NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

April 13, 2016

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

RE: Notice of Exempt Modification
76 East Ridge Road, Ridgefield CT 06877
Latitude: 41.28081
Longitude: -73.49290
T-Mobile Site#: CT11103A_L700

Dear Ms. Bachman:

T-Mobile filed an exempt modification and received approval on June 15, 2015. The following is a resubmission with the revised structural analysis.
T-Mobile currently maintains three antennas at the 100-foot level of the existing 130-foot monopole at 76 East Ridge Road, Ridgefield CT 06877. The tower is owned by Town of Ridgefield – Police Department. The property is owned by Town of Ridgefield. T-Mobile now intends to replace six (6) of its existing antennas with three (3) new 1900 MHz antenna and three(3) new 700 MHz antenna. The antenna would be installed at the 100-foot level of the tower. T-Mobile also intends to replace (3) existing TMA with (3) new dd B4 TMA, install three (3) Ericsson RRUS-11 B12 and (1) 1- 5/8" fiber Line at the 100-foot level.

This facility was approved by the Town of Ridgefield in 197. The town granted the Ridgefield Police Department a Special Permit, approval included the condition(s) "antenna and concrete pad". We have attached a letter from Betty Brosius the Town Zoning Director stating the history of the tower as the old files were not available. See attached. This modification complies with the aforementioned condition(s).

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.SA. § 16-SOj-73, a copy of this letter is being sent to Brandon Robertson, Town Manager for the Town of Avon, as well as the property owner and the tower owner.

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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: The Honorable Rudy Maconi, First Selectman - as elected official
Town of Ridgefield - as tower owner
Town of Ridgefield - as property owner

Exhibit A

FAX Attn: Denise Sobo

860-677-1300

5 pgs. + cover

From:

TOWN OF RIDGEFIELD

www.ridgefieldct.org

BETTY BROSIUS, MPA, AICP
DIRECTOR OF PLANNING

Town Hall Annex • 66 Prospect Street • Ridgefield, CT 06877
Phone: (203) 431-2769 • Fax: (203) 431-2737
Email: planningdirector@ridgefieldct.org

TOWN OF RIDGEFIELD
Planning & Zoning Commission

April 6, 2016

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

Re: History of Permitting for Communications Tower at 76 East Ridge Road
Town of Ridgefield, Connecticut

Dear Ms. Bachman:

To the best of my knowledge, the information below describes the chronological history of the existence of the communication tower and permitting for same at 76 East Ridge Road in the Town of Ridgefield, property owned by the Town and occupied by the Ridgefield Police Department.

- **1920's through 1970's (?)**: The building was used as a facility for the Connecticut State Police.

- **1975:** The Town of Ridgefield purchased the property and the Ridgefield Police Department was granted Special Permit Approval to use the facility for police headquarters. The site plan in the approval file includes a note that the "antenna and concrete pad are to remain", so it is assumed that the State Police had installed a communications tower at some point between the 1920's and 1975. There is no information in our office regarding permits for this original tower.

- **1988:** Metro Mobile CTS of Fairfield County, Inc. submitted an application to the Connecticut Siting Council and was approved for a Certificate of Environmental Compatibility and Public Need for property at 76 East Ridge Road to "replace an existing 80' self-supporting lattice-style tower with a new 130' monopole tower to be owned by the Town. The Company will lease space from the Town in the basement of the existing Ridgefield Police Department building, which is located on the property, for use as a cellular equipment area. Eight cellular antennas will be mounted on the tower. In addition, the tower will be used for the Town's police, fire and emergency services antennas." *[underline added]*

  The Ridgefield Board of Selectmen referred the proposal to the Planning and Zoning Commission, who gave a favorable recommendation for the tower. The structure was built for the Town by Metro Mobile in 1989, with space for antennas permitted under a lease with the Town. The Building Department has a record of permits being pulled for construction of the tower and installation of the antennas in 1989.

- **1998:** Omnipoint Communications applied for a Special Permit from the Planning and Zoning Commission to install additional antennas on the existing tower. The P&Z Commission granted the Special permit in July of 1998. A copy of the approval and letter regarding the Sequence of Construction is attached.

- **2002:** VoiceStream Wireless applied for a Revision to the Special Permit to remove three antennas and to replace twelve antennas on the existing tower. Approval was granted by the Commission in April 2002. A copy of the approval is attached.

  [Note: The above two permits were applied for during the time when there was an on-going dispute about whether the Siting Council had jurisdiction over both cellular and non-cellular (PCS – Personal Communications Services) towers. The VoiceStream application was for PCS antennas. Following the 2002 application, all other applications for modifications to the tower were handled under the jurisdiction of the Siting Council.]

- **1999:** Pinnacle Site Development, Inc. representing AT&T, requested permission from the Board of Selectmen to apply for permits to increase the height of the tower from 130' to 150'. The Planning and Zoning Commission, in a referral to the Board of Selectmen, advised against this proposal. The proposal was never implemented by Pinnacle.

- **2002-2016:** There have been numerous modifications and additions of antennas to this tower in the years following 2002, all under the review and jurisdiction of the Siting Council. The most recent, in 2015, shows that the tower remains at 130 feet in height. No modifications have required approval by the Planning and Zoning Commission, but all installations of equipment and new antennas were reviewed and received permits for construction from the Building Department, after review by the Siting Council.

As stated, this is the history of the tower after reviewing our files to the best of my ability. If you have additional questions, please contact me.

Very truly yours,

Betty Brosius

Betty Brosius, MPA, AICP
Director of Planning

cc: Richard Baldelli, Zoning Enforcement Officer
Chief John Roche, Ridgefield Police Department
William Reynolds, Building Official
Our P&Z File #2009-107-CT ("CT Siting Council")

ADOPTED RESOLUTION OF APPROVAL

SPECIAL PERMIT, File #9858-SP
Telecommunications Antenna
76 East Ridge (Police Headquarters Site)
Applicant: Omnipoint Communications, Inc.
Auth. Agent: John S. Kowalski, Esq., TechStar Communications, Inc.

RESOLVED TO APPROVE, request for Special Permit under Section 312.0 as required by Section 311.0 of the Zoning Regulations, to install a telecommunications antenna on the existing monopole tower located at Town of Ridgefield Police Headquarters at 76 East Ridge in an RA zone, **PROVIDING THAT:**

1. Except as modified by this resolution, the work shall conform to drawings prepared by TechStar Communications, Inc., John Wagner, P.E. (CT Lic #00020470), entitled:

   a. "Site Plan," Sheet S-1, last revised 6/26/98;

   b. "Equipment Information," Sheet Z-1, last revised 6/26/98;

2. Prior to the issuance of any zoning permit, final plans for screening of equipment at the base of the tower, to include fencing and landscaping, shall be reviewed and approved by the Director of Planning.

Reasons: In granting the above special permit, the Planning and Zoning Commission wishes to state upon its records that in the Commission's judgment, the subject project will not exert a detrimental effect on the development of the district nor on the value of the nearby properties. The use minimizes adverse visual effects as no new tower is needed, avoids potential problems due to tower failure as no new tower is proposed, and reduces the need for a new tower as an existing tower is being utilized. In addition, the records of the Commission will show that the application complies either "de facto" or by variance with all applicable requirements according to Sections 312.0 and 311.0 of the Zoning Regulations.

Draft: 7/2/98

Adopted: 7/7/98
Effective: 7/17/98

CC: Richard Baldel[illegible]
William Reynold[illegible]

TECHSTAR
Communications, Inc.

July 23, 1998

RECEIVED
JUL 28 1998
Planning & Zoning Commission
Inland Wetlands Board

HAND DELIVERED

Mr. Oswald Inglese, Director of Planning
Planning and Zoning Commission
Town Hall Annex
66 Prospect Street
Ridgefield, CT 06877

RE: Special Permit Application
Omnipoint Communications, Inc.
Property at: 76 East Ridge Road, Ridgefield, CT
Mount PCS antennae upon existing monopole

Dear Mr. Inglese:

I recently met with Betty Brosius to discuss the conditions attached to the approval of our Special Permit Application. My understanding is that you require a "sequence of construction" regarding the removal and replacement of the existing fencing as well as additional landscaping details.

SEQUENCE OF CONSTRUCTION

1. In order to pour the proposed concrete pad, the existing wood, picket fence is to be removed, and the area shall be cleared and grubbed.
2. The pad will be poured and equipment installed per the attached construction drawing C-1, dated 05/15-98.
3. Upon completion of the installation of our equipment, the existing fence shall be reinstalled in the new location as shown on C-1. outside of.
4. New shrubs will be planted to the ~~inside~~ of the relocated fence as indicated on C-1. The species will be arborvitae 6' on center @ 6' high.
5. If during the course of construction, the existing fence is damaged and can not be reinstalled, new fencing of similar material and dimension shall be substituted.

I have attached a marked up copy of the Site Plan and Elevations (C-1) to illustrate the scope of landscaping. I trust it will meet with your approval, however, if there are questions, please do not hesitate to contact me at 203-434-0269.

APPROVED AS REVISED
[signature]
7/27/98

[signature]
Mark S. DeVoe
Zoning Analyst, TechStar Communications Inc.
On behalf of Omnipoint Communications Inc.

Enclosures

TOWN OF RIDGEFIELD
Planning & Zoning Commission

April 29, 2002

Karina Hanson
VoiceStream Wireless
100 Filley Street
Bloomfield, CT 06002

Re: Special Permit Revision #2002-36-REV
76 East Ridge Street

Dear Ms. Hanson:

Please be advised that the Planning and Zoning Commission, at its meeting of April 23, 2002, voted to APPROVE your request for a REVISION to the Special Permit to remove three antennas on an existing platform and replace twelve antennas at 76 East Ridge Street (Ridgefield Police Station), subject to the following:

1. The work shall conform to the drawings dated 4/4/02, prepared by O'Dea Lynch Abbattista, Consulting Engineers, entitled "SITE CT11-103A, 76 East Ridge Street, Ridgefield, CT," as follows:
   a. "Site Plan and Vicinity Maps," Sheet C-1;
   b. "Monopole Elevation," Sheet C-2; and
2. All other conditions of approval detailed in the original special permit shall remain in force.

If you should have any questions or if I can be of further assistance, please contact me at (203) 431-2767. Thank you.

Sincerely,

Gretchen Kuechler
Deputy Planner

66 Prospect Street · Ridgefield, Connecticut 06877
Phone: (203) 431-2766 · Fax: (203) 431-2737

www.ridgefieldct.org

Exhibit B

T-MOBILE NORTHEAST LLC

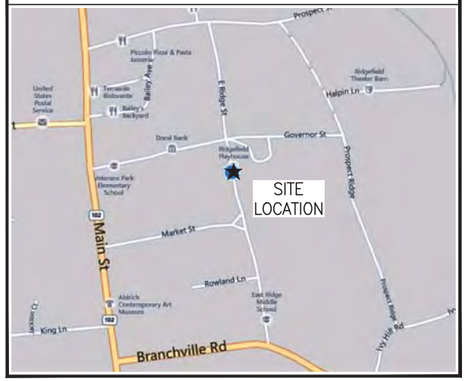
SITE #: CT11103A

SITE NAME: RIDGEFIELD/DOWNTOWN 1

SITE ADDRESS:
76 EAST RIDGE ROAD
RIDGEFIELD ,CT 06877

WIRELESS BROADBAND FACILITY
CONSTRUCTION DRAWINGS
(702CC CONFIGURATION)

VICINITY MAP



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:

WWW.CBYD.COM

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.

COLOR CODE FOR UTILITY LOCATIONS

ELECTRIC – RED		**SEWER**	**– GREEN**
GAS/OIL	– YELLOW	**SURVEY**	**– PINK**
TEL/CATV	– ORANGE	PROPOSED EXCAVATION	– WHITE
WATER	– BLUE	RECLAIMED WATER	– PURPLE

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 CONTRACT DOCUMENTS.
6. 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 SAFETY 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 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 ANAYLYSIS DOCUMENT ENTITLED "TOWER ANALYSIS REPORT SITE NAME CT11103A" PREPARED BY "INFINIGY" DATED APRIL 1, 2016.

SITE INFORMATION

SITE NUMBER:	CT11103A
SITE NAME:	RIDGEFIELD/DOWNTOWN 1
SITE ADDRESS:	76 EAST RIDGE ROAD RIDGEFIELD ,CT 06877
LAT./LONG.:	N 41.28081" / W –73.49290"
JURISDICTION:	TOWN OF RIDGEFIELD
PROPERTY OWNER:	TOWN OF RIDGEFIELD POLICE DEPARTMENT – TOWN OF RIDGEFIELD JOHN S. ROCHE, CHIEF OF POLICE 76 EAST RIDGE ROAD RIDGEFIELD, CT 06877 203–438–6531 OR 203–431–2795 RPDCHIEF@RIDGEFIELDCT.ORG

CODE COMPLIANCE

CONNECTICUT STATE BUILDING CODE

2005 CONNECTICUT BUILDING CODE WITH 2013 AMENDMENT
2011 NATIONAL ELECTRICAL CODE

CONSTRUCTION TYPE: 2B USE GROUP: N/A

PROJECT SUB–CONTRACTORS

APPLICANT:	T–MOBILE NORTHEAST, LLC. 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 (860) 692–7100
PROJECT MANAGER	LISA LIN ALLEN NORTHEAST SITE SOLUTIONS 54 MAIN STREET STURBRIDGE, MA 01566 (508) 434–5237
ARCHITECT/ENGINEER:	ATLANTIS GROUP INC. 1340 CENTRE STREET SUITE 212 NEWTON CENTER, MA 02459 (617) 965–0789

SHEET INDEX

SHEET	DESCRIPTION
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A–1	SITE PLAN AND ELEVATION
A–2	EQUIPMENT PLAN AND DETAILS
A–3	ANTENNA PLAN AND DETAILS
E–1	GROUNDING AND POWER ONE LINE DIAGRAM
E–2	GROUNDING DETAILS

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

ATLANTIS GROUP
1340 Centre Street, Suite 212
Newton Center, MA 02459
Office: 617–965–0789
Fax: 617–213–5056

SUBMITTALS

DATE	DESCRIPTION	REVISION
11/18/15	ISSUED FOR REVIEW	A
04/01/16	REVISED PER NEW SA	0

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

PROJECT NO:	CT11103A
DRAWN BY:	FG
CHECKED BY:	SM

STATE OF CONNECTICUT
HOSSEIN VAHEDI
No. ARI. 11162
LICENSED ARCHITECT

PROFESSIONAL SEAL

SITE NAME
CT11103A

SITE NAME
RIDGEFIELD/DOWNTOWN 1

SITE ADDRESS
76 EAST RIDGE ROAD
RIDGEFIELD ,CT 06877

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

ELECTRICAL NOTES:

WORK INCLUDED

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 THE WORK OF THIS CONTRACT.
   C. SUBMIT AS-BUILT DRAWINGS, OPERATING AND MAINTENANCE INSTRUCTIONS AND MANUALS.
   D. EXECUTE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING OF EXISTING OR NEWLY INSTALLED CONSTRUCTION REQUIRED FOR THE WORK OF THIS CONTRACT. FOR SLAB PENETRATIONS THROUGH POST TENSION SLABS, X-RAY EXACT 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 EQUIPMENT PROVIDED OR INSTALLED UNDER THE WORK OF HIS CONTRACT. PROVIDE COUNTER FLASHING, SLEEVES AND SEALS FOR FLOOR AND WALL PENETRATIONS.
   F. MAINTAIN ALL EXISTING ELECTRICAL SERVICES IN THE BUILDING AREAS NOT AFFECTED BY THE ALTERATION DURING THE PROGRESS OF THE WORK INCLUDING PROVIDING ALL TEMPORARY JUMPERS, CONDUITS, CAPS, PROTECTIVE DEVICES, CONNECTIONS AND EQUIPMENT REQUIRED. PROVIDE TEMPORARY LIGHT AND POWER FOR CONSTRUCTION PURPOSES.
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 FOR INCLUSION IN THE CONTRACT. FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT USUALLY FURNISHED OR NEEDED TO MAKE A COMPLETE INSTALLATION WHETHER OR NOT 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 CODES.
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 EQUIPMENT FOR COMPLIANCE TO NEC. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES AND REQUEST FURTHER DIRECTION BY ENGINEER.
4. EXISTING BUILDING EQUIPMENT IS NOTED ON THE DRAWINGS. NEW OR RELOCATED EQUIPMENT IS SHOWN WITH SOLID LINES. FUTURE EQUIPMENT (NOT IN THIS CONTRACT) IS DEPICTED WITH SHADED LINES. REQUEST CLARIFICATION OF DRAWINGS OR OF SPECIFICATIONS PRIOR TO PRICING OR INSTALLATION.
5. GENERAL
   A. AFTER CAREFULLY STUDYING THE DRAWINGS AND SPECIFICATIONS, AND BEFORE SUBMITTING THE PROPOSAL, MAKE A MANDATORY SITE VISIT TO ASCERTAIN CONDITIONS OF THE SITE, AND THE NATURE AND EXACT QUANTITY OF WORK 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.
6. QUALITY, WORKMANSHIP, MATERIALS AND SAFETY
   A. PROVIDE NEW MATERIALS AND EQUIPMENT OF A DOMESTIC MANUFACTURER BY THOSE REGULARLY ENGAGED IN THE 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 CONTRACT DOCUMENT OR NOT.
   D. MAKE WRITTEN REQUESTS FOR SUPPLEMENTARY INSTRUCTIONS TO ARCHITECT/ENGINEER IN CASE OF DOUBT 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 DIRECTED BY ARCHITECT.

CLEANING

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.

COORDINATION AND SUPERVISION

1. CAREFULLY LAY OUT ALL WORK IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS OR OTHER SURFACES. WHERE SUCH WORK IS NECESSARY, HOWEVER, PATCH AND 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 INSTALLED IN CLOSE PROXIMITY TO WORK OF OTHER TRADES. ASSIST IN WORKING OUT SPACE CONDITIONS. IF WORK IS INSTALLED BEFORE COORDINATION WITH OTHER TRADES, OR CAUSES INTERFERENCE, MAKE CHANGES NECESSARY TO CORRECT CONDITIONS WITHOUT EXTRA CHARGE.

SUBMITTALS

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

CUTTING AND PATCHING

1. 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

1. BEFORE ENERGIZING ANY ELECTRICAL INSTALLATION, INSPECT EACH UNIT IN DETAIL. TIGHTEN ALL BOLTS AND CONNECTIONS (TORQUE-TIGHTEN WHERE REQUIRED) AND DETERMINE THAT ALL COMPONENTS ARE ALIGNED, AND THE EQUIPMENT IS IN SAFE, OPERATIONAL CONDITION.
2. PROVIDE THE COMPLETE ELECTRICAL SYSTEM FREE OF GROUND FAULTS AND SHORT CIRCUITS SUCH THAT THE SYSTEM WILL OPERATE SATISFACTORILY UNDER FULL LOAD CONDITIONS, WITHOUT EXCESSIVE HEATING AT ANY POINT IN THE SYSTEM.

SPECIAL REQUIREMENTS

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 INTERFERE WITH OR CUTOFF ANY OF THE EXISTING SERVICES WITHOUT THE OWNER'S WRITTEN PERMISSION.
2. WHEN NECESSARY TO TEMPORARILY DISCONNECT ANY EXISTING BUILDING UTILITIES AND SERVICE SYSTEMS, INCLUDING FEEDER OR BRANCH CIRCUITING SUPPLYING EXISTING FACILITIES, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A TIME MUTUALLY AGREED UPON. SHUTDOWN NOTE: SCHEDULE AND NOTIFY OWNER 48 HOURS PRIOR TO SHUTDOWN. ALL SHUTDOWN WORK TO BE SCHEDULED AT A TIME CONVENIENT TO OWNER.

GROUNDING

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. VERIFY 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 TERMINATIONS, 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.

RACEWAYS

1. 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 BE EMT.
   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 ¾" 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 CLEARANCES.
   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 CEILING.
   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 VERTICAL DIRECTIONS.
   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, PER BUILDING.

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, PRIOR TO BID.
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
0 TO 50	NO. 12
51 TO 100	NO. 10
101 TO 150	NO. 8

8. VOLTAGE DROP IS NOT TO EXCEED 3%.
9. MAKE ALL CONNECTIONS WITH UL APPROVED, SOLDERLESS, PRESSURE TYPE INSULATED CONNECTORS: SCOTCHLOK OR AND APPROVED EQUAL.

WIRING DEVICES

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 SUPPLIED.
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
   B. SQUARE-D
5. PROVIDE RK-1 TYPE FUSES, UNLESS NOTED OTHERWISE.

INSTALLATION

1. INSTALL DISCONNECT SWITCHES WHERE INDICATED ON DRAWINGS.
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 FOLLOWS:
   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 SIZE BE FURNISHED.

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 CHANGE ORDER.

CONFLICTS

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 OWNER 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 MATTER OR THING CONCERNING SUCH BIDDER MIGHT HAVE 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 OF 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 GOVERNING THE WORK.

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.

STORAGE

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.

CLEANUP

1. 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.
2. EXTERIOR
   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 FINISHED SURFACES.

CHANGE ORDER PROCEDURE:

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

RELATED DOCUMENTS AND COORDINATION

1. GENERAL CARPENTRY, 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

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS REQUIRED AND LISTED IN THESE SPECIFICATIONS TO THE OWNER FOR APPROVAL.
2. ALL SHOP DRAWINGS SHALL BE REVIEWED, CHECKED AND CORRECTED BY CONTRACTOR PRIOR TO SUBMITTAL TO THE OWNER.

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.
2. 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 SHEETS.

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.

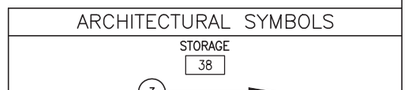
ADMINISTRATION

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 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 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).
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 OWNER.
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.

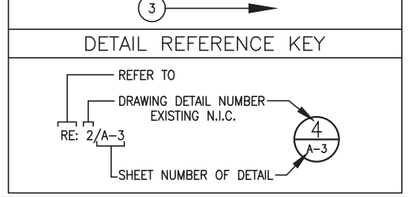
INSURANCE AND BONDS

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

ARCHITECTURAL SYMBOLS



DETAIL REFERENCE KEY



ABBREVIATIONS

ADJ	ADJUSTABLE
AGL	ABOVE GROUND LINE
&	AND
APPROX	APPROXIMATE
@	AT
BTS	BASE TRANSMISSION STATION
CAB	CABINET
CLG	CEILING
CONC	CONCRETE
CONT	CONTINUOUS
DIA OR ø	DIAMETER
DWG	DRAWING
EA	EACH
ELEC	ELECTRICAL
ELEV	ELEVATION
EQ	EQUAL
EQUIP	EQUIPMENT
EGB	EQUIPMENT GROUND BAR
(E)	EXISTING
EXT	EXTERIOR
FF	FINISHED FLOOR
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GRND	GROUND
LG	LONG
MAX	MAXIMUM
MECH	MECHANICAL
MW	MICROWAVE DISH
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MTL	METAL
(N)	NEW
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OPP	OPPOSITE
(P)	PROPOSED
PCS	PERSONAL COMMUNICATION SYSTEM
PPC	POWER PROTECTION CABINET
SF	SQUARE FOOT
SHT	SHEET
SIM	SIMILAR
SS	STAINLESS STEEL
STL	STEEL
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TYP	TYPICAL
VIF	VERIFY IN FIELD
UON	UNLESS OTHERWISE NOTED
WWF	WELDED WIRE FABRIC
W/	WITH

T-MOBILE NORTHEAST, LLC
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SUBMITTALS

DATE	DESCRIPTION	REVISION
11/18/15	ISSUED FOR REVIEW	A
04/01/16	REVISED PER NEW SA	0

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

PROJECT NO: CT11103A
DRAWN BY: FG
CHECKED BY: SM

PROFESSIONAL SEAL

SITE NAME
CT11103A

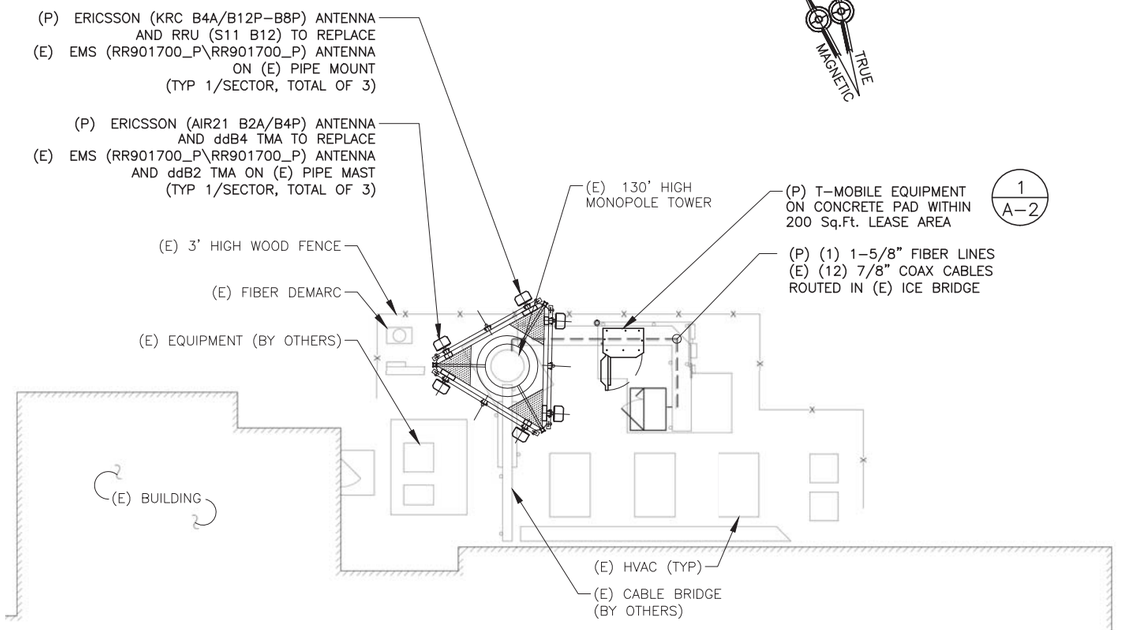
SITE NAME
RIDGEFIELD/DOWNTOWN 1

SITE ADDRESS
76 EAST RIDGE ROAD
RIDGEFIELD ,CT 06877

SHEET TITLE
GENERAL AND ELECTRICAL NOTES

SHEET NUMBER
N-1

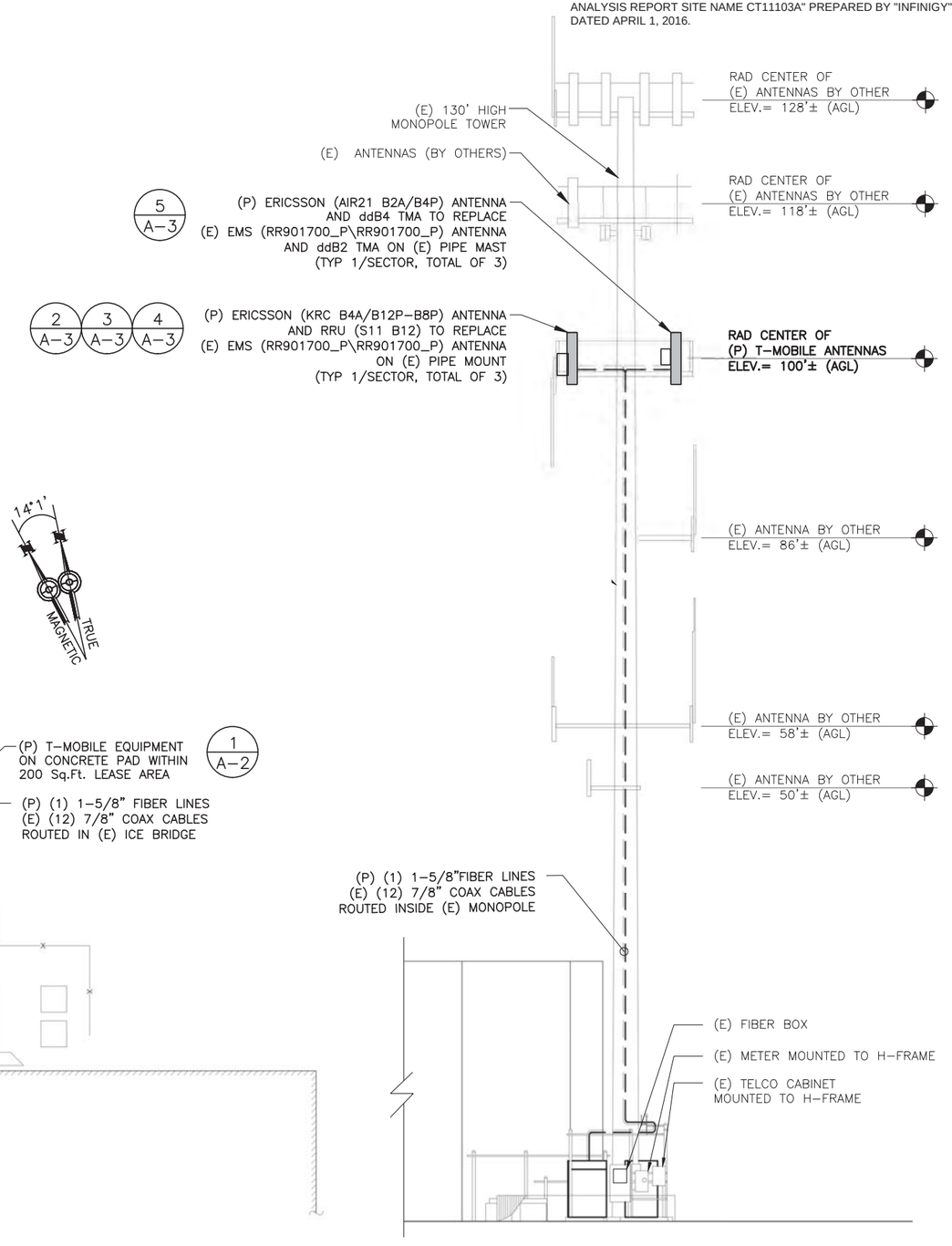
KEY PLAN (1/A-1)
SCALE: N.T.S.



SITE PLAN (2/A-1)
SCALE: 1/16" = 1'-0" (11x17)
1/8" = 1'-0" (24X36)

0 16 32 48
SCALE 1/16"=1' (11x17)
1/8" =1' (24x36)

REFER TO STRUCTURAL ANAYLYSIS DOCUMENT ENTITLED "TOWER ANALYSIS REPORT SITE NAME CT11103A" PREPARED BY "INFINIGY" DATED APRIL 1, 2016.



ELEVATION (3/A-1)
SCALE: 1/16" = 1'-0" (11x17)
1/8" = 1'-0" (24X36)

0 16 32 48
SCALE 1/16"=1' (11x17)
1/8" =1' (24x36)

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 SHOWN.

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 OPERATIONS.

SITE LEGEND

- SITE PROPERTY LINE
- STREET OR ROAD
- CHAIN LINK FENCE
- OPAQUE WOODEN FENCE
- BOARD ON BOARD FENCE
- DECIDUOUS TREES/SHRUBS
- EVERGREEN TREES/SHRUBS
- TREE LINE
- 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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DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CT11103A
DRAWN BY:	FG
CHECKED BY:	SM

STATE OF CONNECTICUT HOSSEIN VAHEDI NO. ARI. 11162 LICENSED ARCHITECT

PROFESSIONAL SEAL

SITE NAME
CT11103A

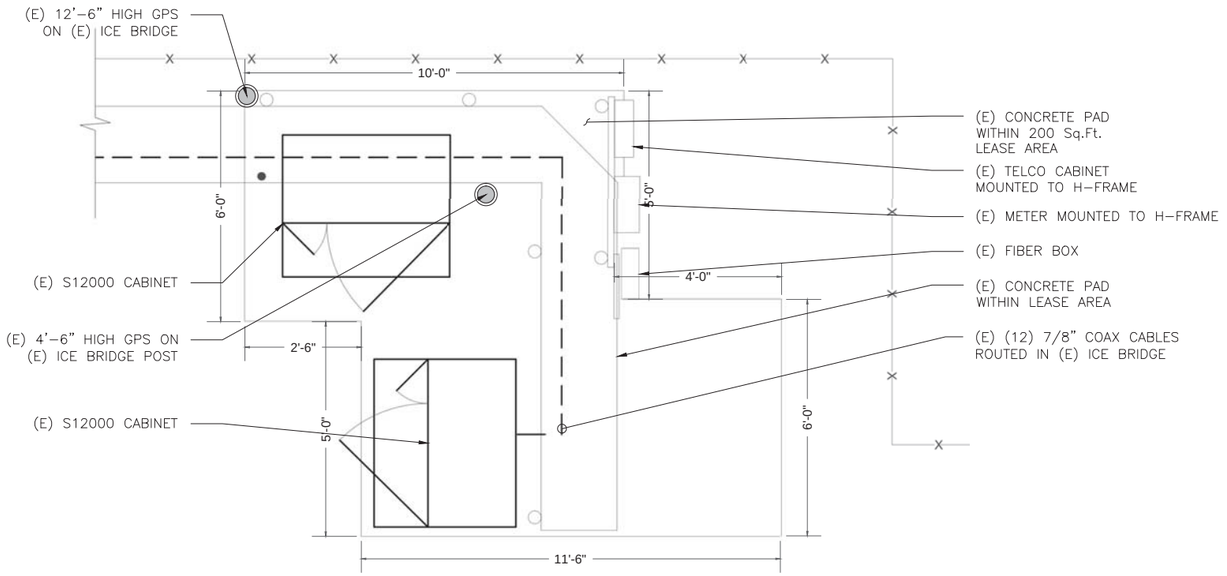
SITE NAME
RIDGEFIELD/DOWNTOWN 1

SITE ADDRESS
76 EAST RIDGE ROAD
RIDGEFIELD ,CT 06877

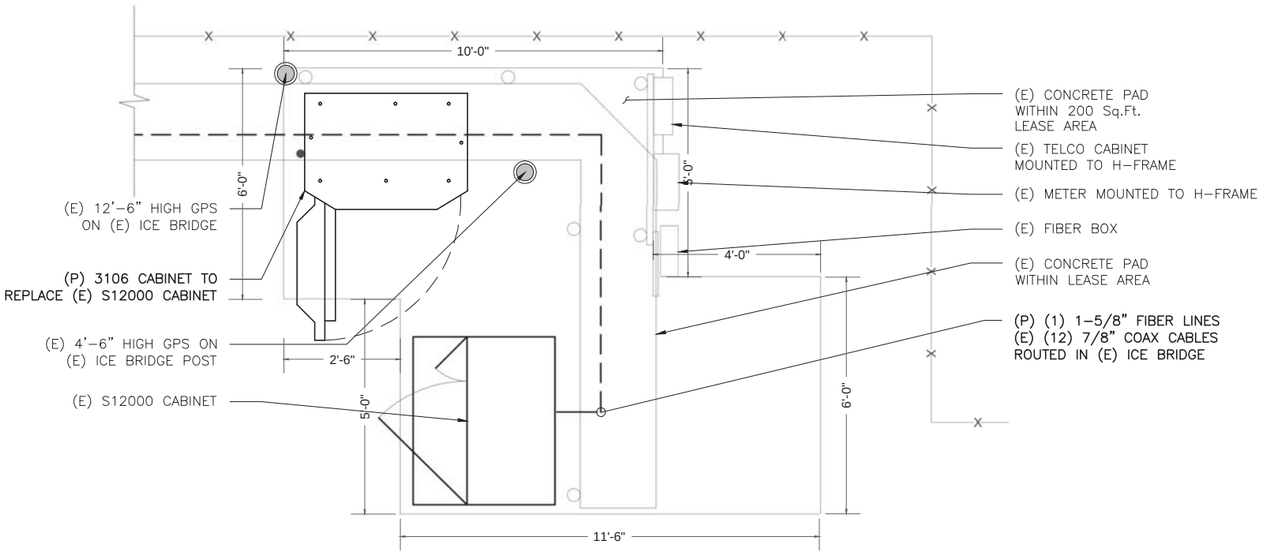
SHEET TITLE
SITE PLAN
AND
ELEVATION

SHEET NUMBER
A-1

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED "POST MOD TOWER ANALYSIS REPORT" PREPARED BY INFINIGY & DESIGN BUILD DELIVER."T-MOBILE SITE ID CT11103" DATED OCTOBER 26, 2015.



EXISTING EQUIPMENT LAYOUT PLAN



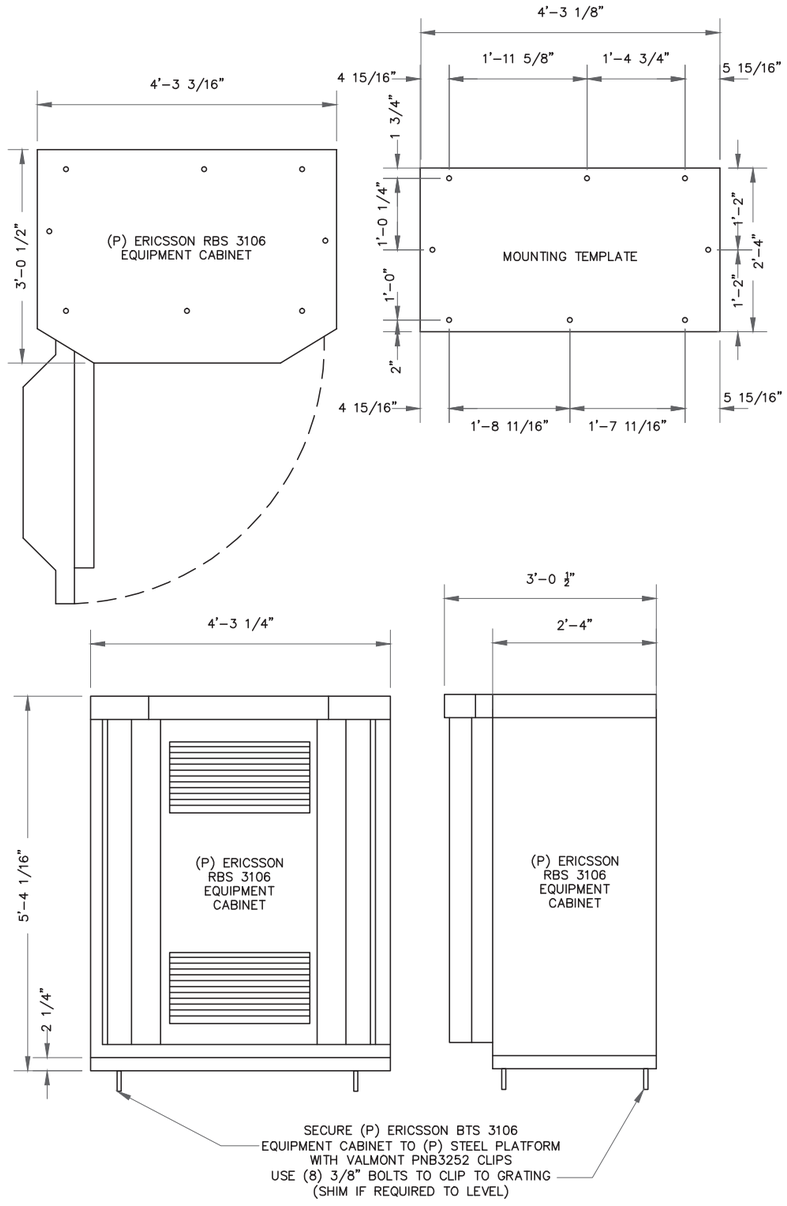
PROPOSED EQUIPMENT LAYOUT PLAN

EQUIPMENT LAYOUT PLAN (1 / A-2)

SCALE: 1" = 4'-0" (11x17)
1" = 2'-0" (24X36)

0 4 8 12

SCALE 1"=4' (11x17)
1"=2' (24x36)



ERICSSON RBS 3106 EQUIPMENT CABINET (2 / A-2)

SCALE: N.T.S

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OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CT11103A
DRAWN BY:	FG
CHECKED BY:	SM

STATE OF CONNECTICUT · HOSSEIN VALHEDI · NO. ARI. 11162 · LICENSED ARCHITECT

PROFESSIONAL SEAL

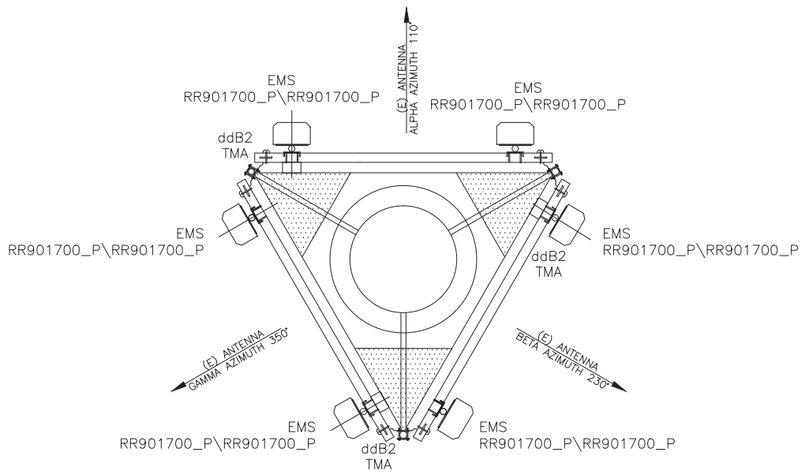
SITE NAME
CT11103A

SITE NAME
RIDGEFIELD/DOWNTOWN 1

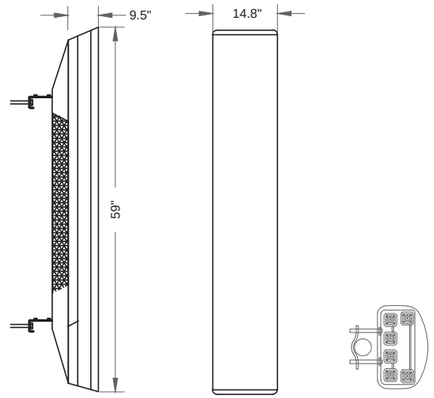
SITE ADDRESS
76 EAST RIDGE ROAD
RIDGEFIELD ,CT 06877

SHEET TITLE
EQUIPMENT PLAN AND DETAILS

SHEET NUMBER
A-2



EXISTING ANTENNA

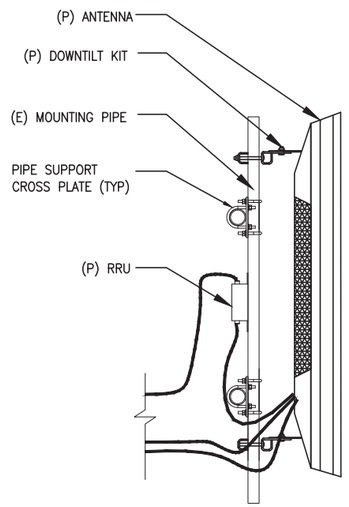


MANUFACTURER: ERICSSON
MODEL NO.:KRC118057/1B4A/B12P-B8p
DIMENSIONS – HxWxD, (IN) 4.9"x14.8"x9.5"

ERICSSON KRC118057/1B4A/B12P-B8p ANTENNA DETAILS

SCALE: N.T.S

2 / A-3

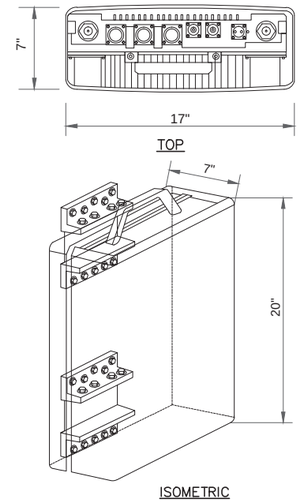


ANTENNA MOUNT DETAIL

SCALE: N.T.S

3 / A-2

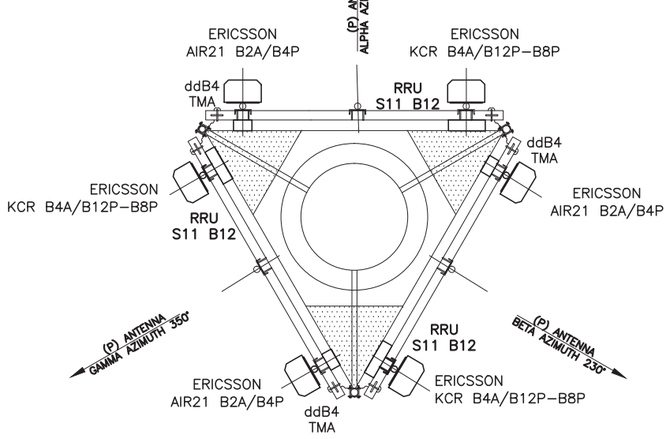
REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED "POST MOD TOWER ANALYSIS REPORT" PREPARED BY INFINIGY & DESIGN BUILD DELIVER."T-MOBILE SITE ID CT11103" DATED OCTOBER 26, 2015.



RRUS 11 B12 DETAILS

SCALE: N.T.S

4 / A-3

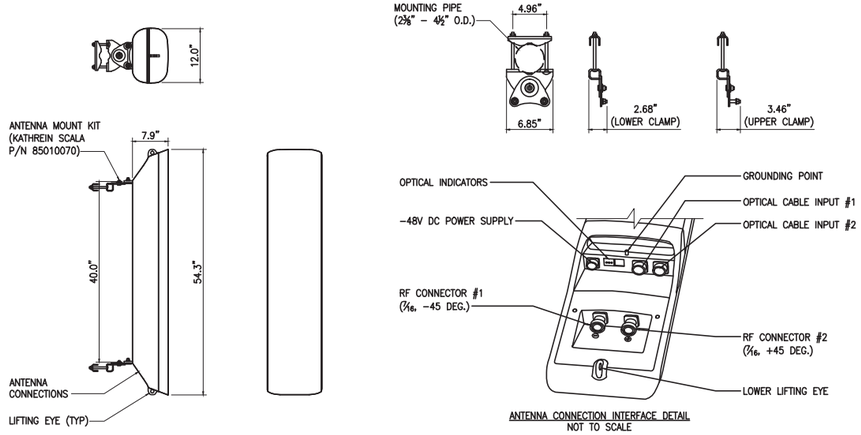


PROPOSED ANTENNA

ANTENNA PLAN

SCALE: N.T.S

1 / A-3



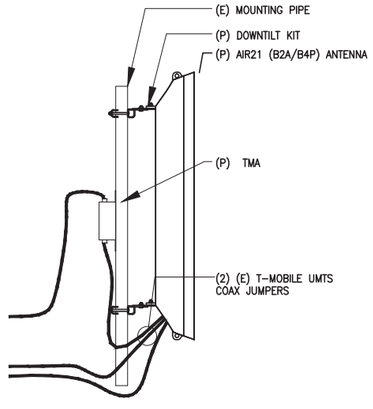
AIR21 "ANTENNA INTEGRATED RADIO"
(PCS & AWS VERSIONS)
WEIGHT: 80LBS (36KG)

ANTENNA CONNECTION INTERFACE DETAIL
NOT TO SCALE

ERICSSON AIR21 B2A/B4P ANTENNA DETAIL

SCALE: N.T.S

5 / A-3



ERICSSON
AIR21 B2A/B4P

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
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ATLANTIS GROUP
1340 Centre Street, Suite 212
Newton Center, MA 02459
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Fax: 617-213-5056

SUBMITTALS

DATE	DESCRIPTION	REVISION
11/18/15	ISSUED FOR REVIEW	A
04/01/16	REVISED PER NEW SA	0

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

PROJECT NO:	CT11103A
DRAWN BY:	FG
CHECKED BY:	SM

STATE OF CONNECTICUT
HOSSEIN VAHEDI
No. ARI. 11162
LICENSED ARCHITECT

PROFESSIONAL SEAL

SITE NAME
CT11103A

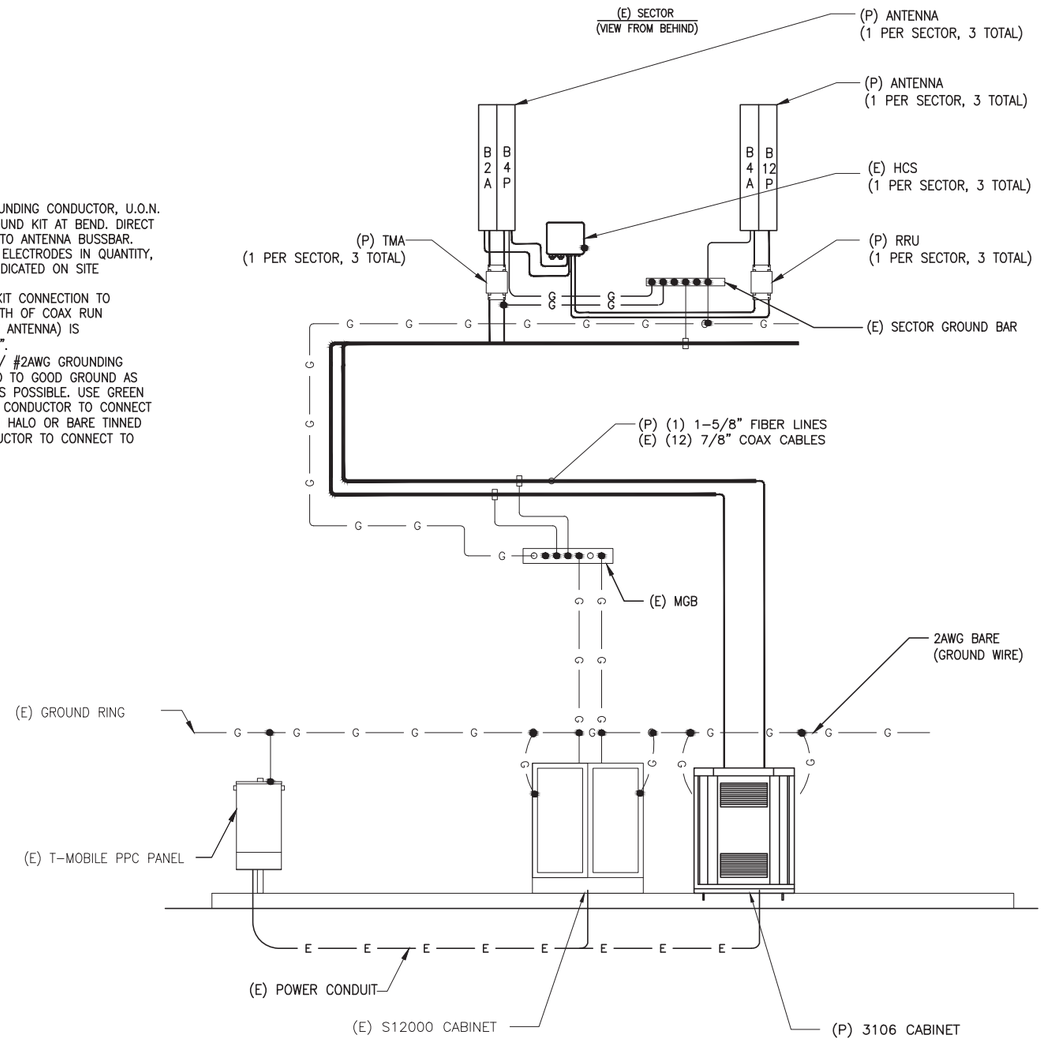
SITE NAME
RIDGEFIELD/DOWNTOWN 1

SITE ADDRESS
76 EAST RIDGE ROAD
RIDGEFIELD ,CT 06877

SHEET TITLE
ANTENNA PLAN
AND
DETAILS

SHEET NUMBER
A-3

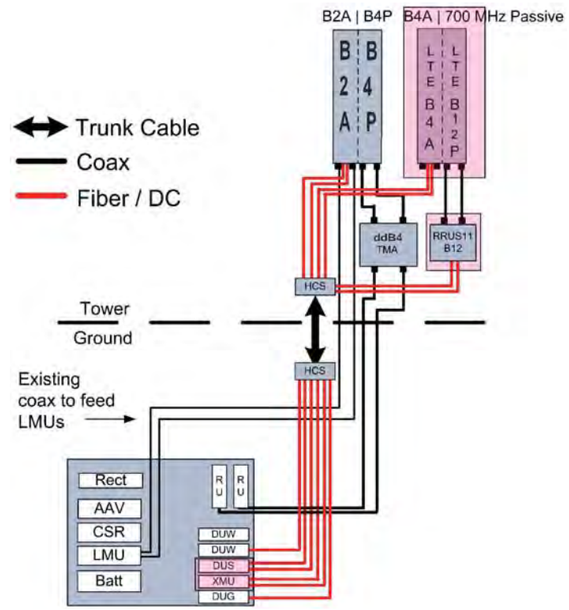
NOTES:
A. PROVIDE #2AWG GROUNDING CONDUCTOR, U.O.N.
B. DO NOT INSTALL GROUND KIT AT BEND. DIRECT GROUND WIRE DOWN TO ANTENNA BUSSBAR.
C. PROVIDE GROUNDING ELECTRODES IN QUANTITY, TYPE AND SIZE AS INDICATED ON SITE GROUNDING PLAN.
D. ADD COAX GROUND KIT CONNECTION TO BUSSBAR WHEN LENGTH OF COAX RUN (FROM EQUIPMENT TO ANTENNA) IS GREATER THAN 20'-0".
E. GROUND HCS BOX W/ #2AWG GROUNDING CONDUCTOR ATTACHED TO GOOD GROUND AS DIRECT AND SHORT AS POSSIBLE. USE GREEN STRANDED INSULATED CONDUCTOR TO CONNECT TO BUSSBAR/GROUND HALO OR BARE TINNED SOLID COPPER CONDUCTOR TO CONNECT TO GROUND RING.



GROUNDING DIAGRAM

1
E-1

SCALE: N.T.S



TRUNK FIBER NOTES:
1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO ⅞" 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 ¾" (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 ⅜" 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 ¾" (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) LONG TERM.
9. STANDARD LENGTHS AVAILABLE ARE 6 FEET, 15 FEET AND 20 FEET

702CC CONFIGURATION
COAX/FIBER PLUMBING DIAGRAM

2
E-1

SCALE: N.T.S

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04/01/16	REVISED PER NEW SA	0

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

PROJECT NO: CT11103A
DRAWN BY: FG
CHECKED BY: SM

PROFESSIONAL SEAL

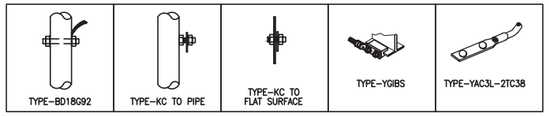
SITE NAME
CT11103A

SITE NAME
RIDGEFIELD/DOWNTOWN 1

SITE ADDRESS
76 EAST RIDGE ROAD
RIDGEFIELD ,CT 06877

SHEET TITLE
GROUNDING AND ONE LINE DIAGRAM
COAX/FIBER DIAGRAM

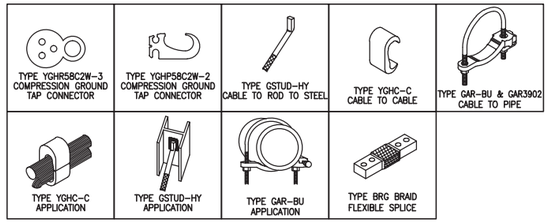
SHEET NUMBER
E-1



BURNDY GROUNDING DETAILS

1 / E-2

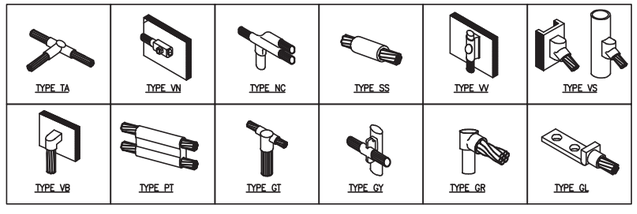
SCALE: N.T.S



BURNDY GROUNDING PRODUCTS

2 / E-2

SCALE: N.T.S



CADWELD GROUNDING CONNECTION PRODUCTS

3 / E-2

SCALE: N.T.S

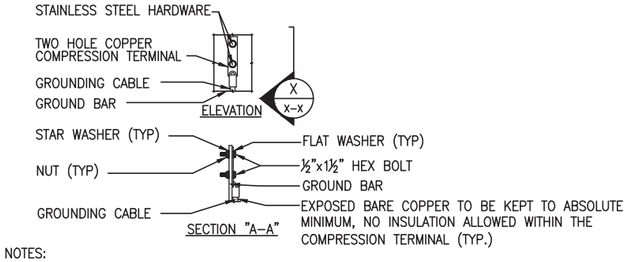
TERMINATION TYPES:
A. MECHANICAL COMPRESSION LUG
B. DOUBLE BARRELL COMPRESSION CONNECTOR
C. EXOTHERMIC TERMINATION
D. BEAM CLAMP

	SOLID #2 TINNED COPPER	#6 GROUND LEAD	#2/0 STRANDED MAIN DOWN CONDUCTOR	MASTER GRND BAR	STRUCTURAL OR TOWER STEEL	BLDG SERVICE ENTR OR GRND RING	GROUND ROD
SOLID #2 TINNED COPPER	B OR C	B OR C		C	A, C, OR D		C
#6 GROUND LEAD	B OR C			A	A, C, OR D		
#2/0 STRANDED GRNDG ELECTRODE CONDUCTOR		A	A	A	A, C, OR D	A	
MASTER GROUND BAR	C	A	A				
STRUCTURAL OR TOWER STEEL	A, C, OR D	A, C, OR D	A, C, OR D				
GROUND RING	C		C				C

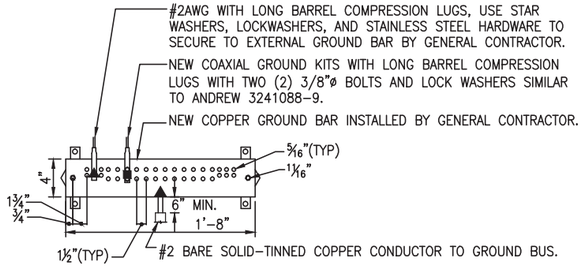
GROUNDING TERMINATION MATRIX

7 / E-2

SCALE: N.T.S



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

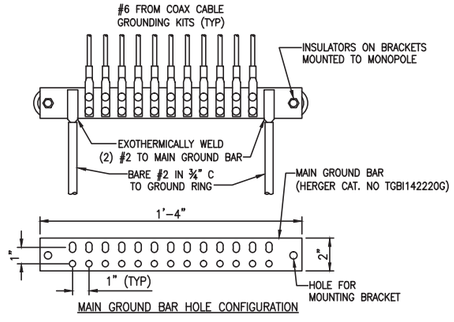


NOTES:
1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
3. ALL HOLES ARE COUNTERSUNK 1⁄16".

TYPICAL GROUND BAR CONNECTIONS DETAIL

4 / E-2

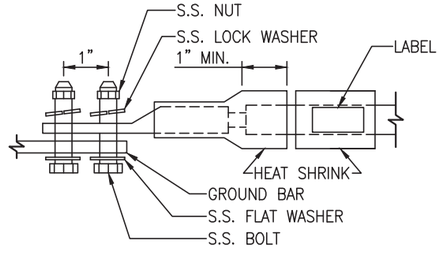
SCALE: N.T.S



GROUND BAR DETAIL

5 / E-2

SCALE: N.T.S



LUG NOTES:
1. ALL HARDWARE IS 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS.
2. ALL HARDWARE SHALL BE S.S. ⅜"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.

GROUND BAR DETAIL

6 / E-2

SCALE: N.T.S

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DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
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SITE AC.			

PROJECT NO:	CT11103A
DRAWN BY:	FG
CHECKED BY:	SM

PROFESSIONAL SEAL

SITE NAME
CT11103A

SITE NAME
RIDGEFIELD/DOWNTOWN 1

SITE ADDRESS
76 EAST RIDGE ROAD
RIDGEFIELD ,CT 06877

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
E-2

Exhibit C

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

1033 WATERVLIET SHAKER RD, ALBANY, NY 12205

Tower Analysis Report

April 1, 2016

Site Name	CT11103A
Infinigy Job Number	379-015
Client	Northeast Site Solutions
Proposed Carrier	T-Mobile
Site Location	76 East Ridge Road, Ridgefield, CT 06877 39° 31' 53.1" N NAD83 76° 22' 10.5" W NAD83
Structure Type	130' Monopole
Structural Usage Ratio	**97.2%**
Overall Result	**Pass**

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The tower is therefore deemed adequate to support the existing and proposed loading as listed in this report.

Nathaniel R. Ober E.I.T.
Structural Engineer I

Contents

Introduction

Infinigy Engineering has been requested to perform a structural analysis on the existing 130' monopole. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The tower was analyzed using tnxTower version 7.0.5.1 tower analysis software.

Supporting Documentation

Previous Analysis	AECOM Job #36931429.00000, dated March 4, 2015
Previous Analysis	Infinigy Job #379-015, dated February 19, 2016

Analysis Code Requirements

Wind Speed	95 mph (3-Second Gust)
Wind Speed w/ ice	40 mph (Fastest-Mile) w/ 1/2" ice
TIA Revision	TIA/EIA-222-G
Adopted IBC	2003 IBC w/ 2005 CT Supplements & 2013 CT Amendments
Structure Class	3
Exposure Category	B
Topographic Category	1
Calculated Crest Height	0 ft

Conclusion

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The tower and foundations are therefore deemed adequate to support the existing and proposed loading as listed in this report.

If you have any questions, require additional information, or actual conditions differ from those as detailed in this report please contact me via the information below:

Nathaniel R Ober, E.I.T.
Structural Engineer I | Infinigy
1033 Watervliet Shaker Road, Albany, NY 12205
(O) (518) 690-0790 | (M) (303) 704-0322
nober@infinigy.com | www.infinigy.com

Existing and Reserved Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax& Lines	Carrier
130.0	1	Celwave PD440-140	Leg	(1) 1/2”	Town
128.0	3	Antel BXA-80080-4CF	Platform w/ Handrails	(18) 7/8” (1) 1-5/8” Hybrid	Verizon
	3	RFS APX75-866512			
	3	Antel BXA-171063-12CF			
	3	Til-Tek MGD3-800TX			
	1	Raycap DB-T1-6Z-8AB-0Z			
118.0	3	RFS APXVSPP18-C-A20	Platform w/ Handrails	(3) 1-5/8” Fiber (1) 1-1/4” Hybrid	Sprint
	3	RFS APXVTM14-C-120			
	3	ALU TD-RRH8x20			
	3	ALU 800 MHz RRH			
	3	ALU 1900MHz RRH			
100.0	2	Celwave PD1142-3	Platform w/ Handrails	(12) 7/8”	Town
	1	Celwave PD440-140			
	6	EMS RR901700_P			T-Mobile
	3	dd B2 TMA			
86.0	1	Celwave PD1142-1	Side Arm	(2) ½”	Town
	1	Celwave PD1121			
58.0	1	Celwave PD1167	Side Arm	(2) ½”	
	1	Celwave PD1121	Side Arm		
50.0	1	GPS	Side Arm	(1) ½	Verizon

To be Removed

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax& Lines	Carrier
100.0	6	EMS RR901700_P	--	--	T-Mobile
	3	dd B2TMA			

Proposed Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax& Lines	Carrier
100.0	3	Ericsson AIR21 B2A/B4P	--	(3) 1-5/8” Fiber	T-Mobile
	3	Ericsson B4A/B12P-B8P			
	3	Ericsson RRUS-11 B12			
	3	dd B4 TMA			

Structure Usages

Pole	97.2	Pass
Base Plate	87.3	Pass
RATING =	**97.2**	**Pass**

Foundation Reactions

Reaction Data	Design Reactions	Analysis Reactions	Result
Moment (kip-ft)	--	2786.1	--
Shear (kip)	--	29.54	--
Axial (kip)	--	37.05	--

Tower base reactions are acceptable per rigorous structural analysis

Deflection, Twist, and Sway

Antenna Elevation (ft)	Deflection (in)	Twist (^{o})	Sway (^{o})
100.0	14.410	0.0126	1.4190

*Per ANSI/TIA-222-G Section 2.8.2 maximum serviceability structural deflection limit is 3% of structure height.
*Per ANSI/TIA-222-G Section 2.8.2 maximum serviceability structural twist and sway limit is 4 degrees.
*Per ANSI/TIA-222-G Section 2.8.3 deflection, Twist, and sway values were calculated using a basic 3-second gust wind speed of 60 mph.
*It is the responsibility of the client to ensure their proposed and/or existing equipment will meet ANSI/TIA-222-G Annex D or other appropriate microwave signal degradation limits based on the provided values above.

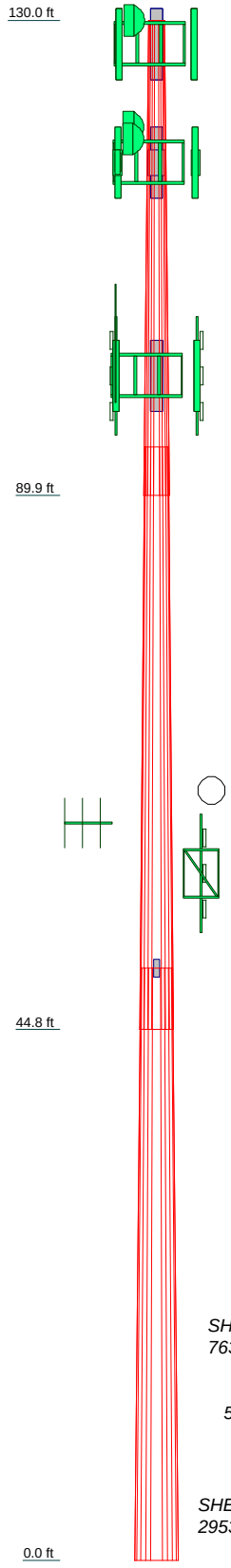
Assumptions and Limitations

Our structural calculations are completed assuming all information provided to Infinigy Engineering is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition of "like new" and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure's condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report Infinigy Engineering should be notified immediately to complete a revised evaluation.

Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied assumptions and conclusions.

This report is an evaluation of the tower structure only and does not reflect adequacy of any existing antenna mounts, mount connections, or coax mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer requirements.

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	40.08	12	0.2200	4.08	16.2600	25.0800		1975.8
2	49.17	12	0.3100	5.17	23.7422	34.5600	A572-65	4816.9
3	50.00	12	0.3800		32.8026	43.8000		7894.6
								14687.2



ALL REACTIONS ARE FACTORED

AXIAL 68238 lb

SHEAR 7634 lb *MOMENT 774843 lb-ft*

TORQUE 1831 lb-ft
50 mph WIND - 0.7500 in ICE

AXIAL 37050 lb

SHEAR 29538 lb *MOMENT 2786051 lb-ft*

TORQUE 9359 lb-ft
REACTIONS - 95 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
PD440-140	130	800 MHz RRH (Sprint)	118
VHLP800-11-4WH (Verizon)	130	1900MHz RRH (Sprint)	118
BXA-80080-4CF (Verizon)	128	1900MHz RRH (Sprint)	118
BXA-80080-4CF (Verizon)	128	1900MHz RRH (Sprint)	118
DB-T1-6Z-8AB-0Z (Verizon)	128	Angle Platform w/ Handrails (Sprint)	118
Angle Platform w/ Handrails (Verizon)	128	AIR 21 B2A/B4P (T-Mobile)	100
800 10736 (Verizon)	128	KRC 118 057/1 (T-Mobile)	100
800 10736 (Verizon)	128	KRC 118 057/1 (T-Mobile)	100
800 10736 (Verizon)	128	KRC 118 057/1 (T-Mobile)	100
HBXX-6516DS (Verizon)	128	AIR 21 B4A/B12-B8P (T-Mobile)	100
HBXX-6516DS (Verizon)	128	AIR 21 B4A/B12-B8P (T-Mobile)	100
(2) HBXX-9014DS (Verizon)	128	AIR 21 B4A/B12-B8P (T-Mobile)	100
HBXX-9014DS (Verizon)	128	RRUS 11 (Band 12) (T-Mobile)	100
HBXX-9014DS (Verizon)	128	RRUS 11 (Band 12) (T-Mobile)	100
RRH2x60 LTE (Verizon)	128	RRUS 11 (Band 12) (T-Mobile)	100
RRH2x60 LTE (Verizon)	128	TTA 18"x6"x6" (T-Mobile)	100
RRH2x60 LTE (Verizon)	128	LNX-6515DS-VTM (T-Mobile)	100
RRH4x45/2x90 AWS (Verizon)	128	LNX-6515DS-VTM (T-Mobile)	100
RRH4x45/2x90 AWS (Verizon)	128	LNX-6515DS-VTM (T-Mobile)	100
RRH4x45/2x90 AWS (Verizon)	128	Angle Platform w/ Handrails (T-Mobile)	100
RRH2x60 PCS (Verizon)	128	AIR 21 B2A/B4P (T-Mobile)	100
RRH2x60 PCS (Verizon)	128	AIR 21 B2A/B4P (T-Mobile)	100
RRH2x60 PCS (Verizon)	128	PD1142-3 (Town)	100
DB-T1-6Z-8AB-0Z (Verizon)	128	PD1142-3 (Town)	100
BXA-80080-4CF (Verizon)	128	PD440-140 (Town)	100
VHLP800-11-4WH (Verizon)	121	TTA 18"x6"x6" (T-Mobile)	100
VHLP800-11-4WH (Verizon)	120	TTA 18"x6"x6" (T-Mobile)	100
APXVSPP18-C-A20 (Sprint)	118	BA80-41-DIN (Town)	97
APXVSPP18-C-A20 (Sprint)	118	PD1142-1 (Town)	86
APXVSPP18-C-A20 (Sprint)	118	PD1121 (Town)	86
APXVTM14-C-120 (Sprint)	118	Pipe Side Arm (Town)	86
APXVTM14-C-120 (Sprint)	118	SD210R-SF2P90LDF (Town)	60
APXVTM14-C-120 (Sprint)	118	Pipe Side Arm (Town)	58
TD-RRH8X20 (Sprint)	118	Pipe Side Arm (Town)	58
TD-RRH8X20 (Sprint)	118	PD1167 (Town)	58
TD-RRH8X20 (Sprint)	118	PD1121 (Town)	58
800 MHz RRH (Sprint)	118	GPS (Verizon)	50
800 MHz RRH (Sprint)	118	Pipe Side Arm (Verizon)	50

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-G Standard.
2. Tower designed for a 95 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class III.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 97.2%

Infinigy Solutions LLC.
1033 Watervliet Shaker Road
Albany, NY 12205
Phone: (518) 690-0790
FAX: (555) 555-1235

Job: ***379-015***			
Project: ***CT11103A***			
Client: Northeast Site Solutions	Drawn by: Nathaniel Ober	App'd:	
Code: TIA-222-G	Date: 04/01/16	Scale: NTS	
Path: C:\Users\nober\Desktop\CT11103A 3-28-2016\TNX\CT11103A.eri		Dwg No. E-1	

Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Basic wind speed of 95 mph.
Structure Class III.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

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	130.00-89.92	40.08	4.08	12	16.2600	25.0800	0.2200	0.8800	A572-65 (65 ksi)
L2	89.92-44.83	49.17	5.17	12	23.7422	34.5600	0.3100	1.2400	A572-65 (65 ksi)
L3	44.83-0.00	50.00		12	32.8026	43.8000	0.3800	1.5200	A572-65

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
									(65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	16.8336	11.3627	373.1450	5.7423	8.4227	44.3024	756.0929	5.5924	3.7681	17.128
	25.9647	17.6108	1389.2099	8.8999	12.9914	106.9327	2814.9159	8.6675	6.1318	27.872
L2	25.5090	23.3900	1639.2313	8.3887	12.2984	133.2878	3321.5271	11.5118	5.5321	17.845
	35.7791	34.1884	5119.0013	12.2615	17.9021	285.9445	10372.4845	16.8265	8.4313	27.198
L3	35.1370	39.6722	5323.1298	11.6073	16.9917	313.2778	10786.1042	19.5255	7.7727	20.454
	45.3451	53.1287	12784.8276	15.5444	22.6884	563.4962	25905.5268	26.1483	10.7200	28.211

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 130.00-89.92				1	1	1			
L2 89.92-44.83				1	1	1			
L3 44.83-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
7/8 (Verizon)	A	Surface Ar (CaAa)	128.00 - 0.00	3	2	0.000 0.000	1.1100		0.54

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
1/2 (Town)	A	No	Inside Pole	130.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.25 0.25 0.25
***								
7/8 (Verizon)	A	No	Inside Pole	128.00 - 0.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.54 0.54 0.54
7/8 (Verizon)	A	No	Inside Pole	128.00 - 0.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.54 0.54 0.54
1 5/8 (Verizon)	A	No	Inside Pole	128.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.04 1.04 1.04

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***								
1 5/8" Fiber (Sprint)	A	No	Inside Pole	118.00 - 0.00	1	No Ice	0.00	1.61
						1/2" Ice	0.00	1.61
						1" Ice	0.00	1.61
1 5/8" Fiber (Sprint)	A	No	Inside Pole	118.00 - 0.00	2	No Ice	0.00	1.61
						1/2" Ice	0.00	1.61
						1" Ice	0.00	1.61
1 1/4" Hybriflex Cable (Sprint)	A	No	Inside Pole	118.00 - 0.00	1	No Ice	0.00	1.00
						1/2" Ice	0.00	1.00
						1" Ice	0.00	1.00
***								
7/8 (T-Mobile)	A	No	Inside Pole	100.00 - 0.00	24	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
						1" Ice	0.00	0.54
1/2 (Town)	A	No	Inside Pole	100.00 - 0.00	3	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
						1" Ice	0.00	0.25
***								
1/2 (Town)	A	No	Inside Pole	86.00 - 0.00	2	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
						1" Ice	0.00	0.25
***								
1/2 (Town)	A	No	Inside Pole	58.00 - 0.00	2	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
						1" Ice	0.00	0.25
***								
1/2 (Verizon)	A	No	Inside Pole	50.00 - 0.00	1	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
						1" Ice	0.00	0.25
***								
1 5/8" Fiber (T-Mobile)	A	No	Inside Pole	100.00 - 0.00	5	No Ice	0.00	1.61
						1/2" Ice	0.00	1.61
						1" Ice	0.00	1.61
1 5/8" Fiber (T-Mobile)	B	No	Inside Pole	100.00 - 0.00	5	No Ice	0.00	1.61
						1/2" Ice	0.00	1.61
						1" Ice	0.00	1.61
1 5/8" Fiber (T-Mobile)	C	No	Inside Pole	100.00 - 0.00	5	No Ice	0.00	1.61
						1/2" Ice	0.00	1.61
						1" Ice	0.00	1.61
EW90 (Verizon)	C	No	Inside Pole	120.00 - 0.00	3	No Ice	0.00	0.32
						1/2" Ice	0.00	0.32
						1" Ice	0.00	0.32
EW90 (Verizon)	C	No	Inside Pole	121.00 - 120.00	2	No Ice	0.00	0.32
						1/2" Ice	0.00	0.32
						1" Ice	0.00	0.32
EW90 (Verizon)	C	No	Inside Pole	130.00 - 121.00	1	No Ice	0.00	0.32
						1/2" Ice	0.00	0.32
						1" Ice	0.00	0.32
7/8 (Verizon)	C	No	Inside Pole	60.00 - 0.00	2	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
						1" Ice	0.00	0.54
7/8 (Verizon)	C	No	Inside Pole	97.00 - 60.00	1	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
						1" Ice	0.00	0.54

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	130.00-89.92	A	0.000	0.000	8.454	0.000	842.41
		B	0.000	0.000	0.000	0.000	81.14
		C	0.000	0.000	0.000	0.000	117.36
L2	89.92-44.83	A	0.000	0.000	10.010	0.000	1815.83
		B	0.000	0.000	0.000	0.000	362.97
		C	0.000	0.000	0.000	0.000	438.80
L3	44.83-0.00	A	0.000	0.000	9.952	0.000	1833.10
		B	0.000	0.000	0.000	0.000	360.88
		C	0.000	0.000	0.000	0.000	452.33

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	130.00-89.92	A	2.113	0.000	0.000	30.679	0.000	1286.96
		B		0.000	0.000	0.000	0.000	81.14
		C		0.000	0.000	0.000	0.000	117.36
L2	89.92-44.83	A	2.012	0.000	0.000	36.326	0.000	2342.21
		B		0.000	0.000	0.000	0.000	362.97
		C		0.000	0.000	0.000	0.000	438.80
L3	44.83-0.00	A	1.798	0.000	0.000	34.985	0.000	2320.99
		B		0.000	0.000	0.000	0.000	360.88
		C		0.000	0.000	0.000	0.000	452.33

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	130.00-89.92	-0.2646	-0.1528	-0.5418	-0.3128
L2	89.92-44.83	-0.2755	-0.1591	-0.6338	-0.3659
L3	44.83-0.00	-0.2762	-0.1595	-0.6792	-0.3921

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	4	7/8	89.92 - 128.00	1.0000	1.0000
L2	4	7/8	44.83 - 89.92	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
PD440-140	B	None				0.0000	130.00	No Ice	2.66	2.66	20.00
								1/2" Ice	4.44	4.44	33.00
								1" Ice	6.22	6.22	46.00
***											
BXA-80080-4CF (Verizon)	A	From Leg	3.00	0.00	0.00	0.0000	128.00	No Ice	5.25	1.63	14.30
								1/2" Ice	5.64	1.89	45.30
								1" Ice	6.04	2.20	80.73
BXA-80080-4CF (Verizon)	B	From Leg	3.00	0.00	0.00	0.0000	128.00	No Ice	5.25	1.63	14.30
								1/2" Ice	5.64	1.89	45.30
								1" Ice	6.04	2.20	80.73
BXA-80080-4CF (Verizon)	C	From Leg	3.00	0.00	0.00	0.0000	128.00	No Ice	5.25	1.63	14.30
								1/2" Ice	5.64	1.89	45.30
								1" Ice	6.04	2.20	80.73
DB-T1-6Z-8AB-0Z (Verizon)	C	From Leg	0.00	0.00	0.00	0.0000	128.00	No Ice	1.92	1.92	21.40
								1/2" Ice	2.12	2.12	44.32
								1" Ice	2.32	2.32	70.36
Angle Platform w/ Handrails (Verizon)	C	From Leg	0.00	0.00	0.00	0.0000	128.00	No Ice	38.80	38.80	2000.00
								1/2" Ice	44.23	44.23	2450.00
								1" Ice	50.42	50.42	2900.00
***											
APXVSPP18-C-A20 (Sprint)	A	From Leg	3.00	0.00	0.00	0.0000	118.00	No Ice	8.26	3.06	57.00
								1/2" Ice	8.81	3.44	106.52
								1" Ice	9.36	3.83	162.12
APXVSPP18-C-A20 (Sprint)	B	From Leg	3.00	0.00	0.00	0.0000	118.00	No Ice	8.26	3.06	57.00
								1/2" Ice	8.81	3.44	106.52
								1" Ice	9.36	3.83	162.12
APXVSPP18-C-A20 (Sprint)	C	From Leg	3.00	0.00	0.00	0.0000	118.00	No Ice	8.26	3.06	57.00
								1/2" Ice	8.81	3.44	106.52
								1" Ice	9.36	3.83	162.12
APXVTM14-C-120 (Sprint)	A	From Leg	3.00	0.00	0.00	0.0000	118.00	No Ice	6.53	2.08	52.90
								1/2" Ice	6.96	2.38	90.49
								1" Ice	7.40	2.69	132.96
APXVTM14-C-120 (Sprint)	B	From Leg	3.00	0.00	0.00	0.0000	118.00	No Ice	6.53	2.08	52.90
								1/2" Ice	6.96	2.38	90.49
								1" Ice	7.40	2.69	132.96
APXVTM14-C-120 (Sprint)	C	From Leg	3.00	0.00	0.00	0.0000	118.00	No Ice	6.53	2.08	52.90
								1/2" Ice	6.96	2.38	90.49
								1" Ice	7.40	2.69	132.96
TD-RRH8X20 (Sprint)	A	From Leg	3.00	0.00	0.00	0.0000	118.00	No Ice	3.70	1.29	66.14
								1/2" Ice	3.95	1.46	90.08
								1" Ice	4.20	1.64	117.36
TD-RRH8X20 (Sprint)	B	From Leg	3.00	0.00	0.00	0.0000	118.00	No Ice	3.70	1.29	66.14
								1/2" Ice	3.95	1.46	90.08
								1" Ice	4.20	1.64	117.36
TD-RRH8X20 (Sprint)	C	From Leg	3.00	0.00	0.00	0.0000	118.00	No Ice	3.70	1.29	66.14
								1/2" Ice	3.95	1.46	90.08
								1" Ice	4.20	1.64	117.36
800 MHz RRH (Sprint)	A	From Leg	3.00	0.00	0.00	0.0000	118.00	No Ice	1.93	2.06	64.00
								1/2" Ice	2.11	2.24	86.12
								1" Ice	2.29	2.43	111.30
800 MHz RRH (Sprint)	B	From Leg	3.00	0.00	0.00	0.0000	118.00	No Ice	1.93	2.06	64.00
								1/2" Ice	2.11	2.24	86.12
								1" Ice	2.29	2.43	111.30
800 MHz RRH (Sprint)	C	From Leg	3.00	0.00	0.00	0.0000	118.00	No Ice	1.93	2.06	64.00
								1/2" Ice	2.11	2.24	86.12
								1" Ice	2.29	2.43	111.30

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
1900MHz RRH	A	From Leg	3.00	0.0000	118.00	No Ice	2.31	2.38	60.00
(Sprint)			0.00			1/2" Ice	2.52	2.58	83.90
			0.00			1" Ice	2.73	2.79	111.08
1900MHz RRH	B	From Leg	3.00	0.0000	118.00	No Ice	2.31	2.38	60.00
(Sprint)			0.00			1/2" Ice	2.52	2.58	83.90
			0.00			1" Ice	2.73	2.79	111.08
1900MHz RRH	C	From Leg	3.00	0.0000	118.00	No Ice	2.31	2.38	60.00
(Sprint)			0.00			1/2" Ice	2.52	2.58	83.90
			0.00			1" Ice	2.73	2.79	111.08
Angle Platform w/ Handrails	C	From Leg	0.00	0.0000	118.00	No Ice	43.70	43.70	2000.00
(Sprint)			0.00			1/2" Ice	49.82	49.82	2450.00
			0.00			1" Ice	56.79	56.79	2900.00
***									
PD1142-3	A	From Leg	3.00	0.0000	100.00	No Ice	0.10	0.10	7.00
(Town)			0.00			1/2" Ice	0.97	0.97	10.25
			0.00			1" Ice	1.85	1.85	18.91
PD1142-3	B	From Leg	3.00	0.0000	100.00	No Ice	0.10	0.10	7.00
(Town)			0.00			1/2" Ice	0.97	0.97	10.25
			0.00			1" Ice	1.85	1.85	18.91
PD440-140	C	From Leg	3.00	0.0000	100.00	No Ice	2.66	2.66	20.00
(Town)			0.00			1/2" Ice	4.44	4.44	33.00
			0.00			1" Ice	6.22	6.22	46.00
TTA 18"x6"x6"	A	From Leg	3.00	0.0000	100.00	No Ice	1.05	1.05	20.61
(T-Mobile)			0.00			1/2" Ice	1.21	1.21	30.47
			0.00			1" Ice	1.38	1.38	42.96
TTA 18"x6"x6"	B	From Leg	3.00	0.0000	100.00	No Ice	1.05	1.05	20.61
(T-Mobile)			0.00			1/2" Ice	1.21	1.21	30.47
			0.00			1" Ice	1.38	1.38	42.96
TTA 18"x6"x6"	C	From Leg	3.00	0.0000	100.00	No Ice	1.05	1.05	20.61
(T-Mobile)			0.00			1/2" Ice	1.21	1.21	30.47
			0.00			1" Ice	1.38	1.38	42.96
LNX-6515DS-VTM	A	From Leg	3.00	0.0000	100.00	No Ice	11.45	4.64	50.30
(T-Mobile)			0.00			1/2" Ice	12.06	5.14	116.17
			0.00			1" Ice	12.69	5.65	189.71
LNX-6515DS-VTM	B	From Leg	3.00	0.0000	100.00	No Ice	11.45	4.64	50.30
(T-Mobile)			0.00			1/2" Ice	12.06	5.14	116.17
			0.00			1" Ice	12.69	5.65	189.71
LNX-6515DS-VTM	C	From Leg	3.00	0.0000	100.00	No Ice	11.45	4.64	50.30
(T-Mobile)			0.00			1/2" Ice	12.06	5.14	116.17
			0.00			1" Ice	12.69	5.65	189.71
Angle Platform w/ Handrails	C	From Leg	0.00	0.0000	100.00	No Ice	30.40	30.40	2000.00
(T-Mobile)			0.00			1/2" Ice	34.66	34.66	2450.00
			0.00			1" Ice	39.51	39.51	2900.00
***									
PD1142-1	A	From Leg	3.00	0.0000	86.00	No Ice	1.86	1.86	10.00
(Town)			0.00			1/2" Ice	3.76	3.76	27.21
			0.00			1" Ice	5.67	5.67	56.16
PD1121	A	From Leg	3.00	0.0000	86.00	No Ice	0.41	0.41	3.00
(Town)			0.00			1/2" Ice	1.52	1.52	11.00
			0.00			1" Ice	2.63	2.63	19.00
Pipe Side Arm	A	From Leg	3.00	0.0000	86.00	No Ice	0.46	3.55	150.00
(Town)			0.00			1/2" Ice	0.62	4.93	175.00
			0.00			1" Ice	0.78	5.89	200.00
***									
PD1167	B	From Leg	3.00	0.0000	58.00	No Ice	2.03	2.03	8.00
(Town)			0.00			1/2" Ice	3.39	3.39	13.00
			0.00			1" Ice	4.75	4.75	18.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
PD1121	A	From Leg	3.00	0.0000	58.00	No Ice	0.41	0.41	3.00
(Town)			0.00			1/2" Ice	1.52	1.52	11.00
			0.00			1" Ice	2.63	2.63	19.00
Pipe Side Arm	B	From Leg	3.00	0.0000	58.00	No Ice	0.46	3.55	150.00
(Town)			0.00			1/2" Ice	0.62	4.93	175.00
			0.00			1" Ice	0.78	5.89	200.00
Pipe Side Arm	A	From Leg	3.00	0.0000	58.00	No Ice	0.46	3.55	150.00
(Town)			0.00			1/2" Ice	0.62	4.93	175.00
			0.00			1" Ice	0.78	5.89	200.00
***									
GPS	A	From Leg	0.00	0.0000	50.00	No Ice	0.42	0.42	10.00
(Verizon)			0.00			1/2" Ice	0.57	0.57	15.96
			0.00			1" Ice	0.69	0.69	23.49
Pipe Side Arm	A	From Leg	3.00	0.0000	50.00	No Ice	0.46	3.55	150.00
(Verizon)			0.00			1/2" Ice	0.62	4.93	175.00
			0.00			1" Ice	0.78	5.89	200.00
***									
AIR 21 B2A/B4P	A	From Leg	3.00	0.0000	100.00	No Ice	6.05	4.31	91.00
(T-Mobile)			0.00			1/2" Ice	6.42	4.66	132.68
			0.00			1" Ice	6.80	5.02	179.47
AIR 21 B2A/B4P	B	From Leg	3.00	0.0000	100.00	No Ice	6.05	4.31	91.00
(T-Mobile)			0.00			1/2" Ice	6.42	4.66	132.68
			0.00			1" Ice	6.80	5.02	179.47
AIR 21 B2A/B4P	C	From Leg	3.00	0.0000	100.00	No Ice	6.05	4.31	91.00
(T-Mobile)			0.00			1/2" Ice	6.42	4.66	132.68
			0.00			1" Ice	6.80	5.02	179.47
KRC 118 057/1	A	From Leg	3.00	0.0000	100.00	No Ice	11.54	8.90	121.00
(T-Mobile)			0.00			1/2" Ice	12.16	9.50	192.94
			0.00			1" Ice	12.79	10.11	272.65
KRC 118 057/1	B	From Leg	3.00	0.0000	100.00	No Ice	11.54	8.90	121.00
(T-Mobile)			0.00			1/2" Ice	12.16	9.50	192.94
			0.00			1" Ice	12.79	10.11	272.65
KRC 118 057/1	C	From Leg	3.00	0.0000	100.00	No Ice	11.54	8.90	121.00
(T-Mobile)			0.00			1/2" Ice	12.16	9.50	192.94
			0.00			1" Ice	12.79	10.11	272.65
AIR 21 B4A/B12-B8P	A	From Leg	3.00	0.0000	100.00	No Ice	5.10	3.85	60.50
(T-Mobile)			0.00			1/2" Ice	5.43	4.16	98.45
			0.00			1" Ice	5.76	4.48	141.05
AIR 21 B4A/B12-B8P	B	From Leg	3.00	0.0000	100.00	No Ice	5.10	3.85	60.50
(T-Mobile)			0.00			1/2" Ice	5.43	4.16	98.45
			0.00			1" Ice	5.76	4.48	141.05
AIR 21 B4A/B12-B8P	C	From Leg	3.00	0.0000	100.00	No Ice	5.10	3.85	60.50
(T-Mobile)			0.00			1/2" Ice	5.43	4.16	98.45
			0.00			1" Ice	5.76	4.48	141.05
RRUS 11 (Band 12)	A	From Leg	3.00	0.0000	100.00	No Ice	2.52	1.07	55.00
(T-Mobile)			0.00			1/2" Ice	2.72	1.21	74.32
			0.00			1" Ice	2.92	1.36	96.56
RRUS 11 (Band 12)	B	From Leg	3.00	0.0000	100.00	No Ice	2.52	1.07	55.00
(T-Mobile)			0.00			1/2" Ice	2.72	1.21	74.32
			0.00			1" Ice	2.92	1.36	96.56
RRUS 11 (Band 12)	C	From Leg	3.00	0.0000	100.00	No Ice	2.52	1.07	55.00
(T-Mobile)			0.00			1/2" Ice	2.72	1.21	74.32
			0.00			1" Ice	2.92	1.36	96.56
***									
SD210R-SF2P90LDF	C	From Leg	3.00	0.0000	60.00	No Ice	27.00	27.00	37.00
(Town)			0.00			1/2" Ice	27.64	27.64	346.98
			2.25			1" Ice	28.28	28.28	668.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
BA80-41-DIN	C	From Leg	3.00	0.0000	97.00	No Ice	4.38	4.38	32.00
(Town)			0.00			1/2" Ice	5.65	5.65	63.34
			5.75			1" Ice	6.71	6.71	102.25
***									
800 10736	A	From Leg	3.00	0.0000	128.00	No Ice	11.39	5.17	41.90
(Verizon)			0.00			1/2" Ice	12.01	5.74	96.22
			0.00			1" Ice	12.63	6.32	157.97
800 10736	B	From Leg	3.00	0.0000	128.00	No Ice	11.39	5.17	41.90
(Verizon)			0.00			1/2" Ice	12.01	5.74	96.22
			0.00			1" Ice	12.63	6.32	157.97
800 10736	C	From Leg	3.00	0.0000	128.00	No Ice	11.39	5.17	41.90
(Verizon)			0.00			1/2" Ice	12.01	5.74	96.22
			0.00			1" Ice	12.63	6.32	157.97
HBXX-6516DS	B	From Leg	3.00	0.0000	128.00	No Ice	5.42	3.28	30.60
(Verizon)			0.00			1/2" Ice	5.76	3.61	65.93
			0.00			1" Ice	6.11	3.94	105.94
HBXX-6516DS	C	From Leg	3.00	0.0000	128.00	No Ice	5.42	3.28	30.60
(Verizon)			0.00			1/2" Ice	5.76	3.61	65.93
			0.00			1" Ice	6.11	3.94	105.94
(2) HBXX-9014DS	A	From Leg	3.00	0.0000	128.00	No Ice	5.44	3.30	29.80
(Verizon)			0.00			1/2" Ice	5.79	3.63	65.25
			0.00			1" Ice	6.14	3.95	105.41
HBXX-9014DS	B	From Leg	3.00	0.0000	128.00	No Ice	5.44	3.30	29.80
(Verizon)			0.00			1/2" Ice	5.79	3.63	65.25
			0.00			1" Ice	6.14	3.95	105.41
HBXX-9014DS	C	From Leg	3.00	0.0000	128.00	No Ice	5.44	3.30	29.80
(Verizon)			0.00			1/2" Ice	5.79	3.63	65.25
			0.00			1" Ice	6.14	3.95	105.41
RRH2x60 LTE	A	From Leg	3.00	0.0000	128.00	No Ice	1.87	1.27	46.00
(Verizon)			0.00			1/2" Ice	2.04	1.42	62.24
			0.00			1" Ice	2.23	1.59	81.19
RRH2x60 LTE	B	From Leg	3.00	0.0000	128.00	No Ice	1.87	1.27	46.00
(Verizon)			0.00			1/2" Ice	2.04	1.42	62.24
			0.00			1" Ice	2.23	1.59	81.19
RRH2x60 LTE	C	From Leg	3.00	0.0000	128.00	No Ice	1.87	1.27	46.00
(Verizon)			0.00			1/2" Ice	2.04	1.42	62.24
			0.00			1" Ice	2.23	1.59	81.19
RRH4x45/2x90 AWS	A	From Leg	3.00	0.0000	128.00	No Ice	2.16	1.42	44.00
(Verizon)			0.00			1/2" Ice	2.36	1.59	61.40
			0.00			1" Ice	2.57	1.77	81.69
RRH4x45/2x90 AWS	B	From Leg	3.00	0.0000	128.00	No Ice	2.16	1.42	44.00
(Verizon)			0.00			1/2" Ice	2.36	1.59	61.40
			0.00			1" Ice	2.57	1.77	81.69
RRH4x45/2x90 AWS	C	From Leg	3.00	0.0000	128.00	No Ice	2.16	1.42	44.00
(Verizon)			0.00			1/2" Ice	2.36	1.59	61.40
			0.00			1" Ice	2.57	1.77	81.69
RRH2x60 PCS	A	From Leg	3.00	0.0000	128.00	No Ice	1.87	1.27	46.00
(Verizon)			0.00			1/2" Ice	2.04	1.42	62.24
			0.00			1" Ice	2.23	1.59	81.19
RRH2x60 PCS	B	From Leg	3.00	0.0000	128.00	No Ice	1.87	1.27	46.00
(Verizon)			0.00			1/2" Ice	2.04	1.42	62.24
			0.00			1" Ice	2.23	1.59	81.19
RRH2x60 PCS	C	From Leg	3.00	0.0000	128.00	No Ice	1.87	1.27	46.00
(Verizon)			0.00			1/2" Ice	2.04	1.42	62.24
			0.00			1" Ice	2.23	1.59	81.19
DB-T1-6Z-8AB-0Z	C	From Leg	3.00	0.0000	128.00	No Ice	1.92	1.92	21.40
(Verizon)			0.00			1/2" Ice	2.12	2.12	44.32

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	2.32	2.32	70.36

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
VHLP800-11-4WH (Verizon)	C	Paraboloid w/Shroud (HP)	From Leg	0.50 0.00 0.00	9.3400		130.00	2.60	No Ice 1/2" Ice 1" Ice	5.31 5.66 6.00	77.00 100.00 120.00
VHLP800-11-4WH (Verizon)	C	Paraboloid w/Shroud (HP)	From Leg	0.50 0.00 0.00	-20.0700		121.00	2.60	No Ice 1/2" Ice 1" Ice	5.31 5.66 6.00	77.00 100.00 120.00
VHLP800-11-4WH (Verizon)	C	Paraboloid w/Shroud (HP)	From Leg	0.50 0.00 0.00	-84.4300		120.00	2.60	No Ice 1/2" Ice 1" Ice	5.31 5.66 6.00	77.00 100.00 120.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice

Comb. No.	Description
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 89.92	24.645	46	1.7348	0.0224
L2	94 - 44.83	12.603	46	1.3401	0.0109
L3	50 - 0	3.356	46	0.6318	0.0038

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
130.00	VHLP800-11-4WH	46	24.645	1.7348	0.0225	23752
128.00	BXA-80080-4CF	46	23.933	1.7157	0.0218	23752
121.00	VHLP800-11-4WH	46	21.450	1.6482	0.0194	13195
120.00	VHLP800-11-4WH	46	21.099	1.6383	0.0190	11876
118.00	APXVSPP18-C-A20	46	20.398	1.6185	0.0183	9896
100.00	PD1142-3	46	14.410	1.4190	0.0126	3957
97.00	BA80-41-DIN	46	13.491	1.3805	0.0117	3603
86.00	PD1142-1	46	10.393	1.2227	0.0091	3285
60.00	SD210R-SF2P90LDF	46	4.832	0.7926	0.0049	3247
58.00	PD1167	46	4.507	0.7596	0.0047	3245
50.00	GPS	46	3.356	0.6318	0.0038	3289

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 89.92	125.617	16	8.7699	0.1134
L2	94 - 44.83	64.857	4	6.8640	0.0546
L3	50 - 0	17.375	4	3.2702	0.0192

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
130.00	VHLP800-11-4WH	16	125.617	8.7699	0.1147	5036
128.00	BXA-80080-4CF	16	122.022	8.6798	0.1111	5036
121.00	VHLP800-11-4WH	16	109.498	8.3601	0.0985	2797
120.00	VHLP800-11-4WH	16	107.723	8.3134	0.0967	2517
118.00	APXVSPP18-C-A20	16	104.188	8.2189	0.0932	2096
100.00	PD1142-3	4	74.006	7.2541	0.0640	833
97.00	BA80-41-DIN	4	69.359	7.0645	0.0597	757
86.00	PD1142-1	4	53.612	6.2798	0.0462	679
60.00	SD210R-SF2P90LDF	4	25.020	4.0973	0.0249	641
58.00	PD1167	4	23.339	3.9276	0.0237	638
50.00	GPS	4	17.375	3.2702	0.0194	637

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	130 - 89.92 (1)	TP25.08x16.26x0.22	40.08	130.00	181.9	16.9748	-11972.00	115961.00	0.103
L2	89.92 - 44.83 (2)	TP34.56x23.7422x0.31	49.17	130.00	131.6	33.0530	-21681.00	431174.00	0.050
L3	44.83 - 0 (3)	TP43.8x32.8026x0.38	50.00	130.00	100.4	53.1287	-37012.10	1191700.00	0.031

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	130 - 89.92 (1)	TP25.08x16.26x0.22	425730.00	562441.67	0.757	0.00	562441.67	0.000
L2	89.92 - 44.83 (2)	TP34.56x23.7422x0.31	1404658.33	1525441.67	0.921	0.00	1525441.67	0.000
L3	44.83 - 0 (3)	TP43.8x32.8026x0.38	2786050.00	3125158.33	0.891	0.00	3125158.33	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	130 - 89.92 (1)	TP25.08x16.26x0.22	19615.60	576788.00	0.034	3230.96	1140458.33	0.003
L2	89.92 - 44.83 (2)	TP34.56x23.7422x0.31	25467.80	1132260.00	0.022	5392.48	3093116.67	0.002
L3	44.83 - 0 (3)	TP43.8x32.8026x0.38	29585.60	1767920.00	0.017	5685.07	6336850.00	0.001

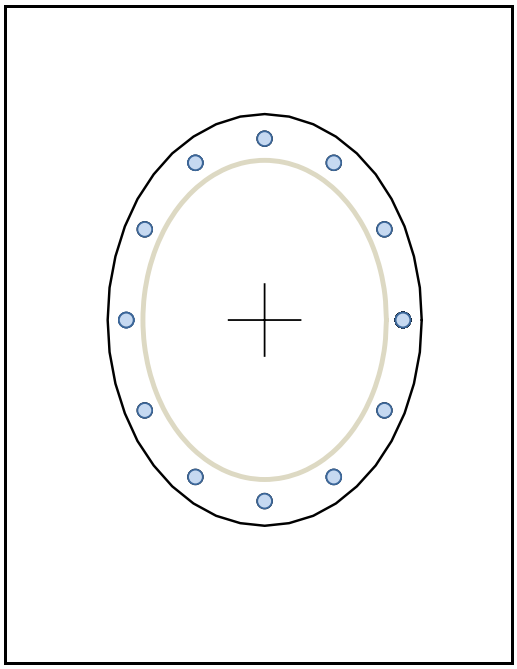
Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	130 - 89.92 (1)	0.103	0.757	0.000	0.034	0.003	0.862 ✔	1.000	4.8.2 ✔
L2	89.92 - 44.83 (2)	0.050	0.921	0.000	0.022	0.002	0.972 ✔	1.000	4.8.2 ✔
L3	44.83 - 0 (3)	0.031	0.891	0.000	0.017	0.001	0.923 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	130 - 89.92	Pole	TP25.08x16.26x0.22	1	-11972.00	115961.00	86.2	Pass
L2	89.92 - 44.83	Pole	TP34.56x23.7422x0.31	2	-21681.00	431174.00	97.2	Pass
L3	44.83 - 0	Pole	TP43.8x32.8026x0.38	3	-37012.10	1191700.00	92.3	Pass
							Summary	
						Pole (L2)	97.2	Pass
						RATING =	**97.2**	**Pass**

Date:	4/1/2016
Customer:	NES / T-Mobile
Engineer:	NRO
Job #:	379-015
Baseplate/Flange:	Base Plate
Plate Shape:	Circle
Use Addendum 3:	No

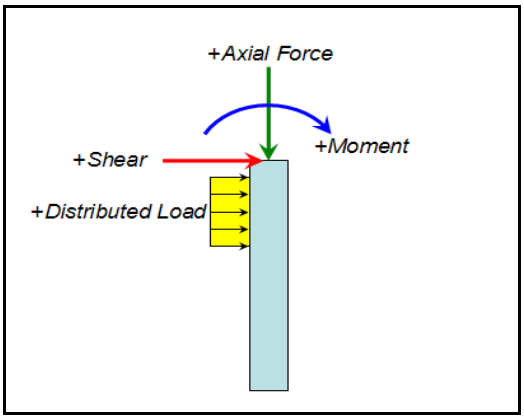


Loading Data		
TIA Code Revision:	Rev-G	
Axial:	37.05	kips
Moment:	2786.1	k-ft
Plate Data		
Pole Base Diameter:	43.8	in
Pole Base Shape:	12 Sided	
Pole thickness:	0.38	in
Pole Fy:	65	ksi
Base Weld Size:	0.38	in
Plate Diameter:	56.5	in
Plate Thickness:	2.5	in
Plate Steel Grade:	A572 Gr. 60	ksi
Internal/External:	External	ksi
Anchor Bolt Data		
Bolt Diameter:	2.25	in
Bolt Hole Diameter:	2.3125	in
Bolt Quantity:	12	
Bolt Grade:	A615 Gr. 75	psi
Bolt Circle:	49.75	in
Bolt Spacing:	6	in
Fully Developed:	Unknown	
Additional Bolt Data		
Bolt Diameter:		in
Bolt Quantity:		
Bolt Grade:		psi
Bolt Circle:		in
Angle:		deg
Stiffener Data		
Stiffener Quantity:		
Stiffener Height:		in
Stiffener Width:		in

Plate Ratio:	25.17
Bolt Ratio:	87.27
Additional Bolt Ratio:	-
Vertical Weld Ratio:	-
Horizontal Weld Ratio:	-
Stiffener Ratio:	-

Date:	4/1/2016
Site Name:	CT11103A
Client:	NES / T-Mobile
Infinigy Job #:	379-015
Analysis/Design:	Analysis
Tower Type:	Monopole

Infinigy Engineering PLLC
Drilled Shaft Calculations
ACI 318-11
Ensoft L-Pile 1212.6.37
Ensoft Shaft 2012.7.8



Loading Data			
TIA Code Revision:	ANSI/TIA-222-G		
Factored Moment:	2786.1	kip-ft	From tnxTower
Factored Uplift:	0	kips	
Factored Axial:	37.05	kips	
Factored Shear:	29.54	kips	
Service Moment:	1285.4	kip-ft	
Service Uplift:	0	kips	
Service Axial:	27.24	kips	
Service Shear:	14.13	kips	

Concrete Strength Check			
Bending Reduction Factor:	1.00		
Unfactored Ultimate Moment Capacity:	5996.92	k-ft	From L-Pile
Maximum Moment In Shaft:	388.27	k-ft	
Depth of Maximum Moment in Shaft:	8.4	ft	
SF:	**15.45**	OK	

Servicability Soil Stability Check			
Allowable Service Pile Head Deflection:	0.75	in	
Maximum Service Pile Head Deflection:	0.039	in	From L-Pile
Deflection Ratio:	**5**	%	

Exhibit D

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

T-Mobile Existing Facility

Site ID: CT11103A

Ridgefield/ Downtown 1
76 East Ridge Road
Ridgefield, CT 06877

April 4, 2016

EBI Project Number: 6216001830

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	8.66 %

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April 4, 2016

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

Emissions Analysis for Site: **CT11103A – Ridgefield/ Downtown 1**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **76 East Ridge Road, Ridgefield, 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 (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **76 East Ridge Road, Ridgefield, 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 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 (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

5) 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.

6) 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.

7) The antennas used in this modeling are the **Ericsson AIR21 B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Ericsson AIR21 B4A/B12P** for 2100 MHz (AWS) and 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR21 B2A/B4P** has a maximum gain of **15.9 dBd** at its main lobe. The **Ericsson AIR21 B4A/B12P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz and has a maximum gain of **13.6 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.

8) The antenna mounting height centerline of the proposed antennas is **100 feet** above ground level (AGL).

9) 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:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
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):	100	Height (AGL):	100	Height (AGL):	100
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 A1 MPE%	1.90	Antenna B1 MPE%	1.90	Antenna C1 MPE%	1.90
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR21 B4A/B12P	Make / Model:	Ericsson AIR21 B4A/B12P	Make / Model:	Ericsson AIR21 B4A/B12P
Gain:	15.9 / 13.6 dBd	Gain:	15.9 / 13.6 dBd	Gain:	15.9 / 13.6 dBd
Height (AGL):	100	Height (AGL):	100	Height (AGL):	100
Frequency Bands	2100 MHz (AWS) / 700 MHz	Frequency Bands	2100 MHz (AWS) / 700 MHz	Frequency Bands	2100 MHz (AWS) / 700 MHz
Channel Count	3	Channel Count	3	Channel Count	3
Total TX Power(W):	150	Total TX Power(W):	150	Total TX Power(W):	150
ERP (W):	5,355.80	ERP (W):	5,355.80	ERP (W):	5,355.80
Antenna A2 MPE%	2.50	Antenna B2 MPE%	2.50	Antenna C2 MPE%	2.50

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	**4.40**
Verizon Wireless	3.08 %
Sprint	1.18 %
Site Total MPE %:	**8.66 %**

T-Mobile Sector 1 Total:	4.40 %
T-Mobile Sector 2 Total:	4.40 %
T-Mobile Sector 3 Total:	4.40 %
Site Total:	8.66 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 2100 MHz (AWS) LTE	**2**	**2334.27**	**100**	**18.99**	**2100**	**1000**	**1.90 %**
T-Mobile 1900 MHz (PCS) GSM/UMTS	**2**	**1167.14**	**100**	**9.50**	**1900**	**1000**	**0.95 %**
T-Mobile 2100 MHz (AWS) UMTS	**2**	**1167.14**	**100**	**9.50**	**2100**	**1000**	**0.95 %**
T-Mobile 700 MHz LTE	**1**	**687.26**	**100**	**2.80**	**700**	**467**	**0.60 %**
						Total:	**4.40%**

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Summary

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

The anticipated maximum composite contributions from the 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:	4.40 %
Sector 2:	4.40 %
Sector 3 :	4.40 %
T-Mobile Total:	4.40 %
Site Total:	8.66 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **8.66%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

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