EMPIRE telecom

July 7, 2016

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

Regarding:	Notice of Exempt Modification – Antenna Swap, Addition of Three Radio Heads with A2 Modules
Property Address:	500 Cooks Lane, Guilford CT 06437

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 180-foot self-supported tower at the above-referenced address, latitude 41.4187388888889, longitude -72.7117083333333. Said self-supported tower is owned by American Tower Corporation. The existing equipment shelter is in a building and measures 20' x 20' totaling 400 square feet.

AT&T desires to modify its existing telecommunications facility by swapping three (3) antennas and adding three remote-radio heads ("RRHs") with A2 modules. The centerline height of said antennas is and will remain at 163 feet. Antennas are mounted utilizing a platform with hand rails.

Please accept this application as notification pursuant to R.C.S.A. §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.C.S.A. §16-50j-73, a copy of this letter is being sent to James Mazza, the First Selectmen for the Town of Guilford, as well as to the owner of the Tower, Menuncketuck Communications Corp. A copy is also being sent to the landowner, Bartlett Land Corporation.

The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72 (b)(2). Specifically:

1. The planned modification will not result in an increase in the height of the existing structure. The antennas to be swapped will be installed at the existing height of 163 feet on the 180-foot self-supported tower.

2. The proposed modifications will not involve any changes to ground-mounted equipment, and therefore will not require an extension of the site boundary.

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

Sarah Snell • Empire Telecom USA, LLC • 16 Esquire Road Billerica, MA 01862 • 978-608-8416 • ssnell@empiretelecomm.com

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above Federal Communications Commission (FCC) safety standard. An RF emissions calculation (attached) for AT&T's modified facility is herein provided.

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

6. The self-supported tower and its foundation can support AT&T's proposed modifications (please see attached structural analysis completed by Com – Ex Consultants dated July 7, 2016).

For the foregoing reasons, AT&T respectfully requests that the proposed antenna swap and remote radio head installation be allowed within the exempt modifications under R.C.S.A. §16-50j-72 (b)(2).

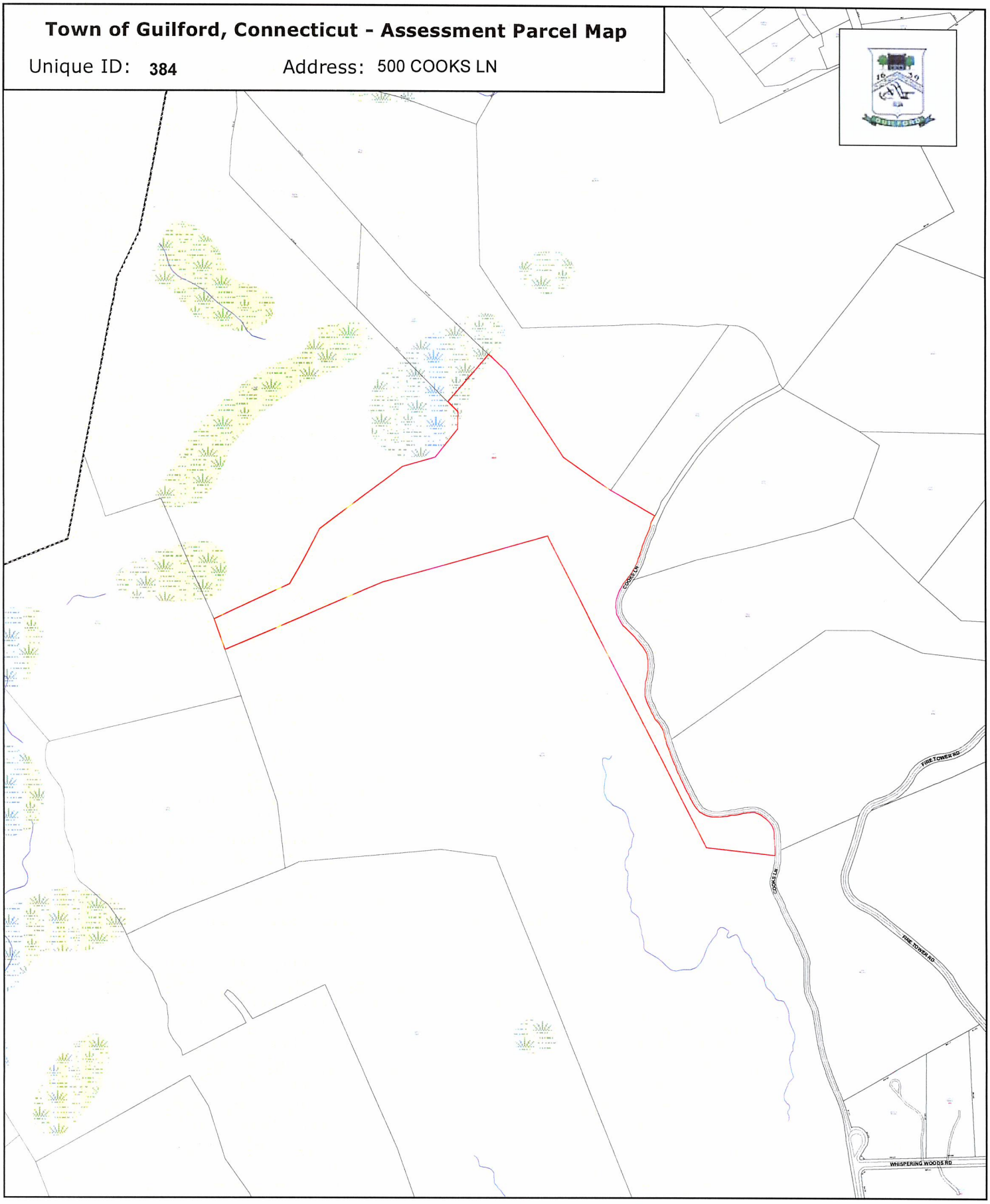
Sincerely,

Sarah Snell
Site Acquisition Specialist

cc: James S. Mazza, First Selectman Town of Guilford
Menuncketuck Communications Corp. (tower owner)
Bartlett Land Corporation (landowner)

Town of Guilford, Connecticut - Assessment Parcel Map

Unique ID: **384** Address: 500 COOKS LN



N

Approximate Scale: 1 inch = 672 feet

0 470 940

Feet

Map Produced: January 2016

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

PROJECT INFORMATION

SCOPE OF WORK:

- AT&T ANTENNAS: (1) NEW LTE ANTENNAS PER SECTOR TO REPLACE EXISTING ANTENNA, FOR A TOTAL OF (3) NEW LTE ANTENNAS; (6) EXISTING ANTENNAS & TMAs TO BE RE-USED (2 PER SECTOR)
- AT&T RRUs: (1) NEW RRU & (1) NEW A2 MODULE PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUs& (3) NEW A2 MODULES; (1) EXISTING RRUs PER SECTOR TO BE REUSED, FOR A TOTAL OF (3) EXISTING RRUs.

SITE ADDRESS:	500 COOKS LANE GUILDFORD, CT 06437
LATITUDE:	41.4187 41° 25' 07.32"N
LONGITUDE:	-72.7117 72° 42' 42.12"W
USID:	61161
TOWER OWNER:	TBA
TYPE OF SITE:	LATTICE TOWER/INDOOR EQUIPMENT
TOWER HEIGHT:	190'-6"±
RAD CENTER:	163'-0"±
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

at&t MOBILITY

FA CODE: 10035062
SITE NUMBER: CT2018
SITE NAME: GUILFORD NORTH

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

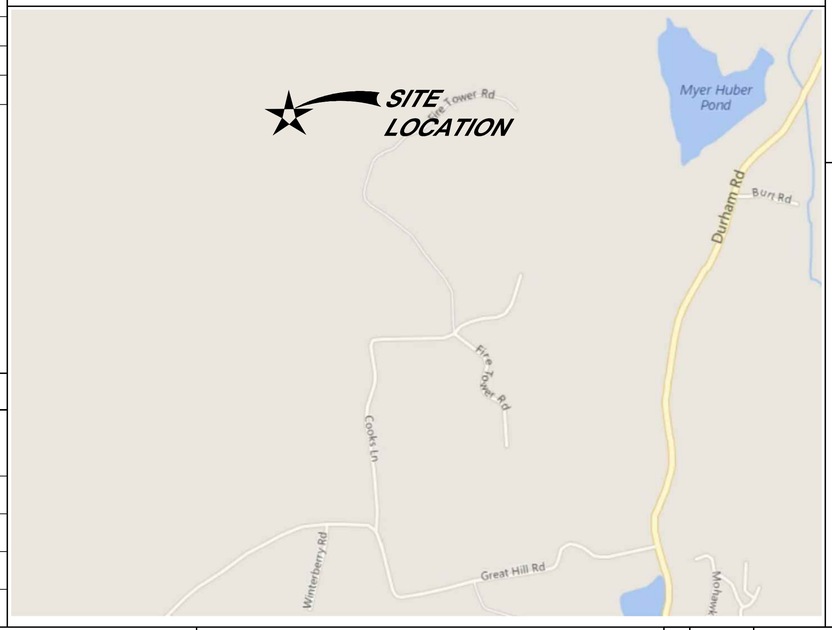
RF ENGINEER:
COMPANY: AT&T MOBILITY - NEW ENGLAND
ADDRESS: 550 COCHITUATE ROAD, SUITE 550 13 & 14, FRAMINGHAM, MA 01701
CONTACT: CAMERON SYME
PHONE: 508-596-7146
EMAIL: cs6970@att.com

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

VICINITY MAP

FROM ROCKY HILL, CT: TAKE I-91 S TOWARD NEW HAVEN, TAKE EXIT 22S AND MERGE ONTO CT-S TOWARD MIDDLETOWN/OLD SAYBROOK, CONTINUE ONTO CT-17 S, TAKE EXIT 13 FOR STATE ROUTE 17 S, TOWARD NEW HAVEN, TAKE SLIGHT RIGHT ONTO CT-17 S, TURN LEFT ONTO S MAIN STREET, TAKE SLIGHT RIGHT ONTO NEW HAVEN ROAD, TAKE SLIGHT LEFT ONTO CT-77 S/GUILFORD ROAD, TURN RIGHT ONTO GREAT HILL ROAD, CONTINUE ONTO COOKS LANE, SITE WILL BE ON THE LEFT.



GENERAL NOTES

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

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

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

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:		

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: CT2018
SITE NAME: GUILFORD NORTH

500 COOKS LANE
GUILFORD, CT 06437
NEW HAVEN COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	03/22/16	ISSUED AS FINAL	NJM	NDB	NDB

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

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

AT&T

DRAWING TITLE: TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV
16003-EMP	T-1	0

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

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

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.

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: CT2018
SITE NAME: GUILFORD NORTH

500 COOKS LANE
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NEW HAVEN COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	03/22/16	ISSUED AS FINAL	NJM	NDB	NDB

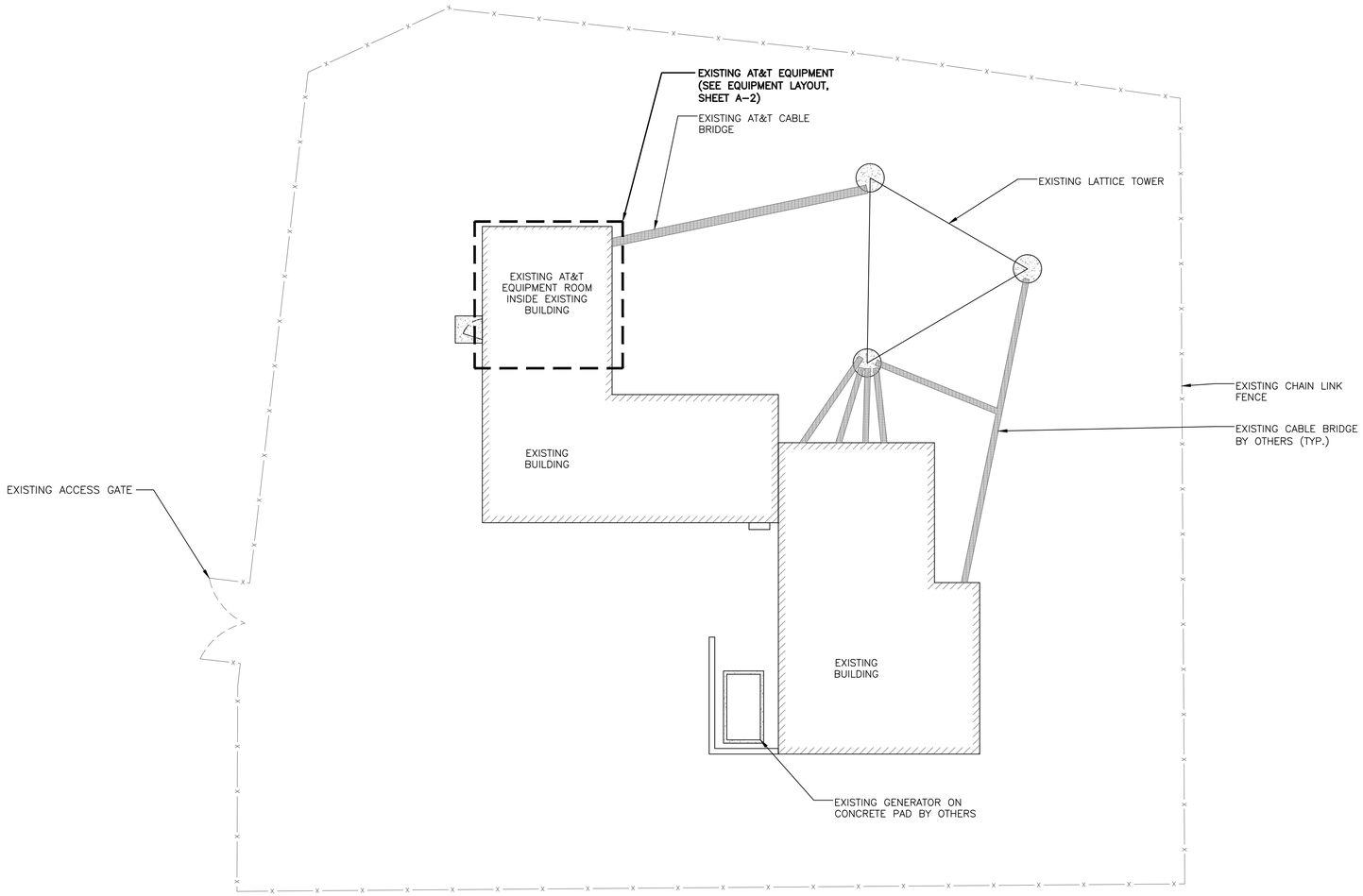
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

SEAL:
STATE OF CONNECTICUT
DOUGLAS D. BARLOW
12863
REGISTERED
PROFESSIONAL ENGINEER
CT PROFESSIONAL ENGINEER 12863

AT&T

DRAWING TITLE:
GROUNDING NOTES & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
16003-EMP	GN-1	0



NORTH

COMPOUND LAYOUT

SCALE: 3/32" = 1'-0"

0 5'-4" 10'-8" 21'-4"

GRAPHIC SCALE: 3/32"=1'-0"

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FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	03/22/16	ISSUED AS FINAL	NJM	NDB	NDB

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

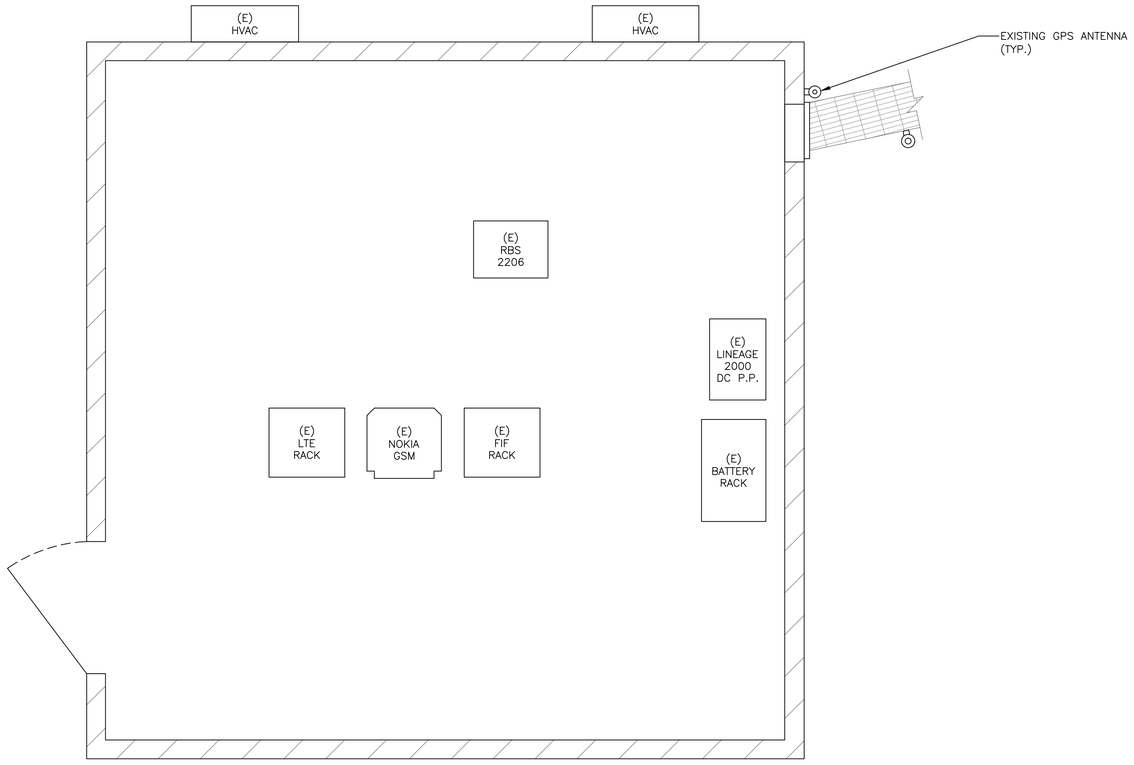
SEAL:

STATE OF CONNECTICUT
NICHOLAS D. BALDUCCI
LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
CT LICENSE NO. 29643

AT&T

DRAWING TITLE:
COMPOUND LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
16003-EMP	A-1	0



NORTH

EXISTING EQUIPMENT LAYOUT

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

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

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
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SITE NUMBER: CT2018
SITE NAME: GUILFORD NORTH

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NEW HAVEN COUNTY

at&t MOBILITY
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NO.	DATE	REVISIONS	BY	CHK	APP'D
0	03/22/16	ISSUED AS FINAL	NJM	NDB	NDB

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

SEAL:

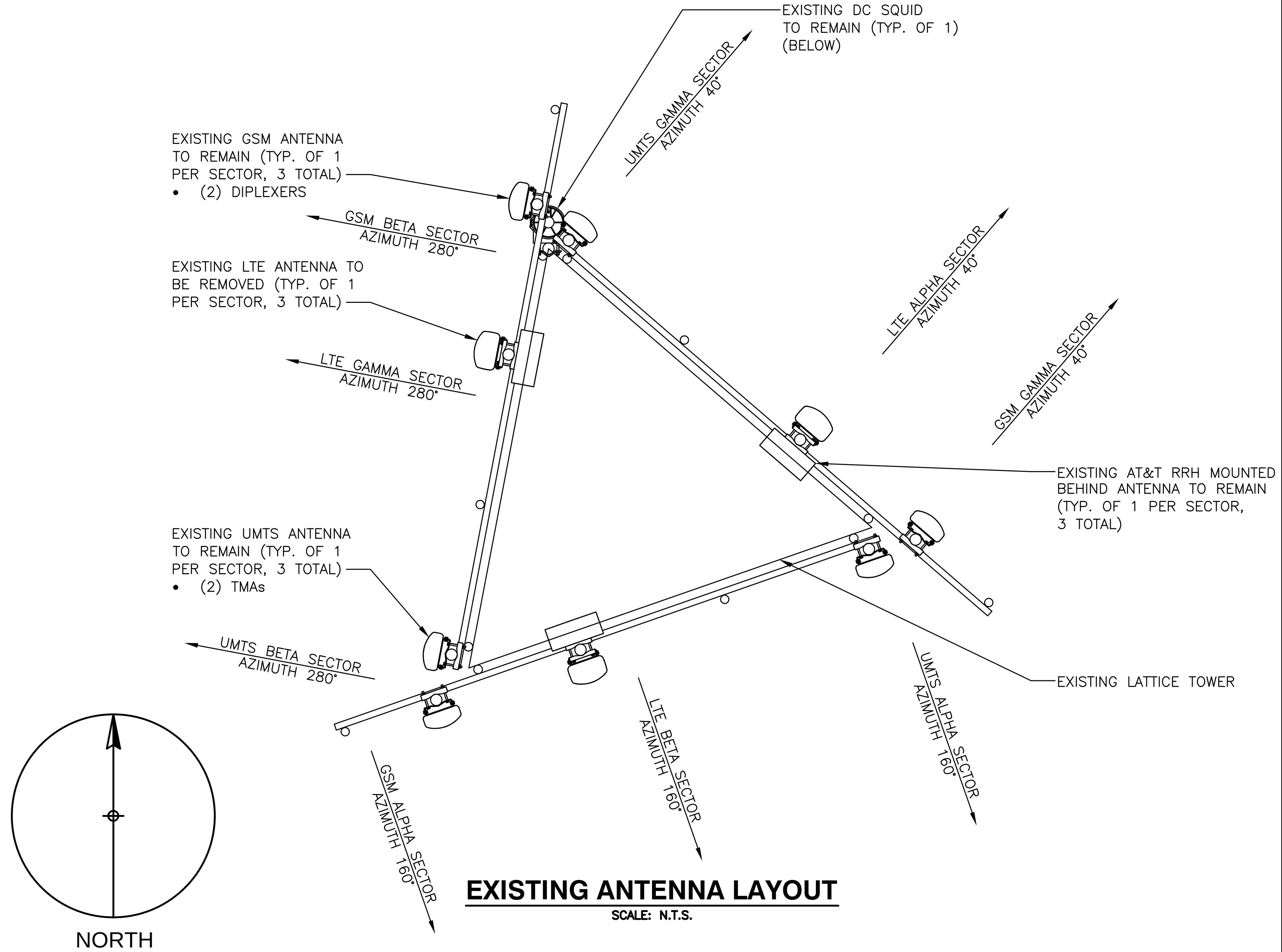
STATE OF CONNECTICUT
DOUGLAS B. HOLMES
PROFESSIONAL ENGINEER
CT LICENSE NO. 23643

AT&T

DRAWING TITLE:
EQUIPMENT LAYOUT

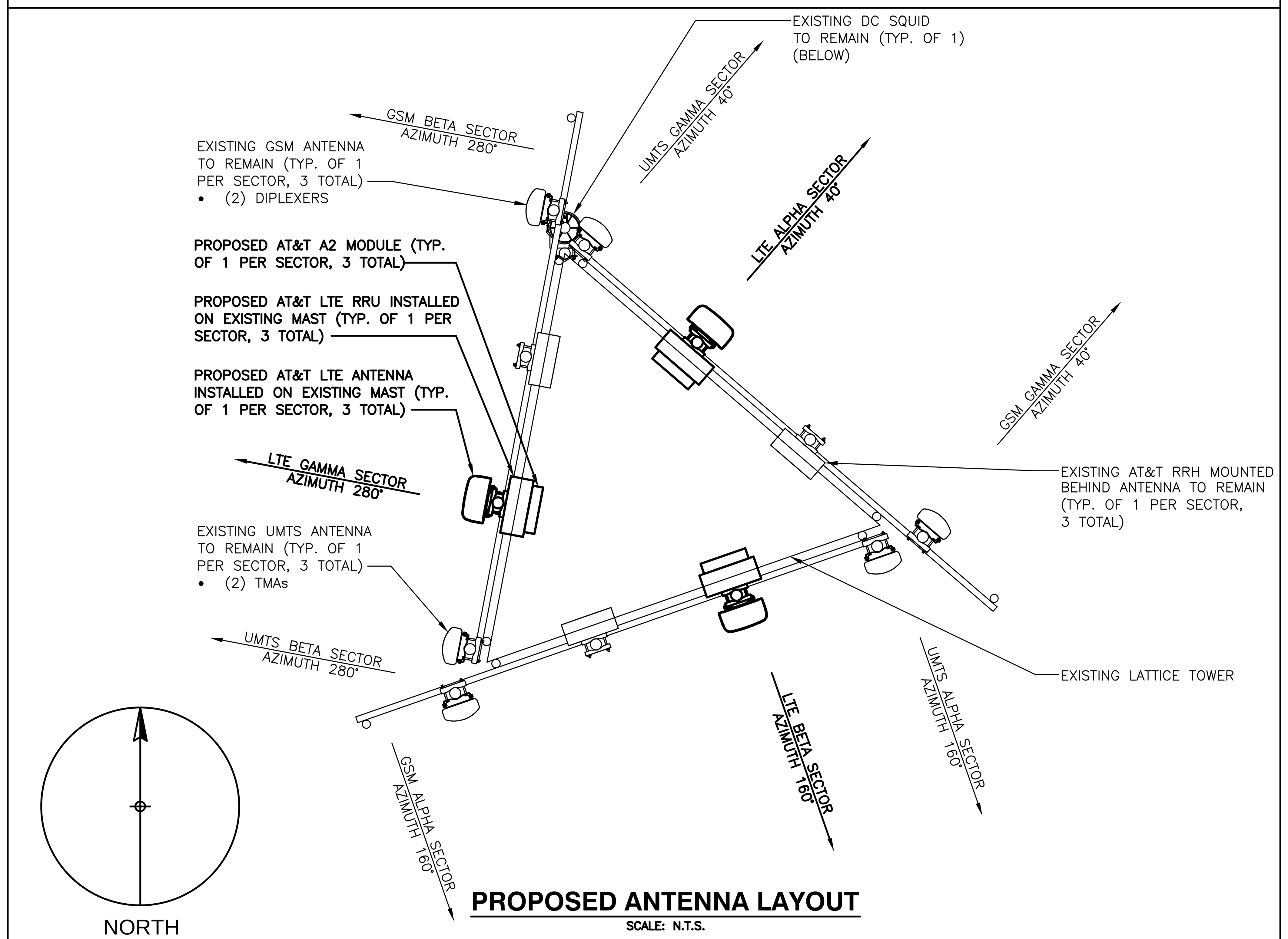
JOB NUMBER	DRAWING NUMBER	REV
16003-EMP	A-2	0

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.



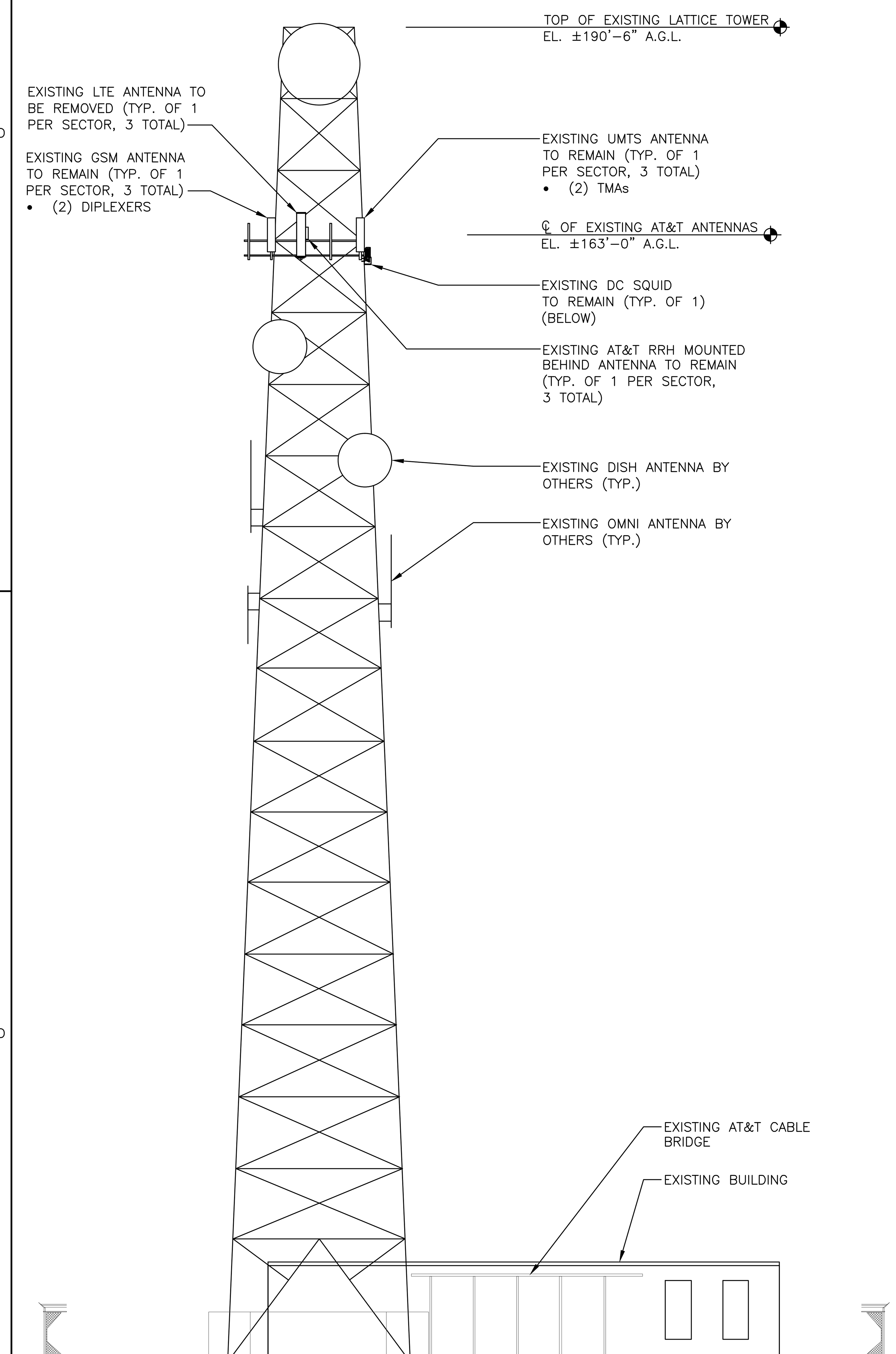
EXISTING ANTENNA LAYOUT

SCALE: N.T.S.



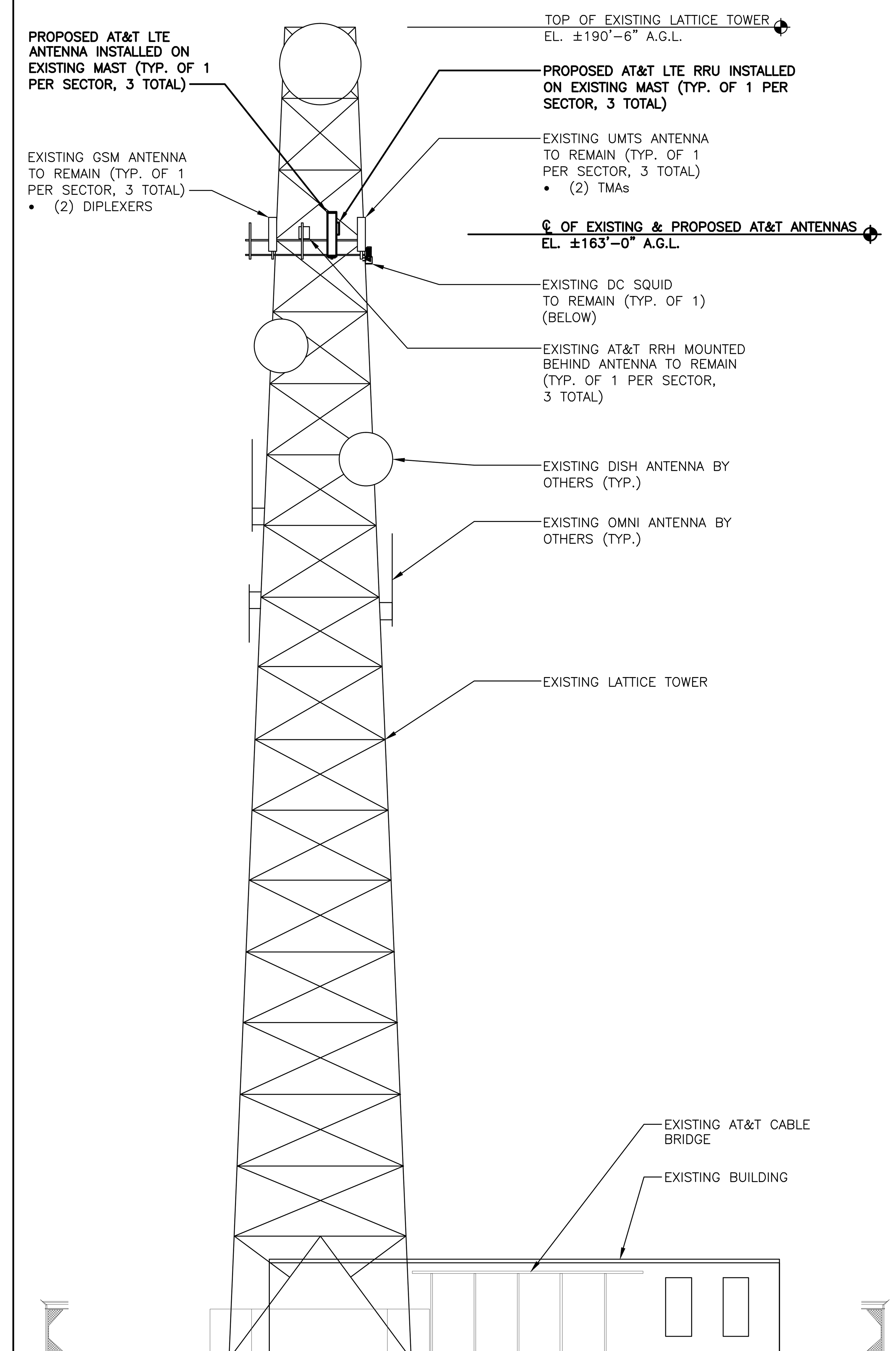
PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.



EXISTING TOWER ELEVATION

SCALE: NTS



PROPOSED TOWER ELEVATION

SCALE: NTS

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: CT2018
SITE NAME: GUILFORD NORTH

500 COOKS LANE
GUILFORD, CT 06437
NEW HAVEN COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	03/22/16	ISSUED AS FINAL	NJM	NDB	NDB

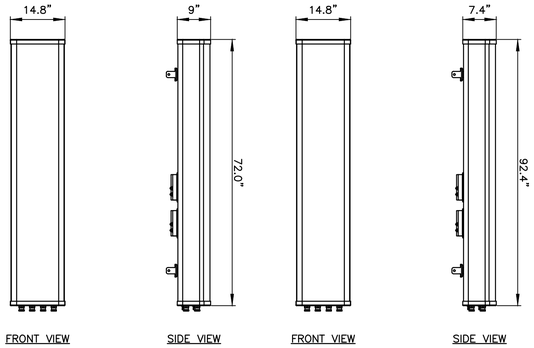
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

SEAL:
STATE OF CONNECTICUT — NICHOLAS D. BARILE — PROFESSIONAL ENGINEER — CT ...643

AT&T

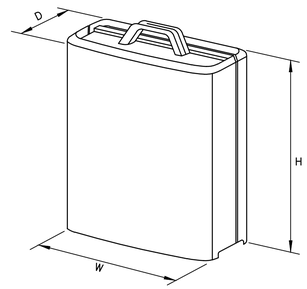
DRAWING TITLE: ANTENNA LAYOUTS & ELEVATION

JOB NUMBER	DRAWING NUMBER	REV
16003–EMP	A–3	0



MANUFACTURER	CCI	CCI
MODEL	HPA-65R-BUU-H6	HPA-65R-BUU-H8
WEIGHT	50.7 LBS	68.0 LBS

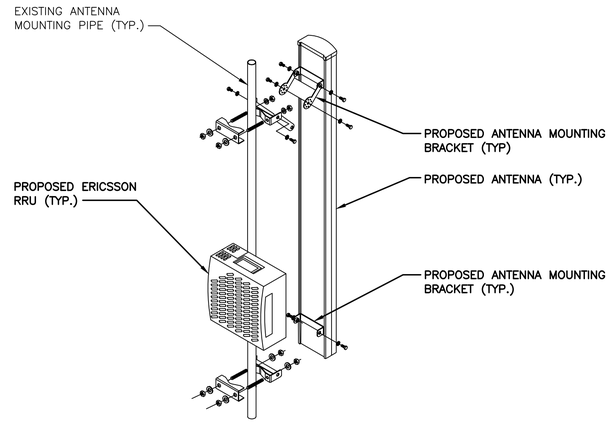
LTE ANTENNA DETAIL
SCALE: N.T.S.



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.



ANTENNA AND RRU MOUNTING DETAIL
SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770.00	55"x11"x5"
	A2	–	–	–
	A3	ANDREW	SBNH-1D6565C	96.4"x11.9"x7.1"
	A4	POWERWAVE	7770.00	55"x11"x5"
BETA	B1	POWERWAVE	7770.00	55"x11"x5"
	B2	–	–	–
	B3	ANDREW	SBNH-1D6565C	96.4"x11.9"x7.1"
	B4	POWERWAVE	7770.00	55"x11"x5"
GAMMA	G1	POWERWAVE	7770.00	55"x11"x5"
	G2	–	–	–
	G3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G4	POWERWAVE	7770.00	55"x11"x5"

FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770.00	55"x11"x5"
	A2	**CCI**	**HPA-65R-BUU-H8**	**92.4"x14.8"x7.4"**
	A3	–	–	–
	A4	POWERWAVE	7770.00	55"x11"x5"
BETA	B1	POWERWAVE	7770.00	55"x11"x5"
	B2	**CCI**	**HPA-65R-BUU-H8**	**92.4"x14.8"x7.4"**
	B3	–	–	–
	B4	POWERWAVE	7770.00	55"x11"x5"
GAMMA	G1	POWERWAVE	7770.00.	55"x11"x5"
	G2	**CCI**	**HPA-65R-BUU-H6**	**72"x14.8"x9"**
	G3	–	–	–
	G4	POWERWAVE	7770.00	55"x11"x5"

PROPOSED RRH SCHEDULE

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

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
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FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	03/22/16	ISSUED AS FINAL	NJM	NDB	NDB

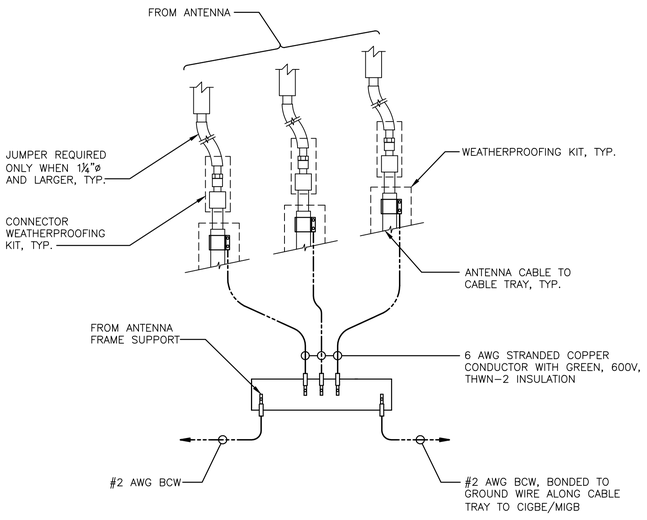
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

SEAL:
STATE OF CONNECTICUT
NICHOLAS D. BARLOW
No. 28447
PROFESSIONAL ENGINEER
CT PROFESSIONAL ENGINEER

AT&T

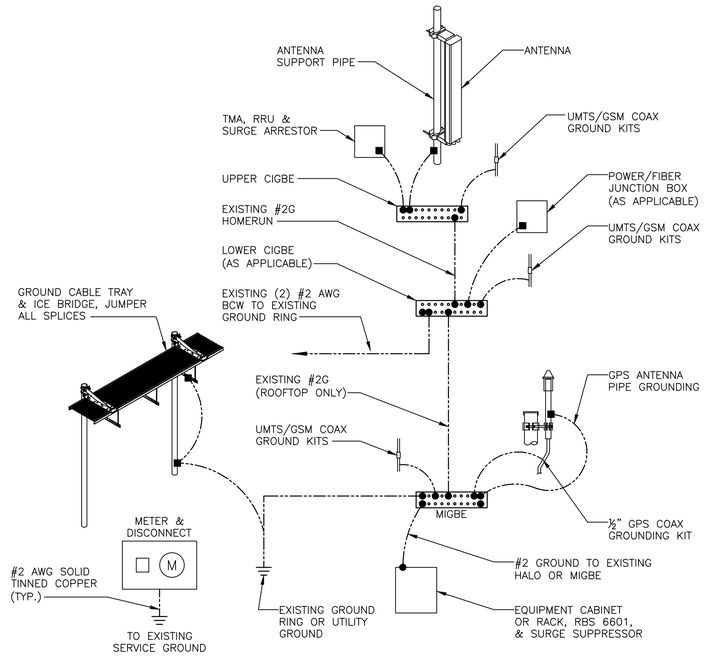
DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATION

JOB NUMBER	DRAWING NUMBER	REV
16003-EMP	A-4	0



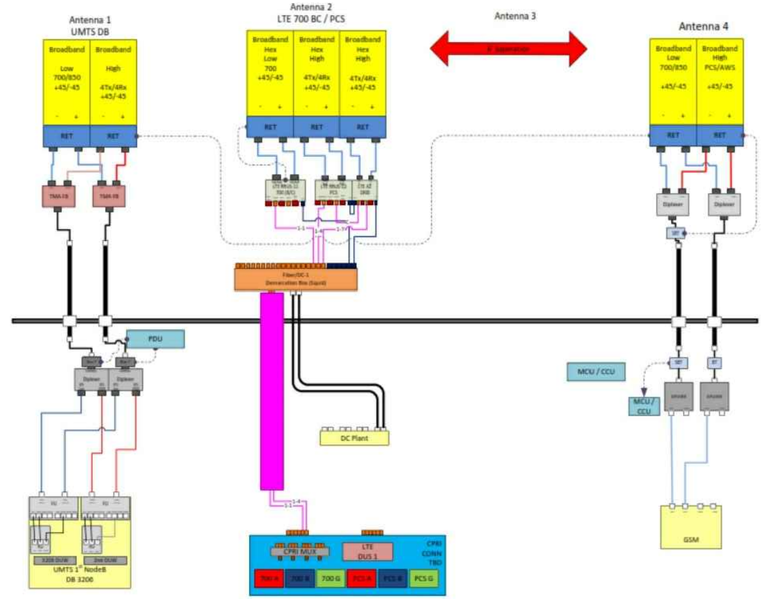
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



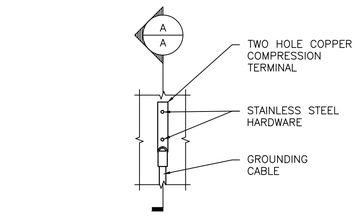
GROUNDING RISER DIAGRAM

SCALE: N.T.S.

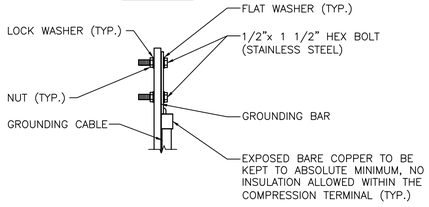


TYPICAL PLUMBING DIAGRAM (PER SECTOR)

SCALE: N.T.S.



ELEVATION



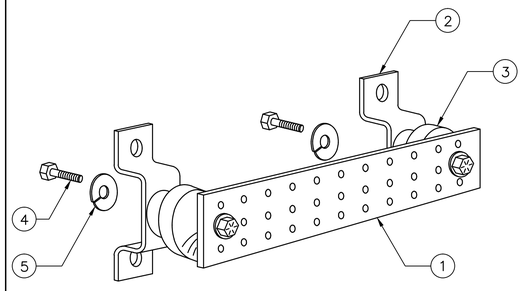
SECTION "A–A"

NOTE:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



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

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)

COM-EX Consultants
115 ROUTE 46
SUITE E39
MOUNTAIN LAKES, NJ 07046
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0	03/22/16	ISSUED AS FINAL	NJM	NDB	NDB

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

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

AT&T

DRAWING TITLE:
GROUNDING, ONE–LINE DIAGRAM & DETAILS

JOB NUMBER	DRAWING NUMBER	REV
16003–EMP	G–1	0

STRUCTURAL ANALYSIS REPORT
SELF-SUPPORT TOWER

Prepared For:

Com-Ex Consultants, LLC
115 Route 46 – Suite E39
Mountain Lakes, NJ 07046

Structure Rating:

Self-Support Tower: **Pass**

Sincerely,
Destek Engineering, LLC

07-07-2016

STATE OF CONNECTICUT
AHMET COLAKOGLU
PEN. 27057
LICENSED
PROFESSIONAL ENGINEER

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057

AT&T Site ID: CT2018
FA Code: 10035062
Site Name: Guilford North
500 Cooks Lane
Guilford, CT 06437

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

CONTENTS

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the existing 180 feet tall self-support tower located at 500 Cooks Lane, Guilford, CT 06437 for the additions and alterations proposed by AT&T.

The structural analysis is based on the following information provided to Destek Engineering, LLC (Destek):

- Structural Analysis Report prepared by Morrison Hershfield Corp., dated 03/18/2013.
- RFDS provided by AT&T, dated 11/18/2015.
- Construction Drawings prepared by Com-Ex Consultants, Project Number 16003-EMP, dated 03/22/2016.
- Site Photographs.

1.1 STRUCTURE

The subject structure is a 3-sided, 180 feet tall self-support tower formed by (9) 20' sections which are K-braced with pipe member diagonals. The tower is 27.5 feet wide at the base and tapers to 8.5 feet wide at the top. AT&T currently has (9) antennas and associated equipment installed at 152' above ground level. Please refer to the software output in Appendix A for tower geometry, member sizes, and other details.

2.0 EXISTING AND PROPOSED APPURTENANCES

Appurtenances by others can be found in the appendix. AT&T is proposing the following antenna configuration on the tower:

Existing Configuration of AT&T Appurtenances:

Rad Center (Feet-AGL)	Antenna & Equipment	Feedlines	Mount
152	(6) Powerwave 7770.00 (2) Commscope SBNH-1D6565C (1) KMW AM-X-CD-16-65-00T-RET (6) LGP17201 TMAs (3) RRUS 11 (1) DC-6-48-60-18-8F	(12) 1-5/8'' (1) Fiber (2) DC Cables	(3) Sector Frames

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

Proposed and Final Configuration of AT&T Appurtenances:

Rad Center (Feet-AGL)	Antenna & Equipment	Feedlines	Mount
152	(6) Powerwave 7770.00 (2) CCI HPA-65R-BUU-H8 (1) CCI HPA-65R-BUU-H6 (6) LGP17201 TMAs (3) RRUS 11 (3) RRUS 12 w/ A2 Module (1) DC-6-48-60-18-8F	(12) 1-5/8'' (1) Fiber (2) DC Cables	(3) Sector Frames

3.0 CODES AND LOADING

The tower was analyzed per TIA/EIA-222-F as referenced by the 2005 State Building Code with all adopted amendments and supplements (Connecticut). The following wind loading was used in compliance with the standard for Guilford, CT:

- Basic wind speed 90 mph without ice (equivalent to 110 mph 3-second gust)
- Basic wind speed 38 mph with 0.75" escalating ice

The following load combinations were used with wind blowing at 0^o, 60^o and 90^o measured from a line normal to the face of the tower.

- $D + W_o$
- $D + 0.75\ W_i + I$

D: Dead Load of structure and appurtenances
W_o: Wind Load, without ice
W_i: Wind Load with ice
I: Weight of ice

4.0 STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING STRUCTURES

The analysis is based on the information provided to Destek and is assumed to be current and correct. Unless noted otherwise, the structure and the foundation system are assumed to be in good condition, free of defects and can achieve theoretical strength.

It is assumed that the structure has been maintained and shall be maintained during its service. The superstructure and the foundation system are assumed to be designed with proper engineering practice and fabricated, constructed and erected in accordance with the design documents. Destek will accept no liability which may arise due to any existing deficiency in design, material, fabrication, erection, construction, etc. or lack of maintenance.

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The analysis does not include a qualification of the mounts attached on the structure or their connections. The analysis is performed to verify the capacity of the main structural members, which is the current practice in the tower industry.

The analysis results presented in this report are only applicable for the previously mentioned existing and proposed additions and alterations. Any deviation of the proposed equipment and placement, etc., will require Destek to generate an additional structural analysis.

5.0 ANALYSIS AND ASSUMPTIONS

The structure is considered to have adequate strength for the proposed loading if the existing structural members that will be used to support the proposed equipment are structurally adequate per the applicable code criteria, or that the additions or alterations to the existing structure do not increase the force in any structural element by more than 5%.

The structure was analyzed by utilizing tnxTower, a non-linear 3-Dimensional finite element software, a product of Tower Numerics, Inc. Software output for this analysis is provided in Appendix-A of this report.

6.0 RESULTS AND CONCLUSION

Based on a structural analysis per ANSI/TIA-222-F, the existing self-support tower is found to have **adequate** structural capacity for the proposed changes by AT&T. For the aforementioned load combinations, the tower diagonal members have the highest stress ratios and are stressed to **86.8%** of capacity, as a maximum. Twist and sway values for existing microwave dishes and the tower reactions can be found in Appendix A.

Foundation information was not available at the time of this analysis, thus the results provided do not address the foundation.

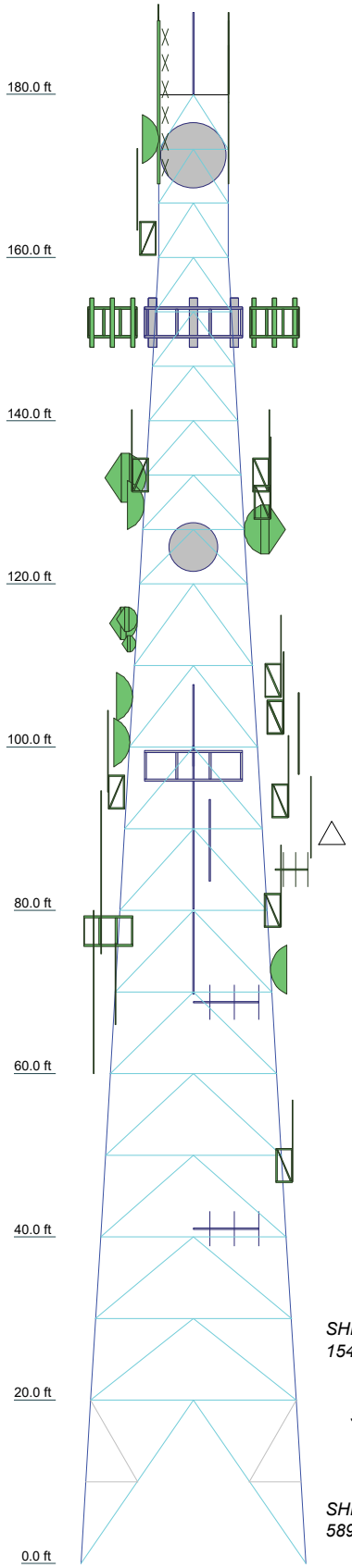
Therefore, the proposed additions and alterations by AT&T **can be implemented** as intended with the conditions outlined in this report.

Should you have any questions about this report, please contact Ahmet Colakoglu at (770) 693-0835 or acolakoglu@destekengineering.com.

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

APPENDIX A
SOFTWARE OUTPUT

Section	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	A	P8x.322		P6.625x.432	P6.625x0.375	P5.5x.375	P4x.337	P3.5x.300	
Leg Grade					A572-50				
Diagonals			P3x.216			P2.5x.203	P2x.154		P2.5x.203
Diagonal Grade					A53-B-35				
Top Girts					N.A.				P2x.154
Horizontals		P3x.216			P2.5x.203	P2x.154		P1.5x.145	P2x.154
Red. Horizontals	P2x.154				N.A.				
Red. Diagonals	P2x.154				N.A.				
Red. Hips	P2x.154				N.A.				
Inner Bracing	P3x.216		L3 1/2x3 1/2x1/4		L2 1/2x2 1/2x3/16		L2x2x1/8		L2x2x1/4
Face Width (ft)	25.125	22.75	20.375	18	15.625	13.25	10.875		8.5
# Panels @ (ft)	1 @ 20			10 @ 10			6 @ 6.66667		3 @ 6.63889
Weight (lb) 29663.2	5294.8	4624.2	4393.2	4167.2	3427.3	2478.7	1973.3	1484.2	1840.3



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
12' Omni	186	Dish Mount	124.5
8' Omni	185	6' Dia. Dish	124.5
10' Dipole	185	12' Omni	117.17
8' Omni	185	3' Dia. Dish	115.67
9' Omni	184.5	Airmux-200/ODU	115.17
8' Omni	184	Dish Mount	115.17
4' Omni	183	8'x3" Mount Pipe	115.17
2'x2.5" Mount Pipe	181	4' Dia. Dish	115.17
2'x2.5" Mount Pipe	181	8'x3" Mount Pipe	112.67
2'x2.5" Mount Pipe	180	2' Dia. Dish	112.67
2-Bay FM Antenna	179	Airmux-200/ODU	112.17
3'x6' Grid Dish	174.5	10' Omni	111.67
14.5' Dipole	174	10' Omni	111.67
8' Dia. Dish	172.5	6' Sidearm	111.17
12' Omni	168.33	6' Sidearm	106.67
3' Standoff Mount	162.33	6' Sidearm	106.67
12' T-Frame	152	3'x6' Grid Dish	106.17
(2) 7770.00 w/ mount pipe	152	10'x2" Mount Pipe	104.33
(2) 7770.00 w/ mount pipe	152	10' Omni	102.67
(2) 7770.00 w/ mount pipe	152	10' Omni	101.67
(2) LGP17201	152	10' Omni	101.67
(2) LGP17201	152	10' Omni	101.42
(2) LGP17201	152	3'x6' Grid Dish	100.58
RRUS-11	152	10' Dipole	99.5
RRUS-11	152	12' T-Frame	97.67
RRUS-11	152	7' Sidearm	96.42
DC6-48-60-18-8F Squid	152	TMA	96.42
CCI HPA-65R-BUU-H8 w/ mast pipe	152	3' Standoff Mount	94.5
CCI HPA-65R-BUU-H8 w/ mast pipe	152	8'-6" Omni	92.67
CCI HPA-65R-BUU-H6 w/ mast pipe	152	10' Omni	91.42
RRUS 12	152	15' Omni	90.17
RRUS 12	152	18" Standoff	88.58
RRUS 12	152	10' Omni	88
A2 Module	152	4' Yagi	85
A2 Module	152	(3) 15' Omni	84.67
A2 Module	152	18" Side Arm	83
12' T-Frame	152	12' T-Frame	77.42
12' T-Frame	152	TMA	77.42
12' Omni	142.33	12' Omni	74.75
10' Omni	141.33	Dish Mount	72.75
12' Omni	139	3'x6' Grid Dish	72.75
2' Straight Arm	136.33	10' Dipole	71
6' Sidearm	136.33	(2) 15' Omni	70
6' Sidearm	133	3' Standoff Mount	68.75
Dish Mount	133	(2) Yagi Antenna (3')	68.75
6' Dia. Dish	133	2'x2.5" Mount Pipe	66
Dish Mount	129.67	14' x 3" diam Omni	58.75
6' Grid Dish	129.67	1' Standoff Mount	51.75
Dish Mount	126.67	Yagi Antenna (3')	41
6' Dia. Dish	126.67	2'x2.5" Mount Pipe	41

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Pipe 8.625" x 0.500" (8 XS)		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A53-B-35	35 ksi	63 ksi

TORQUE 11554 lb-ft

REACTIONS - 38 mph WIND

TOWER DESIGN NOTES

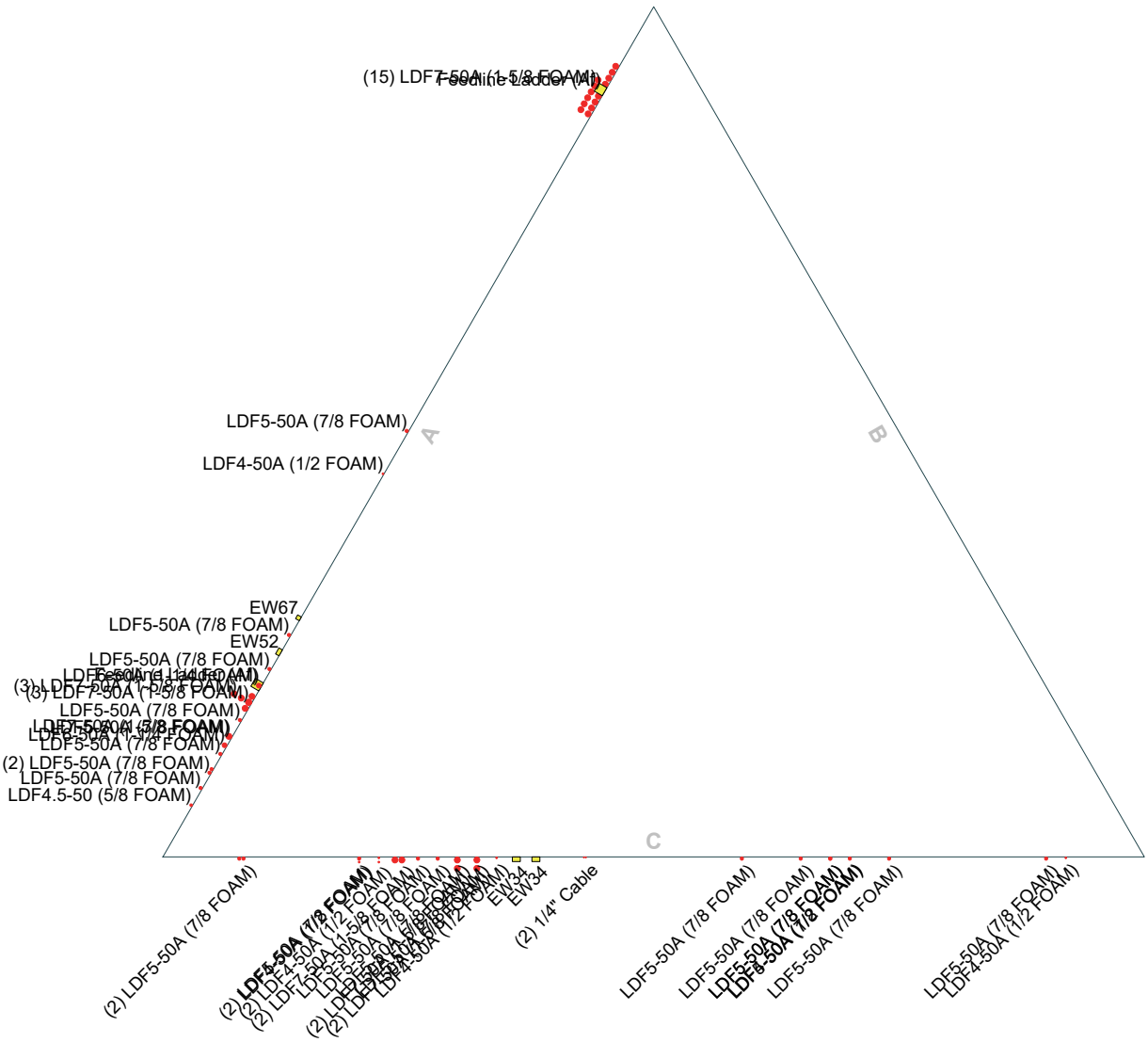
1. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 38 mph basic wind with 0.75 in ice.
3. Deflections are based upon a 50 mph wind.
4. Weld together tower sections have flange connections.
5. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
6. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
7. Welds are fabricated with ER-70S-6 electrodes.
8. TOWER RATING: 86.8%

Destek Engineering, LLC
1281 Kennestone Circle, Suite 100
Marietta, GA 30066
Phone: (770) 693-0835
FAX:

Job: ***180' SST***			
Project: ***CT2018***			
Client: AT&T	Drawn by: Ahmet Colakoglu	App'd:	
Code: TIA/EIA-222-F	Date: 07/07/16	Scale: NTS	
Path: C:\Users\destek16\Desktop\Temporary\29 - Comex\094 - CT2018\7-6-16 SA\CT2018.eri		Dwg No. E-1	

Feed Line Plan

Round Flat App In Face App Out Face



Destek Engineering, LLC
1281 Kennestone Circle, Suite 100
Marietta, GA 30066
Phone: (770) 693-0835
FAX:

Job: ***180' SST***			
Project: ***CT2018***			
Client: AT&T	Drawn by: Ahmet Colakoglu	App'd:	
Code: TIA/EIA-222-F	Date: 07/07/16	Scale: NTS	
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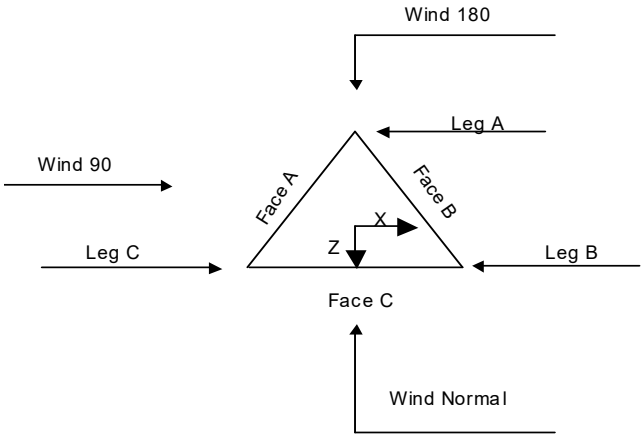
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 8.50 ft at the top and 27.50 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Basic wind speed of 90 mph.
Nominal ice thickness of 0.7500 in.
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.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	180.00-160.00			8.50	1	20.00
T2	160.00-140.00			8.50	1	20.00
T3	140.00-120.00			10.88	1	20.00
T4	120.00-100.00			13.25	1	20.00
T5	100.00-80.00			15.63	1	20.00
T6	80.00-60.00			18.00	1	20.00
T7	60.00-40.00			20.38	1	20.00
T8	40.00-20.00			22.75	1	20.00
T9	20.00-0.00			25.13	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	180.00-160.00	6.64	K Brace Down	No	Yes	1.0000	0.0000
T2	160.00-140.00	6.67	K Brace Down	No	Yes	0.0000	0.0000
T3	140.00-120.00	6.67	K Brace Down	No	Yes	0.0000	0.0000
T4	120.00-100.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T5	100.00-80.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T6	80.00-60.00	10.00	K Brace Down	No	Yes	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T7	60.00-40.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T8	40.00-20.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T9	20.00-0.00	20.00	K1 Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.00-160.00	Pipe	P3.5x.300	A572-50 (50 ksi)	Pipe	P2.5x.203	A53-B-35 (35 ksi)
T2 160.00-140.00	Pipe	P3.5x.300	A572-50 (50 ksi)	Pipe	P2x.154	A53-B-35 (35 ksi)
T3 140.00-120.00	Pipe	P4x.337	A572-50 (50 ksi)	Pipe	P2x.154	A53-B-35 (35 ksi)
T4 120.00-100.00	Pipe	P5.5x.375	A572-50 (50 ksi)	Pipe	P2.5x.203	A53-B-35 (35 ksi)
T5 100.00-80.00	Pipe	P6.625x0.375	A572-50 (50 ksi)	Pipe	P3x.216	A53-B-35 (35 ksi)
T6 80.00-60.00	Pipe	P6.625x.432	A572-50 (50 ksi)	Pipe	P3x.216	A53-B-35 (35 ksi)
T7 60.00-40.00	Pipe	P8x.322	A572-50 (50 ksi)	Pipe	P3x.216	A53-B-35 (35 ksi)
T8 40.00-20.00	Pipe	P8x.322	A572-50 (50 ksi)	Pipe	P3x.216	A53-B-35 (35 ksi)
T9 20.00-0.00	Pipe	Pipe 8.625" x 0.500" (8 XS)	A572-50 (50 ksi)	Pipe	P3x.216	A53-B-35 (35 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 180.00-160.00	Pipe	P2x.154	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 180.00-160.00	None	Flat Bar		A36 (36 ksi)	Pipe	P2x.154	A53-B-35 (35 ksi)
T2 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Pipe	P1.5x.145	A53-B-35 (35 ksi)
T3 140.00-120.00	None	Flat Bar		A36	Pipe	P2x.154	A53-B-35

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T4 120.00-100.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Pipe	P2x.154	(35 ksi) A53-B-35 (35 ksi)
T5 100.00-80.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Pipe	P2.5x.203	(35 ksi) A53-B-35 (35 ksi)
T6 80.00-60.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Pipe	P3x.216	(35 ksi) A53-B-35 (35 ksi)
T7 60.00-40.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Pipe	P3x.216	(35 ksi) A53-B-35 (35 ksi)
T8 40.00-20.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Pipe	P3x.216	(35 ksi) A53-B-35 (35 ksi)
T9 20.00-0.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Pipe	P3x.216	(35 ksi) A53-B-35 (35 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 180.00-160.00	Solid Round		A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T2 160.00-140.00	Solid Round		A572-50 (50 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T3 140.00-120.00	Solid Round		A572-50 (50 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T4 120.00-100.00	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T5 100.00-80.00	Solid Round		A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 80.00-60.00	Solid Round		A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T7 60.00-40.00	Solid Round		A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T8 40.00-20.00	Solid Round		A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T9 20.00-0.00	Solid Round		A572-50 (50 ksi)	Pipe	P3x.216	A53-B-35 (35 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T9 20.00-0.00	A53-B-35 (35 ksi)	Horizontal (1)	Pipe	P2x.154	1
		Diagonal (1)	Pipe	P2x.154	1
		Hip (1)	Pipe	P2x.154	1
		Hip Diagonal (1)	Pipe	P2.5x.203	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T6 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T7 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T8 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T9 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	No	No	1	1	1	1	1	1	1	1
180.00-160.00				1	1	1	1	1	1	1
T2	No	No	1	1	1	1	1	1	1	1
160.00-140.00				1	1	1	1	1	1	1
T3	No	No	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T4	No	No	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T5	No	No	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T6	No	No	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T7	No	No	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T8	No	No	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T9 20.00-0.00	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 180.00-160.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 160.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A (1-5/8 FOAM)	A	Yes	Ar (CfAe)	152.00 - 8.00	0.0000	0.4	15	9	0.2500 0.7500	1.9800		0.82
Feedline Ladder (Af)	A	Yes	Af (CfAe)	152.00 - 8.00	0.0000	0.4	1	1	3.0000	3.0000	12.0000	8.40
Feedline Ladder (Af)	A	Yes	Af (CfAe)	180.00 - 8.00	0.0000	-0.3	1	1	3.0000	3.0000	12.0000	8.40
LDF4.5-50 (5/8 FOAM)	A	Yes	Ar (CfAe)	51.75 - 8.00	0.0000	-0.44	1	1	0.2500 0.7500	0.8700		0.15
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	88.58 - 8.00	0.0000	-0.42	1	1	0.2500 0.7500	1.0900		0.33
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	68.75 - 8.00	0.0000	-0.4	2	2	0.2500 0.7500	1.0900		0.33
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	180.00 - 8.00	0.0000	-0.38	1	1	0.2500 0.7500	1.0900		0.33
LDF7-50A (1-5/8 FOAM)	A	Yes	Ar (CfAe)	97.67 - 8.00	0.0000	-0.36	1	1	1.9800	1.9800		0.82
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	94.42 - 8.00	0.0000	-0.28	1	1	0.2500 0.7500	1.0900		0.33
EW52	A	Yes	Af (CfAe)	133.00 - 8.00	0.0000	-0.26	1	1	0.2500 0.7500	2.2500	7.0686	0.59
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	129.67 - 8.00	0.0000	-0.24	1	1	0.2500 0.7500	1.0900		0.33
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	133.00 - 8.00	0.0000	-0.36	1	1	0.2500 0.7500	1.0900		0.33
LDF6-50A (1-1/4 FOAM)	A	Yes	Ar (CfAe)	111.17 - 8.00	0.0000	-0.37	1	1	1.5500	1.5500		0.66
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	180.00 - 8.00	0.0000	-0.34	1	1	0.2500 0.7500	1.0900		0.33
EW67	A	Yes	Af (CfAe)	172.50 - 8.00	0.0000	-0.22	1	1	0.2500	1.4000	5.6000	0.45

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
									0.7500			
LDF6-50A (1-1/4 FOAM)	A	Yes	Ar (CfAe)	174.50 - 8.00	0.0000	-0.3	1	1	0.2500 0.7500	1.5500		0.66
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	180.00 - 8.00	0.0000	0	1	1	0.2500 1.0900	1.0900		0.33
LDF7-50A (1-5/8 FOAM)	A	Yes	Ar (CfAe)	97.67 - 8.00	0.0000	-0.32	3	1	0.2500 0.7500	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	A	Yes	Ar (CfAe)	77.33 - 8.00	0.0000	-0.32	3	3	0.2500 0.7500	1.9800		0.82
LDF4-50A (1/2 FOAM)	A	Yes	Ar (CfAe)	77.33 - 8.00	0.0000	-0.05	1	1	0.2500 0.7500	0.6300		0.15
********** ***												
LDF4-50A (1/2 FOAM)	C	Yes	Ar (CfAe)	83.00 - 8.00	0.0000	-0.42	1	1	0.6300	0.6300		0.15
LDF5-50A (7/8 FOAM)	C	Yes	Ar (CfAe)	175.00 - 8.00	0.0000	-0.4	1	1	0.2500 0.7500	1.0900		0.33
LDF5-50A (7/8 FOAM)	C	Yes	Ar (CfAe)	180.00 - 8.00	0.0000	0.3	1	1	0.2500 0.7500	1.0900		0.33
LDF4-50A (1/2 FOAM)	C	Yes	Ar (CfAe)	41.00 - 8.00	0.0000	-0.2	1	1	0.2500 0.7500	0.6300		0.15
LDF5-50A (7/8 FOAM)	C	Yes	Ar (CfAe)	66.00 - 8.00	0.0000	-0.18	1	1	0.2500 0.7500	1.0900		0.33
LDF4-50A (1/2 FOAM)	C	Yes	Ar (CfAe)	72.75 - 8.00	0.0000	0.16	1	1	0.2500 0.7500	0.6300		0.15
LDF4-50A (1/2 FOAM)	C	Yes	Ar (CfAe)	96.42 - 8.00	0.0000	0.3	2	1	0.2500 0.7500	0.6300		0.15
LDF7-50A (1-5/8 FOAM)	C	Yes	Ar (CfAe)	96.42 - 8.00	0.0000	0.2	2	1	0.2500 0.7500	1.9800		0.82
LDF5-50A (7/8 FOAM)	C	Yes	Ar (CfAe)	104.33 - 8.00	0.0000	0.42	2	2	0.2500 0.7500	1.0900		0.33
LDF7-50A (1-5/8 FOAM)	C	Yes	Ar (CfAe)	106.67 - 8.00	0.0000	0.18	2	1	0.0000 0.7500	1.9800		0.82
LDF4-50A (1/2 FOAM)	C	Yes	Ar (CfAe)	106.67 - 8.00	0.0000	0.28	2	1	0.2500 0.7500	0.6300		0.15
LDF7-50A (1-5/8 FOAM)	C	Yes	Ar (CfAe)	106.67 - 8.00	0.0000	0.26	2	2	0.2500 0.7500	1.9800		0.82
LDF5-50A (7/8 FOAM)	C	Yes	Ar (CfAe)	180.00 - 8.00	0.0000	0.2	1	1	0.2500 0.7500	1.0900		0.33
LDF5-50A (7/8 FOAM)	C	Yes	Ar (CfAe)	136.33 - 8.00	0.0000	0.22	1	1	0.2500 0.7500	1.0900		0.33
LDF5-50A (7/8 FOAM)	C	Yes	Ar (CfAe)	162.33 - 8.00	0.0000	0.24	1	1	0.2500 0.7500	1.0900		0.33
LDF5-50A (7/8 FOAM)	C	Yes	Ar (CfAe)	162.33 - 8.00	0.0000	0.18	1	1	0.2500 0.7500	1.0900		0.33
EW34	C	Yes	Af (CfAe)	126.67 - 8.00	0.0000	0.14	1	1	0.2500 0.7500	2.5895	8.1937	1.13
EW34	C	Yes	Af (CfAe)	124.50 - 8.00	0.0000	0.12	1	1	0.2500 0.7500	2.5895	8.1937	1.13
1/4" Cable	C	Yes	Ar (CfAe)	115.25 - 8.00	0.0000	0.07	2	2	0.2500 0.7500	0.3450		0.06
LDF5-50A (7/8 FOAM)	C	Yes	Ar (CfAe)	180.00 - 8.00	0.0000	-0.09	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM)	C	Yes	Ar (CfAe)	115.25 - 8.00	0.0000	-0.15	1	1	0.2500 0.7500	1.0900		0.33
LDF5-50A (7/8 FOAM)	C	Yes	Ar (CfAe)	136.33 - 8.00	0.0000	-0.2	1	1	0.2500 0.7500	1.0900		0.33
LDF5-50A (7/8 FOAM)	C	Yes	Ar (CfAe)	180.00 - 8.00	0.0000	-0.18	1	1	0.2500 0.7500	1.0900		0.33
LDF5-50A (7/8 FOAM)	C	Yes	Ar (CfAe)	166.83 - 8.00	0.0000	-0.24	1	1	0.2500 0.7500	1.0900		0.33

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	180.00-160.00	A	7.323	6.458	0.000	0.000	203.00
		B	0.000	0.000	0.000	0.000	0.00
		C	9.673	0.000	0.000	0.000	35.14
T2	160.00-140.00	A	25.853	10.333	0.000	0.000	458.40
		B	0.000	0.000	0.000	0.000	0.00
		C	14.533	0.000	0.000	0.000	52.80
T3	140.00-120.00	A	39.793	14.771	0.000	0.000	639.15
		B	0.000	0.000	0.000	0.000	0.00
		C	17.500	2.410	0.000	0.000	76.20
T4	120.00-100.00	A	42.809	16.083	0.000	0.000	656.37
		B	0.000	0.000	0.000	0.000	0.00
		C	24.867	8.632	0.000	0.000	144.80
T5	100.00-80.00	A	51.870	16.083	0.000	0.000	727.75
		B	0.000	0.000	0.000	0.000	0.00
		C	39.446	8.632	0.000	0.000	237.30
T6	80.00-60.00	A	65.261	16.083	0.000	0.000	792.01
		B	0.000	0.000	0.000	0.000	0.00
		C	42.331	8.632	0.000	0.000	250.69
T7	60.00-40.00	A	69.619	16.083	0.000	0.000	808.16
		B	0.000	0.000	0.000	0.000	0.00
		C	44.036	8.632	0.000	0.000	256.55
T8	40.00-20.00	A	70.217	16.083	0.000	0.000	809.40
		B	0.000	0.000	0.000	0.000	0.00
		C	45.033	8.632	0.000	0.000	259.40
T9	20.00-0.00	A	42.130	9.650	0.000	0.000	485.64
		B	0.000	0.000	0.000	0.000	0.00
		C	27.020	5.179	0.000	0.000	155.64

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	180.00-160.00	A	0.750	16.635	9.167	0.000	0.000	452.04
		B		0.000	0.000	0.000	0.000	0.00
		C		22.984	0.000	0.000	0.000	214.68
T2	160.00-140.00	A	0.750	21.513	32.507	0.000	0.000	1123.21
		B		0.000	0.000	0.000	0.000	0.00
		C		34.533	0.000	0.000	0.000	322.56
T3	140.00-120.00	A	0.750	28.726	50.587	0.000	0.000	1636.89
		B		0.000	0.000	0.000	0.000	0.00
		C		41.582	3.341	0.000	0.000	436.97
T4	120.00-100.00	A	0.750	35.306	52.483	0.000	0.000	1727.10
		B		0.000	0.000	0.000	0.000	0.00
		C		54.790	14.444	0.000	0.000	748.32
T5	100.00-80.00	A	0.750	52.763	52.483	0.000	0.000	2032.67
		B		0.000	0.000	0.000	0.000	0.00
		C		78.234	18.907	0.000	0.000	1182.82
T6	80.00-60.00	A	0.750	67.774	59.901	0.000	0.000	2300.65
		B		0.000	0.000	0.000	0.000	0.00
		C		86.483	18.907	0.000	0.000	1270.91

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T7	60.00-40.00	A	0.750	73.771	62.150	0.000	0.000	2384.10
		B		0.000	0.000	0.000	0.000	0.00
		C		90.969	18.907	0.000	0.000	1310.80
T8	40.00-20.00	A	0.750	75.400	62.150	0.000	0.000	2397.58
		B		0.000	0.000	0.000	0.000	0.00
		C		94.342	18.907	0.000	0.000	1337.67
T9	20.00-0.00	A	0.750	45.240	37.290	0.000	0.000	1438.55
		B		0.000	0.000	0.000	0.000	0.00
		C		56.605	11.344	0.000	0.000	802.60

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	180.00-160.00	A	1.328	4.070	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.932	3.445	0.000	0.000
T2	160.00-140.00	A	2.645	6.911	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	1.062	4.248	0.000	0.000
T3	140.00-120.00	A	3.996	9.840	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	1.458	5.423	0.000	0.000
T4	120.00-100.00	A	3.515	8.475	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	2.000	6.594	0.000	0.000
T5	100.00-80.00	A	4.648	10.852	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.289	9.876	0.000	0.000
T6	80.00-60.00	A	5.747	13.223	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.601	10.806	0.000	0.000
T7	60.00-40.00	A	5.868	13.620	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.606	10.910	0.000	0.000
T8	40.00-20.00	A	5.765	13.445	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.585	10.967	0.000	0.000
T9	20.00-0.00	A	3.634	8.989	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	2.260	7.332	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	180.00-160.00	-4.6364	3.5463	-4.9782	4.6040
T2	160.00-140.00	-6.4824	-4.6855	-6.4601	0.6279
T3	140.00-120.00	-8.4147	-7.8207	-8.6734	-0.6553
T4	120.00-100.00	-11.7712	-4.3137	-12.0571	2.7262

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T5	100.00-80.00	-16.5630	0.3835	-16.8919	6.6520
T6	80.00-60.00	-21.1809	2.4508	-19.7675	8.7525
T7	60.00-40.00	-22.5790	3.4599	-21.0524	10.0460
T8	40.00-20.00	-24.4134	4.1098	-22.6735	11.5704
T9	20.00-0.00	-18.6722	3.1495	-17.5306	8.9650

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
12' Omni	C	From Leg	0.00	0.00	0.0000	186.00	No Ice	3.00	3.00	0.02
			0.00	0.00			1/2" Ice	4.23	4.23	0.04
			0.00	0.00			1" Ice	5.46	5.46	0.06
8' Omni	B	From Leg	0.00	0.00	0.0000	185.00	No Ice	2.40	2.40	0.02
			0.00	0.00			1/2" Ice	3.19	3.19	0.04
			0.00	0.00			1" Ice	3.98	3.98	0.06
2'x2.5" Mount Pipe	B	From Leg	0.00	0.00	0.0000	181.00	No Ice	0.36	0.36	0.03
			0.00	0.00			1/2" Ice	0.49	0.49	0.04
			0.00	0.00			1" Ice	0.62	0.62	0.05
10' Dipole	A	From Leg	0.00	0.00	0.0000	185.00	No Ice	2.00	2.00	0.02
			0.00	0.00			1/2" Ice	2.25	2.25	0.03
			0.00	0.00			1" Ice	2.50	2.50	0.04
8' Omni	B	From Leg	0.00	0.00	0.0000	185.00	No Ice	2.40	2.40	0.02
			0.00	0.00			1/2" Ice	3.19	3.19	0.04
			0.00	0.00			1" Ice	3.98	3.98	0.06
9' Omni	C	From Leg	0.00	0.00	0.0000	184.50	No Ice	2.70	2.70	0.02
			0.00	0.00			1/2" Ice	3.63	3.63	0.04
			0.00	0.00			1" Ice	4.56	4.56	0.06
8' Omni	B	From Leg	0.00	0.00	0.0000	184.00	No Ice	2.40	2.40	0.02
			0.00	0.00			1/2" Ice	3.19	3.19	0.04
			0.00	0.00			1" Ice	3.98	3.98	0.06
2'x2.5" Mount Pipe	B	From Leg	0.00	0.00	0.0000	180.00	No Ice	0.36	0.36	0.03
			0.00	0.00			1/2" Ice	0.49	0.49	0.04
			0.00	0.00			1" Ice	0.62	0.62	0.05
4' Omni	B	From Leg	0.00	0.00	0.0000	183.00	No Ice	0.79	0.79	0.02
			0.00	0.00			1/2" Ice	1.03	1.03	0.03
			0.00	0.00			1" Ice	1.27	1.27	0.04
2'x2.5" Mount Pipe	B	From Leg	0.00	0.00	0.0000	181.00	No Ice	0.36	0.36	0.03
			0.00	0.00			1/2" Ice	0.49	0.49	0.04
			0.00	0.00			1" Ice	0.62	0.62	0.05
2-Bay FM Antenna	C	From Leg	0.00	0.00	0.0000	179.00	No Ice	11.40	11.40	0.22
			0.00	0.00			1/2" Ice	15.00	15.00	0.25
			0.00	0.00			1" Ice	18.60	18.60	0.28
14.5' Dipole	B	From Leg	0.00	0.00	0.0000	174.00	No Ice	3.00	3.00	0.04
			0.00	0.00			1/2" Ice	3.38	3.38	0.05
			0.00	0.00			1" Ice	3.76	3.76	0.06
3' Standoff Mount	C	From Leg	1.50	0.00	0.0000	162.33	No Ice	0.94	1.41	0.03
			0.00	0.00			1/2" Ice	1.48	2.17	0.04
			0.00	0.00			1" Ice	2.02	2.93	0.05
12' Omni	C	From Leg	3.00	0.00	0.0000	168.33	No Ice	3.00	3.00	0.02
			0.00	0.00			1/2" Ice	4.23	4.23	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	5.46	5.46	0.06
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12' T-Frame	A	From Leg	1.50	0.0000	152.00	No Ice	13.60	13.60	0.47
			0.00			1/2" Ice	18.40	18.40	0.60
			0.00			1" Ice	23.20	23.20	0.73
12' T-Frame	B	From Leg	1.50	0.0000	152.00	No Ice	13.60	13.60	0.47
			0.00			1/2" Ice	18.40	18.40	0.60
			0.00			1" Ice	23.20	23.20	0.73
12' T-Frame	C	From Leg	1.50	0.0000	152.00	No Ice	13.60	13.60	0.47
			0.00			1/2" Ice	18.40	18.40	0.60
			0.00			1" Ice	23.20	23.20	0.73
(2) 7770.00 w/ mount pipe	A	From Leg	3.00	0.0000	152.00	No Ice	6.22	4.35	0.06
			0.00			1/2" Ice	6.77	5.20	0.11
			0.00			1" Ice	7.32	6.05	0.16
(2) 7770.00 w/ mount pipe	B	From Leg	3.00	0.0000	152.00	No Ice	6.22	4.35	0.06
			0.00			1/2" Ice	6.77	5.20	0.11
			0.00			1" Ice	7.32	6.05	0.16
(2) 7770.00 w/ mount pipe	C	From Leg	3.00	0.0000	152.00	No Ice	6.22	4.35	0.06
			0.00			1/2" Ice	6.77	5.20	0.11
			0.00			1" Ice	7.32	6.05	0.16
(2) LGP17201	A	From Leg	3.00	0.0000	152.00	No Ice	1.95	0.52	0.03
			0.00			1/2" Ice	2.13	0.64	0.04
			0.00			1" Ice	2.31	0.76	0.05
(2) LGP17201	B	From Leg	3.00	0.0000	152.00	No Ice	1.95	0.52	0.03
			0.00			1/2" Ice	2.13	0.64	0.04
			0.00			1" Ice	2.31	0.76	0.05
(2) LGP17201	C	From Leg	3.00	0.0000	152.00	No Ice	1.95	0.52	0.03
			0.00			1/2" Ice	2.13	0.64	0.04
			0.00			1" Ice	2.31	0.76	0.05
RRUS-11	A	From Leg	3.00	0.0000	152.00	No Ice	2.94	1.25	0.06
			0.00			1/2" Ice	3.17	1.41	0.07
			0.00			1" Ice	3.40	1.57	0.08
RRUS-11	B	From Leg	3.00	0.0000	152.00	No Ice	2.94	1.25	0.06
			0.00			1/2" Ice	3.17	1.41	0.07
			0.00			1" Ice	3.40	1.57	0.08
RRUS-11	C	From Leg	3.00	0.0000	152.00	No Ice	2.94	1.25	0.06
			0.00			1/2" Ice	3.17	1.41	0.07
			0.00			1" Ice	3.40	1.57	0.08
DC6-48-60-18-8F Squid	C	From Leg	3.00	0.0000	152.00	No Ice	1.60	1.60	0.03
			0.00			1/2" Ice	1.81	1.81	0.05
			0.00			1" Ice	2.02	2.02	0.07
********									
2' Straight Arm	C	From Leg	1.00	0.0000	136.33	No Ice	4.50	4.50	0.17
			0.00			1/2" Ice	5.50	5.50	0.22
			0.00			1" Ice	6.50	6.50	0.27
12' Omni	C	From Leg	2.00	0.0000	142.33	No Ice	3.00	3.00	0.02
			0.00			1/2" Ice	4.23	4.23	0.04
			0.00			1" Ice	5.46	5.46	0.06
6' Sidearm	B	From Leg	3.00	0.0000	136.33	No Ice	10.00	10.00	0.10
			0.00			1/2" Ice	13.00	13.00	0.14
			0.00			1" Ice	16.00	16.00	0.18
10' Omni	B	From Leg	6.00	0.0000	141.33	No Ice	3.00	3.00	0.02
			0.00			1/2" Ice	4.03	4.03	0.04
			0.00			1" Ice	5.06	5.06	0.06
6' Sidearm	B	From Leg	3.00	0.0000	133.00	No Ice	10.00	10.00	0.10
			0.00			1/2" Ice	13.00	13.00	0.14
			0.00			1" Ice	16.00	16.00	0.18

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
12' Omni	B	From Leg	6.00	0.0000	139.00	No Ice	3.00	3.00	0.02
			0.00			1/2" Ice	4.23	4.23	0.04
			0.00			1" Ice	5.46	5.46	0.06
********									
Dish Mount	C	From Leg	0.00	0.0000	133.00	No Ice	4.50	4.50	0.17
			0.00			1/2" Ice	5.50	5.50	0.22
			0.00			1" Ice	6.50	6.50	0.27
Dish Mount	C	From Leg	0.00	0.0000	129.67	No Ice	4.50	4.50	0.17
			0.00			1/2" Ice	5.50	5.50	0.22
			0.00			1" Ice	6.50	6.50	0.27
Dish Mount	C	From Leg	0.00	0.0000	126.67	No Ice	4.50	4.50	0.17
			0.00			1/2" Ice	5.50	5.50	0.22
			0.00			1" Ice	6.50	6.50	0.27
Dish Mount	C	From Leg	0.00	0.0000	124.50	No Ice	4.50	4.50	0.17
			0.00			1/2" Ice	5.50	5.50	0.22
			0.00			1" Ice	6.50	6.50	0.27
********									
6' Sidearm	B	From Leg	3.00	0.0000	111.17	No Ice	10.00	10.00	0.10
			0.00			1/2" Ice	13.00	13.00	0.14
			0.00			1" Ice	16.00	16.00	0.18
12' Omni	B	From Leg	6.00	0.0000	117.17	No Ice	3.00	3.00	0.02
			0.00			1/2" Ice	4.23	4.23	0.04
			0.00			1" Ice	5.46	5.46	0.06
Dish Mount	C	From Leg	0.00	0.0000	115.17	No Ice	4.50	4.50	0.17
			0.00			1/2" Ice	5.50	5.50	0.22
			0.00			1" Ice	6.50	6.50	0.27
8'x3" Mount Pipe	C	From Leg	0.00	0.0000	115.17	No Ice	2.40	2.40	0.04
			0.00			1/2" Ice	3.19	3.19	0.06
			0.00			1" Ice	3.98	3.98	0.08
8'x3" Mount Pipe	C	From Leg	0.00	0.0000	112.67	No Ice	2.40	2.40	0.04
			0.00			1/2" Ice	3.19	3.19	0.06
			0.00			1" Ice	3.98	3.98	0.08
Airmux-200/ODU	C	From Leg	0.00	0.0000	115.17	No Ice	1.40	0.26	0.01
			0.00			1/2" Ice	1.56	0.35	0.02
			0.00			1" Ice	1.72	0.44	0.03
Airmux-200/ODU	C	From Leg	0.00	0.0000	112.17	No Ice	1.40	0.26	0.01
			0.00			1/2" Ice	1.56	0.35	0.02
			0.00			1" Ice	1.72	0.44	0.03
********									
6' Sidearm	B	From Leg	3.00	0.0000	106.67	No Ice	10.00	10.00	0.10
			0.00			1/2" Ice	13.00	13.00	0.14
			0.00			1" Ice	16.00	16.00	0.18
10' Omni	B	From Leg	6.00	0.0000	111.67	No Ice	3.00	3.00	0.02
			0.00			1/2" Ice	4.03	4.03	0.04
			0.00			1" Ice	5.06	5.06	0.06
10' Omni	B	From Leg	6.00	0.0000	101.67	No Ice	3.00	3.00	0.02
			0.00			1/2" Ice	4.03	4.03	0.04
			0.00			1" Ice	5.06	5.06	0.06
6' Sidearm	B	From Leg	3.00	0.0000	106.67	No Ice	10.00	10.00	0.10
			0.00			1/2" Ice	13.00	13.00	0.14
			0.00			1" Ice	16.00	16.00	0.18
10' Omni	B	From Leg	6.00	0.0000	111.67	No Ice	3.00	3.00	0.02
			0.00			1/2" Ice	4.03	4.03	0.04
			0.00			1" Ice	5.06	5.06	0.06
10' Omni	B	From Leg	6.00	0.0000	101.67	No Ice	3.00	3.00	0.02
			0.00			1/2" Ice	4.03	4.03	0.04
			0.00			1" Ice	5.06	5.06	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
10'x2" Mount Pipe	C	From Leg	0.00	0.0000	104.33	No Ice	2.00	2.00	0.08
			0.00			1/2" Ice	3.02	3.02	0.10
			0.00			1" Ice	4.04	4.04	0.12
12' T-Frame	A	From Leg	1.50	0.0000	97.67	No Ice	13.60	13.60	0.47
			0.00			1/2" Ice	18.40	18.40	0.60
			0.00			1" Ice	23.20	23.20	0.73
10' Omni	A	From Leg	3.00	0.0000	102.67	No Ice	3.00	3.00	0.02
			0.00			1/2" Ice	4.03	4.03	0.04
			0.00			1" Ice	5.06	5.06	0.06
15' Omni	A	From Leg	3.00	0.0000	90.17	No Ice	3.00	3.00	0.02
			0.00			1/2" Ice	4.53	4.53	0.04
			0.00			1" Ice	6.06	6.06	0.06
10' Omni	B	From Leg	7.00	0.0000	101.42	No Ice	3.00	3.00	0.02
			0.00			1/2" Ice	4.03	4.03	0.04
			0.00			1" Ice	5.06	5.06	0.06
7' Sidearm	B	From Leg	3.00	0.0000	96.42	No Ice	10.00	10.00	0.10
			0.00			1/2" Ice	13.00	13.00	0.14
			0.00			1" Ice	16.00	16.00	0.18
TMA	B	From Leg	7.00	0.0000	96.42	No Ice	1.40	1.40	0.03
			0.00			1/2" Ice	1.60	1.60	0.04
			0.00			1" Ice	1.80	1.80	0.05
10' Omni	B	From Leg	7.00	0.0000	91.42	No Ice	3.00	3.00	0.02
			0.00			1/2" Ice	4.03	4.03	0.04
			0.00			1" Ice	5.06	5.06	0.06
********									
3' Standoff Mount	C	From Leg	1.50	0.0000	94.50	No Ice	0.94	1.41	0.03
			0.00			1/2" Ice	1.48	2.17	0.04
			0.00			1" Ice	2.02	2.93	0.05
10' Dipole	C	From Leg	3.00	0.0000	99.50	No Ice	2.00	2.00	0.02
			0.00			1/2" Ice	2.25	2.25	0.03
			0.00			1" Ice	2.50	2.50	0.04
18" Standoff	A	From Leg	1.00	0.0000	88.58	No Ice	4.50	4.50	0.17
			0.00			1/2" Ice	5.50	5.50	0.22
			0.00			1" Ice	6.50	6.50	0.06
8'-6" Omni	A	From Leg	1.50	0.0000	92.67	No Ice	2.70	2.70	0.02
			0.00			1/2" Ice	3.63	3.63	0.04
			0.00			1" Ice	4.56	4.56	0.06
18" Side Arm	B	From Leg	1.00	0.0000	83.00	No Ice	4.50	4.50	0.17
			0.00			1/2" Ice	5.50	5.50	0.22
			0.00			1" Ice	6.50	6.50	0.06
10' Omni	B	From Leg	1.50	0.0000	88.00	No Ice	3.00	3.00	0.02
			0.00			1/2" Ice	4.03	4.03	0.04
			0.00			1" Ice	5.06	5.06	0.06
********									
4' Yagi	B	From Leg	1.50	0.0000	85.00	No Ice	1.80	1.80	0.01
			0.00			1/2" Ice	3.22	3.22	0.02
			0.00			1" Ice	4.64	4.64	0.03
12' T-Frame	C	From Leg	1.50	0.0000	77.42	No Ice	13.60	13.60	0.47
			0.00			1/2" Ice	18.40	18.40	0.60
			0.00			1" Ice	23.20	23.20	0.73
(3) 15' Omni	C	From Leg	3.00	0.0000	84.67	No Ice	3.00	3.00	0.02
			0.00			1/2" Ice	4.53	4.53	0.04
			0.00			1" Ice	6.06	6.06	0.06
(2) 15' Omni	C	From Leg	3.00	0.0000	70.00	No Ice	3.00	3.00	0.02
			0.00			1/2" Ice	4.53	4.53	0.04
			0.00			1" Ice	6.06	6.06	0.06
TMA	C	From Leg	3.00	0.0000	77.42	No Ice	1.40	1.40	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00				1/2" Ice	1.60	1.60	0.04
			0.00				1" Ice	1.80	1.80	0.05
Dish Mount	B	From Leg	0.00		0.0000	72.75	No Ice	4.50	4.50	0.17
			0.00				1/2" Ice	5.50	5.50	0.22
			0.00				1" Ice	6.50	6.50	0.27
3' Standoff Mount	A	From Leg	1.50		0.0000	68.75	No Ice	0.94	1.41	0.03
			0.00				1/2" Ice	1.48	2.17	0.04
			0.00				1" Ice	2.02	2.93	0.05
(2) Yagi Antenna (3')	A	From Leg	3.00		0.0000	68.75	No Ice	1.14	1.14	0.01
			0.00				1/2" Ice	1.82	1.82	0.02
			0.00				1" Ice	2.50	2.50	0.03
12' Omni	A	From Leg	3.00		0.0000	74.75	No Ice	3.00	3.00	0.02
			0.00				1/2" Ice	4.23	4.23	0.04
			0.00				1" Ice	5.46	5.46	0.06
2'x2.5" Mount Pipe	C	From Leg	0.00		0.0000	66.00	No Ice	0.36	0.36	0.03
			0.00				1/2" Ice	0.49	0.49	0.04
			0.00				1" Ice	0.62	0.62	0.05
10' Dipole	C	From Leg	0.00		0.0000	71.00	No Ice	2.00	2.00	0.02
			0.00				1/2" Ice	2.25	2.25	0.03
			0.00				1" Ice	2.50	2.50	0.04
********										
1' Standoff Mount	B	From Leg	0.50		0.0000	51.75	No Ice	0.31	0.47	0.01
			0.00				1/2" Ice	0.49	0.72	0.02
			0.00				1" Ice	0.67	0.97	0.03
14' x 3" diam Omni	B	From Leg	1.00		0.0000	58.75	No Ice	4.20	4.20	0.04
			0.00				1/2" Ice	5.63	5.63	0.07
			0.00				1" Ice	7.06	7.06	0.10
2'x2.5" Mount Pipe	A	From Leg	0.00		0.0000	41.00	No Ice	0.36	0.36	0.03
			0.00				1/2" Ice	0.49	0.49	0.04
			0.00				1" Ice	0.62	0.62	0.05
Yagi Antenna (3')	A	From Leg	0.00		0.0000	41.00	No Ice	1.14	1.14	0.01
			0.00				1/2" Ice	1.82	1.82	0.02
			0.00				1" Ice	2.50	2.50	0.03
******** ********										
CCI HPA-65R-BUU-H8 w/ mast pipe	C	From Leg	3.00		0.0000	152.00	No Ice	13.67	10.10	120.11
			0.00				1/2" Ice	14.50	11.61	221.82
			0.00				1" Ice	15.32	12.93	334.59
CCI HPA-65R-BUU-H8 w/ mast pipe	B	From Leg	3.00		0.0000	152.00	No Ice	13.67	10.10	120.11
			0.00				1/2" Ice	14.50	11.61	221.82
			0.00				1" Ice	15.32	12.93	334.59
CCI HPA-65R-BUU-H6 w/ mast pipe	A	From Leg	3.00		0.0000	152.00	No Ice	10.65	8.46	91.53
			0.00				1/2" Ice	11.30	9.50	176.32
			0.00				1" Ice	11.93	10.40	270.30
RRUS 12	C	From Leg	3.00		0.0000	152.00	No Ice	3.67	1.49	58.00
			0.00				1/2" Ice	3.93	1.67	81.22
			0.00				1" Ice	4.19	1.87	107.64
RRUS 12	B	From Leg	3.00		0.0000	152.00	No Ice	3.67	1.49	58.00
			0.00				1/2" Ice	3.93	1.67	81.22
			0.00				1" Ice	4.19	1.87	107.64
RRUS 12	A	From Leg	3.00		0.0000	152.00	No Ice	3.67	1.49	58.00
			0.00				1/2" Ice	3.93	1.67	81.22
			0.00				1" Ice	4.19	1.87	107.64
A2 Module	C	From Leg	3.00		0.0000	152.00	No Ice	2.42	0.54	22.00
			0.00				1/2" Ice	2.63	0.67	34.73
			0.00				1" Ice	2.85	0.82	49.92
A2 Module	B	From Leg	3.00		0.0000	152.00	No Ice	2.42	0.54	22.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
A2 Module	A	From Leg	0.00	0.0000	152.00	1/2" Ice	2.63	0.67	34.73
			0.00			1" Ice	2.85	0.82	49.92
			3.00			No Ice	2.42	0.54	22.00
			0.00			1/2" Ice	2.63	0.67	34.73
			0.00			1" Ice	2.85	0.82	49.92

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
3'x6' Grid Dish	C	Grid	From Leg	0.00	0.0000		174.50	6.00	No Ice	28.27	0.20
				0.00					1/2" Ice	29.07	0.35
				0.00					1" Ice	29.87	0.50
8' Dia. Dish	A	Paraboloid w/Shroud (HP)	From Leg	0.00	0.0000		172.50	8.00	No Ice	50.27	0.47
				0.00					1/2" Ice	51.32	1.01
				0.00					1" Ice	52.37	1.55
6' Dia. Dish	C	Paraboloid w/Radome	From Leg	0.00	0.0000		133.00	6.00	No Ice	28.27	0.38
				0.00					1/2" Ice	29.07	0.45
				0.00					1" Ice	29.87	0.52
6' Grid Dish	C	Grid	From Leg	0.00	0.0000		129.67	6.00	No Ice	28.27	0.20
				0.00					1/2" Ice	29.07	0.35
				0.00					1" Ice	29.87	0.50
6' Dia. Dish	B	Paraboloid w/Radome	From Leg	0.00	0.0000		126.67	6.00	No Ice	28.27	0.38
				0.00					1/2" Ice	29.07	0.45
				0.00					1" Ice	29.87	0.52
6' Dia. Dish	A	Paraboloid w/Radome	From Leg	0.00	0.0000		124.50	6.00	No Ice	28.27	0.38
				0.00					1/2" Ice	29.07	0.45
				0.00					1" Ice	29.87	0.52
4' Dia. Dish	C	Paraboloid w/Radome	From Leg	0.00	0.0000		115.17	4.00	No Ice	12.57	0.14
				0.00					1/2" Ice	13.10	0.28
				0.00					1" Ice	13.63	0.42
3' Dia. Dish	C	Paraboloid w/Radome	From Leg	0.00	0.0000		115.67	3.00	No Ice	7.07	0.18
				0.00					1/2" Ice	7.47	0.22
				0.00					1" Ice	7.87	0.26
2' Dia. Dish	C	Paraboloid w/Radome	From Leg	0.00	0.0000		112.67	2.00	No Ice	3.14	0.07
				0.00					1/2" Ice	3.41	0.28
				0.00					1" Ice	3.68	0.49
3'x6' Grid Dish	C	Grid	From Leg	0.00	0.0000		106.17	6.00	No Ice	28.27	0.20
				0.00					1/2" Ice	29.07	0.35
				0.00					1" Ice	29.87	0.50
3'x6' Grid Dish	C	Grid	From Leg	0.00	0.0000		100.58	6.00	No Ice	28.27	0.20
				0.00					1/2" Ice	29.07	0.35
				0.00					1" Ice	29.87	0.50
3'x6' Grid Dish	B	Grid	From Leg	0.00	0.0000		72.75	6.00	No Ice	28.27	0.20
				0.00					1/2" Ice	29.07	0.35
				0.00					1" Ice	29.87	0.50

Tower Pressures - No Ice

G_H = 1.121

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	170.00	1.597	33	175.833	A	6.458	33.478	11.667	29.21	0.000	0.000
180.00-160.00					B	0.000	27.483		42.45	0.000	0.000
					C	0.000	36.224		32.21	0.000	0.000
T2	150.00	1.541	32	199.594	A	10.333	48.824	11.694	19.77	0.000	0.000
160.00-140.00					B	0.000	25.615		45.65	0.000	0.000
					C	0.000	39.086		29.92	0.000	0.000
T3	130.00	1.48	31	248.763	A	14.771	68.068	15.035	18.15	0.000	0.000
140.00-120.00					B	0.000	32.271		46.59	0.000	0.000
					C	2.410	48.313		29.64	0.000	0.000
T4	110.00	1.411	29	297.933	A	16.083	74.615	18.376	20.26	0.000	0.000
120.00-100.00					B	0.000	35.320		52.03	0.000	0.000
					C	8.632	58.188		27.50	0.000	0.000
T5	90.00	1.332	28	347.311	A	16.083	91.870	22.135	20.50	0.000	0.000
100.00-80.00					B	0.000	44.648		49.58	0.000	0.000
					C	8.632	80.805		24.75	0.000	0.000
T6 80.00-60.00	70.00	1.24	26	394.811	A	16.083	108.131	22.135	17.82	0.000	0.000
					B	0.000	48.617		45.53	0.000	0.000
					C	8.632	87.348		23.06	0.000	0.000
T7 60.00-40.00	50.00	1.126	23	445.650	A	16.083	121.282	28.817	20.98	0.000	0.000
					B	0.000	57.531		50.09	0.000	0.000
					C	8.632	97.961		27.04	0.000	0.000
T8 40.00-20.00	30.00	1	21	493.150	A	16.083	124.395	28.817	20.51	0.000	0.000
					B	0.000	59.943		48.07	0.000	0.000
					C	8.632	101.391		26.19	0.000	0.000
T9 20.00-0.00	10.00	1	21	540.650	A	9.650	103.289	28.817	25.52	0.000	0.000
					B	0.000	61.189		47.10	0.000	0.000
					C	5.179	82.345		32.93	0.000	0.000

Tower Pressure - With Ice

G_H = 1.121

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	170.00	1.597	6	0.7500	178.333	A	9.167	53.836	16.667	26.45	0.000	0.000
180.00-160.00						B	0.000	41.270		40.38	0.000	0.000
						C	0.000	60.810		27.41	0.000	0.000
T2	150.00	1.541	6	0.7500	202.098	A	32.507	54.697	16.706	19.16	0.000	0.000
160.00-140.00						B	0.000	40.094		41.67	0.000	0.000
						C	0.000	70.380		23.74	0.000	0.000
T3	130.00	1.48	5	0.7500	251.268	A	50.587	67.055	20.047	17.04	0.000	0.000
140.00-120.00						B	0.000	48.169		41.62	0.000	0.000
						C	3.341	84.328		22.87	0.000	0.000
T4	110.00	1.411	5	0.7500	300.437	A	52.483	76.587	23.388	18.12	0.000	0.000
120.00-100.00						B	0.000	49.756		47.01	0.000	0.000
						C	14.444	97.952		20.81	0.000	0.000
T5 100.00-80.00	90.00	1.332	5	0.7500	349.816	A	52.483	101.919	27.147	17.58	0.000	0.000
						B	0.000	60.009		45.24	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	18.907	128.367		18.43	0.000	0.000
T6 80.00-60.00	70.00	1.24	5	0.7500	397.316	A	59.901	119.529	27.147	15.13	0.000	0.000
						B	0.000	64.979		41.78	0.000	0.000
						C	18.907	140.656		17.01	0.000	0.000
T7 60.00-40.00	50.00	1.126	4	0.7500	448.155	A	62.150	134.999	33.829	17.16	0.000	0.000
						B	0.000	74.849		45.20	0.000	0.000
						C	18.907	154.908		19.46	0.000	0.000
T8 40.00-20.00	30.00	1	4	0.7500	495.655	A	62.150	140.249	33.829	16.71	0.000	0.000
						B	0.000	78.294		43.21	0.000	0.000
						C	18.907	161.669		18.73	0.000	0.000
T9 20.00-0.00	10.00	1	4	0.7500	543.155	A	37.290	123.741	33.829	21.01	0.000	0.000
						B	0.000	82.005		41.25	0.000	0.000
						C	11.344	125.794		24.67	0.000	0.000

Tower Pressure - Service

$G_H = 1.121$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	170.00	1.597	10	175.833	A	6.458	33.478	11.667	29.21	0.000	0.000
180.00-160.00					B	0.000	27.483		42.45	0.000	0.000
					C	0.000	36.224		32.21	0.000	0.000
T2	150.00	1.541	10	199.594	A	10.333	48.824	11.694	19.77	0.000	0.000
160.00-140.00					B	0.000	25.615		45.65	0.000	0.000
					C	0.000	39.086		29.92	0.000	0.000
T3	130.00	1.48	9	248.763	A	14.771	68.068	15.035	18.15	0.000	0.000
140.00-120.00					B	0.000	32.271		46.59	0.000	0.000
					C	2.410	48.313		29.64	0.000	0.000
T4	110.00	1.411	9	297.933	A	16.083	74.615	18.376	20.26	0.000	0.000
120.00-100.00					B	0.000	35.320		52.03	0.000	0.000
					C	8.632	58.188		27.50	0.000	0.000
T5	90.00	1.332	9	347.311	A	16.083	91.870	22.135	20.50	0.000	0.000
100.00-80.00					B	0.000	44.648		49.58	0.000	0.000
					C	8.632	80.805		24.75	0.000	0.000
T6 80.00-60.00	70.00	1.24	8	394.811	A	16.083	108.131	22.135	17.82	0.000	0.000
					B	0.000	48.617		45.53	0.000	0.000
					C	8.632	87.348		23.06	0.000	0.000
T7 60.00-40.00	50.00	1.126	7	445.650	A	16.083	121.282	28.817	20.98	0.000	0.000
					B	0.000	57.531		50.09	0.000	0.000
					C	8.632	97.961		27.04	0.000	0.000
T8 40.00-20.00	30.00	1	6	493.150	A	16.083	124.395	28.817	20.51	0.000	0.000
					B	0.000	59.943		48.07	0.000	0.000
					C	8.632	101.391		26.19	0.000	0.000
T9 20.00-0.00	10.00	1	6	540.650	A	9.650	103.289	28.817	25.52	0.000	0.000
					B	0.000	61.189		47.10	0.000	0.000
					C	5.179	82.345		32.93	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	238.14	1840.30	A	0.227	2.508	0.596	1	1	26.422	2460.14	123.01	A
180.00-160.00			B	0.156	2.748	0.582	1	1	16.008			
			C	0.206	2.576	0.592	1	1	21.432			
T2	511.20	1464.19	A	0.296	2.306	0.615	1	1	40.350	3332.72	166.64	A
160.00-140.00			B	0.128	2.853	0.578	1	1	14.816			
			C	0.196	2.61	0.59	1	1	23.044			
T3	715.35	1973.31	A	0.333	2.212	0.627	1	1	57.419	4367.45	218.37	A
140.00-120.00			B	0.13	2.848	0.579	1	1	18.672			
			C	0.204	2.583	0.591	1	1	30.973			
T4	801.17	2478.68	A	0.304	2.284	0.617	1	1	62.140	4653.71	232.69	A
120.00-100.00			B	0.119	2.891	0.577	1	1	20.386			
			C	0.224	2.517	0.596	1	1	43.291			
T5	965.05	3427.35	A	0.311	2.268	0.619	1	1	72.976	5122.94	256.15	A
100.00-80.00			B	0.129	2.852	0.578	1	1	25.825			
			C	0.258	2.415	0.604	1	1	57.423			
T6	1042.70	4167.19	A	0.315	2.258	0.62	1	1	83.177	5411.10	270.55	A
80.00-60.00			B	0.123	2.873	0.578	1	1	28.088			
			C	0.243	2.458	0.6	1	1	61.052			
T7	1064.71	4393.18	A	0.308	2.274	0.618	1	1	91.091	5422.07	271.10	A
60.00-40.00			B	0.129	2.85	0.578	1	1	33.282			
			C	0.239	2.47	0.599	1	1	67.328			
T8	1068.80	4624.20	A	0.285	2.337	0.611	1	1	92.136	5004.71	250.24	A
40.00-20.00			B	0.122	2.879	0.578	1	1	34.619			
			C	0.223	2.521	0.595	1	1	68.999			
T9 20.00-0.00	641.28	5294.79	A	0.209	2.567	0.592	1	1	70.824	4224.83	211.24	A
			B	0.113	2.912	0.577	1	1	35.278			
			C	0.162	2.728	0.583	1	1	53.216			
Sum Weight:	7048.40	29663.19						OTM	3301142.6 0 lb-ft	39999.66		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	238.14	1840.30	A	0.227	2.508	0.596	0.8	1	25.130	2339.87	116.99	A
180.00-160.00			B	0.156	2.748	0.582	0.8	1	16.008			
			C	0.206	2.576	0.592	0.8	1	21.432			
T2	511.20	1464.19	A	0.296	2.306	0.615	0.8	1	38.284	3162.03	158.10	A
160.00-140.00			B	0.128	2.853	0.578	0.8	1	14.816			
			C	0.196	2.61	0.59	0.8	1	23.044			
T3	715.35	1973.31	A	0.333	2.212	0.627	0.8	1	54.465	4142.75	207.14	A
140.00-120.00			B	0.13	2.848	0.579	0.8	1	18.672			
			C	0.204	2.583	0.591	0.8	1	30.491			
T4	801.17	2478.68	A	0.304	2.284	0.617	0.8	1	58.924	4412.81	220.64	A
120.00-100.00			B	0.119	2.891	0.577	0.8	1	20.386			
			C	0.224	2.517	0.596	0.8	1	41.565			
T5	965.05	3427.35	A	0.311	2.268	0.619	0.8	1	69.759	4897.12	244.86	A
100.00-80.00			B	0.129	2.852	0.578	0.8	1	25.825			
			C	0.258	2.415	0.604	0.8	1	55.697			
T6	1042.70	4167.19	A	0.315	2.258	0.62	0.8	1	79.960	5201.83	260.09	A
80.00-60.00			B	0.123	2.873	0.578	0.8	1	28.088			
			C	0.243	2.458	0.6	0.8	1	59.326			
T7	1064.71	4393.18	A	0.308	2.274	0.618	0.8	1	87.874	5230.60	261.53	A
60.00-40.00			B	0.129	2.85	0.578	0.8	1	33.282			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.239	2.47	0.599	0.8	1	65.601			
T8	1068.80	4624.20	A	0.285	2.337	0.611	0.8	1	88.919	4829.99	241.50	A
40.00-20.00			B	0.122	2.879	0.578	0.8	1	34.619			
			C	0.223	2.521	0.595	0.8	1	67.272			
T9 20.00-0.00	641.28	5294.79	A	0.209	2.567	0.592	0.8	1	68.894	4109.70	205.48	A
			B	0.113	2.912	0.577	0.8	1	35.278			
			C	0.162	2.728	0.583	0.8	1	52.181			
Sum Weight:	7048.40	29663.19						OTM	3148444.8 2 lb-ft	38326.70		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	238.14	1840.30	A	0.227	2.508	0.596	0.85	1	25.453	2369.94	118.50	A
180.00-160.00			B	0.156	2.748	0.582	0.85	1	16.008			
			C	0.206	2.576	0.592	0.85	1	21.432			
T2	511.20	1464.19	A	0.296	2.306	0.615	0.85	1	38.800	3204.70	160.24	A
160.00-140.00			B	0.128	2.853	0.578	0.85	1	14.816			
			C	0.196	2.61	0.59	0.85	1	23.044			
T3	715.35	1973.31	A	0.333	2.212	0.627	0.85	1	55.204	4198.92	209.95	A
140.00-120.00			B	0.13	2.848	0.579	0.85	1	18.672			
			C	0.204	2.583	0.591	0.85	1	30.612			
T4	801.17	2478.68	A	0.304	2.284	0.617	0.85	1	59.728	4473.03	223.65	A
120.00-100.00			B	0.119	2.891	0.577	0.85	1	20.386			
			C	0.224	2.517	0.596	0.85	1	41.997			
T5	965.05	3427.35	A	0.311	2.268	0.619	0.85	1	70.563	4953.58	247.68	A
100.00-80.00			B	0.129	2.852	0.578	0.85	1	25.825			
			C	0.258	2.415	0.604	0.85	1	56.128			
T6	1042.70	4167.19	A	0.315	2.258	0.62	0.85	1	80.764	5254.15	262.71	A
80.00-60.00			B	0.123	2.873	0.578	0.85	1	28.088			
			C	0.243	2.458	0.6	0.85	1	59.758			
T7	1064.71	4393.18	A	0.308	2.274	0.618	0.85	1	88.678	5278.47	263.92	A
60.00-40.00			B	0.129	2.85	0.578	0.85	1	33.282			
			C	0.239	2.47	0.599	0.85	1	66.033			
T8	1068.80	4624.20	A	0.285	2.337	0.611	0.85	1	89.724	4873.67	243.68	A
40.00-20.00			B	0.122	2.879	0.578	0.85	1	34.619			
			C	0.223	2.521	0.595	0.85	1	67.704			
T9 20.00-0.00	641.28	5294.79	A	0.209	2.567	0.592	0.85	1	69.376	4138.48	206.92	A
			B	0.113	2.912	0.577	0.85	1	35.278			
			C	0.162	2.728	0.583	0.85	1	52.440			
Sum Weight:	7048.40	29663.19						OTM	3186619.2 7 lb-ft	38744.94		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	666.72	2886.42	A	0.353	2.164	0.634	1	1	43.280	619.87	30.99	A
180.00-160.00			B	0.231	2.494	0.597	1	1	24.651			
			C	0.341	2.193	0.629	1	1	38.268			
T2	1445.77	2466.10	A	0.431	2.005	0.665	1	1	68.878	881.94	44.10	A
160.00-140.00			B	0.198	2.601	0.59	1	1	23.659			
			C	0.348	2.176	0.632	1	1	44.470			
T3	2073.86	3201.45	A	0.468	1.945	0.682	1	1	96.305	1148.17	57.41	A
140.00-120.00			B	0.192	2.624	0.589	1	1	28.359			
			C	0.349	2.174	0.632	1	1	56.644			
T4	2475.42	3692.42	A	0.43	2.008	0.664	1	1	103.347	1213.09	60.65	A
120.00-100.00			B	0.166	2.715	0.584	1	1	29.057			
			C	0.374	2.118	0.641	1	1	77.268			
T5	3215.49	4960.51	A	0.441	1.988	0.669	1	1	120.704	1324.24	66.21	A
100.00-80.00			B	0.172	2.694	0.585	1	1	35.106			
			C	0.421	2.024	0.66	1	1	103.680			
T6	3571.56	5941.30	A	0.452	1.971	0.674	1	1	140.466	1422.00	71.10	A
80.00-60.00			B	0.164	2.722	0.584	1	1	37.924			
			C	0.402	2.061	0.652	1	1	110.650			
T7	3694.90	6408.32	A	0.44	1.99	0.669	1	1	152.423	1415.50	70.78	A
60.00-40.00			B	0.167	2.71	0.584	1	1	43.729			
			C	0.388	2.089	0.647	1	1	119.088			
T8	3735.26	6772.16	A	0.408	2.048	0.655	1	1	154.019	1306.79	65.34	A
40.00-20.00			B	0.158	2.742	0.583	1	1	45.624			
			C	0.364	2.139	0.638	1	1	122.002			
T9 20.00-0.00	2241.15	7328.55	A	0.296	2.305	0.615	1	1	113.370	1082.95	54.15	A
			B	0.151	2.768	0.582	1	1	47.696			
			C	0.252	2.43	0.603	1	1	87.137			
Sum Weight:	23120.13	43657.21						OTM	859900.53 lb-ft	10414.55		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	666.72	2886.42	A	0.353	2.164	0.634	0.8	1	41.447	593.61	29.68	A
180.00-160.00			B	0.231	2.494	0.597	0.8	1	24.651			
			C	0.341	2.193	0.629	0.8	1	38.268			
T2	1445.77	2466.10	A	0.431	2.005	0.665	0.8	1	62.376	798.69	39.93	A
160.00-140.00			B	0.198	2.601	0.59	0.8	1	23.659			
			C	0.348	2.176	0.632	0.8	1	44.470			
T3	2073.86	3201.45	A	0.468	1.945	0.682	0.8	1	86.188	1027.55	51.38	A
140.00-120.00			B	0.192	2.624	0.589	0.8	1	28.359			
			C	0.349	2.174	0.632	0.8	1	55.976			
T4	2475.42	3692.42	A	0.43	2.008	0.664	0.8	1	92.850	1089.88	54.49	A
120.00-100.00			B	0.166	2.715	0.584	0.8	1	29.057			
			C	0.374	2.118	0.641	0.8	1	74.380			
T5	3215.49	4960.51	A	0.441	1.988	0.669	0.8	1	110.207	1209.08	60.45	A
100.00-80.00			B	0.172	2.694	0.585	0.8	1	35.106			
			C	0.421	2.024	0.66	0.8	1	99.898			
T6	3571.56	5941.30	A	0.452	1.971	0.674	0.8	1	128.485	1300.72	65.04	A
80.00-60.00			B	0.164	2.722	0.584	0.8	1	37.924			
			C	0.402	2.061	0.652	0.8	1	106.869			
T7	3694.90	6408.32	A	0.44	1.99	0.669	0.8	1	139.993	1300.07	65.00	A
60.00-40.00			B	0.167	2.71	0.584	0.8	1	43.729			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.388	2.089	0.647	0.8	1	115.307			
T8	3735.26	6772.16	A	0.408	2.048	0.655	0.8	1	141.589	1201.32	60.07	A
40.00-20.00			B	0.158	2.742	0.583	0.8	1	45.624			
			C	0.364	2.139	0.638	0.8	1	118.220			
T9 20.00-0.00	2241.15	7328.55	A	0.296	2.305	0.615	0.8	1	105.912	1011.71	50.59	A
			B	0.151	2.768	0.582	0.8	1	47.696			
			C	0.252	2.43	0.603	0.8	1	84.868			
Sum Weight:	23120.13	43657.21						OTM	785213.70 lb-ft	9532.64		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	666.72	2886.42	A	0.353	2.164	0.634	0.85	1	41.905	600.17	30.01	A
180.00-160.00			B	0.231	2.494	0.597	0.85	1	24.651			
			C	0.341	2.193	0.629	0.85	1	38.268			
T2	1445.77	2466.10	A	0.431	2.005	0.665	0.85	1	64.002	819.50	40.98	A
160.00-140.00			B	0.198	2.601	0.59	0.85	1	23.659			
			C	0.348	2.176	0.632	0.85	1	44.470			
T3	2073.86	3201.45	A	0.468	1.945	0.682	0.85	1	88.717	1057.70	52.89	A
140.00-120.00			B	0.192	2.624	0.589	0.85	1	28.359			
			C	0.349	2.174	0.632	0.85	1	56.143			
T4	2475.42	3692.42	A	0.43	2.008	0.664	0.85	1	95.474	1120.68	56.03	A
120.00-100.00			B	0.166	2.715	0.584	0.85	1	29.057			
			C	0.374	2.118	0.641	0.85	1	75.102			
T5	3215.49	4960.51	A	0.441	1.988	0.669	0.85	1	112.831	1237.87	61.89	A
100.00-80.00			B	0.172	2.694	0.585	0.85	1	35.106			
			C	0.421	2.024	0.66	0.85	1	100.844			
T6	3571.56	5941.30	A	0.452	1.971	0.674	0.85	1	131.480	1331.04	66.55	A
80.00-60.00			B	0.164	2.722	0.584	0.85	1	37.924			
			C	0.402	2.061	0.652	0.85	1	107.814			
T7	3694.90	6408.32	A	0.44	1.99	0.669	0.85	1	143.101	1328.93	66.45	A
60.00-40.00			B	0.167	2.71	0.584	0.85	1	43.729			
			C	0.388	2.089	0.647	0.85	1	116.252			
T8	3735.26	6772.16	A	0.408	2.048	0.655	0.85	1	144.697	1227.69	61.38	A
40.00-20.00			B	0.158	2.742	0.583	0.85	1	45.624			
			C	0.364	2.139	0.638	0.85	1	119.166			
T9 20.00-0.00	2241.15	7328.55	A	0.296	2.305	0.615	0.85	1	107.776	1029.52	51.48	A
			B	0.151	2.768	0.582	0.85	1	47.696			
			C	0.252	2.43	0.603	0.85	1	85.435			
Sum Weight:	23120.13	43657.21						OTM	803885.41 lb-ft	9753.11		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	238.14	1840.30	A	0.227	2.508	0.596	1	1	26.422	759.30	37.97	A
180.00-160.00			B	0.156	2.748	0.582	1	1	16.008			
			C	0.206	2.576	0.592	1	1	21.432			
T2	511.20	1464.19	A	0.296	2.306	0.615	1	1	40.350	1028.62	51.43	A
160.00-140.00			B	0.128	2.853	0.578	1	1	14.816			
			C	0.196	2.61	0.59	1	1	23.044			
T3	715.35	1973.31	A	0.333	2.212	0.627	1	1	57.419	1347.98	67.40	A
140.00-120.00			B	0.13	2.848	0.579	1	1	18.672			
			C	0.204	2.583	0.591	1	1	30.973			
T4	801.17	2478.68	A	0.304	2.284	0.617	1	1	62.140	1436.33	71.82	A
120.00-100.00			B	0.119	2.891	0.577	1	1	20.386			
			C	0.224	2.517	0.596	1	1	43.291			
T5	965.05	3427.35	A	0.311	2.268	0.619	1	1	72.976	1581.15	79.06	A
100.00-80.00			B	0.129	2.852	0.578	1	1	25.825			
			C	0.258	2.415	0.604	1	1	57.423			
T6	1042.70	4167.19	A	0.315	2.258	0.62	1	1	83.177	1670.09	83.50	A
80.00-60.00			B	0.123	2.873	0.578	1	1	28.088			
			C	0.243	2.458	0.6	1	1	61.052			
T7	1064.71	4393.18	A	0.308	2.274	0.618	1	1	91.091	1673.48	83.67	A
60.00-40.00			B	0.129	2.85	0.578	1	1	33.282			
			C	0.239	2.47	0.599	1	1	67.328			
T8	1068.80	4624.20	A	0.285	2.337	0.611	1	1	92.136	1544.66	77.23	A
40.00-20.00			B	0.122	2.879	0.578	1	1	34.619			
			C	0.223	2.521	0.595	1	1	68.999			
T9 20.00-0.00	641.28	5294.79	A	0.209	2.567	0.592	1	1	70.824	1303.96	65.20	A
			B	0.113	2.912	0.577	1	1	35.278			
			C	0.162	2.728	0.583	1	1	53.216			
Sum Weight:	7048.40	29663.19						OTM	1018871.17 lb-ft	12345.57		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	238.14	1840.30	A	0.227	2.508	0.596	0.8	1	25.130	722.18	36.11	A
180.00-160.00			B	0.156	2.748	0.582	0.8	1	16.008			
			C	0.206	2.576	0.592	0.8	1	21.432			
T2	511.20	1464.19	A	0.296	2.306	0.615	0.8	1	38.284	975.93	48.80	A
160.00-140.00			B	0.128	2.853	0.578	0.8	1	14.816			
			C	0.196	2.61	0.59	0.8	1	23.044			
T3	715.35	1973.31	A	0.333	2.212	0.627	0.8	1	54.465	1278.63	63.93	A
140.00-120.00			B	0.13	2.848	0.579	0.8	1	18.672			
			C	0.204	2.583	0.591	0.8	1	30.491			
T4	801.17	2478.68	A	0.304	2.284	0.617	0.8	1	58.924	1361.98	68.10	A
120.00-100.00			B	0.119	2.891	0.577	0.8	1	20.386			
			C	0.224	2.517	0.596	0.8	1	41.565			
T5	965.05	3427.35	A	0.311	2.268	0.619	0.8	1	69.759	1511.46	75.57	A
100.00-80.00			B	0.129	2.852	0.578	0.8	1	25.825			
			C	0.258	2.415	0.604	0.8	1	55.697			
T6	1042.70	4167.19	A	0.315	2.258	0.62	0.8	1	79.960	1605.50	80.28	A
80.00-60.00			B	0.123	2.873	0.578	0.8	1	28.088			
			C	0.243	2.458	0.6	0.8	1	59.326			
T7	1064.71	4393.18	A	0.308	2.274	0.618	0.8	1	87.874	1614.38	80.72	A
60.00-40.00			B	0.129	2.85	0.578	0.8	1	33.282			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.239	2.47	0.599	0.8	1	65.601			
T8	1068.80	4624.20	A	0.285	2.337	0.611	0.8	1	88.919	1490.74	74.54	A
40.00-20.00			B	0.122	2.879	0.578	0.8	1	34.619			
			C	0.223	2.521	0.595	0.8	1	67.272			
T9 20.00-0.00	641.28	5294.79	A	0.209	2.567	0.592	0.8	1	68.894	1268.42	63.42	A
			B	0.113	2.912	0.577	0.8	1	35.278			
			C	0.162	2.728	0.583	0.8	1	52.181			
Sum Weight:	7048.40	29663.19						OTM	971742.23 lb-ft	11829.23		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	238.14	1840.30	A	0.227	2.508	0.596	0.85	1	25.453	731.46	36.57	A
180.00-160.00			B	0.156	2.748	0.582	0.85	1	16.008			
			C	0.206	2.576	0.592	0.85	1	21.432			
T2	511.20	1464.19	A	0.296	2.306	0.615	0.85	1	38.800	989.11	49.46	A
160.00-140.00			B	0.128	2.853	0.578	0.85	1	14.816			
			C	0.196	2.61	0.59	0.85	1	23.044			
T3	715.35	1973.31	A	0.333	2.212	0.627	0.85	1	55.204	1295.96	64.80	A
140.00-120.00			B	0.13	2.848	0.579	0.85	1	18.672			
			C	0.204	2.583	0.591	0.85	1	30.612			
T4	801.17	2478.68	A	0.304	2.284	0.617	0.85	1	59.728	1380.57	69.03	A
120.00-100.00			B	0.119	2.891	0.577	0.85	1	20.386			
			C	0.224	2.517	0.596	0.85	1	41.997			
T5	965.05	3427.35	A	0.311	2.268	0.619	0.85	1	70.563	1528.88	76.44	A
100.00-80.00			B	0.129	2.852	0.578	0.85	1	25.825			
			C	0.258	2.415	0.604	0.85	1	56.128			
T6	1042.70	4167.19	A	0.315	2.258	0.62	0.85	1	80.764	1621.65	81.08	A
80.00-60.00			B	0.123	2.873	0.578	0.85	1	28.088			
			C	0.243	2.458	0.6	0.85	1	59.758			
T7	1064.71	4393.18	A	0.308	2.274	0.618	0.85	1	88.678	1629.16	81.46	A
60.00-40.00			B	0.129	2.85	0.578	0.85	1	33.282			
			C	0.239	2.47	0.599	0.85	1	66.033			
T8	1068.80	4624.20	A	0.285	2.337	0.611	0.85	1	89.724	1504.22	75.21	A
40.00-20.00			B	0.122	2.879	0.578	0.85	1	34.619			
			C	0.223	2.521	0.595	0.85	1	67.704			
T9 20.00-0.00	641.28	5294.79	A	0.209	2.567	0.592	0.85	1	69.376	1277.31	63.87	A
			B	0.113	2.912	0.577	0.85	1	35.278			
			C	0.162	2.728	0.583	0.85	1	52.440			
Sum Weight:	7048.40	29663.19						OTM	983524.47 lb-ft	11958.31		

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	12647.02					
Bracing Weight	17016.18					
Total Member Self-Weight	29663.19			-12633.37	25537.30	
Total Weight	37293.01			-12633.37	25537.30	
Wind 0 deg - No Ice		295.55	-58970.53	-5827268.46	-14442.85	-49390.41
Wind 90 deg - No Ice		57843.66	-187.97	-48537.62	-5652187.59	28925.51
Wind 180 deg - No Ice		-272.71	57282.10	5668401.16	64616.12	46730.60
Member Ice	13994.02					
Total Weight Ice	67983.53			-7997.14	82661.53	
Wind 0 deg - Ice		754.03	-15382.84	-1510154.46	-26128.56	-11190.76
Wind 90 deg - Ice		14797.64	-589.06	-86297.65	-1368814.90	10849.94
Wind 180 deg - Ice		-92.08	14129.46	1378916.64	95927.50	11504.66
Total Weight	37293.01			-12633.37	25537.30	
Wind 0 deg - Service		91.22	-18200.78	-1794387.28	-12330.21	-15243.95
Wind 90 deg - Service		17852.98	-58.02	-10828.37	-1752374.88	8927.63
Wind 180 deg - Service		-84.17	17679.66	1753658.90	12070.70	14423.03

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 90 deg - No Ice
4	Dead+Wind 180 deg - No Ice
5	Dead+Ice+Temp
6	Dead+Wind 0 deg+Ice+Temp
7	Dead+Wind 90 deg+Ice+Temp
8	Dead+Wind 180 deg+Ice+Temp
9	Dead+Wind 0 deg - Service
10	Dead+Wind 90 deg - Service
11	Dead+Wind 180 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T1	180 - 160	Leg	Max Tension	4	5119.20	16.19	-194.29
			Max. Compression	2	-5724.26	-32.42	-141.74
			Max. Mx	3	-222.64	322.55	23.61
			Max. My	4	-955.00	-31.39	-446.41
			Max. Vy	3	-829.96	-320.20	23.61
			Max. Vx	4	-798.89	-31.39	-446.41
		Diagonal	Max Tension	4	3688.13	0.00	0.00
			Max. Compression	4	-3780.45	0.00	0.00
			Max. Mx	6	691.56	38.28	0.00
			Max. My	2	367.69	0.00	0.25
			Max. Vy	6	-19.43	0.00	0.00
			Max. Vx	2	-0.13	0.00	0.00
		Horizontal	Max Tension	4	2145.56	0.00	0.00
			Max. Compression	2	-1974.97	-11.47	-3.22
			Max. Mx	8	31.74	-17.23	-1.64

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	4	-472.57	-10.03	-7.23
			Max. Vy	8	-17.91	-17.23	-1.64
			Max. Vx	4	1.75	-10.03	-7.23
		Top Girt	Max Tension	3	539.99	-8.05	-0.01
			Max. Compression	3	-537.55	-7.96	-0.01
			Max. Mx	8	-77.43	-14.82	-0.48
			Max. My	2	124.16	-6.55	1.84
			Max. Vy	8	-17.34	-14.82	-0.48
			Max. Vx	4	0.49	-9.75	-1.84
		Inner Bracing	Max Tension	3	9.31	0.00	0.00
			Max. Compression	3	-9.31	0.00	0.00
			Max. Mx	5	0.00	-14.41	0.00
			Max. My	2	4.03	0.00	-0.05
			Max. Vy	5	13.57	0.00	0.00
			Max. Vx	2	0.05	0.00	0.00
T2	160 - 140	Leg	Max Tension	4	21437.73	-443.60	-39.03
			Max. Compression	2	-23108.22	32.17	-28.65
			Max. Mx	4	14095.54	1056.66	-22.32
			Max. My	3	-1463.98	-7.91	-1050.40
			Max. Vy	4	-1362.95	-754.60	-22.32
			Max. Vx	3	1340.95	-7.91	728.94
		Diagonal	Max Tension	4	5769.54	0.00	0.00
			Max. Compression	4	-5841.83	0.00	0.00
			Max. Mx	7	1349.92	38.24	0.00
			Max. My	2	545.56	0.00	0.16
			Max. Vy	7	-17.77	0.00	0.00
			Max. Vx	2	-0.08	0.00	0.00
		Horizontal	Max Tension	4	3870.95	0.00	0.00
			Max. Compression	2	-3830.60	-12.38	-3.42
			Max. Mx	8	98.22	-19.06	-1.63
			Max. My	4	-696.63	-13.30	-7.92
			Max. Vy	8	-16.76	-19.06	-1.63
			Max. Vx	4	1.73	-13.30	-7.92
		Inner Bracing	Max Tension	2	2.94	0.00	0.00
			Max. Compression	4	-5.40	0.00	0.00
			Max. Mx	5	-2.25	-15.38	0.00
			Max. My	2	2.10	0.00	-0.03
			Max. Vy	5	12.20	0.00	0.00
			Max. Vx	2	0.03	0.00	0.00
T3	140 - 120	Leg	Max Tension	4	44879.15	-299.32	-142.32
			Max. Compression	2	-48586.05	530.81	129.35
			Max. Mx	2	-48586.05	530.81	129.35
			Max. My	2	20980.35	-292.31	594.52
			Max. Vy	3	-523.65	-345.69	-288.54
			Max. Vx	3	-565.28	325.38	-309.35
		Diagonal	Max Tension	3	7813.16	0.00	0.00
			Max. Compression	3	-7917.00	0.00	0.00
			Max. Mx	7	1941.42	50.86	0.00
			Max. My	2	354.36	0.00	0.15
			Max. Vy	7	-21.64	0.00	0.00
			Max. Vx	2	-0.07	0.00	0.00
		Horizontal	Max Tension	3	5528.57	0.00	0.00
			Max. Compression	3	-5534.49	-18.38	-0.06
			Max. Mx	8	178.71	-36.38	-2.95
			Max. My	2	220.22	-5.37	12.48
			Max. Vy	8	-26.15	-36.38	-2.95
			Max. Vx	2	-2.12	-3.92	11.95
		Inner Bracing	Max Tension	2	3.55	0.00	0.00
			Max. Compression	4	-6.34	0.00	0.00
			Max. Mx	5	-2.80	-23.48	0.00
			Max. My	2	3.34	0.00	-0.05

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	5	15.08	0.00	0.00
			Max. Vx	2	0.03	0.00	0.00
T4	120 - 100	Leg	Max Tension	4	66786.53	-785.01	-20.33
			Max. Compression	2	-73241.12	901.89	-141.08
			Max. Mx	4	66556.68	-943.47	123.89
			Max. My	4	-37129.33	430.41	988.91
			Max. Vy	4	437.97	-943.47	123.89
			Max. Vx	3	454.58	771.18	-812.18
		Diagonal	Max Tension	3	11782.67	0.00	0.00
			Max. Compression	3	-11935.42	0.00	0.00
			Max. Mx	7	2978.99	113.33	0.00
			Max. My	2	740.88	0.00	0.43
			Max. Vy	7	-35.71	0.00	0.00
			Max. Vx	2	-0.14	0.00	0.00
		Horizontal	Max Tension	3	7299.70	0.00	0.00
			Max. Compression	3	-7256.54	-24.70	0.03
			Max. Mx	8	260.67	-48.31	-3.25
			Max. My	2	537.99	-9.06	13.65
			Max. Vy	8	-30.22	-48.31	-3.25
			Max. Vx	2	-1.96	-9.06	13.65
		Inner Bracing	Max Tension	2	2.53	0.00	0.00
			Max. Compression	3	-7.86	0.00	0.00
			Max. Mx	5	-4.13	-31.53	0.00
			Max. My	2	2.26	0.00	-0.06
			Max. Vy	5	17.47	0.00	0.00
			Max. Vx	2	0.03	0.00	0.00
T5	100 - 80	Leg	Max Tension	4	95050.03	-672.05	-38.84
			Max. Compression	2	-105350.06	777.50	174.64
			Max. Mx	4	80600.74	-943.47	123.90
			Max. My	4	-44600.63	430.42	988.88
			Max. Vy	4	-347.13	-943.47	123.90
			Max. Vx	3	389.96	-8.75	826.20
		Diagonal	Max Tension	3	12881.81	0.00	0.00
			Max. Compression	3	-13141.50	0.00	0.00
			Max. Mx	7	3284.17	174.07	0.00
			Max. My	2	161.15	0.00	0.48
			Max. Vy	7	-51.74	0.00	0.00
			Max. Vx	2	-0.15	0.00	0.00
		Horizontal	Max Tension	3	8691.20	0.00	0.00
			Max. Compression	3	-8655.36	-52.94	-0.06
			Max. Mx	8	376.06	-91.98	-4.86
			Max. My	2	684.78	-15.19	20.46
			Max. Vy	8	-49.27	-91.98	-4.86
			Max. Vx	2	-2.73	-15.19	20.46
		Inner Bracing	Max Tension	2	2.88	0.00	0.00
			Max. Compression	3	-10.40	0.00	0.00
			Max. Mx	5	-6.07	-60.46	0.00
			Max. My	2	2.05	0.00	-0.11
			Max. Vy	5	28.77	0.00	0.00
			Max. Vx	2	0.06	0.00	0.00
T6	80 - 60	Leg	Max Tension	4	123996.87	-659.90	-62.95
			Max. Compression	2	-138744.36	578.27	110.60
			Max. Mx	4	109507.96	-803.13	-172.43
			Max. My	2	53644.14	-412.15	881.70
			Max. Vy	4	-269.10	-803.13	-172.43
			Max. Vx	2	390.23	-412.15	881.70
		Diagonal	Max Tension	3	13963.13	0.00	0.00
			Max. Compression	3	-14333.95	0.00	0.00
			Max. Mx	7	3567.31	208.97	0.00
			Max. My	2	480.26	0.00	0.40
			Max. Vy	7	-58.54	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	2	-0.11	0.00	0.00
		Horizontal	Max Tension	3	10101.16	0.00	0.00
			Max. Compression	3	-10025.74	-90.18	-0.24
			Max. Mx	8	505.40	-151.68	-7.48
			Max. My	2	311.83	-24.92	29.90
			Max. Vy	8	-70.87	-151.68	-7.48
			Max. Vx	2	-3.46	-24.92	29.90
		Inner Bracing	Max Tension	2	3.17	0.00	0.00
			Max. Compression	4	-12.92	0.00	0.00
			Max. Mx	5	-7.95	-123.02	0.00
			Max. My	2	2.33	0.00	-0.22
			Max. Vy	5	51.29	0.00	0.00
			Max. Vx	2	0.10	0.00	0.00
T7	60 - 40	Leg	Max Tension	4	152847.18	-980.00	-82.34
			Max. Compression	2	-172326.76	714.43	98.25
			Max. Mx	4	138262.63	-980.02	-82.37
			Max. My	2	74542.13	-409.88	908.50
			Max. Vy	4	148.86	-980.02	-82.37
			Max. Vx	2	-174.38	-512.96	878.70
		Diagonal	Max Tension	3	14188.38	0.00	0.00
			Max. Compression	3	-14621.91	0.00	0.00
			Max. Mx	7	3606.43	247.44	0.00
			Max. My	2	715.33	0.00	0.30
			Max. Vy	7	-65.33	0.00	0.00
			Max. Vx	2	-0.08	0.00	0.00
		Horizontal	Max Tension	3	10840.24	0.00	0.00
			Max. Compression	3	-10729.12	-113.29	-0.25
			Max. Mx	8	639.79	-186.32	-7.09
			Max. My	2	8.82	-47.27	28.73
			Max. Vy	8	-79.15	-186.32	-7.09
			Max. Vx	2	-2.94	-47.27	28.73
		Inner Bracing	Max Tension	2	1.35	0.00	0.00
			Max. Compression	3	-12.28	0.00	0.00
			Max. Mx	5	-8.73	-155.36	0.00
			Max. My	2	1.35	0.00	-0.21
			Max. Vy	5	-57.64	0.00	0.00
			Max. Vx	2	-0.08	0.00	0.00
T8	40 - 20	Leg	Max Tension	4	180696.40	-1390.10	-52.06
			Max. Compression	2	-205052.33	-1573.49	264.94
			Max. Mx	2	-205052.33	-1573.49	264.94
			Max. My	2	88087.35	374.25	2501.57
			Max. Vy	2	382.64	1518.37	38.59
			Max. Vx	2	-333.61	374.25	2501.57
		Diagonal	Max Tension	3	14367.94	0.00	0.00
			Max. Compression	3	-14870.15	0.00	0.00
			Max. Mx	7	3623.03	289.61	0.00
			Max. My	2	873.35	0.00	0.19
			Max. Vy	7	-72.13	0.00	0.00
			Max. Vx	2	-0.05	0.00	0.00
		Horizontal	Max Tension	3	11484.84	0.00	0.00
			Max. Compression	3	-11321.54	-139.21	-0.34
			Max. Mx	8	774.09	-225.01	-6.56
			Max. My	2	-89.49	-74.04	27.79
			Max. Vy	8	-87.48	-225.01	-6.56
			Max. Vx	2	-2.53	-74.04	27.79
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	4	-11.89	0.00	0.00
			Max. Mx	5	-9.53	-191.47	0.00
			Max. My	2	-0.38	0.00	-0.18
			Max. Vy	5	63.99	0.00	0.00
			Max. Vx	2	0.06	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T9	20 - 0	Leg	Max Tension	4	192776.60	961.91	-237.43
			Max. Compression	2	-221056.21	-0.00	-0.23
			Max. Mx	2	-220582.09	4994.11	-433.40
			Max. My	2	94232.28	375.72	2504.10
			Max. Vy	2	-729.64	4994.11	-433.41
			Max. Vx	2	592.16	375.72	2504.10
		Diagonal	Max Tension	3	20860.68	-116.25	95.61
			Max. Compression	3	-21431.64	0.00	0.00
			Max. Mx	3	9483.32	-146.88	51.89
			Max. My	3	20860.68	-116.25	95.61
			Max. Vy	7	49.79	-124.72	19.38
			Max. Vx	3	7.90	0.00	0.00
		Horizontal	Max Tension	3	11781.80	0.00	0.00
			Max. Compression	3	-11849.24	-156.22	-0.16
			Max. Mx	8	-729.27	-220.11	-6.89
			Max. My	2	15.46	-90.31	27.86
			Max. Vy	8	89.61	-220.11	-6.89
			Max. Vx	2	-2.25	-90.31	27.86
		Redund Horz 1 Bracing	Max Tension	2	3835.54	0.00	0.00
			Max. Compression	2	-3835.54	0.00	0.00
			Max. Mx	6	1305.24	32.15	0.00
			Max. My	3	-280.94	0.00	-0.00
			Max. Vy	7	20.48	0.00	0.00
			Max. Vx	3	0.00	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	2	3514.00	0.00	0.00
			Max. Compression	2	-3514.00	0.00	0.00
			Max. Mx	6	1195.82	53.46	0.00
			Max. My	3	2956.87	0.00	-0.06
			Max. Vy	6	-18.58	0.00	0.00
			Max. Vx	3	0.02	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	3	-56.08	0.00	0.00
			Max. Mx	5	-8.94	32.15	0.00
			Max. My	3	-4.50	0.00	0.00
			Max. Vy	5	-20.48	0.00	0.00
			Max. Vx	3	-0.00	0.00	0.00
		Redund Hip Diagonal 1 Bracing	Max Tension	3	104.58	0.00	0.00
			Max. Compression	2	-66.34	0.00	0.00
			Max. Mx	8	49.49	192.75	0.00
			Max. My	2	40.75	0.00	0.09
			Max. Vy	8	-51.25	0.00	0.00
			Max. Vx	2	-0.02	0.00	0.00
		Inner Bracing	Max Tension	3	4.72	0.00	0.00
			Max. Compression	3	-20.02	0.00	0.00
			Max. Mx	5	-9.43	226.41	0.00
			Max. My	2	-2.43	0.00	0.12
			Max. Vy	5	-72.09	0.00	0.00
			Max. Vx	2	-0.04	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	4	130695.19	11870.65	-13942.11
	Max. H_x	4	130695.19	11870.65	-13942.11
	Max. H_z	2	-107206.84	-10302.46	13466.37
	Min. Vert	3	-188698.29	-25421.37	10316.86
	Min. H_x	3	-188698.29	-25421.37	10316.86
	Min. H_z	4	130695.19	11870.65	-13942.11
Leg B	Max. Vert	3	211521.39	-26866.77	-11358.69
	Max. H_x	2	-106158.27	11057.65	11518.36
	Max. H_z	2	-106158.27	11057.65	11518.36
	Min. Vert	2	-106158.27	11057.65	11518.36
	Min. H_x	3	211521.39	-26866.77	-11358.69
	Min. H_z	4	125985.66	-12601.98	-12119.81
Leg A	Max. Vert	2	250658.10	-1050.76	33984.41
	Max. H_x	4	-219387.86	1003.98	-31218.93
	Max. H_z	2	250658.10	-1050.76	33984.41
	Min. Vert	4	-219387.86	1003.98	-31218.93
	Min. H_x	3	14469.90	-5554.26	1229.87
	Min. H_z	4	-219387.86	1003.98	-31218.93

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	37293.01	0.00	0.00	-12633.45	25537.30	0.00
Dead+Wind 0 deg - No Ice	37293.00	295.58	-58969.15	-5673544.89	-14417.82	-49470.17
Dead+Wind 90 deg - No Ice	37293.00	57842.40	-188.04	-48557.89	-5503020.56	28874.19
Dead+Wind 180 deg - No Ice	37293.00	-272.65	57280.86	5520927.98	64756.06	46810.11
Dead+Ice+Temp	67983.53	0.01	0.00	-8000.17	82646.97	0.10
Dead+Wind 0 deg+Ice+Temp	67983.53	754.01	-15382.22	-1469587.56	-26241.63	-11245.59
Dead+Wind 90 deg+Ice+Temp	67983.53	14797.09	-589.02	-86475.68	-1330688.05	10834.53
Dead+Wind 180 deg+Ice+Temp	67983.53	-92.03	14128.90	1341667.24	96069.51	11554.03
Dead+Wind 0 deg - Service	37293.01	91.22	-18200.36	-1759874.02	13260.43	-15270.03
Dead+Wind 90 deg - Service	37293.01	17852.59	-58.02	-23742.99	-1680798.43	8913.41
Dead+Wind 180 deg - Service	37293.01	-84.16	17679.26	1695253.54	37654.20	14443.53

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-37293.01	0.00	-0.00	37293.01	-0.00	0.000%
2	295.55	-37293.01	-58970.53	-295.58	37293.00	58969.15	0.002%
3	57843.66	-37293.01	-187.97	-57842.40	37293.00	188.04	0.002%
4	-272.71	-37293.01	57282.10	272.65	37293.00	-57280.86	0.002%
5	0.00	-67983.53	0.00	-0.01	67983.53	-0.00	0.000%
6	754.03	-67983.53	-15382.84	-754.01	67983.53	15382.22	0.001%
7	14797.64	-67983.53	-589.06	-14797.09	67983.53	589.02	0.001%
8	-92.08	-67983.53	14129.46	92.03	67983.53	-14128.90	0.001%
9	91.22	-37293.01	-18200.78	-91.22	37293.01	18200.36	0.001%
10	17852.98	-37293.01	-58.02	-17852.59	37293.01	58.02	0.001%
11	-84.17	-37293.01	17679.66	84.16	37293.01	-17679.26	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00010727
3	Yes	4	0.00000001	0.00010017
4	Yes	4	0.00000001	0.00009595
5	Yes	4	0.00000001	0.00000001
6	Yes	4	0.00000001	0.00016554
7	Yes	4	0.00000001	0.00015869
8	Yes	4	0.00000001	0.00015990
9	Yes	4	0.00000001	0.00010088
10	Yes	4	0.00000001	0.00009793
11	Yes	4	0.00000001	0.00009766

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	2.838	9	0.1204	0.0300
T2	160 - 140	2.328	9	0.1185	0.0271
T3	140 - 120	1.827	9	0.1088	0.0205
T4	120 - 100	1.365	9	0.0952	0.0161
T5	100 - 80	0.967	9	0.0809	0.0125
T6	80 - 60	0.638	9	0.0656	0.0112
T7	60 - 40	0.373	9	0.0497	0.0090
T8	40 - 20	0.177	9	0.0319	0.0064
T9	20 - 0	0.058	10	0.0126	0.0036

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
186.00	12' Omni	9	2.838	0.1204	0.0300	Inf
185.00	8' Omni	9	2.838	0.1204	0.0300	Inf
184.50	9' Omni	9	2.838	0.1204	0.0300	Inf
184.00	8' Omni	9	2.838	0.1204	0.0300	Inf
183.00	4' Omni	9	2.838	0.1204	0.0300	Inf
181.00	2'x2.5" Mount Pipe	9	2.838	0.1204	0.0300	Inf
180.00	2'x2.5" Mount Pipe	9	2.838	0.1204	0.0300	Inf
179.00	2-Bay FM Antenna	9	2.813	0.1204	0.0300	Inf
174.50	3'x6' Grid Dish	9	2.698	0.1203	0.0295	Inf
174.00	14.5' Dipole	9	2.685	0.1203	0.0295	Inf
172.50	8' Dia. Dish	9	2.647	0.1202	0.0293	Inf
168.33	12' Omni	9	2.541	0.1200	0.0288	Inf
162.33	3' Standoff Mount	9	2.388	0.1191	0.0277	Inf
152.00	12' T-Frame	9	2.125	0.1155	0.0246	233293
142.33	12' Omni	9	1.884	0.1103	0.0212	118405
141.33	10' Omni	9	1.859	0.1097	0.0209	113158

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
139.00	12' Omni	9	1.802	0.1082	0.0202	103925
136.33	2' Straight Arm	9	1.738	0.1065	0.0194	96917
133.00	6' Dia. Dish	9	1.659	0.1043	0.0186	90213
129.67	6' Grid Dish	9	1.581	0.1020	0.0179	84400
126.67	6' Dia. Dish	9	1.512	0.0999	0.0174	79769
124.50	6' Dia. Dish	9	1.464	0.0984	0.0169	76725
117.17	12' Omni	9	1.304	0.0932	0.0155	70484
115.67	3' Dia. Dish	9	1.273	0.0922	0.0152	70129
115.17	4' Dia. Dish	9	1.262	0.0918	0.0151	70033
112.67	2' Dia. Dish	9	1.211	0.0901	0.0146	69571
112.17	Airmux-200/ODU	9	1.201	0.0897	0.0146	69479
111.67	10' Omni	9	1.190	0.0894	0.0145	69388
111.17	6' Sidearm	9	1.180	0.0890	0.0144	69296
106.67	6' Sidearm	9	1.092	0.0858	0.0135	68486
106.17	3'x6' Grid Dish	9	1.082	0.0854	0.0134	68397
104.33	10'x2" Mount Pipe	9	1.047	0.0841	0.0131	68073
102.67	10' Omni	9	1.016	0.0829	0.0129	67835
101.67	10' Omni	9	0.997	0.0821	0.0128	67766
101.42	10' Omni	9	0.993	0.0820	0.0127	67761
100.58	3'x6' Grid Dish	9	0.977	0.0813	0.0126	67790
99.50	10' Dipole	9	0.958	0.0805	0.0125	67947
97.67	12' T-Frame	9	0.925	0.0792	0.0123	68512
96.42	7' Sidearm	9	0.903	0.0782	0.0122	69051
94.50	3' Standoff Mount	9	0.869	0.0768	0.0120	69998
92.67	8'-6" Omni	9	0.838	0.0754	0.0119	70937
91.42	10' Omni	9	0.817	0.0744	0.0119	71593
90.17	15' Omni	9	0.797	0.0735	0.0118	72262
88.58	18" Standoff	9	0.771	0.0722	0.0117	73131
88.00	10' Omni	9	0.761	0.0718	0.0117	73453
85.00	4' Yagi	9	0.714	0.0695	0.0115	75165
84.67	(3) 15' Omni	9	0.709	0.0692	0.0115	75358
83.00	18" Side Arm	9	0.683	0.0679	0.0114	76296
77.42	12' T-Frame	9	0.600	0.0636	0.0110	76894
74.75	12' Omni	9	0.562	0.0615	0.0108	75784
72.75	3'x6' Grid Dish	9	0.534	0.0599	0.0106	74901
71.00	10' Dipole	9	0.510	0.0586	0.0104	74145
70.00	(2) 15' Omni	9	0.497	0.0578	0.0103	73719
68.75	3' Standoff Mount	9	0.481	0.0568	0.0101	73195
66.00	2'x2.5" Mount Pipe	9	0.445	0.0546	0.0098	72066
58.75	14' x 3" diam Omni	9	0.359	0.0487	0.0089	69110
51.75	1' Standoff Mount	9	0.283	0.0428	0.0080	66065
41.00	2'x2.5" Mount Pipe	9	0.185	0.0329	0.0066	62071

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	9.137	2	0.3871	0.0973
T2	160 - 140	7.498	2	0.3809	0.0879
T3	140 - 120	5.884	2	0.3496	0.0663
T4	120 - 100	4.398	2	0.3060	0.0521
T5	100 - 80	3.117	2	0.2601	0.0407
T6	80 - 60	2.058	2	0.2110	0.0364
T7	60 - 40	1.205	2	0.1601	0.0292
T8	40 - 20	0.574	2	0.1028	0.0208

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T9	20 - 0	0.187	2	0.0407	0.0116

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
186.00	12' Omni	2	9.137	0.3871	0.0973	Inf
185.00	8' Omni	2	9.137	0.3871	0.0973	Inf
184.50	9' Omni	2	9.137	0.3871	0.0973	Inf
184.00	8' Omni	2	9.137	0.3871	0.0973	Inf
183.00	4' Omni	2	9.137	0.3871	0.0973	Inf
181.00	2'x2.5" Mount Pipe	2	9.137	0.3871	0.0973	Inf
180.00	2'x2.5" Mount Pipe	2	9.137	0.3871	0.0973	Inf
179.00	2-Bay FM Antenna	2	9.055	0.3871	0.0970	Inf
174.50	3'x6' Grid Dish	2	8.686	0.3869	0.0957	Inf
174.00	14.5' Dipole	2	8.645	0.3869	0.0955	Inf
172.50	8' Dia. Dish	2	8.522	0.3867	0.0950	Inf
168.33	12' Omni	2	8.180	0.3858	0.0933	696676
162.33	3' Standoff Mount	2	7.688	0.3828	0.0898	427547
152.00	12' T-Frame	2	6.844	0.3712	0.0797	72032
142.33	12' Omni	2	6.068	0.3543	0.0687	36225
141.33	10' Omni	2	5.989	0.3523	0.0676	34606
139.00	12' Omni	2	5.806	0.3476	0.0653	31759
136.33	2' Straight Arm	2	5.599	0.3421	0.0630	29602
133.00	6' Dia. Dish	2	5.345	0.3350	0.0604	27540
129.67	6' Grid Dish	2	5.095	0.3277	0.0581	25754
126.67	6' Dia. Dish	2	4.874	0.3210	0.0562	24333
124.50	6' Dia. Dish	2	4.717	0.3162	0.0549	23399
117.17	12' Omni	2	4.204	0.2996	0.0504	21645
115.67	3' Dia. Dish	2	4.102	0.2962	0.0494	21596
115.17	4' Dia. Dish	2	4.069	0.2951	0.0491	21587
112.67	2' Dia. Dish	2	3.903	0.2895	0.0475	21543
112.17	Airmux-200/ODU	2	3.870	0.2883	0.0471	21534
111.67	10' Omni	2	3.838	0.2872	0.0468	21525
111.17	6' Sidearm	2	3.805	0.2860	0.0465	21517
106.67	6' Sidearm	2	3.520	0.2757	0.0439	21349
106.17	3'x6' Grid Dish	2	3.489	0.2746	0.0436	21319
104.33	10'x2" Mount Pipe	2	3.376	0.2703	0.0426	21210
102.67	10' Omni	2	3.275	0.2664	0.0418	21128
101.67	10' Omni	2	3.216	0.2641	0.0413	21103
101.42	10' Omni	2	3.201	0.2635	0.0412	21101
100.58	3'x6' Grid Dish	2	3.151	0.2615	0.0409	21107
99.50	10' Dipole	2	3.088	0.2590	0.0405	21154
97.67	12' T-Frame	2	2.983	0.2546	0.0399	21329
96.42	7' Sidearm	2	2.912	0.2516	0.0395	21498
94.50	3' Standoff Mount	2	2.805	0.2469	0.0390	21794
92.67	8'-6" Omni	2	2.704	0.2424	0.0386	22089
91.42	10' Omni	2	2.637	0.2394	0.0384	22295
90.17	15' Omni	2	2.570	0.2363	0.0382	22504
88.58	18" Standoff	2	2.486	0.2324	0.0379	22777
88.00	10' Omni	2	2.456	0.2309	0.0378	22878
85.00	4' Yagi	2	2.303	0.2235	0.0373	23416
84.67	(3) 15' Omni	2	2.286	0.2226	0.0373	23476
83.00	18" Side Arm	2	2.203	0.2185	0.0370	23770
77.42	12' T-Frame	2	1.936	0.2045	0.0357	23956
74.75	12' Omni	2	1.814	0.1978	0.0349	23606

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
72.75	3'x6' Grid Dish	2	1.725	0.1928	0.0343	23328
71.00	10' Dipole	2	1.648	0.1884	0.0336	23089
70.00	(2) 15' Omni	2	1.605	0.1859	0.0333	22955
68.75	3' Standoff Mount	2	1.552	0.1827	0.0328	22790
66.00	2'x2.5" Mount Pipe	2	1.439	0.1757	0.0317	22434
58.75	14' x 3" diam Omni	2	1.159	0.1568	0.0287	21505
51.75	1' Standoff Mount	2	0.916	0.1377	0.0258	20552
41.00	2'x2.5" Mount Pipe	2	0.600	0.1059	0.0213	19303

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	180 - 160	P3.5x.300	20.00	6.64	70.1 K=1.00	20.918	3.0159	-5724.26	63086.10	0.091 ✔
T2	160 - 140	P3.5x.300	20.05	6.68	70.6 K=1.00	20.833	3.0159	-23108.20	62829.30	0.368 ✔
T3	140 - 120	P4x.337	20.05	6.68	54.3 K=1.00	23.666	4.4074	-48586.10	104306.00	0.466 ✔
T4	120 - 100	P5.5x.375	20.05	10.02	66.2 K=1.00	21.630	6.0377	-73241.10	130598.00	0.561 ✔
T5	100 - 80	P6.625x0.375	20.05	10.02	54.3 K=1.00	23.661	7.3631	-105350.00	174217.00	0.605 ✔
T6	80 - 60	P6.625x.432	20.05	10.02	54.8 K=1.00	23.585	8.4049	-138744.00	198231.00	0.700 ✔
T7	60 - 40	P8x.322	20.05	10.02	40.9 K=1.00	25.699	8.3993	-172327.00	215853.00	0.798 ✔
T8	40 - 20	P8x.322	20.05	10.02	40.9 K=1.00	25.699	8.3993	-205052.00	215853.00	0.950 ✔
T9	20 - 0	Pipe 8.625" x 0.500" (8 XS)	20.05	10.02	41.8 K=1.00	25.578	12.7627	-221056.00	326445.00	0.677 ✔

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	180 - 160	P2.5x.203	7.88	7.61	96.4 K=1.00	13.215	1.7040	-3780.45	22519.00	0.168 ✔
T2	160 - 140	P2x.154	8.61	8.38	127.7 K=1.00	9.159	1.0745	-5841.83	9842.03	0.594 ✔
T3	140 - 120	P2x.154	9.40	9.14	139.3 K=1.00	7.699	1.0745	-7917.00	8272.38	0.957 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T4	120 - 100	P2.5x.203	12.69	12.32	156.1 K=1.00	6.130	1.7040	-11935.40	10446.00	1.143 ✔
T5	100 - 80	P3x.216	13.46	13.05	134.5 K=1.00	8.250	2.2285	-13141.50	18385.00	0.715 ✔
T6	80 - 60	P3x.216	14.28	13.89	143.3 K=1.00	7.274	2.2285	-14334.00	16211.00	0.884 ✔
T7	60 - 40	P3x.216	15.15	14.67	151.3 K=1.00	6.523	2.2285	-14621.90	14536.50	1.006 ✔
T8	40 - 20	P3x.216	16.06	15.60	160.9 K=1.00	5.769	2.2285	-14870.20	12855.20	1.157 ✔
T9	20 - 0	P3x.216	24.28	12.14	125.2 K=1.00	9.511	2.2285	-21431.60	21194.60	1.011 ✔

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	180 - 160	P2x.154	8.50	4.10	62.6 K=1.00	16.786	1.0745	-1974.97	18037.30	0.109 ✔
T2	160 - 140	P1.5x.145	10.08	4.90	94.4 K=1.00	13.455	0.7995	-3830.60	10756.80	0.356 ✔
T3	140 - 120	P2x.154	12.46	6.04	92.1 K=1.00	13.715	1.0745	-5534.49	14737.50	0.376 ✔
T4	120 - 100	P2x.154	14.44	6.99	106.6 K=1.00	11.984	1.0745	-7256.54	12876.80	0.564 ✔
T5	100 - 80	P2.5x.203	16.81	8.13	103.0 K=1.00	12.427	1.7040	-8655.36	21176.60	0.409 ✔
T6	80 - 60	P3x.216	19.19	9.32	96.1 K=1.00	13.253	2.2285	-10025.70	29533.80	0.339 ✔
T7	60 - 40	P3x.216	21.56	10.42	107.5 K=1.00	11.868	2.2285	-10729.10	26447.10	0.406 ✔
T8	40 - 20	P3x.216	23.94	11.61	119.7 K=1.00	10.267	2.2285	-11321.50	22878.50	0.495 ✔
T9	20 - 0	P3x.216	25.13	12.20	125.9 K=1.00	9.419	2.2285	-11849.20	20990.90	0.564 ✔

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	180 - 160	P2x.154	8.50	4.10	62.6 K=1.00	17.180	1.0745	-537.55	18460.80	0.029 ✔

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T9	20 - 0	P2x.154	6.28	5.92	90.3 K=1.00	13.923	1.0745	-3835.54	14960.90	0.256 ✔

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T9	20 - 0	P2x.154	11.51	10.78	164.4 K=1.00	5.525	1.0745	-3514.00	5937.23	0.592 ✔

Redundant Hip (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T9	20 - 0	P2x.154	6.28	6.28	95.8 K=1.00	13.292	1.0745	-56.08	14282.80	0.004 ✔

Redundant Hip Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T9	20 - 0	P2.5x.203	15.04	15.04	190.5 K=1.00	4.113	1.7040	-66.34	7009.48	0.009 ✔

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	180 - 160	L2x2x1/4	4.25	4.25	130.4 K=1.00	8.777	0.9380	-9.31	8233.17	0.001 ✔
T2	160 - 140	L2x2x1/8	5.04	5.04	152.2 K=1.00	6.448	0.4844	-4.66	3123.12	0.001 ✔
T3	140 - 120	L2x2x1/8	6.23	6.23	188.0 K=1.00	4.224	0.4844	-6.34	2045.87	0.003 ✔
T4	120 - 100	L2x2x1/8	7.22	7.22	217.9	3.145	0.4844	-7.86	1523.40	0.005

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T5	100 - 80	L2 1/2x2 1/2x3/16	8.41	8.41	K=1.00 203.8	3.596	0.9020	-9.83	3243.40	0.003 ✔
T6	80 - 60	L3 1/2x3 1/2x1/4	9.59	9.59	K=1.00 165.9	5.427	1.6900	-12.76	9171.02	0.001 ✔
T7	60 - 40	L3 1/2x3 1/2x1/4	10.78	10.78	K=1.00 186.4	4.297	1.6900	-12.03	7262.00	0.002 ✔
T8	40 - 20	L3 1/2x3 1/2x1/4	11.97	11.97	K=1.00 207.0	3.487	1.6900	-9.62	5892.46	0.002* ✔
T9	20 - 0	P3x.216	12.56	12.56	K=1.00 129.6	8.897	2.2285	-20.02	19826.00	0.001 ✔
					K=1.00					

* DL controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	180 - 160	P3.5x.300	20.00	6.64	70.1	30.000	3.0159	5119.20	90477.90	0.057 ✔
T2	160 - 140	P3.5x.300	20.05	6.68	70.6	30.000	3.0159	21437.70	90477.90	0.237 ✔
T3	140 - 120	P4x.337	20.05	6.68	54.3	30.000	4.4074	44879.20	132223.00	0.339 ✔
T4	120 - 100	P5.5x.375	20.05	10.02	66.2	30.000	6.0377	66786.50	181132.00	0.369 ✔
T5	100 - 80	P6.625x0.375	20.05	10.02	54.3	30.000	7.3631	95050.00	220893.00	0.430 ✔
T6	80 - 60	P6.625x.432	20.05	10.02	54.8	30.000	8.4049	124001.00	252148.00	0.492 ✔
T7	60 - 40	P8x.322	20.05	10.02	40.9	30.000	8.3993	152847.00	251978.00	0.607 ✔
T8	40 - 20	P8x.322	20.05	10.02	40.9	30.000	8.3993	180696.00	251978.00	0.717 ✔
T9	20 - 0	Pipe 8.625" x 0.500" (8 XS)	20.05	10.02	41.8	30.000	12.7627	192777.00	382882.00	0.503 ✔

Diagonal Design Data (Tension)

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

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	180 - 160	P2.5x.203	7.88	7.61	96.4	21.000	1.7040	3688.13	35785.10	0.103 ✔
T2	160 - 140	P2x.154	8.61	8.38	127.7	21.000	1.0745	5769.54	22565.20	0.256 ✔
T3	140 - 120	P2x.154	9.40	9.14	139.3	21.000	1.0745	7813.16	22565.20	0.346 ✔
T4	120 - 100	P2.5x.203	12.69	12.32	156.1	21.000	1.7040	11782.70	35785.10	0.329 ✔
T5	100 - 80	P3x.216	13.46	13.05	134.5	21.000	2.2285	12881.80	46797.90	0.275 ✔
T6	80 - 60	P3x.216	14.28	13.89	143.3	21.000	2.2285	13963.10	46797.90	0.298 ✔
T7	60 - 40	P3x.216	15.15	14.67	151.3	21.000	2.2285	14188.40	46797.90	0.303 ✔
T8	40 - 20	P3x.216	16.06	15.60	160.9	21.000	2.2285	14367.90	46797.90	0.307 ✔
T9	20 - 0	P3x.216	24.28	12.14	125.2	21.000	2.2285	20860.70	46797.90	0.446 ✔

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	180 - 160	P2x.154	8.50	4.10	62.6	21.000	1.0745	2145.56	22565.20	0.095 ✔
T2	160 - 140	P1.5x.145	10.08	4.90	94.4	21.000	0.7995	3870.95	16788.60	0.231 ✔
T3	140 - 120	P2x.154	12.46	6.04	92.1	21.000	1.0745	5528.57	22565.20	0.245 ✔
T4	120 - 100	P2x.154	14.44	6.99	106.6	21.000	1.0745	7299.70	22565.20	0.323 ✔
T5	100 - 80	P2.5x.203	16.81	8.13	103.0	21.000	1.7040	8691.20	35785.10	0.243 ✔
T6	80 - 60	P3x.216	19.19	9.32	96.1	21.000	2.2285	10101.20	46797.90	0.216 ✔
T7	60 - 40	P3x.216	21.56	10.42	107.5	21.000	2.2285	10840.20	46797.90	0.232 ✔
T8	40 - 20	P3x.216	23.94	11.61	119.7	21.000	2.2285	11484.80	46797.90	0.245 ✔
T9	20 - 0	P3x.216	25.13	12.20	125.9	21.000	2.2285	11781.80	46797.90	0.252 ✔

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	180 - 160	P2x.154	8.50	4.10	62.6	21.600	1.0745	539.99	23209.90	0.023 ✔

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T9	20 - 0	P2x.154	6.28	5.92	90.3	21.000	1.0745	3835.54	22565.20	0.170 ✔

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T9	20 - 0	P2x.154	11.51	10.78	164.4	21.000	1.0745	3514.00	22565.20	0.156 ✔

Redundant Hip Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T9	20 - 0	P2.5x.203	15.04	15.04	190.5	21.000	1.7040	104.58	35785.10	0.003 ✔

Inner Bracing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	180 - 160	L2x2x1/4	4.25	4.25	83.7	21.600	0.9380	9.31	20260.80	0.000 ✔
T2	160 - 140	L2x2x1/8	4.65	4.65	89.0	21.600	0.4844	2.94	10462.50	0.000 ✔
T3	140 - 120	L2x2x1/8	5.83	5.83	111.8	21.600	0.4844	3.55	10462.50	0.000 ✔
T4	120 - 100	L2x2x1/8	6.63	6.63	126.9	21.600	0.4844	2.53	10462.50	0.000 ✔
T5	100 - 80	L2 1/2x2 1/2x3/16	7.81	7.81	120.5	21.600	0.9020	2.88	19483.20	0.000

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T6	80 - 60	L3 1/2x3 1/2x1/4	9.00	9.00	99.1	21.600	1.6900	3.17	36504.00	0.000
T7	60 - 40	L3 1/2x3 1/2x1/4	10.19	10.19	112.2	21.600	1.6900	1.35	36504.00	0.000
T9	20 - 0	P3x.216	12.56	12.56	129.6	21.000	2.2285	4.72	46797.90	0.000

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	180 - 160	Leg	P3.5x.300	3	-5724.26	84093.77	6.8	Pass
		Diagonal	P2.5x.203	15	-3780.45	30017.83	12.6	Pass
		Horizontal	P2x.154	13	-1974.97	24043.72	8.2	Pass
		Top Girt	P2x.154	4	-537.55	24608.25	2.2	Pass
		Inner Bracing	L2x2x1/4	37	-9.31	10974.82	0.1	Pass
T2	160 - 140	Leg	P3.5x.300	42	-23108.20	83751.45	27.6	Pass
		Diagonal	P2x.154	51	-5841.83	13119.43	44.5	Pass
		Horizontal	P1.5x.145	49	-3830.60	14338.81	26.7	Pass
		Inner Bracing	L2x2x1/8	52	-2.24	3123.12	0.3	Pass
T3	140 - 120	Leg	P4x.337	81	-48586.10	139039.89	34.9	Pass
		Diagonal	P2x.154	84	-7917.00	11027.08	71.8	Pass
		Horizontal	P2x.154	82	-5534.49	19645.09	28.2	Pass
		Inner Bracing	L2x2x1/8	91	-2.80	2045.87	0.4	Pass
T4	120 - 100	Leg	P5.5x.375	120	-73241.10	174087.13	42.1	Pass
		Diagonal	P2.5x.203	123	-11935.40	13924.52	85.7	Pass
		Horizontal	P2x.154	121	-7256.54	17164.77	42.3	Pass
		Inner Bracing	L2x2x1/8	130	-4.13	1523.40	0.5	Pass
T5	100 - 80	Leg	P6.625x0.375	147	-105350.00	232231.25	45.4	Pass
		Diagonal	P3x.216	150	-13141.50	24507.20	53.6	Pass
		Horizontal	P2.5x.203	148	-8655.36	28228.41	30.7	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	157	-6.07	3243.40	0.4	Pass
T6	80 - 60	Leg	P6.625x.432	174	-138744.00	264241.91	52.5	Pass
		Diagonal	P3x.216	177	-14334.00	21609.26	66.3	Pass
		Horizontal	P3x.216	175	-10025.70	39368.55	25.5	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	184	-7.95	9171.02	0.4	Pass
T7	60 - 40	Leg	P8x.322	201	-172327.00	287732.04	59.9	Pass
		Diagonal	P3x.216	204	-14621.90	19377.15	75.5	Pass
		Horizontal	P3x.216	202	-10729.10	35253.98	30.4	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	211	-8.73	7262.00	0.5	Pass
T8	40 - 20	Leg	P8x.322	228	-205052.00	287732.04	71.3	Pass
		Diagonal	P3x.216	231	-14870.20	17135.98	86.8	Pass
		Horizontal	P3x.216	229	-11321.50	30497.04	37.1	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	238	-9.53	5892.46	0.5	Pass
T9	20 - 0	Leg	Pipe 8.625" x 0.500" (8 XS)	255	-221056.00	435151.17	50.8	Pass
		Diagonal	P3x.216	260	-21431.60	28252.40	75.9	Pass
		Horizontal	P3x.216	256	-11849.20	27980.87	42.3	Pass
		Redund Horz 1 Bracing	P2x.154	268	-3835.54	19942.88	19.2	Pass
		Redund Diag 1 Bracing	P2x.154	269	-3514.00	7914.33	44.4	Pass
		Redund Hip 1 Bracing	P2x.154	281	-56.08	19038.97	0.3	Pass
		Redund Hip Diagonal	P2.5x.203	282	-66.34	9343.64	0.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
		1 Bracing Inner Bracing	P3x.216	283	-9.43	19826.00	0.5	Pass
							Summary	
							Leg (T8) 71.3	Pass
							Diagonal (T8) 86.8	Pass
							Horizontal (T9) 42.3	Pass
							Top Girt (T1) 2.2	Pass
							Redund Horz 1 Bracing (T9) 19.2	Pass
							Redund Diag 1 Bracing (T9) 44.4	Pass
							Redund Hip 1 Bracing (T9) 0.3	Pass
							Redund Hip Diagonal 1 Bracing (T9) 0.7	Pass
							Inner Bracing (T8) 0.5	Pass
							RATING = 86.8	**Pass**

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

AT&T Existing Facility

Site ID: CT2018

North Guilford
500 Cooks Ln
Guilford, CT 06437

March 11, 2016

EBI Project Number: 6216001534

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	**3.23 %**

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

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March 11, 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: **CT2018 – North Guilford**

EBI Consulting was directed to analyze the proposed AT&T facility located at **500 Cooks Ln, Guilford, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **500 Cooks Ln, Guilford, 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 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

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

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

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

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

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

9) The antennas used in this modeling are the **CCI HPA-65R-BUU-H6, CCI HPA-65R-BUU-H8 and the Powerwave 7770.00** for transmission in the 700 MHz, 850 MHz and1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

10) The antenna mounting height centerline of the proposed antennas is **152 feet** above ground level (AGL).

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

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

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AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	152 feet	Height (AGL):	152 feet	Height (AGL):	152 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A1 MPE%	**0.47**	Antenna B1 MPE%	**0.47**	Antenna C1 MPE%	**0.47**
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	CCI HPA-65R-BUU-H8	Make / Model:	CCI HPA-65R-BUU-H8	Make / Model:	CCI HPA-65R-BUU-H8
Gain:	13.15 / 14.95 dBd	Gain:	13.15 / 14.95 dBd	Gain:	11.95 / 14.75 dBd
Height (AGL):	152 feet	Height (AGL):	152 feet	Height (AGL):	152 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	6,229.75	ERP (W):	6,229.75	ERP (W):	5,462.56
Antenna A2 MPE%	**1.53**	Antenna B2 MPE%	**1.53**	Antenna C2 MPE%	**1.28**
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 11.4 dBd
Height (AGL):	152 feet	Height (AGL):	152 feet	Height (AGL):	152 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A3 MPE%	**0.47**	Antenna B3 MPE%	**0.47**	Antenna C3 MPE%	**0.47**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**2.46 %**
Verizon MW	0.01 %
Various DPS antennas	0.76 %
Site Total MPE %:	**3.23 %**

AT&T Sector 1 Total:	2.46 %
AT&T Sector 2 Total:	2.46 %
AT&T Sector 3 Total:	2.22 %
Site Total:	3.23 %

AT&T _ Max Sector Values (Sectors A & B)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	152	1.40	850	567	0.25 %
AT&T 1900 MHz (PCS) UMTS	2	656.33	152	2.21	1900	1000	0.22 %
AT&T 700 MHz LTE	2	1239.23	152	4.18	700	467	0.90 %
AT&T 1900 MHz (PCS) LTE	2	1875.65	152	6.33	1900	1000	0.63 %
AT&T 850 MHz GSM	2	414.12	152	1.40	850	567	0.25 %
AT&T 1900 MHz (PCS) GSM	2	656.33	152	2.21	1900	1000	0.22%
						Total:	2.46 %

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Summary

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

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

AT&T Sector	Power Density Value (%)
Sector 1:	2.46 %
Sector 2:	2.46 %
Sector 3 :	2.22 %
AT&T Maximum Total (per sector):	2.46 %
Site Total:	3.23 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **3.23%** 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