

Northeast Site Solutions Denise Sabo 199 Brickyard Rd Farmington, CT 06032 860-209-4690 denise@northeastsitesolutions.com

June 15, 2016

Members of the Siting Council Connecticut Siting Council Ten Franklin Square New Britain, CT 06051

RE: Notice of Exempt Modification

462 West Main Street, Meriden CT 06451

Latitude: 41.53998 Longitude: -72.81906

T-Mobile Site#: CT11733B_L1900

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 90-foot level of the existing 100-foot monopole at 462 West Main Street, Meriden CT 06451. The tower is owned by Crown Castle. The property is owned by Hunter Family Partnership. T-Mobile now intends to replace six (6) of its existing antennas with three (3) new 1900/2100 MHz antenna and (3) new 700 MHz antennas. The new antennas would be installed at the 90-foot level of the tower.

Planned Modifications:

Remove: NONE

Remove and Replace:

(3)AIR21 B4A /B2P (REMOVE) - (3) Commscope LNX-6515 Antenna (REPLACE)

(3)AIR21 B4A /B2P (REMOVE) - (3)AIR32 B66Aa/B2a (**REPLACE**)

Install New: NONE

Existing to Remain:

(3)AIR21 B4A /B2P

(3) RRUS11 B12

(3) KRY 112 TMA

(1) 1-5/8" Fiber

(18) 7/8" Coax

This facility was approved by the CT Siting Council. Petition No.614 – The existing facility consists of a 100-foot guyed lattice tower, which is currently used by Hunter's Ambulance Company. AT&T proposes to replace the existing guyed lattice tower with a 100-foot monopole approximately 15 feet to the southeast. Existing antennas



used by the ambulance company would be relocated to the top of the monopole. AT&T proposes to install 6 panel antennas at the 100-foot level of the proposed monopole. The proposed monopole would be designed to accommodate the antennas of two additional carriers

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-SOj-73, a copy of this letter is being sent to Mayor Kevin Scarpati, Elected Official for the City of Meriden, as well as the property owner and the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S;A. § 16-50j-72(b)(2).

- 1. The proposed modifications will not result in an increase in the height of the existing structure.
- 2. The proposed modifications will not require the extension of the site boundary.
- 3. The proposed modifications 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 Communications 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, T-Mobile respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Denise Sabo

Mobile: 860-209-4690 Fax: 413-521-0558

Office: 199 Brickyard Rd, Farmington, CT 06032 Email: denise@northeastsitesolutions.com

Attachments

cc: Kevin Scarpati- Mayor - as elected official Crown Castle - as tower owner Hunter Family Partnership - as property owner

Exhibit A

Petition No. 614 AT&T Wireless PCS, LLC Staff Report March 11, 2003

On March 5, 2003, Connecticut Siting Council (Council) member Philip T. Ashton and Christina Lepage of the Council staff met with AT&T Wireless PCS, LLC (AT&T) representatives Anthony Gioffre III, and Charisma King at 450-478 West Main Street, Meriden, Connecticut for the inspection of an existing tower site. The existing property and structure are owned by Hunters Family Limited Partnership. AT&T proposes to replace the existing structure and is petitioning the Council for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required for the modification.

The existing facility consists of a 100-foot guyed lattice tower, which is currently used by Hunter's Ambulance Company. AT&T proposes to replace the existing guyed lattice tower with a 100-foot monopole approximately 15 feet to the southeast. Existing antennas used by the ambulance company would be relocated to the top of the monopole. AT&T proposes to install 6 panel antennas at the 100-foot level of the proposed monopole. The proposed monopole would be designed to accommodate the antennas of two additional carriers.

The proposed equipment would be located at the base of the tower within 7-foot by 16-foot equipment pad. An 8-foot high stockade fence would surround the equipment compound. AT&T proposes to install a retaining wall along the southern portion of the equipment compound.

Access to the site would be via an existing driveway. AT&T proposes to provide utilities to the site overhead from an existing utility pole to the south. The utility corridor would cross over property recently purchased by Hunter's Ambulance Company. Two new poles would be necessary to install a utility line to the site. AT&T submits that the proposed overhead utility installation would cause the least amount of disturbance to the site and surrounding area, due to the presence of bedrock, sidewalks and a parking lot.

Surrounding land uses include a mix of residential and commercial uses. The proposed site is zoned Commercial. The calculated cumulative worst-case radio frequency power density would not exceed the applicable standard.

AT&T contends that it would not need to construct a telecommunications tower to provide coverage to this area of Meriden, and the proposed modification of the existing structure would not cause a substantial adverse environmental effect. Staff recommends approval, with the condition that the tower be situated so as to avoid the removal of an existing tree.

Exhibit B



96630612-0202-0001-00021

Property Information: Address: 450 WEST MAIN ST Map/Lot: 0612-0202-0001-0002 Card Number: 1

Owner

Information:

HUNTER FAMILY LTD PRTSHP

Owner Address: 450 W MAIN ST

MERIDEN, CT 06451

Building

Information:

Units:

Living Area: 13948

Year Built: 1980

Eff. Age: Rooms:

Bedrooms:

Full Bath:

Full Bath Rating:

Half Bath:

Half Bath Rating:

Heat Type: Forced Air

Style: Mixed Use-M

Ext Wall: Brick

Roof Mat: Asphalt

Roof Struct: Gable Fireplaces:

Grade: C

Special Features:

Description	Condition	Yearreautt	AssessedValue
FENCE-5 CHAIN	AV	1980	\$4,100
PAVING ASPHALT	AV	1980	\$8,300

Appraisal Information:

Tax District: 2 District Name: INNER DISTRICT District Mill Rate: 37.83

Current Building Value: \$749,100

Current Yard Items: \$12,400

Current Land Value: \$487,400

Current Total: \$1,248,900

Assessment: \$1,454,040

(Assessment is 70% of appraised value)

Previous Year. 2014

Previous Building Value: \$1,549,300

Previous Yard Items: \$40,500

Previous Land Value: \$487,400

Previous Total: \$2,077,200

Special Land Value: \$0

Land Information:

Type	Lot Size	Lot limit	Zoning	
Commercial Building	113,286.00	SF	C-2	
Commercial Building	0.00	SF	C-2	
Commercial Building	0.00	SF	C-2	

Total Acreage:2.60

*Confirm zoning with Planning Office. Zoning map is the official document.

Sales Information

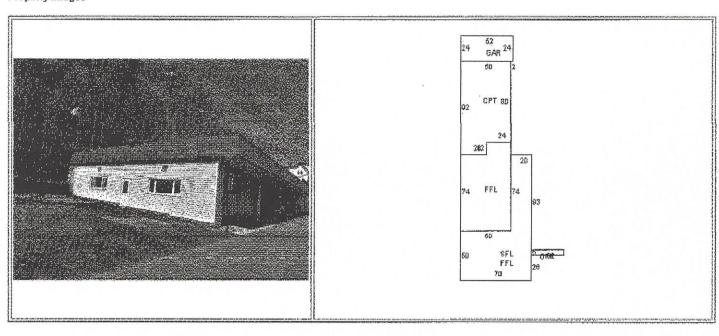
Book	Page	Grantor	Sale	Date	S.016	Price	Dead	Type
2322	336		12/31	/1997	\$650	.000		

Assessor's Permit History:

Dato	Fermit Number	Notes	Ajrioa
9/24/2015	B-15- 743	AT&T ADD 3 ANTENNAE/3 RRU'S/1 FIBER LINE TO EXISTING EQUIPMENT ON TOWER.	
6/22/2015	E-15- 295	INSTALL NEW 150A SERVICE (VERIZON).aPPROVED BY BLDG DEPT.	War what was a series
5/18/2015	E-15- 210	NEW 200A/3PH/4W/ SERVICE FROM MDP TO SHELTER BLDG.	
4/6/2015	P-15-64	NEW GAS SUPPLY TO GENEERATOR INSTALLED, Est complete.	TVALENUMBER

2/20/2015	B-15-61	INSTALL ANTENNAE & GROUND EQUIPMENT FOR VERIZON WIRELESS TELE. Appears complete.	
1/5/2015	B-14- 285	ADD ANTENNAE TO EXISTING TOWER. & PPEARS COMPLETE.	
7/21/2014	2157	3 NEW SPRINT ANTENNAS, Est complete.	
6/6/2014	1664	RRU'S TO TOWER/RADIO UNITS.Est complete.	
6/8/2014	1665	WIRE NEW RXAIT TOWER.Est complete.	
SPRINT - MODIF. TO TELEC. INSTALLATION ON MONOPOLE TOWER, REPL. 3 ANTENNA & CABLES AND ADD RRH'S AND NOTCH FILTERS BEHIND THE NEW ANTENNA ON TOWER, ADD CIENA EQUIP, ENCL. & FIBER JUNCTION BOX & EITHER RETROFIT OR REPLACE BTS CABINET WITHIN EQUIP, SHELTER.		AND THE PROPERTY OF THE PROPER	
12/21/2012	3950	AT&T - REMOVE & REPLACE ONE Q.C. POWER CABINET, INSTALL NEW LTE EQUIPMENT ON OPEN SLAB, CONDUITS, AC & DC CIRCUITS, FIBER OPTICS, GROUNDING & BONDING.	
11/1/2012	3422	AT&T - ADD 3 LTE ANTENNAS, SURGE ARRESTOR, RRU'S, PURCELL CABINET, CONCRETE PAD & DC/FIBER LINES	W. C. 111 11
12/5/2003	4261	AT&T WRELESS CELLSITE	CA
12/5/2003	4261	200 AMP SERV	CA
8/28/2003	3042	REP EX COMMUNI TOWER	CA
8/28/2003	/28/2003 3042 INSTALL COMMUNICA EQUIPME		CA

Property Images



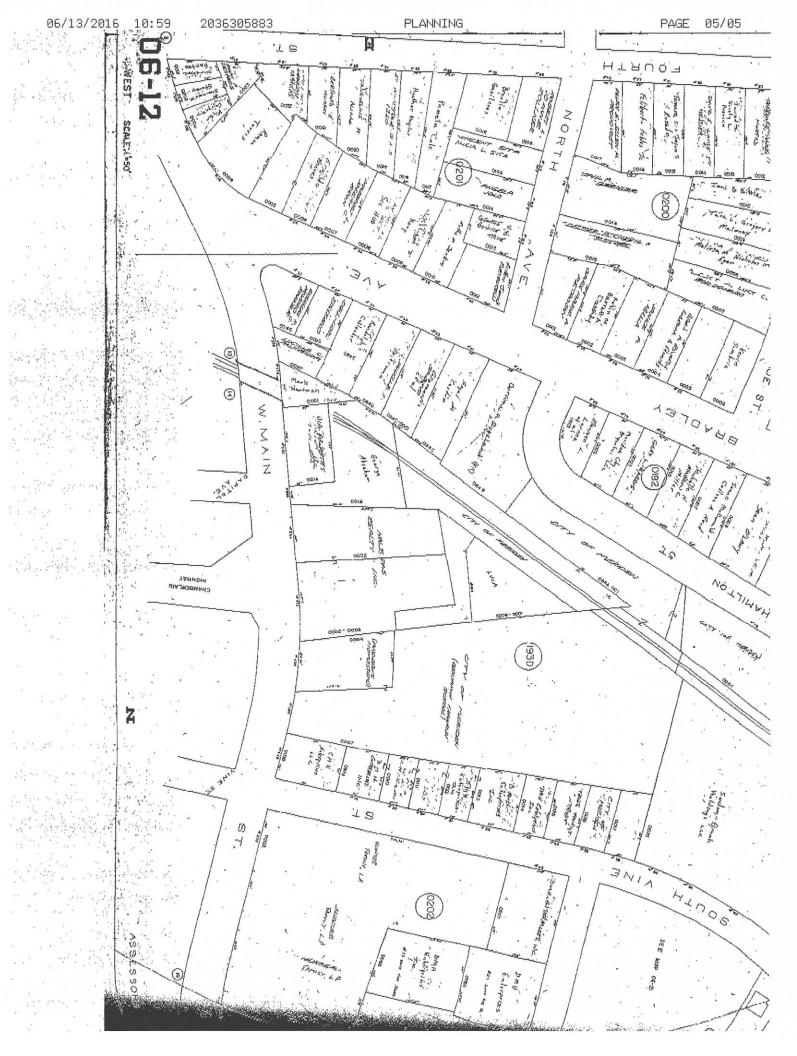


Exhibit C



T-MOBILE NORTHEAST LLC

SITE #: CT11733B

SITE NAME: CT733/AT&T/HUNTER AMBULANCE

SITE ADDRESS: 462 WEST MAIN STREET MERIDEN, CT 06451

WIRELESS BROADBAND FACILITY CONSTRUCTION DRAWINGS (792DB CONFIGURATION)

VICINITY MAP **Super Stop & Shop ** **West Continued by the stop of the stop

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CALL BEFORE YOU DIG:

CALL 800 922 4455, OR 811

CALL THREE WORKING DAYS PRIOR TO DIGGING
SAFETY PRECAUTIONS SHALL BE IMPLEMENTED BY CONTRACTOR(S) AT ALL
TRENCHING IN ACCORDANCE WITH CURRENT OSHA STANDARDS.

RECLAIMED WATER

COLOR CODE FOR UTILITY LOCATIONS

ELECTRIC - RED SEWER - GREEI
GAS/OIL - YELLOW SURVEY - PINK
TEL/CATV - ORANGE PROPOSED EXCAVATION - WHITE

GENERAL NOTES

- 1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES. RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES.
- 2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONSTRUCT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
- 3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE T-MOBILE REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF THE CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES, THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXPENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
- 4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING OF ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
- 5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONT
- THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
- 7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
- 8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUM OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.

- 9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT.
- 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS AND INSPECTIONS WHICH ARE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY, OR LOCAL GOVERNMENT AUTHORITY.
- 11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC., DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY
- 12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
- 13. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS, AS WELL AS THE LATEST EDITIONS OF ANY PERTINENT STATE SAFFTY REGULATIONS.
- 14. THE CONTRACTOR SHALL NOTIFY THE T-MOBILE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE T-MOBILE REPRESENTATIVE.
- 15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC., ON THE JOB.
- 16. THE CONTRACTOR SHALL RETURN ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION AT THE COMPLETION OF WORK.
- 17. ATLANTIS DESIGN GROUP, INC. HAS NOT CONDUCTED A STRUCTURAL ANALYSIS FOR THIS PROJECT AND DOES NOT ASSUME ANY LIABILITY FOR THE ADEQUACY OF THE STRUCTURE AND COMPONENTS.
- 18. REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT" PREPARED BY JACOBS ENGINEERING GROUP, INC., "T-MOBILE SITE ID CT11733B", DATED MAY 11, 2016.

SITE INFORMATION

SITE NUMBER: CT11733B

SITE NAME: CT733/AT&T/HUNTER AMBULANCE
SITE ADDRESS: 462 WEST MAIN STREET

MERIDEN, CT 06451

LAT./LONG.: N 41.53998/ W -72.81906

JURISDICTION: TOWN OF MERIDEN. CT

JURISDICTION: TOWN OF MERIDEN, CT
PROPERTY OWNER: PATRICIA PELON

PROJECT MANAGER T: (518) 373-3507 M: (518) 424-2396

CROWN CASTLE 3 CORPORATE PARK DRIVE, SUITE 101, CLIFTON PARK, NY 12065

USE GROUP:

PROJECT SUB-CONTRACTORS

APPLICANT: T-MOBILE NORTHEAST, LLC.

35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 (860) 692-7100

PROJECT MANAGER LISA LIN ALLEN

A&E:

NORTHEAST SITE SOLUTIONS 54 MAIN STREET STURBRIDGE, MA 01566

(508) 434–5237

ATLANTIS DESIGN GROUP INC. 54 JACQUELINE ROAD, SUITE #7 WALTHAM, MA 02452 (617)—852—3611

CODE COMPLIANCE

CONNECTICUT STATE BUILDING CODE

2005 CONNECTICUT BUILDING CODE WITH 2013 AMENDMENT

2011 NATIONAL ELECTRICAL CODE CONSTRUCTION TYPE: 2B

SHEET DESCRIPTION T-1 TITLE SHEET N-1 GENERAL AND ELECTRICAL NOTES A-1 SITE PLAN AND ELEVATION A-2 ELEVATION AND DETAILS E-1 GROUNDING AND COAX/FIBER DIAGRAM E-2 GROUNDING DETAILS

SHEET INDEX

T - Mobile-

T-MOBILE NORTHEAST, LLC

BLOOMFIELD, CT 06002 OFFICE: (860) 692-7100 FAX:(860) 692-7159

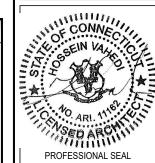
TLANTIS DESIGN GROUP, INC.

54 Jacqueline Road, Suite #7 Waltham, MA 02452 Phone number: 617-852-3611 Fax Number : 781-742-2247

	SUBMITTALS	
DATE	DESCRIPTION	REVISION
05/02/16	ISSUED FOR REVIEW	Α
05/23/16	FINAL CD	0

DEPT.	DATE	APP'D	revisions
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			
	RFE RF MAN. ZONING OPS CONSTR.	RFE RF MAN. ZONING OPS CONSTR.	RFE RF WAN. ZONING OPS CONSTR.

PROJECT NO:	CT11733B
DRAWN BY:	FG
CHECKED BY:	KM



THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED.

SITE NUMBER CT11733B

SITE NAME
CT733/AT&T/HUNTER
AMBULANCE

SITE ADDRESS 462 WEST MAIN STREE MERIDEN, CT 06451

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

ELECTRICAL NOTES:

- 1. INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, PLANT SERVICES AND ADMINISTRATIVE TASKS REQUIRED TO COMPLETE AND MAKE OPERABLE THE ELECTRICAL WORK SHOWN ON THE DRAWINGS. AND SPECIFIED HEREIN, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
- A. PREPARE AND SUBMIT SHOP DRAWINGS, DIAGRAMS AND ILLUSTRATIONS.
- B. PROCURE ALL NECESSARY PERMITS AND APPROVALS AND PAY ALL REQUIRED FEES AND CHARGES IN CONNECTION WITH
- C SUBMIT AS-BUILT DRAWINGS OPERATING AND MAINTENANCE
- D. EXECUTE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING OF EXISTING OR NEWLY INSTALLED CONSTRUCTION
 REQUIRED FOR THE WORK OF THIS CONTRACT, FOR SLAB AREA OF PENETRATION PRIOR TO PERFORMING WORK COORDINATE ALL X-RAY WORK WITH BUILDING ENGINEER.
 E. PROVIDE HANGERS, SUPPORTS, FOUNDATIONS, STRUCTURAL
- FRAMING SUPPORTS, AND BASES FOR CONDUIT AND FOUIPMENT PROVIDED OR INSTALLED LINDER THE WORK OF HIS CONTRACT. PROVIDE COUNTER FLASHING, SLEEVES AND SEALS FOR FLOOR AND WALL PENETRATIONS.
- . MAINTAIN ALL EXISTING ELECTRICAL SERVICES IN THE BUILDING AREAS NOT AFFECTED BY THE ALTERATION DURING TEMPORARY JUMPERS, CONDUITS, CAPS, PROTECTIVE DEVICES. CONNECTIONS AND EQUIPMENT REQUIRED. PROVIDE TEMPORARY LIGHT AND POWER FOR CONSTRUCTION
- 2. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO CALL FOR AN INSTALLATION THAT IS COMPLETE IN EVERY RESPECT. IT IS NOT THE INTENT TO GIVE EVERY DETAIL ON THE DRAWINGS AND IN THE SPECIFICATIONS. IF AN ITEM OF WORK IS INDICATED IN THE DRAWINGS IT IS CONSIDERED SUFFICIENT MATERIAL AND FOUIPMENT USUALLY FURNISHED OR NEEDED TO MAKE A COMPLETE INSTALLATION WHETHER OR I SPECIFICALLY MENTIONED IN THE CONTRACT DOCUMENTS.

GENERAL REQUIREMENTS

- 1. PROVIDE ALL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND LOCAL AND STATE ELECTRICAL
- 2 THE ELECTRICAL PLANS ARE DIAGRAMMATIC ONLY REFER TO THE ARCHITECTURAL PLANS FOR THE EXACT DIMENSIONS OF THE BUILDING
- 3. LOAD CALCULATIONS ARE BASED ON EXISTING BUILDING INFORMATION/DRAWINGS PROVIDED TO ENGINEERING. CONTRACTOR IS TO VERIFY ALL EXISTING RATINGS AND LOADS PRIOR TO PURCHASING OF SPECIFIED FOUIPMENT FOR COMPLIANCE TO NEC. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES AND REQUEST FURTHER DIRECTION BY
- 4. EXISTING BUILDING EQUIPMENT IS NOTED ON THE DRAWINGS. NEW OR RELOCATED EQUIPMENT IS SHOWN WITH SOLID LINES. FUTURE FOUIPMENT (NOT IN THIS CONTRACT) IS DEPICTED WITH SHADED LINES. REQUEST CLARIFICATION OF DRAWINGS OR OF SPECIFICATIONS PRIOR TO PRICING OR INSTALLATION.
- A. AFTER CAREFULLY STUDYING THE DRAWINGS AND SPECIFICATIONS, AND BEFORE SUBMITTING THE PROPOSAL,
 MAKE A MANDATORY SITE VISIT TO ASCERTAIN CONDITIONS OF TO BE PERFORMED NO EXTRA COMPENSATION WILL BE ALLOWED FOR FAILURE TO NOTIFY THE OWNER, IN WRITING,
 OF ANY DISCREPANCIES THAT MAY HAVE BEEN NOTED BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS AND SPECIFICATIONS.
- B. VERIFY ALL MEASUREMENTS AT THE SITE AND BE RESPONSIBLE FOR CORRECTNESS OF SAME QUALITY, WORKMANSHIP, MATERIALS AND SAFETY
- A. PROVIDE NEW MATERIALS AND EQUIPMENT OF A DOMESTIC PRODUCTION AND MANUFACTURE OF SPECIFIED MATERIALS AND EQUIPMENT. WHERE UL, OR OTHER AGENCY, HAS ESTABLISHED STANDARDS FOR MATERIALS. PROVIDE MATERIALS WHICH ARE LISTED AND LABELED ACCORDINGLY. THE COMMERCIALLY STANDARD ITEMS OF EQUIPMENT AND THE SPECIFIC NAMES MENTIONED HEREIN ARE INTENDED FOR THE PROPER FUNCTIONING OF THE WORK
- B. WORK SHALL BE PERFORMED BY WORKMEN SKILLED IN THE TRADE REQUIRED FOR THE WORK. INSTALL MATERIALS AND EQUIPMENT TO PRESENT A NEAT APPEARANCE WHEN COMPLETED AND IN ACCORDANCE WITH THE APPROVED RECOMMENDATIONS OF THE MANUFACTURER AND IN ACCORDANCE WITH CONTRACT DOCUMENTS.
- C. PROVIDE LABOR, MATERIALS, APPARATUS AND APPLIANCES
 ESSENTIAL TO THE FUNCTIONING OF THE SYSTEMS DESCRIBED OR INDICATED HEREIN, OR WHICH MAY BE REASONABLY IMPLIED AS ESSENTIAL WHENEVER MENTIONED IN THE
- D. MAKE WRITTEN REQUESTS FOR SUPPLEMENTARY AS TO WORK INTENDED OR IN EVENT OF NEED FOR EXPLANATION THEREOF.

 E. PERFORMANCE AND MATERIAL REQUIREMENTS SCHEDULED OR
- SPECIFIED ARE MINIMUM STANDARD ACCEPTABLE. THE RIGHT TO JUDGE THE QUALITY OF EQUIPMENT THAT DEVIATES FROM THE CONTRACT DOCUMENT REMAINS SOLELY WITH ARCHITECT/ENGINEER. CONTRACT DOCUMENT OR NOT.

GUARANTEE

1. GUARANTEE MATERIALS, PARTS AND LABOR FOR WORK FOR ONE YEAR FROM THE DATE OF ISSUANCE OF OCCUPANCY PERMIT.
DURING THAT PERIOD. MAKE GOOD FAULTS OR IMPERFECTIONS THAT MAY ARISE DUE TO DEFECTS OR OMISSIONS IN MATERIALS OR WORKMANSHIP WITH NO ADDITIONAL COMPENSATION AND AS

- 1. REMOVE ALL CONSTRUCTION DEBRIS RESULTING FROM THE
- WORK.
 2. CLEAN EQUIPMENT AND SYSTEMS FOLLOWING THE COMPLETION OF THE PROJECT TO THE SATISFACTION OF THE ENGINEER.

 CAREFULLY LAY OUT ALL WORK IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CFILINGS OR OTHER SURFACES. REPAIR THE WORK IN AN APPROVED MANNER BY SKILLED MECHANICS AT NO ADDITIONAL COST TO THE OWNER. RENDER FULL COOPERATION TO OTHER TRADES WHERE WORK WILL BE ASSIST IN WORKING OUT SPACE CONDITIONS, IF WORK IS INSTALLED BEFORE COORDINATION WITH OTHER TRADES, OR CAUSES INTERFERENCE, MAKE CHANGES NECESSARY TO

1 AS-RUILT DRAWINGS.

FOUIPMENT AND SYSTEMS

- A. UPON COMPLETION OF THE WORK, FURNISH TO THE OWNER "AS-BUILT" DRAWINGS.
- A. UPON COMPLETION OF THE WORK, FULLY INSTRUCT T-MOBILE AS TO THE OPERATION AND MAINTENANCE OF ALL MATERIAL,
- B. PROVIDE 3 COMPLETE BOUND SETS OF INSTRUCTIONS FOR OPERATING AND MAINTAINING ALL SYSTEMS AND EQUIPMENT.

CUTTING AND PATCHING

- . PROVIDE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING
- REQUIRED TO COMPLETE THE WORK.

 2. OBTAIN OWNER APPROVAL PRIOR TO CUTTING THROUGH FLOORS OR WALLS FOR PIPING OR CONDUIT.

TESTS, INSPECTION AND APPROVAL

- TO STATE THE STATE OF THE PROVINCE OF THE PROV
- 2. PROVIDE THE COMPLETE ELECTRICAL SYSTEM FREE OF GROUND OPERATE SATISFACTORILY UNDER FULL LOAD CONDITIONS. WITHOUT EXCESSIVE HEATING AT ANY POINT IN THE SYSTEM.

- 1. DO NOT LEAVE ANY WORK INCOMPLETE NOR ANY HAZARDOUS SITUATIONS CREATED WHICH WILL AFFECT THE LIFE OR SAFETY OF THE PUBLIC AND/OR BUILDING OCCUPANTS DO NOT WITHOUT THE OWNER'S WRITTEN PERMISSION.
- 2. WHEN NECESSARY TO TEMPORARILY DISCONNECT ANY EXISTING BUILDING LITHITIES AND SERVICE SYSTEMS, INCLUDING FEEDER OR BRANCH CIRCUITING SUPPLYING EXISTING FACILITIES, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF SHUTDOWN NOTE: SCHEDULE AND NOTIFY OWNER 48 HOURS PRIOR TO SHUTDOWN, ALL SHUTDOWN WORK TO BE SCHEDULED AT A TIME CONVENIENT TO OWNER.

- 1. ROUTE ALL GROUNDING CONDUCTORS AS SHOWN ON
- CONDUIT/GROUNDING RISER. 2. ROUTE 500 KCMIL CU. THHN CONDUCTOR FROM THE MGB LOCATION TO BUILDING STEEL VERIEY BUILDING STEEL IS EFFECTIVELY GROUNDED PER NEC TO THE MAIN SERVICE
- GROUNDING ELECTRODE CONDUCTOR (GEC).

 3. MAKE ALL GROUND CONNECTIONS FROM MGB TO ELECTRICAL EQUIPMENT WITH 2 HOLE, CRIMP TYPE, BURNDY COMPRESSION
- ERMINATIONS, SIZED AS REQUIRED. 4. USE 1 HOLE. CRIMP TYPE. BURNDY COMPRESSIONS TERMINATIONS, SIZED AS REQUIRED, AT EQUIPMENT GROUND CONNECTIONS
- 5. HIRE AN INDEPENDENT LAB TO PERFORM THE SPECIFIED OHMS TESTING. PROVIDE 4 SETS OF THE CERTIFIED DOCUMENTS TO THE OWNER FOR VERIFICATION PRIOR TO THE PROJECT COMPLETION.

- ALL WIRING TO BE INSTALLED IN CONDUIT SYSTEMS IN ACCORDANCE WITH THE FOLLOWING:
- A. EXTERIOR FEEDERS AND CONTROL, WHERE UNDERGROUND. TO BE IN SCH 40 PVC.

 B. EXTERIOR. ABOVE GROUND POWER CONDUITS TO BE
- GALVANIZED RIGID STEEL (RGS).
 C. ALL TELECOMMUNICATION CONDUITS, INTERIOR/EXTERIOR, TO
- D. INSTALL PULL ROPES IN ALL NEW EMPTY CONDUITS INSTALLED
- ON THIS PROJECT.

 E. ALL TELECOM CONDUITS AND PULL BOXES INSTALLED ON THIS PROJECT TO BE LABELED "T—MOBILE". OWNER WILL PROVIDE LABELS FOR CONTRACTOR TO INSTALL.
- F. INTERIOR FEEDERS TO BE INSTALLED IN E.M.T. WITH STEEL COMPRESSION FITTINGS G. MINIMUM SIZE CONDUIT TO BE 34" TRADE SIZE
- UNLESS OTHERWISE INDICATED ON THE DRAWINGS. H. FINAL CONNECTIONS TO MOTORS AND VIBRATING EQUIPMENT TO BE INSTALLED IN LIQUID-TIGHT FLEXIBLE METAL CONDUIT. I. CONDUIT TO BE RUN CONCEALED IN CEILINGS, FINISHED
- AREAS OR DRYWALL PARTITIONS, UNLESS OTHERWISE NOTED J. THE ROUTING OF CONDUITS INDICATED ON THE DRAWINGS IS DIAGRAMMATIC, BEFORE INSTALLING ANY WORK, EXAMINE THE WORKING LAYOUTS AND SHOP DRAWINGS OF THE OTHER TRADES TO DETERMINE THE EXACT LOCATIONS AND
- K. ALL EXTERIOR MOUNTING HARDWARE TO BE GALVANIZED STEEL. COORDINATE WITH BUILDING ENGINEER PRIOR TO ATTACHING TO BUILDING STRUCTURE.

- RACEWAYS CONT'D
 L. PENETRATIONS OF WALLS, FLOORS AND ROOFS, FOR THE PASSAGE OF ELECTRICAL RACEWAYS, TO BE PROPERLY SEALED AFTER INSTALLATION OF RACEWAYS SO AS TO MAINTAIN THE STRUCTURAL OR WATERPROOF INTEGRITY OF THE WALL, FLOOR OR ROOF SYSTEM TO BE PENETRATED. SEAL ALL CONDUIT PENETRATIONS THROUGH FIRE OR SMOKE RATED WALLS. CEILINGS OR SMOKE TIGHT CORRIDOR PARTITIONS TO MAINTAIN PROPER RATING OF WALL OR
 - M. PROVIDE ALL CONDUIT ENDS WITH INSULATED METALLIC GROUNDING BUSHINGS.
 N. CONDUIT TO BE SUPPORTED AT MAXIMUM DISTANCE OF
 - 8'-0", OR AS REQUIRED BY NEC, IN HORIZONTAL AND
 - O. PROVIDE STAINLESS STEEL BLANK COVER PLATES FOR ALL JUNCTION BOXES AND/OR OUTLET BOXES NOT USED IN EXPOSED AREAS. PROVIDE ALL OTHER UNUSED BOXES WITH STANDARD STEEL COVER PLATES.
 - P. WHERE APPLICABLE, PROVIDE ROOFTOP CONDUIT SUPPORT SYSTEM, CONFORMING TO ROOFTOP WARRANTY REQUIREMENTS,

WIRES AND CABLES

- 1. CONTRACTOR TO COORDINATE WITH EQUIPMENT SUPPLIER AND VENDOR FOR EXACT EQUIPMENT OVER-CURRENT PROTECTION VOLTAGE, WIRE SIZE AND PLUG CONFIGURATION, IF APPLICABLE,
- 2. ALL EQUIPMENT/DEVICES TO BE PROVIDED WITH INSULATED GROUND CONDUCTOR 3. ALL WIRE AND CABLE TO BE 600VOLT, COPPER, WITH THWN/
- THHN INSULATION, EXCEPT AS NOTED.

 4. WIRE FOR POWER AND LIGHTING WILL NOT BE LESS THAN NO.
- 12AWG, ALL WIRE NO. 8 AND LARGER TO BE STRANDED. 5. CONTROL WIRING IS NOT TO BE LESS THAN NO. 14AWG, FLEXIBLE IN SINGLE CONDUCTORS OR MULTI-CONDUCTOR CABLES, CONTROL WIRING WILL CONSIST OF MULTI-CONDUCTOR CABLES WHEREVER POSSIBLE, CABLES TO BE PROVIDED WITH
- AN OVERALL FLAME-RETARDANT, EXTRUDED JACKET AND RATED FOR PLENUM USE, ALL CONTROL WIRE TO BE 600VOLT RATED. 6. WIRE PREVIOUSLY PULLED INTO CONDUIT IS CONSIDERED USED
- AND IS NOT TO BE RE-PULLED 7. HOME RUNS AND BRANCH CIRCUIT WIRING FOR 20A, 120V
- CIRCUITS: LENGTH (FT.) HOME RUN WIRE SIZE 101 TO 150
- 8. VOLTAGE DROP IS NOT TO EXCEED 3%. MAKE ALL CONNECTIONS WITH UL APPROVED, SOLDERLESS,
 PRESSURE TYPE INSULATED CONNECTORS: SCOTCHLOK OR AND APPROVED EQUAL.

- 1. ALL RECEPTACLES INSTALLED IN THIS PROJECT TO BE GROUNDING TYPE, WITH GROUNDING PIN SLOT CONNECTED TO DEVICE GROUND SCREW FOR GROUND WIRE CONNECTION. DISCONNECT SWITCHES AND FUSES

 1. DISCONNECT SWITCHES TO BE VOLTAGE—RATED TO SUIT THE
- CHARACTERISTICS OF THE SYSTEM FROM WHICH THEY ARE 2. PROVIDE HEAVY-DUTY, METAL-ENCLOSED, EXTERNALLY-OPERATED
- DISCONNECT SWITCHES, FUSED OR UNFUSED, OF SUCH TYPE AND SIZE AS REQUIRED TO PROPERLY PROTECT OR DISCONNECT THE LOAD FOR WHICH THEY ARE INTENDED.
- 3. PROVIDE NEMA 1 DISCONNECT SWITCHES FOR INTERIOR INSTALLATION. NEMA 3R FOR EXTERIOR INSTALLATION. 4. DISCONNECT SWITCHES TO BE MANUFACTURED BY
- A. GENERAL ELECTRIC COMPANY

5. PROVIDE RK-1 TYPE FUSES, UNLESS NOTED OTHERWISE.

- 1. INSTALL DISCONNECT SWITCHES WHERE INDICATED ON 2. INSTALL FUSES IN FUSIBLE DISCONNECT SWITCHES. FUSES
- MUST MATCH IN TYPE AND RATING.

 3. FUSES TO BE MOUNTED SO THAT THE LABELS SHOWING THEIR
- RATINGS CAN BE READ WITHOUT REQUIRING FUSE REMOVAL.

 4. FURNISH AND DEPOSIT SPARE FUSES AT THE JOB SITE AS
- A. THREE SPARES FOR EACH TYPE AND SIZE, IN EXCESS OF
- 60A, USED FOR INITIAL FUSING.

 B. TEN PERCENT SPARES FOR EACH TYPE AND SIZE. UP TO AND INCLUDING 60A, USED FOR INITIAL FUSING. IN NO CASE WILL LESS THAN THREE FUSES OF ONE PARTICULAR TYPE AND

GENERAL NOTES:

INTENT

- 1. THESE SPECIFICATIONS AND CONSTRUCTION DRAWINGS
 ACCOMPANYING THEM DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR CONSTRUCTION.
 2. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE
- FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED, OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH
- 3. THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR
 AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT 4. THE PURPOSE OF THE SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF
- THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.

 5. MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK WILL BE MADE OR PERMITTED BY THE OWNER WITHOUT ISSUING A

- 1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATIONS OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK, NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE DWNER FOR CONSIDERATION BEFORE THE CONTRACTOR
- PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.

 2. THE BIDDER, IF AWARDED THE CONTRACT, WILL NOT BE ALLOWED ANY EXTRA COMPENSATION BY REASON OF ANY FULLY INFORMED THEMSELVES PRIOR TO THE BIDDING
- 3. NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST, OR OF DIFFICULTIES OR CONDITIONS THAT MAY BE ENCOUNTERED OR ANY OTHER RELEVANT MATTER CONCERNING THE WORK TO BE PERFORMED IN THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF ALL THE REQUIREMENTS OF THE CONTRACT DOCUMENTS

CONTRACTS AND WARRANTIES

- 1. CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT OF CONTRACTOR LICENSES AND BONDS.
- 2. SEE MASTER CONTRACTION SERVICES AGREEMENT FOR ADDITIONAL DETAILS.

1. ALL MATERIALS MUST BE STORED IN A LEVEL AND DRY FASHION AND IN A MANNER THAT DOES NOT NECESSARILY OBSTRUCT THE FLOW OF OTHER WORK. ANY STORAGE METHOD MUST MEET ALL RECOMMENDATIONS OF THE ASSOCIATED MANUFACTURER.

- THE CONTRACTORS SHALL, AT ALL TIMES, KEEP THE SITE FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY THEIR EMPLOYEES AT WORK AND AT THE COMPLETION OF THE WORK, THEY SHALL REMOVE ALL RUBBISH FROM AND ABOUT THE BUILDING AREA, INCLUDING ALL THEIR TOOLS, SCAFFOLDING AND SURPLUS MATERIALS AND SHALL LEAVE THEIR WORK CLEAN AND READY TO USE.
- FXTFRIOR A. VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER.
- B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM
- ADJACENT SURFACES.

 C. IF NECESSARY, TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE.
- 3 INTERIOR A. VISUALLY INSPECT INTERIOR SURFACE AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER FROM WALLS, FLOOR, AND CEILING.
- B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
 C. REMOVE PAINT DROPPINGS, SPOTS, STAINS, AND DIRT FROM

CHANGE ORDER PROCEDURE:

1. REFER TO SECTION 17 OF SIGNED MCSA: SEE PROFESSIONAL SERVICE AGREEMENT FOR MCSA.

RELATED DOCUMENTS AND COORDINATION

- LEATED DOCUMENTS AND CONCENTRATION.

 1. GENERAL CAPPENTRY, ELECTRICAL AND ANTENNA DRAWINGS ARE INTERRELATED, IN PERFORMANCE OF THE WORK, THE CONTRACTOR MUST REFER TO ALL DRAWINGS. ALL COORDINATION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
- SHOP DRAWINGS I. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS REQUIRED AND LISTED IN THESE SPECIFICATIONS TO THE OWNER FOR
- 2. ALL SHOP DRAWINGS SHALL BE REVIEWED, CHECKED AND CORRECTED BY CONTRACTOR PRIOR TO SUBMITTAL TO THE

PRODUCTS AND SUBSTITUTIONS

- 1. SUBMIT 3 COPIES OF EACH REQUEST FOR SUBSTITUTION. IN EACH REQUEST, IDENTIFY THE PRODUCT OR FABRICATION OR INSTALLATION METHOD TO BE REPLACED BY THE SUBSTITUTION INCLUDE RELATED SPECIFICATION SECTION AND DRAWING NUMBERS AND COMPLETE DOCUMENTATION SHOWING COMPLIANCE WITH THE REQUIREMENTS FOR SUBSTITUTIONS
- CUMPLIANCE WITH THE REQUIREMENTS FOR SUBSTITUTIONS.

 SUBMIT ALL NECESSARY PRODUCT DATA AND CUT SHEETS
 WHICH PROPERLY INDICATE AND DESCRIBE THE ITEMS,
 PRODUCTS AND MATERIALS BEING INSTALLED. THE CONTRACTOR
 SHALL, IF DEEMED NECESSARY BY THE OWNER, SUBMIT ACTUAL SAMPLES TO THE OWNER FOR APPROVAL IN LIEU OF CUT

QUALITY ASSURANCE

1. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THESE SHALL INCLUDE, BUT NOT BE LIMITED TO THE APPLICABLE CODES SET FORTH BY THE LOCAL GOVERNING BODY. SEE "CODE COMPLIANCE" T-1.

1. BEFORE THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR WILL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THIS PROJECT, THIS PROJECT MANAGER WILL DEVELOP A MASTER

PROJECT. HIS PROJECT MANAGER WILL DEVELOP A MASTER SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO THE OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK.

2. SUBMIT A BAR TYPE PROGRESS CHART, NOT MORE THAN 3 DAYS AFTER THE DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR EACH MAJOR CATEGORY OR UNIT OF WORK TO BE PERFORMED AT THE SITE, PROPERLY SEQUENCED AND COORDINATED WITH OTHER ELEMENTS OF WORK AND SHOWING COMPLETION OF THE WORK SUFFICIENTLY IN ADVANCE OF THE DATE ESTABLISHED

- FOR SUBSTANTIAL COMPLETION OF THE WORK.

 3. PRIOR TO COMMENCING CONSTRUCTION, THE OWNER SHALL SCHEDULE AN ON-SITE MEETING WITH ALL MAJOR PARTIES. THIS WOULD INCLUDE, BUT NOT LIMITED TO, THE OWNER, PROJECT MANAGER, CONTRACTOR, LAND OWNER REPRESENTATIVE, LOCAL TELEPHONE COMPANY, TOWER ERECTION FOREMAN (IF SUBCONTRACTED).
- SUBCONTRACTED).

 4. CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF CONSTANT COMMUNICATIONS, SUCH AS A MOBILE PHONE OR A BEEPER. THIS EQUIPMENT WILL NOT BE SUPPLIED BY THE OWNER, NOR WILL WIRELESS SERVICE BE ARRANGED.
- 5. DURING CONSTRUCTION, CONTRACTOR MUST ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES. CONTRACTOR WILL COMPLY WITH ALL WPCS SAFETY
 REQUIREMENTS IN THEIR AGREEMENT.
- 6. PROVIDE WRITTEN DAILY UPDATES ON SITE PROGRESS TO THE 7. COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND
- EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION.

 8. NOTIFY THE OWNER/PROJECT MANAGER IN WRITING NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND EQUIPMENT CABINET PLACEMENTS.

INSURANCE AND BONDS

1. CONTRACTOR, AT THEIR OWN EXPENSE, SHALL CARRY AND MAINTAIN, FOR THE DURATION OF THE PROJECT, ALL INSURANCE, AS REQUIRED AND LISTED, AND SHALL NOT COMMENCE WITH THEIR WORK UNTIL THEY HAVE PRESENTED AN ORIGINAL CERTIFICATE OF INSURANCE STATING ALL COVERAGES TO THE OWNER, REFER TO THE MASTER AGREEMENT FOR REQUIRED INSURANCE LIMITS.

ADJ

AGL

BTS CAB

CLG

CONC

CONT

ELEC

ELEV

EQ

(E) EXT

FF GA

GALV GC GRND

MECH

MW MFR

MGB

MIN MTL

(N) NIC NTS OC

OPP

(P) PCS PPC SF SHT SIM SS STL TOC

TOM TYP VIF UON

EQUIP EGB

DIA OR Ø

APPROX

THE OWNER SHALL BE NAMED AS AN ADDITIONAL INSURED ON ALL POLICIES. 3. CONTRACTOR MUST PROVIDE PROOF OF INSURANCE

DRAWING

ELECTRICAL

ELEVATION

FXISTING

GAUGE

GROUND

MINIMUM

LONG MAXIMUM

MECHANICAL

MICROWAVE DISH

NOT IN CONTRACT

PERSONAL COMMUNICATION SYSTEM

POWER PROTECTION CABINET

UNLESS OTHERWISE NOTED

WELDED WIRE FABRIC

NOT TO SCALE

SQUARE FOOT

STAINLESS STEEL

STEEL TOP OF CONCRETE

TOP OF MASONRY

TYPICAL VERIFY IN FIELD

ON CENTER

OPPOSITE

PROPOSED

SHFFT

SIMILAR

MASTER GROUND BAR

MANUFACTURER

GAI VANIZED

FINISHED FLOOR

GENERAL CONTRACTOR

EQUAL EQUIPMENT EQUIPMENT GROUND BAR

FACH

ABBREVIATIONS OF CONNEC ADJUSTABLE ABOVE GROUND LINE GSEIN VALVE C APPROXIMATE BASE TRANSMISSION STATION CABINET CEILING CONCRETE 10 ARI. 11167 CONTINUOUS DIAMETER

NED AROTTO PROFESSIONAL SEAL

T - Mobile -

T-MOBILE NORTHEAST, LLC

35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002

OFFICE: (860) 692-7100 FAX:(860) 692-7159

TLANTIS DESIGN

GROUP, INC.

54 Jacqueline Road, Suite #7 Waltham, MA 02452

SUBMITTALS

FINAL CD

A

REVISIONS

CT11733B

DESCRIPTION

05/23/16

DEPT. DATE APP'D

PROJECT NO:

DRAWN BY

CHECKED BY

ZONING

CONSTR.

one number: 617-852-3611 Number : 781-742-2247

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> SITE NUMBER CT11733B

SITE NAME CT733/AT&T/HUNTER AMBULANCE

SITE ADDRESS 462 WEST MAIN STREET MERIDEN, CT 06451

> SHEET TITLE **GENERAL** AND ELECTRICAL NOTES

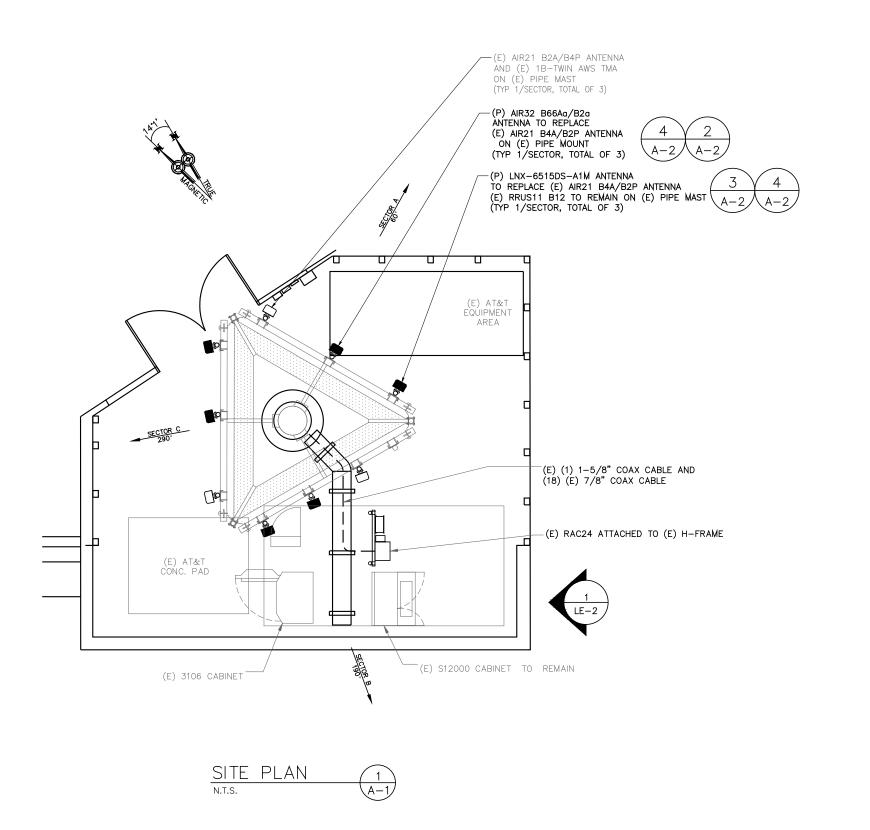
> > SHEET NUMBER

ARCHITECTURAL SYMBOLS STORAGE 38

DETAIL REFERENCE KEY

REFER TO - DRAWING DETAIL NUMBER-EXISTING N.I.C. RE: 2/A-3 LSHEET NUMBER OF DETAIL-

(3)-



GENERAL SITE NOTES

- 1. SITE INFORMATION WAS OBTAINED FROM A FIELD INVESTIGATION PERFORMED BY ATLANTIS GROUP, INC. CONTRACTOR TO FIELD VERIFY DIMENSIONS AS NECESSARY BEFORE CONSTRUCTION.
- 2. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE SIGNS OF ADVERTISING.
- 3. THE PROPOSED DEVELOPMENT IS UNMANNED AND THEREFORE DOES NOT REQUIRE A MEANS OF WATER SUPPLY OR SEWAGE DISPOSAL.
- 4. NO LANDSCAPING WORK IS PROPOSED IN CONJUNCTION WITH THIS DEVELOPMENT OTHER THAN THAT WHICH IS
- 5. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES.
- 6. UTILITIES SHOWN ON PLAN ARE TAKEN FROM OWNERS RECORDS AND FIELD LOCATION OF VISIBLE SURFACE FEATURES. THE EXISTENCE, EXTENT AND EXACT HORIZONTAL AND VERTICAL LOCATIONS OF UTILITIES HAS NOT BEEN VERIFIED. ANY CONTRACTOR PERFORMING WORK ON THIS SITE MUST CONTACT CALL BEFORE YOU DIG THREE WORKING DAYS PRIOR TO COMMENCING WORK.
- 7. ALL OBSOLETE OR UNUSED FACILITIES SHALL BE REMOVED WITHIN 12 MONTHS OF CESSATION OF

SITE LEGEND

SITE PROPERTY LINE STREET OR ROAD CHAIN LINK FENCE -x-x-x-OPAQUE WOODEN FENCE BOARD ON BOARD FENCE DECIDUOUS TREES/SHRUBS EVERGREEN TREES/SHRUBS TREE LINE Ø UTILITY POLE (E) EXISTING (N) NEW (P) PROPOSED (F) **FUTURE** PROP. LTE ANTENNA **_** PROP. UMTS/GSM ANTENNA

EX. GSM ANTENNA

EX. UMTS ANTENNA



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DATE	DESCRIPTION	REVISION
5/02/16	issued for review	A
5/23/16	FINAL CD	0

DEPT.	DATE	APP*D	revisions
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CT11733B
DRAWN BY:	FG
CHECKED BY:	KM



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SITE NAME CT733/AT&T/HUNTER AMBULANCE

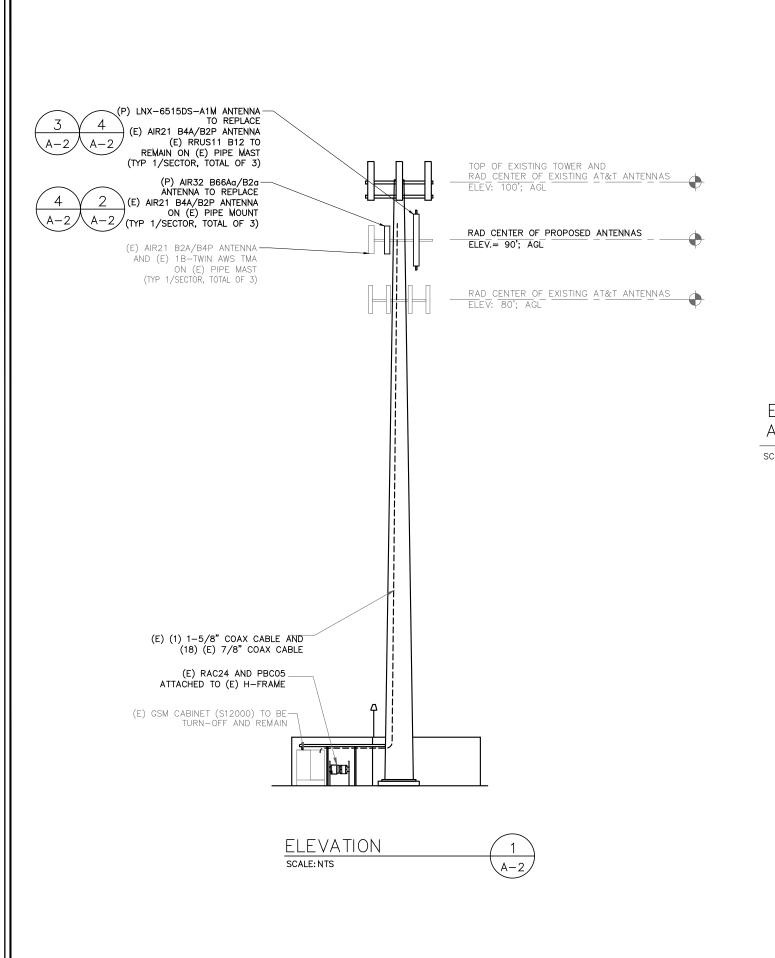
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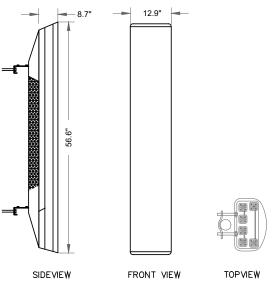
SHEET TITLE

SITE PLAN

SHEET NUMBER

A-1

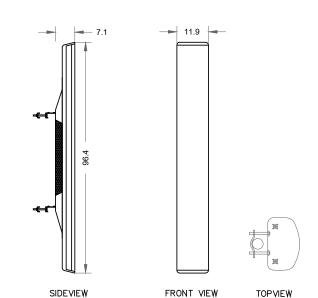




MANUFACTURER: ERICSSON MODEL NO.: ERICSSON AIR32 AIR32 B66Aa/B2a DIMENSIONS - HxWxD, (IN) 56.6"x12.9"x8.7"

ERICSSON AIR32 B66Aa/B2a ANTENNA DETAILS

SCALE: N.T.S



MANUFACTURE: COMMSCOPE MODEL NO. LNX-6515DS-VTM

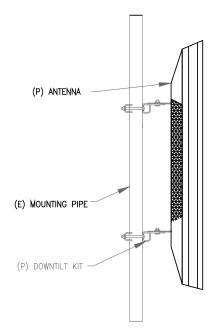
DIMENSIONS - HxWxD, (IN) 96.4x11.9x7.1

WEIGHT - 50.3 LB

COMMSCOPE LNX-6515DS-VTM

ANTENNA DETAILS

SCAA: N.T.S



ANTENNA MOUNT DETAILS

SCALE: N.T.S

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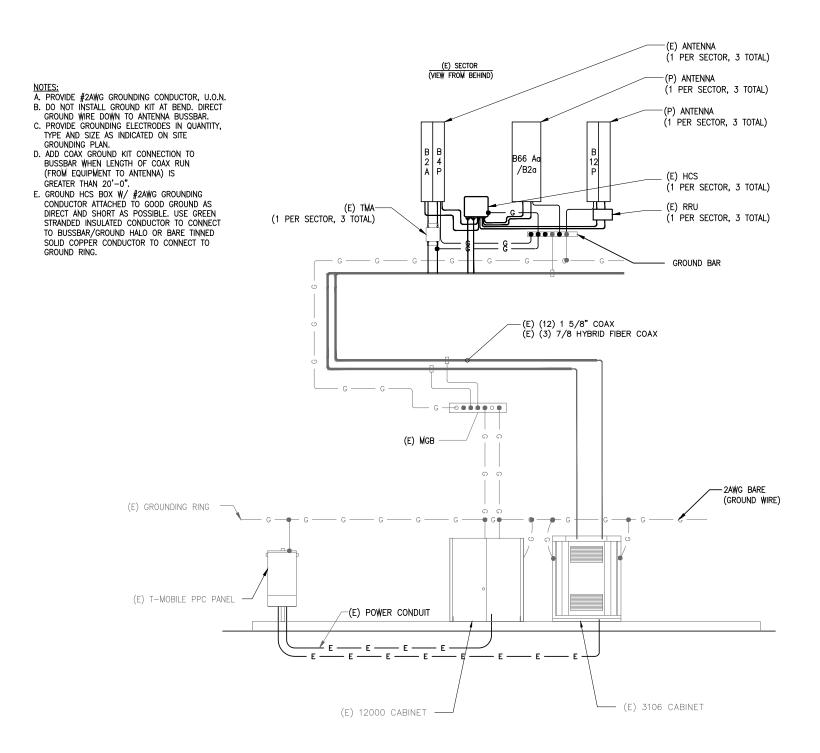
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SHEET TITLE **ELEVATION** AND DETAILS

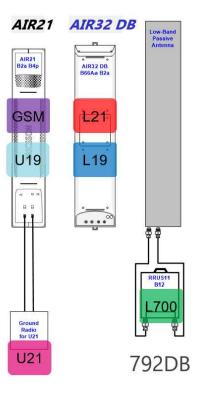
SHEET NUMBER

A-2



GROUNDING DIAGRAM

SCALE: N.T.S



TRUNK FIBER NOTES:

- 1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO %" COAXIAL CABLE, AND SIMILAR INSTALLATION TECHNIQUES APPLY. ALL CABLES ARE INDIVIDUALLY SERIALIZED, BE SURE TO WRITE DOWN THE CABLE SERIAL NUMBER FOR FUTURE REFERENCE.
- 2. THE TERMINATED FIBER ENDS (THE BROKEN OUT FIBERS PLUS CONNECTORS) HOWEVER ARE FRAGILE, AND THESE MUST BE PROTECTED DURING THE INSTALLATION PROCESS.

 3. LEAVE THE PROTECTIVE TUBE AND SOCK AROUND THE FIBER TAILS AND CONNECTORS IN PLACE DURING HOISTING AND
- SECURING THE CABLE. REMOVE THIS ONLY JUST PRIOR TO MAKING THE FINAL CONNECTIONS TO THE OVP BOX.
- 4. DO NOT BEND THE FIBER ENDS (IN THE ORANGE FURCATION TUBES) TIGHTER THAN 3/4" (19MM) BEND RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS FIBERS.
- 5. BE SURE THAT THE LACE UP ENDS AND FIBER CONNECTORS ARE NOT DAMAGED BY ATTACHMENT OF A HOISTING GRIP OR DURING THE HOISTING PROCESS. ATTACH A HOISTING GRIP ON THE JACKETED CABLE NO LESS THAN 6 INCHES BELOW THE FIBER BREAKOUT POINT. IF A HOISTING GRIP IS NOT EASILY ATTACHED, USE A SIMPLE LINE ATTACHED BELOW THE FIBER BREAK-OUT POINT (I.E. AT THE CABLE OUTER JACKET). PREVENT THE FIBER TAILS (IN PROTECTIVE TUBE) AT THE CABLE END FROM UNDUE MOVEMENT DURING HOISTING BY SECURING THE PROTECTIVE TUBE (WITH OUTER SOCK) TO THE HOISTING LINE.
- 6. DURING HOISTING ENSURE THAT THERE IS A FREE PATH AND THAT THE CABLE, AND ESPECIALLY THE FIBER ENDS, WILL NOT BE SNAGGED ON TOWER MEMBERS OR OTHER OBSTACLES.
- 7. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO +70C).
- 8. MINIMUM CABLE BEND RADII ARE 22.2" (565MM) LOADED (WITH TENSION ON THE CABLE) AND 11.1" (280MM) UNLOADED.
- 9. MAXIMUM CABLE TENSILE LOAD IS 3560 N (800 LB) SHORT TERM (DURING INSTALLATION) AND 1070 N (240 LB) LONG TERM.
- 10. COMMSCOPE NON LACE UP GRIP RECOMMENDED FOR MONOPOLE INSTALLATIONS. 11. MAXIMUM HANGER SPACING 3FT (0.9 M).

- HYBRID FIBER/POWER JUMPER NOTES: 1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO A 3/8" COAXIAL CABLE.
- 2. THE TERMINATED FIBER ENDS HOWEVER ARE FRAGILE AND MUST BE PROTECTED DURING INSTALLATION. LEAVE THE PACKAGING AROUND THE FIBER ENDS IN PLACE UNTIL READY TO CONNECT THE JUMPER BETWEEN OVP AND RRU OR BBU
- 3. DO NOT BEND THE FIBER BREAKOUT CABLE (BETWEEN THE MAIN CABLE AND THE FIBER CONNECTOR) TIGHTER THAN 34" (19MM) RADIUS. ELSE THERE IS A RISK OF BREAKING THE GLASS.
- 4. ATTACH THE MAIN CABLE SECURELY TO THE STRUCTURE OR EQUIPMENT USING HANGERS AND/OR CABLE TIES TO PREVENT STRAIN ON CONNECTIONS FROM MOVEMENT IN WIND OR SNOW/ICE CONDITIONS.
- 5. ENSURE THE LC FIBER CONNECTORS ARE SEATED FIRMLY IN PANEL IN OVP OR IN EQUIPMENT.
- 6. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO 70C).
- 7. MINIMUM CABLE BEND RADII ARE 10.3 INCH (265MM) LOADED (WITH TENSION ON THE CABLE) AND 5.2 INCH (130MM) UNLOADED.
- 8. MAXIMUM CABLE TENSILE LOAD IS 350 LB (1560N) SHORT TERM (DURING INSTALLATION) AND 105 LB (470N)
- 9. STANDARD LENGTHS AVAILABLE ARE 6 FEET, 15 FEET AND 20 FEET

792DB CONFIGURATION COAX/FIBER PLUMBING DIAGRAM SCALE: N.T.S



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CONSTR.			
SITE AC.			

PROJECT NO:	CT11733B
DRAWN BY:	FG
CHECKED BY:	KM



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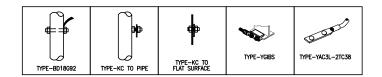
> SITE NUMBER CT11733B

SITE NAME CT733/AT&T/HUNTER AMBULANCE

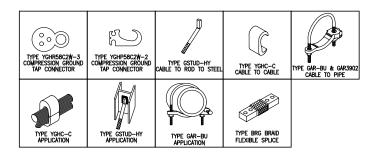
SITE ADDRESS 462 WEST MAIN STREET MERIDEN, CT 06451

SHEET TITLE GROUNDING AND ONE LINE DIAGRAM COAX/FIBER DIAGRAM

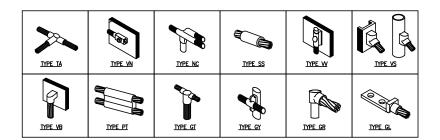
SHEET NUMBER







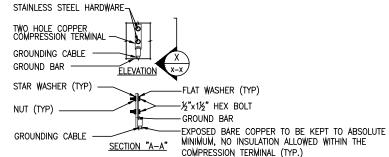
BURNDY GROUNDING PRODUCTS SCALE: N.T.S.



CADWELD GROUNDING CONNECTION PRODUCTS, SCALE: N.T.S.

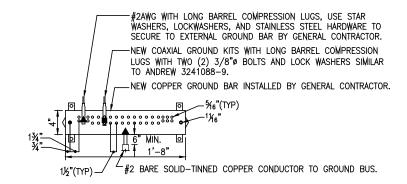
TERMINATION TYPES: A. MECHANICAL COMPRESSION	ше /.	0 /	0/0	/# / &	
B. DOUBLE BARRELL COMPRESS		* / :	3 /3 ×		
CONNECTOR C. EXOTHERMIC TERMINATION					
D. BEAM CLAMP		\ \&_{\&_{\operatorname{\gamma}}}			
	/ 50	/ 🔌	/ ****	1 25	14 07 E /
SOLID #2 TINNED COPPER	B OR C	B OR C		C A, C, OR D	
#6 GROUND LEAD	B OR C			A A, C, OR D	7877
#2/0 STRANDED GRNDG ELECTRODE CONDUCTOR				A A, C, OR D	A
MASTER GROUND BAR	С	Α	A	//////	
STRUCTURAL OR TOWER STEEL	A, C, OR D	A, C, OR D	A, C, OR D	//////	
GROUND RING	С		C	//////	





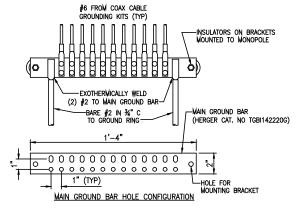
NOTES:

1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

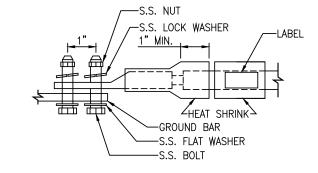


- 1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
- FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
- 3. ALL HOLES ARE COUNTERSUNK 1/6".









LUG NOTES:

- 1. ALL HARDWARE IS 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS.
- 2. ALL HARDWARE SHALL BE S.S. 3/4" Ø OR LARGER.
- 3. FOR GROUND BOND TO STEEL ONLY: INSERT A DRAGON TOOTH WASHER BETWEEN LUG AND STEEL. COAT ALL SURFACES WITH ANTI-OXIDIZATION COMPOUND PRIOR TO MATING.



T - Mobile -

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002 OFFICE: (860) 692-7100 FAX:(860) 692-7159

→\TLANTIS DESIGN GROUP, INC.

54 Jacqueline Road, Suite #7 Waltham, MA 02452 Phone number: 617-852-3611 Fax Number : 781-742-2247

	SUBMITTALS	
DATE	DESCRIPTION	REVISION
05/02/16	issued for review	¥
05/23/16	FINAL CD	0

Ξ					
	DEPT.	DATE	APP*D	REVISIO	NS
	RFE				
Γ	rf Wan. Zoning				
Γ	ZONING				
Γ	OPS				
	CONSTR.				
Γ	SITE AC.				

PROJECT NO:	CT11733B
DRAWN BY:	FG
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> SITE NUMBER CT11733B

SITE NAME CT733/AT&T/HUNTER AMBULANCE

SITE ADDRESS 462 WEST MAIN STREET MERIDEN, CT 06451

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

Exhibit D

Date: May 11, 2016

Sean Dempsey Crown Castle 3530 Toringdon Way Suite 300 Charlotte, NC 28277 JACOBS

Jacobs Engineering Group, Inc.
5449 Bells Ferry Road
Acworth, GA 30102
(770) 701-2500

Subject:

Structural Analysis Report

Carrier Designation:

T-Mobile Co-Locate Carrier Site Number: Carrier Site Name:

CT11733B

CT733/AT&THntr Amblnce FT

Crown Castle Designation:

Crown Castle BU Number:

842869

Crown Castle Site Name:

MERIDEN WEST CENTRAL

Crown Castle JDE Job Number: Crown Castle Work Order Number: Crown Castle Application Number: 375215 1233547

343208 Rev. 6

Engineering Firm Designation:

Jacobs Engineering Group, Inc. Project Number:

1233547

Site Data:

450-478 WEST MAIN STREET, MERIDEN, New Haven County, CT

Latitude 41° 32′ 24.24″, Longitude -72° 49′ 9.06″

100 Foot - Monopole Tower

Dear Sean Dempsey,

Jacobs Engineering Group, Inc. 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 900812, in accordance with application 343208, revision 6.

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.

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 Connecticut State Building Code with 2009 amendment based upon a wind speed of 85 mph fastest mile.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *Jacobs Engineering Group, Inc.* 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:

Ankit Gupta

Structural Engineer

Supto

No. 29955

No. 29955

CENSE

SONAL ENGINEERING

Reviewed by:

Matthew E. Watkins, P.E. Engineering Project Manager

tnxTower Report - version 7.0.5.1

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1) INTRODUCTION

This tower is a 100 ft Monopole tower designed by Glen Martin Engineering in December of 2003. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

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, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Flevation	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
96.0	90.0	3	commscope	LNX-6515DS-A1M w/ Mount Pipe		1-5/8	
86.0		3	ericsson	AIR -32 B2A/B66AA w/ Mount Pipe	1	1-5/6	-

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
100.0	115.0	1	dbspectra	DS8A12F36U-N			
		3	decibel	DB201-A			
	106.0	1	kmw communications	HB-X-AW-19-65-00T			
		3	cci antennas	DTMABP7819VG12A			
		3	cci antennas	OPA-65R-LCUU-H6		1/2 3/8 3/4 1-1/4	1
		4	decibel	DB432-A	8 2		
	100.0	3	ericsson	RRUS 11-700	6		
		3	ericsson	RRUS A2 MODULE			
		3	ericsson	RRUS-11 1900MHz			
		6	kmw communications	AM-X-CD-16-65-00T-RET			
		2	raycap	DC6-48-60-18-8F			
		1	tower mounts (crown)	Platform Mount [LP 1301-			
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe		7/8	
	90.0	3	ericsson	KRY 112 71	11		
86.0		3	ericsson	RRUS 11 B12	1	1-5/8	1
	86.0	1	tower mounts (crown)	Platform Mount [LP 305-1]			
	88.0	3	ericsson	Ericsson Air 21 B4A B12P-B5P 8FT w/ Mount Pipe	7	7/8	3

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		3	alcatel lucent	1900MHz RRH			
78.0	78.0	3	alcatel lucent	800 EXTERNAL NOTCH FILTER			1
	76.0	3	alcatel lucent	TME-800MHZ RRH	-	-	'
		1	tower mounts (crown)	Side Arm Mount [SO 104-3]			
		3 alcatel lucent TD-RRH8x20-25					
76.0	79.0	3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe	1 1 3	5/8 3/4 1-1/4	1
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
	76.0	1	tower mounts (crown)	Platform Mount [LP 304-1]			
		3	alcatel lucent	RRH2x60-700		-	2
		3	alcatel lucent	RRH2x60-AWS	_		
		6	commscope	SBNHH-1D45B w/ Mount Pipe			
65.0	65.0	3	antel	BXA-171063/12CF w/ Mount Pipe	2		
		3	antel	BXA-70063/6CF w/ Mount Pipe		1-5/8	1
		2	rfs celwave	DB-T1-6Z-8AB-0Z			
1		1	tower mounts (crown)	Platform Mount [LP 303-1]			

Notes:

- Existing Equipment Reserved Equipment 1)
- 2)
- Equipment To Be Removed; Not Considered in This Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Elevetion	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
99.0	99.0	6	allgon	7920	12	1-5/8
89.0	89.0	9	generic	4' Panel Antenna	9	1-5/8
79.0	79.0	9	generic	4' Panel Antenna	9	1-5/8

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
GEOTECHNICAL REPORTS	Tectonic	4529388	CCISITES
TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Glen Martin Engineering	4529387	CCISITES
TOWER MANUFACTURER DRAWINGS	Glen Martin Engineering	4713237	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	100 - 47	Pole	TP40.72x28x0.313	1	-16.637	2019.468	48.6	Pass
L2	47 - 0	Pole	TP51.37x38.655x0.375	2	-29.004	3171.353	70.4	Pass
							Summary	
						Pole (L2)	70.4	Pass
						Rating =	70.4	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	65.7	Pass
1	Base Plate	0	50.5	Pass
1	Base Foundation Structural	0	49.5	Pass
1	Base Foundation Soil Interaction	0	83.2	Pass

Structure Rating (max from all components) =	83.2%
3(11)	

Notes:

 See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

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

APPENDIX A TNXTOWER OUTPUT

28.000 53.000 000.9 16 A572-65 47.0 ft 53.000 16 9.6 AXIAL 42 K SHEAR 8 K_[TORQUE 1 kip-ft 38 mph WIND - 0.750 in ICE AXIAL 29 K SHFAR

0.0 ft

15.8

Weight (K)

Bot Dia (in) Top Dia (in)

Thickness (in) Socket Length

Length (ft)

DESIGNED APPURTENANCE LOADING

DESI	GINED AFFOR	TENANCE LOADING	
TYPE	ELEVATION	TYPE	ELEVATION
HB-X-AW-19-65-00T	100	RRUS 11 B12	86
(2) AM-X-CD-16-65-00T-RET	100	RRUS 11 B12	86
(2) AM-X-CD-16-65-00T-RET	100	Platform Mount [LP 305-1]	86
(2) AM-X-CD-16-65-00T-RET	100	6' x 2" Mount Pipe	86
DS8A12F36U-N	100	TME-800MHZ RRH	78
OPA-65R-LCUU-H6	100	TME-800MHZ RRH	78
OPA-65R-LCUU-H6	100	TME-800MHZ RRH	78
OPA-65R-LCUU-H6	100	1900MHz RRH	78
DB201-A	100	1900MHz RRH	78
DB201-A	100	1900MHz RRH	78
DB201-A	100	800 EXTERNAL NOTCH FILTER	78
(2) DB432-A	100	800 EXTERNAL NOTCH FILTER	78
(2) DB432-A	100	800 EXTERNAL NOTCH FILTER	78
RRUS A2 MODULE	100	6' x 2" Mount Pipe	78
RRUS A2 MODULE	100	6' x 2" Mount Pipe	78
RRUS A2 MODULE	100	6' x 2" Mount Pipe	78
RRUS-11 1900MHz	100	Side Arm Mount [SO 104-3]	78
RRUS-11 1900MHz	100	APXVSPP18-C-A20 w/ Mount Pipe	76
RRUS-11 1900MHz	100	APXVTM14-C-120 w/ Mount Pipe	76
RRUS 11-700	100	(2) APXVSPP18-C-A20 w/ Mount Pipe	76
RRUS 11-700	100	(2) APXVTM14-C-120 w/ Mount Pipe	76
RRUS 11-700	100	TD-RRH8x20-25	76
DC6-48-60-18-8F	100	(2) TD-RRH8x20-25	76
DC6-48-60-18-8F	100	(2) 6' x 2" Mount Pipe	76
DTMABP7819VG12A	100	(4) 6' x 2" Mount Pipe	76
DTMABP7819VG12A	100	Platform Mount [LP 304-1]	76
DTMABP7819VG12A	100	(2) SBNHH-1D45B w/ Mount Pipe	65
Platform Mount [LP 1301-1]	100	(2) SBNHH-1D45B w/ Mount Pipe	65
AIR -32 B2A/B66AA w/ Mount Pipe	86	(2) SBNHH-1D45B w/ Mount Pipe	65
AIR -32 B2A/B66AA w/ Mount Pipe	86	RRH2x60-AWS	65
AIR -32 B2A/B66AA w/ Mount Pipe	86	RRH2x60-AWS	65
LNX-6515DS-A1M w/ Mount Pipe	86	RRH2x60-AWS	65
LNX-6515DS-A1M w/ Mount Pipe	86	RRH2x60-700	65
LNX-6515DS-A1M w/ Mount Pipe	86	RRH2x60-700	65
ERICSSON AIR 21 B2A B4P w/	86	RRH2x60-700	65
Mount Pipe		BXA-70063/6CF w/ Mount Pipe	65
ERICSSON AIR 21 B2A B4P w/	86	BXA-70063/6CF w/ Mount Pipe	65
Mount Pipe		BXA-70063/6CF w/ Mount Pipe	65
ERICSSON AIR 21 B2A B4P w/	86	BXA-171063/12CF w/ Mount Pipe	65
Mount Pipe		BXA-171063/12CF w/ Mount Pipe	65
KRY 112 71	86	BXA-171063/12CF w/ Mount Pipe	65
KRY 112 71	86	(2) DB-T1-6Z-8AB-0Z	65
KRY 112 71	86	Platform Mount [LP 303-1]	65
RRUS 11 B12	86		

MATERIAL STRENGTH

GRADE Fy Fu GRADE Fy Fu

TOWER DESIGN NOTES

- Tower is located in New Haven County, Connecticut.
 Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
 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: 70.4%



TORQUE 5 kip-ft REACTIONS - 85 mph WIND

acobs Engineering Group, Inc.

Jacobs Engineering Group, Inc.

5449 Bells Ferry Road Acworth, GA 30102 Phone: (770) 701-2500 FAX: (770) 701-2501

lob: 100' MP - MERIDEN WEST CENTRAL									
Project: BU842869_WO12	233547								
Client: Crown Castle	Drawn by: Ankit Gupta	App'd:							
Code: TIA/EIA-222-F	Date: 05/10/16	Scale: NTS							
Path:		Dwg No. F_1							

Tower Input Data

There is a pole section.

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

The following design criteria apply:

- 1) Tower is located in New Haven County, Connecticut.
- 2) Basic wind speed of 85 mph.
- 3) Nominal ice thickness of 0.750 in.
- 4) Ice thickness is considered to increase with height.
- 5) Ice density of 56.000 pcf.
- 6) A wind speed of 38 mph is used in combination with ice.
- 7) Temperature drop of 50.000 °F.
- 8) Deflections calculated using a wind speed of 50 mph.
- 9) A non-linear (P-delta) analysis was used.
- 10) Pressures are calculated at each section.
- 11) Stress ratio used in pole design is 1.333.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification

- √ Use Code Stress Ratios
- √ Use Code Safety Factors Guys
- ✓ Escalate Ice
 Always Use Max Kz
 Use Special Wind Profile

Include Bolts In Member Capacity

Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric Distribute Leg Loads As Uniform Assume Legs Pinned

- √ Assume Rigid Index Plate
- √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension
- √ Bypass Mast Stability Checks
- √ Use Azimuth Dish Coefficients
- √ Project Wind Area of Appurt.

Autocalc Torque Arm Areas

Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation

 ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice

Exemption

Poles

 Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	100.000- 47.000	53.000	6.000	16	28.000	40.720	0.313	1.250	A572-65 (65 ksi)
L2	47.000-0.000	53.000		16	38.655	51.370	0.375	1.500	À572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in²	I in⁴	r in	C in	I/C in³	J in⁴	It/Q in²	w in	w/t
L1	28.549	27.601	2673.045	9.857	14.280	187.188	5386.564	13.647	4.950	15.84
	41.518	40.281	8308.852	14.385	20.767	400.095	16743.510	19.917	7.481	23.94

Section	Tip Dia.	Area	1	r	С	I/C	J	It/Q	W	w/t
	in	in²	in⁴	in	in	in ³	in⁴	in²	in	
L2	40.880	45.792	8477.194	13.628	19.714	430.008	17082.742	22.642	6.946	18.523
	52.376	61.003	20040.987	18.154	26.199	764.961	40385.419	30.163	9.476	25.27

Tower	Gusset	Gusset	Gusset Grade Adjust. Factor	Adjust.	Weight Mult.	Double Angle		Double Angle
Elevation	Area	Thickness	A_{f}	Factor		Stitch Bolt	Stitch Bolt	Stitch Bolt
	(per face)			A_r		Spacing	Spacing	Spacing
						Diagonals	Horizontals	Redundants
ft	fť	in				in	in	in
L1 100.000-			1	1	1			
47.000								
L2 47.000-			1	1	1			
0.000								

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face Allow or Shield	Component Type	Placement	Total Number	Number Per Row			Perimete r	Weight
	Leg	,,	ft			in	r		klf
	· ·						in	in	

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or	Allow Shield	Component Type	Placement	Total Number		$C_A A_A$	Weight
	Leg		• •	ft			ft²/ft	klf
Safety Line 3/8	С	No	CaAa (Out Of	100.000 - 0.000	1	No Ice	0.037	0.000
-			Face)			1/2" Ice	0.137	0.001
						1" Ice	0.238	0.001
						2" Ice	0.437	0.002
						4" Ice	0.838	0.004
LDF4-50A(1/2")	Α	No	Inside Pole	100.000 - 0.000	8	No Ice	0.000	0.000
• •						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
LDF6-50A(1-1/4")	Α	No	Inside Pole	100.000 - 0.000	6	No Ice	0.000	0.001
, ,						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
FB-L98B-034-	Α	No	Inside Pole	100.000 - 0.000	1	No Ice	0.000	0.000
XXXXXX(3/8)						1/2" Ice	0.000	0.000
, ,						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
WR-VG86ST-BRD(Α	No	Inside Pole	100.000 - 0.000	2	No Ice	0.000	0.001
3/4)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
FB-L98B-034-	Α	No	Inside Pole	100.000 - 0.000	1	No Ice	0.000	0.000
XXXXXX(3/8)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
WR-VG86ST-BRD(Α	No	Inside Pole	100.000 - 0.000	2	No Ice	0.000	0.001
3/4)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
2 1/4" Flex Conduit	Α	No	Inside Pole	100.000 - 0.000	2	No Ice	0.000	0.002
						1/2" Ice	0.000	0.002

Description	Face or	Allow Shield	Component Type	Placement	Total Number		$C_A A_A$	Weight
	Leg	Siliela	туре	ft	INUITIDEI		ft²/ft	klf
						1" Ice	0.000	0.002
						2" Ice	0.000	0.002
						4" Ice	0.000	0.002
****	_							
LDF5-50A(7/8")	С	No	Inside Pole	86.000 - 0.000	11	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
	_					4" Ice	0.000	0.000
MLE Hybrid	С	No	Inside Pole	86.000 - 0.000	1	No Ice	0.000	0.001
9Power/18Fiber RL 2(1/2" Ice	0.000	0.001
1 5/8)						1" lce	0.000	0.001
						2" Ice	0.000	0.001
MI E I I de ade al	0	NI-	lasida Dala	00 000 0 000	4	4" Ice	0.000	0.001
MLE Hybrid	С	No	Inside Pole	86.000 - 0.000	1	No Ice	0.000	0.001
9Power/18Fiber RL						1/2" Ice	0.000	0.001
2(1-5/8")						1" lce 2" lce	0.000 0.000	0.001 0.001
						4" Ice	0.000	
****						4 ice	0.000	0.001
LDF4.5-50(5/8")	В	No	Inside Pole	76.000 - 0.000	1	No Ice	0.000	0.000
22: 00(0/0)	_			7 0.000	•	1/2" Ice	0.000	0.000
						1" lce	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
EP185(3/4")	В	No	Inside Pole	76.000 - 0.000	1	No Ice	0.000	0.000
,						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
HB114-13U3M12-	В	No	Inside Pole	76.000 - 0.000	3	No Ice	0.000	0.001
XXXF(1-1/4")						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
****						4" Ice	0.000	0.001
			0 4 (0 10)	05.000 0.000	_		0.400	0.004
MLE Hybrid	Α	No	CaAa (Out Of	65.000 - 0.000	1	No Ice	0.163	0.001
9Power/18Fiber RL 2(Face)			1/2" Ice	0.263	0.002
1 5/8)						1" Ice	0.362	0.004
						2" Ice	0.562	0.010
MLE Hybrid	۸	No	Inside Pole	65.000 - 0.000	1	4" Ice No Ice	0.962 0.000	0.029 0.001
Power/18Fiber RL 2(Α	INO	iliside Pole	00.000 - 0.000	I	1/2" Ice	0.000	0.001
						1/2 ice 1" lce	0.000	
1 5/8)						2" lce	0.000	0.001 0.001
						4" Ice	0.000	0.001
***						4 100	0.000	0.001

Feed Line/Linear Appurtenances Section Areas

Tower	Tower	Face	A_R	A_F	$C_A A_A$	$C_A A_A$	Weight
Sectio	Elevation				In Face	Out Face	
n	ft		ft ²	ft ²	ft ²	ft ²	K
L1	100.000-47.000	Α	0.000	0.000	0.000	2.925	0.696
		В	0.000	0.000	0.000	0.000	0.096
		С	0.000	0.000	0.000	1.988	0.237
L2	47.000-0.000	Α	0.000	0.000	0.000	7.638	0.683
		В	0.000	0.000	0.000	0.000	0.156
		С	0.000	0.000	0.000	1.763	0.282

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Sectio	Tower	Face	Ice Thickness	A_R	A_F	C _A A _A In Face	C _A A _A Out Face	Weight
	Elevation	or		ft ²	r.2	III Face	Out Face	17
n	π	Leg	in	π	fť	π	π	K
L1	100.000-47.000	Α	0.824	0.000	0.000	0.000	5.893	0.741
		В		0.000	0.000	0.000	0.000	0.096
		С		0.000	0.000	0.000	10.726	0.283
L2	47.000-0.000	Α	0.750	0.000	0.000	0.000	15.386	0.802
		В		0.000	0.000	0.000	0.000	0.156
		С		0.000	0.000	0.000	9.511	0.323

Feed Line Center of Pressure Section Elevation $\overline{CP_X}$ CP_Z $\overline{CP_X}$ CP_Z Ice Ice in in in in 100.000-47.000 47.000-0.000 -0.047 -0.046 -0.063 -0.205 L1 -0.227 -0.031 L2 -0.224 -0.289

Discrete Tower Loads												
Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustmen t	Placement		C _A A _A Front	C _A A _A Side	Weight			
			ft ft ft	0	ft		ft ²	ft ²	К			
Lvl 100 HB-X-AW-19-65-00T	А	From Leg	4.000 0.000 6.000	0.000	100.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.817 5.265 5.721 6.654 8.671	4.817 5.265 5.721 6.654 8.671	0.029 0.062 0.100 0.195 0.462			
2) AM-X-CD-16-65-00T- RET	Α	From Leg	4.000 0.000 0.000	0.000	100.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.260 8.807 9.364 10.502 12.882	4.642 5.088 5.542 6.473 8.446	0.049 0.095 0.147 0.271 0.600			
2) AM-X-CD-16-65-00T- RET	В	From Leg	4.000 0.000 0.000	0.000	100.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.260 8.807 9.364 10.502 12.882	4.642 5.088 5.542 6.473 8.446	0.049 0.095 0.147 0.271 0.600			
2) AM-X-CD-16-65-00T- RET	С	From Leg	4.000 0.000 0.000	0.000	100.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.260 8.807 9.364 10.502 12.882	4.642 5.088 5.542 6.473 8.446	0.049 0.095 0.147 0.271 0.600			
DS8A12F36U-N	Α	From Leg	4.000 0.000 15.000	0.000	100.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.675 8.933 11.208 15.808 25.208	6.675 8.933 11.208 15.808 25.208	0.063 0.111 0.173 0.340 0.849			
OPA-65R-LCUU-H6	Α	From Leg	4.000 0.000 0.000	0.000	100.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.360 10.927 11.502 12.680 15.137	5.517 5.971 6.434 7.380 9.574	0.073 0.131 0.196 0.345 0.728			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustmen t	Placement		C _A A _A Front	C _A A _A Side	Weight
			Vert ft ft	•	ft		ft ²	ft²	K
OPA-65R-LCUU-H6	В	From Leg	4.000 0.000 0.000	0.000	100.000	No Ice 1/2" Ice 1" Ice	10.360 10.927 11.502 12.680	5.517 5.971 6.434 7.380	0.073 0.131 0.196 0.345
OPA-65R-LCUU-H6	С	From Leg	4.000 0.000 0.000	0.000	100.000	2" Ice 4" Ice No Ice 1/2" Ice 1" Ice	15.137 10.360 10.927 11.502 12.680	9.574 5.517 5.971 6.434 7.380	0.728 0.073 0.131 0.196 0.345
DB201-A	Α	From Leg	4.000 0.000 6.000	0.000	100.000	2" Ice 4" Ice No Ice 1/2" Ice	15.137 1.100 1.980 2.860	9.574 1.100 1.980 2.860	0.728 0.025 0.033 0.040
DB201-A	В	From Leg	4.000 0.000	0.000	100.000	1" Ice 2" Ice 4" Ice No Ice 1/2"	4.620 8.140 1.100 1.980	4.620 8.140 1.100 1.980	0.055 0.085 0.025 0.033
DB201-A	С	From Leg	6.000 4.000	0.000	100.000	Ice 1" Ice 2" Ice 4" Ice No Ice	2.860 4.620 8.140 1.100	2.860 4.620 8.140 1.100	0.040 0.055 0.085 0.025
BBZOTT		110111 209	0.000 6.000	0.000	100.000	1/2" Ice 1" Ice 2" Ice 4" Ice	1.980 2.860 4.620 8.140	1.980 2.860 4.620 8.140	0.033 0.040 0.055 0.085
(2) DB432-A	В	From Leg	4.000 0.000 0.000	0.000	100.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.300 0.540 0.780 1.260 2.220	0.300 0.540 0.780 1.260 2.220	0.005 0.006 0.008 0.011 0.017
(2) DB432-A	С	From Leg	4.000 0.000 0.000	0.000	100.000	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice	0.300 0.540 0.780 1.260 2.220	0.300 0.540 0.780 1.260 2.220	0.005 0.006 0.008 0.011 0.017
RRUS A2 MODULE	Α	From Leg	4.000 0.000 0.000	0.000	100.000	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice	1.867 2.051 2.244 2.657 3.585	0.423 0.532 0.650 0.912 1.540	0.021 0.031 0.044 0.077 0.177
RRUS A2 MODULE	В	From Leg	4.000 0.000 0.000	0.000	100.000	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice	1.867 2.051 2.244 2.657 3.585	0.423 0.532 0.650 0.912 1.540	0.021 0.031 0.044 0.077 0.177
RRUS A2 MODULE	С	From Leg	4.000 0.000 0.000	0.000	100.000	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice	1.867 2.051 2.244 2.657 3.585	0.423 0.532 0.650 0.912 1.540	0.021 0.031 0.044 0.077 0.177
RRUS-11 1900MHz	Α	From Leg	4.000 0.000 0.000	0.000	100.000	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice	2.942 3.172 3.410 3.913 5.023	1.190 1.351 1.521 1.887 2.721	0.044 0.063 0.086 0.140 0.291

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustmen t	Placement		C _A A _A Front	C _A A _A Side	Weight
	209		Vert ft ft	0	ft		ft²	ft ²	К
			ft			4" Ice			
RRUS-11 1900MHz	В	From Leg	4.000	0.000	100.000	No Ice	2.942	1.190	0.044
		J	0.000			1/2"	3.172	1.351	0.063
			0.000			Ice	3.410	1.521	0.086
						1" Ice	3.913	1.887	0.140
						2" Ice 4" Ice	5.023	2.721	0.291
RRUS-11 1900MHz	С	From Leg	4.000	0.000	100.000	No Ice	2.942	1.190	0.044
		J	0.000			1/2"	3.172	1.351	0.063
			0.000			Ice	3.410	1.521	0.086
						1" Ice 2" Ice	3.913	1.887	0.140
						4" Ice	5.023	2.721	0.291
RRUS 11-700	Α	From Leg	4.000	0.000	100.000	No Ice	2.942	1.190	0.055
		J	0.000			1/2"	3.172	1.351	0.074
			0.000			Ice	3.410	1.521	0.097
						1" Ice	3.913	1.887	0.151
						2" Ice 4" Ice	5.023	2.721	0.302
RRUS 11-700	В	From Leg	4.000	0.000	100.000	No Ice	2.942	1.190	0.055
	_		0.000	0.000		1/2"	3.172	1.351	0.074
			0.000			Ice	3.410	1.521	0.097
						1" Ice	3.913	1.887	0.151
						2" Ice 4" Ice	5.023	2.721	0.302
RRUS 11-700	С	From Leg	4.000	0.000	100.000	No Ice	2.942	1.190	0.055
	_		0.000			1/2"	3.172	1.351	0.074
			0.000			Ice	3.410	1.521	0.097
						1" Ice	3.913	1.887	0.151
						2" Ice 4" Ice	5.023	2.721	0.302
DC6-48-60-18-8F	Α	From Leg	4.000	0.000	100.000	No Ice	1.467	1.467	0.033
		· ·	0.000			1/2"	1.667	1.667	0.051
			0.000			Ice	1.878	1.878	0.071
						1" Ice 2" Ice	2.333 3.378	2.333 3.378	0.119 0.253
						4" Ice	3.376	3.370	0.233
DC6-48-60-18-8F	С	From Leg	4.000	0.000	100.000	No Ice	1.467	1.467	0.033
			0.000			1/2"	1.667	1.667	0.051
			0.000			lce	1.878 2.333	1.878 2.333	0.071
						1" Ice 2" Ice	2.333 3.378	2.333 3.378	0.119 0.253
						4" lce	0.070	0.070	0.200
DTMABP7819VG12A	Α	From Leg	4.000	0.000	100.000	No Ice	1.139	0.391	0.019
			0.000			1/2"	1.284	0.488	0.026
			0.000			lce 1" lce	1.437 1.769	0.595 0.833	0.036 0.060
						2" Ice	2.538	1.414	0.000
						4" lce	2.000		011.10
DTMABP7819VG12A	В	From Leg	4.000	0.000	100.000	No Ice	1.139	0.391	0.019
			0.000			1/2"	1.284	0.488	0.026
			0.000			lce 1" lce	1.437 1.769	0.595 0.833	0.036 0.060
						2" lce	2.538	1.414	0.140
						4" Ice			
DTMABP7819VG12A	С	From Leg	4.000	0.000	100.000	No Ice	1.139	0.391	0.019
			0.000 0.000			1/2" Ice	1.284 1.437	0.488 0.595	0.026 0.036
			0.000			1" lce	1.769	0.833	0.030
						2" lce	2.538	1.414	0.140
_	_					4" Ice			
Platform Mount [LP 1301-	С	None		0.000	100.000	No Ice	51.700	51.700	2.262
1]						1/2" Ice	62.700 76.000	62.700 76.000	2.935 3.808
						1" lce	92.200	92.200	4.940

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustmen t	Placement		C₄A₄ Front	C _A A _A Side	Weight
			Vert ft ft ft	0	ft		ft ²	ft²	К
!! 00						2" lce 4" lce	111.800	111.800	6.411
LvI 86 AIR -32 B2A/B66AA w/ Mount Pipe	Α	From Leg	4.000 0.000 4.000	0.000	86.000	No Ice 1/2" Ice 1" Ice	7.336 7.868 8.393 9.474	6.145 7.014 7.803 9.434	0.153 0.214 0.282 0.441
AID OO DOA/DOOAA w/	Б	F	4.000	0.000	00.000	2" lce 4" lce	11.759	12.912	0.885
AIR -32 B2A/B66AA w/ Mount Pipe	В	From Leg	4.000 0.000 4.000	0.000	86.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.336 7.868 8.393 9.474 11.759	6.145 7.014 7.803 9.434 12.912	0.153 0.214 0.282 0.441 0.885
AIR -32 B2A/B66AA w/ Mount Pipe	С	From Leg	4.000 0.000 4.000	0.000	86.000	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice	7.336 7.868 8.393 9.474 11.759	6.145 7.014 7.803 9.434 12.912	0.153 0.214 0.282 0.441 0.885
LNX-6515DS-A1M w/ Mount Pipe	Α	From Leg	4.000 0.000 4.000	0.000	86.000	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice	11.445 12.064 12.689 14.030 17.045	9.359 10.679 11.714 13.816 18.222	0.076 0.160 0.254 0.474 1.078
LNX-6515DS-A1M w/ Mount Pipe	В	From Leg	4.000 0.000 4.000	0.000	86.000	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice	11.445 12.064 12.689 14.030 17.045	9.359 10.679 11.714 13.816 18.222	0.076 0.160 0.254 0.474 1.078
LNX-6515DS-A1M w/ Mount Pipe	С	From Leg	4.000 0.000 4.000	0.000	86.000	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice	11.445 12.064 12.689 14.030 17.045	9.359 10.679 11.714 13.816 18.222	0.076 0.160 0.254 0.474 1.078
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	Α	From Leg	4.000 0.000 4.000	0.000	86.000	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice	6.825 7.347 7.863 8.926 11.175	5.642 6.480 7.257 8.864 12.293	0.112 0.169 0.233 0.383 0.807
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	В	From Leg	4.000 0.000 4.000	0.000	86.000	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice	6.825 7.347 7.863 8.926 11.175	5.642 6.480 7.257 8.864 12.293	0.112 0.169 0.233 0.383 0.807
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	С	From Leg	4.000 0.000 4.000	0.000	86.000	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice	6.825 7.347 7.863 8.926 11.175	5.642 6.480 7.257 8.864 12.293	0.112 0.169 0.233 0.383 0.807
KRY 112 71	Α	From Leg	4.000 0.000 4.000	0.000	86.000	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice	0.681 0.802 0.932 1.219 1.896	0.450 0.559 0.677 0.939 1.566	0.013 0.018 0.025 0.044 0.111
KRY 112 71	В	From Leg	4.000 0.000	0.000	86.000	4" Ice No Ice 1/2"	0.681 0.802	0.450 0.559	0.013 0.018

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustmen t	Placement		C _A A _A Front	C _A A _A Side	Weight
			Vert ft ft ft	0	ft		ft ²	ft²	К
			4.000			Ice	0.932	0.677	0.025
						1" Ice 2" Ice 4" Ice	1.219 1.896	0.939 1.566	0.044 0.111
KRY 112 71	С	From Leg	4.000 0.000 4.000	0.000	86.000	No Ice 1/2" Ice	0.681 0.802 0.932	0.450 0.559 0.677	0.013 0.018 0.025
						1" lce 2" lce 4" lce	1.219 1.896	0.939 1.566	0.044 0.111
RRUS 11 B12	Α	From Leg	4.000 0.000	0.000	86.000	No Ice 1/2"	3.306 3.550	1.361 1.540	0.051 0.072
			4.000			Ice 1" Ice 2" Ice	3.802 4.334 5.501	1.728 2.130 3.038	0.095 0.153 0.314
RRUS 11 B12	В	From Leg	4.000	0.000	86.000	4" Ice No Ice	3.306	1.361	0.051
		3	0.000 4.000			1/2" Ice	3.550 3.802	1.540 1.728	0.072 0.095
						1" Ice 2" Ice 4" Ice	4.334 5.501	2.130 3.038	0.153 0.314
RRUS 11 B12	С	From Leg	4.000 0.000 4.000	0.000	86.000	No Ice 1/2" Ice	3.306 3.550 3.802	1.361 1.540 1.728	0.051 0.072 0.095
			4.000			1" Ice 2" Ice 4" Ice	4.334 5.501	2.130 3.038	0.153 0.314
Platform Mount [LP 305-1]	С	None		0.000	86.000	No Ice 1/2" Ice 1" Ice 2" Ice	18.010 23.330 28.650 39.290 60.570	18.010 23.330 28.650 39.290 60.570	1.121 1.352 1.584 2.046 2.972
6' x 2" Mount Pipe	В	From Leg	4.000 0.000 0.000	0.000	86.000	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
**************************************		From Low	0.000	0.000	70.000	No. los	0.400	0.000	0.050
TME-800MHZ RRH	А	From Leg	2.000 0.000 0.000	0.000	78.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.490 2.706 2.931 3.407 4.462	2.068 2.271 2.481 2.928 3.927	0.053 0.074 0.098 0.157 0.318
TME-800MHZ RRH	В	From Leg	2.000 0.000 0.000	0.000	78.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.490 2.706 2.931 3.407 4.462	2.068 2.271 2.481 2.928 3.927	0.053 0.074 0.098 0.157 0.318
TME-800MHZ RRH	С	From Leg	2.000 0.000 0.000	0.000	78.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.490 2.706 2.931 3.407 4.462	2.068 2.271 2.481 2.928 3.927	0.053 0.074 0.098 0.157 0.318
1900MHz RRH	Α	From Leg	2.000 0.000 0.000	0.000	78.000	No Ice 1/2" Ice 1" Ice	2.907 3.145 3.391 3.909	3.801 4.065 4.337 4.908	0.044 0.075 0.110 0.192

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustmen t	Placement		C _A A _A Front	C₄A₄ Side	Weight
			Vert ft ft ft	0	ft		ft ²	ft ²	K
						2" Ice 4" Ice	5.050	6.152	0.407
1900MHz RRH	В	From Leg	2.000	0.000	78.000	No Ice	2.907	3.801	0.044
	_		0.000	0.000	. 0.000	1/2"	3.145	4.065	0.075
			0.000			Ice	3.391	4.337	0.110
						1" Ice	3.909	4.908	0.192
						2" Ice 4" Ice	5.050	6.152	0.407
1900MHz RRH	С	From Leg	2.000	0.000	78.000	No Ice	2.907	3.801	0.044
	Ū		0.000	0.000	7 0.000	1/2"	3.145	4.065	0.075
			0.000			Ice	3.391	4.337	0.110
						1" Ice	3.909	4.908	0.192
						2" Ice 4" Ice	5.050	6.152	0.407
800 EXTERNAL NOTCH	Α	From Leg	2.000	0.000	78.000	No Ice	0.770	0.375	0.011
FILTER	^	1 Tom Log	0.000	0.000	70.000	1/2"	0.890	0.465	0.017
			0.000			Ice	1.018	0.563	0.024
						1" Ice	1.301	0.787	0.045
						2" Ice	1.970	1.337	0.114
800 EXTERNAL NOTCH	В	From Leg	2.000	0.000	78.000	4" Ice No Ice	0.770	0.375	0.011
FILTER	Ь	From Leg	0.000	0.000	76.000	1/2"	0.770	0.375	0.011
I ILI LII			0.000			Ice	1.018	0.563	0.024
						1" Ice	1.301	0.787	0.045
						2" Ice	1.970	1.337	0.114
OOO EVEEDNAL NOTOLL	•		0.000	0.000	70.000	4" Ice	0.770	0.075	0.011
800 EXTERNAL NOTCH	С	From Leg	2.000	0.000	78.000	No Ice 1/2"	0.770	0.375	0.011
FILTER			0.000 0.000			Ice	0.890 1.018	0.465 0.563	0.017 0.024
			0.000			1" Ice	1.301	0.787	0.045
						2" Ice	1.970	1.337	0.114
						4" Ice			
6' x 2" Mount Pipe	Α	From Leg	2.000	0.000	78.000	No Ice	1.425	1.425	0.022
			0.000 3.000			1/2" Ice	1.925 2.294	1.925 2.294	0.033 0.048
			3.000			1" Ice	3.060	3.060	0.048
						2" lce	4.702	4.702	0.231
						4" Ice			
6' x 2" Mount Pipe	В	From Leg	2.000	0.000	78.000	No Ice	1.425	1.425	0.022
			0.000			1/2"	1.925	1.925	0.033
			3.000			ıce 1" lce	2.294 3.060	2.294 3.060	0.048 0.090
						2" Ice	4.702	4.702	0.231
						4" Ice		-	
6' x 2" Mount Pipe	С	From Leg	2.000	0.000	78.000	No Ice	1.425	1.425	0.022
			0.000			1/2"	1.925	1.925	0.033
			3.000			lce 1" lce	2.294 3.060	2.294 3.060	0.048 0.090
						2" Ice	4.702	4.702	0.090
						4" lce	٧=	02	0.20.
Side Arm Mount [SO 104-	С	None		0.000	78.000	No Ice	3.300	3.300	0.287
3]						1/2"	4.130	4.130	0.317
						Ice 1" Ice	4.960	4.960	0.347
						2" Ice	6.620 9.940	6.620 9.940	0.407 0.527
						4" lce	3.340	3.340	0.527
LvI 76									
APXVSPP18-C-A20 w/	Α	From Leg	4.000	0.000	76.000	No Ice	8.498	6.946	0.083
Mount Pipe			0.000			1/2"	9.149	8.127	0.151
			3.000			lce 1" lce	9.767 11.031	9.021 10.844	0.227 0.406
						2" Ice	13.679	14.851	0.400
						4" Ice			
APXVTM14-C-120 w/	Α	From Leg	4.000	0.000	76.000	No Ice	7.134	4.959	0.077
Mount Pipe			0.000			1/2"	7.662	5.754	0.131

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustmen t	Placement		C _A A _A Front	C _A A _A Side	Weight
			Vert ft ft ft	۰	ft		ft ²	ft ²	K
			3.000			Ice	8.183	6.472	0.193
						1" Ice 2" Ice 4" Ice	9.256 11.526	8.010 11.412	0.338 0.752
(2) APXVSPP18-C-A20 w/	С	From Leg	4.000	0.000	76.000	No Ice	8.498	6.946	0.083
Mount Pipe			0.000 3.000			1/2" Ice	9.149 9.767	8.127 9.021	0.151 0.227
			0.000			1" Ice	11.031	10.844	0.406
(0) ADVO/TAMA O 400	•		4.000	0.000	70.000	2" Ice 4" Ice	13.679	14.851	0.909
(2) APXVTM14-C-120 w/ Mount Pipe	С	From Leg	4.000 0.000	0.000	76.000	No Ice 1/2"	7.134 7.662	4.959 5.754	0.077 0.131
Mount Fipe			3.000			lce	8.183	6.472	0.131
						1" Ice	9.256	8.010	0.338
TD DD110 00 05						2" Ice 4" Ice	11.526	11.412	0.752
TD-RRH8x20-25	Α	From Leg	4.000 0.000	0.000	76.000	No Ice 1/2"	4.720 5.014	1.700 1.917	0.070 0.097
			3.000			lce	5.316	2.143	0.037
						1" Ice	5.948	2.620	0.200
(a) TD DD110 00 07						2" Ice 4" Ice	7.314	3.677	0.397
(2) TD-RRH8x20-25	С	From Leg	4.000 0.000	0.000	76.000	No Ice 1/2"	4.720 5.014	1.700 1.917	0.070 0.097
			3.000			lce	5.316	2.143	0.097
			0.000			1" Ice	5.948	2.620	0.200
						2" Ice 4" Ice	7.314	3.677	0.397
(2) 6' x 2" Mount Pipe	Α	From Leg	4.000	0.000	76.000	No Ice 1/2"	1.425	1.425	0.022
			0.000 3.000			lce	1.925 2.294	1.925 2.294	0.033 0.048
			0.000			1" Ice	3.060	3.060	0.090
						2" lce 4" lce	4.702	4.702	0.231
(4) 6' x 2" Mount Pipe	В	From Leg	4.000	0.000	76.000	No Ice	1.425	1.425	0.022
			0.000 3.000			1/2" Ice	1.925 2.294	1.925 2.294	0.033 0.048
			3.000			1" Ice	3.060	3.060	0.048
						2" lce 4" lce	4.702	4.702	0.231
Platform Mount [LP 304-1]	С	None		0.000	76.000	No Ice	17.460	17.460	1.349
						1/2" Ice	22.440 27.420	22.440 27.420	1.625 1.900
						1" Ice	37.380	37.380	2.451
						2" Ice 4" Ice	57.300	57.300	3.554
Lvl 65 (2) SBNHH-1D45B w/	Α	From Leg	4.000	0.000	65.000	No Ice	12.838	6.946	0.088
Mount Pipe	^	1 Tolli Leg	0.000	0.000	05.000	1/2"	13.529	8.127	0.088
Wodin Lipo			0.000			Ice	14.188	9.021	0.265
						1" Ice	15.532	10.844	0.478
	_					2" lce 4" lce	18.340	14.851	1.055
(2) SBNHH-1D45B w/ Mount Pipe	В	From Leg	4.000 0.000	0.000	65.000	No Ice 1/2"	12.838 13.529	6.946 8.127	0.088 0.172
Mount Fipe			0.000			lce	14.188	9.021	0.172
			0.000			1" Ice	15.532	10.844	0.478
						2" lce 4" lce	18.340	14.851	1.055
(2) SBNHH-1D45B w/	С	From Leg	4.000	0.000	65.000	No Ice	12.838	6.946	0.088
Mount Pipe			0.000 0.000			1/2" Ice	13.529 14.188	8.127 9.021	0.172 0.265
			0.000			1" lce	15.532	10.844	0.203
						2" lce	18.340	14.851	1.055
						4" Ice			

Description	Face	Offset	Offsets:	Azimuth	Placement		C_AA_A	C_AA_A	Weight
	or Leg	Type	Horz Lateral Vert	Adjustmen t			Front	Side	
			ft ft ft	٥	ft		ft ²	ft ²	К
RRH2x60-AWS	Α	From Leg	4.000	0.000	65.000	No Ice	3.957	1.816	0.060
			0.000			1/2"	4.272	2.075	0.083
			0.000			Ice	4.596	2.360	0.109
						1" Ice	5.271	2.957	0.173
						2" Ice	6.722	4.253	0.354
RRH2x60-AWS	В	From Leg	4.000	0.000	65.000	4" Ice No Ice	3.957	1.816	0.060
TITI IZXOO AVVO		1 Tolli Log	0.000	0.000	05.000	1/2"	4.272	2.075	0.083
			0.000			Ice	4.596	2.360	0.109
						1" Ice	5.271	2.957	0.173
						2" Ice	6.722	4.253	0.354
DDI IOCO AMIC	_	Г., I	4.000	0.000	CF 000	4" Ice	0.057	1.010	0.000
RRH2x60-AWS	С	From Leg	4.000 0.000	0.000	65.000	No Ice 1/2"	3.957 4.272	1.816 2.075	0.060 0.083
			0.000			Ice	4.596	2.360	0.109
			0.000			1" Ice	5.271	2.957	0.173
						2" Ice	6.722	4.253	0.354
	_					4" Ice			
RRH2x60-700	Α	From Leg	4.000	0.000	65.000	No Ice	3.957	1.816	0.060
			0.000 0.000			1/2" Ice	4.272 4.596	2.075 2.360	0.083 0.109
			0.000			1" Ice	5.271	2.957	0.173
						2" lce	6.722	4.253	0.354
						4" Ice			
RRH2x60-700	В	From Leg	4.000	0.000	65.000	No Ice	3.957	1.816	0.060
			0.000			1/2"	4.272	2.075	0.083
			0.000			lce 1" lce	4.596 5.271	2.360 2.957	0.109 0.173
						2" Ice	6.722	4.253	0.173
						4" Ice			
RRH2x60-700	С	From Leg	4.000	0.000	65.000	No Ice	3.957	1.816	0.060
			0.000			1/2"	4.272	2.075	0.083
			0.000			lce 1" lce	4.596 5.271	2.360 2.957	0.109 0.173
						2" Ice	6.722	4.253	0.173
						4" lce	0.722	7.200	0.004
BXA-70063/6CF w/ Mount	Α	From Leg	4.000	0.000	65.000	No Ice	7.979	5.407	0.042
Pipe			0.000			1/2"	8.621	6.558	0.101
			0.000			lce	9.228 10.473	7.422	0.168
						1" Ice 2" Ice	13.082	9.198 12.952	0.328 0.788
						4" lce	10.002	12.552	0.700
BXA-70063/6CF w/ Mount	В	From Leg	4.000	0.000	65.000	No Ice	7.979	5.407	0.042
Pipe			0.000			1/2"	8.621	6.558	0.101
			0.000			Ice	9.228	7.422	0.168
						1" lce 2" lce	10.473 13.082	9.198 12.952	0.328 0.788
						4" Ice	13.002	12.332	0.700
BXA-70063/6CF w/ Mount	С	From Leg	4.000	0.000	65.000	No Ice	7.979	5.407	0.042
Pipe			0.000			1/2"	8.621	6.558	0.101
			0.000			Ice	9.228	7.422	0.168
						1" lce 2" lce	10.473 13.082	9.198 12.952	0.328 0.788
						4" Ice	13.002	12.952	0.766
BXA-171063/12CF w/	Α	From Leg	4.000	0.000	65.000	No Ice	5.029	5.289	0.041
Mount Pipe		•	0.000			1/2"	5.583	6.459	0.087
			0.000			Ice	6.103	7.348	0.140
						1" Ice	7.166	9.148	0.273
						2" Ice 4" Ice	9.438	12.947	0.677
BXA-171063/12CF w/	В	From Leg	4.000	0.000	65.000	No Ice	5.029	5.289	0.041
Mount Pipe		9	0.000	-		1/2"	5.583	6.459	0.087
•			0.000			Ice	6.103	7.348	0.140
						1" lce	7.166	9.148	0.273
						2" Ice	9.438	12.947	0.677

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustmen t	Placement		C _A A _A Front	C₄A₄ Side	Weight
			Vert ft ft ft	٥	ft		ft ²	ft²	К
						4" Ice			
BXA-171063/12CF w/	С	From Leg	4.000	0.000	65.000	No Ice	5.029	5.289	0.041
Mount Pipe			0.000			1/2"	5.583	6.459	0.087
			0.000			Ice	6.103	7.348	0.140
						1" Ice	7.166	9.148	0.273
						2" Ice	9.438	12.947	0.677
	_	_				4" Ice			
(2) DB-T1-6Z-8AB-0Z	С	From Leg	4.000	0.000	65.000	No Ice	5.600	2.333	0.044
			0.000			1/2"	5.915	2.558	0.080
			0.000			Ice	6.240	2.791	0.120
						1" Ice	6.914	3.284	0.213
						2" Ice	8.365	4.373	0.455
	_					4" Ice			
Platform Mount [LP 303-1]	С	None		0.000	65.000	No Ice	14.660	14.660	1.250
						1/2"	18.870	18.870	1.481
						Ice	23.080	23.080	1.713
						1" Ice	31.500	31.500	2.175
						2" Ice	48.340	48.340	3.101
****						4" Ice			

Dishes										
Description	Face or Leg	Dish Type	Offset Type		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weigh
				ft	0	0	ft	ft	ft ²	K

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M _x kip-ft	Sum of Overturning Moments, M _z kip-ft	Sum of Torques kip-ft
Leg Weight Bracing Weight Total Member Self-Weight Total Weight	15.751 0.000 15.751 29.027			-0.316 -0.316	2.240 2.240	
Wind 0 deg - No Ice Wind 30 deg - No Ice Wind 60 deg - No Ice Wind 90 deg - No Ice Wind 120 deg - No Ice Wind 150 deg - No Ice Wind 180 deg - No Ice Wind 210 deg - No Ice Wind 240 deg - No Ice Wind 270 deg - No Ice Wind 300 deg - No Ice		0.342 16.162 27.652 31.732 27.310 15.570 -0.342 -16.162 -27.652 -31.732 -27.310	-31.608 -27.545 -16.100 -0.342 15.508 27.203 31.608 27.545 16.100 0.342 -15.508	-2239.492 -1952.245 -1141.980 -25.807 1097.196 1926.121 2238.859 1951.612 1141.347 25.174 -1097.828	-1956.664 -2244.991 -1931.173 -1099.299 27.731 1147.932 1961.145 2249.471 1935.654	-4.944 -5.354 -4.328 -2.143 0.616 3.210 4.944 5.354 4.328 2.143 -0.616
Wind 330 deg - No Ice Member Ice Total Weight Ice Wind 0 deg - Ice	3.940 41.433		-27.203 -7.433	-1926.754 -0.994 -536.364	1103.780 5.042 0.519	-3.210 -1.160

Load	Vertical	Sum of	Sum of	Sum of	Sum of	Sum of
Case	Forces	Forces	Forces	Overturning	Overturning	Torques
		X	Ζ	Moments, M_x	Moments, M_z	-
	K	K	K	kip-ft	kip-ft	
				•	,	kip-ft
Wind 30 deg - Ice		3.782	-6.468	-466.899	-267.384	-1.293
Wind 60 deg - Ice		6.490	-3.769	-272.596	-462.290	-1.080
Wind 90 deg - Ice		7.458	-0.061	-5.517	-531.975	-0.578
Wind 120 deg - Ice		6.428	3.663	262.773	-457.767	0.079
Wind 150 deg - Ice		3.676	6.406	460.388	-259.549	0.715
Wind 180 deg - Ice		-0.061	7.433	534.375	9.565	1.160
Wind 210 deg - Ice		-3.782	6.468	464.911	277.468	1.293
Wind 240 deg - Ice		-6.490	3.769	270.608	472.374	1.080
Wind 270 deg - Ice		-7.458	0.061	3.529	542.059	0.578
Wind 300 deg - Ice		-6.428	-3.663	-264.762	467.851	-0.079
Wind 330 deg - Ice		-3.676	-6.406	-462.376	269.633	-0.715
Total Weight	29.027			-0.316	2.240	
Wind 0 deg - Service		0.118	-10.937	-775.009	-6.612	-1.711
Wind 30 deg - Service		5.592	-9.531	-675.616	-394.224	-1.852
Wind 60 deg - Service		9.568	-5.571	-395.247	-675.613	-1.498
Wind 90 deg - Service		10.980	-0.118	-9.028	-775.380	-0.742
Wind 120 deg - Service		9.450	5.366	379.554	-666.793	0.213
Wind 150 deg - Service		5.388	9.413	666.380	-378.947	1.111
Wind 180 deg - Service		-0.118	10.937	774.593	11.029	1.711
Wind 210 deg - Service		-5.592	9.531	675.200	398.642	1.852
Wind 240 deg - Service		-9.568	5.571	394.831	680.030	1.498
Wind 270 deg - Service		-10.980	0.118	8.613	779.797	0.742
Wind 300 deg - Service		-9.450	-5.366	-379.970	671.210	-0.213
Wind 330 deg - Service		-5.388	-9.413	-666.795	383.364	-1,111

Load Combinations

Comb.	Description
No.	·
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+lce+Temp
23	Dead+Wind 240 deg+lce+Temp
24	Dead+Wind 270 deg+lce+Temp
25	Dead+Wind 300 deg+lce+Temp
26	Dead+Wind 330 deg+lce+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

Comb. No.	o. Descript	ion
35	Dead+Wind 240 deg - Service	
36	Dead+Wind 270 deg - Service	
37	Dead+Wind 300 deg - Service	
38	Dead+Wind 330 deg - Service	

Maximum	Member	Forces
IVIAXIIIIIII	MEHINE	

Sectio	Elevation	Component	Condition	Gov.	Force	Major Axis	Minor Axis
n	ft	Type		Load		Moment	Moment
No.				Comb.	K	kip-ft	kip-ft
L1	100 - 47	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-27.339	5.064	0.738
			Max. Mx	11	-16.651	763.736	-7.329
			Max. My	2	-16.657	-5.336	760.190
			Max. Vy	11	-25.590	763.736	-7.329
			Max. Vx	2	-25.464	-5.336	760.190
			Max. Torque	3			5.281
L2	47 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-41.693	5.157	1.019
			Max. Mx	11	-29.005	2281.413	-25.516
			Max. My	2	-29.005	-23.550	2271.296
			Max. Vy	11	-31.753	2281.413	-25.516
			Max. Vx	2	-31.629	-23.550	2271.296
			Max. Torque	3			5.351

Maximum Reactions

Location	Condition	Gov.	Vertical	Horizontal, X	Horizontal, Z
		Load	K	K	K
		Comb.			
Pole	Max. Vert	23	41.693	6.490	-3.769
	Max. H _x	11	29.027	31.732	-0.342
	Max. H _z	2	29.027	-0.342	31.608
	$Max. M_x$	2	2271.296	-0.342	31.608
	Max. M _z	5	2276.832	-31.732	0.342
	Max. Torsion	3	5.351	-16.162	27.545
	Min. Vert	1	29.027	0.000	0.000
	Min. H _x	5	29.027	-31.732	0.342
	Min. H _z	8	29.027	0.342	-31.608
	Min. M _x	8	-2270.649	0.342	-31.608
	Min. M _z	11	-2281.413	31.732	-0.342
	Min. Torsion	9	-5.345	16.162	-27.545

Tower Mast Reaction Summary

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M ₂	Torque
Combination	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	29.027	0.000	0.000	-0.316	2.240	0.000
Dead+Wind 0 deg - No Ice	29.027	0.342	-31.608	-2271.296	-23.551	-4.936
Dead+Wind 30 deg - No Ice	29.027	16.162	-27.545	-1979.950	-1159.647	-5.351
Dead+Wind 60 deg - No Ice	29.027	27.652	-16.100	-1158.176	-1984.399	-4.331
Dead+Wind 90 deg - No Ice	29.027	31.732	-0.342	-26.160	-2276.832	-2.151
Dead+Wind 120 deg - No Ice	29.027	27.310	15.508	1112.790	-1958.579	0.600
Dead+Wind 150 deg - No Ice	29.027	15.570	27.203	1953.485	-1114.903	3.188
Dead+Wind 180 deg - No Ice	29.027	-0.342	31.608	2270.649	28.125	4.924
Dead+Wind 210 deg - No Ice	29.027	-16.162	27.545	1979.306	1164.220	5.345
Dead+Wind 240 deg - No Ice	29.027	-27.652	16.100	1157.535	1988.976	4.336
Dead+Wind 270 deg - No Ice	29.027	-31.732	0.342	25.517	2281.413	2.163

Dead+Wind 300 deg - No Ice Dead+Wind 330 deg - No Ice	29.027	K		Moment, M_x	Moment, M_z	
- J	29.027		K	kip-ft	kip-ft	kip-ft
Dead+Wind 330 deg - No Ice		-27.310	-15.508	-1113.438	1963.161	-0.593
	29.027	-15.570	-27.203	-1954.135	1119.481	-3.193
Dead+Ice+Temp	41.693	-0.000	-0.000	-1.019	5.157	0.000
Dead+Wind 0	41.693	0.061	-7.433	-548.705	0.612	-1.156
deg+Ice+Temp						
Dead+Wind 30	41.693	3.782	-6.468	-477.641	-273.445	-1.296
deg+lce+Temp						
Dead+Wind 60	41.693	6.490	-3.769	-278.870	-472.830	-1.089
deg+Ice+Temp						
Dead+Wind 90	41.693	7.458	-0.061	-5.653	-544.118	-0.589
deg+lce+Temp					• • • • • • • • • • • • • • • • • • • •	
Dead+Wind 120	41.693	6.428	3.663	268.802	-468.209	0.068
deg+Ice+Temp		020	0.000		.00.200	0.000
Dead+Wind 150	41.693	3.676	6.406	470.956	-265.440	0.707
deg+Ice+Temp		0.07.0	00	0.000		00.
Dead+Wind 180	41.693	-0.061	7.433	546.640	9.855	1.156
deg+Ice+Temp	11.000	0.001	7.100	0 10.0 10	0.000	1.100
Dead+Wind 210	41.693	-3.782	6.468	475.577	283.912	1.297
deg+Ice+Temp	11.000	0.702	0.100	170.077	200.012	1.207
Dead+Wind 240	41.693	-6.490	3.769	276.806	483.297	1.090
deg+lce+Temp	41.000	0.400	0.700	270.000	400.201	1.000
Dead+Wind 270	41.693	-7.458	0.061	3.589	554.586	0.591
dea+Ice+Temp	41.033	-7.450	0.001	0.009	334.300	0.551
Dead+Wind 300	41.693	-6.428	-3.663	-270.866	478.676	-0.067
dea+Ice+Temp	41.033	-0.420	-3.003	-270.000	470.070	-0.007
Dead+Wind 330	41.693	-3.676	-6.406	-473.020	275.908	-0.706
deg+lce+Temp	41.033	-3.070	-0.400	-470.020	273.300	-0.700
Dead+Wind 0 deg - Service	29.027	0.118	-10.937	-786.323	-6.649	-1.709
Dead+Wind 30 deg - Service	29.027	5.592	-9.531	-685.489	-399.861	-1.854
Dead+Wind 60 deg - Service	29.027	9.568	-5.571	-401.067	-685.315	-1.502
Dead+Wind 90 deg - Service	29.027	10.980	-0.118	-9.266	-786.526	-0.747
Dead+Wind 120 deg - Service	29.027	9.450	5.366	384.931	-676.373	0.207
Service	29.027	9.430	5.300	304.931	-0/0.3/3	0.207
Dead+Wind 150 deg -	29.027	5.388	9.413	675.899	-384.372	1.105
Service	29.027	3.300	3.413	075.099	-304.372	1.103
Dead+Wind 180 deg -	29.027	-0.118	10.937	785.674	11.236	1.708
Service	29.027	-0.116	10.937	700.074	11.230	1.700
Dead+Wind 210 deg -	29.027	-5.592	9.531	684.841	404.448	1.853
Service	29.027	-5.592	9.551	004.041	404.440	1.000
	29.027	-9.568	5.571	400.420	689.903	1.502
Dead+Wind 240 deg - Service	29.027	-9.500	5.571	400.420	009.903	1.302
	29.027	-10.980	0.118	8.619	791.114	0.749
Dead+Wind 270 deg -	29.027	-10.960	0.118	0.019	/91.114	0.749
Service	20.007	0.450	E 000	205 570	600,000	0.000
Dead+Wind 300 deg -	29.027	-9.450	-5.366	-385.579	680.962	-0.206
Service	20.007	E 000	0.440	676 F40	000 000	1 100
Dead+Wind 330 deg - Service	29.027	-5.388	-9.413	-676.548	388.960	-1.106

Solution Summary

	Sun	n of Applied Force	es		Sum of Reactio	ns	
Load	PX	PY	PZ	PX	PY	PZ	% Error
Comb.	K	K	K	K	K	K	
1	0.000	-29.027	0.000	0.000	29.027	0.000	0.000%
2	0.342	-29.027	-31.608	-0.342	29.027	31.608	0.000%
3	16.162	-29.027	-27.545	-16.162	29.027	27.545	0.000%
4	27.652	-29.027	-16.100	-27.652	29.027	16.100	0.000%
5	31.732	-29.027	-0.342	-31.732	29.027	0.342	0.000%
6	27.310	-29.027	15.508	-27.310	29.027	-15.508	0.000%
7	15.570	-29.027	27.203	-15.570	29.027	-27.203	0.000%
8	-0.342	-29.027	31.608	0.342	29.027	-31.608	0.000%
9	-16.162	-29.027	27.545	16.162	29.027	-27.545	0.000%
10	-27.652	-29.027	16.100	27.652	29.027	-16.100	0.000%
11	-31.732	-29.027	0.342	31.732	29.027	-0.342	0.000%
12	-27.310	-29.027	-15.508	27.310	29.027	15.508	0.000%
13	-15.570	-29.027	-27.203	15.570	29.027	27.203	0.000%

	Sur	n of Applied Force	es		Sum of Reactio	ns	
Load	PX	PY	PZ	PX	PY	PZ	% Error
Comb.	K	K	K	K	K	K	
14	0.000	-41.693	0.000	0.000	41.693	0.000	0.000%
15	0.061	-41.693	-7.433	-0.061	41.693	7.433	0.000%
16	3.782	-41.693	-6.468	-3.782	41.693	6.468	0.000%
17	6.490	-41.693	-3.769	-6.490	41.693	3.769	0.000%
18	7.458	-41.693	-0.061	-7.458	41.693	0.061	0.000%
19	6.428	-41.693	3.663	-6.428	41.693	-3.663	0.000%
20	3.676	-41.693	6.406	-3.676	41.693	-6.406	0.000%
21	-0.061	-41.693	7.433	0.061	41.693	-7.433	0.000%
22	-3.782	-41.693	6.468	3.782	41.693	-6.468	0.000%
23	-6.490	-41.693	3.769	6.490	41.693	-3.769	0.000%
24	-7.458	-41.693	0.061	7.458	41.693	-0.061	0.000%
25	-6.428	-41.693	-3.663	6.428	41.693	3.663	0.000%
26	-3.676	-41.693	-6.406	3.676	41.693	6.406	0.000%
27	0.118	-29.027	-10.937	-0.118	29.027	10.937	0.000%
28	5.592	-29.027	-9.531	-5.592	29.027	9.531	0.000%
29	9.568	-29.027	-5.571	-9.568	29.027	5.571	0.000%
30	10.980	-29.027	-0.118	-10.980	29.027	0.118	0.000%
31	9.450	-29.027	5.366	-9.450	29.027	-5.366	0.000%
32	5.388	-29.027	9.413	-5.388	29.027	-9.413	0.000%
33	-0.118	-29.027	10.937	0.118	29.027	-10.937	0.000%
34	-5.592	-29.027	9.531	5.592	29.027	-9.531	0.000%
35	-9.568	-29.027	5.571	9.568	29.027	-5.571	0.000%
36	-10.980	-29.027	0.118	10.980	29.027	-0.118	0.000%
37	-9.450	-29.027	-5.366	9.450	29.027	5.366	0.000%
38	-5.388	-29.027	-9.413	5.388	29.027	9.413	0.000%

Non-Linear Convergence Results

Load	Converged?	Number	Displacement	Force
Combination	J	of Cycles	Tolerance	Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	4	0.0000001	0.00009481
3	Yes	4	0.0000001	0.00023022
4	Yes	4	0.0000001	0.00032346
5	Yes	4	0.0000001	0.00006217
6	Yes	4	0.0000001	0.00025091
7	Yes	4	0.0000001	0.00022495
8	Yes	4	0.0000001	0.00010785
9	Yes	4	0.0000001	0.00033741
10	Yes	4	0.0000001	0.00023269
11	Yes	4	0.0000001	0.00004961
12	Yes	4	0.0000001	0.00024994
13	Yes	4	0.0000001	0.00028729
14	Yes	4	0.0000001	0.00000444
15	Yes	4	0.0000001	0.00014506
16	Yes	4	0.0000001	0.00015178
17	Yes	4	0.0000001	0.00015201
18	Yes	4	0.0000001	0.00014202
19	Yes	4	0.0000001	0.00014774
20	Yes	4	0.0000001	0.00014808
21	Yes	4	0.0000001	0.00014414
22	Yes	4	0.0000001	0.00015531
23	Yes	4	0.0000001	0.00015490
24	Yes	4	0.0000001	0.00014683
25	Yes	4	0.0000001	0.00015306
26	Yes	4	0.0000001	0.00015285
27	Yes	4	0.0000001	0.00001850
28	Yes	4	0.0000001	0.00002110
29	Yes	4	0.0000001	0.00003133
30	Yes	4	0.0000001	0.00001104
31	Yes	4	0.0000001	0.00001809
32	Yes	4	0.0000001	0.00001599
33	Yes	4	0.0000001	0.00001930
34	Yes	4	0.0000001	0.00003429
35	Yes	4	0.0000001	0.00001967

tnxTower Report - version 7.0.5.1

36	Yes	4	0.0000001	0.00001036
37	Yes	4	0.0000001	0.00001803
38	Yes	4	0.0000001	0.00002516

Maximum Tower Deflections - Service Wind

Section No.	Elevation	Horz. Deflection	Gov. Load	Tilt	Twist
	ft	in	Comb.	0	0
L1	100 - 47	10.201	35	0.792	0.006
L2	53 - 0	3.240	35	0.542	0.003

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load	Deflection	Tilt	Twist	Radius of Curvature
ft		Comb.	in	0	0	ft
100.000	HB-X-AW-19-65-00T	35	10.201	0.792	0.006	43249
86.000	AIR -32 B2A/B66AA w/ Mount Pipe	35	7.867	0.732	0.005	15446
78.000	TME-800MHZ RRH	35	6.591	0.694	0.004	9829
76.000	APXVSPP18-C-A20 w/ Mount Pipe	35	6.284	0.684	0.004	9010
65.000	(2) SBNHH-1D45B w/ Mount Pipe	35	4.699	0.623	0.003	6178

Maximum Tower Deflections - Design Wind

Section	Elevation	Horz.	Gov.	Tilt	Twist
No.		Deflection	Load		
	ft	in	Comb.	0	0
L1	100 - 47	29.382	10	2.281	0.018
L2	53 - 0	9.341	10	1.561	0.007

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov.	Deflection	Tilt	Twist	Radius of
		Load				Curvature
ft		Comb.	in	0	0	ft
100.000	HB-X-AW-19-65-00T	10	29.382	2.281	0.018	15067
86.000	AIR -32 B2A/B66AA w/ Mount Pipe	10	22.662	2.109	0.015	5380
78.000	TME-800MHZ RRH	10	18.991	2.001	0.013	3423
76.000	APXVSPP18-C-A20 w/ Mount Pipe	10	18.105	1.972	0.012	3138
65.000	(2) SBNHH-1D45B w/ Mount Pipe	10	13.541	1.796	0.010	2150

Compression Checks

	Pole Design Data									
Section No.	Elevation	Size	L	Lu	KI/r	Fa	Α	Actual P	Allow. P _a	Ratio P
	ft		ft	ft		ksi	in²	K	ĸ	P_a
L1 L2	100 - 47 (1) 47 - 0 (2)	TP40.72x28x0.313 TP51.37x38.655x0.375	53.000 53.000	0.000 0.000	0.0 0.0	39.000 39.000	38.846 61.003	-16.637 -29.004	1514.980 2379.110	0.011 0.012

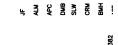
Pole Bending Design Data										
Section No.	Elevation	Size	Actual M _x	Actual f _{bx}	Allow. F _{bx}	Ratio f _{bx}	Actual M _v	Actual f _{by}	Allow. F _{by}	Ratio f _{bv}
	ft		kip-ft	ksi	ksi	$\overline{F_{bx}}$	kip-ft	ksi	ksi	$\frac{f_{by}}{F_{by}}$
L1	100 - 47 (1)	TP40.72x28x0.313	769.46 3	24.823	39.000	0.636	0.000	0.000	39.000	0.000
L2	47 - 0 (2)	TP51.37x38.655x0.375	2301.2 83	36.100	39.000	0.926	0.000	0.000	39.000	0.000

Pole Shear Design Data									
Elevation	Size	Actual	Actual	Allow.	Ratio	Actual	Actual	Allow.	Ratio
ft		V K	f _v ksi	F _v ksi	$\frac{f_{v}}{F_{v}}$	T kip-ft	f _{vt} ksi	F _{vt} ksi	$\frac{f_{vt}}{F_{vt}}$
100 - 47 (1)	TP40.72x28x0.313	25.859	0.666	26.000	0.052	4.236	0.066	26.000	0.003
47 - 0 (2)	TP51.37x38.655x0.375	32.018	0.525	26.000	0.041	4.336	0.033	26.000	0.001
	ft 100 - 47 (1)	Elevation Size ft 100 - 47 (1) TP40.72x28x0.313	Elevation Size Actual V K ft K 100 - 47 (1) TP40.72x28x0.313 25.859	Elevation Size Actual V f _v Actual V ksi ft K ksi 100 - 47 (1) TP40.72x28x0.313 25.859 0.666	Elevation Size Actual V f _v F _v F _v Actual F _v F _v Actual F _v F _v ft K ksi ksi 100 - 47 (1) TP40.72x28x0.313 25.859 0.666 26.000	Elevation Size Actual V f _v Actual F _v Allow. F _v Ratio F _v ft K ksi ksi F _v 100 - 47 (1) TP40.72x28x0.313 25.859 0.666 26.000 0.052	Elevation Size Actual V f _v Actual F _v Allow. F _v Ratio F _v Actual T F _v ft K ksi ksi F _v kip-ft 100 - 47 (1) TP40.72x28x0.313 25.859 0.666 26.000 0.052 4.236	Elevation Size Actual V f _v F _v F _v f _v F _v tit Actual F _v F _v f _v to the size Actual Actual F _v f _v to the size Actual F _v f _v to t	Elevation Size Actual V Actual V Allow. V Ratio V Actual V

	Pole Interaction Design Data								
Section No.	Elevation	Ratio P	Ratio f _{bx}	Ratio f _{by}	Ratio f _v	Ratio f _{vt}	Comb. Stress	Allow. Stress	Criteria
	ft	P_a	F_{bx}	$\overline{F_{bv}}$	$\overline{F_{v}}$	$\overline{F_{vt}}$	Ratio	Ratio	
L1	100 - 47 (1)	0.011	0.636	0.000	0.052	0.003	0.648	1.333	H1-3+VT 🖊
L2	47 - 0 (2)	0.012	0.926	0.000	0.041	0.001	0.938	1.333	H1-3+VT 🖊

Section Capacity Table								
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail
L1	100 - 47	Pole	TP40.72x28x0.313	1	-16.637	2019.468	48.6	Pass
L2	47 - 0	Pole	TP51.37x38.655x0.375	2	-29.004	3171.353	70.4 Summary	Pass
						Pole (L2) RATING =	70.4 70.4	Pass Pass

APPENDIX B BASE LEVEL DRAWING





DRAWN BY: **EJB** CHECKED BY: DRAWING DATE: **21/04/14**

SITE NUMBER: SITE NAME:

SITE NAME

MERIDEN WEST CENTRAL

BUSINESS UNIT NUMBER

842869

SITE ADDRESS

450-478 WEST MAIN STREET MERIDEN, CT 06451 COUNTY USA

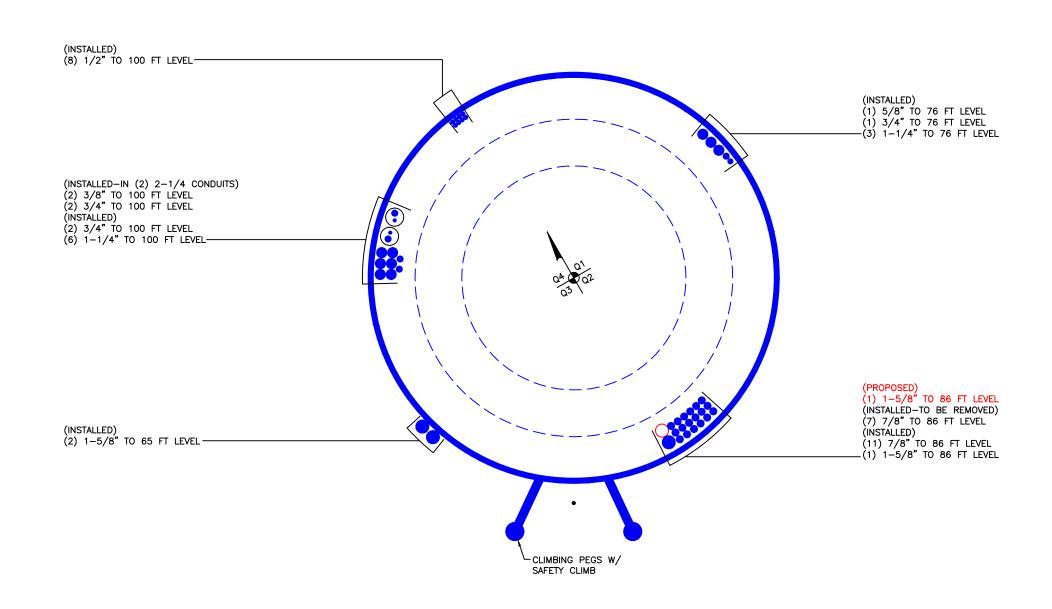
SHEET TITLE

BASE LEVEL

SHEET NUMBER

A1-0

1" = 1'-0"



BUSINESS UNIT: 842869 TOWER ID: C_BASELEVEL

APPENDIX C ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data

BU#: 842869

Site Name: Meriden West Central

App #: 343208 Rev# 6

Pole Manufacturer: Other

Anchor Rod Data				
Qty:	20			
Diam:	2.5	in		
Rod Material:	Other			
Strength (Fu):	65	ksi		
Yield (Fy):	50	ksi		
Bolt Circle:	59	in		

Plate Data				
Diam:	69	in		
Thick:	3	in		
Grade:	36	ksi		
Single-Rod B-eff:	8.17	in		

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

Pole Data					
51.37	in				
0.375	in				
65	ksi				
16	"0" IF Round				
80	ksi				
0	"0" if None				
	0.375 65 16				

Stress Increase Factor						
ASIF:	1.333					

Reactions		
Moment:	2301	ft-kips
Axial:	29	kips
Shear:	32	kips

If No stiffeners, Criteria:	AISC ASD	<-Only Applcable to Unstiffened Cases
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Anchor Rod Results

Maximum Rod Tension: 92.2 Kips
Allowable Tension: 140.4 Kips
Anchor Rod Stress Ratio: 65.7% Pass

Anchor Rod Stress Ratio:	65.7% Pass

Base Plate ResultsFlexural CheckBase Plate Stress:18.2 ksiAllowable Plate Stress:36.0 ksiBase Plate Stress Ratio:50.5% Pass

Rigid
Service ASD
0.75*Fy*ASIF
Y.L. Length:
29.02

Rigid

Service, ASD

Fty*ASIF

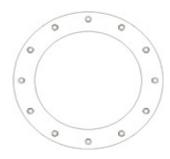
<u>n/a</u>

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





Analysis Date: 5/10/2016

 $^{^{\}star}$ 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

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

(Bearing and Stability Checks) Tool for TIA Rev F or G - Application (MP, SST with unitbase)

Site Data

BU#: 842869

Site Name: Meriden West Central App #: 343208 Rev# 6

Enter Load Factors Below:				
For P (DL)	1.2 < Enter Factor			
For P,V, and M (WL)	V, and M WL) 1.35 < Enter Factor			

Pad & Pier Data			
Base PL Dist. Above Pier:	3	in	
Pier Dist. Above Grade:	12	in	
Pad Bearing Depth, D:	7.5	ft	
Pad Thickness, T:	2.5	ft	
Pad Width=Length, L:	20	ft	
Pier Cross Section Shape:	Square	<pull down<="" td=""></pull>	
Enter Pier Side Width:	8	ft	
Concrete Density:	150.0	pcf	
Pier Cross Section Area:	64.00	ft^2	
Pier Height:	6.00	ft	
Soil (above pad) Height:	5.00	ft	

Soil Parameters			
Unit Weight, γ:	110.0	pcf	
Ultimate Bearing Capacity, qn:	16.00	ksf	
Strength Reduct. factor, φ:	0.75		
Angle of Friction, Φ:	30.0	degrees	
Undrained Shear Strength, Cu:	0.00	ksf	
Allowable Bearing: φ*qn:	12.00	ksf	
Passive Pres. Coeff., Kp	3.00]	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad		
Passive Force, Vu):	43.2	kips
Pad Force Location Above D:	1.17	ft
φ(Passive Pressure Moment):		ft-kips
Factored O.T. M(WL), "1.6W":	3484.4	ft-kips
Factored OT (MW-Msoil), M1	3433.95	ft-kips

Resistance due to Foundation Gravity			
Soil Wedge Projection grade, a:	2.89	ft	
Sum of Soil Wedges Wt:	43.20	kips	
Soil Wedges ecc, K1:	6.14	ft	
Ftg+Soil above Pad wt:	392.4	kips	
Unfactored (Total ftg-soil Wt):	435.60	kips	
1.2D. No Soil Wedges.	505.68	kips	
0.9D. With Soil Wedges	418.14	kips	

Resistance due to Cohesion (Vertical)			
φ*(1/2*Cu)(Total Vert. Planes)	0.00	kips	
Cohesion Force Eccentricity, K2	0.00	ft	

Monopole Base Reaction Forces			
TIA Revision: F <pull down<="" td=""></pull>			
Unfactored DL Axial, PD:	29	kips	
Unfactored WL Axial, PW:	0	kips	
Unfactored WL Shear, V:	32	kips	
Unfactored WL Moment, M:	2301	ft-kips	

Load Factor	Shaft Factored Loads		
1.20	1.2D+1.6W, Pu:	34.8	kips
0.90	0.9D+1.6W, Pu:	26.1	kips
1.05	Vu:	43.2	kips
1.35	Mu:	3106.35	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(No Soil Wedges) [Reaction+Conc+Soil]	505.68	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	3433.95	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 = 6.79 ft Orthogonal qu= 3.94 ksf qu/ϕ^*qn Ratio= 32.83% Pass

Diagonal Direction:

ecc2 = (0.707M1)/P1 = 4.80 ft Diagonal qu= 4.68 ksf qu/ ϕ *qn Ratio= **38.98%** Pass

Run <-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(<u>w/ Soil Wedges</u>) [Reaction+Conc+Soil]	418.14	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	3195.33	ft-kips

Orthogonal ecc3 = M2/P2 = 7.64 ft
Ortho Non Bearing Length,NBL= 15.28 ft
Orthogonal qu= 4.43 ksf
Diagonal qu= 4.95 ksf

Max Reaction Moment (ft-kips) so that $qu=\phi^*qn = 100\%$			
Capacity Rating			
Actual M:	2301.00		
M Orthogonal:	2766.25	83.18%	Pass
M Diagonal:	2766.25	83.18%	Pass

Project Name: Meriden We Project Number: BU 842869 Job Number: WO 123354

Date:

Meriden West Central BU 842869 WO 1233547 5/10/2016



Created On: 6/3/2014
Checked By: DW
Revised On: 3/4/2015

Revision No.: 1.6

Monopole Pad & Pier Foundation

Foundation Parameters

Load			
Code	F		
Axial	29	kips	
Shear	32	kips	
Moment	2301	k-ft	
Soil Unit Weight	110	pcf	
Friction Angle	30		
Cohesion	0	psf	

Material			
Concrete Strength (F'c)	4000	psi	
Concrete Density	150	pcf	
Rebar Tensile (Fy)	60	ksi	
Clear Cover	3	in	

Pad		
Thickness	2.5	ft
Bearing Depth	7.5	ft
Width	20	ft
Rebar Size	9	
Rebar Quantity	32	

Pier		
Pier type	Square	
Width	8	ft
Height above Grade	1	ft
Rebar Size	11	
Rebar Quantity	60	
Tie Size	4	
Tie C/C Spacing	12	in

Structural Checks

Pad Beam Shear Capacity	576.2	kips
Pad Beam Shear	285.1	kips
Pad Beam Shear Check	49.5%	Pass

Pad Bending Moment Capacity	3474.9	k-ft
Pad Bending Moment	1306.6	k-ft
Pad Bending Moment Check	37.6%	Pass

Punching Shear Capacity	2330.0	kips
Punching Shear	211.4	kips
Punching Shear Check	9.1%	Pass

Pad-Pier Bearing Capacity	40734.7	kips
Pad-Pier Bearing	505.7	kips
Pad-Pier Bearing Check	1.2%	Pass

Pier Beam Shear Capacity	927.8	kips
Pier Beam Shear	43.2	kips
Pier Beam Shear Check	4.7%	Pass

Pier Bending Moment Capacity	18313.5	k-ft
Pier Bending Moment	3343.4	k-ft
Pier Bending Moment Check	18.3%	Pass

Exhibit E



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

T-Mobile Existing Facility

Site ID: CT11733B

CT733/AT&T/Hunter Ambulance 462 West Main Street Meriden, CT 06451

May 26, 2016

EBI Project Number: 6216002596

Site Compliance Summary				
Compliance Status:	COMPLIANT			
Site total MPE% of FCC general public allowable limit:	81.74 %			



May 26, 2016

T-Mobile USA Attn: Jason Overbey, RF Manager 35 Griffin Road South Bloomfield, CT 06002

Emissions Analysis for Site: CT11733B – CT733/AT&T/Hunter Ambulance

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **462 West Main Street**, **Meriden**, **CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile 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 (μ W/cm²). The number of μ W/cm² 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 (μ W/cm²). The general population exposure limit for the 700 MHz Band is approximately 467 μ W/cm², and the general population exposure limit for the PCS and AWS bands is 1000 μ W/cm². 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 T-Mobile Wireless antenna facility located at **462 West Main Street, Meriden, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile 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 GSM / 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
- 2) 2 UMTS channels (AWS Band 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 LTE channels (PCS Band 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) 2 LTE channels (AWS Band 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.



- 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 Ericsson AIR32 B2A/B66AA & AIR21 B2A/B4P for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the Commscope LNX-6515DS-VTM for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The Ericsson AIR32 B2A/B66AA & AIR21 B2A/B4P have a maximum gain of 15.9 dBd at their main lobe at 1900 MHz and 2100 MHz. The Commscope LNX-6515DS-VTM has a maximum gain of 14.6 dBd at its main lobe at 700 MHz. 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 **90 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.



T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	В	Sector:	С
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR32 B2A/B66AA	Make / Model:	Ericsson AIR32 B2A/B66AA	Make / Model:	Ericsson AIR32 B2A/B66AA
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	90	Height (AGL):	90	Height (AGL):	90
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
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):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	4.76	Antenna B1 MPE%	4.76	Antenna C1 MPE%	4.76
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	90	Height (AGL):	90	Height (AGL):	90
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
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):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A2 MPE%	2.38	Antenna B2 MPE%	2.38	Antenna C2 MPE%	2.38
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Commscope LNX- 6515DS-VTM	Make / Model:	Commscope LNX- 6515DS-VTM	Make / Model:	Commscope LNX- 6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	90	Height (AGL):	90	Height (AGL):	90
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.94	Antenna B3 MPE%	0.94	Antenna C3 MPE%	0.94

Site Composite MPE%				
Carrier	MPE%			
T-Mobile (Per Sector Max)	8.08 %			
AT&T	3.61 %			
Hunter Yagi 1	7.43 %			
Hunter Yagi 2	7.43 %			
Hunter Yagi 3	22.28 %			
Hunter whip	7.43 %			
Sprint	10.89 %			
Verizon Wireless	14.59 %			
Site Total MPE %:	81.74 %			

T-Mobile Sector 1 Total:	8.08 %
T-Mobile Sector 2 Total:	8.08 %
T-Mobile Sector 3 Total:	8.08 %
Site Total:	81.74 %

T-Mobile _Max per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (µW/cm²)	Calculated % MPE
T-Mobile 2100 MHz (AWS) LTE	2	2334.27	90	23.79	2100	1000	2.38 %
T-Mobile 1900 MHz (AWS) LTE	2	2334.27	90	23.79	1900	1000	2.38 %
T-Mobile 1900 MHz (PCS) GSM/UMTS	2	1167.14	90	11.89	1900	1000	1.19 %
T-Mobile 2100 MHz (AWS) UMTS	2	1167.14	90	11.89	2100	1000	1.19 %
T-Mobile 700 MHz LTE	1	865.21	90	4.41	700	467	0.94 %
						Total:	8.08 %



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 T-Mobile 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:

T-Mobile Sector	Power Density Value (%)
Sector 1:	8.08 %
Sector 2:	8.08 %
Sector 3:	8.08 %
T-Mobile Per Sector	8.08 %
Maximum:	
Site Total:	81.74 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **81.74%** 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.