VERTICAL DEVELOPMENT

20 Commercial St.
Branford, CT 06405
Phone: (203) 208-0806
Fax: (203) 488-4820

December 18, 2014

Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051
Attn: Ms. Melanie Bachman, Executive Director

Re: 2108 Main St. – Glastonbury, CT (Town of Glastonbury Police Department)

Dear Ms. Bachman,

On behalf of New Cingular Wireless PCS, LLC ("AT&T"), enclosed for filing are One (1) original and two (2) copies of AT&T's Notice of Exempt Modification for Proposed Modifications to an Existing Telecommunications Facility located at the above-referenced site.

I also enclose herewith a check in the amount of $625.00 representing the fee for the Notice of Exempt Modification.

If you have any questions, please feel free to contact me.

Thank you,

By: Paul F. Sagristano

Digitally signed by Paul F. Sagristano
DN: cn=Paul F. Sagristano, o, ou, email=psagristano@yahoo.com, c=US
Date: 2014.12.19 12:04:56 -05'00'

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Branford, CT 06405
Phone – 917-841-0247
Fax – 401-633-6202
psagristano@verticaldevelopmentllc.com

CC: Via Fed Ex
Mr. Richard Johnson, Town Manager – Tower Owner
Glastonbury Town Hall
2155 Main St.
Glastonbury, CT 06033
860-652-7500

Notice of Exempt Modification
2108 Main St., Glastonbury, CT

New Cingular Wireless PCS, LLC ("AT&T") submits this Notice of Exempt Modification to the Connecticut Siting Council ("Council") pursuant to Sections 16-50j-73 and 16-50j-72(b) of the Regulations of Connecticut State Agencies ("Regulations") in connection with AT&T's planned modification of antennas and associated equipment on an existing 170' Lattice Self Support Tower located at 2108 Main St., in the Town of Glastonbury, owned by the Town of Glastonbury and located at the Glastonbury Police Department. More particularly, AT&T plans to upgrade this site by adding additional 4G LTE technology to its facilities. The proposed modifications will not increase the tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six (6) decibels, or add radio frequency sending or receiving capability which increases the total radio frequency electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to Connecticut General Statutes § 22a-162.

To better meet the growing voice and data demands of its wireless customers, AT&T is upgrading their network nationwide to enhance its current 4G technology, which will provide faster service and better overall performance. Pursuant to the LTE upgrade at this site, AT&T will add antennas, install RRHs, and install related equipment to its equipment area within the fenced compound at the base of the tower.

The 170' monopole tower located at 2108 Main St., in the Town of Glastonbury (lat. 41.706187, long. -73.606898) is owned by The Town of Glastonbury. It is in an approx. 2000+ square foot fenced compound. AT&T currently has 3 omni-directional whip antennas, nine (9) panel antennas, three (3) per sector), behind which, mounted to the same pipe as the 3 LTE antennas currently at the site, is one (1) RRH for a total of three (3) at a centerline of 167' installed on the tower and associated transmission lines (one (1) per antenna). AT&T's base station equipment is located adjacent to the base of the tower within the fenced compound. A site plan depicting this is attached.

AT&T plans to remove all existing equipment and install a new Commscope MTC3615 platform mount. The existing equipment will be replaced on the new platform mount with the exception of the 3 existing Kathrein 800 10121 GSM antennas, which will be relocated, the remaining 6 antenna will be removed and replaced by six (6) OPA-65R-LCUU-H6 LTE antennas, one (3) per sector, each with a centerline of 167', and associated transmission lines (one (1) per antenna). Located behind each new and each existing antenna, installed on the same pipe mount, will be 3 new RRU's per sector (1 RRU 12, 1 RRU 32, 1 RRU E2 and 1 RRU A2 (which is attached to the back of the RRU 12) in addition to the replaced RRUs 11 for a total of 12. The height of the tower will not need to be increased. AT&T also plans to install new Ericsson RBS 6601 radio equipment within an existing cabinet and a new GE Power plant inside their existing equipment room within the tower compound's fenced border, they also plan to add 2 Fiber Trunks and 4 DC Trunks along the same route as the existing Fiber and DC Trunks. Six (6) of the twelve (12) existing Coaxial runs will be removed. The compound's boundaries will not need to be extended. Other than brief, construction-related noise, these modifications will not increase noise levels at the tower site boundary by six (6) decibels.

AT&T commissioned Destek Engineering to perform a structural analysis of the tower to verify that it can support the proposed loading. The tower "Passes with Proposed modifications at 88.0% Capacity)" (see page 1 of Structural Analysis Report, November 21, 2014).

The proposed modifications will not add radio frequency sending or receiving capability which increases the total radio frequency electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to Connecticut General Statutes § 22a-162. A radio frequency emissions analysis prepared by EBI Consulting indicates that the proposed final configuration (including other carriers on the tower) will emit 10.73% of the allowable FCC established general public limit sampled at the ground level (see the 5th page of Radio Frequency Emissions Analysis Report - Evaluation of Human Exposure Potential to Non-Ionizing Emissions, December 1,

2014). Emission values for the AT&T antennas have been calculated from the sample point, which is the top of a six foot person standing at the base of the tower. Emissions values for additional carriers were based upon values listed in Connecticut Siting Council active database (see the 3rd and 4th page of Radio Frequency Emissions Analysis Report - Evaluation of Human Exposure Potential to Non-Ionizing Emissions, December 1, 2014). The information used in the 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 (see the 2nd & 3rd page of Radio Frequency Emissions Analysis Report - Evaluation of Human Exposure Potential to Non-Ionizing Emissions, December 1, 2014).

In conclusion, AT&T's proposed modifications do not constitute a modification subject to the Council's review because AT&T will not change the height of the tower, will not extend the boundaries of the compound, will not increase the noise levels at the site, and will not increase the total radio frequency electromagnetic radiation power density at the site to levels above applicable standards. Therefore, AT&T respectfully requests that the Council acknowledge that this Notice of Exempt Modification meets the Council's exemption criteria.

PROJECT INFORMATION

SCOPE OF WORK:

- REMOVE ALL TOWER TOP EQUIPMENT & REPLACE SECTOR FRAMES.
- AT&T ANTENNAS: (2) NEW LTE ANTENNAS PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (6) NEW LTE ANTENNAS; (3) EXISTING UMTS ANTENNAS & TMAs TO BE RE-USED (1 PER SECTOR)
- AT&T RRUs: (3) NEW RRUs PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (9) NEW RRUs; (1) EXISTING RRU PER SECTOR TO BE REUSED, FOR A TOTAL OF (3) EXISTING RRUs.
- (1) NEW A2 MODULE PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) A2 MODULES.
- (2) NEW AT&T DC6 SURGE SUPPRESSORS; (1) EXISTING DC6 TO BE REUSED.
- (2) NEW FIBER TRUNKS & (4) NEW DC TRUNKS.
- REMOVE & REPLACE EXISTING DIPLEXERS MOUNTED TO EXISTING LADDER RACK.
- INSTALL NEW POWER PLANT IN EXISTING EQUIPMENT ROOM.

SITE ADDRESS:	2108 MAIN STREET GLASTONBURY, CT 06033
LATITUDE:	41.706187° 41° 42' 22.27"N
LONGITUDE:	-72.606898° 72° 36' 24.83"W
USID:	59372
TOWER OWNER:	TOWN OF GLASTONBURY
TYPE OF SITE:	SELF SUPPORT TOWER
TOWER HEIGHT:	170'-0"±
RAD CENTER:	167'-0"± AGL
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

at&t MOBILITY

FA CODE: 10035111
SITE NUMBER: CT1083
SITE NAME: GLASTONBURY PD

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: VERTICAL DEVELOPMENT, LLC
ADDRESS: 20 COMMERCIAL STREET, BRANFORD, CT 06405
CONTACT: DAVID BASS
PHONE: 203-826-5857
EMAIL: dbass@verticaldevelopmentllc.com

ZONING:
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CONTACT: DAVID BASS
PHONE: 203-826-5857
EMAIL: dbass@verticaldevelopmentllc.com

ENGINEERING:
COMPANY: COM-EX CONSULTANTS, LLC
ADDRESS: 4 SECOND AVENUE, SUITE 204, DENVILLE, NJ 07834
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

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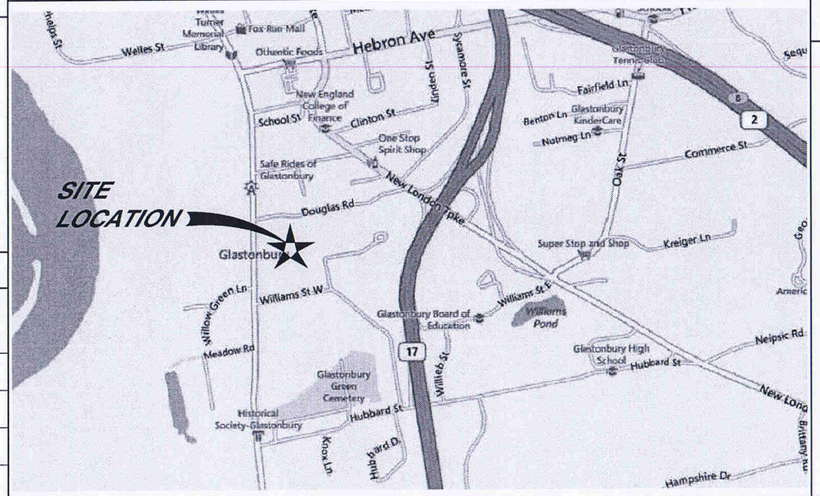
DIRECTIONS TO SITE

1. HEAD WEST ON COCHITUATE RD TOWARD BURR ST 0.3 MI). 2. TURN LEFT ONTO SHOPPERS WORLD DR (230 FT). 3. MAKE A U-TURN AT RING RD (138 FT). 4. TAKE THE 1ST RIGHT ONTO COCHITUATE RD (0.3 MI). 5. TAKE THE RAMP TO I-90 E/MASSPIKE W/SPRINGFIELD/BOSTON (0.6 MI). 6. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR INTERSTATE 90 W/MASSACHUSETTS TURNPIKE/WORCESTER/SPRINGFIELD AND MERGE ONTO I-90 W/MASSACHUSETTS TURNPIKE (0.5 MI). 7. MERGE ONTO I-90 W/MASSACHUSETTS TURNPIKE (37.8 MI) 8. TAKE EXIT 9 TO MERGE ONTO I-84 TOWARD US-20/HARTFORD/NEW YORK CITY (42.7 MI) 9. TAKE EXIT 55 ON THE LEFT TO MERGE ONTO CT-2 E TOWARD NORWICH (4.7 MI) 10. TAKE EXIT 8 FOR CONNECTICUT 94/HEBRON AVENUE (0.2 MI) 11. KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR HEBRON AVE/GASTONBURY CTR (230 FT) 12. TURN RIGHT ONTO HEBRON AVE (0.5 MI) 13. TURN LEFT ONTO MAIN ST - DESTINATION WILL BE ON LEFT (0.4 MI)

VICINITY MAP



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 AMD MAY IMPOSE CHANGES OR SITE MODIFICATIONS.

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

COM-EX Consultants
4 SECOND AVENUE
SUITE 204
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EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT1083
SITE NAME: GLASTONBURY PD
2108 MAIN STREET
GLASTONBURY, CT 06033
HARTFORD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	12/17/14	INITIAL SUBMISSION	CJT	NDB	

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

STATE OF CONNECTICUT NICHOLAS D. BARILE No. 28943 LICENSED PROFESSIONAL ENGINEER

AT&T MOBILITY

DRAWING TITLE: TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV
14011-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
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FAX: 862.209.4301

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

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SITE NAME: GLASTONBURY PD

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HARTFORD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	12/17/14	INITIAL SUBMISSION	CJT	NDB	NJDR

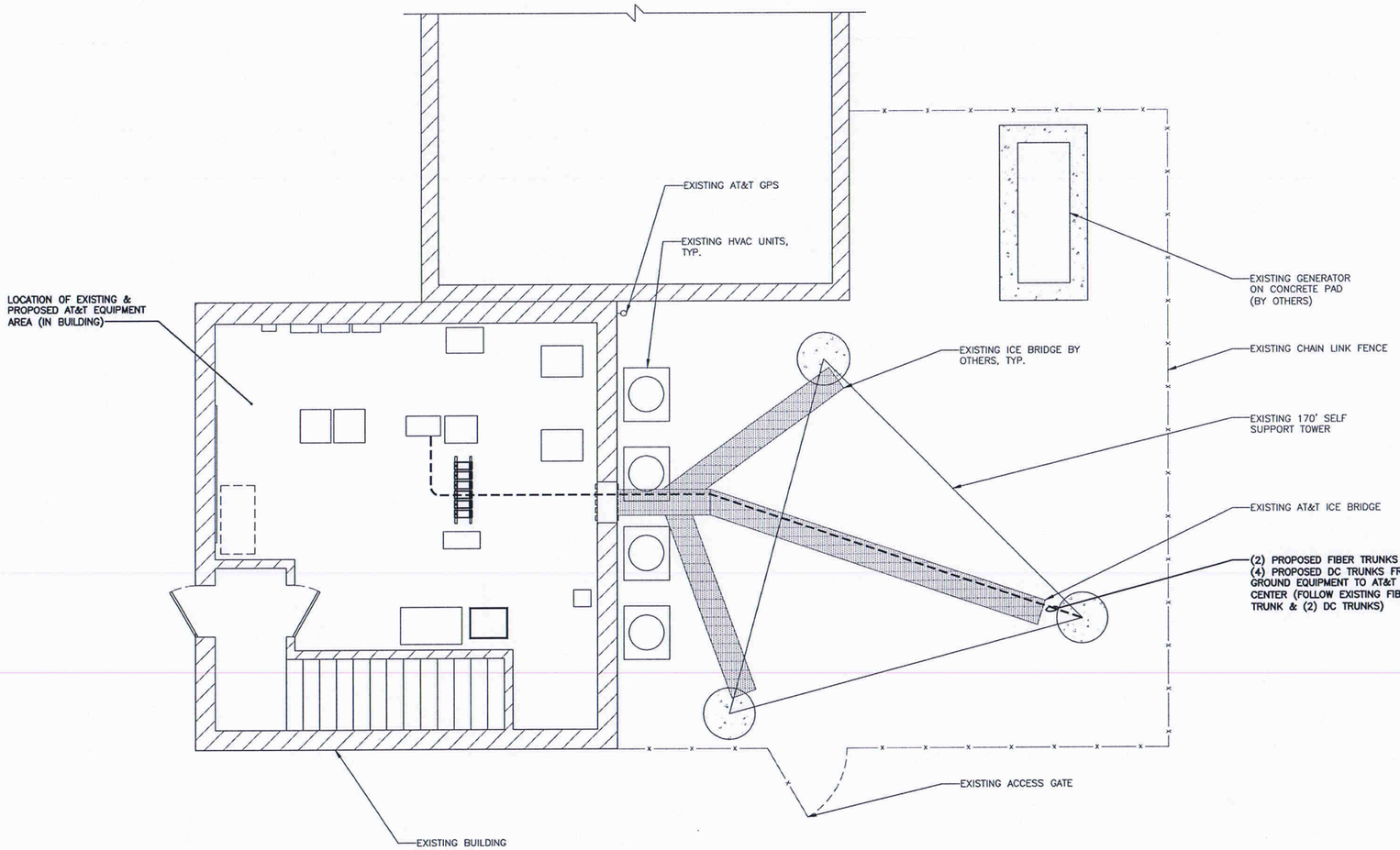
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

STATE OF CONNECTICUT
NICHOLAS J. DARLEY
No. 29043
LICENSED PROFESSIONAL ENGINEER

AT&T MOBILITY

DRAWING TITLE:
GROUNDING NOTES & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
14011-EMP	GN-1	0



COMPOUND LAYOUT

SCALE: 1/4" = 1'-0"

4 0 2 4 8 16

(IN FEET)

1/4 Inch = 1 Foot

14.6° W

NORTH

COM-EX Consultants
4 SECOND AVENUE
SUITE 204
DENVILLE, NJ 07834
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT1083
SITE NAME: GLASTONBURY PD

2108 MAIN STREET
GLASTONBURY, CT 06033
HARTFORD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	12/17/14	INITIAL SUBMISSION	CJT	NDB	NBD

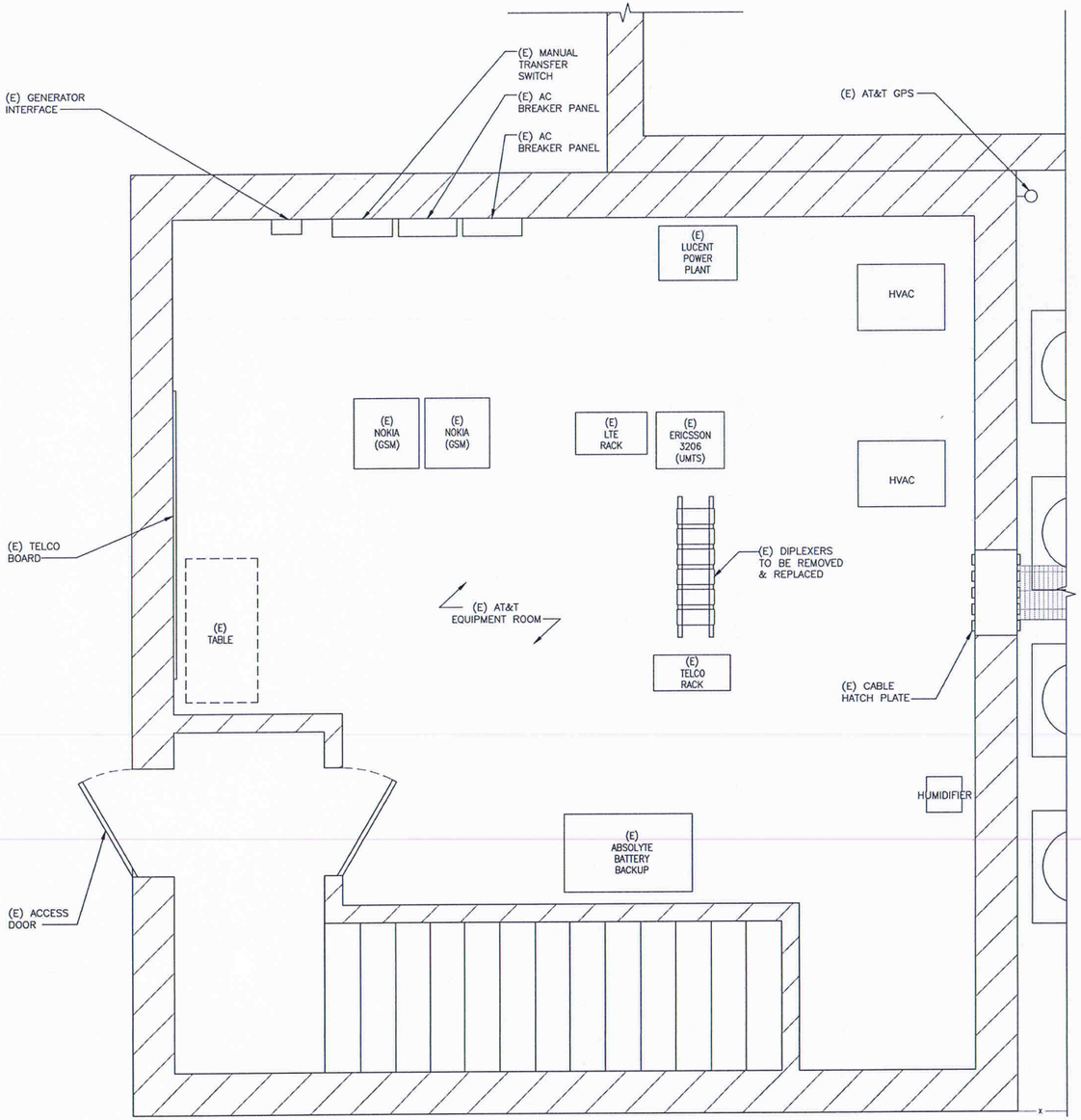
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

STATE OF CONNECTICUT
NICHOLAS J. DIBRILE
No. 23643
LICENSED PROFESSIONAL ENGINEER

AT&T MOBILITY

DRAWING TITLE:
COMPOUND LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
14011-EMP	A-1	0



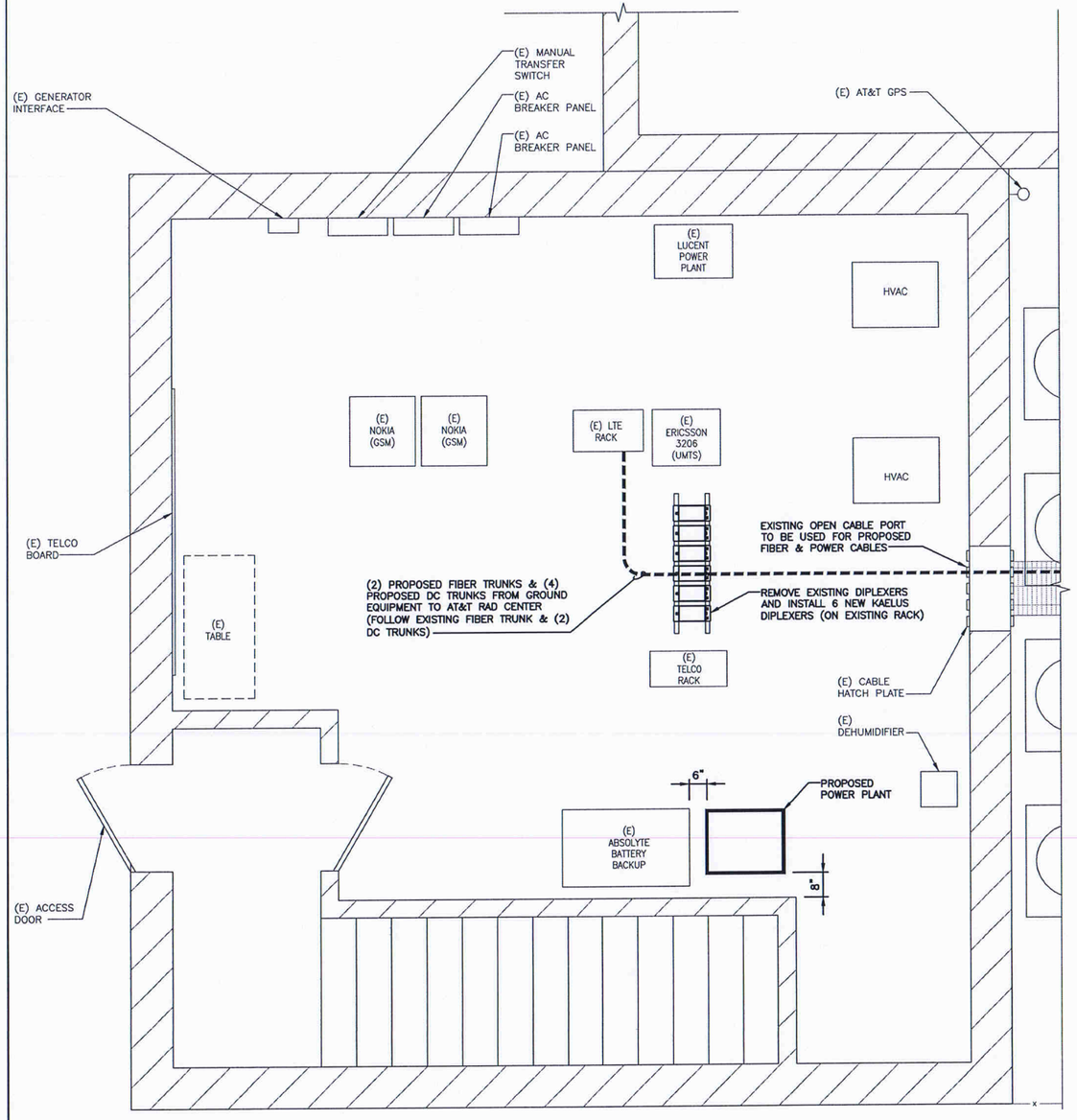
EXISTING EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"

14.6° W

NORTH

(IN FEET)
1/2 Inch = 1 Foot



PROPOSED EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"

14.6° W

NORTH

(IN FEET)
1/2 Inch = 1 Foot

NOTE: ALL NEW ELECTRICAL FEEDERS, BREAKERS & CONDUITS TO BE SIZED AND INSTALLED BY A LICENSED ELECTRICIAN

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NO.	DATE	REVISIONS	BY	CHK	APP'D
0	12/17/14	INITIAL SUBMISSION	CJT	NDB	NDB

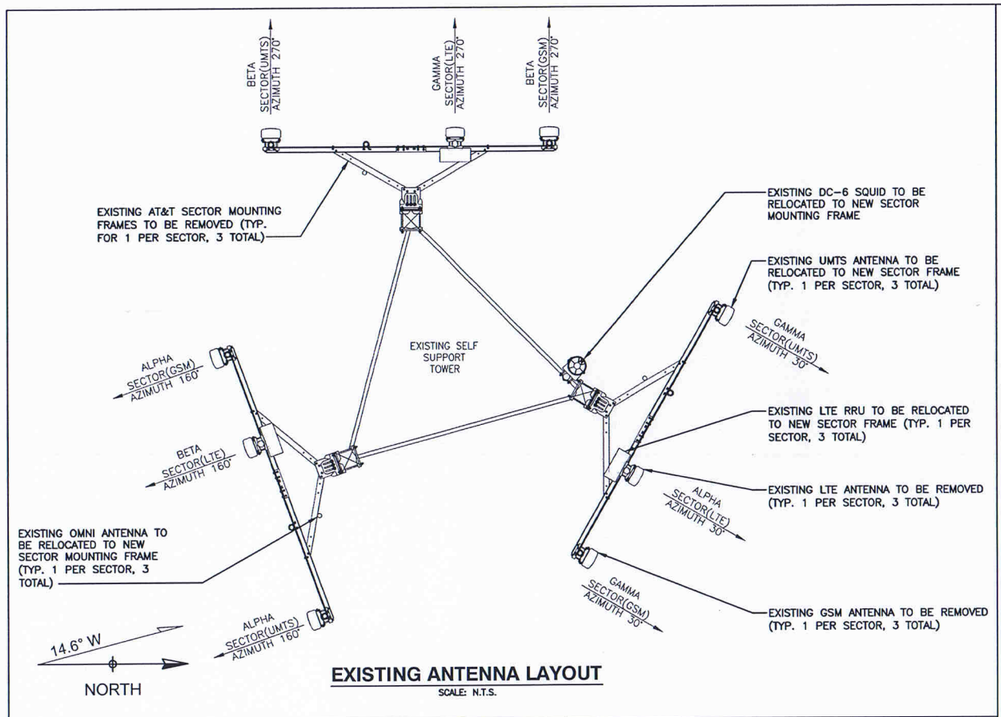
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

SEAL: STATE OF CONNECTICUT · NICHOLAS D. BARILE · No. 23043 · LICENSED PROFESSIONAL ENGINEER

AT&T MOBILITY

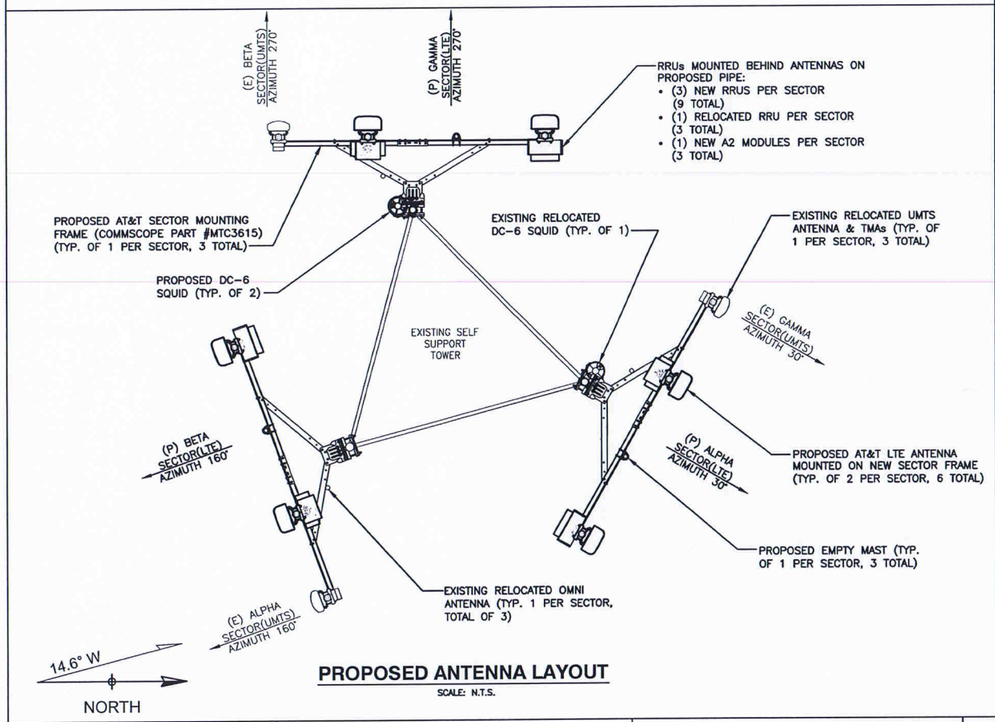
DRAWING TITLE:
EQUIPMENT LAYOUTS

JOB NUMBER	DRAWING NUMBER	REV
14011-EMP	A-2	0



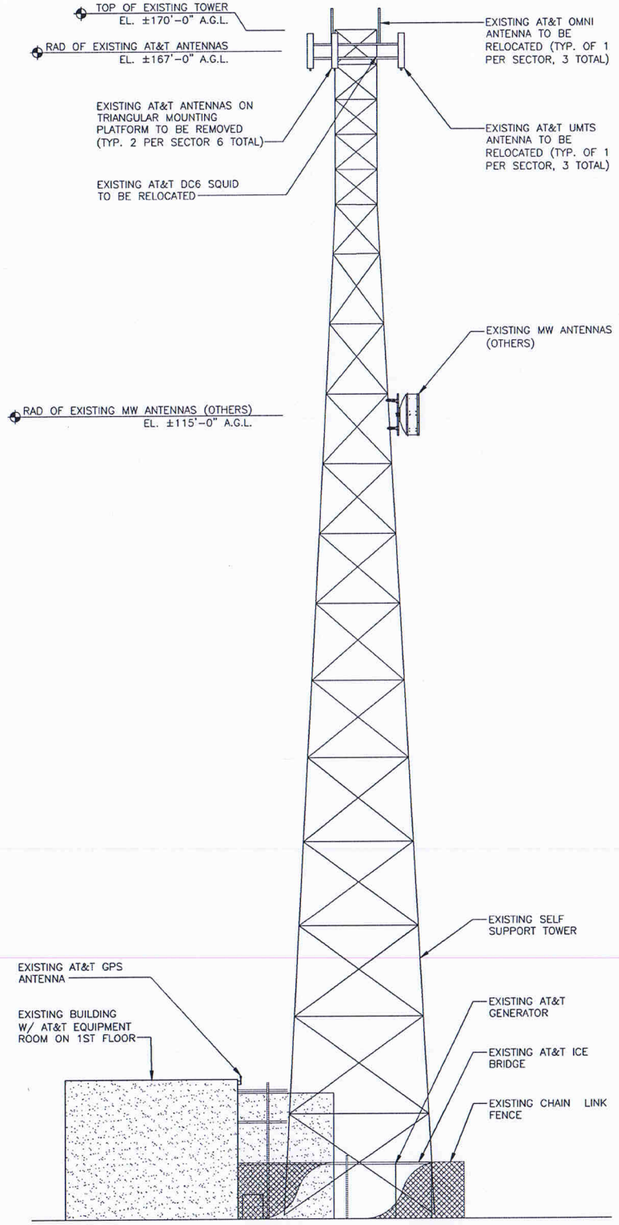
EXISTING ANTENNA LAYOUT

SCALE: N.T.S.



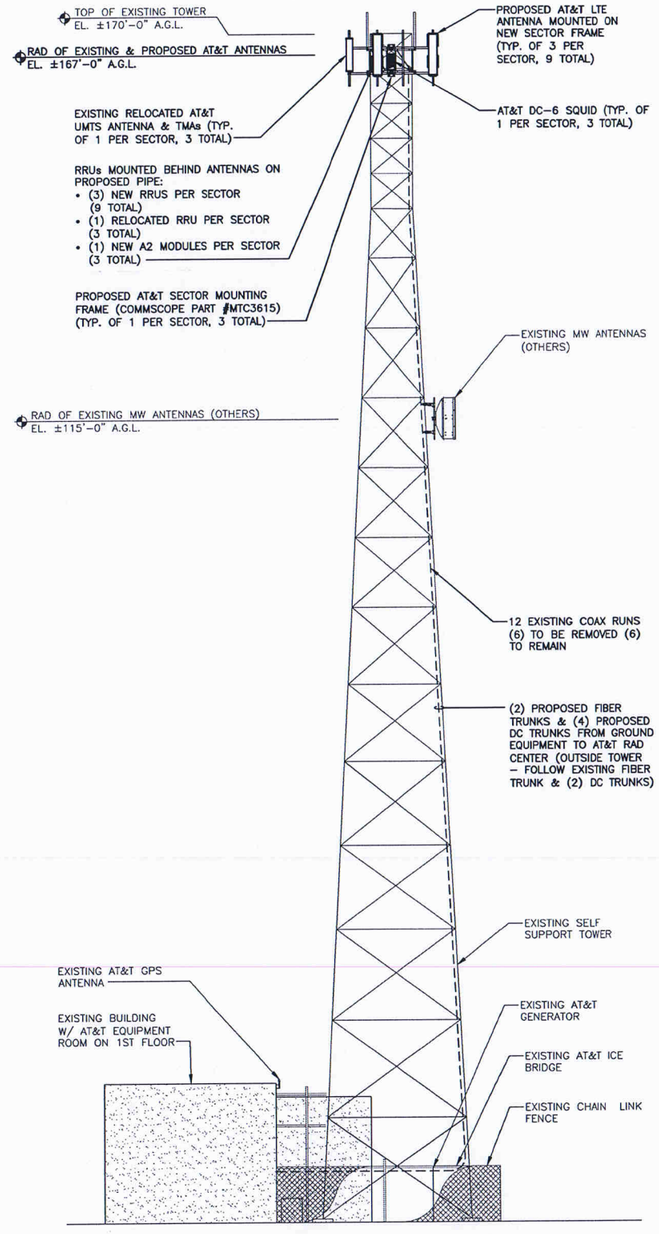
PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.



EXISTING TOWER ELEVATION

SCALE: NTS



PROPOSED TOWER ELEVATION

SCALE: NTS

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

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NO.	DATE	REVISIONS	BY	CHK	APP
0	12/17/14	INITIAL SUBMISSION	CJT	NDB	BDB

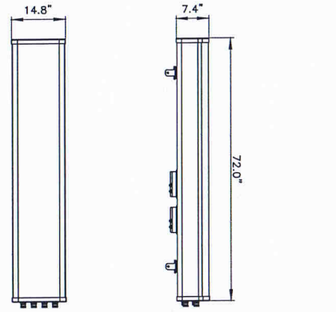
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

STATE OF CONNECTICUT
NICHOLAS D. CARILE
No. 28643
LICENSED PROFESSIONAL ENGINEER

AT&T MOBILITY

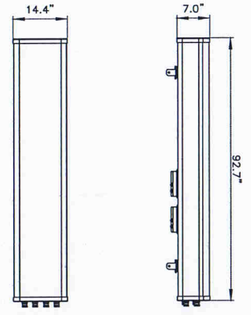
DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
14011-EMP	A-3	0



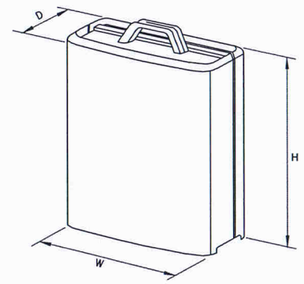
MANUFACTURER	CCI
MODEL	OPA-65R-LCUU-H6
WEIGHT	73.0 LBS

6' LTE ANTENNA DETAIL
SCALE: N.T.S.



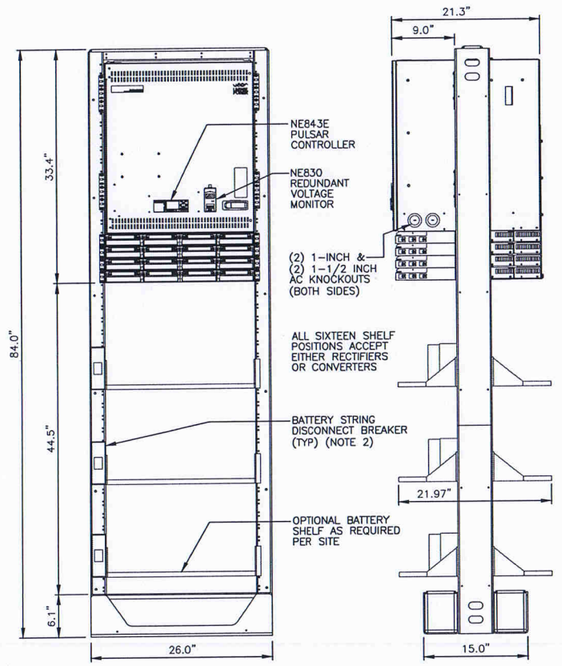
MANUFACTURER	CCI
MODEL	OPA-65R-LCUU-H8
WEIGHT	88.0 LBS

8' 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
RRUS-32	29.9" x 13.3" x 9.5"	77 LBS
RRUS-E2	20.4" x 18.5" x 7.5"	58 LBS
A2 MODULE	16.4" x 15.2" x 3.4"	22 LBS

RRUS DETAIL
SCALE: N.T.S.



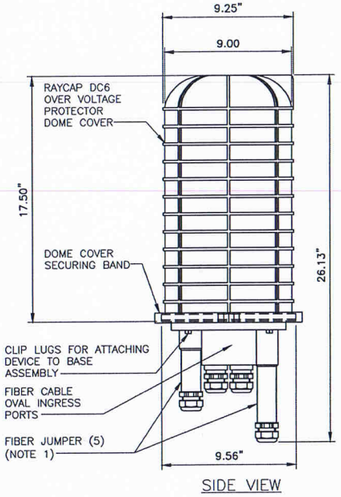
WEIGHT:
FRAME W/DC POWER SYSTEM AND W/O BATTERIES = 435lbs

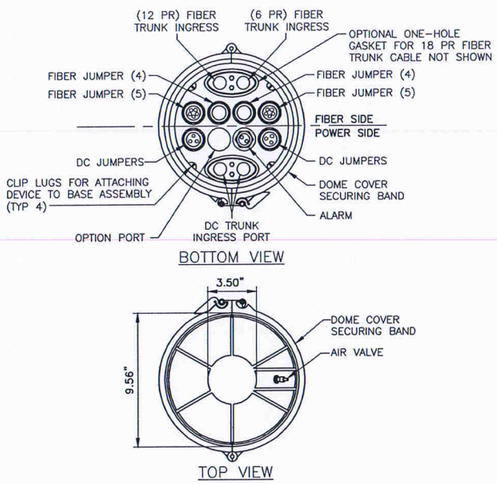
BATTERY SHELF (W/(4) 155AH BATTERIES = APPROXIMATELY 500lbs PER SHELF

CLEARANCE:
FRONT = 36"
REAR = 6"
SIDES = 2"

NOTES:
1. GE/LINEAGE FLOOR ANCHOR KIT (8471135688) MAY BE USED UNLESS LOCAL REQUIREMENTS GOVERN.
2. DISCONNECT MAY BE MOUNTED TO EITHER SIDE OF TRAY OR DIRECTLY TO FRAMEWORK
3. PER MANUFACTURER, FRAME IS SEISMIC COMPLIANT UP TO 3 BATTERY SHELVES.

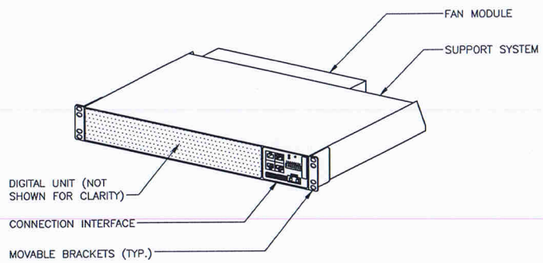
POWER PLANT DETAIL
SCALE: N.T.S.





NOTES:
1. REMOVE CABLE SEALING GLAND AND INSTALL M32x1.5 METRIC-TO-1" NPT ADAPTER (COOPER CROUSE-HINES P/N CAP 740 994 OR EQUIVALENT MFR) WHEN CONNECTING CONDUIT TO OVP.

DC-6 SURGE SUPPRESSOR DETAIL
SCALE: N.T.S.



PHYSICAL CHARACTERISTICS	
HEIGHT	2.59" (1.5 U)
WIDTH	19"
DEPTH	13.77"
WEIGHT (FULLY EQUIPPED)	<22 LBS.
COLOR	WHITE

DC POWER SUPPLY	
NOMINAL VOLTAGE	-48VDC
OPERATING VOLTAGE RANGE	-40.0 TO -57.6 VDC
NON-DESTRUCTIVE VOLTAGE RANGE	0 TO -60 VDC

RBS 6601 DETAIL
SCALE: N.T.S.

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HARTFORD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK'D
0	12/17/14	INITIAL SUBMISSION	CJT	NDF, MBP

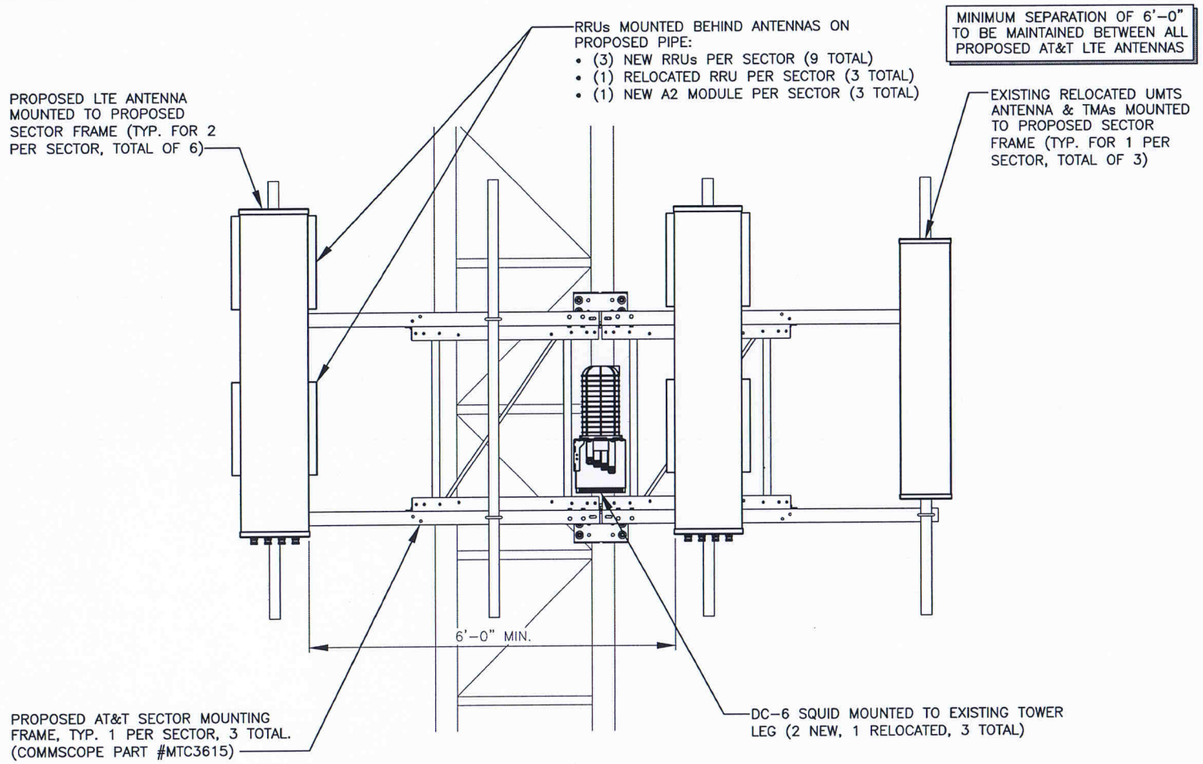
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

STATE OF CONNECTICUT
NICHOLAS J. DARIOTIS
No. 28643
LICENSED PROFESSIONAL ENGINEER

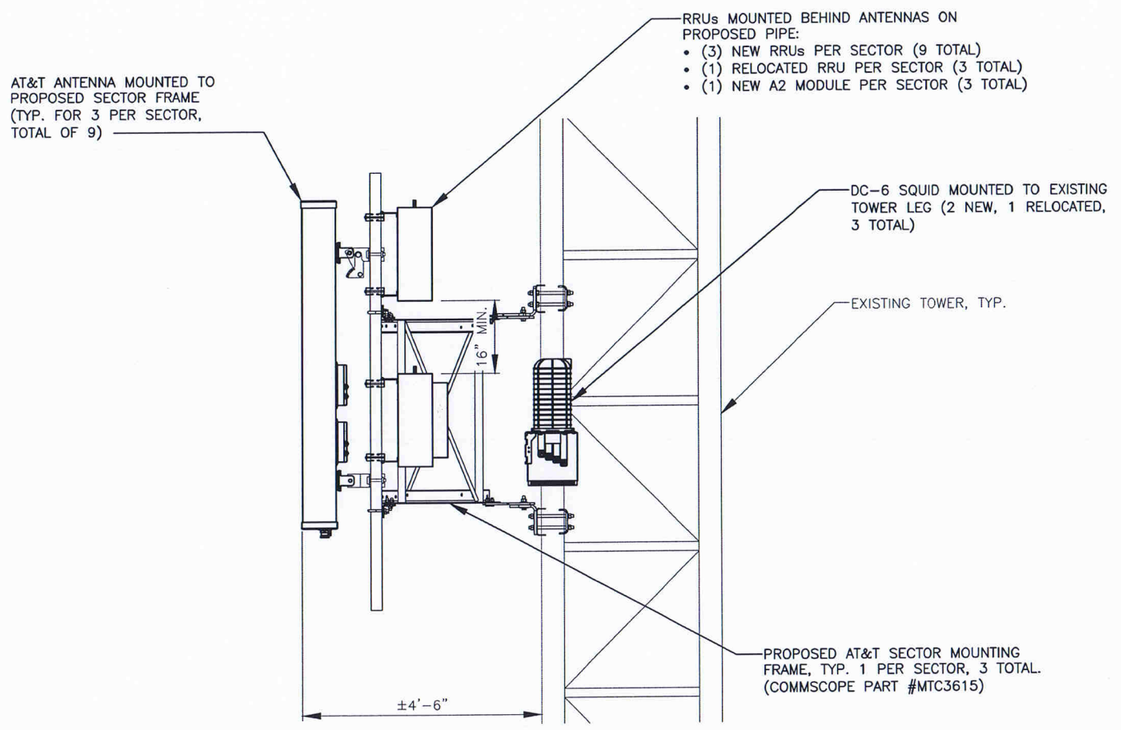
AT&T MOBILITY

DRAWING TITLE: DETAILS

JOB NUMBER	DRAWING NUMBER	REV.
14011-EMP	A-4	0



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



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

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	KATHREIN	800–10121	54.5"x10.3"x5.9"
	A2	–	–	–
	A3	KMW	AM–X–CD–16–65–00T–RET	72"x11.8"x5.9"
	A4	KMW	AM–X–CD–16–65–00T–RET	72"x11.8"x5.9"
BETA	B1	KATHREIN	800–10121	54.5"x10.3"x5.9"
	B2	–	–	–
	B3	KMW	AM–X–CD–16–65–00T–RET	72"x11.8"x5.9"
	B4	ANDREW	SBNH–1D6565C	96.4"x11.9"x7.1"
GAMMA	G1	KATHREIN	800–10121	54.5"x10.3"x5.9"
	G2	–	–	–
	G3	ANDREW	SBNH–1D6565C	96.4"x11.9"x7.1"
	G4	KMW	AM–X–CD–16–65–00T–RET	72"x11.8"x5.9"

PROPOSED ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	KATHREIN	800–10121	54.5"x10.3"x5.9"
	A2	CCI	OPA–65R–LCUU–H6	72"x14.8"x7.4"
	A3	–	–	–
	A4	CCI	OPA–65R–LCUU–H6	72"x14.8"x7.4"
BETA	B1	KATHREIN	800–10121	54.5"x10.3"x5.9"
	B2	CCI	OPA–65R–LCUU–H6	72"x14.8"x7.4"
	B3	–	–	–
	B4	CCI	OPA–65R–LCUU–H6	72"x14.8"x7.4"
GAMMA	G1	KATHREIN	800–10121	54.5"x10.3"x5.9"
	G2	CCI	OPA–65R–LCUU–H8	92.7"x14.4"x7.0"
	G3	–	–	–
	G4	CCI	OPA–65R–LCUU–H8	92.7"x14.4"x7.0"

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 (RELOCATED)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS–32	29.9"x13.3"x9.5"		
	ERICSSON	RRUS–E2	20.4"x18.5"x7.5"		
BETA	ERICSSON	RRUS–12	20.4"x18.5"x7.5"	ERICSSON A2 MODULE	16.4"x15.2"x3.4"
	ERICSSON	RRUS–11 (RELOCATED)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS–32	29.9"x13.3"x9.5"		
	ERICSSON	RRUS–E2	20.4"x18.5"x7.5"		
GAMMA	ERICSSON	RRUS–12	20.4"x18.5"x7.5"	ERICSSON A2 MODULE	16.4"x15.2"x3.4"
	ERICSSON	RRUS–11 (RELOCATED)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS–32	29.9"x13.3"x9.5"		
	ERICSSON	RRUS–E2	20.4"x18.5"x7.5"		

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NO.	DATE	REVISIONS	BY	CHK	APP'D
0	12/17/14	INITIAL SUBMISSION	CJT	NDB	NDB

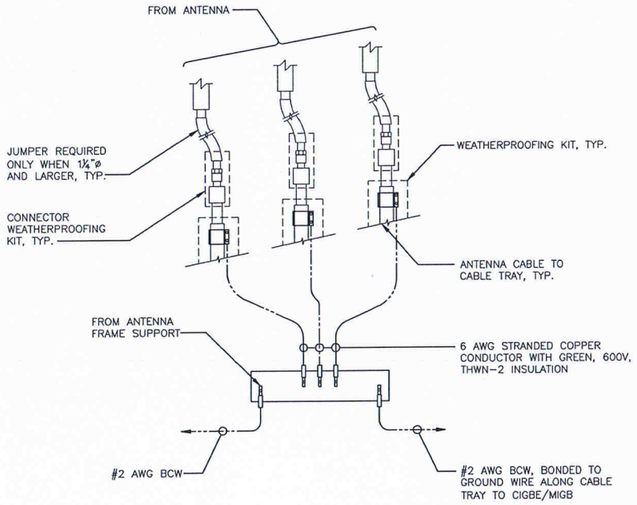
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

STATE OF CONNECTION
NICHOLAS D. DARLEY
No. 28643
LICENSED PROFESSIONAL ENGINEER
SEAL

AT&T MOBILITY

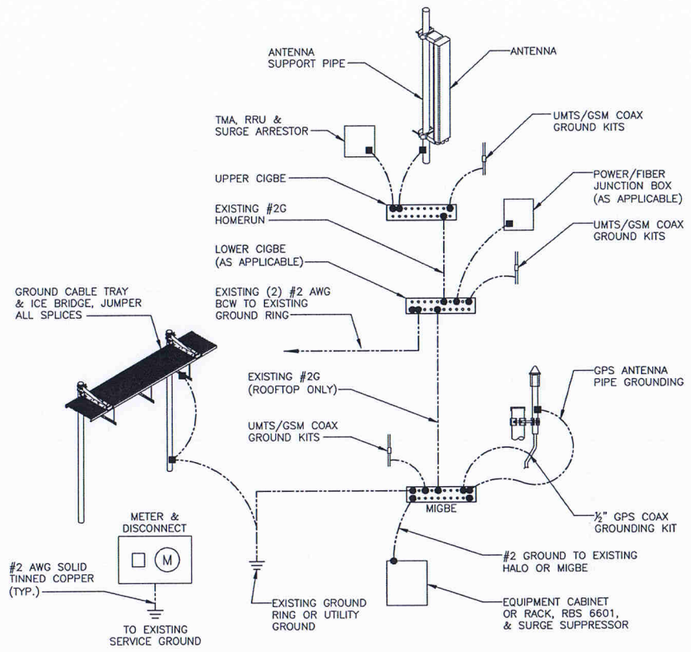
DRAWING TITLE:
ANTENNA MOUNTING DETAILS

JOB NUMBER	DRAWING NUMBER	REV
14011–EMP	A–5	0



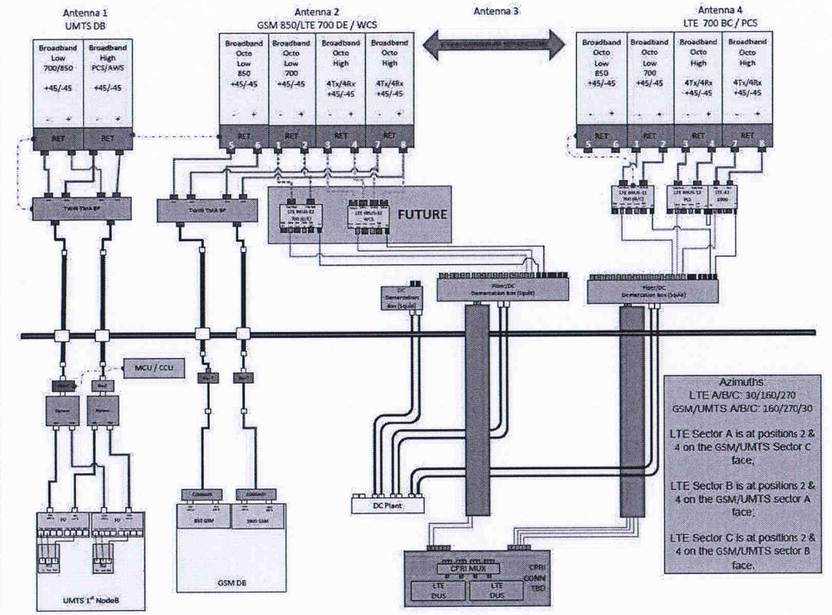
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



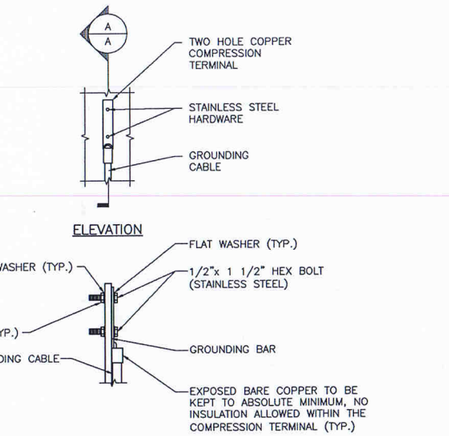
GROUNDING RISER DIAGRAM

SCALE: N.T.S.



PLUMBING DIAGRAM

SCALE: N.T.S.

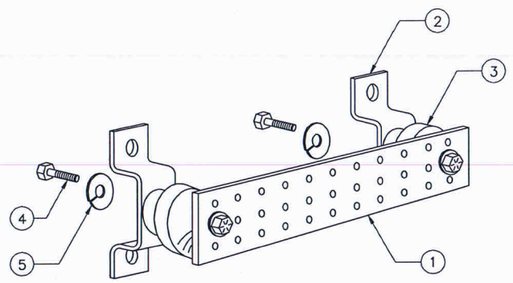


NOTE:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



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

NOTES:

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

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

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

GROUND BAR DETAIL

SCALE: N.T.S.

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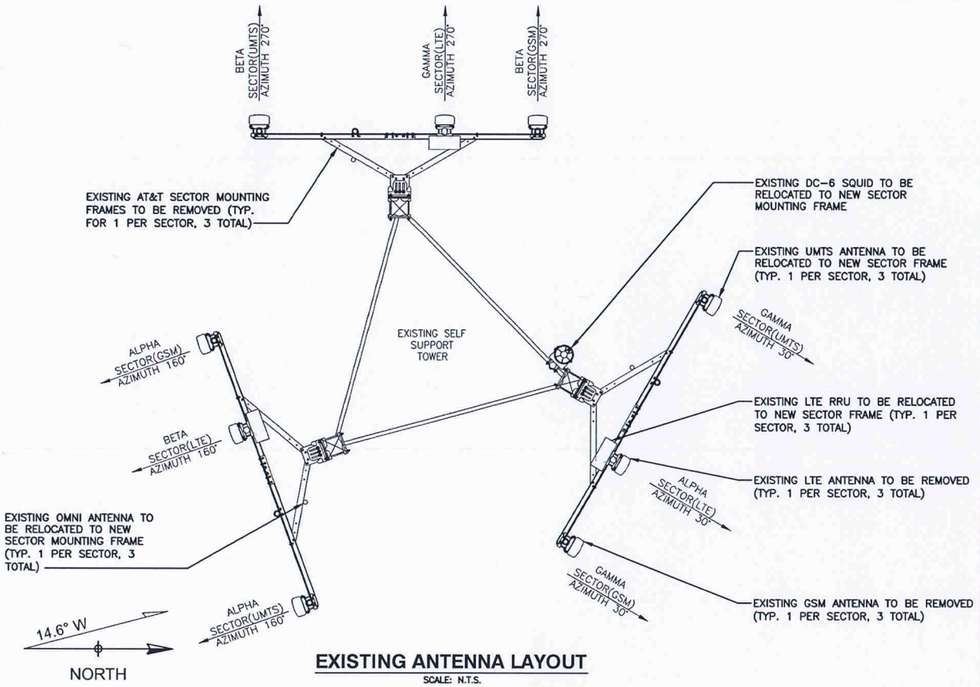
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: NJM

STATE OF CONNECTICUT
NICHOLAS D. DARILE
No. 28343
LICENSED PROFESSIONAL ENGINEER

AT&T MOBILITY

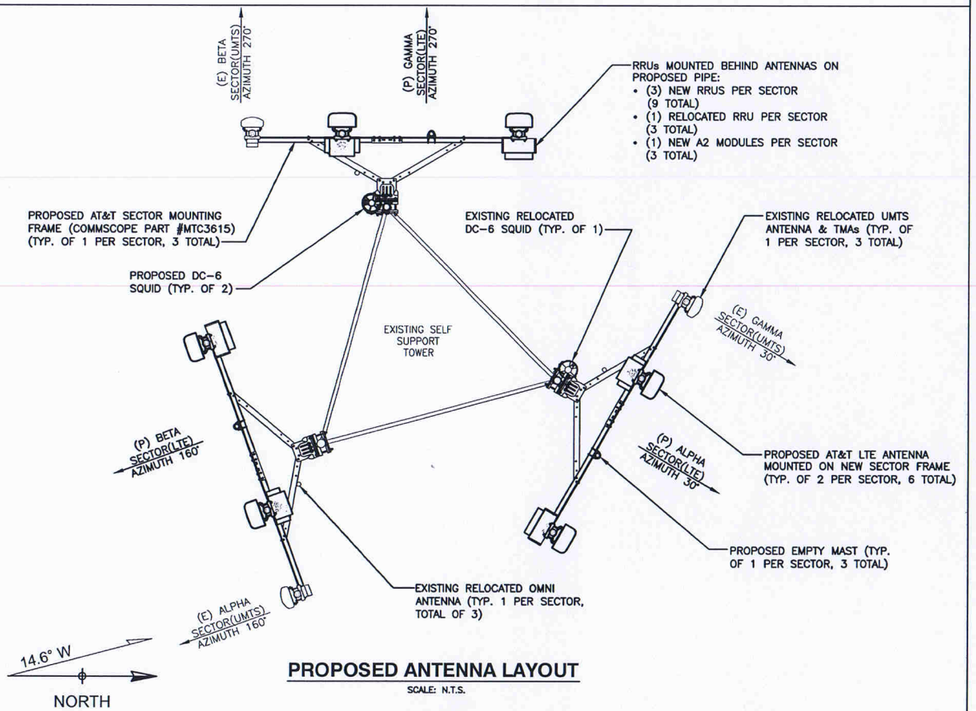
DRAWING TITLE:
GROUNDING, ONE-LINE DIAGRAM & DETAILS

JOB NUMBER	DRAWING NUMBER	REV
14011-EMP	G-1	0



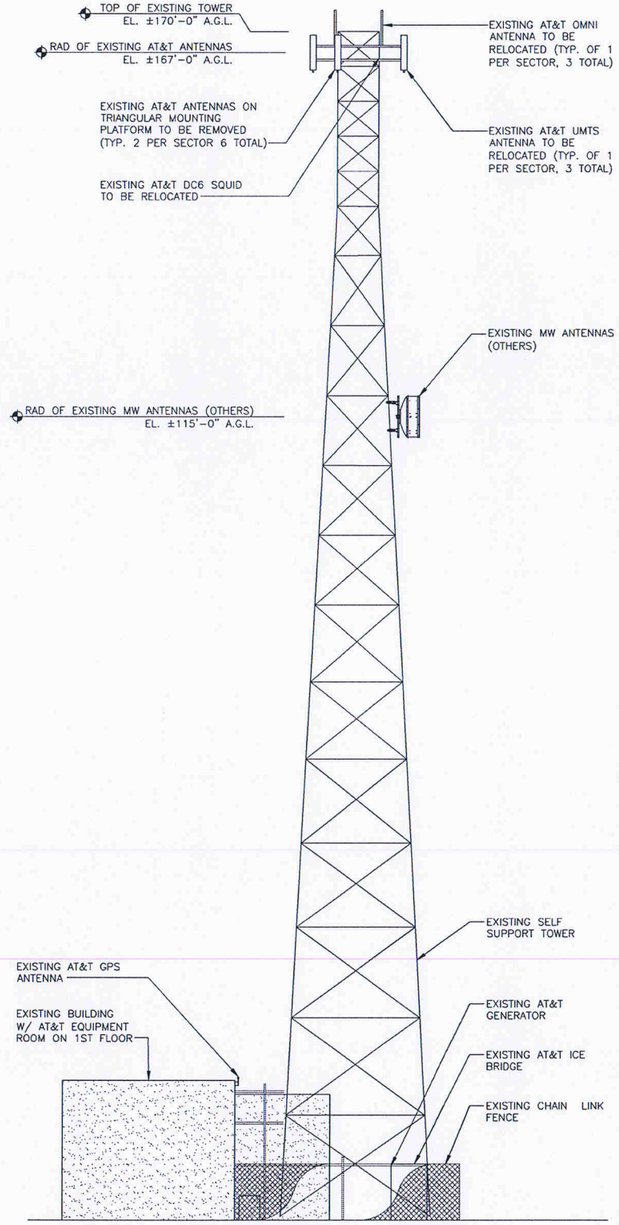
EXISTING ANTENNA LAYOUT

SCALE: N.T.S.



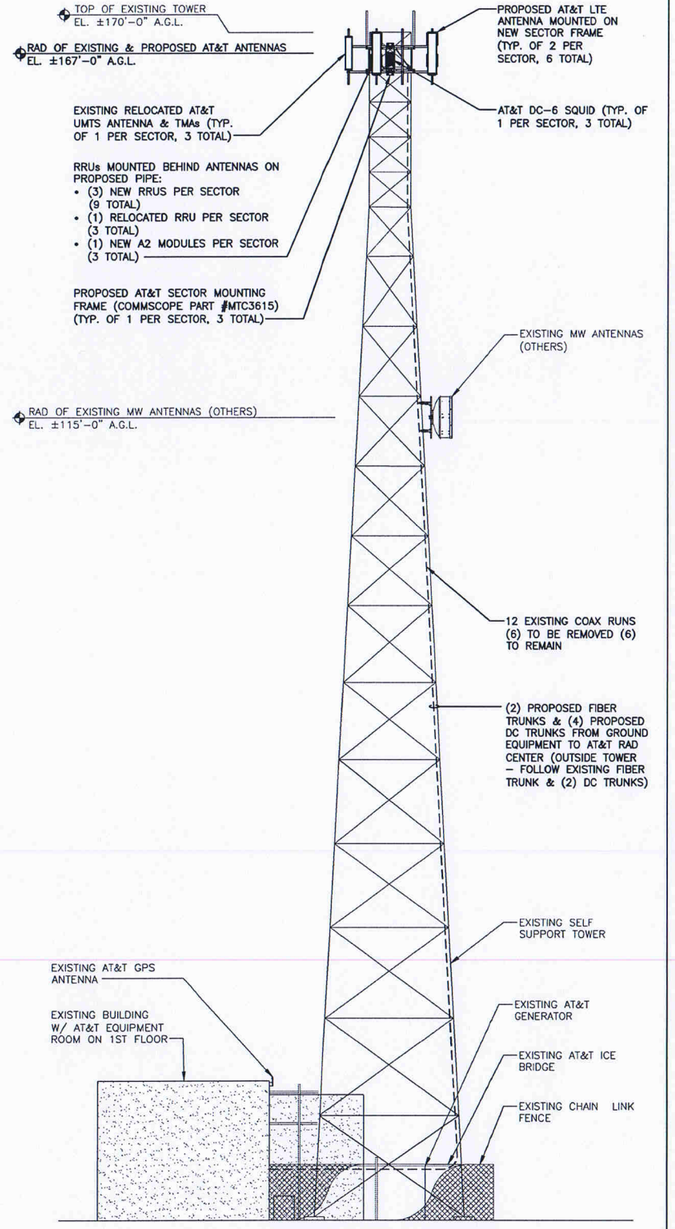
PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.



EXISTING TOWER ELEVATION

SCALE: NTS



PROPOSED TOWER ELEVATION

SCALE: NTS

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

COM-EX Consultants
4 SECOND AVENUE
SUITE 204
DENVILLE, NJ 07834
PHONE: 862.209.4300
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EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT1083
SITE NAME: GLASTONBURY PD

2108 MAIN STREET
GLASTONBURY, CT 06033
HARTFORD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	12/17/14	INITIAL SUBMISSION	CJT	NDB	NDB

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

SEAL: STEPHEN J. CARILE No. 23643 LICENSED PROFESSIONAL ENGINEER

AT&T MOBILITY

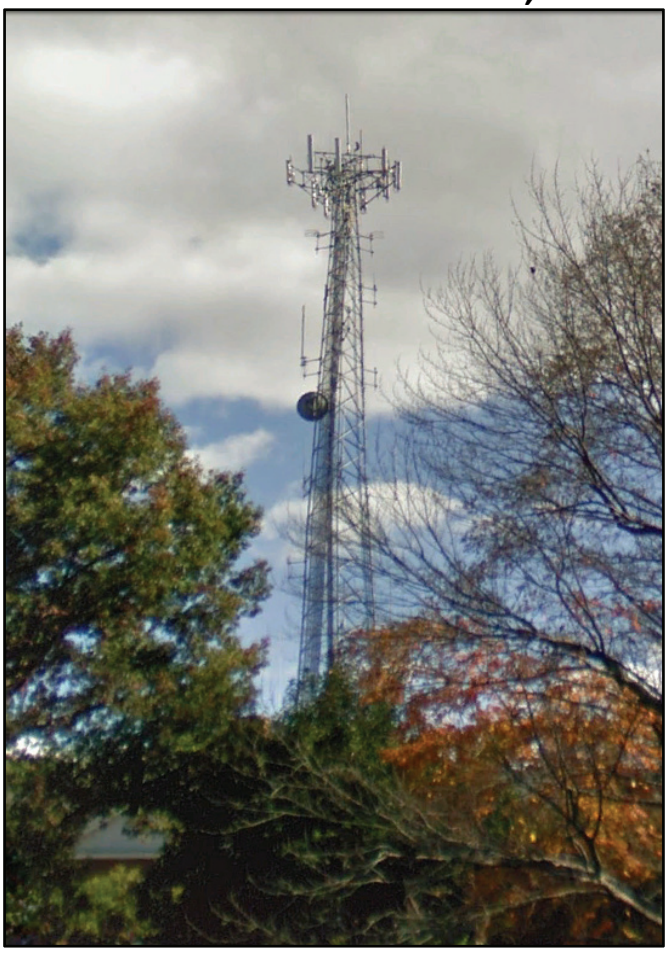
DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
14011-EMP	A-3	0

STRUCTURAL ANALYSIS REPORT
SELF SUPPORT TOWER

Prepared For:

Com-Ex Consultants, LLC
4 Second Avenue – Suite 204
Denville, NJ 07834



Tower Rating

Tower:	**Pass (88%)**

Sincerely,
Destek Engineering, LLC

11-21-2014

Ahmet Colakoglu, PE
CT Professional Engineer
License No: 27057

AT&T Site Name: GLASTONBURY PD
AT&T Site ID: CT1083
FA#:10035111
2108 Main Street
Glastonbury, CT 06033

DESTEK ENGINEERING, LLC
5150 Stilesboro Road, Ste. 510, Kennesaw, GA 30152 -Tel: (770) 693-0835

CONTENTS

DESTEK ENGINEERING, LLC
5150 Stilesboro Road, Ste. 510, Kennesaw, GA 30152 -Tel: (770) 693-0835

1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the existing self-support tower at 2108 Main Street, Glastonbury, CT 06033, for the additions and alterations proposed by AT&T.

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

- Construction Drawings prepared by Hudson Design Group, LLC, dated 04/18/2012.
- Construction Drawings prepared by Com-Ex Consultants, dated 10/03/2014.
- Structural Analysis Report prepared by Hudson Design Group, LLC, dated 04/16/2012.
- Antenna information provided by AT&T Mobility.

1.1 STRUCTURE

The subject structure is a three-sided, 170'-0" self-support lattice tower. It is formed by eight (8) 20'-0" sections and one (1) 10'-0" section. The pipe legs are X-braced along the entire tower height with single angle diagonals. The tower is 20'-10" wide at the base and 4'-7" wide at the top, with a slope change at the 140'-0" AGL. Please refer to the software output in Appendix A for tower geometry, member sizes, and other details.

2.0 EXISTING AND PROPOSED APPURTENANCES

The analysis is based on the following existing and proposed appurtenances:

Existing configuration of AT&T Appurtenances:

CARRIER	RAD CENTER (FT)	ANTENNA & TMA	MOUNT
AT&T	166'	(3) Kathrein 800-10121 (4) KMW AM-X-CD-16-65-00T-RET (2) SBNH-1D6565C (3) RRUS-11	(3) PiROD 12' T-Frame

Proposed and Final configuration of AT&T Appurtenances:

CARRIER	RAD CENTER (FT)	ANTENNA & TMA	MOUNT
AT&T	166'	(3) Kathrein 800-10121 (6) OPA-65R-LCUU-H6 (3) RRUS-12 (3) RRUS-11 (3) RRUS A2 Modules (3) RRUS-32 (3) RRUS-E2	(3) PiROD 12' T-Frame

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Existing Appurtenance Configuration by Others:

RAD CENTER(FT)	ANTENNA	COAX	MOUNT
174	(1) 8' Omni	(1) 7/8"	Tower Leg
173	(1) 10' Omni	(1) 7/8"	Tower Leg
172	(1) 8' Omni	(1) 7/8"	Tower Leg
158	(1) Parabolic Grid Dish	(1) 7/8"	3' Mount Standoff
152	(3) Parabolic Grid Dish	(3) 7/8"	3' Mount Standoff
142	(2) 12' Omni	(2) 7/8"	3' Mount Standoff
129	(1) 10' Omni	(1) 7/8"	3' Mount Standoff
124	(1) 12' Omni (1) 10' Omni	(2) 7/8"	3' Mount Standoff
115	(1) 6' Dish	(1) 7/8"	1' Mount Standoff
107	(1) 10' Dipole	(1) 7/8"	Tower Leg
102	(1) 20' Omni (2) 10' Omni	(3) 7/8"	3' Mount Standoff
84	(1) 10' Omni	(1) 7/8"	3' Mount Standoff
80	(1) 10' Omni	(1) 7/8"	3' Mount Standoff
70	(1) 12' Omni	(1) 7/8"	3' Mount Standoff
67	(1) 8' Omni	(1) 7/8"	3' Mount Standoff
52	(1) 20' Omni (2) 10' Omni	(3) 7/8"	(2) 3' Mount Standoff
32	(2) 20' Omni (1) PD 1150	(3) 7/8"	Tower Leg & 3' Mount Standoff

3.0 CODES AND LOADING

The tower was analyzed per ANSI/TIA-222-F as referenced by the 2005 Connecticut Building Code with 2011 Supplement, which is the adopted building code in the county. The following wind loading was used in compliance with the standard for Hartford County, CT.

- Basic wind speed 80 mph (W) without ice.
- Basic wind speed 69.3 mph (W_i) with 1/2" radial and 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
- D + W_i + I

D: Dead Load of structure and appurtenances
W: Wind Load, without ice
W_i: Wind Load, with ice
I: Ice Gravity Load

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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 otherwise noted, the structure is 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 lifespan. 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.

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 appurtenances. Any deviation of the appurtenances and placement, etc., will require Destek to generate an additional structural analysis. Additionally, the proposed linear appurtenances should be placed per recommendations of this report.

5.0 ANALYSIS and ASSUMPTIONS

The tower was analyzed by utilizing tnxTower, a non-linear, three-dimensional, finite element-analysis software package produced Tower Numerics, Inc. Software output for this analysis is provided in Appendix A of this report.

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6.0 RESULTS AND CONCLUSION

The existing tower was found to have **adequate** structural capacity to support the proposed installation by AT&T. For the aforementioned load combinations and as a maximum, the tower diagonals between 20' and 40' are stressed to **88%** of capacity. Maximum usage of tower legs is 78.9%.

Information regarding the existing soils and the foundation system was not available at the time of this analysis, thus an analysis could not be completed.

Reactions Comparison

Maximums	Destek Analysis	HDG Analysis
Leg Compression (Kip)	168	183.7
Leg Uplift (Kips)	142.2	157
Total Shear(Kips)	28.2	31

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

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

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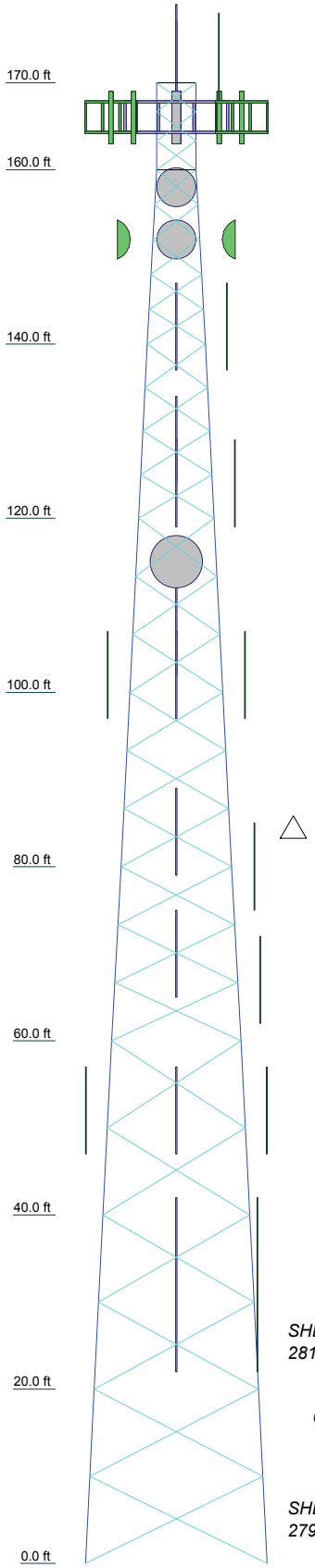
APPENDIX A
SOFTWARE OUTPUT

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9
Legs	ROHN 2.5 STD	ROHN 2.5 STD	ROHN 3 STD	ROHN 3.5 EH	ROHN 4 X-STR	ROHN 4 X-STR	ROHN 5 X-STR	ROHN 6 EHS	ROHN 6 EHS
Leg Grade	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50
Diagonals	A	L1 1/2x1 1/2x3/16	L1 3/4x1 3/4x3/16	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x1/4	L3x3x1/4	L3x3x1/4	L3 1/2x3 1/2x1/4
Diagonal Grade	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50
Top Girts	A	L2 1/2x2 1/2x3/16	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Face Width (ft)	4.5599	6.59896	8.64063	10.6797	12.6797	14.7708	16.849	18.849	20.8594
# Panels @ (ft)	3 @ 3.33333	5 @ 4	4 @ 5	9 @ 6.66667			6 @ 10		
Weight (lb)	315.0	760.6	918.4	1401.1	1644.6	2013.9	2350.3	2576.1	2907.2



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 1"x10'	175	Kathrein PR-950	158
Omni 4"x8'	174	3' Side Mount Standoff	152
2" Dia 10' Omni	173	3' Side Mount Standoff	152
Omni 4"x8'	172	3' Side Mount Standoff	152
PiROD 12' T-Frame	166	Kathrein PR-950	152
PiROD 12' T-Frame	166	Kathrein PR-950	152
PiROD 12' T-Frame	166	Kathrein PR-950	152
800 10121 w/ Mount Pipe	166	3' Side Mount Standoff	142
800 10121 w/ Mount Pipe	166	Omni 2 1/2"x12'	142
800 10121 w/ Mount Pipe	166	3' Side Mount Standoff	142
(2) Kathrein 860 10025 (RCU)	166	Omni 2 1/2"x12'	142
(2) Kathrein 860 10025 (RCU)	166	3' Side Mount Standoff	129
(2) Kathrein 860 10025 (RCU)	166	Omni 2 1/2"x10'	129
(2) TT19-08BP111-001	166	3' Side Mount Standoff	124
(2) TT19-08BP111-001	166	Omni 2 1/2"x12'	124
(2) TT19-08BP111-001	166	3' Side Mount Standoff	124
(2) LGP21900	166	Omni 2 1/2"x10'	124
(2) LGP21900	166	1' Side Mount Standoff	115
(2) LGP21900	166	PAR6-65	115
TMA DTMABP7819VG12A	166	10' 4-Bay Dipole	107
TMA DTMABP7819VG12A	166	3' Side Mount Standoff	102
TMA DTMABP7819VG12A	166	3' Side Mount Standoff	102
(2) LGP21900	166	Omni 2 1/2"x10'	102
(2) LGP21900	166	3' Side Mount Standoff	102
(2) LGP21900	166	3" Dia 20' Omni	102
DC6-48-60-18-8F	166	Omni 2 1/2"x10'	102
(2) OPA-65R-LCUU-H6	166	3' Side Mount Standoff	84
(2) OPA-65R-LCUU-H6	166	Omni 2 1/2"x10'	84
(2) OPA-65R-LCUU-H6	166	3' Side Mount Standoff	80
RRUS-12	166	Omni 2 1/2"x10'	80
RRUS-12	166	Omni 2 1/2"x12'	70
RRUS-12	166	3' Side Mount Standoff	70
RRUS-11	166	3' Side Mount Standoff	67
RRUS-11	166	Omni 2 1/2"x8'	67
RRUS-11	166	3" Dia 10' Omni	52
RRUS 32 B30	166	3" Dia 20' Omni	52
RRUS 32 B30	166	3' Side Mount Standoff	52
RRUS 32 B30	166	3" Dia 10' Omni	52
RRUS-E2	166	3' Side Mount Standoff	52
RRUS-E2	166	3' Side Mount Standoff	52
RRUS-E2	166	PD1150	32
RRUS A2 MODULE	166	3" Dia 20' Omni	32
RRUS A2 MODULE	166	3' Side Mount Standoff	32
RRUS A2 MODULE	166	3" Dia 20' Omni	32
3' Side Mount Standoff	158		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L1 1/2x1 1/2x1/8		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

AXIAL
36661 lb

SHEAR
28119 lb

TORQUE 13134 lb-ft
69 mph WIND - 0.5000 in ICE

AXIAL
22203 lb

SHEAR
27929 lb

MOMENT
2734468 lb-ft

TORQUE 14000 lb-ft
REACTIONS - 80 mph WIND

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.
5. TOWER RATING: 88%

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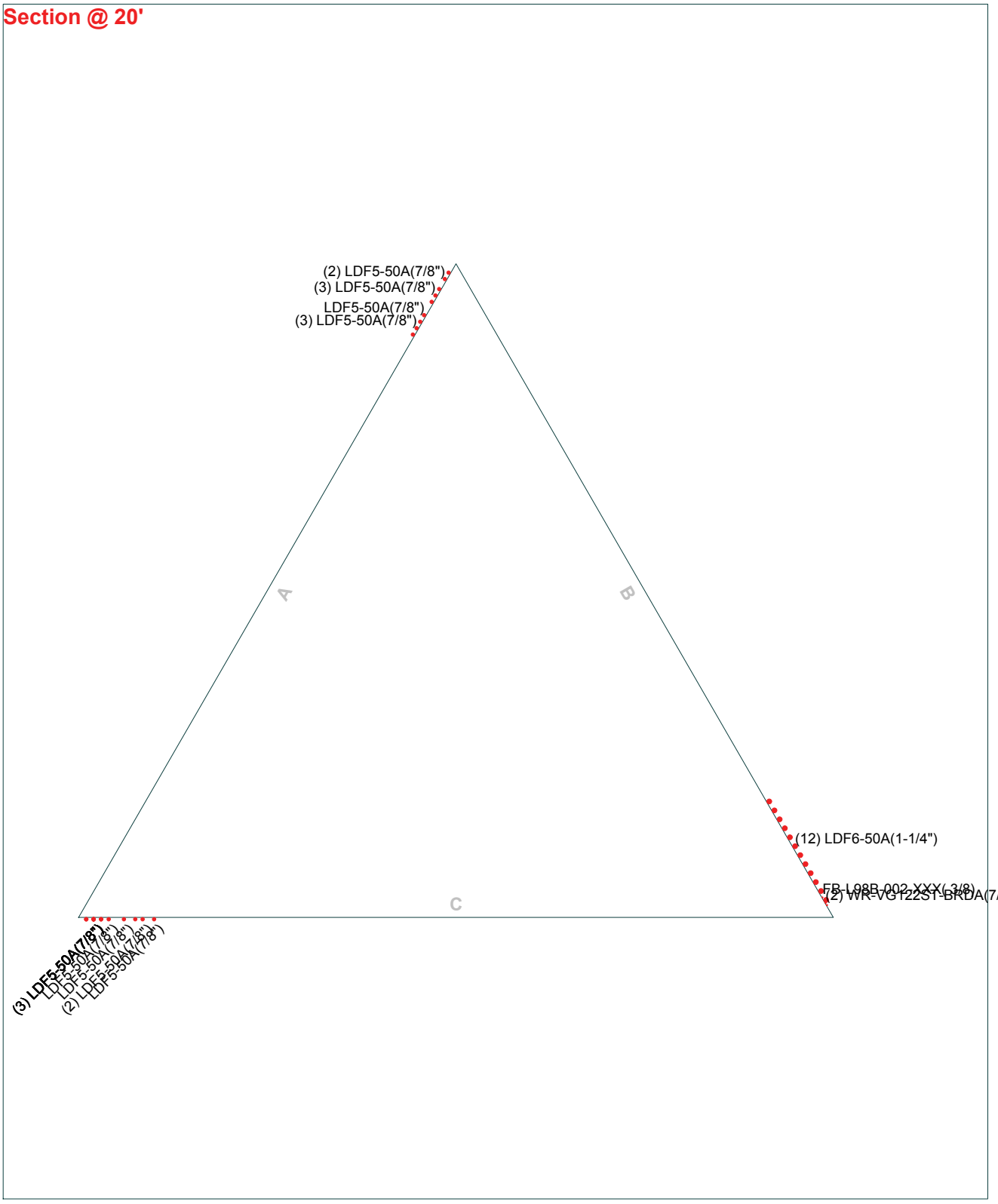
Job: 1429024			
Project: CT1083			
Client: Com-ex	Drawn by: Ahmet Colakoglu	App'd:	
Code: TIA/EIA-222-F	Date: 11/21/14	Scale: NTS	
Path: Z:\Projects\2014\29 - Com-Ex Consultants\1429024 - CT1083\Calcs\CT1083.eri		Dwg No. E-1	

Feed Line Plan
20'

Round Flat App In Face App Out Face

Section @ 20'



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Job: 1429024			
Project: CT1083			
Client: Com-ex	Drawn by: Ahmet Colakoglu	App'd:	
Code: TIA/EIA-222-F	Date: 11/21/14	Scale: NTS	
Path: Z:\Projects\2014\29 - Com-Ex Consultants\1429024 - CT1083\Calcs\CT1083.eri		Dwg No. E-7	

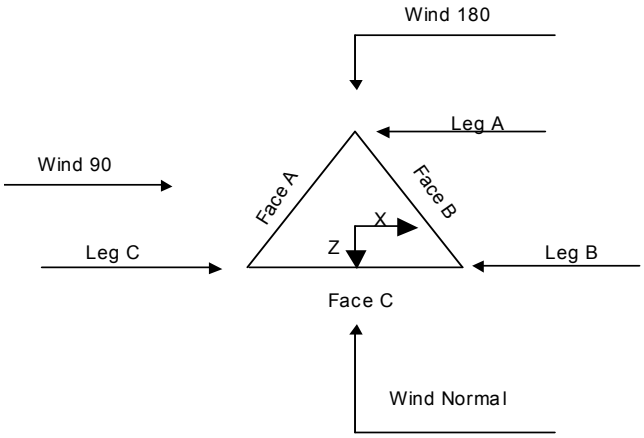
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 170.00 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 4.56 ft at the top and 20.86 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 69 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	170.00-160.00			4.56	1	10.00
T2	160.00-140.00			4.56	1	20.00
T3	140.00-120.00			6.60	1	20.00
T4	120.00-100.00			8.64	1	20.00
T5	100.00-80.00			10.68	1	20.00
T6	80.00-60.00			12.68	1	20.00
T7	60.00-40.00			14.77	1	20.00
T8	40.00-20.00			16.85	1	20.00
T9	20.00-0.00			18.85	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	170.00-160.00	3.33	X Brace	No	No	0.0000	0.0000
T2	160.00-140.00	4.00	X Brace	No	No	0.0000	0.0000
T3	140.00-120.00	5.00	X Brace	No	No	0.0000	0.0000
T4	120.00-100.00	6.67	X Brace	No	No	0.0000	0.0000
T5	100.00-80.00	6.67	X Brace	No	No	0.0000	0.0000
T6	80.00-60.00	6.67	X Brace	No	No	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	X Brace	No	No	0.0000	0.0000
T8	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T9	20.00-0.00	10.00	X Brace	No	No	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 170.00-160.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A572-50 (50 ksi)
T2 160.00-140.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A572-50 (50 ksi)
T3 140.00-120.00	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A572-50 (50 ksi)
T4 120.00-100.00	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A572-50 (50 ksi)
T5 100.00-80.00	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A572-50 (50 ksi)
T6 80.00-60.00	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A572-50 (50 ksi)
T7 60.00-40.00	Pipe	ROHN 5 X-STR	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A572-50 (50 ksi)
T8 40.00-20.00	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A572-50 (50 ksi)
T9 20.00-0.00	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 170.00-160.00	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T2 160.00-140.00	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 170.00-160.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T2 160.00-140.00	Solid Round		A572-50	Solid Round	9/16	A572-50

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T3 140.00-120.00	Solid Round		(50 ksi) A572-50 (50 ksi)	Solid Round	9/16	(50 ksi) A572-50 (50 ksi)
T4 120.00-100.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T5 100.00-80.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T6 80.00-60.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T7 60.00-40.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T8 40.00-20.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T9 20.00-0.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 170.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T9 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	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 170.00-160.00	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

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
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 Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	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
170.00-160.00														
T2	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
160.00-140.00														
T3	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
140.00-120.00														
T4	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
120.00-100.00														
T5	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
100.00-80.00														
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
LDF5-50A(7/8")	A	Yes	Ar (CfAe)	170.00 - 6.00	0.0000	0.4	3	3	1.1100 0.0000	1.1100		0.54

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF6-50A(1-1/4")	B	Yes	Ar (CfAe)	166.00 - 6.00	0.0000	0.4	12	12	1.5500 0.0000	1.5500		0.66
LDF5-50A(7/8")	A	Yes	Ar (CfAe)	158.00 - 6.00	0.0000	0.42	1	1	1.1100 0.0000	1.1100		0.54
LDF5-50A(7/8")	A	Yes	Ar (CfAe)	152.00 - 6.00	0.0000	0.45	3	3	1.1100 0.0000	1.1100		0.54
LDF5-50A(7/8")	A	Yes	Ar (CfAe)	142.00 - 6.00	0.0000	0.48	2	2	1.1100 0.0000	1.1100		0.54
LDF5-50A(7/8")	C	Yes	Ar (CfAe)	129.00 - 6.00	0.0000	0.4	1	1	1.1100 0.0000	1.1100		0.54
LDF5-50A(7/8")	C	Yes	Ar (CfAe)	124.00 - 6.00	0.0000	0.42	2	2	1.1100 0.0000	1.1100		0.54
LDF5-50A(7/8")	C	Yes	Ar (CfAe)	115.00 - 6.00	0.0000	0.44	1	1	1.1100 0.0000	1.1100		0.54
LDF5-50A(7/8")	C	Yes	Ar (CfAe)	107.00 - 6.00	0.0000	0.46	1	1	1.1100 0.0000	1.1100		0.54
LDF5-50A(7/8")	C	Yes	Ar (CfAe)	102.00 - 6.00	0.0000	0.48	3	3	1.1100 0.0000	1.1100		0.54
LDF5-50A(7/8")	C	Yes	Ar (CfAe)	84.00 - 6.00	0.0000	0.48	1	1	1.1100 0.0000	1.1100		0.54
LDF5-50A(7/8")	C	Yes	Ar (CfAe)	80.00 - 6.00	0.0000	0.48	1	1	1.1100 0.0000	1.1100		0.54
LDF5-50A(7/8")	C	Yes	Ar (CfAe)	70.00 - 6.00	0.0000	0.48	1	1	1.1100 0.0000	1.1100		0.54
LDF5-50A(7/8")	C	Yes	Ar (CfAe)	67.00 - 6.00	0.0000	0.48	1	1	1.1100 0.0000	1.1100		0.54
LDF5-50A(7/8")	C	Yes	Ar (CfAe)	52.00 - 6.00	0.0000	0.48	3	3	1.1100 0.0000	1.1100		0.54
LDF5-50A(7/8") ********	C	Yes	Ar (CfAe)	32.00 - 6.00	0.0000	0.48	3	3	1.1100 0.0000	1.1100		0.54
FB-L98B-002-XXX(3/8)	B	Yes	Ar (CfAe)	166.00 - 6.00	0.0000	0.47	1	1	0.3937 0.0000	0.3937		0.25
WR-VG122ST-BRDA(7/16)	B	Yes	Ar (CfAe)	166.00 - 6.00	0.0000	0.48	2	2	0.4000 0.0000	0.4000		0.25

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	170.00-160.00	A	2.775	0.000	0.000	0.000	16.20
		B	9.897	0.000	0.000	0.000	52.02
		C	0.000	0.000	0.000	0.000	0.00
T2	160.00-140.00	A	10.915	0.000	0.000	0.000	63.72
		B	32.990	0.000	0.000	0.000	173.40
		C	0.000	0.000	0.000	0.000	0.00
T3	140.00-120.00	A	16.650	0.000	0.000	0.000	97.20
		B	32.990	0.000	0.000	0.000	173.40
		C	1.573	0.000	0.000	0.000	9.18
T4	120.00-100.00	A	16.650	0.000	0.000	0.000	97.20
		B	32.990	0.000	0.000	0.000	173.40
		C	8.140	0.000	0.000	0.000	47.52
T5	100.00-80.00	A	16.650	0.000	0.000	0.000	97.20
		B	32.990	0.000	0.000	0.000	173.40
		C	15.170	0.000	0.000	0.000	88.56

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
T6	80.00-60.00	A	16.650	0.000	0.000	0.000	97.20
		B	32.990	0.000	0.000	0.000	173.40
		C	20.073	0.000	0.000	0.000	117.18
T7	60.00-40.00	A	16.650	0.000	0.000	0.000	97.20
		B	32.990	0.000	0.000	0.000	173.40
		C	25.530	0.000	0.000	0.000	149.04
T8	40.00-20.00	A	16.650	0.000	0.000	0.000	97.20
		B	32.990	0.000	0.000	0.000	173.40
		C	31.080	0.000	0.000	0.000	181.44
T9	20.00-0.00	A	11.655	0.000	0.000	0.000	68.04
		B	23.093	0.000	0.000	0.000	121.38
		C	23.310	0.000	0.000	0.000	136.08

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	170.00-160.00	A	0.500	5.275	0.000	0.000	0.000	45.70
		B		16.697	0.400	0.000	0.000	151.08
		C		0.000	0.000	0.000	0.000	0.00
T2	160.00-140.00	A	0.500	20.748	0.000	0.000	0.000	179.77
		B		55.656	1.333	0.000	0.000	503.59
		C		0.000	0.000	0.000	0.000	0.00
T3	140.00-120.00	A	0.500	31.650	0.000	0.000	0.000	274.23
		B		55.656	1.333	0.000	0.000	503.59
		C		2.989	0.000	0.000	0.000	25.90
T4	120.00-100.00	A	0.500	31.650	0.000	0.000	0.000	274.23
		B		55.656	1.333	0.000	0.000	503.59
		C		15.473	0.000	0.000	0.000	134.07
T5	100.00-80.00	A	0.500	31.650	0.000	0.000	0.000	274.23
		B		55.656	1.333	0.000	0.000	503.59
		C		28.837	0.000	0.000	0.000	249.85
T6	80.00-60.00	A	0.500	31.650	0.000	0.000	0.000	274.23
		B		55.656	1.333	0.000	0.000	503.59
		C		38.156	0.000	0.000	0.000	330.60
T7	60.00-40.00	A	0.500	31.650	0.000	0.000	0.000	274.23
		B		55.656	1.333	0.000	0.000	503.59
		C		48.530	0.000	0.000	0.000	420.48
T8	40.00-20.00	A	0.500	31.650	0.000	0.000	0.000	274.23
		B		55.656	1.333	0.000	0.000	503.59
		C		59.080	0.000	0.000	0.000	511.89
T9	20.00-0.00	A	0.500	22.155	0.000	0.000	0.000	191.96
		B		38.959	0.933	0.000	0.000	352.52
		C		44.310	0.000	0.000	0.000	383.92

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	170.00-160.00	A	0.000	0.371	0.292	0.556
		B	0.000	1.201	1.043	1.802
		C	0.000	0.000	0.000	0.000

Section	Elevation	Face	A_R	A_R Ice	A_F	A_F Ice
	ft		ft^2	ft^2	ft^2	ft^2
T2	160.00-140.00	A	0.000	1.155	0.957	1.819
		B	0.000	3.173	2.893	4.998
		C	0.000	0.000	0.000	0.000
T3	140.00-120.00	A	0.000	1.265	1.164	2.213
		B	0.000	2.277	2.307	3.985
		C	0.000	0.119	0.110	0.209
T4	120.00-100.00	A	0.000	0.963	1.266	2.407
		B	0.000	1.733	2.509	4.334
		C	0.000	0.471	0.619	1.177
T5	100.00-80.00	A	0.000	0.912	1.199	2.279
		B	0.000	1.642	2.376	4.104
		C	0.000	0.831	1.092	2.077
T6	80.00-60.00	A	0.000	0.880	1.157	2.200
		B	0.000	1.585	2.293	3.962
		C	0.000	1.061	1.395	2.652
T7	60.00-40.00	A	0.000	0.624	0.985	1.873
		B	0.000	1.124	1.952	3.373
		C	0.000	0.957	1.511	2.872
T8	40.00-20.00	A	0.000	0.605	0.954	1.814
		B	0.000	1.089	1.891	3.267
		C	0.000	1.129	1.782	3.387
T9	20.00-0.00	A	0.000	0.414	0.761	1.447
		B	0.000	0.745	1.509	2.606
		C	0.000	0.827	1.523	2.895

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	170.00-160.00	5.5069	0.7419	5.3801	0.4596
T2	160.00-140.00	9.3443	0.5308	9.1866	-0.0440
T3	140.00-120.00	10.3750	-1.1856	10.4538	-2.1847
T4	120.00-100.00	8.6448	0.3000	8.7129	-0.4956
T5	100.00-80.00	6.4792	2.0473	5.9343	1.6039
T6	80.00-60.00	4.8933	3.5886	3.7615	3.4103
T7	60.00-40.00	2.6112	5.4034	0.8400	5.7623
T8	40.00-20.00	-0.0175	7.0904	-2.5639	7.9892
T9	20.00-0.00	-0.8233	6.0369	-3.1987	7.2053

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft ft ft	°	ft		ft^2	ft^2	lb
Lightning Rod 1"x10'	B	From Leg	0.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice	1.00 2.02	1.00 2.02	40.00 49.26

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
Omni 4"x8'	A	From Leg	0.00 0.00 0.00	0.0000	174.00	No Ice 1/2" Ice	3.14 3.62	3.14 3.62	18.00 40.63
Omni 4"x8'	A	From Leg	3.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice	3.14 3.62	3.14 3.62	18.00 40.63
2" Dia 10' Omni	B	From Leg	3.00 0.00 0.00	0.0000	173.00	No Ice 1/2" Ice	2.00 3.03	2.00 3.03	20.00 35.50
PiROD 12' T-Frame	A	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	12.20 17.60	12.20 17.60	360.00 490.00
PiROD 12' T-Frame	B	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	12.20 17.60	12.20 17.60	360.00 490.00
PiROD 12' T-Frame	C	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	12.20 17.60	12.20 17.60	360.00 490.00
800 10121 w/ Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	5.69 6.18	4.60 5.35	78.15 126.48
800 10121 w/ Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	5.69 6.18	4.60 5.35	78.15 126.48
800 10121 w/ Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	5.69 6.18	4.60 5.35	78.15 126.48
(2) Kathrein 860 10025 (RCU)	A	From Leg	3.00 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	0.16 0.23	0.14 0.20	1.20 2.76
(2) Kathrein 860 10025 (RCU)	B	From Leg	3.00 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	0.16 0.23	0.14 0.20	1.20 2.76
(2) Kathrein 860 10025 (RCU)	C	From Leg	3.00 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	0.16 0.23	0.14 0.20	1.20 2.76
(2) TT19-08BP111-001	A	From Leg	3.00 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	0.64 0.76	0.52 0.62	16.00 21.80
(2) TT19-08BP111-001	B	From Leg	3.00 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	0.64 0.76	0.52 0.62	16.00 21.80
(2) TT19-08BP111-001	C	From Leg	3.00 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	0.64 0.76	0.52 0.62	16.00 21.80
(2) LGP21900	A	From Leg	3.00 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
(2) LGP21900	B	From Leg	3.00 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
(2) LGP21900	C	From Leg	3.00 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
********									
TMA DTMABP7819VG12A	A	From Leg	3.00 0.00	0.0000	166.00	No Ice 1/2" Ice	1.14 1.28	0.39 0.49	19.20 26.50

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						
TMA DTMABP7819VG12A	B	From Leg	3.00	0.0000	166.00	No Ice	1.14	0.39	19.20
			0.00			1/2" Ice	1.28	0.49	26.50
			0.00						
TMA DTMABP7819VG12A	C	From Leg	3.00	0.0000	166.00	No Ice	1.14	0.39	19.20
			0.00			1/2" Ice	1.28	0.49	26.50
			0.00						
(2) LGP21900	A	From Leg	3.00	0.0000	166.00	No Ice	0.23	0.12	5.50
			0.00			1/2" Ice	0.30	0.17	7.70
			0.00						
(2) LGP21900	B	From Leg	3.00	0.0000	166.00	No Ice	0.23	0.12	5.50
			0.00			1/2" Ice	0.30	0.17	7.70
			0.00						
(2) LGP21900	C	From Leg	3.00	0.0000	166.00	No Ice	0.23	0.12	5.50
			0.00			1/2" Ice	0.30	0.17	7.70
			0.00						
DC6-48-60-18-8F	A	From Leg	0.00	0.0000	166.00	No Ice	2.57	2.57	18.90
			0.00			1/2" Ice	2.80	2.80	41.46
			0.00						
********									
3' Side Mount Standoff	A	From Leg	1.50	0.0000	158.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
3' Side Mount Standoff	A	From Leg	1.50	0.0000	152.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
3' Side Mount Standoff	B	From Leg	1.50	0.0000	152.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
3' Side Mount Standoff	C	From Leg	1.50	0.0000	152.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
3' Side Mount Standoff	A	From Leg	1.50	0.0000	142.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x12'	A	From Leg	3.00	0.0000	142.00	No Ice	3.00	3.00	30.00
			0.00			1/2" Ice	4.23	4.23	52.30
			0.00						
3' Side Mount Standoff	B	From Leg	1.50	0.0000	142.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x12'	B	From Leg	3.00	0.0000	142.00	No Ice	3.00	3.00	30.00
			0.00			1/2" Ice	4.23	4.23	52.30
			0.00						
3' Side Mount Standoff	A	From Leg	1.50	0.0000	129.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x10'	A	From Leg	3.00	0.0000	129.00	No Ice	2.50	2.50	25.00
			0.00			1/2" Ice	3.53	3.53	43.64
			0.00						
3' Side Mount Standoff	A	From Leg	1.50	0.0000	124.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x12'	A	From Leg	3.00	0.0000	124.00	No Ice	3.00	3.00	30.00
			0.00			1/2" Ice	4.23	4.23	52.30
			0.00						
3' Side Mount Standoff	B	From Leg	1.50	0.0000	124.00	No Ice	1.90	1.90	40.00

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
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x10'	B	From Leg	3.00	0.0000	124.00	No Ice	2.50	2.50	25.00
			0.00			1/2" Ice	3.53	3.53	43.64
			0.00						
1' Side Mount Standoff	A	From Leg	0.50	0.0000	115.00	No Ice	1.00	1.00	30.00
			0.00			1/2" Ice	1.50	1.50	50.00
			0.00						
10' 4-Bay Dipole	A	From Leg	0.50	0.0000	107.00	No Ice	2.75	2.75	25.00
			0.00			1/2" Ice	3.50	3.50	40.00
			0.00						
3' Side Mount Standoff	A	From Leg	1.50	0.0000	102.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
3" Dia 20' Omni	A	From Leg	3.00	0.0000	102.00	No Ice	6.00	6.00	50.00
			0.00			1/2" Ice	8.03	8.03	93.17
			0.00						
3' Side Mount Standoff	B	From Leg	1.50	0.0000	102.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x10'	B	From Leg	3.00	0.0000	102.00	No Ice	2.50	2.50	25.00
			0.00			1/2" Ice	3.53	3.53	43.64
			0.00						
3' Side Mount Standoff	C	From Leg	1.50	0.0000	102.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x10'	C	From Leg	3.00	0.0000	102.00	No Ice	2.50	2.50	25.00
			0.00			1/2" Ice	3.53	3.53	43.64
			0.00						
3' Side Mount Standoff	A	From Leg	1.50	0.0000	84.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x10'	A	From Leg	3.00	0.0000	84.00	No Ice	2.50	2.50	25.00
			0.00			1/2" Ice	3.53	3.53	43.64
			0.00						
3' Side Mount Standoff	B	From Leg	1.50	0.0000	80.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x10'	B	From Leg	3.00	0.0000	80.00	No Ice	2.50	2.50	25.00
			0.00			1/2" Ice	3.53	3.53	43.64
			0.00						
3' Side Mount Standoff	A	From Leg	1.50	0.0000	70.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x12'	A	From Leg	3.00	0.0000	70.00	No Ice	3.00	3.00	30.00
			0.00			1/2" Ice	4.23	4.23	52.30
			0.00						
3' Side Mount Standoff	B	From Leg	1.50	0.0000	67.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x8'	B	From Leg	3.00	0.0000	67.00	No Ice	2.00	2.00	20.00
			0.00			1/2" Ice	2.83	2.83	34.97
			0.00						
3' Side Mount Standoff	A	From Leg	1.50	0.0000	52.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
3" Dia 20' Omni	A	From Leg	3.00	0.0000	52.00	No Ice	6.00	6.00	50.00

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
			0.00 0.00			1/2" Ice	8.03	8.03	93.17
3' Side Mount Standoff	B	From Leg	1.50 0.00 0.00	0.0000	52.00	No Ice 1/2" Ice	1.90 3.30	1.90 3.30	40.00 70.00
3" Dia 10' Omni	B	From Leg	3.00 0.00 0.00	0.0000	52.00	No Ice 1/2" Ice	3.00 4.03	3.00 4.03	20.00 41.79
3' Side Mount Standoff	C	From Leg	1.50 0.00 0.00	0.0000	52.00	No Ice 1/2" Ice	1.90 3.30	1.90 3.30	40.00 70.00
3" Dia 10' Omni	C	From Leg	3.00 0.00 0.00	0.0000	52.00	No Ice 1/2" Ice	3.00 4.03	3.00 4.03	20.00 41.79
3" Dia 20' Omni	A	From Leg	0.50 0.00 0.00	0.0000	32.00	No Ice 1/2" Ice	6.00 8.03	6.00 8.03	50.00 93.17
3" Dia 20' Omni	B	From Leg	0.50 0.00 0.00	0.0000	32.00	No Ice 1/2" Ice	6.00 8.03	6.00 8.03	50.00 93.17
3' Side Mount Standoff	C	From Leg	1.50 0.00 0.00	0.0000	32.00	No Ice 1/2" Ice	1.90 3.30	1.90 3.30	40.00 70.00
PD1150	C	From Leg	3.00 0.00 0.00	0.0000	32.00	No Ice 1/2" Ice	2.00 2.86	2.00 2.86	8.00 23.06
******									
(2) OPA-65R-LCUU-H6	A	From Leg	3.00 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	10.36 10.93	5.52 5.97	73.00 131.43
(2) OPA-65R-LCUU-H6	B	From Leg	3.00 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	10.36 10.93	5.52 5.97	73.00 131.43
(2) OPA-65R-LCUU-H6	C	From Leg	3.00 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	10.36 10.93	5.52 5.97	73.00 131.43
RRUS-12	A	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	3.67 3.93	1.49 1.67	50.00 73.22
RRUS-12	B	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	3.67 3.93	1.49 1.67	50.00 73.22
RRUS-12	C	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	3.67 3.93	1.49 1.67	50.00 73.22
RRUS-11	A	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	3.25 3.49	1.37 1.55	47.62 68.42
RRUS-11	B	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	3.25 3.49	1.37 1.55	47.62 68.42
RRUS-11	C	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	3.25 3.49	1.37 1.55	47.62 68.42
RRUS 32 B30	A	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	3.14 3.40	1.74 1.96	60.00 80.40

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
RRUS 32 B30	B	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	3.14 3.40	1.74 1.96	60.00 80.40
RRUS 32 B30	C	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	3.14 3.40	1.74 1.96	60.00 80.40
RRUS-E2	A	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	3.67 3.93	1.49 1.67	50.00 73.22
RRUS-E2	B	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	3.67 3.93	1.49 1.67	50.00 73.22
RRUS-E2	C	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	3.67 3.93	1.49 1.67	50.00 73.22
RRUS A2 MODULE	A	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	1.87 2.05	0.42 0.53	21.16 31.49
RRUS A2 MODULE	B	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	1.87 2.05	0.42 0.53	21.16 31.49
RRUS A2 MODULE	C	From Leg	1.50 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	1.87 2.05	0.42 0.53	21.16 31.49

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
Kathrein PR-950	A	Grid	From Leg	3.00 0.00 0.00	0.0000		158.00	4.50	No Ice 1/2" Ice	6.00 9.00	38.00 98.00
Kathrein PR-950	A	Grid	From Leg	3.00 0.00 0.00	0.0000		152.00	4.50	No Ice 1/2" Ice	6.00 9.00	38.00 98.00
Kathrein PR-950	B	Grid	From Leg	3.00 0.00 0.00	0.0000		152.00	4.50	No Ice 1/2" Ice	6.00 9.00	38.00 98.00
Kathrein PR-950	C	Grid	From Leg	3.00 0.00 0.00	0.0000		152.00	4.50	No Ice 1/2" Ice	6.00 9.00	38.00 98.00
PAR6-65	A	Paraboloid w/o Radome	From Leg	2.00 0.00 0.00	0.0000		115.00	6.00	No Ice 1/2" Ice	28.27 29.05	143.00 292.13

Load Combinations

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

Maximum 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	170 - 160	Leg	Max Tension	4	5167.78	-122.14	65.39
			Max. Compression	19	-7361.09	-37.59	-93.70
			Max. Mx	11	-1009.14	-584.43	-6.74
			Max. My	2	-86.78	-43.38	-556.92
			Max. Vy	5	-1168.37	-265.62	-58.53
			Max. Vx	2	1198.73	5.28	299.50
		Diagonal	Max Tension	13	2320.29	0.00	0.00
			Max. Compression	13	-2343.52	0.00	0.00
			Max. Mx	21	-505.32	5.47	0.22
			Max. My	13	-1817.05	0.60	-2.63
			Max. Vy	21	5.10	5.47	0.22
			Max. Vx	13	0.93	0.60	-2.63

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
		Top Girt	Max Tension	4	308.36	0.00	0.00
			Max. Compression	2	-311.77	0.00	0.00
			Max. Mx	14	-2.62	-7.20	0.00
			Max. My	26	0.50	0.00	-0.00
			Max. Vy	14	6.32	0.00	0.00
			Max. Vx	26	0.00	0.00	0.00
T2	160 - 140	Leg	Max Tension	4	25676.85	-107.51	-4.17
			Max. Compression	15	-30055.85	103.96	-41.02
			Max. Mx	21	24593.97	-118.25	42.70
			Max. My	15	10887.93	-63.75	-153.19
			Max. Vy	23	283.46	51.49	12.13
			Max. Vx	16	-250.07	8.52	-5.45
		Diagonal	Max Tension	26	2605.02	0.00	0.00
			Max. Compression	26	-2640.78	0.00	0.00
			Max. Mx	17	1923.85	10.96	0.61
			Max. My	26	-2503.81	0.01	-2.82
			Max. Vy	17	8.36	10.96	0.61
			Max. Vx	26	1.07	0.00	0.00
		Top Girt	Max Tension	23	40.66	0.00	0.00
			Max. Compression	21	-61.48	0.00	0.00
			Max. Mx	14	-7.24	-14.02	0.00
			Max. My	25	15.31	0.00	0.41
			Max. Vy	14	-12.30	0.00	0.00
			Max. Vx	25	-0.36	0.00	0.00
T3	140 - 120	Leg	Max Tension	17	43205.99	-177.31	37.67
			Max. Compression	15	-50498.11	198.20	-37.01
			Max. Mx	8	42260.06	-232.64	33.91
			Max. My	9	-2156.57	35.17	289.16
			Max. Vy	25	-94.09	-127.99	-25.46
			Max. Vx	19	133.99	-58.10	131.43
		Diagonal	Max Tension	26	3174.01	0.00	0.00
			Max. Compression	26	-3236.10	0.00	0.00
			Max. Mx	21	1824.77	19.47	2.04
			Max. My	26	-3186.36	2.17	-4.32
			Max. Vy	21	12.24	19.47	2.04
			Max. Vx	26	1.17	0.00	0.00
T4	120 - 100	Leg	Max Tension	21	60192.64	-131.79	20.79
			Max. Compression	15	-70314.22	242.55	-12.00
			Max. Mx	8	52786.08	-355.36	13.49
			Max. My	6	-52064.46	276.14	-350.16
			Max. Vy	6	358.37	-301.53	173.30
			Max. Vx	9	-309.97	106.77	274.61
		Diagonal	Max Tension	26	4037.13	0.00	0.00
			Max. Compression	26	-4069.45	0.00	0.00
			Max. Mx	19	2173.07	43.19	4.42
			Max. My	26	-3945.99	2.05	-8.97
			Max. Vy	17	20.87	40.72	-3.06
			Max. Vx	26	2.02	0.00	0.00
T5	100 - 80	Leg	Max Tension	21	78302.37	-279.48	10.92
			Max. Compression	15	-90403.60	380.65	-14.18
			Max. Mx	19	-90022.40	381.40	38.27
			Max. My	18	-6310.97	-33.98	286.27
			Max. Vy	23	-80.18	380.06	-24.09
			Max. Vx	18	95.78	-77.93	284.01
		Diagonal	Max Tension	26	4290.43	0.00	0.00
			Max. Compression	26	-4482.01	0.00	0.00
			Max. Mx	15	2594.30	47.56	-4.56
			Max. My	26	-4171.56	10.69	-8.40
			Max. Vy	21	23.70	47.26	5.38
			Max. Vx	26	1.79	0.00	0.00
T6	80 - 60	Leg	Max Tension	21	94437.50	-51.82	6.26

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	15	-109758.80	60.38	-12.72
			Max. Mx	21	94342.26	-583.98	16.09
			Max. My	22	-11953.79	-256.12	403.15
			Max. Vy	23	-136.17	426.35	-19.34
			Max. Vx	18	104.40	-146.59	326.17
		Diagonal	Max Tension	26	4744.17	0.00	0.00
			Max. Compression	26	-4670.83	0.00	0.00
			Max. Mx	19	2512.00	66.51	6.49
			Max. My	26	-4272.19	22.68	-11.82
			Max. Vy	21	31.11	61.33	6.48
			Max. Vx	26	2.26	0.00	0.00
T7	60 - 40	Leg	Max Tension	21	108394.13	-49.47	2.34
			Max. Compression	19	-127020.03	-229.06	-11.40
			Max. Mx	21	108202.36	-1059.39	1.92
			Max. My	9	-7617.73	-18.26	515.45
			Max. Vy	23	-215.00	796.18	-20.08
			Max. Vx	11	180.52	-23.83	-498.29
		Diagonal	Max Tension	26	5644.83	0.00	0.00
			Max. Compression	26	-5520.40	0.00	0.00
			Max. Mx	21	3098.88	109.43	11.02
			Max. My	26	-5480.83	49.33	-16.88
			Max. Vy	21	41.82	95.96	11.75
			Max. Vx	26	2.91	0.00	0.00
T8	40 - 20	Leg	Max Tension	21	123297.29	564.37	-3.48
			Max. Compression	19	-146052.33	-861.49	-12.68
			Max. Mx	21	123093.81	-2087.67	1.10
			Max. My	9	-9118.55	-38.66	805.78
			Max. Vy	17	316.92	-2075.06	-10.04
			Max. Vx	9	-196.40	-38.66	805.78
		Diagonal	Max Tension	26	6360.67	0.00	0.00
			Max. Compression	26	-6096.42	0.00	0.00
			Max. Mx	21	3155.33	128.09	13.15
			Max. My	26	-6057.10	77.70	-17.02
			Max. Vy	21	46.43	128.09	13.15
			Max. Vx	26	2.81	0.00	0.00
T9	20 - 0	Leg	Max Tension	21	137539.76	1018.65	-6.03
			Max. Compression	19	-164693.13	0.00	-0.15
			Max. Mx	21	132891.79	-2087.67	1.10
			Max. My	7	-10534.18	-51.19	-1133.02
			Max. Vy	17	-364.97	-2075.06	-10.04
			Max. Vx	7	-180.38	-51.19	-1133.02
		Diagonal	Max Tension	26	7019.04	0.00	0.00
			Max. Compression	26	-6860.71	0.00	0.00
			Max. Mx	21	2626.51	211.31	16.98
			Max. My	26	-6815.19	130.58	-28.38
			Max. Vy	21	62.84	211.31	16.98
			Max. Vx	26	4.03	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	23	167098.43	13589.61	-7788.40
	Max. H_x	10	157956.52	14969.30	-8584.78
	Max. H_z	17	-137887.76	-15149.28	8734.66
	Min. Vert	17	-137887.76	-15149.28	8734.66

Location	*Condition*	*Gov. Load Comb.*	*Vertical lb*	*Horizontal, X lb*	*Horizontal, Z lb*
	Min. H_x	17	-137887.76	-15149.28	8734.66
	Min. H_z	10	157956.52	14969.30	-8584.78
Leg B	Max. Vert	19	168052.99	-13443.74	-8076.18
	Max. H_x	25	-136934.25	14984.56	8985.01
	Max. H_z	25	-136934.25	14984.56	8985.01
	Min. Vert	25	-136934.25	14984.56	8985.01
	Min. H_x	6	158346.33	-14808.33	-8877.21
	Min. H_z	6	158346.33	-14808.33	-8877.21
Leg A	Max. Vert	15	167830.16	321.93	15684.80
	Max. H_x	11	7666.61	1918.41	610.54
	Max. H_z	2	158771.20	333.66	17298.61
	Min. Vert	21	-142245.99	-299.42	-17924.45
	Min. H_x	5	7666.36	-1910.27	610.26
	Min. H_z	21	-142245.99	-299.42	-17924.45

Tower Mast Reaction Summary

Load Combination	*Vertical*	*Shear$_x$*	*Shear$_z$*	*Overturning Moment, M_x*	*Overturning Moment, M_z*	*Torque*
	lb	*lb*	*lb*	*lb-ft*	*lb-ft*	*lb-ft*
Dead Only	22203.11	-0.00	0.00	-2014.04	-4050.41	-0.00
Dead+Wind 0 deg - No Ice	22202.96	-0.00	-27928.98	-2734464.93	-4117.11	12071.14
Dead+Wind 30 deg - No Ice	22203.22	13364.41	-23236.64	-2295884.78	-1322064.88	6319.47
Dead+Wind 60 deg - No Ice	22202.97	22690.57	-13262.32	-1315932.33	-2246103.34	942.27
Dead+Wind 90 deg - No Ice	22202.73	26370.72	-19.29	-4795.17	-2597450.10	-4056.92
Dead+Wind 120 deg - No Ice	22202.96	23647.87	14787.39	1458540.72	-2306536.60	-8384.16
Dead+Wind 150 deg - No Ice	22202.98	13051.44	23817.16	2358702.63	-1286099.90	-11066.21
Dead+Wind 180 deg - No Ice	22202.97	-0.02	26998.92	2680465.43	-4120.22	-11622.92
Dead+Wind 210 deg - No Ice	22202.73	-13051.71	23816.96	2358746.43	1277886.03	-9251.47
Dead+Wind 240 deg - No Ice	22202.96	-23647.98	14787.44	1458585.85	2298379.46	-3688.87
Dead+Wind 270 deg - No Ice	22202.74	-26370.83	-19.28	-4799.79	2589322.70	4057.01
Dead+Wind 300 deg - No Ice	22202.98	-22690.66	-13262.35	-1315982.22	2237951.94	10680.15
Dead+Wind 330 deg - No Ice	22202.98	-13364.12	-23236.75	-2295934.79	1313860.97	13999.81
Dead+Ice+Temp	36660.56	-0.47	0.29	-1670.61	-9867.74	-0.04
Dead+Wind 0 deg+Ice+Temp	36660.53	-0.11	-28116.35	-2811055.33	-10061.36	11242.19
Dead+Wind 30 deg+Ice+Temp	36660.53	13719.93	-23544.65	-2358506.86	-1391150.40	6078.69
Dead+Wind 60 deg+Ice+Temp	36660.54	23244.76	-13568.65	-1366883.19	-2341987.54	644.32
Dead+Wind 90 deg+Ice+Temp	36660.53	26850.07	-155.68	-25337.59	-2690982.51	-4491.55
Dead+Wind 120 deg+Ice+Temp	36660.53	23834.33	14918.64	1511659.71	-2377817.90	-8153.54
Dead+Wind 150 deg+Ice+Temp	36660.52	13142.05	24291.08	2453320.67	-1311368.73	-10249.85
Dead+Wind 180 deg+Ice+Temp	36660.54	-0.14	27626.19	2790392.49	-10014.19	-11050.49
Dead+Wind 210 deg+Ice+Temp	36660.52	-13142.30	24291.11	2453362.94	1291371.02	-8969.68
Dead+Wind 240 deg+Ice+Temp	36660.53	-23834.62	14918.67	1511752.13	2357852.99	-3095.55
Dead+Wind 270 deg+Ice+Temp	36660.54	-26850.38	-155.66	-25351.03	2671085.08	4493.65
Dead+Wind 300 deg+Ice+Temp	36660.55	-23244.99	-13568.67	-1366943.87	2322062.88	10402.79
Dead+Wind 330 deg+Ice+Temp	36660.53	-13720.16	-23544.67	-2358565.60	1371178.77	13134.05
Dead+Wind 0 deg - Service	22203.07	-0.04	-15711.31	-1539220.51	-4080.28	6790.26
Dead+Wind 30 deg - Service	22203.07	7517.51	-13070.45	-1292315.54	-745479.75	3557.07
Dead+Wind 60 deg - Service	22203.07	12763.66	-7460.16	-741122.56	-1265259.89	530.11
Dead+Wind 90 deg - Service	22203.07	14833.54	-11.28	-3614.63	-1462857.32	-2286.50
Dead+Wind 120 deg - Service	22203.07	13302.95	8318.65	819664.12	-1299362.58	-4717.65
Dead+Wind 150 deg - Service	22203.07	7341.12	13397.33	1325928.06	-725168.19	-6225.32
Dead+Wind 180 deg - Service	22203.07	-0.05	15187.20	1506933.81	-4082.54	-6538.36
Dead+Wind 210 deg - Service	22203.07	-7341.23	13397.34	1325942.54	717010.18	-5207.24
Dead+Wind 240 deg - Service	22203.07	-13303.07	8318.67	819677.18	1291223.78	-2073.66
Dead+Wind 270 deg - Service	22203.07	-14833.66	-11.28	-3617.23	1454729.41	2286.56
Dead+Wind 300 deg - Service	22203.07	-12763.76	-7460.17	-741139.50	1257125.04	6007.95

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead+Wind 330 deg - Service	22203.07	-7517.60	-13070.46	-1292332.53	737327.52	7874.79

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	-22203.11	-0.00	0.00	22203.11	-0.00	0.000%
2	0.00	-22203.11	-27948.79	0.00	22202.96	27928.98	0.055%
3	13374.00	-22203.11	-23251.51	-13364.41	22203.22	23236.64	0.051%
4	22706.75	-22203.11	-13271.75	-22690.57	22202.97	13262.32	0.054%
5	26388.31	-22203.11	-20.80	-26370.72	22202.73	19.29	0.051%
6	23664.55	-22203.11	14797.93	-23647.87	22202.96	-14787.39	0.055%
7	13059.05	-22203.11	23833.53	-13051.44	22202.98	-23817.16	0.051%
8	0.00	-22203.11	27018.05	0.02	22202.97	-26998.92	0.055%
9	-13059.05	-22203.11	23833.53	13051.71	22202.73	-23816.96	0.052%
10	-23664.55	-22203.11	14797.93	23647.98	22202.96	-14787.44	0.055%
11	-26388.31	-22203.11	-20.80	26370.83	22202.74	19.28	0.051%
12	-22706.75	-22203.11	-13271.75	22690.66	22202.98	13262.35	0.054%
13	-13374.00	-22203.11	-23251.51	13364.12	22202.98	23236.75	0.051%
14	0.00	-36660.68	-0.00	0.47	36660.56	-0.29	0.002%
15	0.00	-36660.68	-28135.24	0.11	36660.53	28116.35	0.041%
16	13730.52	-36660.68	-23560.88	-13719.93	36660.53	23544.65	0.042%
17	23259.52	-36660.68	-13577.27	-23244.76	36660.54	13568.65	0.038%
18	26869.09	-36660.68	-156.74	-26850.07	36660.53	155.68	0.042%
19	23850.25	-36660.68	14928.78	-23834.33	36660.53	-14918.64	0.041%
20	13150.57	-36660.68	24308.73	-13142.05	36660.52	-24291.08	0.043%
21	0.00	-36660.68	27643.63	0.14	36660.54	-27626.19	0.038%
22	-13150.57	-36660.68	24308.73	13142.30	36660.52	-24291.11	0.042%
23	-23850.25	-36660.68	14928.78	23834.62	36660.53	-14918.67	0.040%
24	-26869.09	-36660.68	-156.74	26850.38	36660.54	155.66	0.041%
25	-23259.52	-36660.68	-13577.27	23244.99	36660.55	13568.67	0.037%
26	-13730.52	-36660.68	-23560.88	13720.16	36660.53	23544.67	0.042%
27	0.00	-22203.11	-15721.20	0.04	22203.07	15711.31	0.036%
28	7522.87	-22203.11	-13078.97	-7517.51	22203.07	13070.45	0.038%
29	12772.55	-22203.11	-7465.36	-12763.66	22203.07	7460.16	0.039%
30	14843.42	-22203.11	-11.70	-14833.54	22203.07	11.28	0.037%
31	13311.31	-22203.11	8323.84	-13302.95	22203.07	-8318.65	0.036%
32	7345.71	-22203.11	13406.36	-7341.12	22203.07	-13397.33	0.038%
33	-0.00	-22203.11	15197.65	0.05	22203.07	-15187.20	0.039%
34	-7345.71	-22203.11	13406.36	7341.23	22203.07	-13397.34	0.037%
35	-13311.31	-22203.11	8323.84	13303.07	22203.07	-8318.67	0.036%
36	-14843.42	-22203.11	-11.70	14833.66	22203.07	11.28	0.037%
37	-12772.55	-22203.11	-7465.36	12763.76	22203.07	7460.17	0.038%
38	-7522.87	-22203.11	-13078.97	7517.60	22203.07	13070.46	0.037%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	12	0.00017326	0.00019827
3	Yes	13	0.00016059	0.00018392

4	Yes	13	0.00017095	0.00019611
5	Yes	13	0.00016094	0.00018437
6	Yes	12	0.00017337	0.00019833
7	Yes	13	0.00016092	0.00018442
8	Yes	13	0.00017086	0.00019575
9	Yes	13	0.00016109	0.00018431
10	Yes	12	0.00017311	0.00019802
11	Yes	13	0.00016085	0.00018423
12	Yes	13	0.00017100	0.00019612
13	Yes	13	0.00016042	0.00018391
14	Yes	4	0.00000001	0.00008971
15	Yes	16	0.00016032	0.00018413
16	Yes	16	0.00016814	0.00019310
17	Yes	17	0.00014961	0.00017191
18	Yes	16	0.00016828	0.00019327
19	Yes	16	0.00016033	0.00018410
20	Yes	16	0.00016850	0.00019337
21	Yes	17	0.00014969	0.00017168
22	Yes	16	0.00016841	0.00019324
23	Yes	16	0.00015995	0.00018360
24	Yes	16	0.00016801	0.00019287
25	Yes	17	0.00014958	0.00017178
26	Yes	16	0.00016805	0.00019293
27	Yes	13	0.00000001	0.00017565
28	Yes	13	0.00000001	0.00018332
29	Yes	13	0.00000001	0.00019032
30	Yes	13	0.00000001	0.00018368
31	Yes	13	0.00000001	0.00017559
32	Yes	13	0.00000001	0.00018328
33	Yes	13	0.00000001	0.00018969
34	Yes	13	0.00000001	0.00018313
35	Yes	13	0.00000001	0.00017520
36	Yes	13	0.00000001	0.00018337
37	Yes	13	0.00000001	0.00019019
38	Yes	13	0.00000001	0.00018321

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	170 - 160	ROHN 2.5 STD	10.00	3.33	42.2 K=1.00	25.517	1.7040	-7361.09	43481.80	0.169
T2	160 - 140	ROHN 2.5 STD	20.03	4.01	50.8 K=1.00	24.233	1.7040	-30055.90	41294.30	0.728
T3	140 - 120	ROHN 3 STD	20.03	5.01	51.7 K=1.00	24.091	2.2285	-50498.10	53685.40	0.941
T4	120 - 100	ROHN 3.5 EH	20.03	6.68	61.3 K=1.00	22.489	3.6784	-70314.20	82723.10	0.850
T5	100 - 80	ROHN 4 X-STR	20.03	6.68	54.3 K=1.00	23.672	4.4074	-90403.60	104333.00	0.866
T6	80 - 60	ROHN 4 X-STR	20.04	6.68	54.3 K=1.00	23.671	4.4074	-109759.00	104327.00	1.052
T7	60 - 40	ROHN 5 X-STR	20.04	10.02	65.4 K=1.00	21.780	6.1120	-127020.00	133118.00	0.954

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T8	40 - 20	ROHN 6 EHS	20.03	10.02	54.0 K=1.00	23.713	6.7133	-146052.00	159191.00	0.917
T9	20 - 0	ROHN 6 EHS	20.03	10.02	54.0 K=1.00	23.713	6.7133	-164693.00	159190.00	1.035

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	170 - 160	L1 1/2x1 1/2x1/8	5.65	2.68	108.4 K=1.00	12.706	0.3594	-2343.52	4566.33	0.513
T2	160 - 140	L1 1/2x1 1/2x3/16	7.54	3.75	153.4 K=1.00	6.343	0.5273	-2640.78	3344.86	0.790
T3	140 - 120	L1 3/4x1 3/4x3/16	9.76	4.86	169.8 K=1.00	5.177	0.6211	-3236.10	3215.50	1.006
T4	120 - 100	L2 1/2x2 1/2x3/16	12.30	6.16	149.2 K=1.00	6.705	0.9020	-4069.45	6047.85	0.673
T5	100 - 80	L2 1/2x2 1/2x3/16	14.03	6.99	169.5 K=1.00	5.197	0.9020	-4482.01	4687.29	0.956
T6	80 - 60	L2 1/2x2 1/2x1/4	15.89	7.93	193.8 K=1.00	3.975	1.1900	-4446.17	4730.55	0.940
T7	60 - 40	L3x3x1/4	19.15	9.61	194.8 K=1.00	3.937	1.4400	-5234.61	5669.19	0.923
T8	40 - 20	L3x3x1/4	20.90	10.42	211.2 K=1.00	3.347	1.4400	-5651.70	4820.25	1.172
T9	20 - 0	KL/R > 200 (C) - 172 L3 1/2x3 1/2x1/4	21.78	10.87	187.9 K=1.00	4.229	1.6900	-6860.71	7147.01	0.960

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	170 - 160	L1 1/2x1 1/2x1/8	4.56	4.32	175.0 K=1.00	4.874	0.3594	-311.77	1751.62	0.178
T2	160 - 140	L2 1/2x2 1/2x3/16	4.56	4.32	104.7 K=1.00	12.370	0.9020	-61.48	11157.30	0.006

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	170 - 160	ROHN 2.5 STD	10.00	3.33	42.2	30.000	1.7040	5167.78	51121.50	0.101
T2	160 - 140	ROHN 2.5 STD	20.03	4.01	50.8	30.000	1.7040	25676.90	51121.50	0.502
T3	140 - 120	ROHN 3 STD	20.03	5.01	51.7	30.000	2.2285	43206.00	66854.10	0.646
T4	120 - 100	ROHN 3.5 EH	20.03	6.68	61.3	30.000	3.6784	60192.60	110352.00	0.545
T5	100 - 80	ROHN 4 X-STR	20.03	6.68	54.3	30.000	4.4074	78302.40	132223.00	0.592
T6	80 - 60	ROHN 4 X-STR	20.04	6.68	54.3	30.000	4.4074	94437.50	132223.00	0.714
T7	60 - 40	ROHN 5 X-STR	20.04	10.02	65.4	30.000	6.1120	108394.00	183359.00	0.591
T8	40 - 20	ROHN 6 EHS	20.03	10.02	54.0	30.000	6.7133	123297.00	201398.00	0.612
T9	20 - 0	ROHN 6 EHS	20.03	10.02	54.0	30.000	6.7133	137540.00	201398.00	0.683

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 $\frac{P}{P_a}$
T1	170 - 160	L1 1/2x1 1/2x1/8	5.65	2.68	69.0	32.500	0.2695	2320.29	8759.77	0.265
T2	160 - 140	L1 1/2x1 1/2x3/16	7.54	3.75	98.6	32.500	0.3955	2605.02	12854.00	0.203
T3	140 - 120	L1 3/4x1 3/4x3/16	9.76	4.86	108.6	32.500	0.4658	3174.01	15139.20	0.210
T4	120 - 100	L2 1/2x2 1/2x3/16	12.30	6.16	95.0	32.500	0.6765	4037.13	21986.30	0.184
T5	100 - 80	L2 1/2x2 1/2x3/16	13.45	6.70	103.4	32.500	0.6765	4290.43	21986.30	0.195
T6	80 - 60	L2 1/2x2 1/2x1/4	15.89	7.93	123.8	32.500	0.8925	4744.17	29006.30	0.164
T7	60 - 40	L3x3x1/4	19.15	9.61	124.0	32.500	1.0800	5644.83	35100.00	0.161
T8	40 - 20	L3x3x1/4	20.90	10.42	134.4	32.500	1.0800	6360.67	35100.00	0.181
T9	20 - 0	L3 1/2x3 1/2x1/4	22.68	11.31	124.6	32.500	1.2675	7019.04	41193.80	0.170

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	170 - 160	L1 1/2x1 1/2x1/8	4.56	4.32	111.4	21.600	0.3594	308.36	7762.50	0.040
T2	160 - 140	L2 1/2x2 1/2x3/16	4.56	4.32	66.6	21.600	0.9020	40.66	19483.20	0.002

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	170 - 160	Leg	ROHN 2.5 STD	2	-7361.09	57961.24	12.7	Pass
T2	160 - 140	Leg	ROHN 2.5 STD	27	-30055.90	55045.30	54.6	Pass
T3	140 - 120	Leg	ROHN 3 STD	63	-50498.10	71562.63	70.6	Pass
T4	120 - 100	Leg	ROHN 3.5 EH	90	-70314.20	110269.89	63.8	Pass
T5	100 - 80	Leg	ROHN 4 X-STR	111	-90403.60	139075.88	65.0	Pass
T6	80 - 60	Leg	ROHN 4 X-STR	132	-109759.00	139067.89	78.9	Pass
T7	60 - 40	Leg	ROHN 5 X-STR	152	-127020.00	177446.29	71.6	Pass
T8	40 - 20	Leg	ROHN 6 EHS	167	-146052.00	212201.59	68.8	Pass
T9	20 - 0	Leg	ROHN 6 EHS	182	-164693.00	212200.26	77.6	Pass
T1	170 - 160	Diagonal	L1 1/2x1 1/2x1/8	10	-2343.52	6086.92	38.5	Pass
T2	160 - 140	Diagonal	L1 1/2x1 1/2x3/16	34	-2640.78	4458.70	59.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T3	140 - 120	Diagonal	L1 3/4x1 3/4x3/16	67	-3236.10	4286.26	75.5	Pass
T4	120 - 100	Diagonal	L2 1/2x2 1/2x3/16	94	-4069.45	8061.78	50.5	Pass
T5	100 - 80	Diagonal	L2 1/2x2 1/2x3/16	115	-4482.01	6248.16	71.7	Pass
T6	80 - 60	Diagonal	L2 1/2x2 1/2x1/4	136	-4446.17	6305.82	70.5	Pass
T7	60 - 40	Diagonal	L3x3x1/4	157	-5234.61	7557.03	69.3	Pass
T8	40 - 20	Diagonal	L3x3x1/4	172	-5651.70	6425.39	88.0	Pass
T9	20 - 0	Diagonal	L3 1/2x3 1/2x1/4	193	-6860.71	9526.96	72.0	Pass
T1	170 - 160	Top Girt	L1 1/2x1 1/2x1/8	4	-311.77	2334.91	13.4	Pass
T2	160 - 140	Top Girt	L2 1/2x2 1/2x3/16	28	-61.48	14872.68	0.4	Pass
							Summary	
						Leg (T6)	78.9	Pass
						Diagonal (T8)	88.0	Pass
						Top Girt (T1)	13.4	Pass
						RATING =	**88.0**	**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: CT1083

Glastonbury PD
2108 Main Street
Glastonbury, CT 06033

December 1, 2014

EBI Project Number: 62146229

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	10.73 %

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

EBI Consulting
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December 1, 2014

AT&T Mobility – New England
Attn: Cameron Syme
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 01701

Emissions Analysis for Site: **CT1083 – Glastonbury PD**

EBI Consulting was directed to analyze the proposed AT&T facility located at **2108 Main Street, Glastonbury, 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 MHz and 800 MHz bands are 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the PCS and AWS 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 **2108 Main Street, Glastonbury, 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) 4 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 4 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.

3) 4 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.

4) 4 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 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.

6) 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.

7) 2 LTE channel (WCS Band - 2300 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 60 Watts

8) 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.

9) 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.

10) The antennas used in this modeling are the **Kathrein 800-10121** for 850 MHz and 1900 MHz (PCS) channels and the **CCI OPA-65R-LCUU-H6 /H8** for 700 MHz, 850 MHz, 1900 MHz and 2300 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Kathrein 800-10121** has a maximum gain of **11.5 dBd for 850 MHz and 13.8 dBd for 1900 MHz** at its main lobe. The **CCI OPA-65R-LCUU-H6/H8** has a maximum gain of **12/13.2 dBd for 700 MHz, 12.7/14.2 dBd for 850 MHz, 14.8/15 dBd for 1900 MHz and 15.3/15.6 dBd for 2300 MHz** at its main lobe. 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.

11) The antenna mounting height centerlines of the proposed antennas are **167 feet** above ground level (AGL).

12) 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:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121
Gain:	11.5 / 13.8 dBd	Gain:	14.9 / 11.3 dBd	Gain:	14.9 / 11.3 dBd
Height (AGL):	167 feet	Height (AGL):	167 feet	Height (AGL):	167 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	8	Channel Count	8	# PCS Channels:	8
Total TX Power:	240	Total TX Power:	240	# AWS Channels:	240
ERP (W):	2,881.32	ERP (W):	2,881.32	ERP (W):	2,881.32
Antenna A1 MPE%	0.81	Antenna B1 MPE%	0.81	Antenna C1 MPE%	0.81
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H8
Gain:	12/12.7/14.8/15.3 dBd	Gain:	12/12.7/14.8/15.3 dBd	Gain:	13.2/14.1/15/15.6 dBd
Height (AGL):	167 feet	Height (AGL):	167 feet	Height (AGL):	167 feet
Frequency Bands	700 MHz / 850 MHz / 1900 MHz (PCS) / 2300 MHz (WCS)	Frequency Bands	700 MHz / 850 MHz / 1900 MHz (PCS) / 2300 MHz (WCS)	Frequency Bands	700 MHz / 850 MHz / 1900 MHz (PCS) / 2300 MHz (WCS)
Channel Count	11	Channel Count	11	Channel Count	11
Total TX Power:	420	Total TX Power:	420	Total TX Power:	420
ERP (W):	5787.03	ERP (W):	5787.03	ERP (W):	6045.13
Antenna A2 MPE%	1.90	Antenna B2 MPE%	1.90	Antenna C2 MPE%	2.12
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H8
Gain:	12 / 14.8 dBd	Gain:	12 / 14.8 dBd	Gain:	13.2 / 15 dBd
Height (AGL):	167 feet	Height (AGL):	167 feet	Height (AGL):	167 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	3	Channel Count	3	Channel Count	3
Total TX Power:	180	Total TX Power:	180	Total TX Power:	180
ERP (W):	2468.13	ERP (W):	2468.13	ERP (W):	2492.30
Antenna A3 MPE%	1.45	Antenna B3 MPE%	1.45	Antenna C3 MPE%	0.81

Site Composite MPE%	
Carrier	**MPE%**
AT&T	**10.73 %**
No Additional Carriers Listed in the CSC MPE Database	NA
Site Total MPE %:	**10.73 %**

AT&T Sector 1 Total:	3.49%
AT&T Sector 2 Total:	3.49%
AT&T Sector 3 Total:	3.74%
Site Total:	**10.73 %**

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Summary

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

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

AT&T Sector	Power Density Value (%)
Sector 1:	3.49%
Sector 2:	3.49 %
Sector 3 :	3.74 %
AT&T Total:	10.73 %
Site Total:	10.73 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **10.73%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

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