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

February 1, 2016

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

RE: **Notice of Exempt Modification for AT&T/ LTE 3C Crown Site BU: 841294**
AT&T Site ID: CT2144
230 Guinea Road, Monroe, CT 06468
Latitude: 41° 20' 30.7"/ Longitude: -73° 16' 28.3"

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 236-foot level of the existing 240-foot monopole at 230 Guinea Road in Monroe, CT. The tower is owned by Crown Castle. The property is owned by the Town of Monroe. AT&T now intends to replace three (3) antennas with three (3) new CCI 700 MHz antennas. These antennas would be installed at the 236-foot level of the tower. AT&T also intends to install three (3) RRU12s and three (3) A2s.

In communications with the Town of Monroe, the original Zoning Approval for this tower is unavailable.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to Mr. Steve Vavrek, First Selectman, Town of Windsor, as well as the property owner, and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.

2. The proposed modifications will not require the extension of the site boundary.

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

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.

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

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Sincerely,

Jeffrey Barbadora
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
781-729-0053
Jeff.Barbadora@crowncastle.com

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: Mr. Steve Vavrek, First Selecctman, Town of Windsor
Town of Monroe
7 Fan Hill Road
Monroe, CT 06468

Town of Monroe
7 Fan Hill Road
Monroe, CT 06468

Terry, Dashanna

From: Donna Suszynski <dsuszynski@monroect.org>
Sent: Friday, January 22, 2016 9:35 AM
To: Terry, Dashanna
Cc: Barbadora, Jeff; Joseph Chapman; Tanya Bombero; Vida Stone
Subject: RE: Zoning Documents - Tower at 230 Guinea Road
Attachments: ATT 230 Guinea Road Zoning Certificate.pdf; ATT 230 Guinea Road Zoning Certificate 3-11-2013.pdf

Good Morning Terry,
I have attached two(2) Zoning Compliance Certificates for the tower located at 230 Guinea Road. I have not found any information in the Land Use office regarding lease information pertaining to the original project. May I suggest you check with the First Selectman's office or our Town Clerk. They may have records which might be useful to you. Feel free to contact me with any other request.
Regards

Donna Suszynski
Land Use Coordinator
203-452-2809

From: Terry, Dashanna [mailto:Dashanna.Terry@crowncastle.com]
Sent: Thursday, January 21, 2016 10:25 AM
To: Donna Suszynski
Cc: Barbadora, Jeff
Subject: Zoning Documents - Tower at 230 Guinea Road

Good morning Donna,

I have an inquiry regarding original zoning documents for a tower and I am hoping you can provide more information.

We are applying for CSC Zoning Approval for tower modifications and new requirements ask that we procure original zoning documents from the jurisdiction, if possible. However, if these documents are not available, please let me know. The tower is located at 230 Guinea Road and according to lease documents this was have been approved around 1990 – the town owns the property and signed the lease at that time.

If you have any questions, please don't hesitate to call or e-mail me.

Thank you,
Dashanna

DASHANNA TERRY
Real Estate Project Coordinator
T: (781) 970-0067| M: (571) 241-0984

12 Gill Street, Suite 5800, Woburn, MA 01801
Crowncastle.com

PROJECT INFORMATION

SCOPE OF WORK:

- REMOVE (1) EXISTING LTE ANTENNA PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) EXISTING ANTENNAS TO BE REMOVED.
- NEW AT&T ANTENNAS: (1) NEW ANTENNA PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW ANTENNAS; (6) EXISTING GSM/UMTS ANTENNAS TO REMAIN (2 PER SECTOR)
- AT&T RRUs: (1) NEW RRUs PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUs; (1) EXISTING RRU PER SECTOR TO REMAIN, FOR A TOTAL OF (3) EXISTING RRUs.
- (1) NEW A2 MODULE PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW A2 MODULES.

SITE ADDRESS: 230 GUINEA ROAD
MONROE, CT 06468

LATITUDE: 41.3418531 41° 20' 30.67116"N
LONGITUDE: −73.2745269 −73° 16' 28.29684"W

USID: 60427

TOWER OWNER:

TYPE OF SITE: LATTICE TOWER/INDOOR EQUIPMENT

TOWER HEIGHT: 245'−0"±
RAD CENTER: 236'−0"±

CURRENT USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

PROPOSED USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

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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:		

at&t MOBILITY

FA CODE: 10035068
SITE NUMBER: CT2144
SITE NAME: MONROE-GUINEA ROAD

VICINITY MAP

1. TAKE I−84W. 2. TAKE EXIT 11 TOWARD CT−34/DERBY/NEW HAVEN. 3. TURN RIGHT ONTO WASSERMAN WAY. 4. TURN RIGHT ONTO CT−34E/BERKSHIRE ROAD. 5. TAKE SLIGHT RIGHT ONTO TODY HILL ROAD. 6. CONTINUE ONTO BOTSFORD HILL ROAD. 7. CONTINUE ONTO MEADOW BROOK ROAD. 8. TURN LEFT ONTO PINE TREE HILL ROAD. 9. CONTINUE ONTO GUINEA ROAD. 10. ACCESS DRIVE WILL BE ON LEFT, AND IS SHORTLY AFTER GAYLOR DRIVE (ON RIGHT).

PROJECT TEAM

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

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

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

ENGINEERING:
COMPANY: COM−EX CONSULTANTS, LLC
ADDRESS: 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

GENERAL NOTES

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

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

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

COM−EX Consultants
4 SECOND AVENUE
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DENVILLE, NJ 07834
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT2144
SITE NAME: MONROE-GUINEA ROAD

230 GUINEA ROAD
MONROE, CT 06468
FAIRFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/02/15	ISSUED AS FINAL	AM	NDB	NDB

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

SEAL: STATE OF CONNECTICUT · NICHOLAS D. BARILE · 18643 · PROFESSIONAL ENGINEER

AT&T

DRAWING TITLE: TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV
15129−EMP	T−1	A

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

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

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

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

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

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

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

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

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

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

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

23. INFORMATION SHOWN ON THIS SET OF PLANS TAKEN FROM DRAWINGS PREPARED BY CHACOMPANIES FOR A RECENT UPGRADE DATED 04/05/2011. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.

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: CT2144
SITE NAME: MONROE-GUINEA ROAD

230 GUINEA ROAD
MONROE, CT 06468
FAIRFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/02/15	ISSUED AS FINAL	AM	NDB	NDB

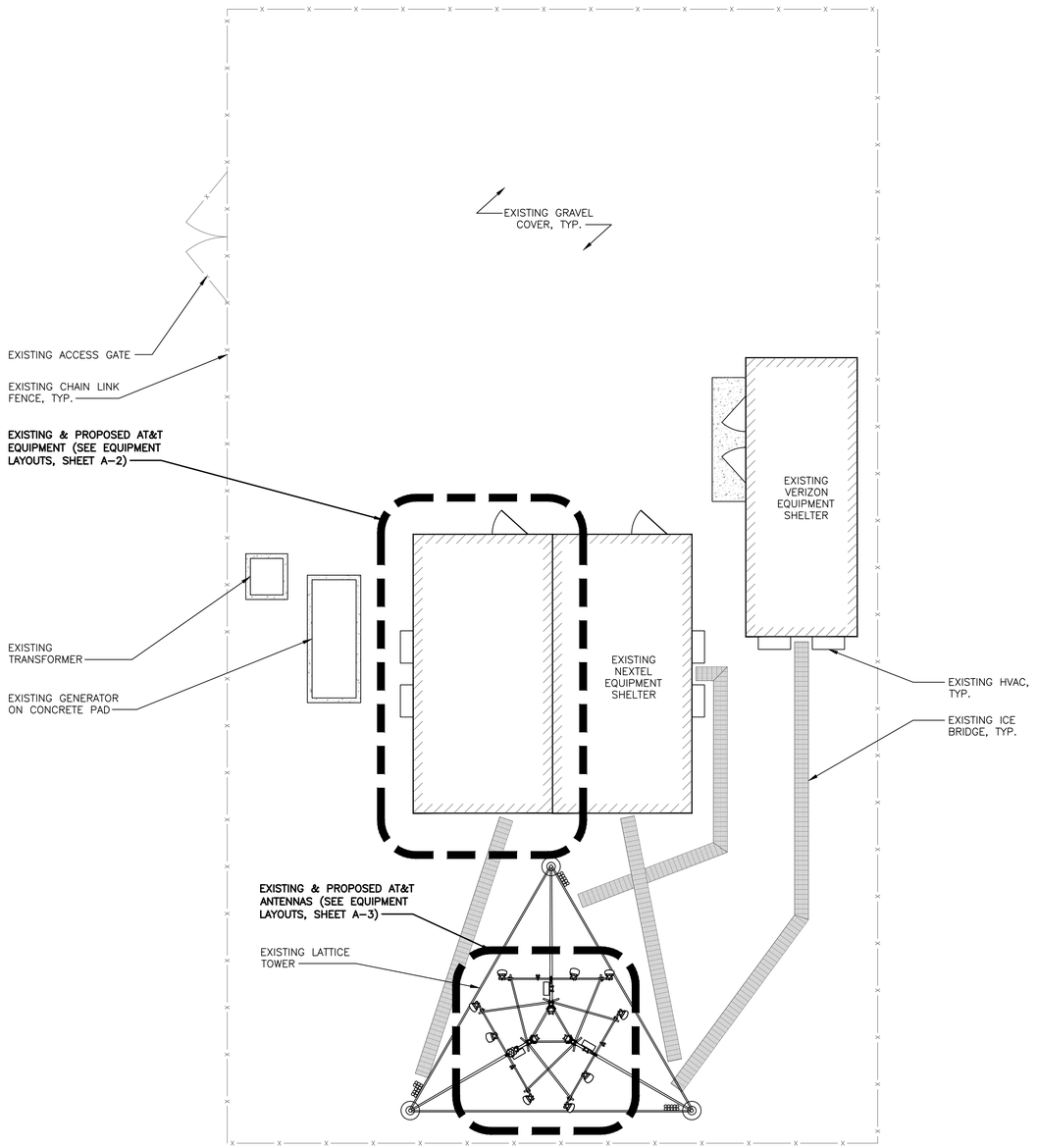
SCALE: AS SHOWN | DESIGNED BY: AM | DRAWN BY: AM

SEAL: STATE OF CONNECTICUT — NICHOLAS D. BARILE — PROFESSIONAL ENGINEER — LICENSE NO. 28643

AT&T

DRAWING TITLE: GROUNDING & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
15129-EMP	GN-1	A



COMPOUND LAYOUT

SCALE: 1/8" = 1'-0"

8 0 4 8 16 32

(IN FEET)

1/8 Inch = 1 Foot

NORTH

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

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EMPIRE telecom
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SITE NUMBER: CT2144
SITE NAME: MONROE-GUINEA ROAD

230 GUINEA ROAD
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FAIRFIELD COUNTY

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NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/02/15	ISSUED AS FINAL	AM	NDB	NDB

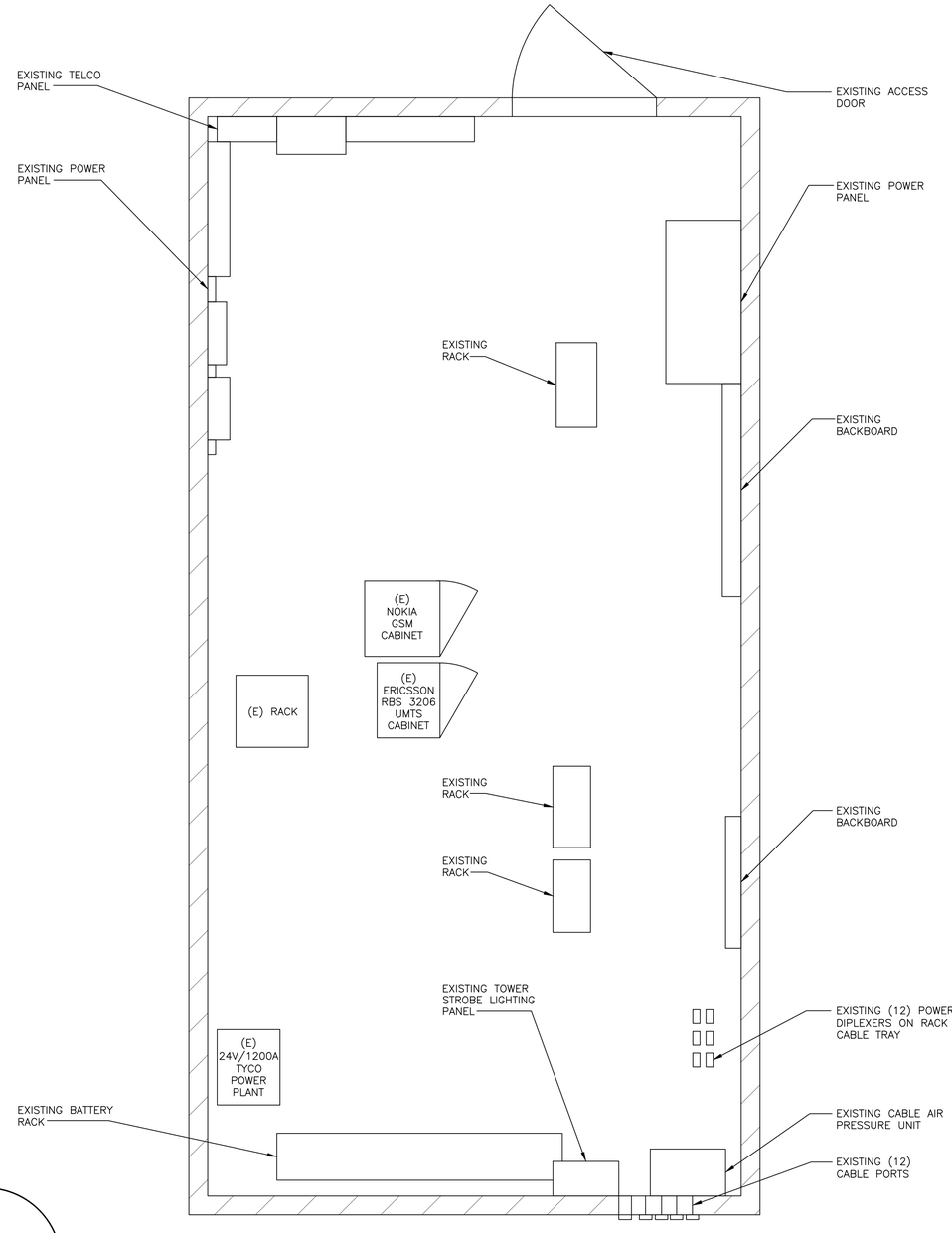
SCALE: AS SHOWN | DESIGNED BY: AM | DRAWN BY: AM

SEAL: STATE OF CONNECTICUT · NICHOLAS D. BARILE · PROFESSIONAL ENGINEER · LICENSE NO. 23643

AT&T

DRAWING TITLE:
COMPOUND LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
15129-EMP	A-1	A

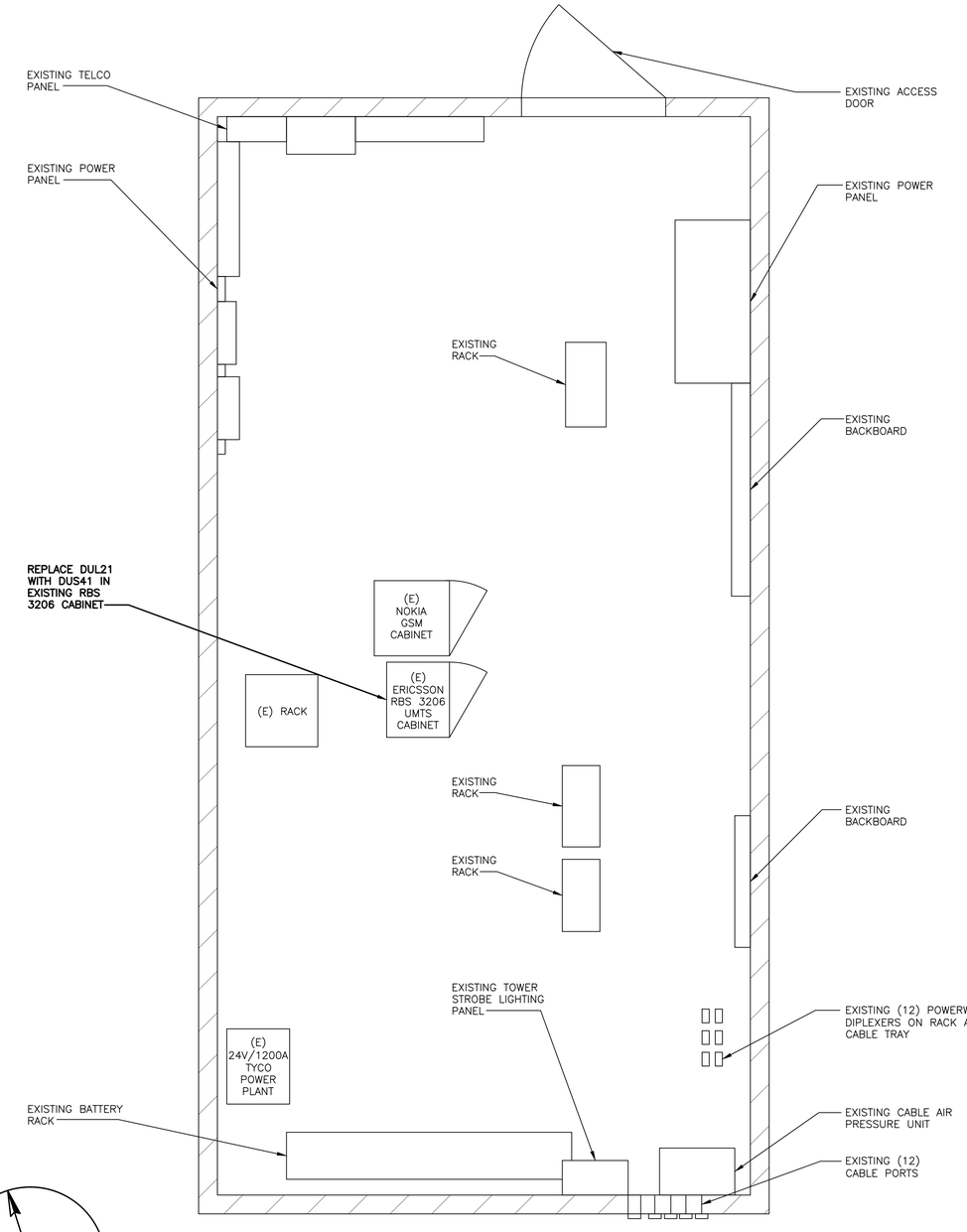


EXISTING EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot



PROPOSED EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot

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EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT2144
SITE NAME: MONROE-GUINEA ROAD

230 GUINEA ROAD
MONROE, CT 06468
FAIRFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/02/15	ISSUED AS FINAL	AM	NDB	NDB

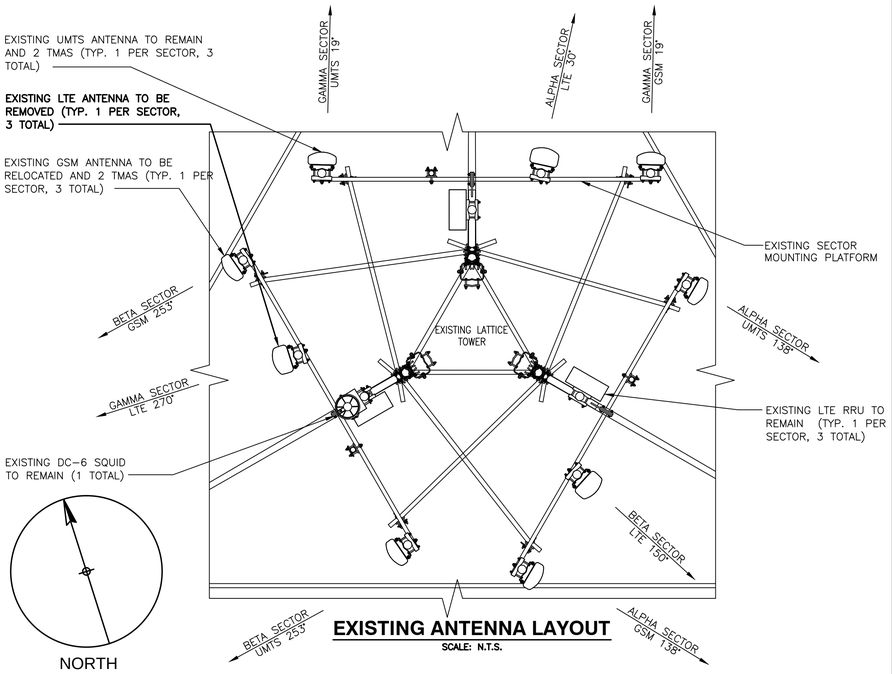
SCALE: AS SHOWN | DESIGNED BY: AM | DRAWN BY: AM

SEAL: STATE OF CONNECTICUT · NICHOLAS D. BARILE · LICENSE NO. 30643 · PROFESSIONAL ENGINEER

AT&T

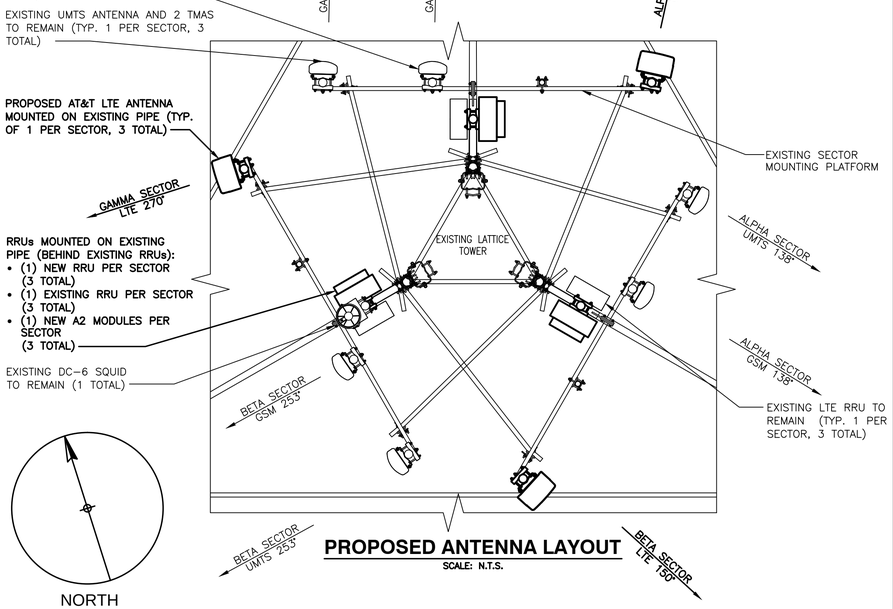
DRAWING TITLE: EQUIPMENT LAYOUTS

JOB NUMBER	DRAWING NUMBER	REV
15129-EMP	A-2	A



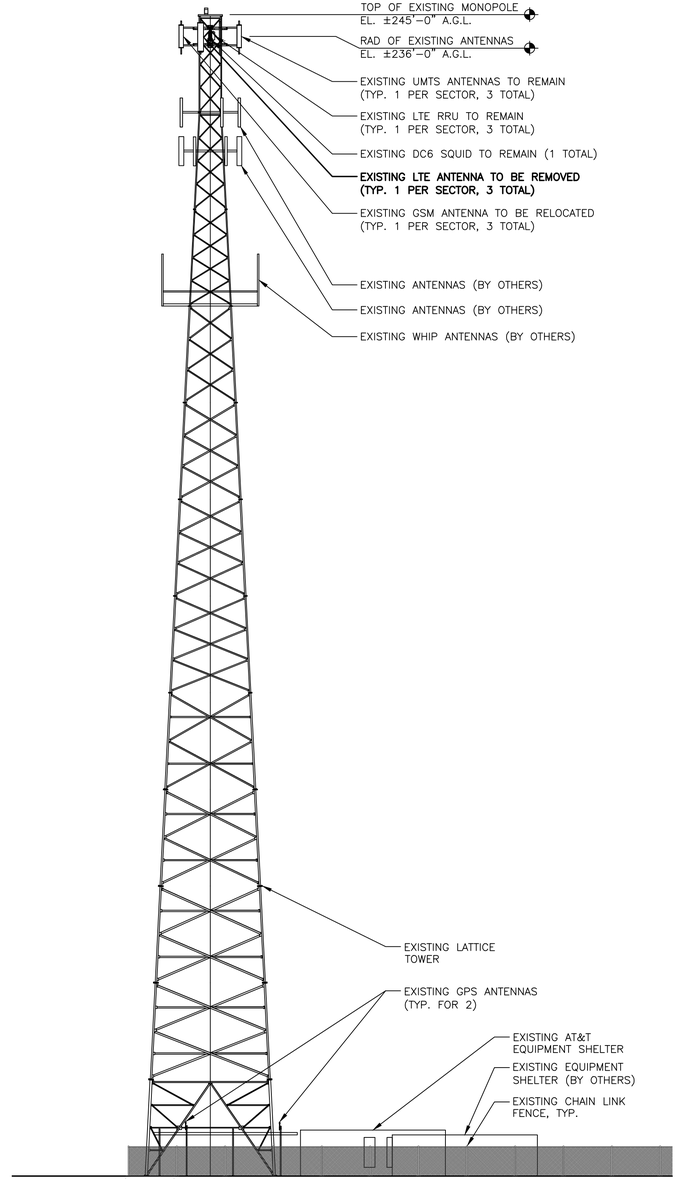
EXISTING ANTENNA LAYOUT

SCALE: N.T.S.



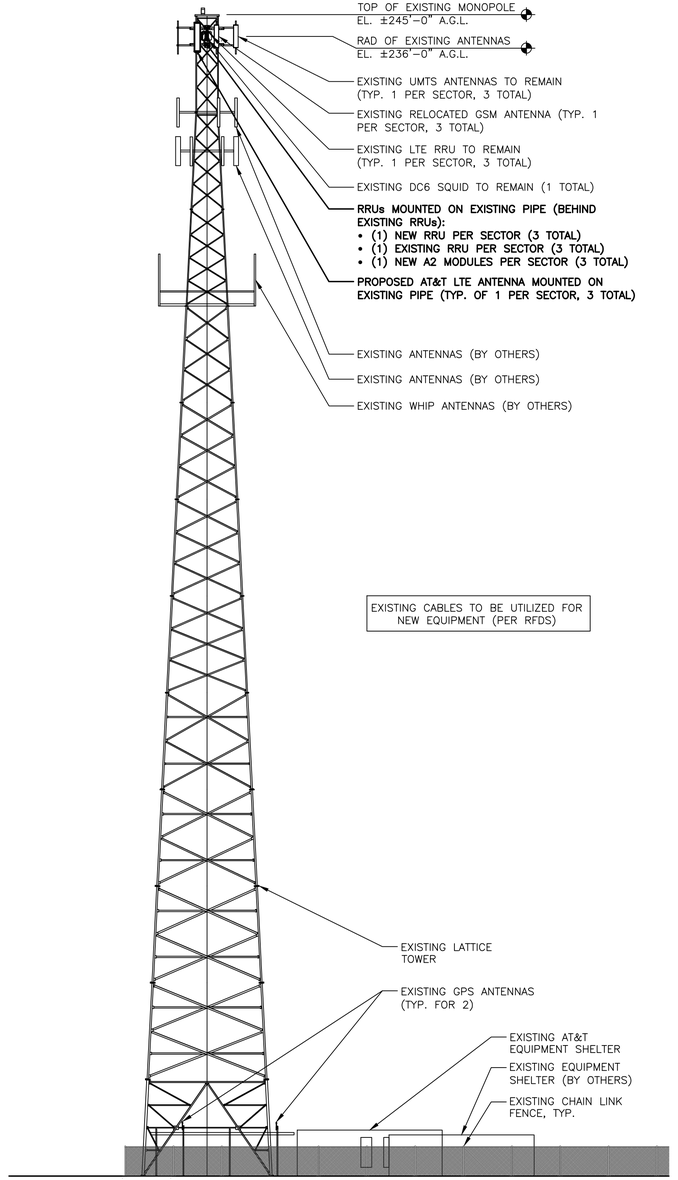
PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.



EXISTING TOWER ELEVATION

SCALE: NTS



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

PROPOSED TOWER ELEVATION

SCALE: NTS

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

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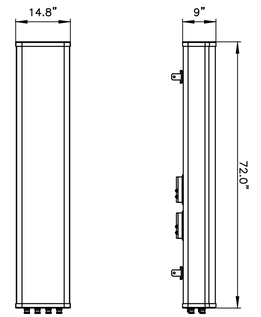
SEAL: STATE OF CONNECTICUT — NICHOLAS D. BARILE — LICENSED PROFESSIONAL ENGINEER

AT&T

DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
15129-EMP	A-3	A



FRONT VIEW

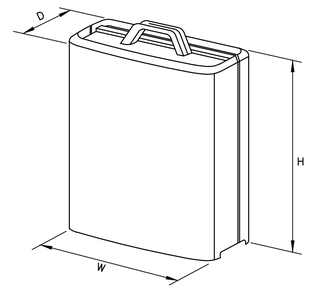
SIDE VIEW

BOTTOM VIEW

MANUFACTURER	CCI
MODEL	HPA-65R-BUU-H6
WEIGHT	50.7

LTE ANTENNA DETAIL

SCALE: N.T.S.



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

*DENOTES EXISTING.

RRUS DETAIL

SCALE: N.T.S.

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

AT&T

DRAWING TITLE:
DETAILS

JOB NUMBER	DRAWING NUMBER	REV
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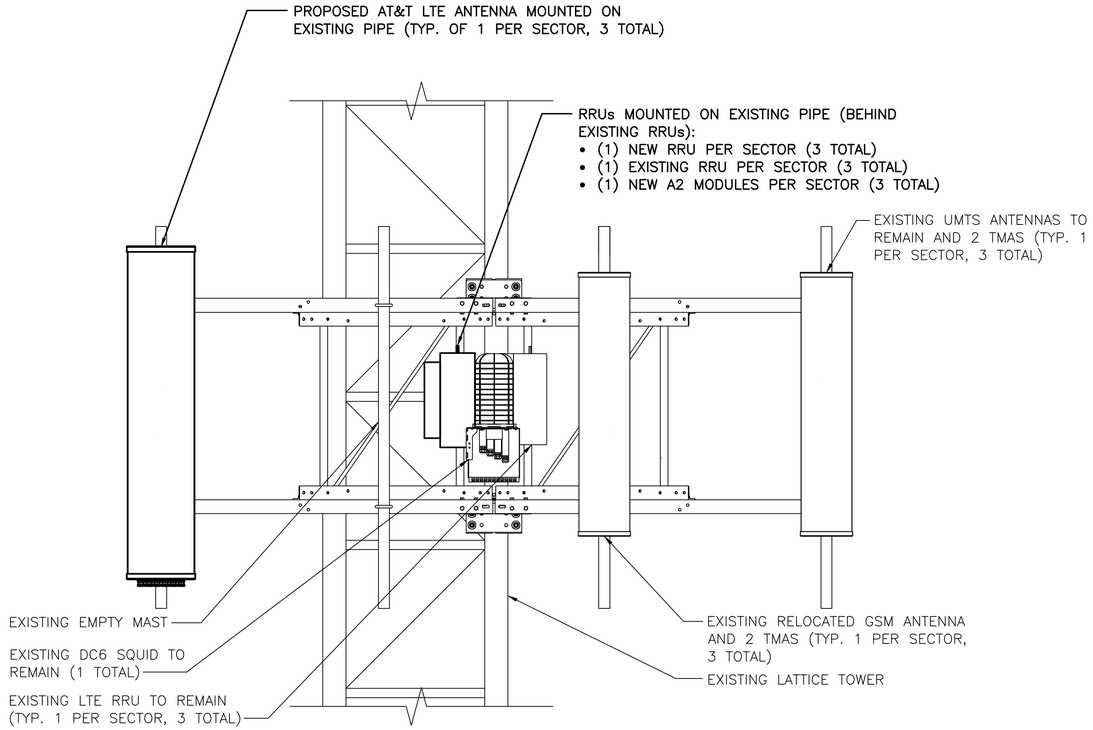
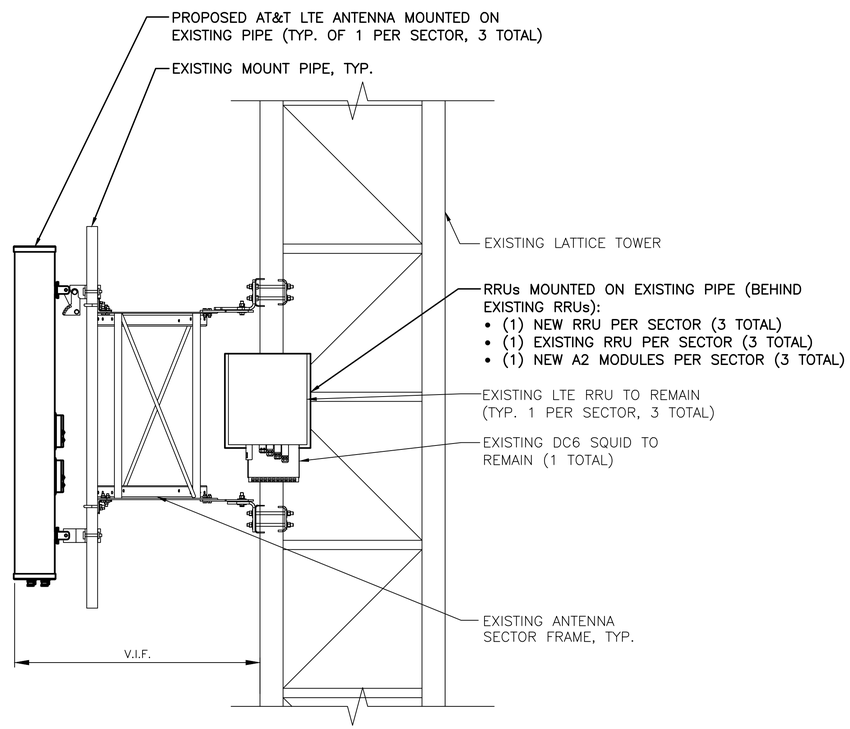


PROPOSED ANTENNA MOUNTING DETAIL (FRONT VIEW)

SCALE: N.T.S.



PROPOSED ANTENNA MOUNTING DETAIL (SIDE VIEW)

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE				
SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	–	–	–
	A3	POWERWAVE	P65–16–XLH–RR	72"x12"x6"
	A4	POWERWAVE	7770	55"x11"x5"
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	–	–	–
	B3	POWERWAVE	P65–16–XLH–RR	72"x12"x6"
	B4	POWERWAVE	7770	55"x11"x5"
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	–	–	–
	G3	POWERWAVE	P65–16–XLH–RR	72"x12"x6"
	G4	POWERWAVE	7770	55"x11"x5"

FINAL ANTENNA SCHEDULE				
SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	POWERWAVE	7770	55"x11"x5"
	A3	–	–	–
	A4	**CCI**	**HPA–65R–BUU–H6**	**72"x14.8"x9"**
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	POWERWAVE	7770	55"x11"x5"
	B3	–	–	–
	B4	**CCI**	**HPA–65R–BUU–H6**	**72"x14.8"x9"**
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	POWERWAVE	7770	55"x11"x5"
	G3	–	–	–
	G4	**CCI**	**HPA–65R–BUU–H6**	**72"x14.8"x9"**

PROPOSED RRU 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 (EXISTING)	19.7"x16.9"x7.2"		
BETA	**ERICSSON**	**RRUS–12**	**20.4"x18.5"x7.5"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**
	ERICSSON	RRUS–11 (EXISTING)	19.7"x16.9"x7.2"		
GAMMA	**ERICSSON**	**RRUS–12**	**20.4"x18.5"x7.5"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**
	ERICSSON	RRUS–11 (EXISTING)	19.7"x16.9"x7.2"		

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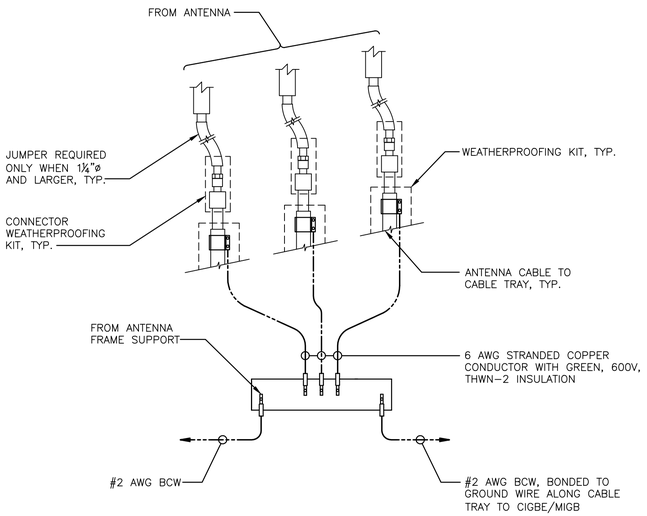
SCALE: AS SHOWN | DESIGNED BY: AM | DRAWN BY: AM

SEAL: STATE OF CONNECTICUT · NICHOLAS D. BARILE · LICENSED PROFESSIONAL ENGINEER · No. 28643

AT&T

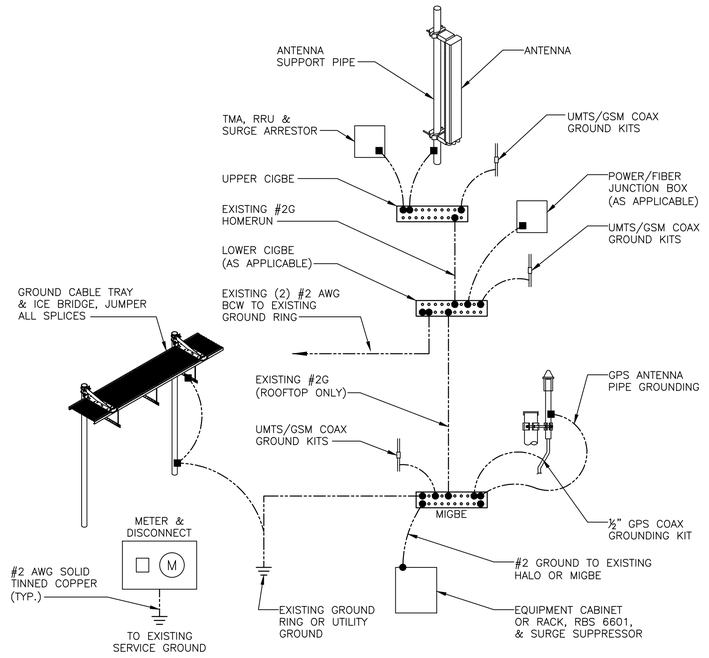
DRAWING TITLE: ANTENNA MOUNTING DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15129–EMP	A–5	A



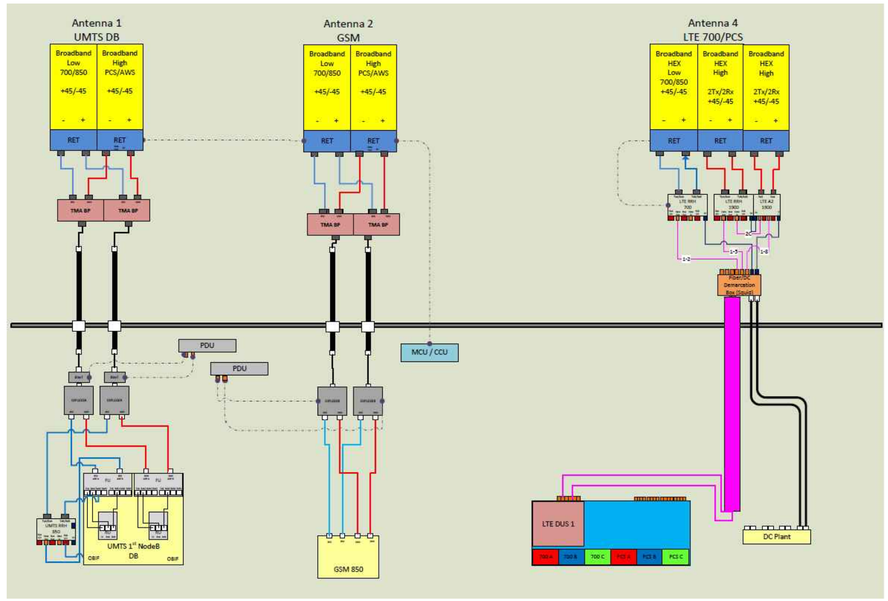
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



GROUNDING RISER DIAGRAM

SCALE: N.T.S.



TYPICAL PLUMBING DIAGRAM (PER SECTOR)

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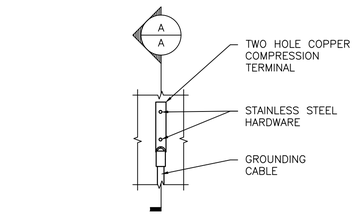
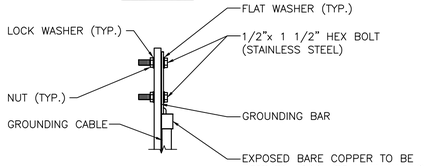


ELEVATION



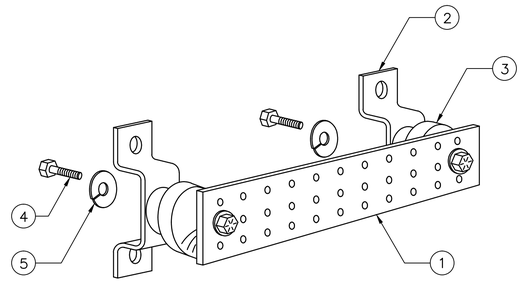
SECTION "A–A"

NOTE:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



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

NOTES:

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

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

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

GROUND BAR DETAIL

SCALE: N.T.S.

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

AT&T

DRAWING TITLE: GROUNDING, ONE-LINE DIAGRAM & DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15129-EMP	G-1	A

Date: **November 20, 2015**

GPD Engineering and Architecture
Professional Corporation

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Crown Castle
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Charlotte, NC 28277
(704) 405-6580

520 S. Main St., Suite 2531
Akron, OH 44311
(216) 927-8663
dpalkovic@gpdgroup.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Name:	Monroe - Guinea Road
	Carrier Site Number:	CT2144
Crown Castle Designation:	**Crown Castle BU Number:**	841294
	Crown Castle Site Name:	MONROE-GUINEA ROAD
	Crown Castle JDE Job Number:	355203
	Crown Castle Work Order Number:	1153142
	Crown Castle Application Number:	319144 Rev. 1
Engineering Firm Designation:	**GPD Project Number:**	2016777.841294.09
Site Data:	**230 GUINEA ROAD, MONROE, Fairfield County, CT 06468** **Latitude *41° 20' 30.7"*, Longitude *-73° 16' 28.3"*** **242.9 Foot – Modified Rohn Self Support Tower**	

Dear Marianne Dunst,

GPD is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 846165, in accordance with application 319144, revision 1.

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

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

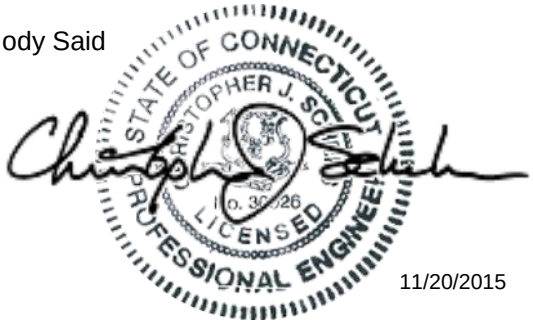
The analysis has been performed in accordance with the TIA/EIA-222-F standard, and the 2005 CT State Building Code based upon a wind speed of 85 mph fastest mile.

The structure has sufficient capacity once the loading changes described in the Recommendations section of this report are completed.

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

Structural Analysis Prepared by: Mody Said

Respectfully submitted by:



Christopher J. Scheks, P.E.
Connecticut #: 0030026

11/20/2015

TABLE OF CONTENTS

1) INTRODUCTION

The existing 242.9 ft self support tower is supported on three legs and has twelve major sections. It has a triangular cross section made of bolted connections with a “K down” bracing configuration from 0' to 40.7' and an "X" bracing configuration from 40.7’ to 242.9’. The tower is fabricated with round pipe legs and pipe bracing members 0’ to 40’ and angle bracing members from 40.7’ to 242.9’. The tower is galvanized and has tower lighting.

This tower is a 242.9 ft self-support tower designed by Rohn in June of 1990. The tower was originally designed for a wind pressure of 40 psf per EIA-222-C.

The modifications designed by GPD (Job #: 2009268.80 Rev. A, dated 10/20/2009), have been considered in this analysis. The modifications consist of replacing the diagonal members from 20.3’ to 40.7’ and replacing the diagonal member bolts from 142.0’ to 162.2’.

The modifications designed by GPD (Project #: 2014777.841294.04, dated 9/22/2014) were considered in the analysis. They consist of replacing the bent top girts at 242.9’, replacing the diagonals from 121.8’-162.2’, and replacing the diagonal bolts from 101.6’-121.8’ and 162’-182.4’.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 38 mph with 0.75 inch ice thickness (in accordance with ASCE7-05 ice conditions) and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
236	236	3	CCI ANTENNAS	HPA-65R-BUU-H6	1	3/8	1,2
		3	Ericsson	RRUS 12 B2/RRUS A2			
		6	Powerwave	LGP21401			

Notes:
1) Equipment elevations are measured from the bottom of tower steel which is 2ft above ground level.
2) See Appendix B for the proposed coax layout.

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
240	240	1		Side Arm Mount [SO 303-3]	1	1/2	1
	237	1	Decibel	DB806-XC			
		1	Kathrein	FMO			
236	236	3	Powerwave	P65-16-XLH-RR			1,2
		6	Powerwave	LGP13519			
		6	Powerwave	RA21.7770.00	12 2 2	1-5/8 3/8 5/8	1
		6	Powerwave	LGP21401			
		3	Ericsson	RRUS 11 B12			
		1	Raycap	DC6-48-60-18-8F			
		1		Pipe Mount [PM 601-3]			
		1		Sector Mount [SM 201-3]			
215	218	6	Andrew	HBXX-6517DS-VTM	1	1-5/8	1,3
		3	Andrew	LNX-8514DS-VTM			
		3	Alcatel Lucent	RRH2X60-AWS			
		3	Alcatel Lucent	RRH2X60-PCS			
		1	Andrew	BXA-70063-4CF-EDIN-6	18	1-5/8	1
		2	Andrew	BXA-70063-6CF-2			
	215	1		Sector Mount [SM 503-3]			
	212	1	RFS Celwave	DB-T1-6Z-8AB-0Z			1,3
201	207	2	Kathrein	OG-4	2	1-1/4	1
	201	2		Side Arm Mount [SO 306-1]			
186	189	1	Andrew	DB589-A	1 1	7/8 1/2	1
	186	1		Side Arm Mount [SO 308-1]			
	184	1	Andrew	DB589-A			
12	12	1	Scala	TY-840	1	1/2	1

Notes:
1) Equipment elevations are measured from the bottom of tower steel which is 2ft above ground level.
2) Existing equipment to be removed to be removed; not considered in this analysis.
3) Reserved equipment.

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Tower Manufacturer Drawings	Rohn ENG. File #: 25692, dated: 07/05/1990	Doc ID: 4841385	CCISITES
Tower Foundation Investigation	WEI Project #: 2009-901, dated 09/16/2009	D. Palkovic	GPD
Tower Foundation Investigation	GPD Project #: 2015777.841294.06, dated 06/11/2015	Doc ID: 4468667	CCISITES
Geotechnical Report	WEI Project #: 2009-901, dated 09/16/2009	Doc ID: 4468666	CCISITES
Boring Log Review	GPD Project #: 2015777.841294.07, dated 06/17/2015	Doc ID: 5751301	CCISITES
Tower Reinforcement Design	GPD Project #: 2009268.80 Rev. A, dated 10/12/2009	Doc ID: 4601540	CCISITES
Post-Modification Inspection	GPD Project #: 2009591.00, dated 01/13/2010	Doc ID: 4710154	CCISITES
Tower Reinforcement Design	GPD Job #: 2014777.841294.04, dated 09/22/2014	Doc ID: 5306639	CCISITES
Post-Modification Inspection	GPD Job #: 2015777.841294.05, dated 06/17/2015	Doc ID: 5750961	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA-222-F.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_{allow} (K)	% Capacity	Pass / Fail
T1	244.917 - 224.792	Leg	ROHN 2.5 STD	1	-14.04	54.96	25.5	Pass
T2	224.792 - 204.625	Leg	ROHN 3 EH	37	-43.63	95.77	45.6	Pass
T3	204.625 - 184.438	Leg	ROHN 3.5 EH	67	-72.70	109.77	66.2	Pass
T4	184.438 - 164.229	Leg	ROHN 4 EH	88	-101.28	138.52	73.1	Pass
T5	164.229 - 144.021	Leg	ROHN 5 EH	109	-129.07	205.72	62.7	Pass
T6	144.021 - 123.813	Leg	ROHN 5 EH	130	-153.95	176.42	87.3	Pass
T7	123.813 - 103.604	Leg	ROHN 6 EH	145	-181.30	263.24	68.9	Pass
T8	103.604 - 83.3333	Leg	ROHN 6 EH	160	-209.19	262.93	79.6	Pass
T9	83.3333 - 63	Leg	ROHN 6 EH	175	-237.41	262.62	90.4	Pass
T10	63 - 42.6667	Leg	ROHN 8 EHS	190	-265.93	331.26	80.3	Pass
T11	42.6667 - 22.3334	Leg	ROHN 8 EHS	205	-271.61	331.26	82.0	Pass
T12	22.3334 - 2	Leg	ROHN 8 EH	238	-327.55	433.93	75.5	Pass
T1	244.917 - 224.792	Diagonal	L1 3/4x1 3/4x3/16	7	-2.78	7.79	35.7 54.1 (b)	Pass
T2	224.792 - 204.625	Diagonal	L1 3/4x1 3/4x3/16	44	-4.33	4.40	98.4	Pass
T3	204.625 - 184.438	Diagonal	L2 1/2x2 1/2x3/16	71	-5.39	8.09	66.6 98.5 (b)	Pass
T4	184.438 - 164.229	Diagonal	L2 1/2x2 1/2x1/4	92	-5.86	7.98	73.4 80.3 (b)	Pass
T5	164.229 - 144.021	Diagonal	L2 1/2x2 1/2x5/16	113	-6.38	7.61	83.8	Pass
T6	144.021 - 123.813	Diagonal	L3x3x5/16	134	-7.59	9.05	83.9 88.4 (b)	Pass
T7	123.813 - 103.604	Diagonal	L3 1/2x3 1/2x1/4	149	-8.32	10.03	82.9	Pass
T8	103.604 - 83.3333	Diagonal	L4x4x5/16	164	-9.14	15.60	58.6 73.9 (b)	Pass
T9	83.3333 - 63	Diagonal	L4x4x5/16	179	-9.95	13.25	75.1 80.5 (b)	Pass
T10	63 - 42.6667	Diagonal	L4x4x5/16	194	-10.77	11.53	93.3	Pass
T11	42.6667 - 22.3334	Diagonal	ROHN 3 STD	212	-18.91	27.34	69.2	Pass
T12	22.3334 - 2	Diagonal	ROHN 3 STD	245	-18.70	26.15	71.5	Pass
T11	42.6667 - 22.3334	Horizontal	ROHN 2.5 STD	208	-10.38	13.36	77.7	Pass
T12	22.3334 - 2	Horizontal	ROHN 3 STD	241	-10.79	22.37	48.3	Pass
T1	244.917 - 224.792	Top Girt	L2x2x1/8	5	-0.03	2.83	1.0	Pass
T2	224.792 - 204.625	Top Girt	L1 3/4x1 3/4x3/16	41	-0.26	2.71	9.4	Pass
T11	42.6667 - 22.3334	Redund Horz 1 Bracing	ROHN 1.5 STD	210	-4.71	11.29	41.7	Pass
T12	22.3334 - 2	Redund Horz 1 Bracing	ROHN 1.5 STD	243	-5.68	9.69	58.6	Pass
T11	42.6667 - 22.3334	Redund Diag 1 Bracing	ROHN 2 STD	211	-4.29	7.52	57.0	Pass
T12	22.3334 - 2	Redund Diag 1 Bracing	ROHN 2 STD	244	-4.87	7.14	68.3	Pass
T11	42.6667 - 22.3334	Redund Hip 1 Bracing	ROHN 1.5 STD	233	-0.03	10.23	0.3	Pass
T12	22.3334 - 2	Redund Hip 1 Bracing	ROHN 1.5 STD	266	-0.02	8.72	0.3	Pass
T11	42.6667 - 22.3334	Redund Hip Diagonal Bracing	Rohn 2.5 STD	232	-0.05	6.71	0.7	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_{allow} (K)	% Capacity	Pass / Fail
T12	22.3334 - 2	Redund Hip Diagonal Bracing	Rohn 2.5 STD	265	-0.05	6.16	0.8	Pass
T11	42.6667 - 22.3334	Inner Bracing	ROHN 2 STD	237	-0.01	4.12	0.6	Pass
T12	22.3334 - 2	Inner Bracing	ROHN 3 STD	270	-0.01	15.93	0.5	Pass
						Summary	ELC:	Load Case 7
						Leg (T9)	90.4	Pass
						Diagonal (T3)	98.5	Pass
						Horizontal (T11)	77.7	Pass
						Top Girt (T2)	9.4	Pass
						Redund Horz 1 Bracing (T12)	58.6	Pass
						Redund Diag 1 Bracing (T12)	68.3	Pass
						Redund Hip 1 Bracing (T11)	0.3	Pass
						Redund Hip Diagonal Bracing (T12)	0.8	Pass
						Inner Bracing (T11)	0.6	Pass
						Bolt Checks	98.5	Pass
						Rating =	98.5	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
-	Anchor Rods	0	63.5	Pass
1	Base Foundation Soil Interaction	0	85.6	Pass
1	Base Foundation Structure	0	57.1	Pass

Structure Rating (max from all components) =	**98.5%**

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

4.1) Recommendations

The modified tower and its foundation are sufficient for the proposed loading and do not require additional modifications once the following loading changes are completed:

- Restack the (12) 1-5/8” coax to the 236 FT to be three rows of four coax. Refer to Appendix B for the base level drawing that reflects the coax configuration.

5) DISCLAIMER OF WARRANTIES

GPD has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

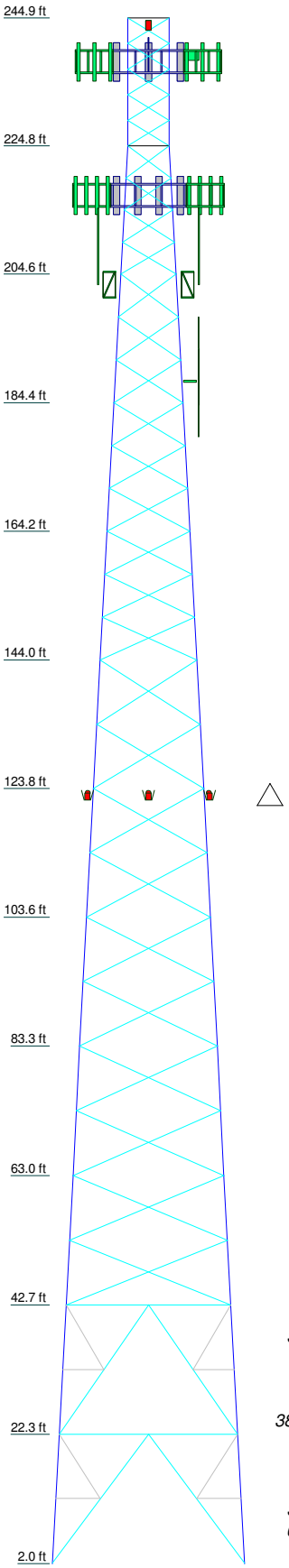
Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

TNXTOWER OUTPUT

Section	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 8 EH	ROHN 8 EHS			ROHN 6 EH		ROHN 5 EH		ROHN 4 EH	ROHN 3.5 EH	ROHN 3 EH	ROHN 2.5 STD
Leg Grade						A572-50						
Diagonals	ROHN 3 STD			L4x4x5/16		L3 1/2x3 1/2x1/4	L3x3x5/16	L2 1/2x2 1/2x5/16	L2 1/2x2 1/2x1/4	L2 1/2x2 1/2x3/16	L1 3/4x1 3/4x3/16	
Diagonal Grade	A572-50	A500-42		A572-50		N.A.	A36					
Top Girts											L1 3/4x1 3/4x3/16	L2x2x1/8
Horizontals	ROHN 3 STD	ROHN 2.5 STD						N.A.				
Red. Horizontals		ROHN 1.5 STD						N.A.				
Red. Diagonals		ROHN 2 STD						N.A.				
Red. Hips		ROHN 1.5 STD						N.A.				
Inner Bracing	ROHN 3 STD	ROHN 2 STD						N.A.				
Face Width (ft)	28.0303	25.8835	23.7367	21.59	19.4432	17.2964	15.1496	13.0028	10.8561	8.70928		6.5625
# Panels @ (ft)	1 @ 20.25	1 @ 20.3333	4 @ 10.1667	2 @ 10.1354	4 @ 10.1042		6 @ 6.73611			3 @ 6.72917	4 @ 5.04167	5 @ 4.025
Weight (K)	5.5	4.4	4.7	4.2	4.0	3.2	2.7	2.7	1.9	1.4	1.1	0.9
36.5												



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Flash Beacon Lighting	243	BXA-70063-6CF-2 w/ Mount Pipe	217
Side Arm Mount [SO 303-1]	242	(2) HBXX-6517DS-VTM w/ Mount Pipe	217
DB806-XC	242	(2) HBXX-6517DS-VTM w/ Mount Pipe	217
FMO	242	(2) HBXX-6517DS-VTM w/ Mount Pipe	217
Sector Mount [SM 201-3]	238	LNX-8514DS-VTM w/ Mount Pipe	217
Pipe Mount [PM 601-3]	238	LNX-8514DS-VTM w/ Mount Pipe	217
(2) RA21.7770.00	238	LNX-8514DS-VTM w/ Mount Pipe	217
(2) RA21.7770.00	238	RRH2X60-AWS	217
(2) RA21.7770.00	238	RRH2X60-AWS	217
HPA-65R-BUU-H6	238	RRH2X60-AWS	217
HPA-65R-BUU-H6	238	RRH2X60-PCS	217
HPA-65R-BUU-H6	238	RRH2X60-PCS	217
(2) LGP21401	238	RRH2X60-PCS	217
(2) LGP21401	238	DB-T1-6Z-8AB-0Z	217
(2) LGP21401	238	Side Arm Mount [SO 306-1]	203
RRUS 11 B12	238	Side Arm Mount [SO 306-1]	203
RRUS 11 B12	238	OG-4	203
RRUS 11 B12	238	OG-4	203
DC6-48-60-18-8F Surge Suppression Unit	238	Side Arm Mount [SO 308-1]	188
		DB589-A	188
RRUS 12 B2/RRUS A2	238	DB589-A	188
RRUS 12 B2/RRUS A2	238	17' Side Light Mount	122
RRUS 12 B2/RRUS A2	238	17' Side Light Mount	122
(2) LGP21401	238	Side Light	122
(2) LGP21401	238	Side Light	122
(2) LGP21401	238	Side Light	122
Sector Mount [SM 503-3]	217	TY-840	14
BXA-70063-6CF-2 w/ Mount Pipe	217		
BXA-70063-4CF-EDIN-6 w/ Mount Pipe	217		

MATERIAL STRENGTH

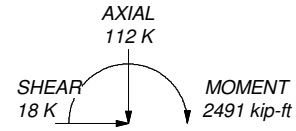
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A500-42	42 ksi	58 ksi
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

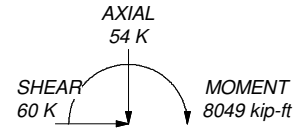
1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 98.5%

MAX. CORNER REACTIONS AT BASE:
DOWN: 326 K
SHEAR: 36 K

UPLIFT: -273 K
SHEAR: 31 K



TORQUE 6 kip-ft
38 mph WIND - 0.7500 in ICE



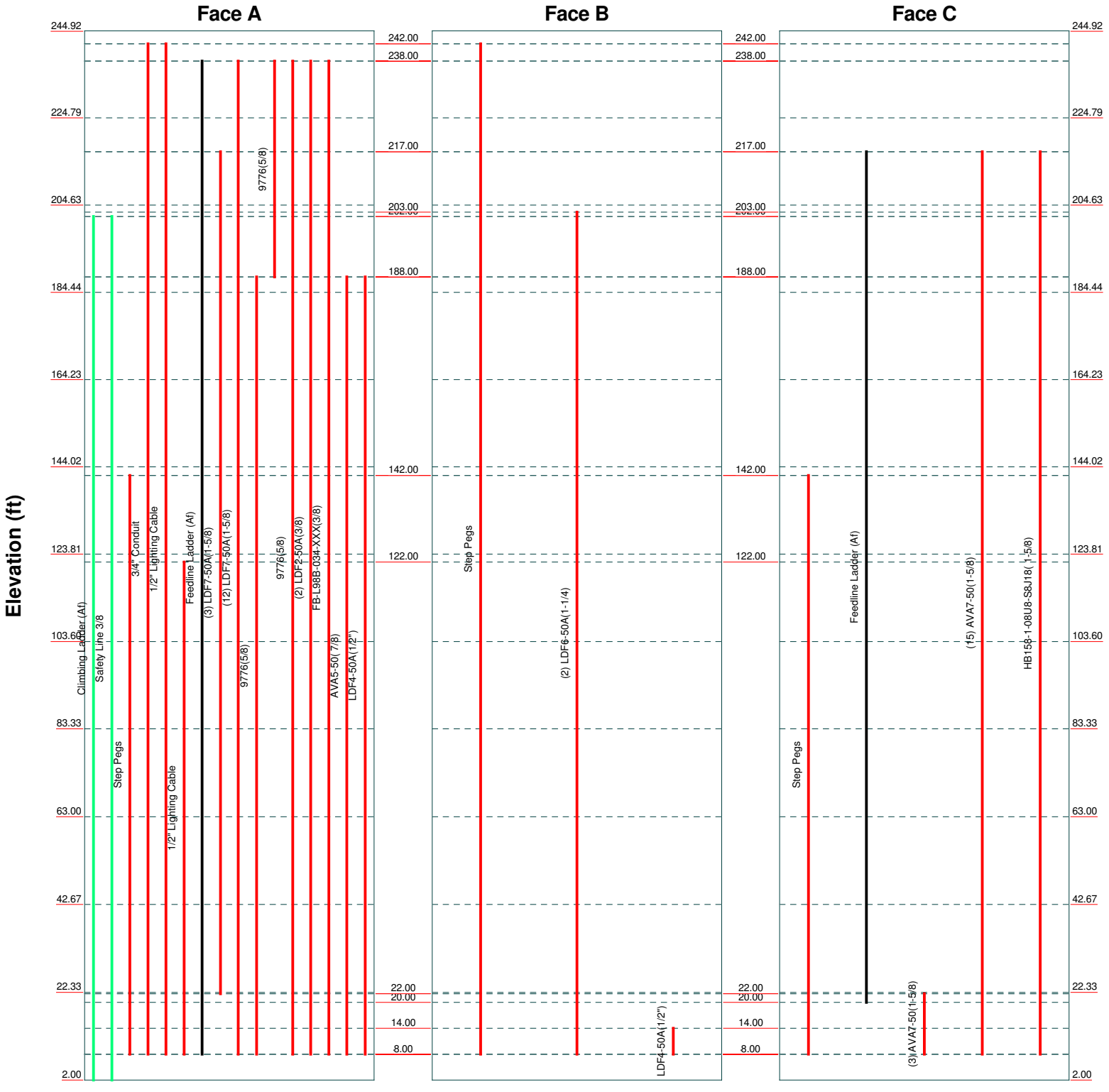
TORQUE 33 kip-ft
REACTIONS - 85 mph WIND

GPD
520 S. Main Street, Suite 2531
Akron, OH 44311
Phone: (330) 572-2100
FAX: (330) 572-2102

Job: **BU #: 841294 MONROE-GUINEA ROAD**			
Project: **2016777.841294.09**			
Client: Crown Castle USA, Inc	Drawn by: MSaid	App'd:	
Code: TIA/EIA-222-F	Date: 11/20/15	Scale: NTS	
Path: T:\Crown\841294\09\TNX\841294.eri		Dwg No. E-1	

Feed Line Distribution Chart
2' - 244'11-1/32"

Round | Flat | App In Face | App Out Face | Truss Leg



GPD

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Job:	***BU #: 841294 MONROE-GUINEA ROAD***		
Project:	***2016777.841294.09***		
Client: Crown Castle USA, Inc		Drawn by: MSaid	App'd:
Code: TIA/EIA-222-F		Date: 11/20/15	Scale: NTS
Path: T:\Crown\841294\09\TNX\841294.eri			Dwg No. E-7

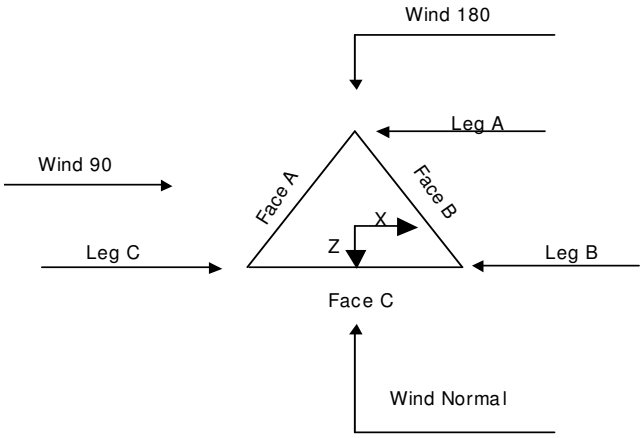
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 244.92 ft above the ground line.
The base of the tower is set at an elevation of 2.00 ft above the ground line.
The face width of the tower is 6.56 ft at the top and 30.18 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Fairfield County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
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*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	244.92-224.79			6.56	1	20.13
T2	224.79-204.63			6.56	1	20.17
T3	204.63-184.44			8.71	1	20.19
T4	184.44-164.23			10.86	1	20.21
T5	164.23-144.02			13.00	1	20.21
T6	144.02-123.81			15.15	1	20.21
T7	123.81-103.60			17.30	1	20.21
T8	103.60-83.33			19.44	1	20.27
T9	83.33-63.00			21.59	1	20.33
T10	63.00-42.67			23.74	1	20.33
T11	42.67-22.33			25.88	1	20.33
T12	22.33-2.00			28.03	1	20.33

Tower Section Geometry *(cont'd)*

Tower Section	*Tower Elevation*	*Diagonal Spacing*	*Bracing Type*	*Has K Brace End Panels*	*Has Horizontals*	*Top Girt Offset*	*Bottom Girt Offset*
	ft	*ft*				*in*	*in*
T1	244.92-224.79	4.03	X Brace	No	No	0.0000	0.0000
T2	224.79-204.63	5.04	X Brace	No	No	0.0000	0.0000
T3	204.63-184.44	6.73	X Brace	No	No	0.0000	0.0000
T4	184.44-164.23	6.74	X Brace	No	No	0.0000	0.0000
T5	164.23-144.02	6.74	X Brace	No	No	0.0000	0.0000
T6	144.02-123.81	10.10	X Brace	No	No	0.0000	0.0000
T7	123.81-103.60	10.10	X Brace	No	No	0.0000	0.0000
T8	103.60-83.33	10.14	X Brace	No	No	0.0000	0.0000
T9	83.33-63.00	10.17	X Brace	No	No	0.0000	0.0000
T10	63.00-42.67	10.17	X Brace	No	No	0.0000	0.0000
T11	42.67-22.33	20.33	K1 Down	No	Yes	0.0000	0.0000
T12	22.33-2.00	20.25	K1 Down	No	Yes	0.0000	1.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	*Leg Type*	*Leg Size*	*Leg Grade*	*Diagonal Type*	*Diagonal Size*	*Diagonal Grade*
T1 244.92-224.79	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 224.79-204.63	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T3 204.63-184.44	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T4 184.44-164.23	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T5 164.23-144.02	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)
T6 144.02-123.81	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T7 123.81-103.60	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T8 103.60-83.33	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Equal Angle	L4x4x5/16	A572-50 (50 ksi)
T9 83.33-63.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Equal Angle	L4x4x5/16	A572-50 (50 ksi)
T10 63.00-42.67	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Equal Angle	L4x4x5/16	A572-50 (50 ksi)
T11 42.67-22.33	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A500-42 (42 ksi)
T12 22.33-2.00	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Pipe	ROHN 3 STD	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 244.92-224.79	Equal Angle	L2x2x1/8	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T2 224.79-204.63	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	*No. of Mid Girts*	*Mid Girt Type*	*Mid Girt Size*	*Mid Girt Grade*	*Horizontal Type*	*Horizontal Size*	*Horizontal Grade*
T11 42.67-22.33	None	Solid Round		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T12 22.33-2.00	None	Solid Round		A36 (36 ksi)	Pipe	ROHN 3 STD	A572-50 (50 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*
T11 42.67-22.33	Solid Round		A36 (36 ksi)	Pipe	ROHN 2 STD	A36 (36 ksi)
T12 22.33-2.00	Solid Round		A36 (36 ksi)	Pipe	ROHN 3 STD	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T11 42.67-22.33	A36 (36 ksi)	Horizontal (1)	Pipe	ROHN 1.5 STD	1
		Diagonal (1)	Pipe	ROHN 2 STD	1
		Hip (1)	Pipe	ROHN 1.5 STD	1
		Hip Diagonal		Rohn 2.5 STD	1
T12 22.33-2.00	A36 (36 ksi)	Horizontal (1)	Pipe	ROHN 1.5 STD	1
		Diagonal (1)	Pipe	ROHN 2 STD	1
		Hip (1)	Pipe	ROHN 1.5 STD	1
		Hip Diagonal		Rohn 2.5 STD	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 244.92-224.79	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 224.79-204.63	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 204.63-184.44	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 184.44-164.23	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 164.23-144.02	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 144.02-123.81	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 123.81-103.60	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 103.60-83.33	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T9 83.33-63.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T10 63.00-42.67	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T11 42.67-22.33	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T12 22.33-2.00	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 244.92-224.79	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T2 224.79-204.63	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T3 204.63-184.44	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T4 184.44-164.23	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T5 164.23-144.02	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T6 144.02-123.81	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T7 123.81-103.60	Yes	No	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
				1	1	1	1	1	1	1
T8 103.60-83.33	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T9 83.33-63.00	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T10 63.00-42.67	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T11 42.67-22.33	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T12 22.33-2.00	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 244.92-224.79	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 224.79-204.63	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 204.63-184.44	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 184.44-164.23	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 164.23-144.02	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 144.02-123.81	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 123.81-103.60	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 103.60-83.33	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 83.33-63.00	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
T10 63.00-42.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 42.67-22.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 22.33-2.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 244.92-224.79	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 224.79-204.63	Flange	0.8750 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 204.63-184.44	Flange	0.8750 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 184.44-164.23	Flange	1.0000 A325N	4	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 164.23-144.02	Flange	1.0000 A325N	4	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 144.02-123.81	Flange	1.0000 A325N	6	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 123.81-103.60	Flange	1.0000 A325N	6	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 103.60-83.33	Flange	1.0000 A325N	6	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 83.33-63.00	Flange	1.0000 A325N	6	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 63.00-42.67	Flange	1.0000 A325N	8	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T11 42.67-22.33	Flange	1.0000 A325N	8	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0
T12 22.33-2.00	Flange	1.0000 A354-BC	10	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Step Pegs	C	Yes	Ar (CfAe)	142.00 - 8.00	0.0000	0.5	1	1	0.0000	0.8000		2.72
Step Pegs	A	Yes	Ar (CfAe)	142.00 - 8.00	0.0000	0.5	1	1	0.0000	0.8000		2.72
Step Pegs	B	Yes	Ar (CfAe)	242.00 - 8.00	0.0000	0.5	1	1	0.0000	0.8000		2.72
3/4" Conduit	A	Yes	Ar (CfAe)	242.00 - 8.00	0.0000	0.4825	1	1	0.0000	0.7500		0.50
1/2" Lighting Cable	A	Yes	Ar (CfAe)	242.00 - 8.00	0.0000	0.4825	1	1	0.0000	0.0000		0.50
1/2" Lighting Cable	A	Yes	Ar (CfAe)	122.00 - 8.00	0.0000	0.4825	1	1	0.0000	0.0000		0.50
Feedline Ladder (Af)	A	Yes	Af (CfAe)	238.00 - 8.00	0.0000	-0.4	1	1	0.0000	3.0000	12.0000	8.40
LDF7-50A(1-5/8)	A	Yes	Ar (CfAe)	217.00 - 22.00	0.0000	-0.45	3	3	1.0000	1.9800		0.82
LDF7-50A(1-5/8)	A	Yes	Ar (CfAe)	238.00 - 8.00	0.0000	-0.4	12	4	1.0000	1.9800		0.82
9776(5/8)	A	Yes	Ar (CfAe)	188.00 - 8.00	0.0000	-0.425	1	1	0.0000	0.0000		0.28
9776(5/8)	A	Yes	Ar (CfAe)	238.00 - 188.00	0.0000	-0.425	1	1	0.0000	0.7350		0.28
9776(5/8)	A	Yes	Ar (CfAe)	238.00 - 8.00	0.0000	-0.375	1	1	0.0000	0.7350		0.28
LDF2-50A(3/8)	A	Yes	Ar (CfAe)	238.00 - 8.00	0.0000	-0.375	2	1	0.7500	0.0000		0.08
FB-L98B-034-XXX(3/8)	A	Yes	Ar (CfAe)	238.00 - 8.00	2.0000	-0.375	1	1	0.0000	0.0000		0.06
AVA5-50(7/8)	A	Yes	Ar (CfAe)	188.00 - 8.00	0.0000	-0.425	1	1	0.0000	1.1020		0.30
LDF4-50A(1/2")	A	Yes	Ar (CfAe)	188.00 - 8.00	0.0000	-0.425	1	1	0.0000	0.0000		0.15
LDF6-50A(1-1/4)	B	Yes	Ar (CfAe)	203.00 - 8.00	0.0000	0.4825	2	1	1.0000	1.5500		0.60
Feedline Ladder (Af)	C	Yes	Af (CfAe)	217.00 - 20.00	0.0000	-0.375	1	1	0.0000	3.0000	12.0000	8.40
AVA7-50(1-5/8)	C	Yes	Ar (CfAe)	22.00 - 8.00	0.0000	0.375	3	3	1.0000	2.0100		0.70
AVA7-50(1-5/8)	C	Yes	Ar (CfAe)	217.00 - 8.00	0.0000	-0.4	15	9	1.0000	2.0100		0.70
HB158-1-08U8-S8J18(1-5/8)	C	Yes	Ar (CfAe)	217.00 - 8.00	0.0000	-0.4	1	1	0.0000	1.9800		1.30
LDF4-50A(1/2")	B	Yes	Ar (CfAe)	14.00 - 8.00	0.0000	0.375	1	1	0.0000	0.6300		0.15

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
Climbing Ladder (Af)	A	No	CaAa (Out Of Face)	202.00 - 2.00	1	No Ice	0.64	4.81
						1/2" Ice	0.75	6.97
						1" Ice	0.86	9.48
						2" Ice	1.08	15.54
						4" Ice	1.53	31.80
Safety Line 3/8	A	No	CaAa (Out Of Face)	202.00 - 2.00	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75
						1" Ice	0.24	1.28
						2" Ice	0.44	2.34
						4" Ice	0.84	4.46

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Flash Beacon Lighting	B	None		0.0000	243.00	No Ice	2.70	2.70	0.05
						1/2" Ice	3.10	3.10	0.07
						1" Ice	3.50	3.50	0.09
						2" Ice	4.30	4.30	0.13
						4" Ice	5.90	5.90	0.21
Side Arm Mount [SO 303-1]	B	None		0.0000	242.00	No Ice	2.24	5.32	0.12
						1/2" Ice	3.19	7.69	0.16
						1" Ice	4.14	10.06	0.20
						2" Ice	6.04	14.80	0.29
						4" Ice	9.84	24.28	0.46
DB806-XC	A	From Leg	4.00 0.00 -3.00	0.0000	242.00	No Ice	1.14	1.14	0.02
						1/2" Ice	1.68	1.68	0.03
						1" Ice	2.03	2.03	0.04
						2" Ice	2.75	2.75	0.08
						4" Ice	4.32	4.32	0.21
FMO	B	From Leg	4.00 0.00 -3.00	0.0000	242.00	No Ice	9.80	9.80	0.01
						1/2" Ice	10.28	10.28	0.18
						1" Ice	10.78	10.78	0.36
						2" Ice	11.79	11.79	0.75
						4" Ice	13.91	13.91	1.63
Sector Mount [SM 201-3]	B	None		0.0000	238.00	No Ice	26.69	26.69	1.08
						1/2" Ice	37.60	37.60	1.49
						1" Ice	48.51	48.51	1.90
						2" Ice	70.33	70.33	2.71
						4" Ice	113.97	113.97	4.34
Pipe Mount [PM 601-3]	B	None		0.0000	238.00	No Ice	4.39	4.39	0.20
						1/2" Ice	5.48	5.48	0.24
						1" Ice	6.57	6.57	0.28
						2" Ice	8.75	8.75	0.36
						4" Ice	13.11	13.11	0.53
(2) RA21.7770.00	A	From Leg	1.00 0.00 0.00	0.0000	238.00	No Ice	6.74	3.47	0.04
						1/2" Ice	7.22	3.86	0.08
						1" Ice	7.71	4.26	0.12
						2" Ice	8.73	5.08	0.22
						4" Ice	10.85	6.86	0.50
(2) RA21.7770.00	B	From Leg	1.00 0.00 0.00	0.0000	238.00	No Ice	6.74	3.47	0.04
						1/2" Ice	7.22	3.86	0.08
						1" Ice	7.71	4.26	0.12
						2" Ice	8.73	5.08	0.22
						4" Ice	10.85	6.86	0.50
(2) RA21.7770.00	C	From Leg	1.00 0.00 0.00	0.0000	238.00	No Ice	6.74	3.47	0.04
						1/2" Ice	7.22	3.86	0.08
						1" Ice	7.71	4.26	0.12
						2" Ice	8.73	5.08	0.22
						4" Ice	10.85	6.86	0.50
HPA-65R-BUU-H6	A	From Leg	1.00 0.00 0.00	0.0000	238.00	No Ice	10.36	6.45	0.05
						1/2" Ice	10.93	6.91	0.11
						1" Ice	11.50	7.38	0.18
						2" Ice	12.68	8.47	0.34
						4" Ice	15.14	10.78	0.75
HPA-65R-BUU-H6	B	From Leg	1.00 0.00 0.00	0.0000	238.00	No Ice	10.36	6.45	0.05
						1/2" Ice	10.93	6.91	0.11
						1" Ice	11.50	7.38	0.18
						2" Ice	12.68	8.47	0.34
						4" Ice	15.14	10.78	0.75
HPA-65R-BUU-H6	C	From Leg	1.00 0.00 0.00	0.0000	238.00	No Ice	10.36	6.45	0.05
						1/2" Ice	10.93	6.91	0.11
						1" Ice	11.50	7.38	0.18
						2" Ice	12.68	8.47	0.34
						4" Ice	15.14	10.78	0.75
(2) LGP21401	A	From Leg	1.00 0.00	0.0000	238.00	No Ice	1.29	0.36	0.01
						1/2" Ice	1.45	0.48	0.02

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 K
			0.00			1" Ice	1.61	0.60	0.03
						2" Ice	1.97	0.87	0.05
						4" Ice	2.79	1.52	0.14
(2) LGP21401	B	From Leg	1.00	0.0000	238.00	No Ice	1.29	0.36	0.01
			0.00			1/2" Ice	1.45	0.48	0.02
			0.00			1" Ice	1.61	0.60	0.03
						2" Ice	1.97	0.87	0.05
						4" Ice	2.79	1.52	0.14
(2) LGP21401	C	From Leg	1.00	0.0000	238.00	No Ice	1.29	0.36	0.01
			0.00			1/2" Ice	1.45	0.48	0.02
			0.00			1" Ice	1.61	0.60	0.03
						2" Ice	1.97	0.87	0.05
						4" Ice	2.79	1.52	0.14
RRUS 11 B12	A	From Leg	1.00	0.0000	238.00	No Ice	3.31	1.36	0.05
			0.00			1/2" Ice	3.55	1.54	0.07
			0.00			1" Ice	3.80	1.73	0.10
						2" Ice	4.33	2.13	0.15
						4" Ice	5.50	3.04	0.31
RRUS 11 B12	B	From Leg	1.00	0.0000	238.00	No Ice	3.31	1.36	0.05
			0.00			1/2" Ice	3.55	1.54	0.07
			0.00			1" Ice	3.80	1.73	0.10
						2" Ice	4.33	2.13	0.15
						4" Ice	5.50	3.04	0.31
RRUS 11 B12	C	From Leg	1.00	0.0000	238.00	No Ice	3.31	1.36	0.05
			0.00			1/2" Ice	3.55	1.54	0.07
			0.00			1" Ice	3.80	1.73	0.10
						2" Ice	4.33	2.13	0.15
						4" Ice	5.50	3.04	0.31
DC6-48-60-18-8F Surge Suppression Unit	A	From Leg	1.00	0.0000	238.00	No Ice	1.47	1.47	0.02
			0.00			1/2" Ice	1.67	1.67	0.04
			0.00			1" Ice	1.88	1.88	0.06
						2" Ice	2.33	2.33	0.11
						4" Ice	3.38	3.38	0.24
RRUS 12 B2/RRUS A2	A	From Leg	1.00	0.0000	238.00	No Ice	3.67	2.16	0.07
			0.00			1/2" Ice	3.93	2.36	0.10
			0.00			1" Ice	4.19	2.58	0.13
						2" Ice	4.75	3.04	0.20
						4" Ice	5.96	4.06	0.40
RRUS 12 B2/RRUS A2	B	From Leg	1.00	0.0000	238.00	No Ice	3.67	2.16	0.07
			0.00			1/2" Ice	3.93	2.36	0.10
			0.00			1" Ice	4.19	2.58	0.13
						2" Ice	4.75	3.04	0.20
						4" Ice	5.96	4.06	0.40
RRUS 12 B2/RRUS A2	C	From Leg	1.00	0.0000	238.00	No Ice	3.67	2.16	0.07
			0.00			1/2" Ice	3.93	2.36	0.10
			0.00			1" Ice	4.19	2.58	0.13
						2" Ice	4.75	3.04	0.20
						4" Ice	5.96	4.06	0.40
(2) LGP21401	A	From Leg	1.00	0.0000	238.00	No Ice	1.29	0.36	0.01
			0.00			1/2" Ice	1.45	0.48	0.02
			0.00			1" Ice	1.61	0.60	0.03
						2" Ice	1.97	0.87	0.05
						4" Ice	2.79	1.52	0.14
(2) LGP21401	B	From Leg	1.00	0.0000	238.00	No Ice	1.29	0.36	0.01
			0.00			1/2" Ice	1.45	0.48	0.02
			0.00			1" Ice	1.61	0.60	0.03
						2" Ice	1.97	0.87	0.05
						4" Ice	2.79	1.52	0.14
(2) LGP21401	C	From Leg	1.00	0.0000	238.00	No Ice	1.29	0.36	0.01
			0.00			1/2" Ice	1.45	0.48	0.02
			0.00			1" Ice	1.61	0.60	0.03
						2" Ice	1.97	0.87	0.05
						4" Ice	2.79	1.52	0.14
Sector Mount [SM 503-3]	B	None		0.0000	217.00	No Ice	33.64	33.64	1.69
						1/2" Ice	48.17	48.17	2.26

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	62.70	62.70	2.82
						2" Ice	91.76	91.76	3.95
						4" Ice	149.88	149.88	6.21
BXA-70063-6CF-2 w/ Mount Pipe	A	From Leg	4.00	0.0000	217.00	No Ice	7.97	5.80	0.04
			0.00			1/2" Ice	8.61	6.95	0.10
			3.00			1" Ice	9.22	7.82	0.17
						2" Ice	10.46	9.60	0.34
						4" Ice	13.07	13.37	0.80
BXA-70063-4CF-EDIN-6 w/ Mount Pipe	B	From Leg	4.00	0.0000	217.00	No Ice	5.40	3.69	0.03
			0.00			1/2" Ice	5.84	4.29	0.07
			3.00			1" Ice	6.30	4.91	0.12
						2" Ice	7.24	6.26	0.23
						4" Ice	9.26	9.29	0.58
BXA-70063-6CF-2 w/ Mount Pipe	C	From Leg	4.00	0.0000	217.00	No Ice	7.97	5.80	0.04
			0.00			1/2" Ice	8.61	6.95	0.10
			3.00			1" Ice	9.22	7.82	0.17
						2" Ice	10.46	9.60	0.34
						4" Ice	13.07	13.37	0.80
(2) HBXX-6517DS-VTM w/ Mount Pipe	A	From Leg	4.00	0.0000	217.00	No Ice	9.16	7.14	0.07
			0.00			1/2" Ice	9.91	8.44	0.14
			3.00			1" Ice	10.63	9.58	0.22
						2" Ice	12.03	11.55	0.41
						4" Ice	14.95	15.73	0.94
(2) HBXX-6517DS-VTM w/ Mount Pipe	B	From Leg	4.00	0.0000	217.00	No Ice	9.16	7.14	0.07
			0.00			1/2" Ice	9.91	8.44	0.14
			3.00			1" Ice	10.63	9.58	0.22
						2" Ice	12.03	11.55	0.41
						4" Ice	14.95	15.73	0.94
(2) HBXX-6517DS-VTM w/ Mount Pipe	C	From Leg	4.00	0.0000	217.00	No Ice	9.16	7.14	0.07
			0.00			1/2" Ice	9.91	8.44	0.14
			3.00			1" Ice	10.63	9.58	0.22
						2" Ice	12.03	11.55	0.41
						4" Ice	14.95	15.73	0.94
LNX-8514DS-VTM w/ Mount Pipe	A	From Leg	4.00	0.0000	217.00	No Ice	11.67	9.83	0.07
			0.00			1/2" Ice	12.39	11.35	0.16
			3.00			1" Ice	13.12	12.90	0.26
						2" Ice	14.58	15.24	0.50
						4" Ice	17.85	20.11	1.14
LNX-8514DS-VTM w/ Mount Pipe	B	From Leg	4.00	0.0000	217.00	No Ice	11.67	9.83	0.07
			0.00			1/2" Ice	12.39	11.35	0.16
			3.00			1" Ice	13.12	12.90	0.26
						2" Ice	14.58	15.24	0.50
						4" Ice	17.85	20.11	1.14
LNX-8514DS-VTM w/ Mount Pipe	C	From Leg	4.00	0.0000	217.00	No Ice	11.67	9.83	0.07
			0.00			1/2" Ice	12.39	11.35	0.16
			3.00			1" Ice	13.12	12.90	0.26
						2" Ice	14.58	15.24	0.50
						4" Ice	17.85	20.11	1.14
RRH2X60-AWS	A	From Leg	4.00	0.0000	217.00	No Ice	2.19	1.43	0.04
			0.00			1/2" Ice	2.40	1.61	0.06
			3.00			1" Ice	2.61	1.80	0.08
						2" Ice	3.07	2.21	0.13
						4" Ice	4.09	3.13	0.26
RRH2X60-AWS	B	From Leg	4.00	0.0000	217.00	No Ice	2.19	1.43	0.04
			0.00			1/2" Ice	2.40	1.61	0.06
			3.00			1" Ice	2.61	1.80	0.08
						2" Ice	3.07	2.21	0.13
						4" Ice	4.09	3.13	0.26
RRH2X60-AWS	C	From Leg	4.00	0.0000	217.00	No Ice	2.19	1.43	0.04
			0.00			1/2" Ice	2.40	1.61	0.06
			3.00			1" Ice	2.61	1.80	0.08
						2" Ice	3.07	2.21	0.13
						4" Ice	4.09	3.13	0.26
RRH2X60-PCS	A	From Leg	4.00	0.0000	217.00	No Ice	2.57	1.55	0.06
			0.00			1/2" Ice	2.79	1.74	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			3.00			1" Ice	3.02	1.95	0.09
						2" Ice	3.52	2.38	0.14
						4" Ice	4.61	3.34	0.29
RRH2X60-PCS	B	From Leg	4.00	0.0000	217.00	No Ice	2.57	1.55	0.06
			0.00			1/2" Ice	2.79	1.74	0.07
			3.00			1" Ice	3.02	1.95	0.09
						2" Ice	3.52	2.38	0.14
						4" Ice	4.61	3.34	0.29
RRH2X60-PCS	C	From Leg	4.00	0.0000	217.00	No Ice	2.57	1.55	0.06
			0.00			1/2" Ice	2.79	1.74	0.07
			3.00			1" Ice	3.02	1.95	0.09
						2" Ice	3.52	2.38	0.14
						4" Ice	4.61	3.34	0.29
DB-T1-6Z-8AB-0Z	C	From Leg	1.00	0.0000	217.00	No Ice	5.60	2.33	0.04
			0.00			1/2" Ice	5.92	2.56	0.08
			-3.00			1" Ice	6.24	2.79	0.12
						2" Ice	6.91	3.28	0.21
						4" Ice	8.37	4.37	0.45
Side Arm Mount [SO 306-1]	B	From Leg	2.00	0.0000	203.00	No Ice	0.98	2.18	0.04
			0.00			1/2" Ice	1.70	3.80	0.06
			0.00			1" Ice	2.42	5.42	0.08
						2" Ice	3.86	8.66	0.12
						4" Ice	6.74	15.14	0.20
Side Arm Mount [SO 306-1]	C	From Leg	2.00	0.0000	203.00	No Ice	0.98	2.18	0.04
			0.00			1/2" Ice	1.70	3.80	0.06
			0.00			1" Ice	2.42	5.42	0.08
						2" Ice	3.86	8.66	0.12
						4" Ice	6.74	15.14	0.20
OG-4	B	From Leg	4.00	0.0000	203.00	No Ice	6.00	6.00	0.02
			0.00			1/2" Ice	7.14	7.14	0.06
			6.00			1" Ice	7.86	7.86	0.11
						2" Ice	9.34	9.34	0.23
						4" Ice	12.41	12.41	0.58
OG-4	C	From Leg	4.00	0.0000	203.00	No Ice	6.00	6.00	0.02
			0.00			1/2" Ice	7.14	7.14	0.06
			6.00			1" Ice	7.86	7.86	0.11
						2" Ice	9.34	9.34	0.23
						4" Ice	12.41	12.41	0.58
Side Arm Mount [SO 308-1]	B	From Leg	1.50	0.0000	188.00	No Ice	0.98	3.03	0.05
			0.00			1/2" Ice	1.70	5.22	0.08
			0.00			1" Ice	2.42	7.41	0.10
						2" Ice	3.86	11.79	0.16
						4" Ice	6.74	20.55	0.26
DB589-A	B	From Leg	3.00	0.0000	188.00	No Ice	2.76	2.76	0.01
			0.00			1/2" Ice	4.17	4.17	0.03
			3.00			1" Ice	5.59	5.59	0.06
						2" Ice	8.49	8.49	0.15
						4" Ice	12.44	12.44	0.44
DB589-A	B	From Leg	3.00	0.0000	188.00	No Ice	2.76	2.76	0.01
			0.00			1/2" Ice	4.17	4.17	0.03
			-2.00			1" Ice	5.59	5.59	0.06
						2" Ice	8.49	8.49	0.15
						4" Ice	12.44	12.44	0.44
TY-840	B	From Face	1.00	0.0000	14.00	No Ice	0.25	0.25	0.00
			0.00			1/2" Ice	0.45	0.45	0.00
			0.00			1" Ice	0.65	0.65	0.00
						2" Ice	1.05	1.05	0.01
						4" Ice	1.85	1.85	0.01
17' Side Light Mount	A	From Face	0.50	0.0000	122.00	No Ice	2.27	2.27	0.06
			0.00			1/2" Ice	3.42	3.42	1.15
			0.00			1" Ice	4.58	4.58	2.26
						2" Ice	6.93	6.93	4.55
						4" Ice	11.78	11.78	9.38
17' Side Light Mount	C	From Face	0.50	0.0000	122.00	No Ice	2.27	2.27	0.06
			0.00			1/2" Ice	3.42	3.42	1.15

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 K
			0.00			1" Ice	4.58	4.58	2.26
						2" Ice	6.93	6.93	4.55
						4" Ice	11.78	11.78	9.38
Side Light	A	From Leg	1.00	0.0000	122.00	No Ice	0.33	0.33	0.01
			0.00			1/2" Ice	0.47	0.47	0.01
			0.00			1" Ice	0.60	0.60	0.01
						2" Ice	0.87	0.87	0.01
						4" Ice	1.40	1.40	0.01
Side Light	B	From Leg	1.00	0.0000	122.00	No Ice	0.33	0.33	0.01
			0.00			1/2" Ice	0.47	0.47	0.01
			0.00			1" Ice	0.60	0.60	0.01
						2" Ice	0.87	0.87	0.01
						4" Ice	1.40	1.40	0.01
Side Light	C	From Leg	1.00	0.0000	122.00	No Ice	0.33	0.33	0.01
			0.00			1/2" Ice	0.47	0.47	0.01
			0.00			1" Ice	0.60	0.60	0.01
						2" Ice	0.87	0.87	0.01
						4" Ice	1.40	1.40	0.01

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 Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	244.917 - 224.792	8.306	35	0.3251	0.0354
T2	224.792 - 204.625	6.929	35	0.3139	0.0313
T3	204.625 - 184.438	5.617	35	0.2865	0.0270
T4	184.438 - 164.229	4.449	35	0.2482	0.0220
T5	164.229 - 144.021	3.450	35	0.2092	0.0176
T6	144.021 - 123.813	2.600	35	0.1781	0.0143
T7	123.813 - 103.604	1.892	35	0.1447	0.0119
T8	103.604 - 83.3333	1.302	35	0.1195	0.0096
T9	83.3333 - 63	0.825	35	0.0931	0.0080
T10	63 - 42.6667	0.458	35	0.0658	0.0064
T11	42.6667 - 22.3334	0.195	27	0.0418	0.0048
T12	22.3334 - 2	0.059	27	0.0182	0.0022

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
243.00	Flash Beacon Lighting	35	8.174	0.3243	0.0350	313065
242.00	Side Arm Mount [SO 303-1]	35	8.105	0.3240	0.0348	313065
238.00	Sector Mount [SM 201-3]	35	7.830	0.3223	0.0340	226312
217.00	Sector Mount [SM 503-3]	35	6.410	0.3053	0.0297	49204
203.00	Side Arm Mount [SO 306-1]	35	5.517	0.2837	0.0266	30884
188.00	Side Arm Mount [SO 308-1]	35	4.643	0.2554	0.0229	27717
122.00	17' Side Light Mount	35	1.834	0.1421	0.0117	43743
14.00	TY-840	27	0.029	0.0102	0.0013	100241

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	244.917 - 224.792	23.865	10	0.9324	0.1022
T2	224.792 - 204.625	19.914	10	0.9007	0.0902
T3	204.625 - 184.438	16.148	10	0.8224	0.0779
T4	184.438 - 164.229	12.793	10	0.7129	0.0635
T5	164.229 - 144.021	9.923	10	0.6010	0.0507
T6	144.021 - 123.813	7.479	10	0.5117	0.0410
T7	123.813 - 103.604	5.443	10	0.4156	0.0343
T8	103.604 - 83.3333	3.746	10	0.3433	0.0275
T9	83.3333 - 63	2.376	10	0.2674	0.0229
T10	63 - 42.6667	1.319	10	0.1891	0.0183
T11	42.6667 - 22.3334	0.565	10	0.1200	0.0137
T12	22.3334 - 2	0.169	2	0.0522	0.0063

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
243.00	Flash Beacon Lighting	10	23.486	0.9304	0.1011	110923
242.00	Side Arm Mount [SO 303-1]	10	23.289	0.9293	0.1005	110923
238.00	Sector Mount [SM 201-3]	10	22.498	0.9247	0.0981	80185
217.00	Sector Mount [SM 503-3]	10	18.423	0.8760	0.0856	17309
203.00	Side Arm Mount [SO 306-1]	10	15.860	0.8143	0.0768	10811
188.00	Side Arm Mount [SO 308-1]	10	13.349	0.7334	0.0661	9671
122.00	17' Side Light Mount	10	5.277	0.4081	0.0337	15244
14.00	TY-840	2	0.084	0.0292	0.0036	34838

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	244.917	Leg	A325N	0.7500	4	2.85	19.44	0.147 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	2.74	3.81	0.721 ✔	1.333	Member Block Shear
		Top Girt	A325N	0.5000	1	0.03	2.72	0.010 ✔	1.333	Member Bearing
T2	224.792	Leg	A325N	0.8750	4	9.24	26.46	0.349 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	4.67	3.81	1.227 ✔	1.333	Member Block Shear
		Top Girt	A325N	0.5000	1	0.25	3.81	0.066 ✔	1.333	Member Block Shear
T3	204.625	Leg	A325N	0.8750	4	15.89	26.46	0.600 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	5.36	4.08	1.314 ✔	1.333	Member Bearing
T4	184.438	Leg	A325N	1.0000	4	22.26	34.56	0.644 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	5.82	5.44	1.070 ✔	1.333	Member Bearing
T5	164.229	Leg	A325N	1.0000	4	28.28	34.56	0.818 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	6.38	5.89	1.083 ✔	1.333	Bolt Shear
T6	144.021	Leg	A325N	1.0000	6	22.40	34.56	0.648 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	7.59	6.44	1.179 ✔	1.333	Bolt Shear
T7	123.813	Leg	A325N	1.0000	6	26.23	34.56	0.759 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.6250	1	8.24	7.62	1.082 ✔	1.333	Member Bearing
T8	103.604	Leg	A325N	1.0000	6	30.04	34.56	0.869 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	9.14	9.28	0.985 ✔	1.333	Bolt Shear
T9	83.3333	Leg	A325N	1.0000	6	33.86	34.56	0.980 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	9.95	9.28	1.073 ✔	1.333	Bolt Shear
T10	63	Leg	A325N	1.0000	8	28.24	34.56	0.817 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	10.77	9.28	1.160 ✔	1.333	Bolt Shear
T11	42.6667	Leg	A325N	1.0000	8	28.62	34.56	0.828 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.7500	3	6.30	9.28	0.679 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.7500	2	5.19	9.28	0.559 ✔	1.333	Bolt Shear
T12	22.3334	Leg	A354-BC	1.0000	10	27.45	32.40	0.847 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.7500	3	6.23	9.28	0.672 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.7500	2	5.40	9.28	0.582 ✔	1.333	Bolt Shear

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	244.917 - 224.792	ROHN 2.5 STD	20.13	4.02	51.0 K=1.00	24.197	1.7040	-14.04	41.23	0.341 ✔
T2	224.792 - 204.625	ROHN 3 EH	20.20	5.05	53.3 K=1.00	23.821	3.0159	-43.63	71.84	0.607 ✔
T3	204.625 - 184.438	ROHN 3.5 EH	20.23	6.74	61.9 K=1.00	22.388	3.6784	-72.70	82.35	0.883 ✔
T4	184.438 - 164.229	ROHN 4 EH	20.25	6.75	54.8 K=1.00	23.578	4.4074	-101.28	103.92	0.975 ✔
T5	164.229 - 144.021	ROHN 5 EH	20.25	6.75	44.0 K=1.00	25.252	6.1114	-129.07	154.32	0.836 ✔
T6	144.021 - 123.813	ROHN 5 EH	20.25	10.12	66.1 K=1.00	21.656	6.1114	-153.95	132.35	1.163 ✔
T7	123.813 - 103.604	ROHN 6 EH	20.25	10.12	55.3 K=1.00	23.496	8.4049	-181.30	197.48	0.918 ✔
T8	103.604 - 83.3333	ROHN 6 EH	20.31	10.15	55.5 K=1.00	23.468	8.4049	-209.19	197.25	1.061 ✔
T9	83.3333 - 63	ROHN 6 EH	20.37	10.19	55.7 K=1.00	23.440	8.4049	-237.41	197.01	1.205 ✔
T10	63 - 42.6667	ROHN 8 EHS	20.37	10.19	41.9 K=1.00	25.568	9.7193	-265.93	248.51	1.070 ✔
T11	42.6667 - 22.3334	ROHN 8 EHS	20.37	10.19	41.9 K=1.00	25.568	9.7193	-271.61	248.51	1.093 ✔
T12	22.3334 - 2	ROHN 8 EH	20.37	10.14	42.3 K=1.00	25.506	12.7627	-327.55	325.53	1.006 ✔

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	244.917 - 224.792	L1 3/4x1 3/4x3/16	7.70	3.60	125.9 K=1.00	9.415	0.6211	-2.78	5.85	0.476 ✔
T2	224.792 - 204.625	L1 3/4x1 3/4x3/16	9.83	4.80	167.7 K=1.00	5.312	0.6211	-4.33	3.30	1.312 ✔
T3	204.625 - 184.438	L2 1/2x2 1/2x3/16	12.47	6.15	149.0 K=1.00	6.727	0.9020	-5.39	6.07	0.888 ✔
T4	184.438 - 164.229	L2 1/2x2 1/2x1/4	14.33	7.05	172.3 K=1.00	5.029	1.1900	-5.86	5.98	0.979 ✔
T5	164.229 - 144.021	L2 1/2x2 1/2x5/16	16.25	7.97	195.5 K=1.00	3.909	1.4600	-6.38	5.71	1.118 ✔
T6	144.021 - 123.813	L3x3x5/16	19.57	9.71	197.8 K=1.00	3.819	1.7773	-7.59	6.79	1.119 ✔
T7	123.813 - 103.604	L3 1/2x3 1/2x1/4	21.44	10.59	183.1 K=1.00	4.453	1.6900	-8.32	7.52	1.105 ✔
T8	103.604 - 83.3333	L4x4x5/16	23.37	11.54	175.1 K=1.00	4.873	2.4023	-9.14	11.71	0.781 ✔
T9	83.3333 - 63	L4x4x5/16	25.33	12.52	190.0 K=1.00	4.139	2.4023	-9.95	9.94	1.001 ✔
T10	63 - 42.6667	L4x4x5/16	27.31	13.42	203.6 K=1.00	3.602	2.4023	-10.77	8.65	1.244 ✔
T11	42.6667 - 22.3334	KL/R > 200 (C) - 194 ROHN 3 STD	24.70	12.35	127.4 K=1.00	9.203	2.2285	-18.91	20.51	0.922 ✔
T12	22.3334 - 2	ROHN 3 STD	25.26	12.63	130.2 K=1.00	8.803	2.2285	-18.70	19.62	0.953 ✔

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T11	42.6667 - 22.3334	ROHN 2.5 STD	25.88	12.58	159.4 K=1.00	5.880	1.7040	-10.38	10.02	1.036 ✔
T12	22.3334 - 2	ROHN 3 STD	28.03	13.66	140.8 K=1.00	7.529	2.2285	-10.79	16.78	0.643 ✔

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	244.917 - 224.792	L2x2x1/8	6.56	6.11	184.6 K=1.00	4.384	0.4844	-0.03	2.12	0.014 ✔
T2	224.792 - 204.625	L1 3/4x1 3/4x3/16 KL/R > 200 (C) - 41	6.56	6.11	213.6 K=1.00	3.272	0.6211	-0.26	2.03	0.126 ✔

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T11	42.6667 - 22.3334	ROHN 1.5 STD	6.47	6.11	117.8 K=1.00	10.597	0.7995	-4.71	8.47	0.556 ✔
T12	22.3334 - 2	ROHN 1.5 STD	7.01	6.65	128.1 K=1.00	9.095	0.7995	-5.68	7.27	0.781 ✔

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T11	42.6667 - 22.3334	ROHN 2 STD	11.78	11.06	168.7 K=1.00	5.249	1.0745	-4.29	5.64	0.760 ✔
T12	22.3334 - 2	ROHN 2 STD	12.02	11.35	173.1 K=1.00	4.983	1.0745	-4.87	5.35	0.910 ✔

Redundant Hip (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T11	42.6667 - 22.3334	ROHN 1.5 STD	6.47	6.47	124.7 K=1.00	9.596	0.7995	-0.03	7.67	0.003 ✔
T12	22.3334 - 2	ROHN 1.5 STD	7.01	7.01	135.1 K=1.00	8.186	0.7995	-0.02	6.54	0.003 ✔

Redundant Hip Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T11	42.6667 - 22.3334	Rohn 2.5 STD	15.37	15.37	194.7 K=1.00	3.939	1.7040	-0.05	6.71	0.007* ✔
T12	22.3334 - 2	Rohn 2.5 STD	16.05	16.05	203.3 K=1.00	3.612	1.7040	-0.05	6.16	0.008* ✔

* DL controls

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T11	42.6667 - 22.3334	ROHN 2 STD	12.94	12.94	197.3 K=1.00	3.836	1.0745	-0.01	4.12	0.002* ✔
T12	22.3334 - 2	ROHN 3 STD	14.02	14.02	144.5 K=1.00	7.148	2.2285	-0.01	15.93	0.001* ✔

* DL controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	244.917 - 224.792	ROHN 2.5 STD	20.13	4.02	51.0	30.000	1.7040	11.42	51.12	0.223 ✔
T2	224.792 - 204.625	ROHN 3 EH	20.20	5.05	53.3	30.000	3.0159	36.96	90.48	0.409 ✔
T3	204.625 - 184.438	ROHN 3.5 EH	20.23	6.74	61.9	30.000	3.6784	63.54	110.35	0.576 ✔
T4	184.438 - 164.229	ROHN 4 EH	20.25	6.75	54.8	30.000	4.4074	89.06	132.22	0.674 ✔
T5	164.229 - 144.021	ROHN 5 EH	20.25	6.75	44.0	30.000	6.1114	113.13	183.34	0.617 ✔
T6	144.021 - 123.813	ROHN 5 EH	20.25	10.12	66.1	30.000	6.1114	134.41	183.34	0.733 ✔
T7	123.813 - 103.604	ROHN 6 EH	20.25	10.12	55.3	30.000	8.4049	157.35	252.15	0.624 ✔
T8	103.604 - 83.3333	ROHN 6 EH	20.31	10.15	55.5	30.000	8.4049	180.24	252.15	0.715 ✔
T9	83.3333 - 63	ROHN 6 EH	20.37	10.19	55.7	30.000	8.4049	203.15	252.15	0.806 ✔
T10	63 - 42.6667	ROHN 8 EHS	20.37	10.19	41.9	30.000	9.7193	225.92	291.58	0.775 ✔
T11	42.6667 - 22.3334	ROHN 8 EHS	20.37	10.19	41.9	30.000	9.7193	229.37	291.58	0.787 ✔
T12	22.3334 - 2	ROHN 8 EH	20.37	10.14	42.3	30.000	12.7627	274.52	382.88	0.717 ✔

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	244.917 - 224.792	L1 3/4x1 3/4x3/16	7.70	3.60	82.9	29.000	0.3779	2.74	10.96	0.250 ✔
T2	224.792 - 204.625	L1 3/4x1 3/4x3/16	9.38	4.57	104.5	29.000	0.3779	4.67	10.96	0.426 ✔
T3	204.625 - 184.438	L2 1/2x2 1/2x3/16	12.47	6.15	96.4	29.000	0.5886	5.36	17.07	0.314 ✔
T4	184.438 - 164.229	L2 1/2x2 1/2x1/4	14.33	7.05	111.6	29.000	0.7753	5.82	22.48	0.259 ✔
T5	164.229 - 144.021	L2 1/2x2 1/2x5/16	16.25	7.97	127.2	29.000	0.9485	6.37	27.51	0.232 ✔
T6	144.021 - 123.813	L3x3x5/16	19.57	9.71	128.0	29.000	1.1572	7.55	33.56	0.225 ✔
T7	123.813 - 103.604	L3 1/2x3 1/2x1/4	21.44	10.59	117.9	32.500	1.1269	8.24	36.62	0.225 ✔
T8	103.604 - 83.3333	L4x4x5/16	23.37	11.54	112.7	32.500	1.5967	9.08	51.89	0.175 ✔
T9	83.3333 - 63	L4x4x5/16	25.33	12.52	122.2	32.500	1.5967	9.84	51.89	0.190 ✔
T10	63 - 42.6667	L4x4x5/16	27.31	13.42	130.8	32.500	1.5967	10.68	51.89	0.206 ✔
T11	42.6667 - 22.3334	ROHN 3 STD	24.70	12.35	127.4	25.200	2.2285	18.17	56.16	0.323 ✔
T12	22.3334 - 2	ROHN 3 STD	25.26	12.63	130.2	30.000	2.2285	17.88	66.85	0.268 ✔

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T11	42.6667 - 22.3334	ROHN 2.5 STD	25.88	12.58	159.4	30.000	1.7040	10.38	51.12	0.203 ✔
T12	22.3334 - 2	ROHN 3 STD	28.03	13.66	140.8	30.000	2.2285	10.79	66.85	0.161 ✔

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	244.917 - 224.792	L2x2x1/8	6.56	6.11	121.2	29.000	0.3047	0.03	8.84	0.003 ✔
T2	224.792 - 204.625	L1 3/4x1 3/4x3/16	6.56	6.11	141.3	29.000	0.3779	0.25	10.96	0.023 ✔

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T11	42.6667 - 22.3334	ROHN 1.5 STD	6.47	6.11	117.8	21.600	0.7995	4.71	17.27	0.273 ✔
T12	22.3334 - 2	ROHN 1.5 STD	7.01	6.65	128.1	21.600	0.7995	5.68	17.27	0.329 ✔

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T11	42.6667 - 22.3334	ROHN 2 STD	11.78	11.06	168.7	21.600	1.0745	4.29	23.21	0.185 ✓
T12	22.3334 - 2	ROHN 2 STD	12.02	11.35	173.1	21.600	1.0745	4.87	23.21	0.210 ✓

Redundant Hip (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T11	42.6667 - 22.3334	ROHN 1.5 STD	6.47	6.47	124.7	21.600	0.7995	0.02	17.27	0.001 ✓
T12	22.3334 - 2	ROHN 1.5 STD	7.01	7.01	135.1	21.600	0.7995	0.01	17.27	0.001 ✓

Redundant Hip Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T11	42.6667 - 22.3334	Rohn 2.5 STD	15.37	15.37	194.7	21.600	1.7040	0.04	36.81	0.001* ✓
T12	22.3334 - 2	Rohn 2.5 STD	16.05	16.05	203.3	21.600	1.7040	0.04	36.81	0.001* ✓

* DL controls

Inner Bracing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T11	42.6667 - 22.3334	ROHN 2 STD	12.94	12.94	197.3	21.600	1.0745	0.00	23.21	0.000 ✓

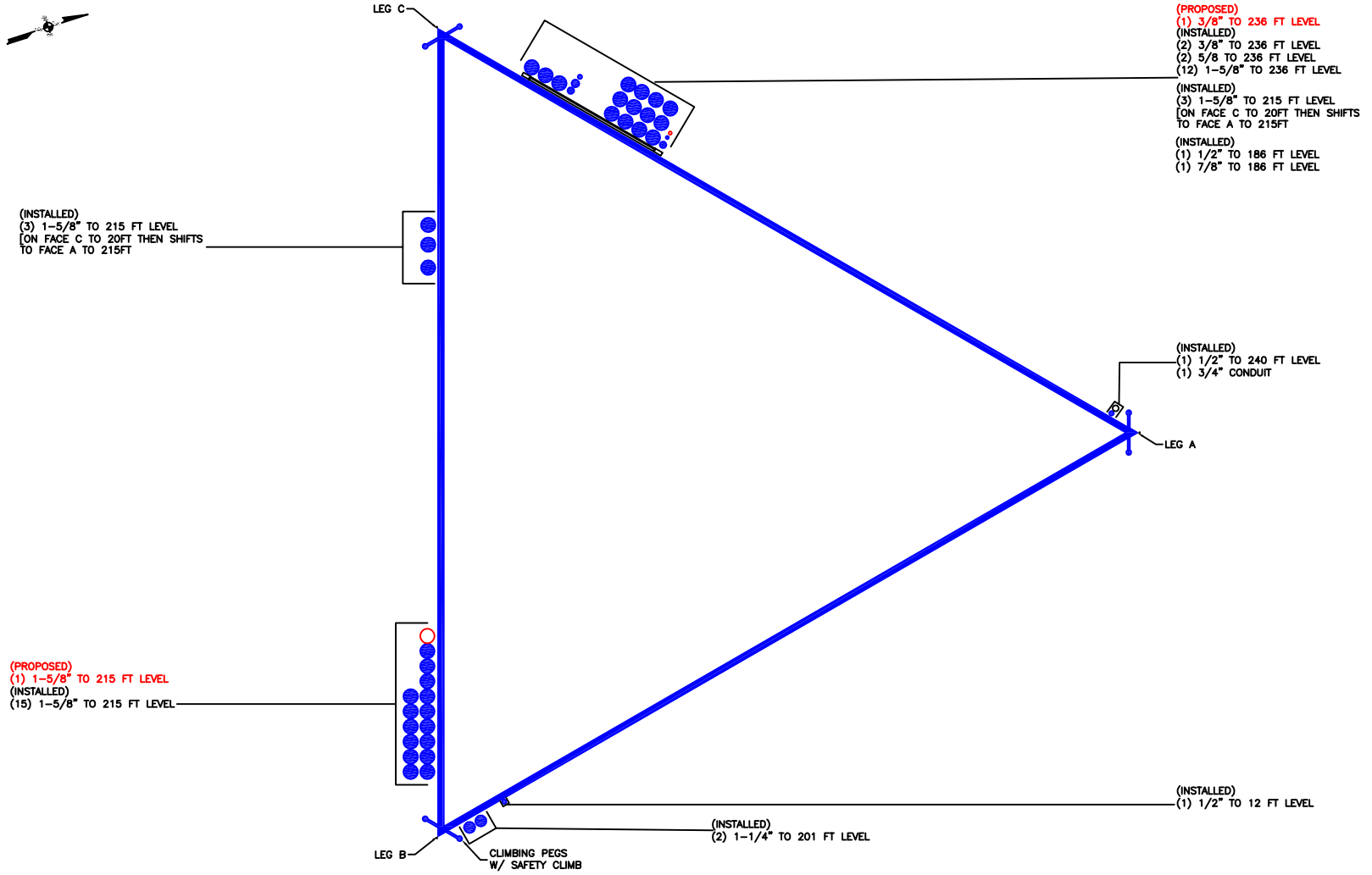
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	244.917 - 224.792	Leg	ROHN 2.5 STD	1	-14.04	54.96	25.5	Pass
T2	224.792 - 204.625	Leg	ROHN 3 EH	37	-43.63	95.77	45.6	Pass
T3	204.625 - 184.438	Leg	ROHN 3.5 EH	67	-72.70	109.77	66.2	Pass
T4	184.438 - 164.229	Leg	ROHN 4 EH	88	-101.28	138.52	73.1	Pass
T5	164.229 - 144.021	Leg	ROHN 5 EH	109	-129.07	205.72	62.7	Pass
T6	144.021 - 123.813	Leg	ROHN 5 EH	130	-153.95	176.42	87.3	Pass
T7	123.813 - 103.604	Leg	ROHN 6 EH	145	-181.30	263.24	68.9	Pass
T8	103.604 - 83.3333	Leg	ROHN 6 EH	160	-209.19	262.93	79.6	Pass
T9	83.3333 - 63	Leg	ROHN 6 EH	175	-237.41	262.62	90.4	Pass
T10	63 - 42.6667	Leg	ROHN 8 EHS	190	-265.93	331.26	80.3	Pass
T11	42.6667 - 22.3334	Leg	ROHN 8 EHS	205	-271.61	331.26	82.0	Pass
T12	22.3334 - 2	Leg	ROHN 8 EH	238	-327.55	433.93	75.5	Pass
T1	244.917 - 224.792	Diagonal	L1 3/4x1 3/4x3/16	7	-2.78	7.79	35.7	Pass
							54.1 (b)	
T2	224.792 - 204.625	Diagonal	L1 3/4x1 3/4x3/16	44	-4.33	4.40	98.4	Pass
T3	204.625 - 184.438	Diagonal	L2 1/2x2 1/2x3/16	71	-5.39	8.09	66.6	Pass
							98.5 (b)	
T4	184.438 - 164.229	Diagonal	L2 1/2x2 1/2x1/4	92	-5.86	7.98	73.4	Pass
							80.3 (b)	
T5	164.229 - 144.021	Diagonal	L2 1/2x2 1/2x5/16	113	-6.38	7.61	83.8	Pass
T6	144.021 - 123.813	Diagonal	L3x3x5/16	134	-7.59	9.05	83.9	Pass
							88.4 (b)	
T7	123.813 - 103.604	Diagonal	L3 1/2x3 1/2x1/4	149	-8.32	10.03	82.9	Pass
T8	103.604 - 83.3333	Diagonal	L4x4x5/16	164	-9.14	15.60	58.6	Pass
							73.9 (b)	
T9	83.3333 - 63	Diagonal	L4x4x5/16	179	-9.95	13.25	75.1	Pass
							80.5 (b)	
T10	63 - 42.6667	Diagonal	L4x4x5/16	194	-10.77	11.53	93.3	Pass
T11	42.6667 - 22.3334	Diagonal	ROHN 3 STD	212	-18.91	27.34	69.2	Pass
T12	22.3334 - 2	Diagonal	ROHN 3 STD	245	-18.70	26.15	71.5	Pass
T11	42.6667 - 22.3334	Horizontal	ROHN 2.5 STD	208	-10.38	13.36	77.7	Pass
T12	22.3334 - 2	Horizontal	ROHN 3 STD	241	-10.79	22.37	48.3	Pass
T1	244.917 - 224.792	Top Girt	L2x2x1/8	5	-0.03	2.83	1.0	Pass
T2	224.792 - 204.625	Top Girt	L1 3/4x1 3/4x3/16	41	-0.26	2.71	9.4	Pass
T11	42.6667 - 22.3334	Redund Horz 1 Bracing	ROHN 1.5 STD	210	-4.71	11.29	41.7	Pass
T12	22.3334 - 2	Redund Horz 1 Bracing	ROHN 1.5 STD	243	-5.68	9.69	58.6	Pass
T11	42.6667 - 22.3334	Redund Diag 1 Bracing	ROHN 2 STD	211	-4.29	7.52	57.0	Pass
T12	22.3334 - 2	Redund Diag 1 Bracing	ROHN 2 STD	244	-4.87	7.14	68.3	Pass
T11	42.6667 - 22.3334	Redund Hip 1 Bracing	ROHN 1.5 STD	233	-0.03	10.23	0.3	Pass
T12	22.3334 - 2	Redund Hip 1 Bracing	ROHN 1.5 STD	266	-0.02	8.72	0.3	Pass
T11	42.6667 - 22.3334	Redund Hip Diagonal Bracing	Rohn 2.5 STD	232	-0.05	6.71	0.7	Pass
T12	22.3334 - 2	Redund Hip Diagonal Bracing	Rohn 2.5 STD	265	-0.05	6.16	0.8	Pass
T11	42.6667 - 22.3334	Inner Bracing	ROHN 2 STD	237	-0.01	4.12	0.6	Pass
T12	22.3334 - 2	Inner Bracing	ROHN 3 STD	270	-0.01	15.93	0.5	Pass

Summary	ELC:	Load Case 7
Leg (T9)	90.4	Pass
Diagonal (T3)	98.5	Pass
Horizontal (T11)	77.7	Pass
Top Girt (T2)	9.4	Pass
Redund Horz 1 Bracing (T12)	58.6	Pass
Redund Diag 1 Bracing (T12)	68.3	Pass
Redund Hip 1 Bracing (T11)	0.3	Pass
Redund Hip Diagonal Bracing (T12)	0.8	Pass
Inner Bracing (T11)	0.6	Pass
Bolt Checks	98.5	Pass
Rating =	98.5	Pass

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 841294 TOWER ID: C_BASELEVEL

CROWN REGION ADDRESS

USA

AGT MR CAH

02/04/14 UPDATED PER WORK ORDER #735708
25/07/14 UPDATED PER WORK ORDER #738683 900219
12/08/14 UPDATED PER WORK ORDER # 908410

DRAWN BY: VJL
CHECKED BY: AGT
DRAWING DATE: 18/03/14

SITE NUMBER:
SITE NAME:

SITE NAME

MONROE-GUINEA ROAD

BUSINESS UNIT NUMBER

841294

SITE ADDRESS

230 GUINEA ROAD
MONROE, CT 06468
FAIRFIELD COUNTY
USA

SHEET TITLE

BASE LEVEL

SHEET NUMBER

A1-0

BASE LEVEL DRAWING

SCALE: N.T.S.

1

PLOT DATE: 14/12/2015 - FILE NAME: 841294-BASELEVEL.dwg
R:\TEMPLATES\TYPICAL BLOCKS FOR TEMPLATES\TITLE BLOCK STD-VER 8.1.dwg

APPENDIX C

ADDITIONAL CALCULATIONS

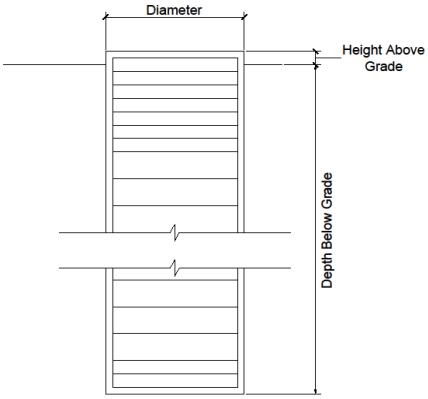
GPD GROUP

Self Support Tower Caisson Analysis - Rev F
MONROE-GUINEA ROAD BU: 841294
2016777.841294.09

Tower Reactions		
Uplift		
P	273.2	kips
V	30.9	kips
Compression		
P	326.0	kips
V	35.7	kips

Overall Capacities		
Compression Capacity	47.3%	**OK**
Uplift Capacity	85.6%	**OK**
Reinforcement Capacity	57.1%	**OK**
As Min OK?	Yes	**OK**
Controlling Capacity	**85.6%**	**OK**

Caisson Details		
Diameter	3.5	ft
Height Above Grade	2	ft
Depth Below Grade	20	ft
Crossectional Area	9.6	ft^2
Perimeter	11.0	ft



Reinforcement Properties		
Reinforcing Known	Yes	
Bar Size	9	
# of Existing Vertical Bars	12	
Horizontal Bar Size	4	
Anchor Rod Embedment	72	in
Anchor Rod Circle	14	in
Min. Concrete Cover	8.5	in
Concrete Strength	3000	psi
Bar Strength, F_y	60	ksi

Soil Properties		
Water Table Depth	30	ft
Bearing Type	Net	
F.S. Used for Skin Friction	2.0	
Allowable End Bearing	30	ksf

Soil Layer	Soil Layer Thickness	Allowable Uplift Skin Friction	Allowable Compression Skin Friction	Soil Unit Weight (Neglect Pore Pressure)	Concrete Dry Unit Weight
	(ft)	(ksf)	(ksf)	(kcf)	(kcf)
1 (neglected)	3.5	0.000	0.000	0.120	0.150
2	3.5	0.200	0.300	0.120	0.150
3	20	2.000	3.000	0.150	0.150
Totals	27				

Reinforcement Check			
Existing A_s	12.0	in^2	
Compression A_s min. (in^2)	6.9	OK	
Rebar Cage Diameter	22.24	in	
Rqr'd Development Lenth	61.8	in	
Development Length (in)	59.4	NG	<---- Include Tensile Strength Reduction
Factored Uplift Force	355.1	k	
Tensile Strength, ϕP_s (kip)	622.4	OK, Includes Reduction	
Reinforcement Capacity	57.1%	OK	

Soil Check

Soil Layer	Soil Layer Thickness	Effective Soil Unit Weight	Effective Concrete Unit Weight	Uplift Skin Friction Resistance	Compression Skin Friction Resistance	Effective Soil Weight Removed	Effective Concrete Weight Added
	(ft)	(kcf)	(kcf)	(kips)	(kips)	(kips)	(kips)
1 (neglected)	3.5	0.120	0.150	0	0	4.04	7.94
2	3.5	0.120	0.150	8	12	4.04	5.05
3	20.0	0.150	0.150	286	429	18.76	18.76
Totals	27			293.6	440.4	26.8	31.7

End Bearing Resistance:	315.5	kips	Caisson Weight Resistance:	31.7	kpis
Compression Skin Friction Resistance:	440.4	kips	Uplift Skin Friction Resistance (ultimate):	587.2	kips
Total Compression Resistance:	755.8	kips	Case 1 Uplift Resistance (Wr/2 + Wc/1.25):	319.0	kips **<--- Controls**
			Case 2 Uplift Resistance ((Wr + Wc)/1.5):	412.6	kips

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

AT&T Existing Facility

Site ID: CTL02144

Monroe Guinea Road
230 Guinea Road
Monroe, CT 06468

February 1, 2016

EBI Project Number: 6216000447

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	2.46 %

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

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February 1, 2016

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

Emissions Analysis for Site: **CTL02144 – Monroe Guinea Road**

EBI Consulting was directed to analyze the proposed AT&T facility located at **230 Guinea Road, Monroe, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **230 Guinea Road, Monroe, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

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

3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 LTE channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

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

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

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

9) The antenna mounting height centerline of the proposed antennas is **236 feet** above ground level (AGL).

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

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

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AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	236 feet	Height (AGL):	236 feet	Height (AGL):	236 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A1 MPE%	**0.21**	Antenna B1 MPE%	**0.21**	Antenna C1 MPE%	**0.21**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00
Gain:	11.4 dBd	Gain:	11.4 dBd	Gain:	11.4 dBd
Height (AGL):	236 feet	Height (AGL):	236 feet	Height (AGL):	236 feet
Frequency Bands	850 MHz	Frequency Bands	850 MHz	Frequency Bands	850 MHz
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	60	Total TX Power(W):	60	Total TX Power(W):	60
ERP (W):	828.23	ERP (W):	828.23	ERP (W):	828.23
Antenna A2 MPE%	**0.10**	Antenna B2 MPE%	**0.10**	Antenna C2 MPE%	**0.10**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	CCI OPA-65R-BUU-H6	Make / Model:	CCI OPA-65R-BUU-H6	Make / Model:	CCI OPA-65R-BUU-H6
Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd
Height (AGL):	236 feet	Height (AGL):	236 feet	Height (AGL):	236 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	5,462.56	ERP (W):	5,462.56	ERP (W):	5,462.56
Antenna A3 MPE%	**0.47**	Antenna B3 MPE%	**0.47**	Antenna C3 MPE%	**0.47**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**0.78 %**
PageNet	0.20 %
RAW Mobile Data	0.01 %
Nextel	0.25 %
CL&P	0.09 %
Verizon Wireless	1.13 %
Site Total MPE %:	**2.46 %**

AT&T Sector 1 Total:	0.78 %
AT&T Sector 2 Total:	0.78 %
AT&T Sector 3 Total:	0.78 %
Site Total:	2.46 %

AT&T _ Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	236		850	567	0.12 %
AT&T 1900 MHz (PCS) UMTS	2	656.333	236		1900	1000	0.09 %
AT&T 850 MHz GSM	2	414.12	236		850	567	0.10 %
AT&T 700 MHz LTE	2	940.05	236		700	467	0.23 %
AT&T 1900 MHz (PCS) LTE	2	1791.23	236		1900	1000	0.24 %
						Total:	0.78 %

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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:	0.78%
Sector 2:	0.78%
Sector 3 :	0.78%
AT&T Maximum Total (per sector):	0.78%
Site Total:	2.46 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **2.46%** 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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