
**COUNTRY CLUB**  
50 WOODFIELD ROAD  
WOODBRIDGE, CT 06525  
NEW HAVEN COUNTY



0	02/02/16	ISSUED AS FINAL	JW	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		



<b>AT&amp;T</b>		
DRAWING TITLE: <b>TITLE SHEET</b>		
JOB NUMBER 15088-EMP	DRAWING NUMBER T-1	REV 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 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

**GENERAL NOTES:**

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
 CONTRACTOR - EMPIRE TELECOM  
 SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)  
 OWNER - AT&T MOBILITY  
 OEM - ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR (EMPIRE TELECOM).
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR
9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
14. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy=36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
18. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

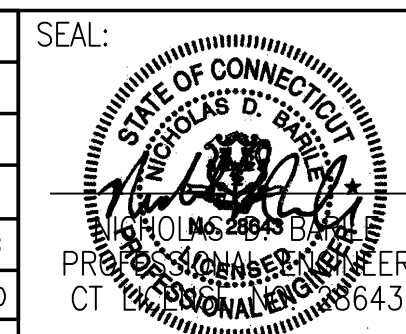
19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
  - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
  - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
  - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS
20. SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
  - AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
  - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION
  - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
  - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
  - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
  - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
  - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
  - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS
21. FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.
22. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.



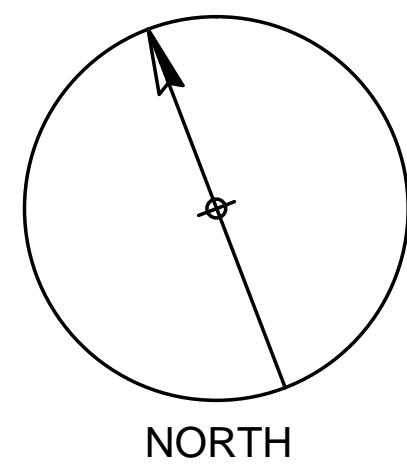
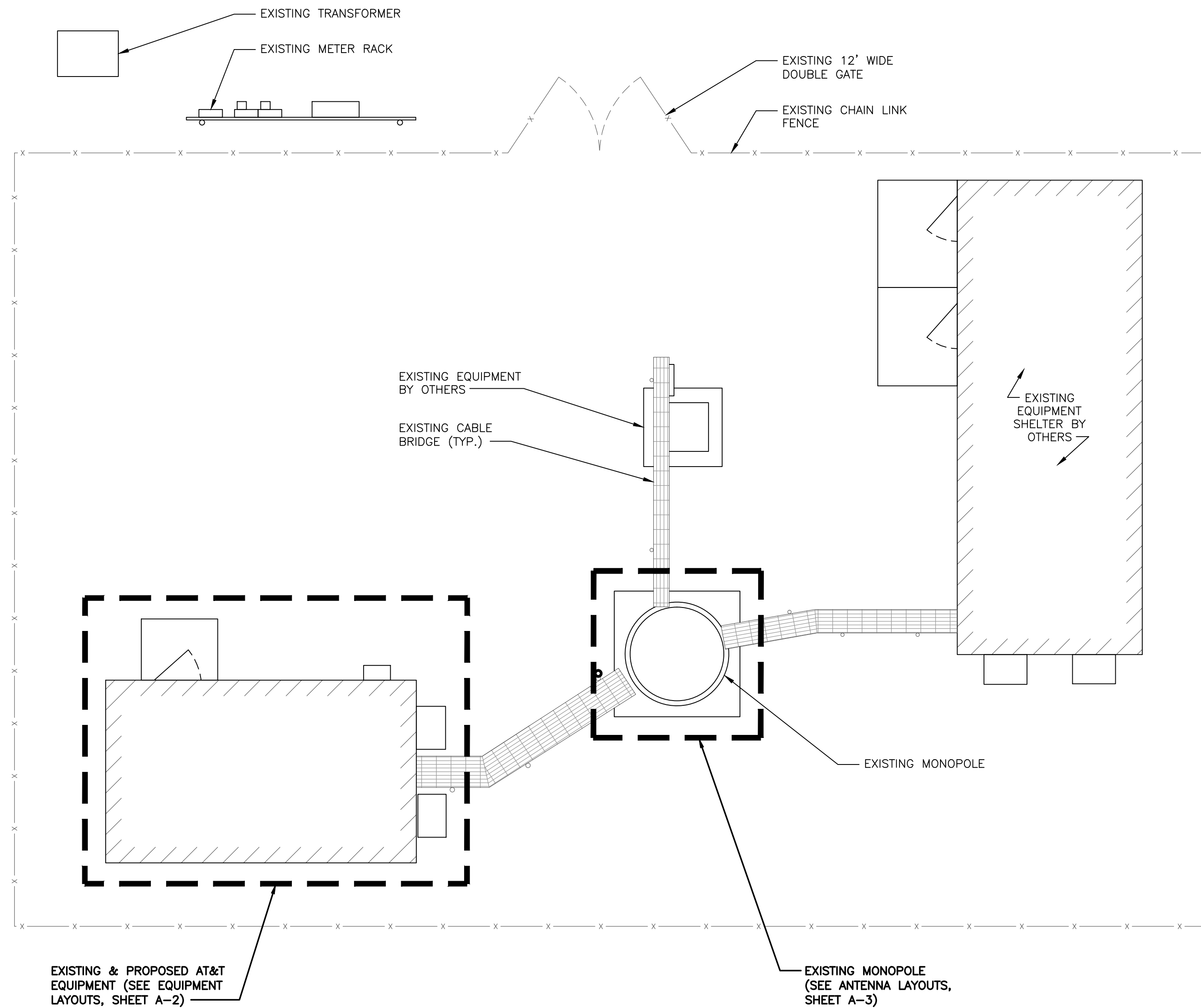
**SITE NUMBER: CTV5163**  
**SITE NAME: WOODBRIDGE COUNTRY CLUB**  
 50 WOODFIELD ROAD  
 WOODBRIDGE, CT 06525  
 NEW HAVEN COUNTY



0	02/02/16	ISSUED AS FINAL	JW	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

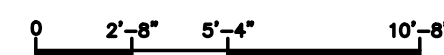


<b>AT&amp;T</b>		
DRAWING TITLE: <b>GROUNDING &amp; GENERAL NOTES</b>		
JOB NUMBER 15088-EMP	DRAWING NUMBER GN-1	REV 0



NORTH

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



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

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

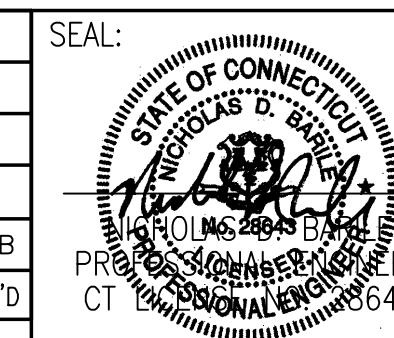
**COM-EX**  
Consultants  
115 ROUTE 46  
SUITE E39  
MOUNTAIN LAKES, NJ 07046  
PHONE: 862.209.4300  
FAX: 862.209.4301

**EMPIRE**  
telecom  
16 ESQUIRE ROAD  
BILLERICA, MA 01821

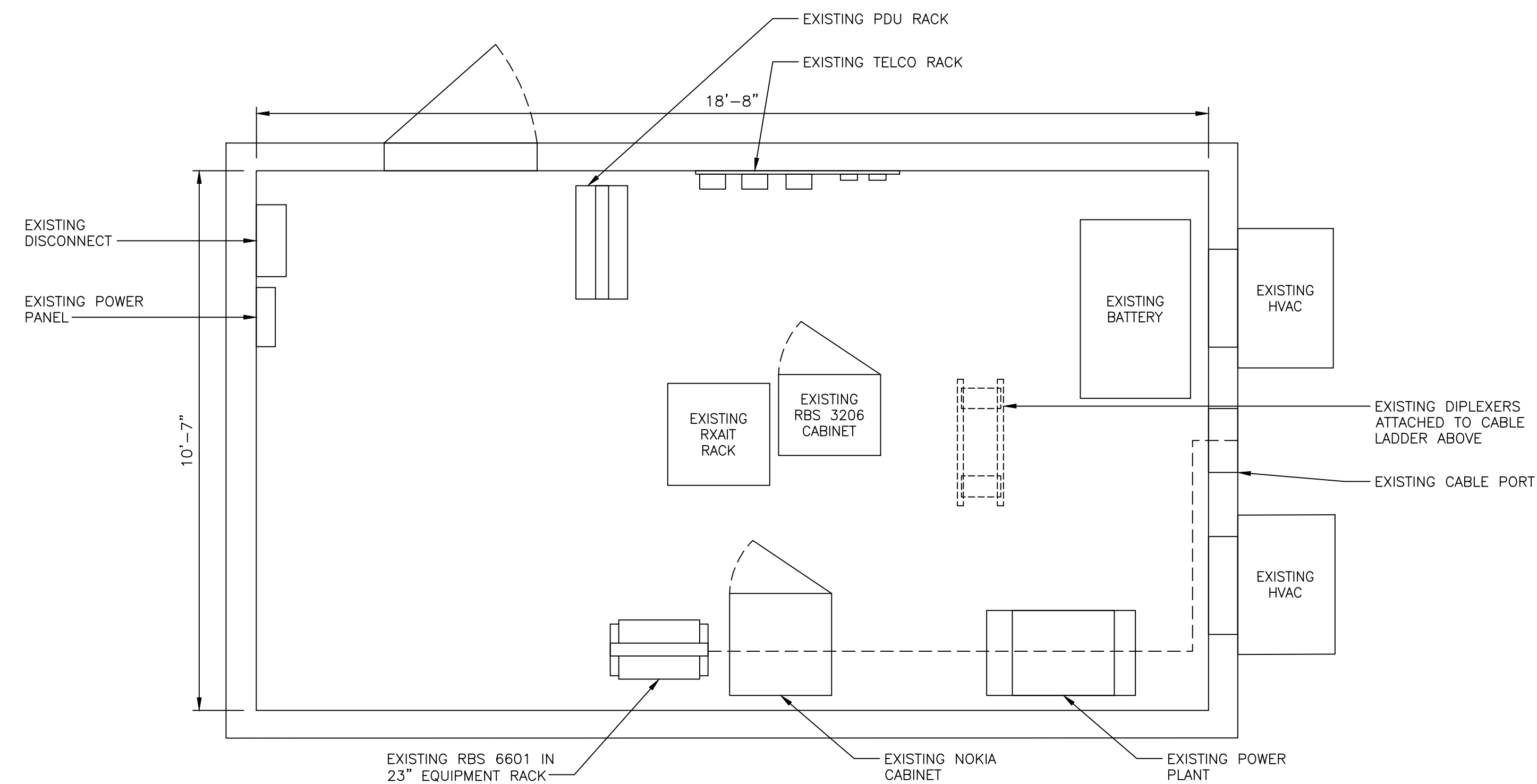
**SITE NUMBER: CTV5163**  
**SITE NAME: WOODBRIDGE COUNTRY CLUB**  
50 WOODFIELD ROAD  
WOODBRIDGE, CT 06525  
NEW HAVEN COUNTY

**at&t**  
MOBILITY  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

0	02/02/16	ISSUED AS FINAL	JW	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN			DESIGNED BY: NJM		DRAWN BY: NJM



<b>AT&amp;T</b>		
DRAWING TITLE: ROOFTOP LAYOUT		
JOB NUMBER 15088-EMP	DRAWING NUMBER A-1	REV 0



**PROPOSED EQUIPMENT LAYOUT**

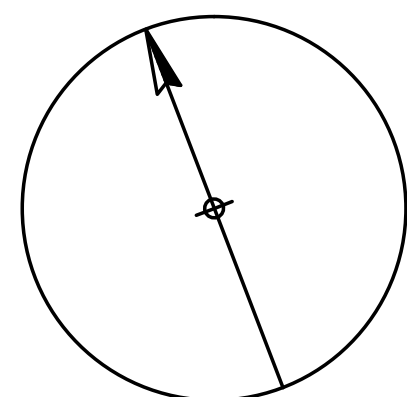
SCALE: 1" = 2'-0"



( IN FEET )

1/2 Inch = 1 Foot

NO GROUND EQUIPMENT MODIFICATIONS ARE BEING MADE AS PART OF THIS SCOPE. EXISTING GROUND EQUIPMENT CONFIGURATION TO REMAIN.



NORTH

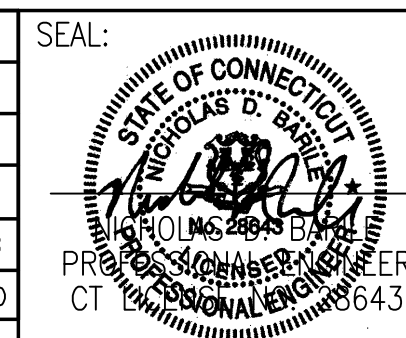
**COM-EX**  
Consultants  
115 ROUTE 46  
SUITE E39  
MOUNTAIN LAKES, NJ 07046  
PHONE: 862.209.4300  
FAX: 862.209.4301

**EMPIRE**  
telecom  
16 ESQUIRE ROAD  
BILLERICA, MA 01821

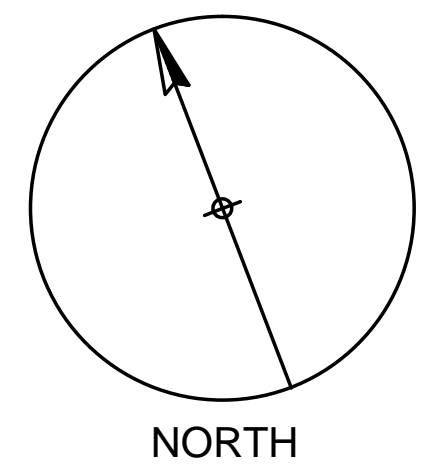
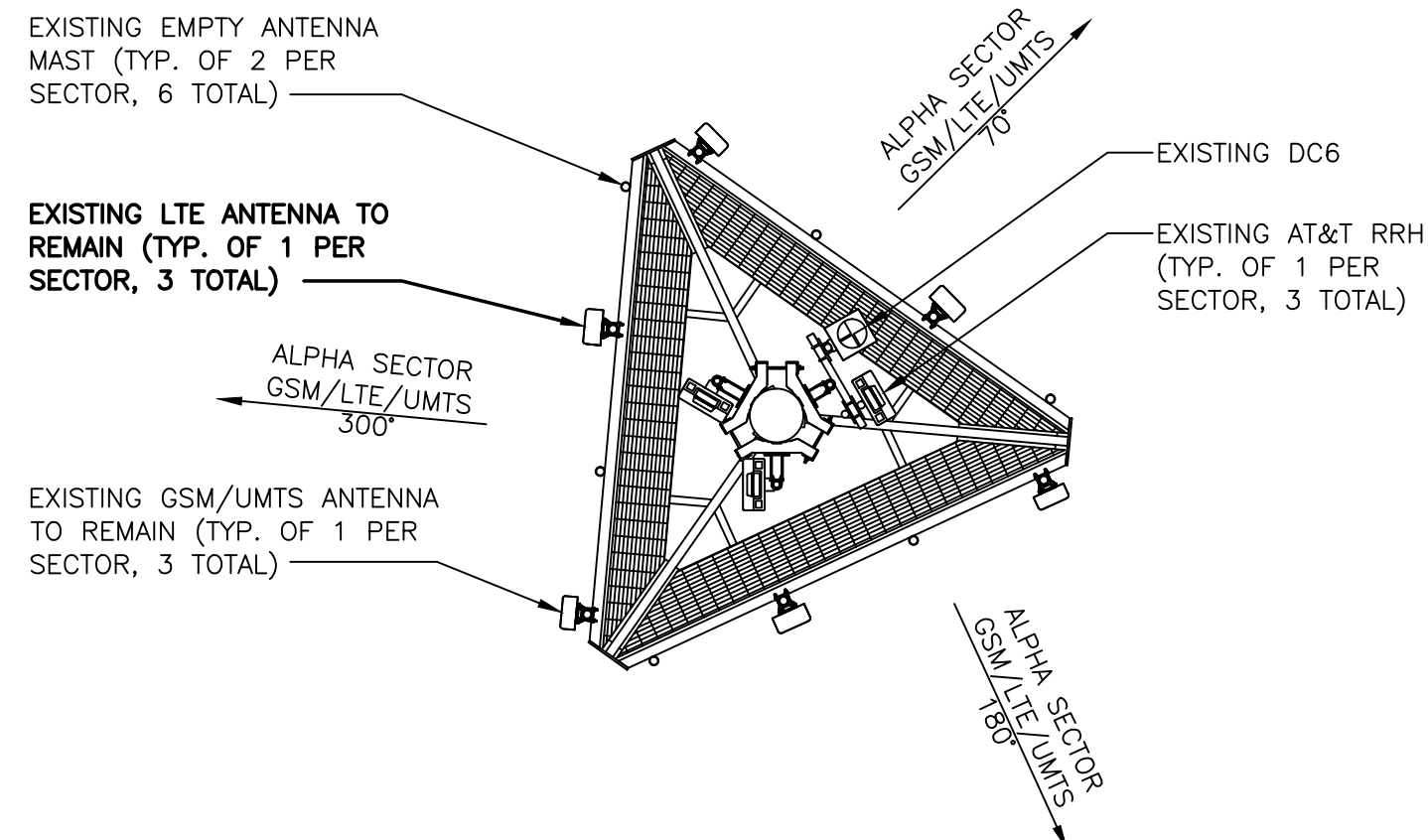
**SITE NUMBER: CTV5163**  
**SITE NAME: WOODBRIDGE COUNTRY CLUB**  
50 WOODFIELD ROAD  
WOODBRIDGE, CT 06525  
NEW HAVEN COUNTY

**at&t**  
MOBILITY  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

0	02/02/16	ISSUED AS FINAL	JW	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

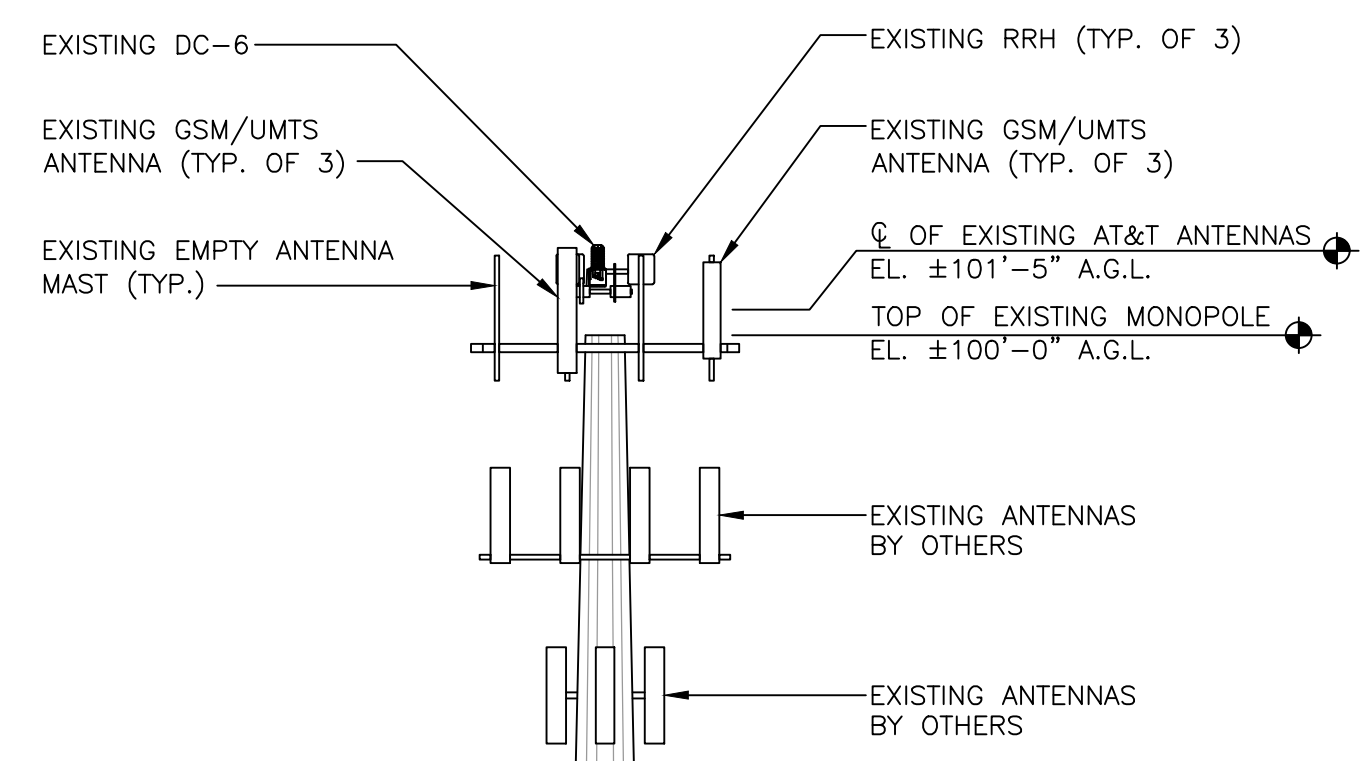


<b>AT&amp;T</b>		
DRAWING TITLE: <b>EQUIPMENT LAYOUTS</b>		
JOB NUMBER 15088-EMP	DRAWING NUMBER A-2	REV 0

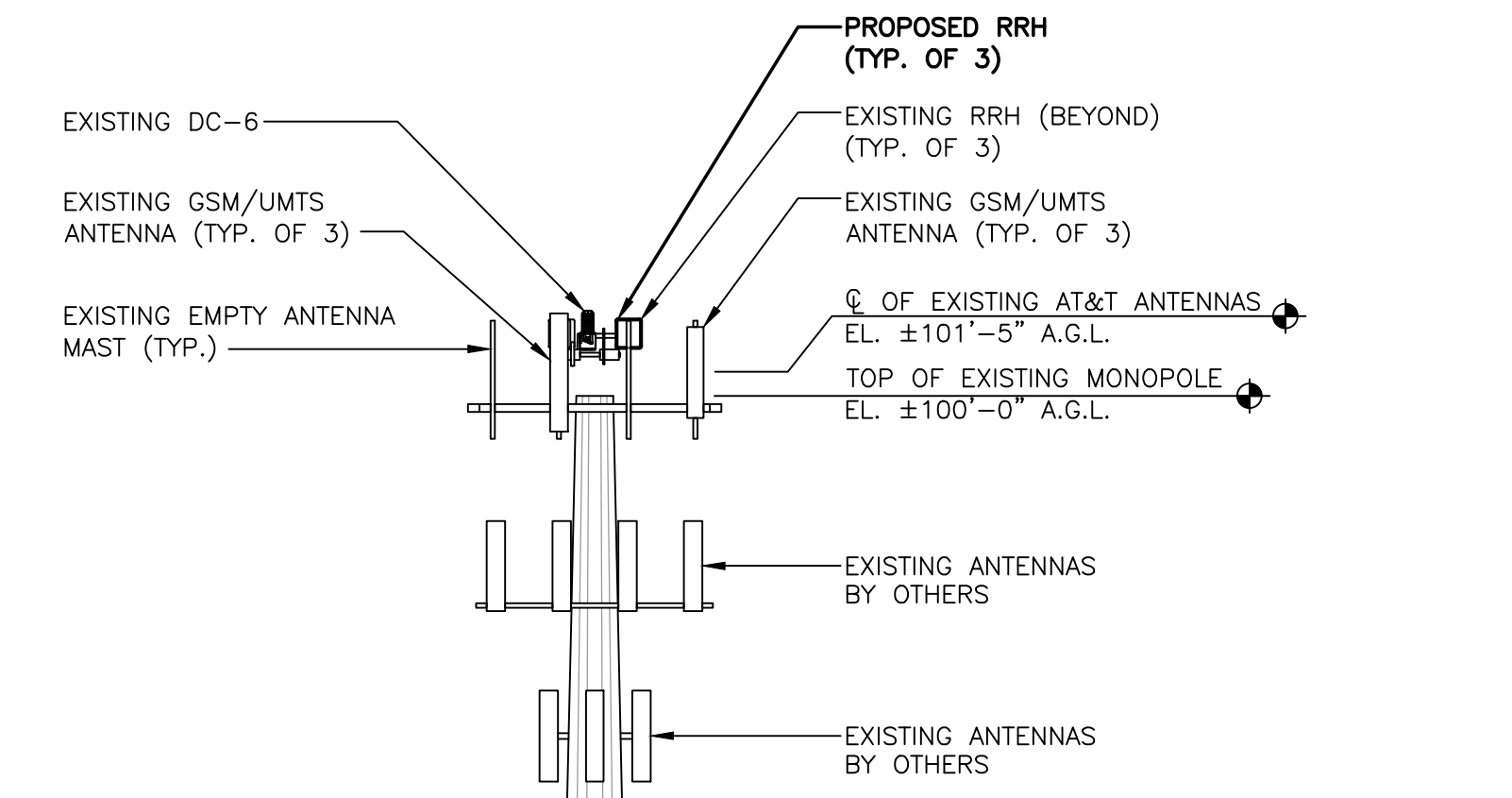


**EXISTING ANTENNA LAYOUT**  
SCALE: N.T.S.

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.

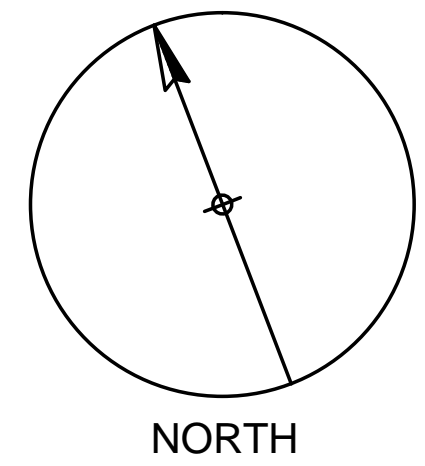
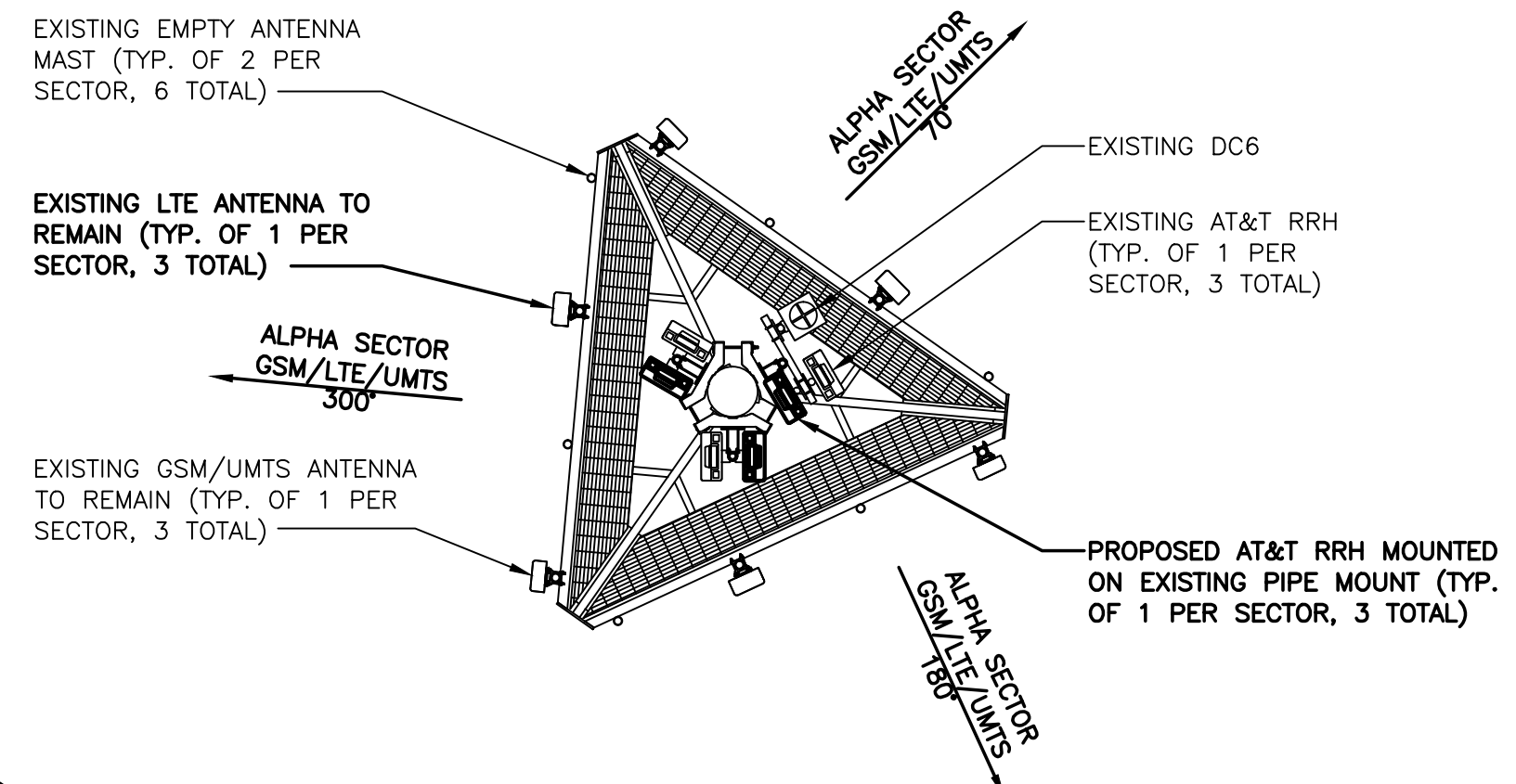


**EXISTING TOWER ELEVATION**  
SCALE: N.T.S.



**PROPOSED TOWER ELEVATION**  
SCALE: N.T.S.

EXISTING CABLES TO BE UTILIZED FOR NEW EQUIPMENT (PER RFDS)



**PROPOSED ANTENNA LAYOUT**  
SCALE: N.T.S.

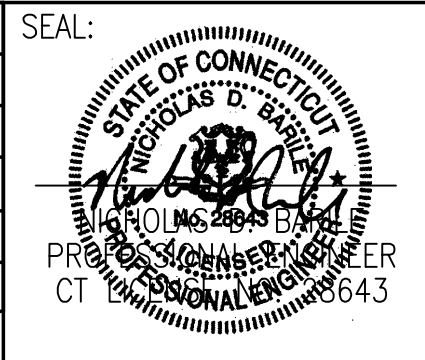
**COM-EX**  
Consultants  
115 ROUTE 46  
SUITE E39  
MOUNTAIN LAKES, NJ 07046  
PHONE: 862.209.4300  
FAX: 862.209.4301

**EMPIRE**  
telecom  
16 ESQUIRE ROAD  
BILLERICA, MA 01821

**SITE NUMBER: CTV5163**  
**SITE NAME: WOODBRIDGE COUNTRY CLUB**  
50 WOODFIELD ROAD  
WOODBRIDGE, CT 06525  
NEW HAVEN COUNTY

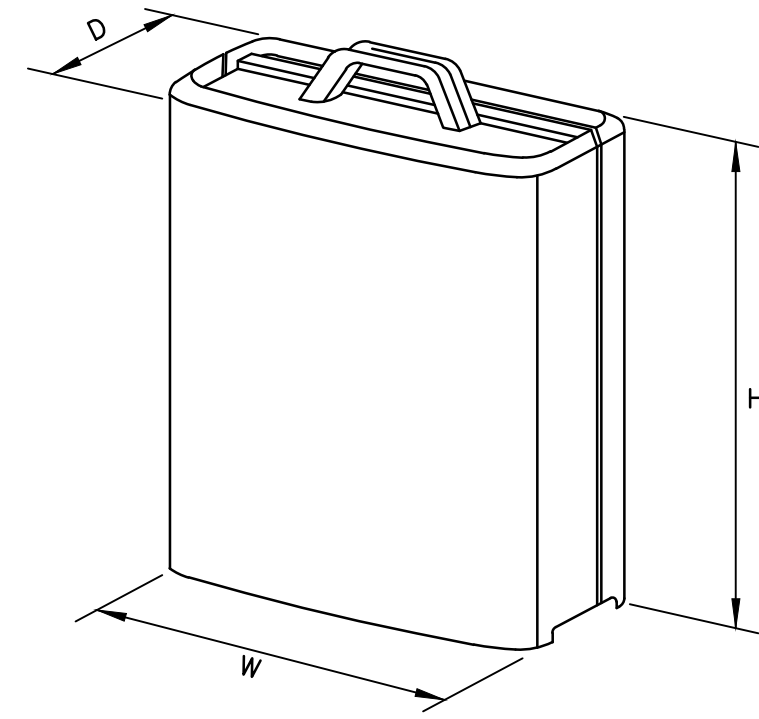
**at&t**  
MOBILITY  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

0	02/02/16	ISSUED AS FINAL	JW	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		



<b>AT&amp;T</b>		
DRAWING TITLE: <b>ANTENNA LAYOUTS &amp; ELEVATIONS</b>		
JOB NUMBER 15088-EMP	DRAWING NUMBER A-3	REV 0





MODEL	L x W x H	WEIGHT
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS-12	20.4" x 18.5" x 7.5"	58 LBS
A2 MODULE	16.4" x 15.2" x 3.4"	22 LBS

\*DENOTES EXISTING.

**RRUS DETAIL**  
SCALE: N.T.S.

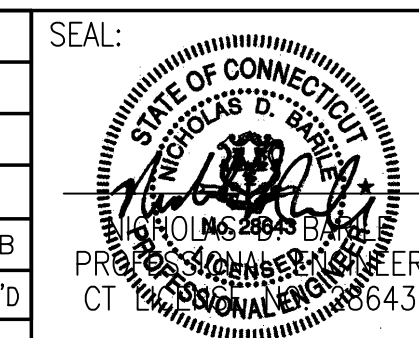
**COM-EX**  
Consultants  
115 ROUTE 46  
SUITE E39  
MOUNTAIN LAKES, NJ 07046  
PHONE: 862.209.4300  
FAX: 862.209.4301

**EMPIRE**  
telecom  
16 ESQUIRE ROAD  
BILLERICA, MA 01821

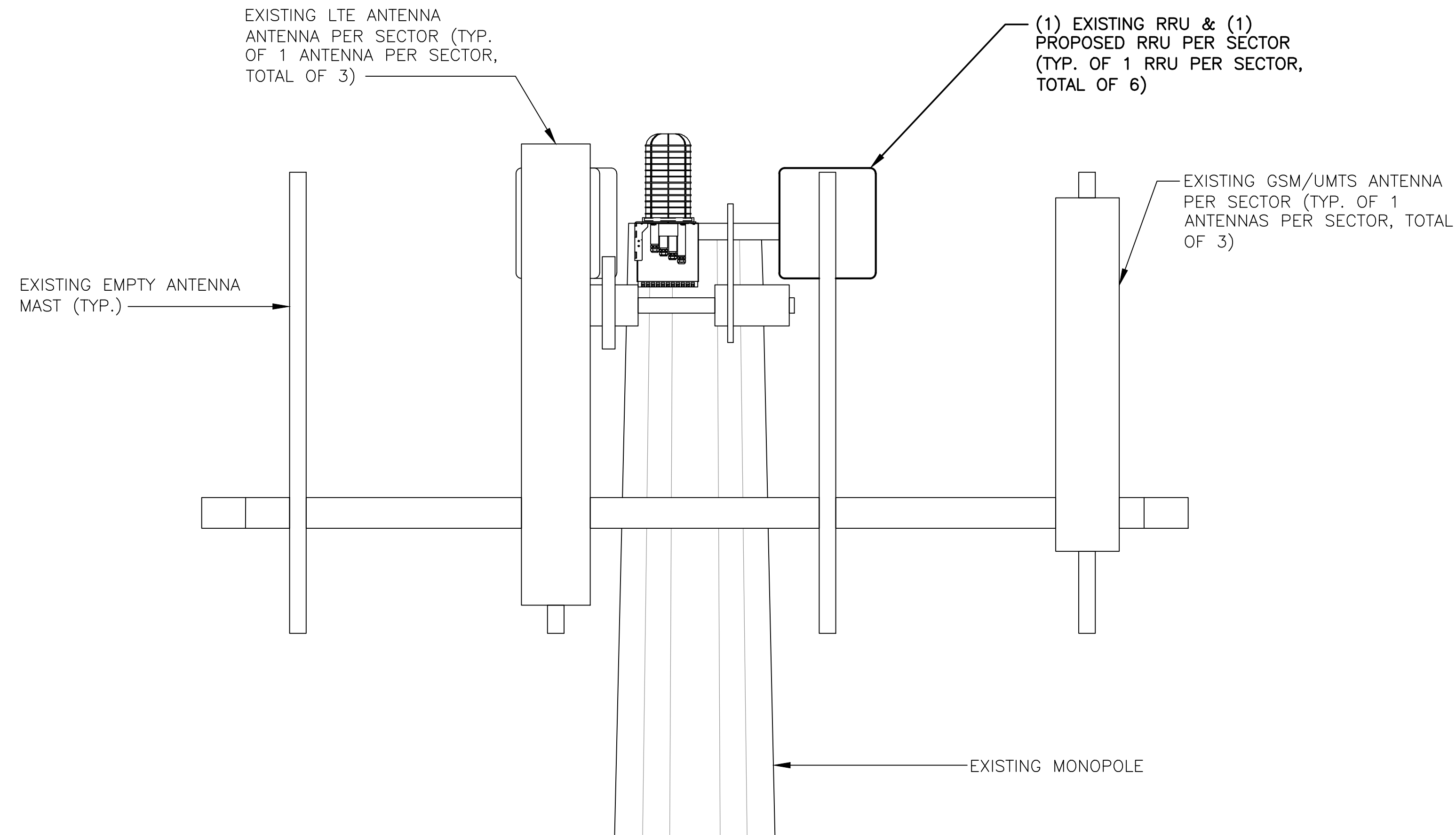
**SITE NUMBER: CTV5163**  
**SITE NAME: WOODBRIDGE**  
**COUNTRY CLUB**  
50 WOODFIELD ROAD  
WOODBRIDGE, CT 06525  
NEW HAVEN COUNTY

 **at&t**  
MOBILITY  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

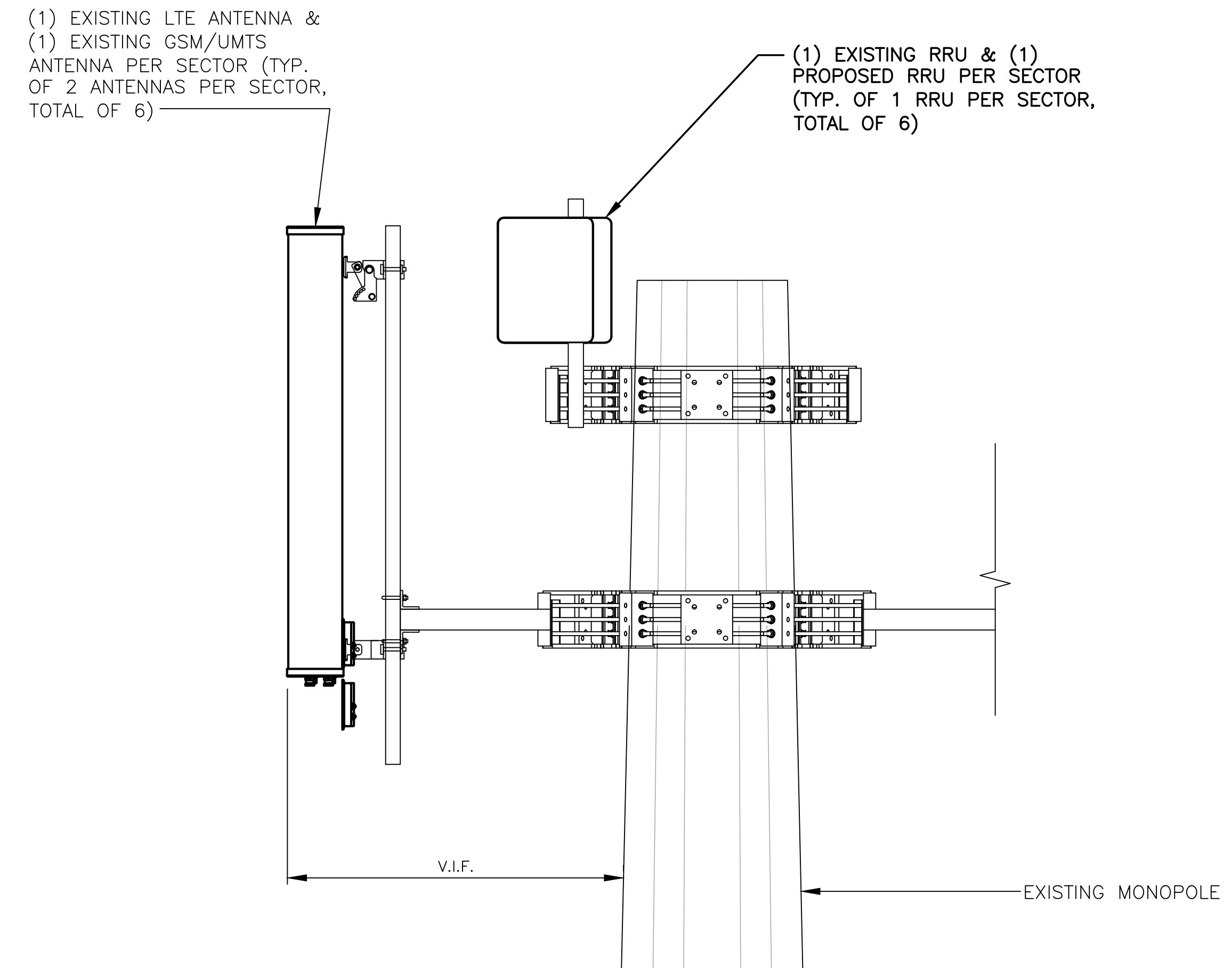
0	02/02/16	ISSUED AS FINAL	JW	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN			DESIGNED BY: NJM		DRAWN BY: NJM



<b>AT&amp;T</b>		
DRAWING TITLE: <b>DETAILS</b>		
JOB NUMBER 15088-EMP	DRAWING NUMBER A-4	REV 0



**PROPOSED ANTENNA MOUNTING DETAIL (FRONT VIEW)**  
SCALE: N.T.S.



**PROPOSED ANTENNA MOUNTING DETAIL (SIDE VIEW)**  
SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	-	-	-
	A3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	A4	-	-	-
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	-	-	-
	B3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B4	-	-	-
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	-	-	-
	G3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G4	-	-	-

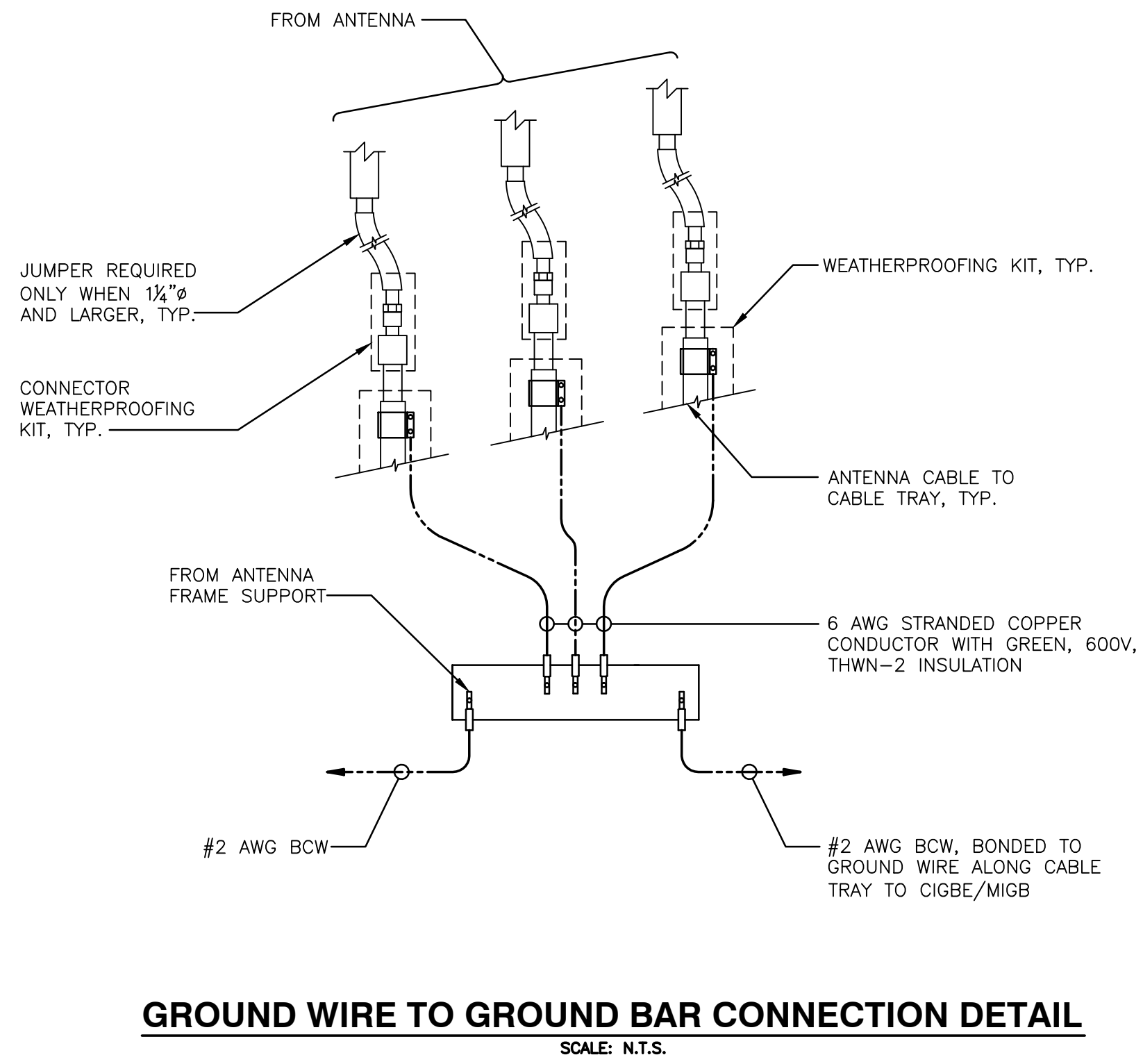
FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	-	-	-
	A3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	A4	-	-	-
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	-	-	-
	B3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B4	-	-	-
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	-	-	-
	G3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G4	-	-	-

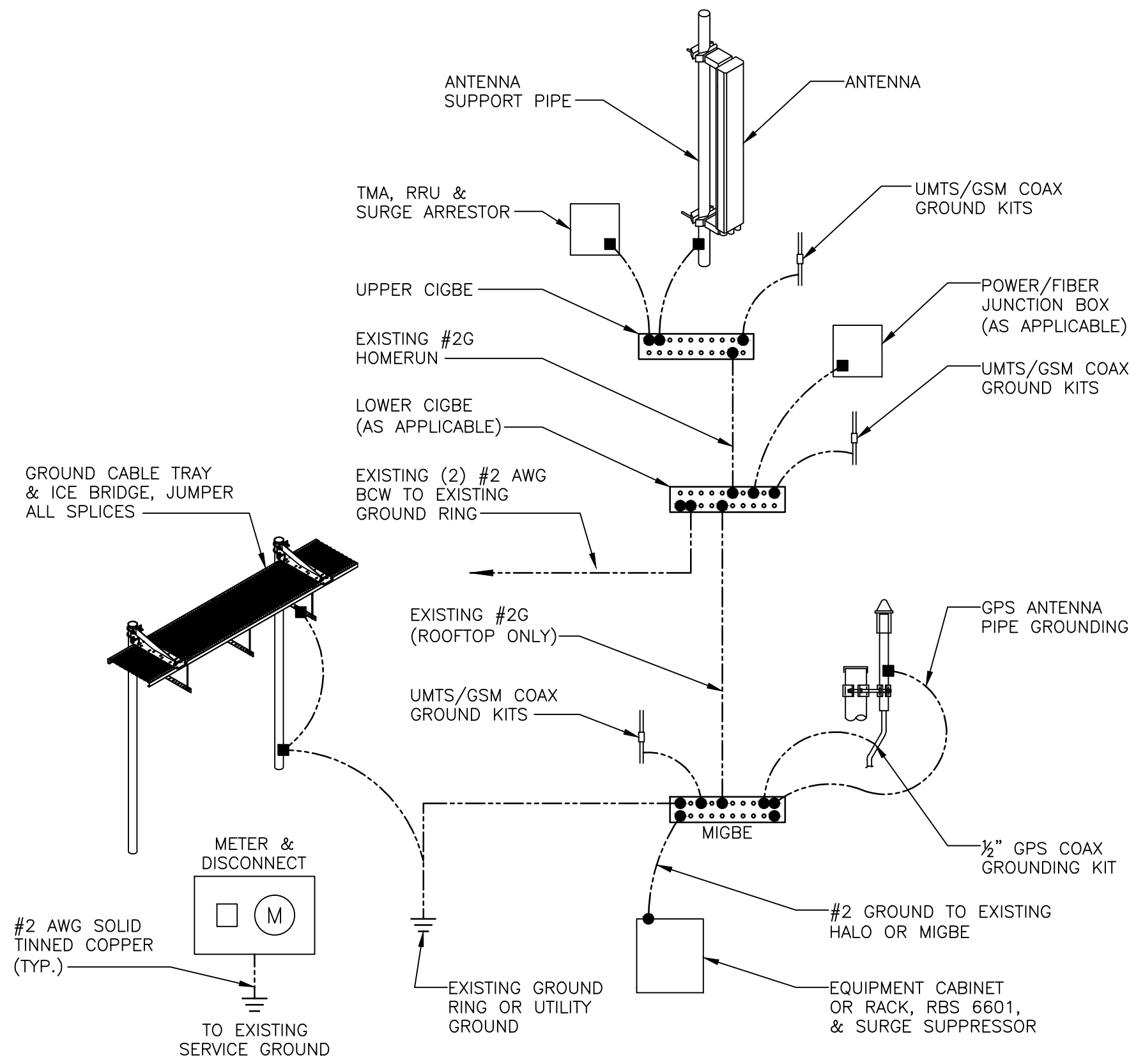
PROPOSED RRU SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-11	19.7"x16.9"x7.2"		
BETA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-11	19.7"x16.9"x7.2"		
GAMMA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-11	19.7"x16.9"x7.2"		

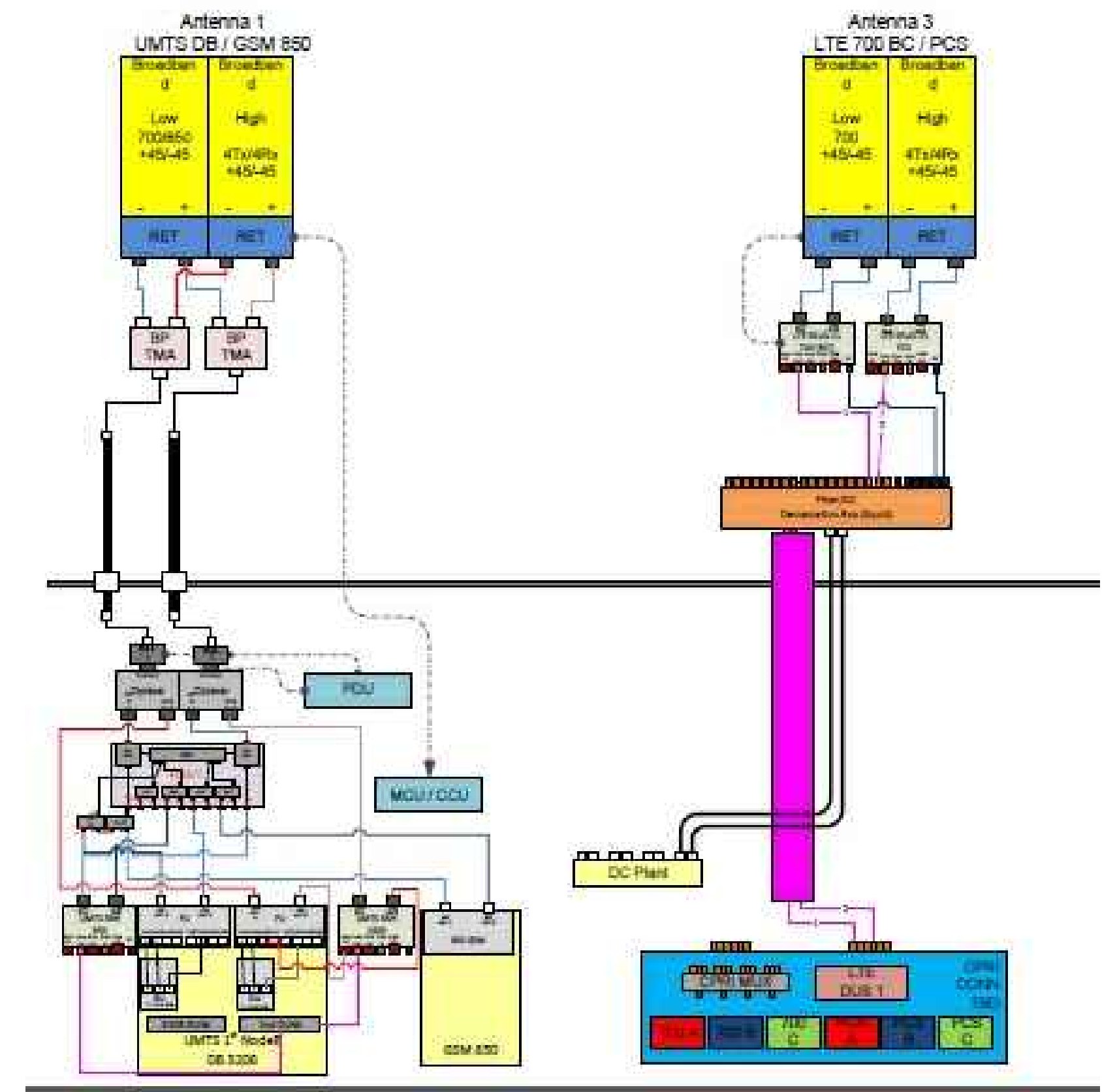
PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING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



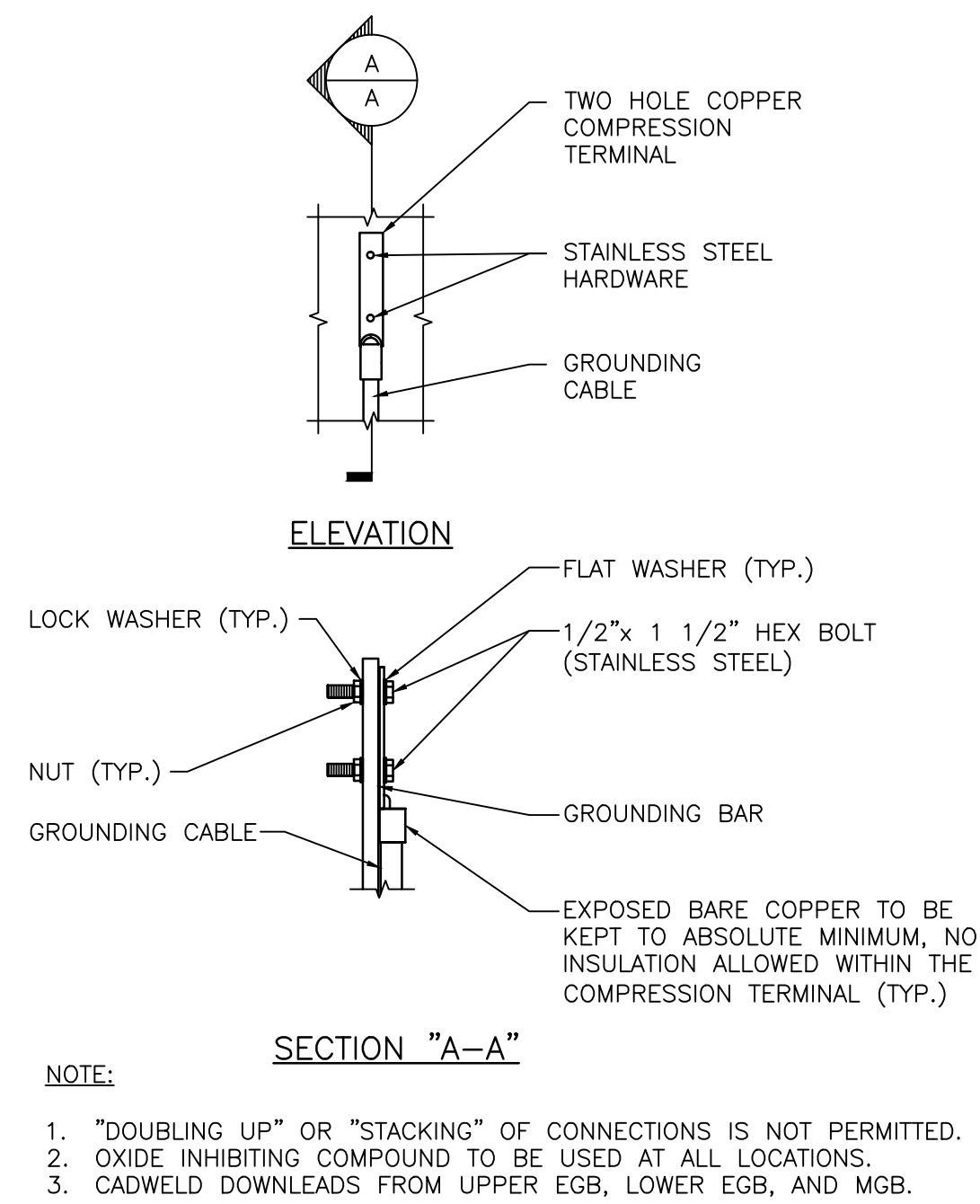
**GROUND WIRE TO GROUND BAR CONNECTION DETAIL**  
SCALE: N.T.S.



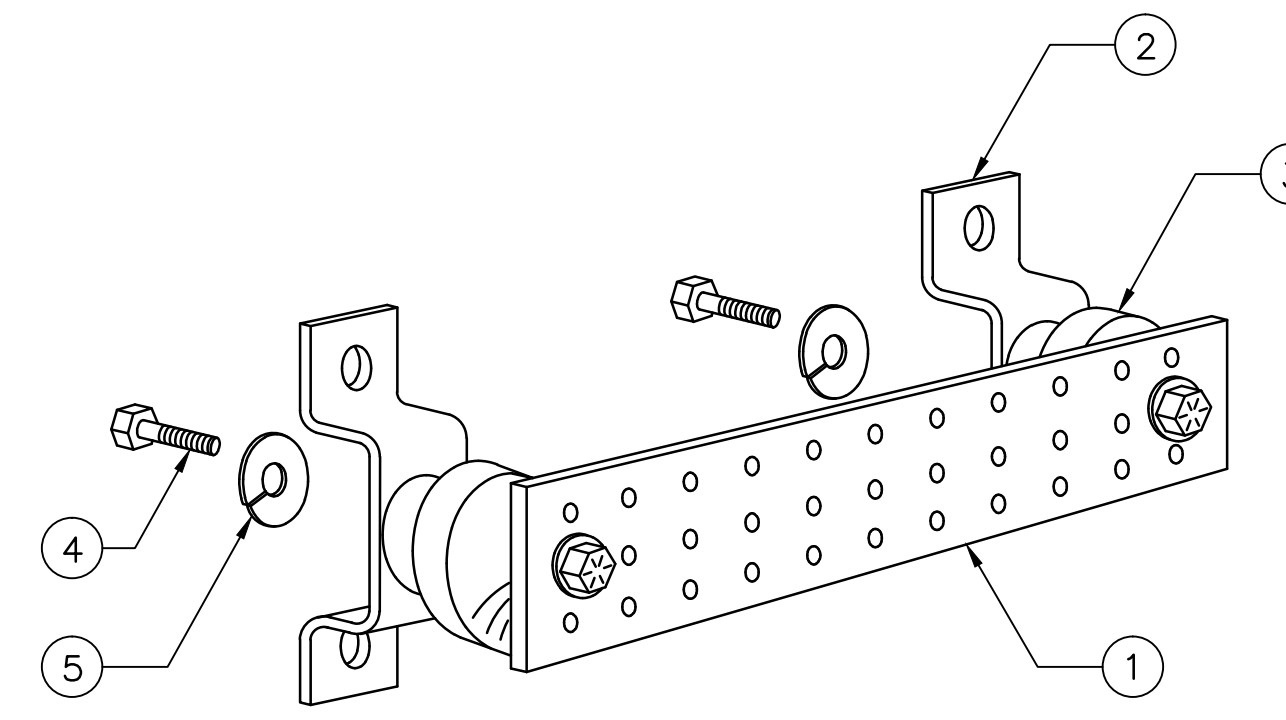
**GROUNDING RISER DIAGRAM**  
SCALE: N.T.S.



**TYPICAL PLUMBING DIAGRAM (PER SECTOR)**  
SCALE: N.T.S.



**TYPICAL GROUND BAR CONNECTION DETAIL**  
SCALE: N.T.S.



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x 1/4")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	5/8"-11x1" H.H.C.S.
5	4	5/8" LOCK WASHER

**GROUND BAR DETAIL**  
SCALE: N.T.S.

- 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)



**Pier Structural Engineering Corp.**  
 55 Northfield Drive E, Suite 198  
 Waterloo, ON N2K 3T6  
 Tel: 519-885-3806  
 Fax: 519-886-0076  
 www.p-sec.ca

**December 04, 2015**

Rebecca Klein, Tower Structural Analyst  
 Crown Castle USA Inc.  
 525 Alderman Lane  
 Fort Mill, SC 29715

**Subject: Structural Analysis Report**

**Carrier Designation:** Carrier Co-Locate: **AT&T Mobility**  
 Carrier Site Number: **CT5163**  
 Carrier Site Name: **AWE - Woodbridge Country Club**

**Crown Castle Designation:** Crown Castle BU Number: **842879**  
 Crown Castle Site Name: **WOODBIDGE COUNTRY CLUB**  
 Crown Castle JDE Job Number: **358041**  
 Crown Castle WO Number: **1161139**

**Engineering Firm Designation:** P-SEC Project Number: **14711**

**Site Data:** **50 WOODFIELD ROAD, WOODBRIDGE, New Haven County, CT**  
**Latitude 41° 19' 39.5", Longitude -72° 59' 36.84"**  
**100-ft Monopole Tower**

Dear Rebecca Klein,

Pier Structural Engineering Corp. (P-SEC) 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 851404, in accordance with application 322607, revision 0.

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**

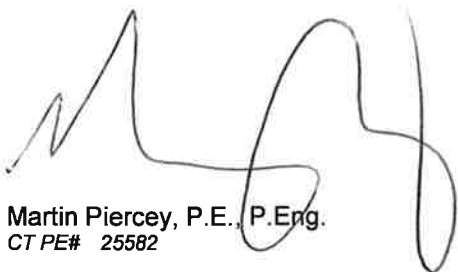
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

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

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

Structural analysis prepared by: Hamze Siblani, E.I.T.

Respectfully submitted by:



Martin Piercey, P.E., P.Eng.  
 CT PE# 25582





**Pier Structural Engineering Corp.**  
 55 Northfield Drive E, Suite 198  
 Waterloo, ON N2K 3T6  
 Tel: 519-885-3806  
 Fax: 519-886-0076  
 www.p-sec.ca

**December 04, 2015**

Rebecca Klein, Tower Structural Analyst  
 Crown Castle USA Inc.  
 525 Alderman Lane  
 Fort Mill, SC 29715

**Subject: Structural Analysis Report**

**Carrier Designation:** Carrier Co-Locate: **AT&T Mobility**  
 Carrier Site Number: **CT5163**  
 Carrier Site Name: **AWE - Woodbridge Country Club**

**Crown Castle Designation:** Crown Castle BU Number: **842879**  
 Crown Castle Site Name: **WOODBIDGE COUNTRY CLUB**  
 Crown Castle JDE Job Number: **358041**  
 Crown Castle WO Number: **1161139**

**Engineering Firm Designation:** P-SEC Project Number: **14711**

**Site Data:** **50 WOODFIELD ROAD, WOODBRIDGE, New Haven County, CT**  
**Latitude 41° 19' 39.5", Longitude -72° 59' 36.84"**  
**100-ft Monopole Tower**

Dear Rebecca Klein,

Pier Structural Engineering Corp. (P-SEC) 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 851404, in accordance with application 322607, revision 0.

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/reserved loading, respectively.

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

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

Structural analysis prepared by: Hamze Siblini, E.I.T.

Respectfully submitted by:

Martin Piercey, P.E., P.Eng.  
 CT PE# 25582

## TABLE OF CONTENTS

### 1) INTRODUCTION

### 2) ANALYSIS CRITERIA

Table 1 - Proposed Antenna and Cable Information

Table 2 - Existing and Reserved Antenna and Cable Information

Table 3 - Design Antenna and Cable Information

### 3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

### 4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Table 6 - Tower Component Stresses vs. Capacity

4.1) Recommendations

### 5) APPENDIX A

tnxTower Output

### 6) APPENDIX B

Base Level Drawing

### 7) APPENDIX C

Additional Calculations

## 1) INTRODUCTION

This tower is a 100-ft Monopole tower was mapped by BTE Management Group in April of 2012. The original design wind speed and code are unknown.

## 2) ANALYSIS CRITERIA

The following design parameters have been used in our analysis:

Design Standard: TIA/EIA-222-F Standard and 2005 CT State Building Code  
 County/State: New Haven County, CT  
 Wind Speeds: *CASE 1* 85 mph (fastest mile)  
                   *CASE 2* 37.6 mph (fastest mile) with 0.75" radial solid ice (*per ASCE7 ice map*)  
                   *CASE 3* 50 mph (fastest mile) for Serviceability  
 Allowable Stress: Increased 1/3rd

**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
98	99	3	ericsson	RRUS 11	2 1	3/4 3/8	1

Notes:

- 1) Proposed equipment

**Table 2 - Existing and Reserved Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
98	99	3	kmw	AM-X-CD-16-65-00T-RET	9 2 1	1-5/8 7/8 1/2	1
		3	powerwave	RA21.7770.00			
		6	ericsson	RBS 6601			
		6	powerwave	LGP21401			
	1	raycap	DC6-48-60-18-8F				
	98	1	--	Platform Mount [LP 712-1]			
90	90	3	antel	BXA-171063-8BF-2	13	1-5/8	1
		3	antel	BXA-171063/8CF			
		3	antel	BXA-70063/6CF			
		3	antel	BXA-80063/4CF			
		3	alcatel lucent	RRH2X40-AWS			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
	1	--	Platform Mount [LP 306-1]				
80	83	2	dragonwave	A-ANT-18G-2-C	5 4	1/2 5/16	1
		2	dragonwave	HORIZON DUO			
	80	3	argus	LLPX310R			
		3	samsung	URAS-FLEXIBLE			
		1	--	Side Arm Mount [SO 102-3]			

Notes:

- 1) Existing equipment

**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)
UNKNOWN						

### 3) ANALYSIS PROCEDURE

**Table 4 - Documents Provided**

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	URS Geotechnical Report dated 3/13/2000	4529495	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEL Job No. 7537-P01 dated 7/26/2000	4529500	CCISITES
4-TOWER MANUFACTURER DRAWINGS	BTE Mapping Job No. 15085 dated 4/24/2012	4858948	CCISITES
APPLICATION	AT&T Mobility, Revision #0 dated 11/30/2015	322607	CCISITES

#### 3.1) Analysis Method

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

#### 3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower\structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
- 5) P-SEC did not analyze antenna supporting mounts as part of this analysis report and assumed they are structurally sufficient. It is the carrier's responsibility to ensure structural compliance of their existing and/or proposed antenna supporting mounts.
- 6) Tower steel assumed 65ksi with A615-J anchor bolts and a 60ksi base plate.
- 7) All equipment model numbers, quantities, and centerline elevations are as provided in the CCI CAD package dated 12/2/2015.

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



#### 4) ANALYSIS RESULTS

**Table 5 - Section Capacity (Summary)**

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	100 - 87	Pole	TP33.73x29.78x0.31	1	-3.18	1643.94	3.1	Pass
L2	87 - 42.9583	Pole	TP47.24x31.8281x0.38	2	-14.16	2819.92	19.3	Pass
L3	42.9583 - 0	Pole	TP60.43x44.593x0.39	3	-27.70	3820.75	26.7	Pass
							Summary	
						Pole (L3)	26.7	Pass
						<b>RATING =</b>	<b>26.7</b>	<b>Pass</b>

**Table 6 - Tower Component Stresses vs. Capacity**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
2	Anchor Rods	0	23.7	Pass
2	Base Plate	0	29.3	Pass
2	Base Foundation (Compared w/ Design Loads)	0	32.5	Pass

<b>Structure Rating (max from all components) =</b>	<b>32.5%</b>
---	--------------

- Notes: 1) See full member breakdown and section capacities in Appendix A.  
 2) See additional documentation in Appendix C for supporting calculations.  
 3) Stresses up to 105% (steel) and 110% (foundations) are within engineering tolerance and considered acceptable.

#### 4.1) Recommendations

The existing 100-ft monopole tower located in New Haven County (WOODBIDGE COUNTRY CLUB), CT is **structurally acceptable** based on the TIA/EIA-222-F Standard and 2005 CT State Building Code based upon a wind speed of 70 mph fastest mile.

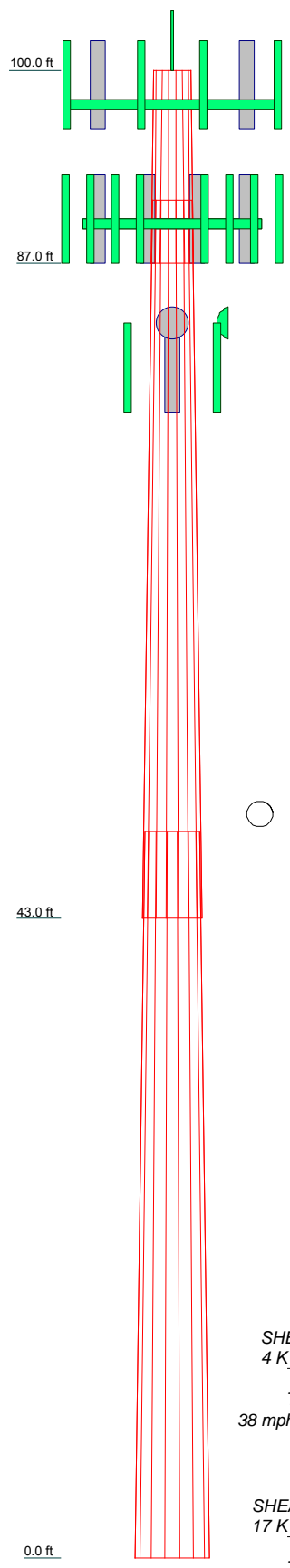
No modifications are required for the proposed loading.

Should you have any questions, please call us anytime at 519-885-3806.

encl.  
 842879\_322607 SA Report\_20151204.doc

**APPENDIX A**  
**TNXTOWER OUTPUT**

Section	1	2	3
Length (ft)	13'	48'3-1/8"	48'10-7/16"
Number of Sides	18	18	18
Thickness (in)	0.3100	0.3800	0.3900
Socket Length (ft)	4'2-5/8"	5'10-29/32"	44.5930
Top Dia (in)	29.7600	31.8281	44.5930
Bot Dia (in)	33.7900	47.2400	60.4300
Grade		A572-65	
Weight (K)	1.4	7.8	10.7



**DESIGNED APPURTENANCE LOADING**

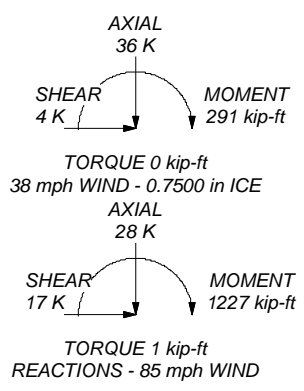
TYPE	ELEVATION	TYPE	ELEVATION
Lighting Rod 5/8" x 4' (LROD 102' E)	102	BXA-70063/6CF w/ Mount Pipe (Carrier 90' E)	90
RRUS 11 (Carrier 98' P)	98	BXA-171063-8BF-2 w/ Mount Pipe (Carrier 90' E)	90
RRUS 11 (Carrier 98' P)	98	BXA-171063-8BF-2 w/ Mount Pipe (Carrier 90' E)	90
RRUS 11 (Carrier 98' P)	98	BXA-171063-8BF-2 w/ Mount Pipe (Carrier 90' E)	90
AM-X-CD-16-65-00T-RET w/ Mount Pipe (Carrier 98' E)	98	BXA-171063-8BF-2 w/ Mount Pipe (Carrier 90' E)	90
AM-X-CD-16-65-00T-RET w/ Mount Pipe (Carrier 98' E)	98	BXA-171063-8BF-2 w/ Mount Pipe (Carrier 90' E)	90
AM-X-CD-16-65-00T-RET w/ Mount Pipe (Carrier 98' E)	98	BXA-80063/4CF w/ Mount Pipe (Carrier 90' E)	90
RA21.7770.00 w/ Mount Pipe (Carrier 98' E)	98	BXA-80063/4CF w/ Mount Pipe (Carrier 90' E)	90
RA21.7770.00 w/ Mount Pipe (Carrier 98' E)	98	BXA-80063/4CF w/ Mount Pipe (Carrier 90' E)	90
RA21.7770.00 w/ Mount Pipe (Carrier 98' E)	98	RRH2X40-AWS (Carrier 90' E)	90
RA21.7770.00 w/ Mount Pipe (Carrier 98' E)	98	RRH2X40-AWS (Carrier 90' E)	90
(2) RBS 6601 (Carrier 98' E)	98	RRH2X40-AWS (Carrier 90' E)	90
(2) RBS 6601 (Carrier 98' E)	98	DB-T1-6Z-8AB-0Z (Carrier 90' E)	90
(2) RBS 6601 (Carrier 98' E)	98	Platform Mount [LP 306-1] (Carrier 90' E)	90
(2) LGP21401 (Carrier 98' E)	98	LLPX310R w/ Mount Pipe (Carrier 80' E)	80
(2) LGP21401 (Carrier 98' E)	98	LLPX310R w/ Mount Pipe (Carrier 80' E)	80
(2) LGP21401 (Carrier 98' E)	98	LLPX310R w/ Mount Pipe (Carrier 80' E)	80
DC6-48-60-18-8F (Carrier 98' E)	98	LLPX310R w/ Mount Pipe (Carrier 80' E)	80
(2) 6' x 2" Mount Pipe (Carrier 98' E)	98	LLPX310R w/ Mount Pipe (Carrier 80' E)	80
(2) 6' x 2" Mount Pipe (Carrier 98' E)	98	URAS-FLEXIBLE (Carrier 80' E)	80
(2) 6' x 2" Mount Pipe (Carrier 98' E)	98	URAS-FLEXIBLE (Carrier 80' E)	80
Platform Mount [LP 712-1] (Carrier 98' E)	98	URAS-FLEXIBLE (Carrier 80' E)	80
BXA-171063/8CF w/ Mount Pipe (Carrier 90' E)	90	HORIZON DUO (Carrier 80' E)	80
BXA-171063/8CF w/ Mount Pipe (Carrier 90' E)	90	HORIZON DUO (Carrier 80' E)	80
BXA-171063/8CF w/ Mount Pipe (Carrier 90' E)	90	(2) 6' x 2" Mount Pipe (Carrier 80' E)	80
BXA-171063/8CF w/ Mount Pipe (Carrier 90' E)	90	(2) 6' x 2" Mount Pipe (Carrier 80' E)	80
BXA-171063/8CF w/ Mount Pipe (Carrier 90' E)	90	(2) 6' x 2" Mount Pipe (Carrier 80' E)	80
BXA-70063/6CF w/ Mount Pipe (Carrier 90' E)	90	Side Arm Mount [SO 102-3] (Carrier 80' E)	80
BXA-70063/6CF w/ Mount Pipe (Carrier 90' E)	90	A-ANT-18G-2-C (Carrier 80' E)	80
BXA-70063/6CF w/ Mount Pipe (Carrier 90' E)	90	A-ANT-18G-2-C (Carrier 80' E)	80

**MATERIAL STRENGTH**

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

**TOWER DESIGN NOTES**

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. -----
6. E - Existing, R/MLA - Reserved, P - Proposed
7. Proposed loading at 98ft elevation
8. TOWER RATING: 26.7%



**Pier Structural Engineering Corp.**  
 198-55 Northfield Drive East  
 Waterloo, ON N2K 3T6  
 Phone: (519) 885-3806  
 FAX: (519) 886-0076

Job: <b>PSEC 14711 (for AT&amp;T MOBILITY)</b>		
Project: <b>842879 - WOODBRIDGE COUNTRY CLUB</b>		
Client: CROWN CASTLE	Drawn by: HS	App'd:
Code: TIA/EIA-222-F	Date: 12/04/15	Scale: NTS
Path:		Dwg No. E-1

H:\PROJECTS\JOB 14000 - 14999\JOB 14700 - 14799\14711\_COI\_842879\_WOODBRIDGE COUNTRY CLUB\842879\_LCS 20151204.dwg

<b>tnxTower</b>  <b>Pier Structural Engineering Corp.</b> 198-55 Northfield Drive East Waterloo, ON N2K 3T6 Phone: (519) 885-3806 FAX: (519) 886-0076	<b>Job</b> PSEC 14711 (for AT&T MOBILITY)	<b>Page</b> 1 of 12
	<b>Project</b> 842879 - WOODBRIDGE COUNTRY CLUB	<b>Date</b> 12:02:48 12/04/15
	<b>Client</b> CROWN CASTLE	<b>Designed by</b> HS

## Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in New Haven County, Connecticut.

Basic wind speed of 85 mph.

Nominal ice thickness of 0.7500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 38 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50 mph.

-----  
E - Existing, R/MLA - Reserved, P - Proposed.

Proposed loading at 98ft elevation.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

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

## 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	100'-87"	13'	4'-5/8"	18	29.7800	33.7300	0.3100	1.2400	A572-65 (65 ksi)
L2	87'-42"11-17/32"	48'3-1/8"	5'10-29/32"	18	31.8281	47.2400	0.3800	1.5200	A572-65 (65 ksi)
L3	42'11-17/32"-0'	48'10-7/16"		18	44.5930	60.4300	0.3900	1.5600	A572-65 (65 ksi)

<b>tnxTower</b>  <b>Pier Structural Engineering Corp.</b> 198-55 Northfield Drive East Waterloo, ON N2K 3T6 Phone: (519) 885-3806 FAX: (519) 886-0076	<b>Job</b> PSEC 14711 (for AT&T MOBILITY)	<b>Page</b> 2 of 12
	<b>Project</b> 842879 - WOODBRIDGE COUNTRY CLUB	<b>Date</b> 12:02:48 12/04/15
	<b>Client</b> CROWN CASTLE	<b>Designed by</b> HS

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>2</sup>	w in	w/t
L1	30.2394	28.9967	3181.6066	10.4619	15.1282	210.3091	6367.3996	14.5011	4.6957	15.147
	34.2503	32.8833	4640.0793	11.8641	17.1348	270.7979	9286.2641	16.4448	5.3909	17.39
L2	33.6872	37.9302	4739.2895	11.1641	16.1687	293.1151	9484.8150	18.9687	4.9330	12.981
	47.9688	56.5188	15679.5943	16.6353	23.9979	653.3731	31379.8203	28.2648	7.6454	20.12
L3	47.2254	54.7172	13507.1848	15.6921	22.6533	596.2580	27032.1428	27.3638	7.1620	18.364
	61.3622	74.3211	33847.8455	21.3142	30.6984	1102.5917	67740.2289	37.1676	9.9493	25.511

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A <sub>f</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
ft	ft <sup>2</sup>	in						
L1 100'-87'				1	1	1		
L2				1	1	1		
87'-42'11-17/32"								
L3				1	1	1		
42'11-17/32"-0'								

### Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C <sub>A</sub> A <sub>A</sub> ft <sup>2</sup> /ft	Weight plf	
LDF4-50A(1/2") (Carrier 98' E)	A	No	Inside Pole	98' - 0'	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
LDF5-50A(7/8) (Carrier 98' E)	A	No	Inside Pole	98' - 0'	2	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33
LDF7-50A(1-5/8) (Carrier 98' E)	A	No	Inside Pole	98' - 0'	9	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
FB-L98B-034-XXX(3/8) (Carrier 98' P)	A	No	Inside Pole	98' - 0'	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06
WR-VG86ST-BRD(3/4") (Carrier 98' P)	A	No	Inside Pole	98' - 0'	2	No Ice	0.00	0.58
						1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
						2" Ice	0.00	0.58
						4" Ice	0.00	0.58
2" Rigid Conduit (Carrier 98' E)	A	No	Inside Pole	98' - 0'	1	No Ice	0.00	2.80
						1/2" Ice	0.00	2.80
						1" Ice	0.00	2.80
						2" Ice	0.00	2.80
						4" Ice	0.00	2.80
LDF7-50A(1-5/8)	B	No	Inside Pole	90' - 0'	12	No Ice	0.00	0.82

<b>tnxTower</b>  <b>Pier Structural Engineering Corp.</b> 198-55 Northfield Drive East Waterloo, ON N2K 3T6 Phone: (519) 885-3806 FAX: (519) 886-0076	<b>Job</b>	PSEC 14711 (for AT&T MOBILITY)	<b>Page</b>	3 of 12
	<b>Project</b>	842879 - WOODBRIDGE COUNTRY CLUB	<b>Date</b>	12:02:48 12/04/15
	<b>Client</b>	CROWN CASTLE	<b>Designed by</b>	HS

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	CAAA	Weight
						ft <sup>2</sup> /ft	plf
(Carrier 90' E)						1/2" Ice 0.00	0.82
						1" Ice 0.00	0.82
						2" Ice 0.00	0.82
						4" Ice 0.00	0.82
MLE Hybrid 9Power/18Fiber RL 2(15/8")	B	No	Inside Pole	90' - 0'	1	No Ice 0.00	1.07
(Carrier 90' E)						1/2" Ice 0.00	1.07
						1" Ice 0.00	1.07
						2" Ice 0.00	1.07
						4" Ice 0.00	1.07
LDF4-50A(1/2")	A	No	Inside Pole	80' - 0'	5	No Ice 0.00	0.15
(Carrier 80' E)						1/2" Ice 0.00	0.15
						1" Ice 0.00	0.15
						2" Ice 0.00	0.15
						4" Ice 0.00	0.15
9207(5/16")	A	No	Inside Pole	80' - 0'	4	No Ice 0.00	0.60
(Carrier 80' E)						1/2" Ice 0.00	0.60
						1" Ice 0.00	0.60
						2" Ice 0.00	0.60
						4" Ice 0.00	0.60
2 1/4" Rigid Conduit	A	No	Inside Pole	80' - 0'	2	No Ice 0.00	3.15
(Carrier 80' E)						1/2" Ice 0.00	3.15
						1" Ice 0.00	3.15
						2" Ice 0.00	3.15
						4" Ice 0.00	3.15
**							

### Feed Line Center of Pressure

Section	Elevation ft	CP <sub>x</sub> in	CP <sub>z</sub> in	CP <sub>x</sub> Ice in	CP <sub>z</sub> Ice in
L1	100'-87"	0.0000	0.0000	0.0000	0.0000
L2	87'-42"11-17/32"	0.0000	0.0000	0.0000	0.0000
L3	42"11-17/32"-0'	0.0000	0.0000	0.0000	0.0000

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	CAAA Front ft <sup>2</sup>	CAAA Side ft <sup>2</sup>	Weight K
Lighting Rod 5/8" x 4' (LROD 102' E)	C	None		0.0000	102'	No Ice 0.25	0.25	0.03
						1/2" Ice 0.66	0.66	0.03
						1" Ice 0.97	0.97	0.04
						2" Ice 1.49	1.49	0.06
						4" Ice 2.68	2.68	0.14
**								
RRUS 11 (Carrier 98' P)	A	From Leg	4.00 0' 1'	0.0000	98'	No Ice 3.25	1.37	0.05
						1/2" Ice 3.49	1.55	0.07
						Ice 3.74	1.74	0.10
						1" Ice 4.27	2.14	0.15
						2" Ice 5.43	3.04	0.31

<b>tnxTower</b>  <b>Pier Structural Engineering Corp.</b> 198-55 Northfield Drive East Waterloo, ON N2K 3T6 Phone: (519) 885-3806 FAX: (519) 886-0076	<b>Job</b>	PSEC 14711 (for AT&T MOBILITY)	<b>Page</b>	4 of 12
	<b>Project</b>	842879 - WOODBRIDGE COUNTRY CLUB	<b>Date</b>	12:02:48 12/04/15
	<b>Client</b>	CROWN CASTLE	<b>Designed by</b>	HS

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Lateral					
<b>RRUS 11</b> (Carrier 98' P)	<b>B</b>	<b>From Leg</b>	<b>4.00</b>	<b>0.0000</b>	<b>98'</b>	<b>4" Ice</b>	<b>3.25</b>	<b>1.37</b>	<b>0.05</b>
			<b>0'</b>			<b>No Ice</b>	<b>3.49</b>	<b>1.55</b>	<b>0.07</b>
			<b>1'</b>			<b>1/2" Ice</b>	<b>3.74</b>	<b>1.74</b>	<b>0.10</b>
						<b>1" Ice</b>	<b>4.27</b>	<b>2.14</b>	<b>0.15</b>
						<b>2" Ice</b>	<b>5.43</b>	<b>3.04</b>	<b>0.31</b>
<b>RRUS 11</b> (Carrier 98' P)	<b>C</b>	<b>From Leg</b>	<b>4.00</b>	<b>0.0000</b>	<b>98'</b>	<b>4" Ice</b>	<b>3.25</b>	<b>1.37</b>	<b>0.05</b>
			<b>0'</b>			<b>No Ice</b>	<b>3.49</b>	<b>1.55</b>	<b>0.07</b>
			<b>1'</b>			<b>1/2" Ice</b>	<b>3.74</b>	<b>1.74</b>	<b>0.10</b>
						<b>1" Ice</b>	<b>4.27</b>	<b>2.14</b>	<b>0.15</b>
						<b>2" Ice</b>	<b>5.43</b>	<b>3.04</b>	<b>0.31</b>
AM-X-CD-16-65-00T-RET w/ Mount Pipe (Carrier 98' E)	<b>A</b>	<b>From Leg</b>	<b>4.00</b>	<b>0.0000</b>	<b>98'</b>	<b>4" Ice</b>	<b>8.50</b>	<b>6.30</b>	<b>0.07</b>
			<b>0'</b>			<b>No Ice</b>	<b>9.15</b>	<b>7.48</b>	<b>0.14</b>
			<b>1'</b>			<b>1/2" Ice</b>	<b>9.77</b>	<b>8.37</b>	<b>0.21</b>
						<b>2" Ice</b>	<b>11.03</b>	<b>10.18</b>	<b>0.38</b>
						<b>4" Ice</b>	<b>13.68</b>	<b>14.02</b>	<b>0.87</b>
AM-X-CD-16-65-00T-RET w/ Mount Pipe (Carrier 98' E)	<b>B</b>	<b>From Leg</b>	<b>4.00</b>	<b>0.0000</b>	<b>98'</b>	<b>4" Ice</b>	<b>8.50</b>	<b>6.30</b>	<b>0.07</b>
			<b>0'</b>			<b>No Ice</b>	<b>9.15</b>	<b>7.48</b>	<b>0.14</b>
			<b>1'</b>			<b>1/2" Ice</b>	<b>9.77</b>	<b>8.37</b>	<b>0.21</b>
						<b>2" Ice</b>	<b>11.03</b>	<b>10.18</b>	<b>0.38</b>
						<b>4" Ice</b>	<b>13.68</b>	<b>14.02</b>	<b>0.87</b>
AM-X-CD-16-65-00T-RET w/ Mount Pipe (Carrier 98' E)	<b>C</b>	<b>From Leg</b>	<b>4.00</b>	<b>0.0000</b>	<b>98'</b>	<b>4" Ice</b>	<b>8.50</b>	<b>6.30</b>	<b>0.07</b>
			<b>0'</b>			<b>No Ice</b>	<b>9.15</b>	<b>7.48</b>	<b>0.14</b>
			<b>1'</b>			<b>1/2" Ice</b>	<b>9.77</b>	<b>8.37</b>	<b>0.21</b>
						<b>2" Ice</b>	<b>11.03</b>	<b>10.18</b>	<b>0.38</b>
						<b>4" Ice</b>	<b>13.68</b>	<b>14.02</b>	<b>0.87</b>
RA21.7770.00 w/ Mount Pipe (Carrier 98' E)	<b>A</b>	<b>From Leg</b>	<b>4.00</b>	<b>0.0000</b>	<b>98'</b>	<b>4" Ice</b>	<b>7.03</b>	<b>5.00</b>	<b>0.06</b>
			<b>0'</b>			<b>No Ice</b>	<b>7.61</b>	<b>5.96</b>	<b>0.11</b>
			<b>1'</b>			<b>1/2" Ice</b>	<b>8.16</b>	<b>6.75</b>	<b>0.18</b>
						<b>2" Ice</b>	<b>9.31</b>	<b>8.37</b>	<b>0.32</b>
						<b>4" Ice</b>	<b>11.72</b>	<b>11.87</b>	<b>0.75</b>
RA21.7770.00 w/ Mount Pipe (Carrier 98' E)	<b>B</b>	<b>From Leg</b>	<b>4.00</b>	<b>0.0000</b>	<b>98'</b>	<b>4" Ice</b>	<b>7.03</b>	<b>5.00</b>	<b>0.06</b>
			<b>0'</b>			<b>No Ice</b>	<b>7.61</b>	<b>5.96</b>	<b>0.11</b>
			<b>1'</b>			<b>1/2" Ice</b>	<b>8.16</b>	<b>6.75</b>	<b>0.18</b>
						<b>2" Ice</b>	<b>9.31</b>	<b>8.37</b>	<b>0.32</b>
						<b>4" Ice</b>	<b>11.72</b>	<b>11.87</b>	<b>0.75</b>
RA21.7770.00 w/ Mount Pipe (Carrier 98' E)	<b>C</b>	<b>From Leg</b>	<b>4.00</b>	<b>0.0000</b>	<b>98'</b>	<b>4" Ice</b>	<b>7.03</b>	<b>5.00</b>	<b>0.06</b>
			<b>0'</b>			<b>No Ice</b>	<b>7.61</b>	<b>5.96</b>	<b>0.11</b>
			<b>1'</b>			<b>1/2" Ice</b>	<b>8.16</b>	<b>6.75</b>	<b>0.18</b>
						<b>2" Ice</b>	<b>9.31</b>	<b>8.37</b>	<b>0.32</b>
						<b>4" Ice</b>	<b>11.72</b>	<b>11.87</b>	<b>0.75</b>
(2) RBS 6601 (Carrier 98' E)	<b>A</b>	<b>From Leg</b>	<b>4.00</b>	<b>0.0000</b>	<b>98'</b>	<b>4" Ice</b>	<b>0.48</b>	<b>0.35</b>	<b>0.02</b>
			<b>0'</b>			<b>No Ice</b>	<b>0.62</b>	<b>0.46</b>	<b>0.03</b>
			<b>1'</b>			<b>1/2" Ice</b>	<b>0.77</b>	<b>0.58</b>	<b>0.05</b>
						<b>2" Ice</b>	<b>1.10</b>	<b>0.84</b>	<b>0.08</b>
						<b>4" Ice</b>	<b>1.87</b>	<b>1.47</b>	<b>0.20</b>
(2) RBS 6601 (Carrier 98' E)	<b>B</b>	<b>From Leg</b>	<b>4.00</b>	<b>0.0000</b>	<b>98'</b>	<b>4" Ice</b>	<b>0.48</b>	<b>0.35</b>	<b>0.02</b>
			<b>0'</b>			<b>No Ice</b>	<b>0.62</b>	<b>0.46</b>	<b>0.03</b>
			<b>1'</b>			<b>1/2" Ice</b>	<b>0.77</b>	<b>0.58</b>	<b>0.05</b>
						<b>2" Ice</b>	<b>1.10</b>	<b>0.84</b>	<b>0.08</b>
						<b>4" Ice</b>	<b>1.87</b>	<b>1.47</b>	<b>0.20</b>
(2) RBS 6601 (Carrier 98' E)	<b>C</b>	<b>From Leg</b>	<b>4.00</b>	<b>0.0000</b>	<b>98'</b>	<b>4" Ice</b>	<b>0.48</b>	<b>0.35</b>	<b>0.02</b>
			<b>0'</b>			<b>No Ice</b>	<b>0.62</b>	<b>0.46</b>	<b>0.03</b>
			<b>1'</b>			<b>1/2" Ice</b>	<b>0.77</b>	<b>0.58</b>	<b>0.05</b>
						<b>2" Ice</b>	<b>1.10</b>	<b>0.84</b>	<b>0.08</b>
						<b>4" Ice</b>	<b>1.87</b>	<b>1.47</b>	<b>0.20</b>

<b>tnxTower</b>  <b>Pier Structural Engineering Corp.</b> 198-55 Northfield Drive East Waterloo, ON N2K 3T6 Phone: (519) 885-3806 FAX: (519) 886-0076	<b>Job</b>	PSEC 14711 (for AT&T MOBILITY)	<b>Page</b>	5 of 12
	<b>Project</b>	842879 - WOODBRIDGE COUNTRY CLUB	<b>Date</b>	12:02:48 12/04/15
	<b>Client</b>	CROWN CASTLE	<b>Designed by</b>	HS

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Lateral					
(2) LGP21401 (Carrier 98' E)	A	From Leg	4.00	0.0000	98'	4" Ice	1.87	1.47	0.20
						No Ice	1.29	0.23	0.01
						1/2" Ice	1.45	0.31	0.02
						1" Ice	1.61	0.40	0.03
						2" Ice	1.97	0.61	0.05
(2) LGP21401 (Carrier 98' E)	B	From Leg	4.00	0.0000	98'	4" Ice	2.79	1.12	0.14
						No Ice	1.29	0.23	0.01
						1/2" Ice	1.45	0.31	0.02
						1" Ice	1.61	0.40	0.03
						2" Ice	1.97	0.61	0.05
(2) LGP21401 (Carrier 98' E)	C	From Leg	4.00	0.0000	98'	4" Ice	2.79	1.12	0.14
						No Ice	1.29	0.23	0.01
						1/2" Ice	1.45	0.31	0.02
						1" Ice	1.61	0.40	0.03
						2" Ice	1.97	0.61	0.05
DC6-48-60-18-8F (Carrier 98' E)	C	From Leg	4.00	0.0000	98'	4" Ice	2.79	1.12	0.14
						No Ice	2.57	2.57	0.02
						1/2" Ice	2.80	2.80	0.04
						1" Ice	3.04	3.04	0.07
						2" Ice	3.54	3.54	0.13
(2) 6' x 2" Mount Pipe (Carrier 98' E)	A	From Leg	4.00	0.0000	98'	4" Ice	4.66	4.66	0.30
						No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
(2) 6' x 2" Mount Pipe (Carrier 98' E)	B	From Leg	4.00	0.0000	98'	4" Ice	4.70	4.70	0.23
						No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
(2) 6' x 2" Mount Pipe (Carrier 98' E)	C	From Leg	4.00	0.0000	98'	4" Ice	4.70	4.70	0.23
						No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
Platform Mount [LP 712-1] (Carrier 98' E)	C	None	0.0000	98'	No Ice	24.53	24.53	1.34	
					1/2" Ice	29.94	29.94	1.65	
					1" Ice	35.35	35.35	1.96	
					2" Ice	46.17	46.17	2.58	
					4" Ice	67.81	67.81	3.82	
**									
BXA-171063/8CF w/ Mount Pipe (Carrier 90' E)	A	From Leg	4.00	0.0000	90'	No Ice	3.16	3.33	0.03
						1/2" Ice	3.53	3.94	0.06
						1" Ice	3.94	4.56	0.10
						2" Ice	4.83	5.86	0.19
						4" Ice	6.73	8.84	0.48
BXA-171063/8CF w/ Mount Pipe (Carrier 90' E)	B	From Leg	4.00	0.0000	90'	No Ice	3.16	3.33	0.03
						1/2" Ice	3.53	3.94	0.06
						1" Ice	3.94	4.56	0.10
						2" Ice	4.83	5.86	0.19
						4" Ice	6.73	8.84	0.48
BXA-171063/8CF w/ Mount Pipe (Carrier 90' E)	C	From Leg	4.00	0.0000	90'	No Ice	3.16	3.33	0.03
						1/2" Ice	3.53	3.94	0.06
						1" Ice	3.94	4.56	0.10
						2" Ice	4.83	5.86	0.19
						4" Ice	6.73	8.84	0.48



<b>tnxTower</b>  <b>Pier Structural Engineering Corp.</b> 198-55 Northfield Drive East Waterloo, ON N2K 3T6 Phone: (519) 885-3806 FAX: (519) 886-0076	<b>Job</b>	PSEC 14711 (for AT&T MOBILITY)	<b>Page</b>	6 of 12
	<b>Project</b>	842879 - WOODBRIDGE COUNTRY CLUB	<b>Date</b>	12:02:48 12/04/15
	<b>Client</b>	CROWN CASTLE	<b>Designed by</b>	HS

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Lateral					
BXA-70063/6CF w/ Mount Pipe (Carrier 90' E)	A	From Leg	4.00	0.0000	90'	No Ice	7.98	5.70	0.04
			0'	0'	1/2" Ice	8.62	6.85	0.10	
			0'	0'	1" Ice	9.23	7.71	0.17	
			0'	0'	2" Ice	10.47	9.50	0.33	
			0'	0'	4" Ice	13.08	13.26	0.80	
BXA-70063/6CF w/ Mount Pipe (Carrier 90' E)	B	From Leg	4.00	0.0000	90'	No Ice	7.98	5.70	0.04
			0'	0'	1/2" Ice	8.62	6.85	0.10	
			0'	0'	1" Ice	9.23	7.71	0.17	
			0'	0'	2" Ice	10.47	9.50	0.33	
			0'	0'	4" Ice	13.08	13.26	0.80	
BXA-70063/6CF w/ Mount Pipe (Carrier 90' E)	C	From Leg	4.00	0.0000	90'	No Ice	7.98	5.70	0.04
			0'	0'	1/2" Ice	8.62	6.85	0.10	
			0'	0'	1" Ice	9.23	7.71	0.17	
			0'	0'	2" Ice	10.47	9.50	0.33	
			0'	0'	4" Ice	13.08	13.26	0.80	
BXA-171063-8BF-2 w/ Mount Pipe (Carrier 90' E)	A	From Leg	4.00	0.0000	90'	No Ice	3.18	3.35	0.03
			0'	0'	1/2" Ice	3.56	3.97	0.06	
			0'	0'	1" Ice	3.96	4.60	0.10	
			0'	0'	2" Ice	4.85	5.89	0.19	
			0'	0'	4" Ice	6.77	8.89	0.49	
BXA-171063-8BF-2 w/ Mount Pipe (Carrier 90' E)	B	From Leg	4.00	0.0000	90'	No Ice	3.18	3.35	0.03
			0'	0'	1/2" Ice	3.56	3.97	0.06	
			0'	0'	1" Ice	3.96	4.60	0.10	
			0'	0'	2" Ice	4.85	5.89	0.19	
			0'	0'	4" Ice	6.77	8.89	0.49	
BXA-171063-8BF-2 w/ Mount Pipe (Carrier 90' E)	C	From Leg	4.00	0.0000	90'	No Ice	3.18	3.35	0.03
			0'	0'	1/2" Ice	3.56	3.97	0.06	
			0'	0'	1" Ice	3.96	4.60	0.10	
			0'	0'	2" Ice	4.85	5.89	0.19	
			0'	0'	4" Ice	6.77	8.89	0.49	
BXA-80063/4CF w/ Mount Pipe (Carrier 90' E)	A	From Leg	4.00	0.0000	90'	No Ice	5.40	3.42	0.03
			0'	0'	1/2" Ice	5.84	4.02	0.07	
			0'	0'	1" Ice	6.30	4.64	0.12	
			0'	0'	2" Ice	7.24	5.92	0.23	
			0'	0'	4" Ice	9.26	8.93	0.56	
BXA-80063/4CF w/ Mount Pipe (Carrier 90' E)	B	From Leg	4.00	0.0000	90'	No Ice	5.40	3.42	0.03
			0'	0'	1/2" Ice	5.84	4.02	0.07	
			0'	0'	1" Ice	6.30	4.64	0.12	
			0'	0'	2" Ice	7.24	5.92	0.23	
			0'	0'	4" Ice	9.26	8.93	0.56	
BXA-80063/4CF w/ Mount Pipe (Carrier 90' E)	C	From Leg	4.00	0.0000	90'	No Ice	5.40	3.42	0.03
			0'	0'	1/2" Ice	5.84	4.02	0.07	
			0'	0'	1" Ice	6.30	4.64	0.12	
			0'	0'	2" Ice	7.24	5.92	0.23	
			0'	0'	4" Ice	9.26	8.93	0.56	
RRH2X40-AWS (Carrier 90' E)	A	From Leg	4.00	0.0000	90'	No Ice	2.52	1.59	0.04
			0'	0'	1/2" Ice	2.75	1.80	0.06	
			0'	0'	1" Ice	2.99	2.01	0.08	
			0'	0'	2" Ice	3.50	2.46	0.13	
			0'	0'	4" Ice	4.61	3.48	0.28	
RRH2X40-AWS (Carrier 90' E)	B	From Leg	4.00	0.0000	90'	No Ice	2.52	1.59	0.04
			0'	0'	1/2" Ice	2.75	1.80	0.06	
			0'	0'	1" Ice	2.99	2.01	0.08	
			0'	0'	2" Ice	3.50	2.46	0.13	
			0'	0'	4" Ice	4.61	3.48	0.28	
RRH2X40-AWS (Carrier 90' E)	C	From Leg	4.00	0.0000	90'	No Ice	2.52	1.59	0.04
			0'	0'	1/2" Ice	2.75	1.80	0.06	

<b>tnxTower</b>  <b>Pier Structural Engineering Corp.</b> 198-55 Northfield Drive East Waterloo, ON N2K 3T6 Phone: (519) 885-3806 FAX: (519) 886-0076	<b>Job</b>	PSEC 14711 (for AT&T MOBILITY)	<b>Page</b>	7 of 12
	<b>Project</b>	842879 - WOODBRIDGE COUNTRY CLUB	<b>Date</b>	12:02:48 12/04/15
	<b>Client</b>	CROWN CASTLE	<b>Designed by</b>	HS

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Lateral					
				0'					
						1" Ice	2.99	2.01	0.08
						2" Ice	3.50	2.46	0.13
						4" Ice	4.61	3.48	0.28
DB-T1-6Z-8AB-0Z (Carrier 90' E)	A	From Leg	4.00	0'	0.0000	90'	No Ice	5.60	2.33
				0'			1/2" Ice	5.92	2.56
							1" Ice	6.24	2.79
							2" Ice	6.91	3.28
							4" Ice	8.37	4.37
Platform Mount [LP 306-1] (Carrier 90' E)	C	None			0.0000	90'	No Ice	20.81	20.81
							1/2" Ice	26.90	26.90
							1" Ice	32.99	32.99
							2" Ice	45.17	45.17
							4" Ice	69.53	69.53
**									
LLPX310R w/ Mount Pipe (Carrier 80' E)	A	From Leg	2.00	0'	0.0000	80'	No Ice	5.07	2.98
				0'			1/2" Ice	5.48	3.53
							1" Ice	5.91	4.09
							2" Ice	6.79	5.31
							4" Ice	8.70	8.13
LLPX310R w/ Mount Pipe (Carrier 80' E)	B	From Leg	2.00	0'	0.0000	80'	No Ice	5.07	2.98
				0'			1/2" Ice	5.48	3.53
							1" Ice	5.91	4.09
							2" Ice	6.79	5.31
							4" Ice	8.70	8.13
LLPX310R w/ Mount Pipe (Carrier 80' E)	C	From Leg	2.00	0'	0.0000	80'	No Ice	5.07	2.98
				0'			1/2" Ice	5.48	3.53
							1" Ice	5.91	4.09
							2" Ice	6.79	5.31
							4" Ice	8.70	8.13
URAS-FLEXIBLE (Carrier 80' E)	A	From Leg	2.00	0'	0.0000	80'	No Ice	1.80	0.78
				0'			1/2" Ice	1.99	0.92
							1" Ice	2.18	1.07
							2" Ice	2.59	1.39
							4" Ice	3.51	2.14
URAS-FLEXIBLE (Carrier 80' E)	B	From Leg	2.00	0'	0.0000	80'	No Ice	1.80	0.78
				0'			1/2" Ice	1.99	0.92
							1" Ice	2.18	1.07
							2" Ice	2.59	1.39
							4" Ice	3.51	2.14
URAS-FLEXIBLE (Carrier 80' E)	C	From Leg	2.00	0'	0.0000	80'	No Ice	1.80	0.78
				0'			1/2" Ice	1.99	0.92
							1" Ice	2.18	1.07
							2" Ice	2.59	1.39
							4" Ice	3.51	2.14
HORIZON DUO (Carrier 80' E)	A	From Leg	2.00	0'	0.0000	80'	No Ice	0.20	0.28
				0'			1/2" Ice	0.29	0.40
				3'			1" Ice	0.39	0.53
							2" Ice	0.62	0.82
							4" Ice	1.19	1.51
HORIZON DUO (Carrier 80' E)	B	From Leg	2.00	0'	0.0000	80'	No Ice	0.20	0.28
				0'			1/2" Ice	0.29	0.40
				3'			1" Ice	0.39	0.53
							2" Ice	0.62	0.82
							4" Ice	1.19	1.51
(2) 6' x 2" Mount Pipe (Carrier 80' E)	A	From Leg	2.00	0'	0.0000	80'	No Ice	1.43	1.43
				0'			1/2" Ice	1.92	1.92
							1" Ice	2.29	2.29

<b>tnxTower</b>  <b>Pier Structural Engineering Corp.</b> 198-55 Northfield Drive East Waterloo, ON N2K 3T6 Phone: (519) 885-3806 FAX: (519) 886-0076	<b>Job</b>	PSEC 14711 (for AT&T MOBILITY)	<b>Page</b>	8 of 12
	<b>Project</b>	842879 - WOODBRIDGE COUNTRY CLUB	<b>Date</b>	12:02:48 12/04/15
	<b>Client</b>	CROWN CASTLE	<b>Designed by</b>	HS

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Lateral						
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
(2) 6' x 2" Mount Pipe (Carrier 80' E)	B	From Leg	2.00	0'	0.0000	80'	2" Ice	3.06	3.06	0.09
							4" Ice	4.70	4.70	0.23
							No Ice	1.43	1.43	0.02
							1/2" Ice	1.92	1.92	0.03
							1" Ice	2.29	2.29	0.05
(2) 6' x 2" Mount Pipe (Carrier 80' E)	C	From Leg	2.00	0'	0.0000	80'	2" Ice	3.06	3.06	0.09
							4" Ice	4.70	4.70	0.23
							No Ice	1.43	1.43	0.02
							1/2" Ice	1.92	1.92	0.03
							1" Ice	2.29	2.29	0.05
Side Arm Mount [SO 102-3] (Carrier 80' E)	C	None			0.0000	80'	2" Ice	3.06	3.06	0.09
							4" Ice	4.70	4.70	0.23
							No Ice	3.00	3.00	0.08
							1/2" Ice	3.48	3.48	0.11
							1" Ice	3.96	3.96	0.14
							2" Ice	4.92	4.92	0.20
							4" Ice	6.84	6.84	0.32

\*\*

## Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				Horz	Lateral							
				ft	ft	°	°	ft	ft	ft <sup>2</sup>	K	
A-ANT-18G-2-C (Carrier 80' E)	A	Paraboloid w/o Radome	From Leg	2.00	0'	0.0000		80'	2.17	No Ice	3.72	0.03
										1/2" Ice	4.01	0.05
										1" Ice	4.30	0.07
										2" Ice	4.88	0.10
										4" Ice	6.04	0.20
A-ANT-18G-2-C (Carrier 80' E)	B	Paraboloid w/o Radome	From Leg	2.00	0'	0.0000		80'	2.17	No Ice	3.72	0.03
										1/2" Ice	4.01	0.05
										1" Ice	4.30	0.07
										2" Ice	4.88	0.10
										4" Ice	6.04	0.20

## Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice

<b>tnxTower</b>  <b>Pier Structural Engineering Corp.</b> 198-55 Northfield Drive East Waterloo, ON N2K 3T6 Phone: (519) 885-3806 FAX: (519) 886-0076	<b>Job</b>	PSEC 14711 (for AT&T MOBILITY)	<b>Page</b>	9 of 12
	<b>Project</b>	842879 - WOODBRIDGE COUNTRY CLUB	<b>Date</b>	12:02:48 12/04/15
	<b>Client</b>	CROWN CASTLE	<b>Designed by</b>	HS

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

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	36.38	0.00	0.00
	Max. H <sub>x</sub>	11	27.70	17.11	0.12
	Max. H <sub>z</sub>	2	27.70	0.20	17.30
	Max. M <sub>x</sub>	2	1226.66	0.20	17.30
	Max. M <sub>z</sub>	5	1203.11	-17.04	-0.00
	Max. Torsion	3	0.55	-8.51	14.87
	Min. Vert	27	27.70	0.07	5.99
	Min. H <sub>x</sub>	5	27.70	-17.04	-0.00
	Min. H <sub>z</sub>	8	27.70	-0.02	-17.32
	Min. M <sub>x</sub>	8	-1227.28	-0.02	-17.32
	Min. M <sub>z</sub>	11	-1208.95	17.11	0.12
	Min. Torsion	11	-0.50	17.11	0.12

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	27.70	0.00	0.00	-0.23	-0.03	0.00
Dead+Wind 0 deg - No Ice	27.70	-0.20	-17.30	-1226.66	16.39	-0.37

<b>tnxTower</b>  <b>Pier Structural Engineering Corp.</b> 198-55 Northfield Drive East Waterloo, ON N2K 3T6 Phone: (519) 885-3806 FAX: (519) 886-0076	<b>Job</b> PSEC 14711 (for AT&T MOBILITY)	<b>Page</b> 10 of 12
	<b>Project</b> 842879 - WOODBRIDGE COUNTRY CLUB	<b>Date</b> 12:02:48 12/04/15
	<b>Client</b> CROWN CASTLE	<b>Designed by</b> HS

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead+Wind 30 deg - No Ice	27.70	8.51	-14.87	-1053.00	-601.27	-0.55
Dead+Wind 60 deg - No Ice	27.70	14.76	-8.59	-608.23	-1042.42	-0.45
Dead+Wind 90 deg - No Ice	27.70	17.04	0.00	0.12	-1203.11	-0.23
Dead+Wind 120 deg - No Ice	27.70	14.77	8.82	627.20	-1043.25	-0.08
Dead+Wind 150 deg - No Ice	27.70	8.49	15.06	1067.78	-599.43	0.07
Dead+Wind 180 deg - No Ice	27.70	0.02	17.32	1227.28	-2.03	0.18
Dead+Wind 210 deg - No Ice	27.70	-8.45	14.99	1062.56	595.61	0.28
Dead+Wind 240 deg - No Ice	27.70	-14.87	8.65	612.95	1051.35	0.45
Dead+Wind 270 deg - No Ice	27.70	-17.11	-0.12	-10.45	1208.95	0.50
Dead+Wind 300 deg - No Ice	27.70	-14.87	-8.68	-615.73	1051.35	0.27
Dead+Wind 330 deg - No Ice	27.70	-8.69	-14.94	-1058.68	615.95	-0.07
Dead+Ice+Temp	36.38	0.00	-0.00	-0.58	-0.00	0.00
Dead+Wind 0 deg+Ice+Temp	36.38	-0.04	-3.94	-291.08	3.63	-0.08
Dead+Wind 30 deg+Ice+Temp	36.38	1.94	-3.39	-250.09	-142.71	-0.12
Dead+Wind 60 deg+Ice+Temp	36.38	3.37	-1.96	-144.69	-247.38	-0.10
Dead+Wind 90 deg+Ice+Temp	36.38	3.89	0.00	-0.53	-285.52	-0.06
Dead+Wind 120 deg+Ice+Temp	36.38	3.37	2.01	147.80	-247.56	-0.02
Dead+Wind 150 deg+Ice+Temp	36.38	1.94	3.43	252.28	-142.28	0.01
Dead+Wind 180 deg+Ice+Temp	36.38	0.01	3.95	290.13	-0.44	0.04
Dead+Wind 210 deg+Ice+Temp	36.38	-1.93	3.42	251.13	141.46	0.06
Dead+Wind 240 deg+Ice+Temp	36.38	-3.39	1.97	144.65	249.37	0.10
Dead+Wind 270 deg+Ice+Temp	36.38	-3.90	-0.03	-2.85	286.82	0.12
Dead+Wind 300 deg+Ice+Temp	36.38	-3.39	-1.98	-146.33	249.36	0.06
Dead+Wind 330 deg+Ice+Temp	36.38	-1.98	-3.41	-251.34	145.95	-0.01
Dead+Wind 0 deg - Service	27.70	-0.07	-5.99	-424.58	5.65	-0.13
Dead+Wind 30 deg - Service	27.70	2.95	-5.15	-364.49	-208.06	-0.19
Dead+Wind 60 deg - Service	27.70	5.11	-2.97	-210.60	-360.70	-0.16
Dead+Wind 90 deg - Service	27.70	5.89	0.00	-0.11	-416.30	-0.08
Dead+Wind 120 deg - Service	27.70	5.11	3.05	216.86	-360.98	-0.03
Dead+Wind 150 deg - Service	27.70	2.94	5.21	369.30	-207.42	0.02
Dead+Wind 180 deg - Service	27.70	0.01	5.99	424.49	-0.72	0.06
Dead+Wind 210 deg - Service	27.70	-2.92	5.19	367.49	206.06	0.10
Dead+Wind 240 deg - Service	27.70	-5.14	2.99	211.93	363.75	0.16
Dead+Wind 270 deg - Service	27.70	-5.92	-0.04	-3.77	418.28	0.17
Dead+Wind 300 deg - Service	27.70	-5.14	-3.00	-213.19	363.75	0.09
Dead+Wind 330 deg - Service	27.70	-3.01	-5.17	-366.46	213.10	-0.02

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	100 - 87	3.448	27	0.2736	0.0004
L2	91.2188 - 42.9583	2.946	27	0.2707	0.0004
L3	48.8672 - 0	0.907	27	0.1679	0.0001

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
102'	Lighting Rod 5/8" x 4'	27	3.448	0.2736	0.0006	155096
98'	RRUS 11	27	3.333	0.2733	0.0005	155096
90'	BXA-171063/8CF w/ Mount Pipe	27	2.877	0.2698	0.0005	74933

<b>tnxTower</b>  <b>Pier Structural Engineering Corp.</b> 198-55 Northfield Drive East Waterloo, ON N2K 3T6 Phone: (519) 885-3806 FAX: (519) 886-0076	<b>Job</b> PSEC 14711 (for AT&T MOBILITY)	<b>Page</b> 11 of 12
	<b>Project</b> 842879 - WOODBRIDGE COUNTRY CLUB	<b>Date</b> 12:02:48 12/04/15
	<b>Client</b> CROWN CASTLE	<b>Designed by</b> HS

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
83'	A-ANT-18G-2-C	27	2.487	0.2612	0.0004	41074
80'	LLPX310R w/ Mount Pipe	27	2.323	0.2560	0.0004	34355

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>a</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P/P <sub>a</sub>
L1	100 - 87 (1)	TP33.73x29.78x0.31	13'	0'	0.0	39.000	31.6220	-3.18	1233.26	0.003
L2	87 - 42.9583 (2)	TP47.24x31.8281x0.38	48'3-1/8"	0'	0.0	39.000	54.2429	-14.16	2115.47	0.007
L3	42.9583 - 0 (3)	TP60.43x44.593x0.39	48'10-7/16"	0'	0.0	38.566	74.3211	-27.70	2866.28	0.010

### Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M <sub>x</sub> kip-ft	Actual f <sub>bx</sub> ksi	Allow. F <sub>bx</sub> ksi	Ratio f <sub>bx</sub> /F <sub>bx</sub>	Actual M <sub>y</sub> kip-ft	Actual f <sub>by</sub> ksi	Allow. F <sub>by</sub> ksi	Ratio f <sub>by</sub> /F <sub>by</sub>
L1	100 - 87 (1)	TP33.73x29.78x0.31	31.65	1.517	39.000	0.039	0.00	0.000	39.000	0.000
L2	87 - 42.9583 (2)	TP47.24x31.8281x0.38	488.64	9.747	39.000	0.250	0.00	0.000	39.000	0.000
L3	42.9583 - 0 (3)	TP60.43x44.593x0.39	1227.28	13.357	38.566	0.346	0.00	0.000	38.566	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f <sub>v</sub> ksi	Allow. F <sub>v</sub> ksi	Ratio f <sub>v</sub> /F <sub>v</sub>	Actual T kip-ft	Actual f <sub>vt</sub> ksi	Allow. F <sub>vt</sub> ksi	Ratio f <sub>vt</sub> /F <sub>vt</sub>
L1	100 - 87 (1)	TP33.73x29.78x0.31	4.52	0.143	26.000	0.011	0.00	0.000	26.000	0.000
L2	87 - 42.9583 (2)	TP47.24x31.8281x0.38	13.01	0.240	26.000	0.018	0.37	0.004	26.000	0.000
L3	42.9583 - 0 (3)	TP60.43x44.593x0.39	17.32	0.233	26.000	0.018	0.18	0.001	26.000	0.000

### Pole Interaction Design Data

Section No.	Elevation ft	Ratio P/P <sub>a</sub>	Ratio f <sub>bx</sub> /F <sub>bx</sub>	Ratio f <sub>by</sub> /F <sub>by</sub>	Ratio f <sub>v</sub> /F <sub>v</sub>	Ratio f <sub>vt</sub> /F <sub>vt</sub>	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	100 - 87 (1)	0.003	0.039	0.000	0.011	0.000	0.042	1.333	H1-3+VT ✓

<b>tnxTower</b>  <b>Pier Structural Engineering Corp.</b> 198-55 Northfield Drive East Waterloo, ON N2K 3T6 Phone: (519) 885-3806 FAX: (519) 886-0076	<b>Job</b> PSEC 14711 (for AT&T MOBILITY)	<b>Page</b> 12 of 12
	<b>Project</b> 842879 - WOODBRIDGE COUNTRY CLUB	<b>Date</b> 12:02:48 12/04/15
	<b>Client</b> CROWN CASTLE	<b>Designed by</b> HS

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L2	87 - 42.9583 (2)	0.007	0.250	0.000	0.018	0.000	0.257 ✓	1.333	H1-3+VT ✓
L3	42.9583 - 0 (3)	0.010	0.346	0.000	0.018	0.000	0.356 ✓	1.333	H1-3+VT ✓

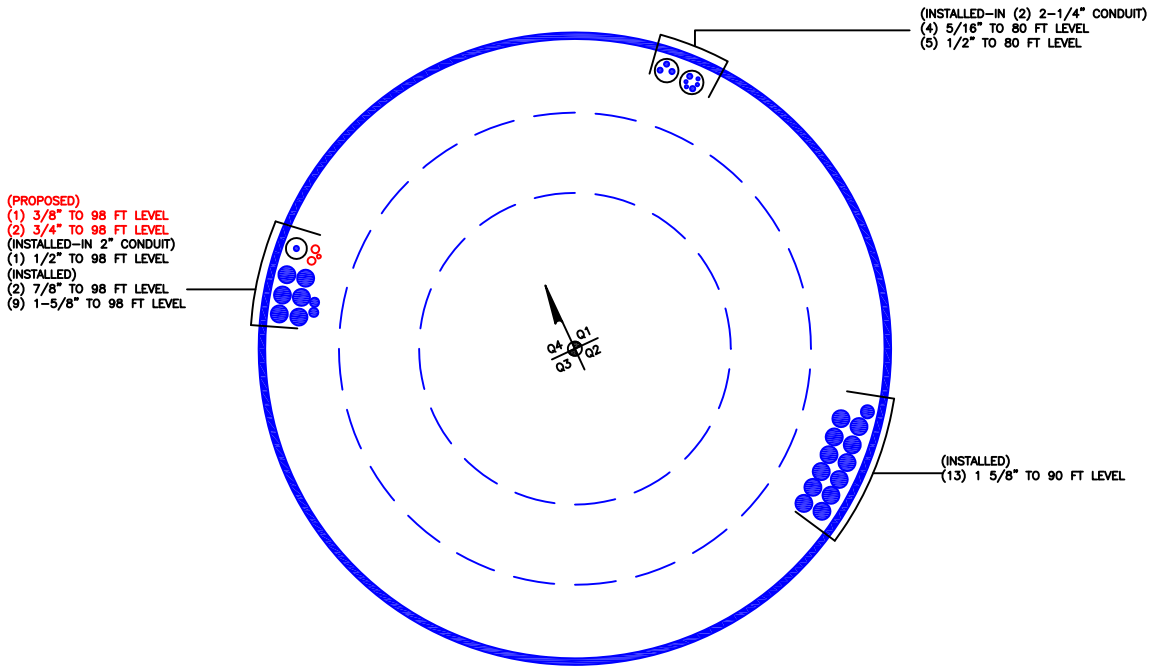
### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P <sub>allow</sub> K	% Capacity	Pass Fail
L1	100 - 87	Pole	TP33.73x29.78x0.31	1	-3.18	1643.94	3.1	Pass
L2	87 - 42.9583	Pole	TP47.24x31.8281x0.38	2	-14.16	2819.92	19.3	Pass
L3	42.9583 - 0	Pole	TP60.43x44.593x0.39	3	-27.70	3820.75	26.7	Pass
Summary								
Pole (L3)							26.7	Pass
<b>RATING =</b>							<b>26.7</b>	<b>Pass</b>

**APPENDIX B**  
**BASE LEVEL DRAWING**



# TX LINE LAYOUT



(PROPOSED)  
 (1) 3/8" TO 98 FT LEVEL  
 (2) 3/4" TO 98 FT LEVEL  
 (INSTALLED-IN 2" CONDUIT)  
 (1) 1/2" TO 98 FT LEVEL  
 (INSTALLED)  
 (2) 7/8" TO 98 FT LEVEL  
 (9) 1-5/8" TO 98 FT LEVEL

(INSTALLED-IN (2) 2-1/4" CONDUIT)  
 (4) 5/16" TO 80 FT LEVEL  
 (5) 1/2" TO 80 FT LEVEL

(INSTALLED)  
 (13) 1 5/8" TO 90 FT LEVEL

BUSINESS UNIT: 842879 TOWER ID: C\_BASELEVEL

Clients



Professional Stamp

Revisions

No.	Description	Date
A	ISSUED FOR REVIEW	12.4.15

THE INFORMATION CONTAINED IN THIS SET OF DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO THE CLIENT NAMED IS STRICTLY PROHIBITED

Engineering Firm



ph: 519-885-3806  
 fx: 519-886-0076  
 www.p-sec.ca

PIER STRUCTURAL ENGINEERING CORP  
 55 NORTHFIELD DR. E, SUITE 198  
 WATERLOO, ON N2K 3T6

PSEC Job No.

14711

Site Name

842879  
 WOODBRIDGE  
 COUNTRY CLUB

Site Design

Sheet Title

TX LINES

Drawn by

HS

Sheet

Checked by

Approved By

A-1

**APPENDIX C**  
**ADDITIONAL CALCULATIONS**

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

## TIA Rev F

### Site Data

BU#:	842879
Site Name:	WOODRIDGE COUNTRY
App #:	322607 Rev 0
Pole Manufacturer:	Other

Reactions		
Moment:	1227	ft-kips
Axial:	28	kips
Shear:	17	kips

Anchor Rod Data		
Qty:	18	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	68.4	in

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

### Anchor Rod Results

Maximum Rod Tension:	46.3 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	23.7% <b>Pass</b>

Rigid
Service, ASD
Fty*ASIF

Plate Data		
Diam:	74.43	in
Thick:	2	in
Grade:	60	ksi
Single-Rod B-eff:	10.66	in

### Base Plate Results

Base Plate Stress:	17.6 ksi	Flexural Check
Allowable Plate Stress:	60.0 ksi	
Base Plate Stress Ratio:	29.3% <b>Pass</b>	

Rigid
Service ASD
0.75*Fy*ASIF
Y.L. Length:
32.04

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

n/a

### Stiffener Results

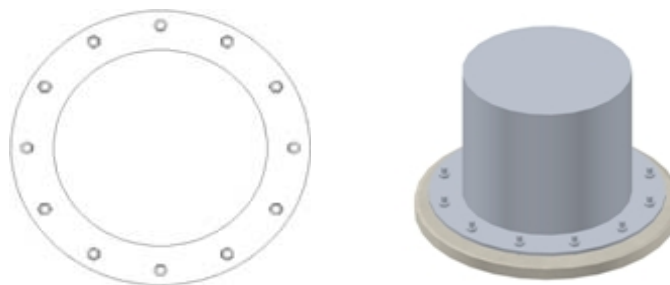
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

### Pole Results

Pole Punching Shear Check:	n/a
----------------------------	-----

Pole Data		
Diam:	60.43	in
Thick:	0.38	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	85	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	



\* 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



PROJECT No: 14711  
 PROJECT NAME: 842879 - WOODBRIDGE COUNTRY CLUB  
CROWN CASTLE  
 DATE: December 4, 2015

ENG: HS  
 CHK: SH  
 PAGE: 1 of 1

**FOUNDATION COMAPRISON CALCULATIONS**

**a) Governing Standards Used**

Tower Type	MONOPOLE
Current Standard	TIA-222-F
Original Standard	TIA-222-F

**b) Foundation Loads from "Current Analysis"**

	Allowable		
i) MOMENT (OTM)	1227.0	k-ft	(INPUT values from TNX Tower results)
ii) AXIAL	28.0	kips	
iii) SHEAR	17.0	kips	

**c) Foundation Capacity from "Original Design"**

	Allowable		
i) MOMENT (OTM)	3770.5	k-ft	(INPUT values from Central Tower dwg no. 150-100-1)
ii) AXIAL	33.3	kips	
iii) SHEAR	34.3	kips	

**d) Foundation Capacity Increase**

**[ IGNORE THIS SECTION AS IT DOES NOT APPLY ]**

	Factored		
i) MOMENT (OTM)	5090.2	k-ft	(multiply by 1.35 per Rev G Clause 15.5.1)
ii) AXIAL	45.0	kips	
iii) SHEAR	46.3	kips	

**e) Foundation Capacities**

i) MOMENT (OTM)	1227 k-ft / 3770.5 k-ft	[ 32.5% ]
ii) AXIAL	28 kips / 33.3 kips	[ 84.1% ]
iii) SHEAR	17 kips / 34.3 kips	[ 49.6% ]

**f) OVERALL FOUNDATION CAPACITY**

\* Note: Axial and Shear capacities are negligible, the overturning moment governs calculations.

**FOUNDATION  
CAPACITY**

**32.5%**

BU: 842879  
WOODBIDGE COUNTRY  
CLUB

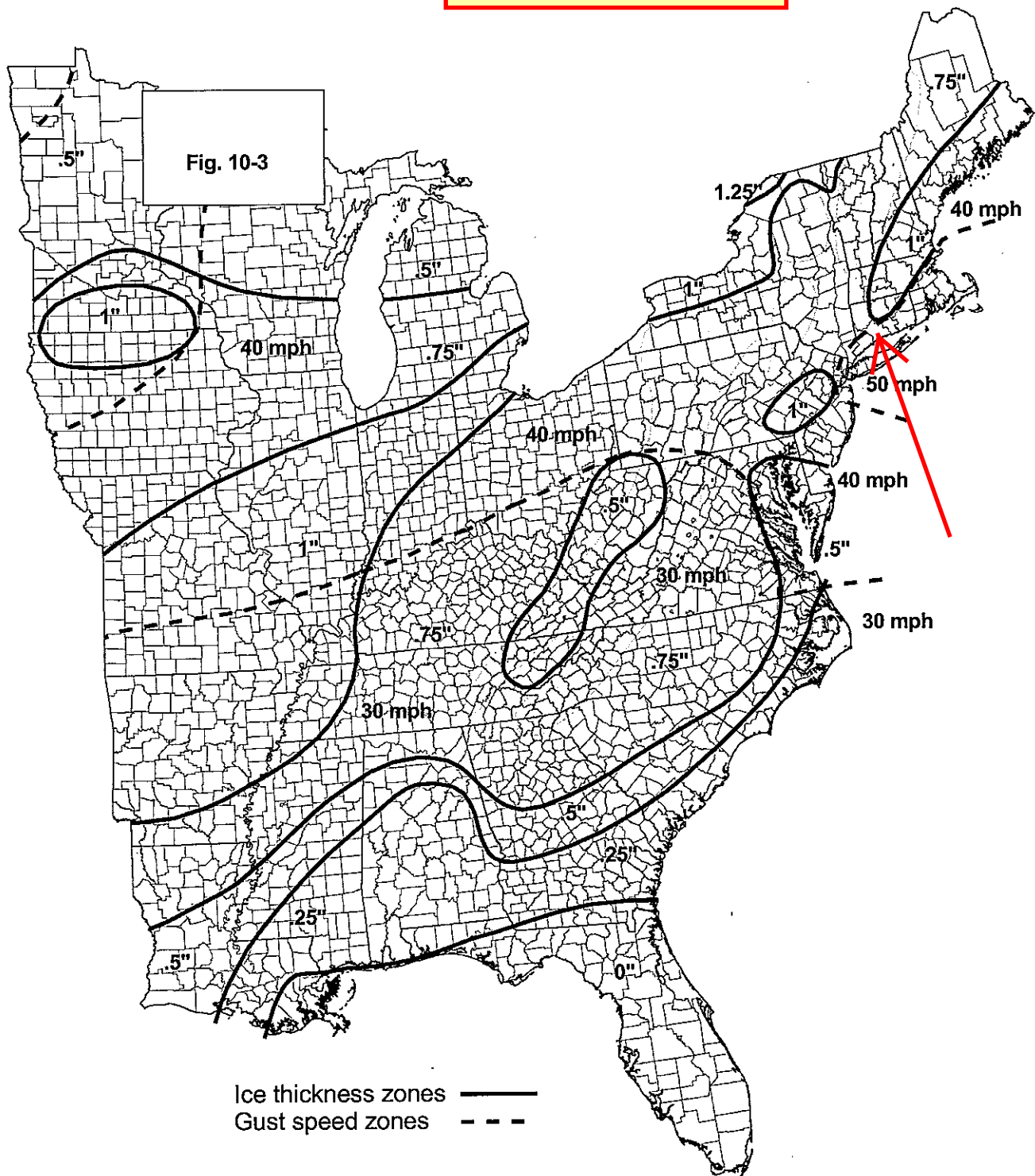


FIGURE 10-2 (continued) 50-YEAR MEAN RECURRENCE INTERVAL UNIFORM ICE THICKNESSES DUE TO FREEZING RAIN WITH CONCURRENT 3-SECOND GUST SPEEDS: CONTIGUOUS 48 STATES.

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

AT&T Existing Facility

Site ID: CT5163

AWE - Woodbridge Country Club  
50 Woodfield Road  
Woodbridge, CT 06525

**February 18, 2016**

**EBI Project Number: 6216000626**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>11.20 %</b>

February 18, 2016

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

Emissions Analysis for Site: **CT5163 – AWE - Woodbridge Country Club**

EBI Consulting was directed to analyze the proposed AT&T facility located at **50 Woodfield Road, Woodbridge, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

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

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

Additional details can be found in FCC OET 65.

## **CALCULATIONS**

Calculations were done for the proposed AT&T Wireless antenna facility located at **50 Woodfield Road, Woodbridge, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

- 1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 LTE channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel



- 6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 7) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antennas used in this modeling are the **KMW AM-X-CD-16-65-00T-RET** and the **Powerwave 7770.00** for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antenna mounting height centerline of the proposed antennas is **99 feet** above ground level (AGL).
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

### AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	99 feet	Height (AGL):	99 feet	Height (AGL):	99 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	2,969.12	ERP (W):	2,969.12	ERP (W):	2,969.12
Antenna A1 MPE%	<b>1.76</b>	Antenna B1 MPE%	<b>1.76</b>	Antenna C1 MPE%	<b>1.76</b>
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET
Gain:	13.35 / 15.25 dBd	Gain:	13.35 / 15.25 dBd	Gain:	13.35 / 15.25 dBd
Height (AGL):	99 feet	Height (AGL):	99 feet	Height (AGL):	99 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	6,614.85	ERP (W):	6,614.85	ERP (W):	6,614.85
Antenna A2 MPE%	<b>3.98</b>	Antenna B2 MPE%	<b>3.98</b>	Antenna C2 MPE%	<b>3.98</b>

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	<b>5.74 %</b>
Clearwire	0.34 %
Verizon Wireless	5.12 %
<b>Site Total MPE %:</b>	<b>11.20 %</b>

AT&T Sector 1 Total:	5.74 %
AT&T Sector 2 Total:	5.74 %
AT&T Sector 3 Total:	5.74 %
<b>Site Total:</b>	<b>11.20 %</b>

AT&T _ Max Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	99	3.44	850	567	0.61 %
AT&T 1900 MHz (PCS) UMTS	2	656.33	99	5.46	1900	1000	0.55 %
AT&T 850 MHz GSM	2	414.12	99	3.44	850	567	0.61 %
AT&T 700 MHz LTE	2	1297.63	99	10.79	700	467	2.31 %
AT&T 1900 MHz (PCS) LTE	2	2009.79	99	16.71	1900	1000	1.67 %
						<b>Total:</b>	<b>5.74 %</b>

## Summary

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

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

AT&T Sector	Power Density Value (%)
Sector 1:	5.74 %
Sector 2:	5.74 %
Sector 3 :	5.74 %
AT&T Maximum Total (per sector):	5.74 %
Site Total:	11.20 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **11.20%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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



Scott Heffernan  
RF Engineering Director

**EBI Consulting**  
21 B Street  
Burlington, MA 01803