NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

June 16, 2016

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

RE: Notice of Exempt Modification
439 Homestead Avenue, Hartford CT 06112
Latitude: 41.783719
Longitude: -72.703743
T-Mobile Site#: CT11161D_L1900

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 128-foot level of the existing 140-foot monopole at 439 Homestead Avenue, Hartford CT 06112. The tower is owned by American Tower Corporation. The property is owned by Talar Properties LLC. T-Mobile now intends to replace three (3) of its existing antennas with three (3) new 1900 MHz antenna. The antenna would be installed at the 128-foot level of the tower.

This facility was approved by the City of Hartford PZC. The city file is no longer available – See attached letter from the City Planner.

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 Mayor Luke Bronin, Elected Official for the City of Hartford, as well as the property owner and the tower owner.

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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: Luke Bronin- Mayor - as elected official
Crown Castle - as tower owner
Crown Castle - as property owner

Exhibit A

LUKE BRONIN
MAYOR

CITY OF HARTFORD

DEPARTMENT OF DEVELOPMENT SERVICES
Planning and Economic Development Division
250 Constitution Plaza, 4th Floor
Hartford, Connecticut 06103

Telephone: (860) 757- 9025
Fax: (860) 722-6402
www.hartford.gov

JAMIE BRÄTT
DIRECTOR

June 7, 2016

Denise Sabo
Northeast Site Solutions
54 Main Street Unit 3
Sturbridge MA 01566

RE: 439 Homestead Avenue

Dear Ms. Sabo:

In response to your inquiry regarding cell towers at 439 Homestead Avenue, the Planning Division did not find any original zoning approvals. No Certificate of Occupancy was found for the use of cell towers; however, building permits indicate that the use of cell towers currently exists.

Please feel free to contact me at 860-757-9055, should you have any questions.

Sincerely,

Lynda Crespo,
Administrative Assistant

Exhibit B

Unofficial Property Record Card - City of Hartford, CT

General Property Data

Parcel Identification 152-181-002
Property Owner TALAR PROPERTIES LLC
Mailing Address 705 N MOUNTAIN RD
City NEWINGTON
Mailing State CT **Zip** 06111-1412
ParcelZoning CX-1

Property Location 0441 HOMESTEAD AV HARTFORD
Property Use VAC LAND IND
Most Recent Sale Date 4/21/2016
Legal Reference 0-0
Grantor TALAR PROPERTIES LLC,
Sale Price 300,000
Land Area 1.830 acres

Current Property Assessment

Fiscal Year 2015
Land Value 219,800
Total Value 219,800
Building Value 0

Building Description

Building Style N/A	**Foundation Type** N/A	**Flooring Type** N/A
# of Living Units N/A	**Frame Type** N/A	**Basement Floor** N/A
Year Built N/A	**Roof Structure** N/A	**Heating Type** N/A
Building Grade N/A	**Roof Cover** N/A	**Heating Fuel** N/A
Building Condition Average	**Siding** N/A	**Air Conditioning** 0%
Finished Area (SF) N/A	**Interior Walls** N/A	**# of Bsmt Garages** 0
Number Rooms 0	**Number Beds** 0	**# of Full Baths** 0
# of 3/4 Baths 0	**# of 1/2 Baths** 0	**# of Other Fixtures** 0

Legal Description

Narrative Description of Property

This property contains 1.830 acres of land mainly classified as VAC LAND IND with a(n) N/A style building, built about N/A , having N/A exterior and N/A roof cover, with N/A unit(s), 0 room(s), 0 bedroom(s), 0 bath(s), 0 half bath(s).

Property Images

Disclaimer: This information is believed to be correct but is subject to change and is not warranteed.

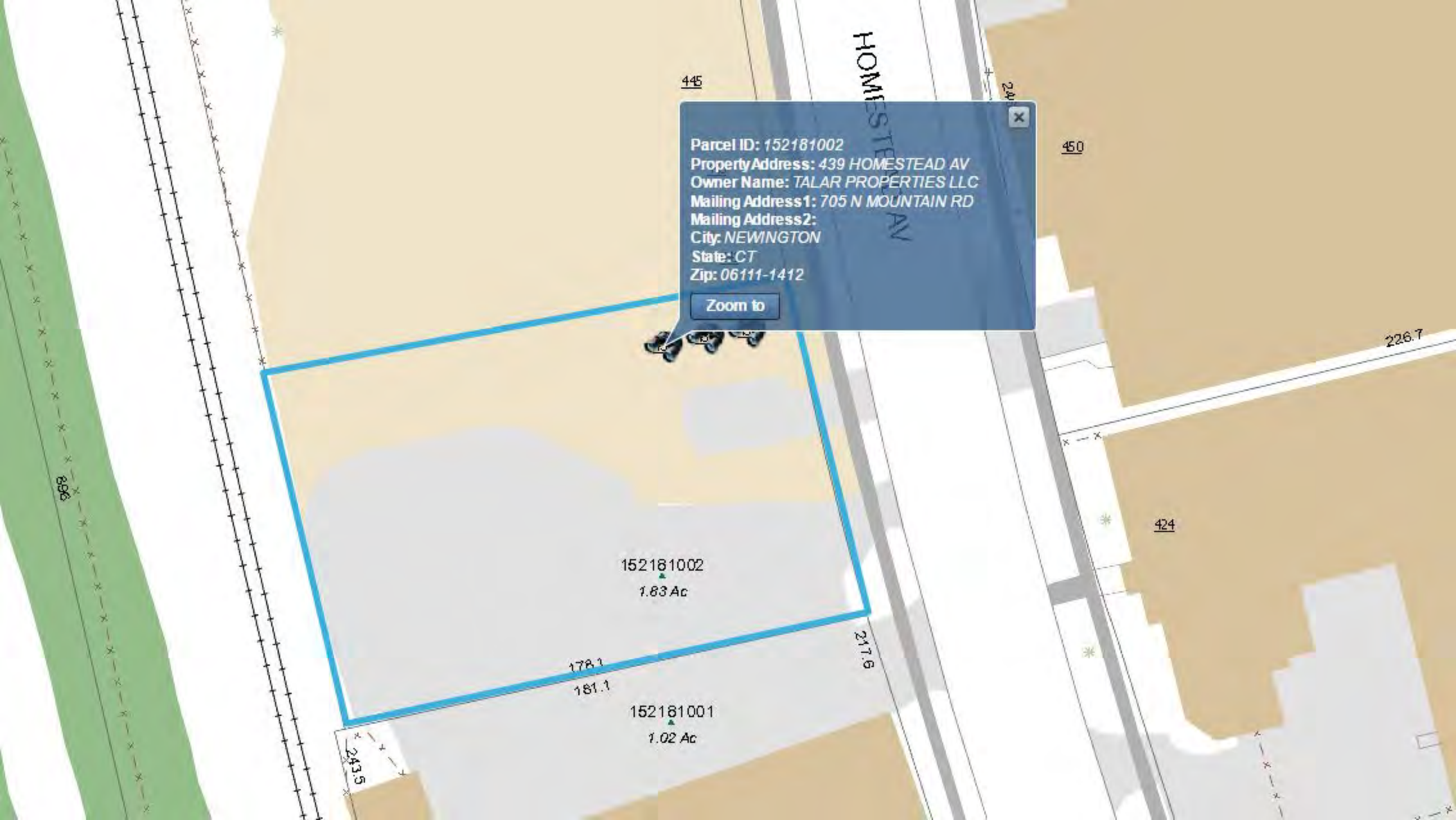

445
450
424
HOMESTEAD AV
Parcel ID: 152181002
Property Address: 439 HOMESTEAD AV
Owner Name: TALAR PROPERTIES LLC
Mailing Address1: 705 N MOUNTAIN RD
Mailing Address2:
City: NEWINGTON
State: CT
Zip: 06111-1412
Zoom to
152181002
1.83 Ac
152181001
1.02 Ac
178.1
181.1
217.6
243.5
226.7
896

Exhibit C

T-MOBILE NORTHEAST LLC

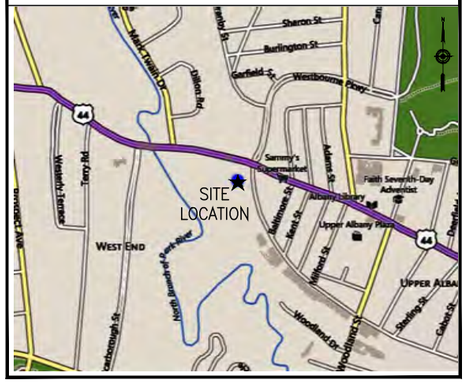
SITE #: CT11161D

SITE NAME: CT161/JN OF ALBANY_1

SITE ADDRESS:
439 HOMESTEAD AVENUE
HARTFORD, CT 06112

WIRELESS BROADBAND FACILITY
CONSTRUCTION DRAWINGS
(792DB 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 DESIGN GROUP, INC. HAS NOT CONDUCTED A STRUCTURAL ANALYSIS FOR THIS PROJECT AND DOES NOT ASSUME ANY LIABILITY FOR THE ADEQUACY OF THE STRUCTURE AND COMPONENTS.
18. REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT " PREPARED BY BLACK & VEATCH CORP. "T–MOBILE SITE ID CT11161D", DATED MAY 04, 2016.

SITE INFORMATION

SITE NUMBER:	CT11161D
SITE NAME:	CT161/JN OF ALBANY_1
SITE ADDRESS:	439 HOMESTEAD AVENUE HARTFORD, CT 06112
PARCEL ID:	152–181–002
LAT./LONG.:	N 41.783719 / W –72.703743
DEED BOOK / PAGE:	04350/0044
CURRENT ZONING:	I2
JURISDICTION:	CITY OF HARTFORD, CT
DISTRICT:	INDUSTRIAL DISTRICT
PROPERTY OWNER:	PATRICIA PELON PROJECT MANAGER T: (518) 373–3507 M: (518) 424–2396 CROWN CASTLE 3 CORPORATE PARK DRIVE, SUITE 101, CLIFTON PARK, NY 12065

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
A&E:	ATLANTIS DESIGN GROUP INC. 54 JACQUELINE ROAD, SUITE #7 WALTHAM, MA 02452 (617)–852–3611

SHEET INDEX

SHEET	DESCRIPTION
T–1	TITLE SHEET
N–1	GENERAL AND ELECTRICAL NOTES
A–1	SITE LAYOUT AND SITE PLAN
A–2	ELEVATION
A–3	ANTENNA PLAN AND DETAILS
E–1	GROUNDING AND COAX/FIBER 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 DESIGN GROUP, INC.
54 Jacqueline Road, Suite #7
Waltham, MA 02452
Phone number: 617–852–3611
Fax Number : 781–742–2247

SUBMITTALS

DATE	DESCRIPTION	REVISION
06/09/16	ISSUED FOR REVIEW	A
06/02/16	FINAL CD	0

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

PROJECT NO:	CT11161D
DRAWN BY:	FG
CHECKED BY:	KM

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

PROFESSIONAL SEAL

SITE NAME
CT11161D
CT161/JN OF ALBANY_1
439 HOMESTEAD AVENUE
HARTFORD, CT 06112

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.

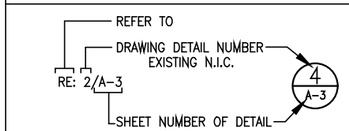
INSURANCE AND BONDS

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

STORAGE
38
3

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

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

SUBMITTALS

DATE	DESCRIPTION	REVISION
06/09/16	ISSUED FOR REVIEW	A
06/02/16	FINAL CD	0

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

PROJECT NO: CT11161D
DRAWN BY: FG
CHECKED BY: KM

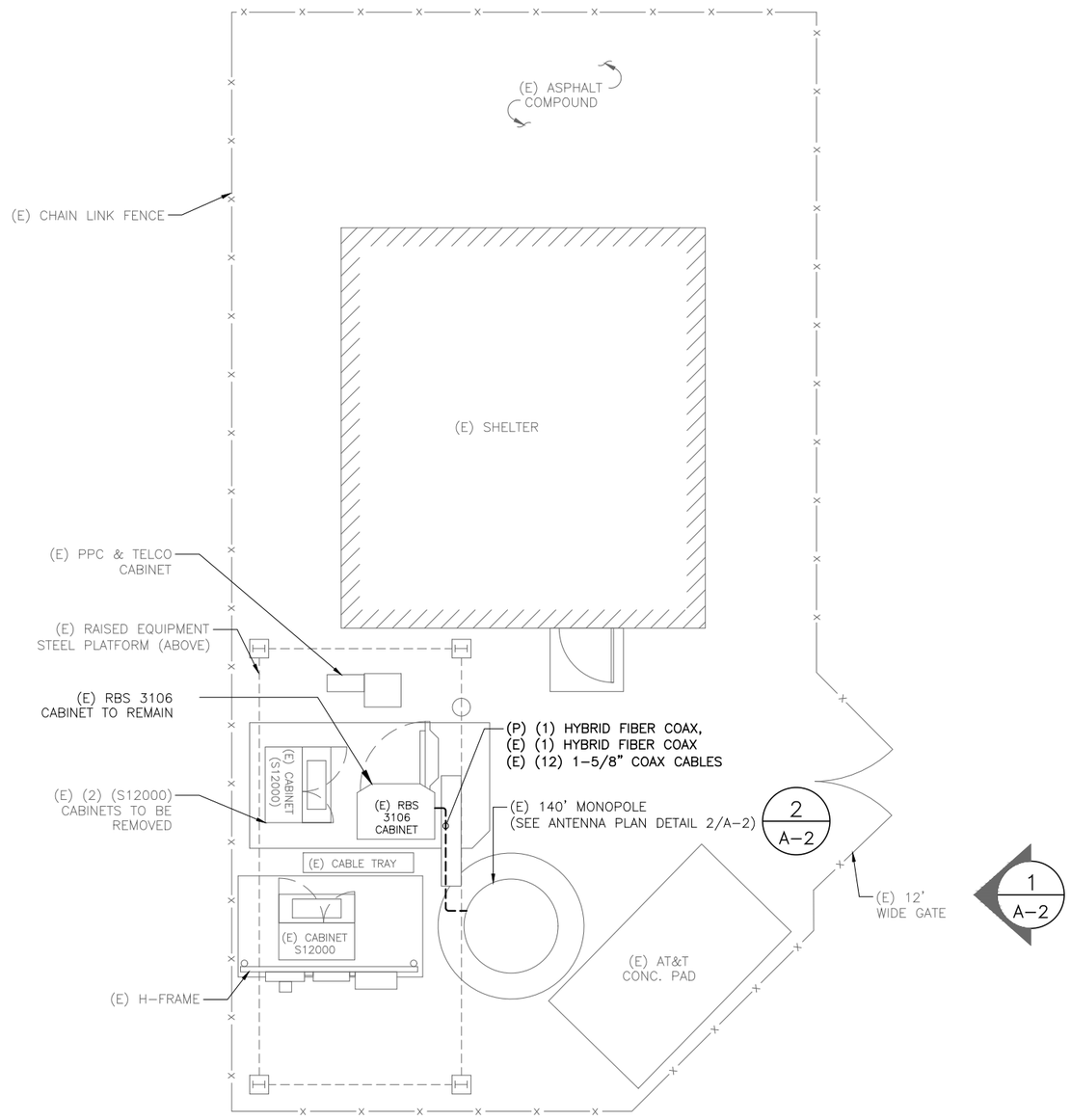
STATE OF CONNECTICUT
HOSSEIN VAHEDI
NO. ARI. 11162
LICENSED ARCHITECT

PROFESSIONAL SEAL

SITE NAME
CT11161D
CT161/JN OF ALBANY_1
439 HOMESTEAD AVENUE
HARTFORD, CT 06112

SHEET TITLE
GENERAL AND ELECTRICAL NOTES

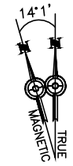
SHEET NUMBER
N-1



1 A-1 COMPOUND PLAN

SCALE: 1/8" = 1'-0" (11x17)
1/4" = 1'-0" (24x36)

4 0 4 8 12



GENERAL SITE NOTES

1. SITE INFORMATION WAS OBTAINED FROM A FIELD INVESTIGATION PERFORMED BY ATLANTIS DESIGN 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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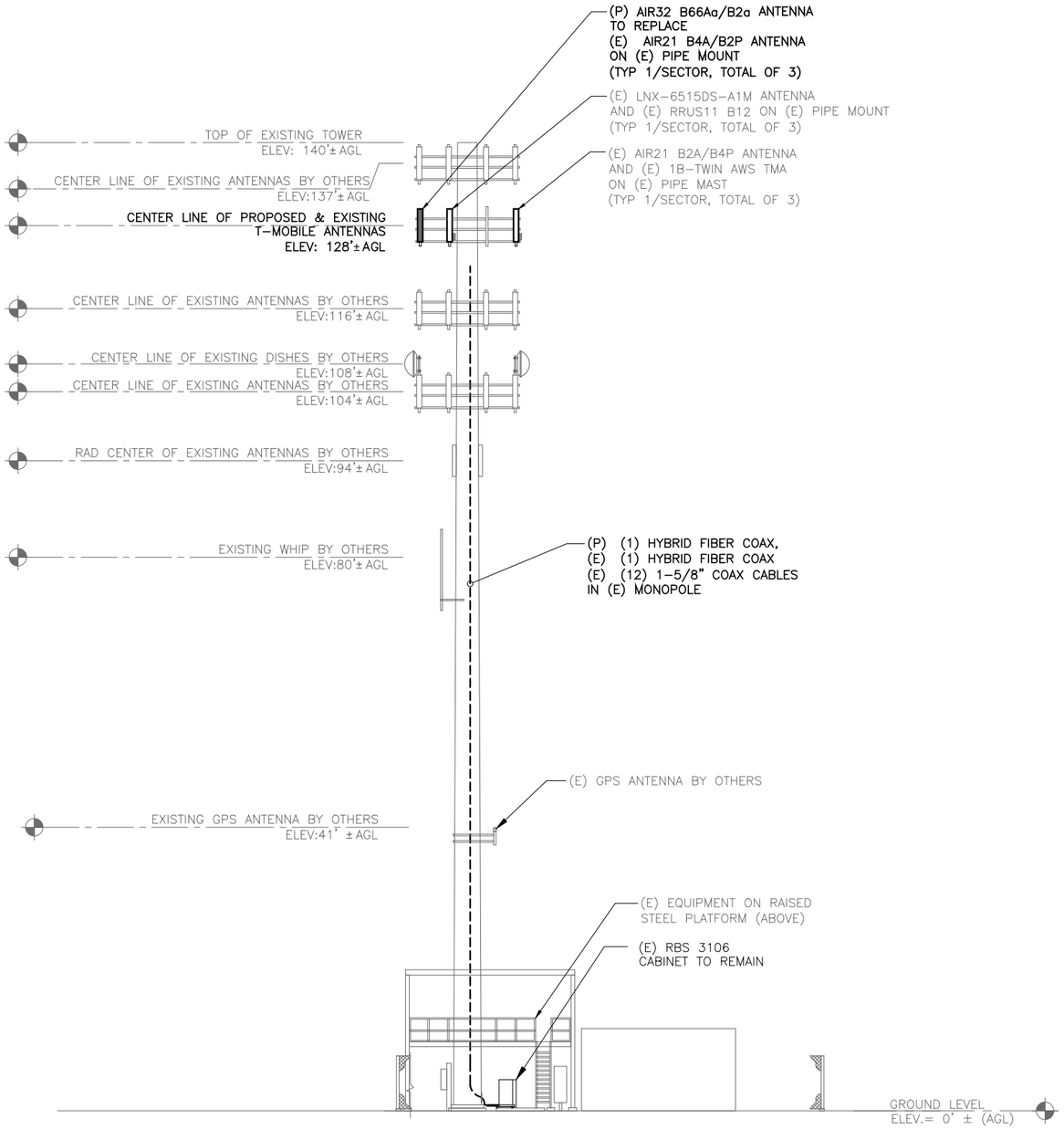
PROFESSIONAL SEAL

SITE NAME
CT11161D
CT161/JN OF ALBANY_1
439 HOMESTEAD AVENUE
HARTFORD, CT 06112

SHEET TITLE
COMPOUND PLAN

SHEET NUMBER
A-1

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT " PREPARED BY BLACK & VEATCH CORP. "T-MOBILE SITE ID CT11161D", DATED MAY 04, 2016.



1 / A-2 EAST ELEVATION
SCALE: 1" = 20'-0" (11x17)
1" = 10'-0" (24x36)

10 0 10 20 30

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SITE NAME
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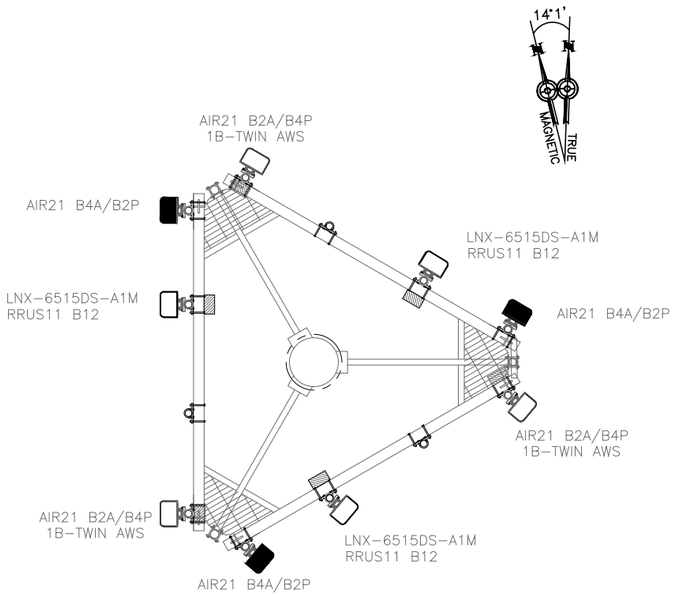
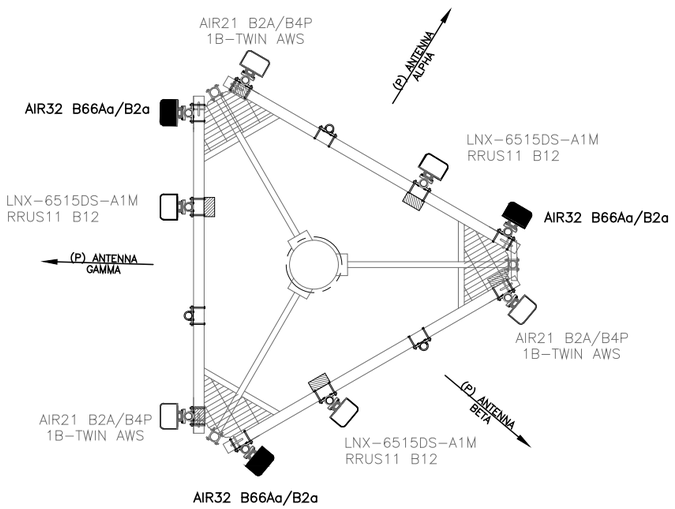
439 HOMESTEAD AVENUE
HARTFORD, CT 06112

SHEET TITLE
ELEVATION AND ANTENNA PLAN

SHEET NUMBER
A-2



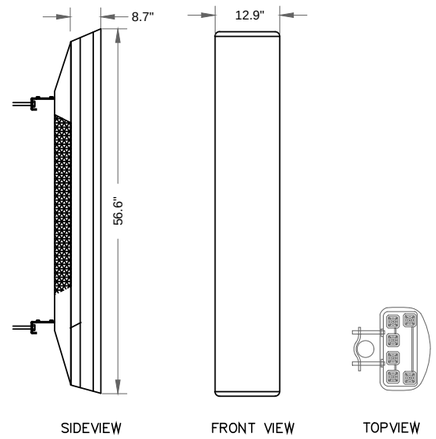
EXISTING ANTENNA



PROPOSED ANTENNA

ANTENNA PLAN (1 / A–3)

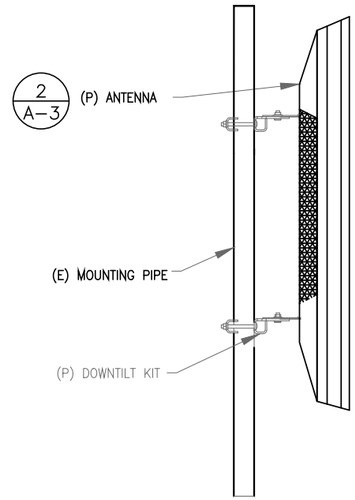
SCALE: N.T.S



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

ERICSSON AIR32 B66Aa/B2a ANTENNA DETAILS (2 / A–3)

SCALE: N.T.S



ANTENNA MOUNT DETAILS (3 / A–3)

SCALE: N.T.S

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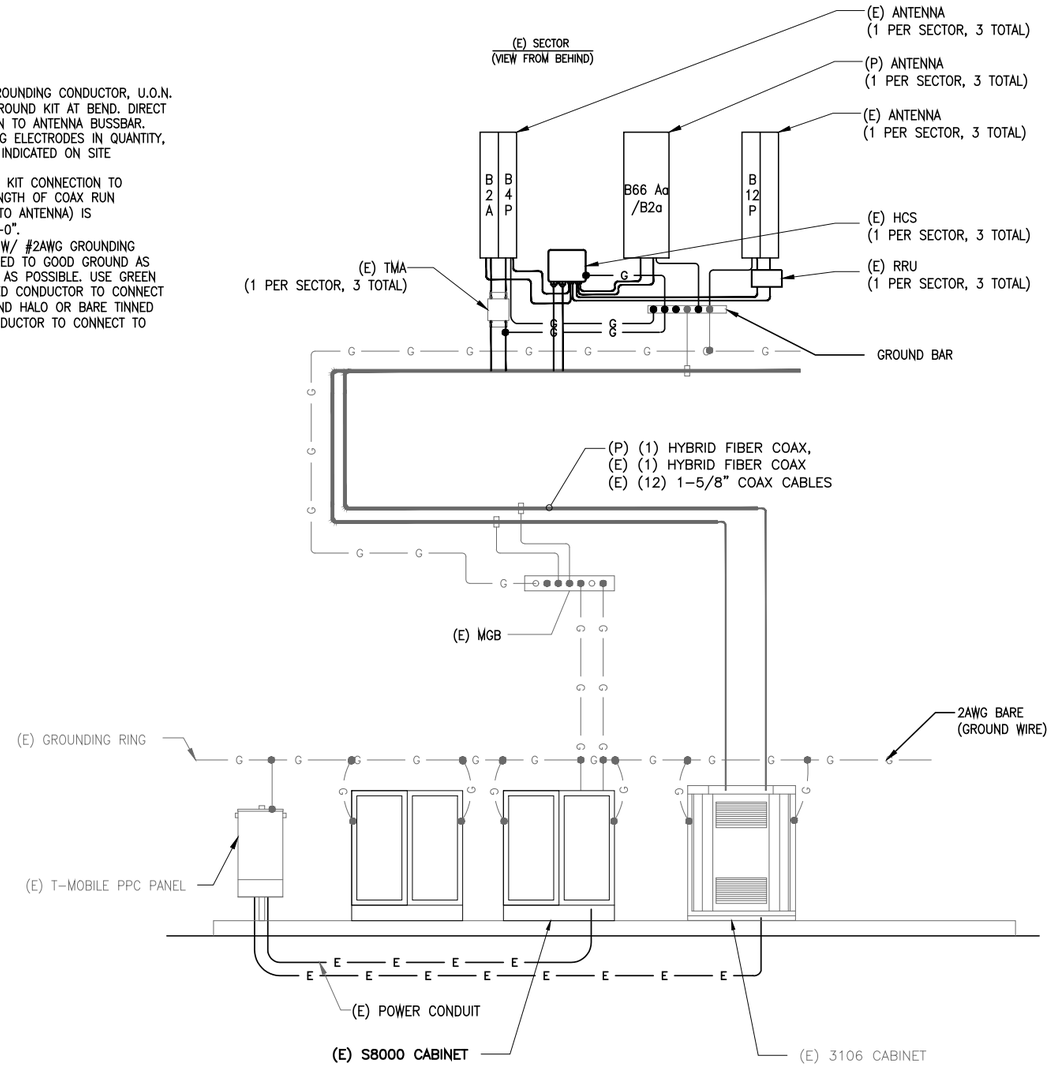
SHEET TITLE
ANTENNA PLAN AND DETAILS

SHEET NUMBER
A-3

NOTES:

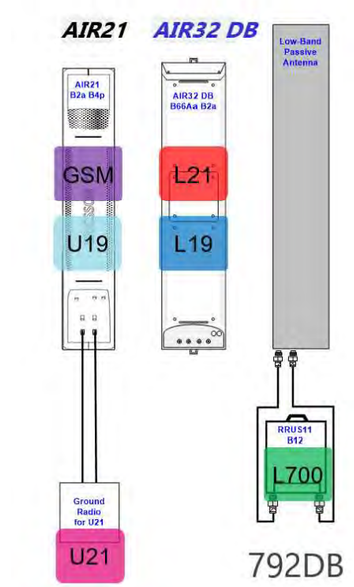
A. PROVIDE #2AWG GROUNDING CONDUCTOR, U.O.N.
B. DO NOT INSTALL GROUND KIT AT BEND. DIRECT GROUND WIRE DOWN TO ANTENNA BUSSBAR.
C. PROVIDE GROUNDING ELECTRODES IN QUANTITY, TYPE AND SIZE AS INDICATED ON SITE GROUNDING PLAN.
D. ADD COAX GROUND KIT CONNECTION TO BUSSBAR WHEN LENGTH OF COAX RUN (FROM EQUIPMENT 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

792DB CONFIGURATION
COAX/FIBER PLUMBING DIAGRAM

2
E-1

SCALE: N.T.S

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Fax Number : 781-742-2247

SUBMITTALS

DATE	DESCRIPTION	REVISION
06/09/16	ISSUED FOR REVIEW	A
06/02/16	FINAL CD	0

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

PROJECT NO: CT11161D
DRAWN BY: FG
CHECKED BY: KM

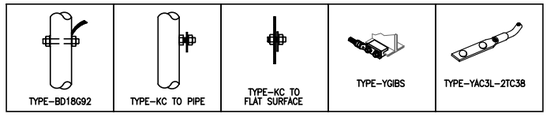
STATE OF CONNECTICUT
HOSSEIN VAHEDI
NO. ARI. 11162
LICENSED ARCHITECT

PROFESSIONAL SEAL

SITE NAME
CT11161D
CT161/JN OF ALBANY_1
439 HOMESTEAD AVENUE
HARTFORD, CT 06112

SHEET TITLE
GROUNDING AND ONE LINE DIAGRAM
COAX/FIBER DIAGRAM

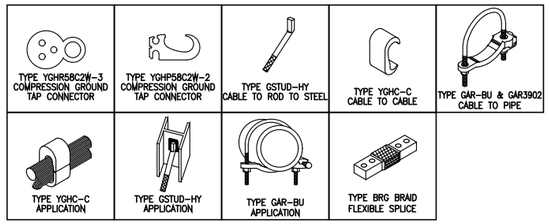
SHEET NUMBER
E-1



BURNDY GROUNDING DETAILS

1 E-2

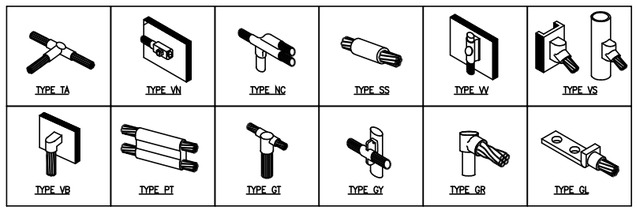
SCALE: N.T.S



BURNDY GROUNDING PRODUCTS

2 E-2

SCALE: N.T.S



CADWELD GROUNDING CONNECTION PRODUCTS

3 E-2

SCALE: N.T.S

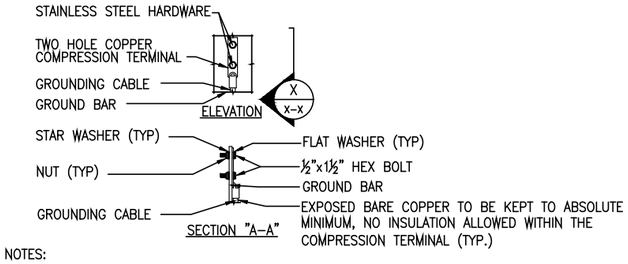
TERMINATION TYPES:
A. MECHANICAL COMPRESSION LUG
B. DOUBLE BARRELL COMPRESSION CONNECTOR
C. EXOTHERMIC TERMINATION
D. BEAM CLAMP

	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, 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

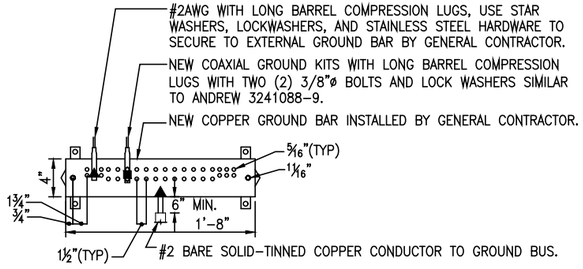
GROUNDING TERMINATION MATRIX

7 E-2

SCALE: N.T.S



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

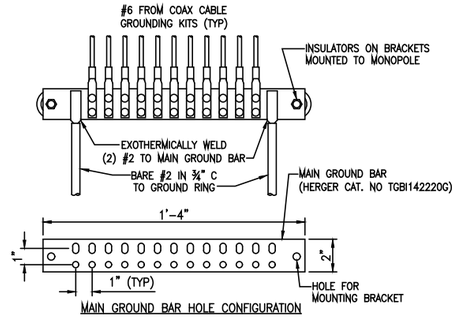


NOTES:
1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
3. ALL HOLES ARE COUNTERSUNK 1/16".

TYPICAL GROUND BAR CONNECTIONS DETAIL

4 E-2

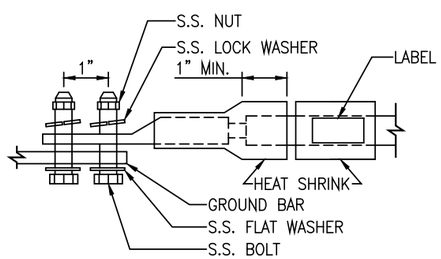
SCALE: N.T.S



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

PROFESSIONAL SEAL

SITE NAME
CT11161D
CT161/JN OF ALBANY_1
439 HOMESTEAD AVENUE
HARTFORD, CT 06112

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
E-2

Exhibit D

Date: **May 31, 2016**

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

Black & Veatch Corp.
6800 W. 115th St., Suite 2292
Overland Park, KS 66211
(913) 458-7245

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11161D
	Carrier Site Name:	CT161/Jn of Albany_1
Crown Castle Designation:	**Crown Castle BU Number:**	806369
	Crown Castle Site Name:	HRT 094 943225
	Crown Castle JDE Job Number:	373788
	Crown Castle Work Order Number:	1225690
	Crown Castle Application Number:	342353 Rev. 6
Engineering Firm Designation:	**Black & Veatch Corp. Project Number:**	182896
Site Data:	**439-455 Homestead Ave, Hartford, Hartford County, CT** **Latitude *41° 47' 1.61"*, Longitude *-72° 42' 13.66"*** **140 Foot - Monopole Tower**	

Dear Sean Dempsey,

Black & Veatch Corp. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 907964, in accordance with application 342353, revision 6.

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

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

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment based upon a wind speed of 80 mph fastest mile, equivalent to a 100 mph 3-sec gust wind speed per table 1609.3.1, page 290 of the 2003 IBC.

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

Structural analysis prepared by: Chariya Wannaklut / Brennan Sedlacek

Respectfully submitted by:

Ping Jiang, P.E.
Professional Engineer

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7) APPENDIX D
Windspeed Requirements

1) INTRODUCTION

This tower is a 140 ft Monopole tower designed by Valmont Industries, Inc. in August of 1999. The tower was originally designed for a wind speed of 125 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
126.0	128.0	3	ericsson	AIR -32 B2A/B66AA w/ Mount Pipe	1	1-5/8	1

Notes:
1) Refer Appendix B for detailed coax layout

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
142.0	142.0	3	amphenol	BXA-80063-4BF-EDIN-X w/ Mount Pipe	13	1-5/8	1
		3	antel	BXA-171063-8BF-EDIN-2 w/ Mount Pipe			
		3	antel	BXA-171063/8CF-EDIN-2 w/ Mount Pipe			
		3	css	X7C-FRO-660-V w/ Mount Pipe			
		3	alcatel lucent	RRH2x40-AWS			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		6	rfs celwave	FD9R6004/2C-3L			
		1	cci tower mounts	Platform Mount [LP 713-1]			
126.0	128.0	3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	1	1-5/8	3
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	11 1	1-5/8 1-1/4	1
		3	commscope	LNX-6515DS-VTM w/ Mount Pipe			
		3	ericsson	RRUS 11 B12			
		3	rfs celwave	ATMAA1412D-1A20			
	126.0	1	cci tower mounts	Platform Mount [LP 713-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
115.0	117.0	1	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe	2 1	3/4 3/8	2
		2	quintel technology	QS66512-3 w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
		3	ericsson	RRUS 12			
		3	ericsson	RRUS 32			
		3	ericsson	RRUS-11	12 2 1	1-5/8 3/4 3/8	1
		1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
	116.0	6	powerwave technologies	7020.00	-	-	1,4
		1	raycap	DC6-48-60-18-8F			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
	115.0	1	cci tower mounts	Platform Mount [LP 712-1]			1
103.0	104.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz	-	-	1
	103.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	cci tower mounts	Pipe Mount [PM 601-3]			
	102.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER			
102.0	108.0	1	andrew	VHLP2-180	3 3 3 3 1	1-1/4 1/4 5/16 1/2 5/8	1
		1	andrew	VHLP2.5-11			
		2	dragonwave	HORIZON COMPACT			
	104.0	3	alcatel lucent	TD-RRH8x20-25			
		3	argus technologies	LLPX310R-V1 w/ Mount Pipe			
		1	powerwave technologies	P40-16-XLPP-RR-A w/ Mount Pipe			
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
		3	rfs celwave	IBC1900BB-1			
		3	rfs celwave	IBC1900HG-2A			
		3	samsung telecommunications	WIMAX DAP HEAD			
	102.0	1	cci tower mounts	Platform Mount [LP 713-1]			
94.0	94.0	1	cci tower mounts	Pipe Mount [PM 602-3]	6	1-5/8	1
		3	kathrein	742 213 w/ Mount Pipe			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
74.0	80.0	1	antel	BCD-87010	1	7/8	1
	74.0	1	cci tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed; Not Considered in This Analysis
4) Equipment To be Relocated to Center Line Elevation 117.0 ft.

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
137.0	137.0	12	swedcom	ALP 9212-N	-	-
124.0	124.0	6	rfs celwave	APN199015	-	-
114.0	1140	9	allgon	7184.15	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Tower Engineering Professionals, Inc.	2294838	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Tower Engineering Professionals, Inc. (Mapped)	2294380	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Tower Engineering Professionals, Inc. (Mapped)	2294379	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	Crown Castle	6070320	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
5) This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, existing/proposed appurtenance loading, tower/foundation details, and geotechnical data. The existing/proposed loading on the structure is based on CAD level drawings and carrier applications provided by the owner. If any of this information is not current and correct, this report should be considered obsolete and further analysis will be required.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	140 - 86.8333	Pole	TP39.223x26.216x0.3125	1	-18.71	1962.96	52.6	Pass
L2	86.8333 - 38	Pole	TP50.56x37.2117x0.4063	2	-31.39	3294.14	71.9	Pass
L3	38 - 0	Pole	TP59.05x48.033x0.5	3	-48.63	4900.57	70.4	Pass
							Summary	
						Pole (L2)	71.9	Pass
						Rating =	71.9	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	75.5	Pass
	Base Plate		35.2	Pass
1	Base Foundation	0	64.2	Pass

Structure Rating (max from all components) =	75.5%

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

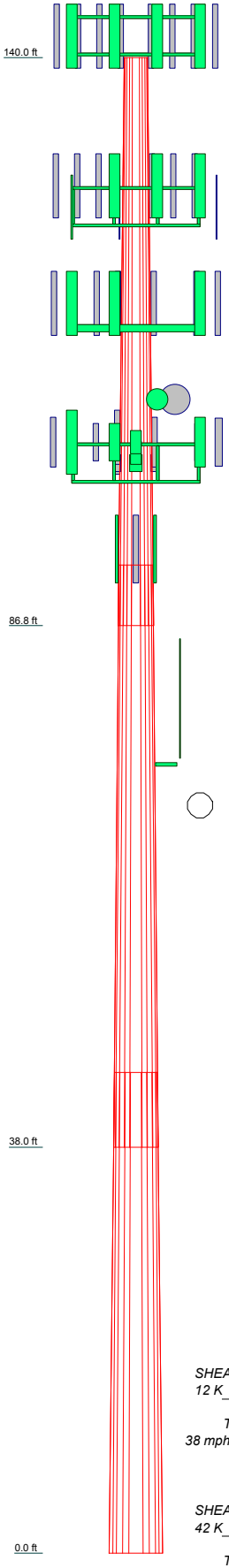
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	53.17	12	0.3125	5.67	26.2160	39.2230		5.9
2	54.50	12	0.4063	7.00	37.2117	50.5600	A572-65	10.5
3	45.00	12	0.5000		48.0330	59.0500		13.1
								29.5



AXIAL
82 K
SHEAR
12 K
MOMENT
1242 kip-ft
TORQUE 1 kip-ft
38 mph WIND - 1.0000 in ICE
AXIAL
49 K
SHEAR
42 K
MOMENT
4056 kip-ft
TORQUE 2 kip-ft
REACTIONS - 80 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
BXA-80063-4BF-EDIN-X w/ Mount Pipe	142	(2) 7020.00	115
BXA-80063-4BF-EDIN-X w/ Mount Pipe	142	(2) 7020.00	115
BXA-80063-4BF-EDIN-X w/ Mount Pipe	142	(2) 7020.00	115
X7C-FRO-660-V w/ Mount Pipe	142	RRUS-11	115
X7C-FRO-660-V w/ Mount Pipe	142	RRUS-11	115
X7C-FRO-660-V w/ Mount Pipe	142	RRUS-11	115
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	142	RRUS 12	115
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	142	RRUS 12	115
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	142	RRUS 12	115
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	142	RRUS 32	115
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	142	RRUS 32	115
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	142	RRUS 32	115
(2) FD9R6004/2C-3L	142	Platform Mount [LP 712-1]	115
(2) FD9R6004/2C-3L	142	8'x2 1/2" Pipe Mount	115
(2) FD9R6004/2C-3L	142	8'x2 1/2" Pipe Mount	115
RRH2x40-AWS	142	8'x2 1/2" Pipe Mount	115
RRH2x40-AWS	142	800MHz 2X50W RRH W/FILTER	103
RRH2x40-AWS	142	800MHz 2X50W RRH W/FILTER	103
DB-T1-6Z-8AB-0Z	142	800MHz 2X50W RRH W/FILTER	103
12' Hor x 4" x 4" Angle Mount	142	PCS 1900MHz 4x45W-65MHz	103
12' Hor x 4" x 4" Angle Mount	142	PCS 1900MHz 4x45W-65MHz	103
12' Hor x 4" x 4" Angle Mount	142	PCS 1900MHz 4x45W-65MHz	103
Platform Mount [LP 713-1]	142	PCS 1900MHz 4x45W-65MHz	103
LNX-6515DS-VTM w/ Mount Pipe	126	PCS 1900MHz 4x45W-65MHz	103
LNX-6515DS-VTM w/ Mount Pipe	126	PCS 1900MHz 4x45W-65MHz	103
LNX-6515DS-VTM w/ Mount Pipe	126	Pipe Mount [PM 601-3]	103
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	APXVTM14-C-120 w/ Mount Pipe	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	APXVTM14-C-120 w/ Mount Pipe	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	APXVTM14-C-120 w/ Mount Pipe	102
AIR -32 B2A/B66AA w/ Mount Pipe	126	LLPX310R-V1 w/ Mount Pipe	102
AIR -32 B2A/B66AA w/ Mount Pipe	126	LLPX310R-V1 w/ Mount Pipe	102
AIR -32 B2A/B66AA w/ Mount Pipe	126	LLPX310R-V1 w/ Mount Pipe	102
ATMAA1412D-1A20	126	APXVSPP18-C-A20 w/ Mount Pipe	102
ATMAA1412D-1A20	126	APXVSPP18-C-A20 w/ Mount Pipe	102
ATMAA1412D-1A20	126	P40-16-XLPP-RR-A w/ Mount Pipe	102
RRUS 11 B12	126	TD-RRH8x20-25	102
RRUS 11 B12	126	TD-RRH8x20-25	102
RRUS 11 B12	126	TD-RRH8x20-25	102
(2) 12' Hor x 4" x 4" Angle Mount	126	WIMAX DAP HEAD	102
(2) 12' Hor x 4" x 4" Angle Mount	126	WIMAX DAP HEAD	102
(2) 12' Hor x 4" x 4" Angle Mount	126	WIMAX DAP HEAD	102
Platform Mount [LP 713-1]	126	IBC1900BB-1	102
6' x 2" Mount Pipe	126	IBC1900BB-1	102
6' x 2" Mount Pipe	126	IBC1900BB-1	102
6' x 2" Mount Pipe	126	IBC1900HG-2A	102
7770.00 w/ Mount Pipe	115	IBC1900HG-2A	102
7770.00 w/ Mount Pipe	115	IBC1900HG-2A	102
7770.00 w/ Mount Pipe	115	HORIZON COMPACT	102
P65-17-XLH-RR w/ Mount Pipe	115	HORIZON COMPACT	102
P65-17-XLH-RR w/ Mount Pipe	115	Platform Mount [LP 713-1]	102
AM-X-CD-16-65-00T-RET w/ Mount Pipe	115	VHLP2-180	102
TPA-65R-LCUUUU-H8 w/ Mount Pipe	115	VHLP2.5-11	102
QS66512-3 w/ Mount Pipe	115	742 213 w/ Mount Pipe	94
QS66512-3 w/ Mount Pipe	115	Pipe Mount [PM 602-3]	94
DC6-48-60-18-8F	115	742 213 w/ Mount Pipe	94
DC6-48-60-18-8F	115	742 213 w/ Mount Pipe	94
(2) LGP21401	115	BCD-87010	74
(2) LGP21401	115	Side Arm Mount [SO 701-1]	74
(2) LGP21401	115		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 71.9%

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Job:	HRT 094 943225 (BU#806369)		
Project:	182896 (806369.1225690)		
Client:	Crown Castle	Drawn by: Brennan J. Sedlacek, E.I.T.	App'd:
Code:	TIA/EIA-222-F	Date: 05/31/16	Scale: NTS
Path:	C:\Users\sed77779\Desktop\806369.1225690\Structural\806369.1225690 Structural Analysis.eri		Dwg No. E-1

Tower Input Data

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

1) Tower is located in Hartford County, Connecticut.
2) Basic wind speed of 80 mph.
3) Nominal ice thickness of 1.0000 in.
4) Ice thickness is considered to increase with height.
5) Ice density of 56 pcf.
6) A wind speed of 38 mph is used in combination with ice.
7) Temperature drop of 50 °F.
8) Deflections calculated using a wind speed of 50 mph.
9) A non-linear (P-delta) analysis was used.
10) Pressures are calculated at each section.
11) Stress ratio used in pole design is 1.333.
12) 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	140.00-86.83	53.17	5.67	12	26.2160	39.2230	0.3125	1.2500	A572-65 (65 ksi)
L2	86.83-38.00	54.50	7.00	12	37.2117	50.5600	0.4063	1.6250	A572-65 (65 ksi)
L3	38.00-0.00	45.00		12	48.0330	59.0500	0.5000	2.0000	A572-65 (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	27.1408	26.0654	2232.3752	9.2735	13.5799	164.3883	4523.3974	12.8286	6.1884	19.803
	40.6066	39.1537	7566.4519	13.9300	20.3175	372.4103	15331.6830	19.2703	9.6743	30.958
L2	39.9612	48.1461	8324.7349	13.1763	19.2756	431.8784	16868.1699	23.6960	8.8840	21.868
	52.3436	65.6074	21064.2222	17.9550	26.1901	804.2825	42681.8251	32.2900	12.4613	30.674
L3	51.5017	76.5282	22069.8035	17.0168	24.8811	887.0103	44719.4053	37.6648	11.5329	23.066
	61.1331	94.2655	41247.0150	20.9609	30.5879	1348.4749	83577.6350	46.3946	14.4854	28.971

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 140.00-86.83				1	1	1			
L2 86.83-38.00				1	1	1			
L3 38.00-0.00				1	1	1			

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
Safety Line 3/8	A	No	CaAa (Out Of Face)	140.00 - 10.00	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75
						1" Ice	0.24	1.28
						2" Ice	0.44	2.34
						4" Ice	0.84	4.46
LDF7-50A(1-5/8")	A	No	Inside Pole	140.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
HB158-1-08U8-S8J18(1-5/8")	A	No	Inside Pole	140.00 - 8.00	1	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
						2" Ice	0.00	1.30
						4" Ice	0.00	1.30
LCF158-50JA(1-5/8")	A	No	Inside Pole	126.00 - 8.00	6	No Ice	0.00	0.92
						1/2" Ice	0.00	0.92
						1" Ice	0.00	0.92
						2" Ice	0.00	0.92
						4" Ice	0.00	0.92
LCF158-50JA(1-5/8")	A	No	CaAa (Out Of Face)	126.00 - 8.00	1	No Ice	0.20	0.92
						1/2" Ice	0.30	2.45
						1" Ice	0.40	4.60
						2" Ice	0.60	10.72
						4" Ice	1.00	30.29
LCF158-50JA(1-5/8")	A	No	CaAa (Out Of Face)	126.00 - 8.00	1	No Ice	0.00	0.92
						1/2" Ice	0.00	2.45
						1" Ice	0.00	4.60
						2" Ice	0.00	10.72
						4" Ice	0.00	30.29
LDF5-50A(7/8")	A	No	CaAa (Out Of Face)	74.00 - 8.00	1	No Ice	0.00	0.33
						1/2" Ice	0.00	1.30
						1" Ice	0.00	2.88
						2" Ice	0.00	7.88
						4" Ice	0.00	25.20
AVA7-50(1-5/8")	A	No	CaAa (Out Of Face)	94.00 - 8.00	6	No Ice	0.00	0.70
						1/2" Ice	0.00	2.23
						1" Ice	0.00	4.38
						2" Ice	0.00	10.50
						4" Ice	0.00	30.07
LDF7-50A(1-5/8")	B	No	Inside Pole	115.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
FB-L98B-034-XXXXXX(3/8")	B	No	Inside Pole	115.00 - 8.00	1	No Ice	0.00	0.05
						1/2" Ice	0.00	0.05
						1" Ice	0.00	0.05
						2" Ice	0.00	0.05
						4" Ice	0.00	0.05
WR-VG86ST-BRD(3/4")	B	No	Inside Pole	115.00 - 8.00	2	No Ice	0.00	0.58
						1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
						2" Ice	0.00	0.58

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						4" Ice	0.00	0.58
2" innerduct conduit	B	No	Inside Pole	115.00 - 8.00	1	No Ice	0.00	0.20
						1/2" Ice	0.00	0.20
						1" Ice	0.00	0.20
						2" Ice	0.00	0.20
						4" Ice	0.00	0.20
FB-L98B-034-XXX(3/8")	B	No	Inside Pole	115.00 - 8.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06
WR-VG86ST-BRD(3/4")	B	No	Inside Pole	115.00 - 8.00	2	No Ice	0.00	0.58
						1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
						2" Ice	0.00	0.58
						4" Ice	0.00	0.58
LCF158-50JA(1-5/8")	C	No	CaAa (Out Of Face)	126.00 - 8.00	3	No Ice	0.00	0.92
						1/2" Ice	0.00	2.45
						1" Ice	0.00	4.60
						2" Ice	0.00	10.72
						4" Ice	0.00	30.29
HB114-21U3M12-XXXF(1-1/4)	C	No	CaAa (Out Of Face)	126.00 - 8.00	1	No Ice	0.00	1.22
						1/2" Ice	0.00	2.47
						1" Ice	0.00	4.32
						2" Ice	0.00	9.87
						4" Ice	0.00	28.29
MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	C	No	CaAa (Out Of Face)	102.00 - 8.00	1	No Ice	0.00	1.07
						1/2" Ice	0.00	2.37
						1" Ice	0.00	4.28
						2" Ice	0.00	9.93
						4" Ice	0.00	28.56
MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	C	No	CaAa (Out Of Face)	126.00 - 102.00	1	No Ice	0.16	1.07
						1/2" Ice	0.26	2.37
						1" Ice	0.36	4.28
						2" Ice	0.56	9.93
						4" Ice	0.96	28.56
LDF4.5-50(5/8")	C	No	CaAa (Out Of Face)	102.00 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.98
						1" Ice	0.00	2.43
						2" Ice	0.00	7.15
						4" Ice	0.00	23.92
HB114-1-08U4-M5J(1-1/4")	C	No	CaAa (Out Of Face)	102.00 - 8.00	3	No Ice	0.15	1.08
						1/2" Ice	0.25	2.33
						1" Ice	0.35	4.18
						2" Ice	0.55	9.73
						4" Ice	0.95	28.15
FSJ4-50B(1/2")	C	No	Inside Pole	102.00 - 8.00	1	No Ice	0.00	0.14
						1/2" Ice	0.00	0.14
						1" Ice	0.00	0.14
						2" Ice	0.00	0.14
						4" Ice	0.00	0.14
FSJ4-50B(1/2")	C	No	CaAa (Out Of Face)	102.00 - 8.00	2	No Ice	0.00	0.14
						1/2" Ice	0.00	0.76
						1" Ice	0.00	2.00
						2" Ice	0.00	6.30
						4" Ice	0.00	22.23
ATCB-B01-005(5/16")	C	No	CaAa (Out Of Face)	102.00 - 8.00	2	No Ice	0.00	0.07
						1/2" Ice	0.00	0.57
						1" Ice	0.00	1.68
						2" Ice	0.00	5.73
						4" Ice	0.00	21.16
ATCB-B01-005(5/16")	C	No	CaAa (Out Of Face)	102.00 - 8.00	1	No Ice	0.00	0.07
						1/2" Ice	0.00	0.57
						1" Ice	0.00	1.68
						2" Ice	0.00	5.73
						4" Ice	0.00	21.16
LDF1-50A(1/4")	C	No	CaAa (Out Of Face)	102.00 - 8.00	3	No Ice	0.00	0.06
						1/2" Ice	0.00	0.58

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						1" Ice	0.00	1.70
						2" Ice	0.00	5.79
						4" Ice	0.00	21.29
2" Rigid Conduit	C	No	CaAa (Out Of Face)	102.00 - 8.00	1	No Ice	0.00	2.80
						1/2" Ice	0.00	4.33
						1" Ice	0.00	6.47
						2" Ice	0.00	12.57
						4" Ice	0.00	32.12
2" Rigid Conduit	C	No	CaAa (Out Of Face)	102.00 - 8.00	1	No Ice	0.20	2.80
						1/2" Ice	0.30	4.33
						1" Ice	0.40	6.47
						2" Ice	0.60	12.57
						4" Ice	1.00	32.12

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 K
L1	140.00-86.83	A	0.000	0.000	0.000	9.866	0.92
		B	0.000	0.000	0.000	0.000	0.35
		C	0.000	0.000	0.000	13.940	0.35
L2	86.83-38.00	A	0.000	0.000	0.000	11.647	1.13
		B	0.000	0.000	0.000	0.000	0.61
		C	0.000	0.000	0.000	32.327	0.73
L3	38.00-0.00	A	0.000	0.000	0.000	7.080	0.70
		B	0.000	0.000	0.000	0.000	0.37
		C	0.000	0.000	0.000	19.860	0.45

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 K
L1	140.00-86.83	A	1.158	0.000	0.000	0.000	31.252	1.55
		B		0.000	0.000	0.000	0.000	0.35
		C		0.000	0.000	0.000	33.550	1.86
L2	86.83-38.00	A	1.079	0.000	0.000	0.000	34.268	3.13
		B		0.000	0.000	0.000	0.000	0.61
		C		0.000	0.000	0.000	77.569	3.90
L3	38.00-0.00	A	1.000	0.000	0.000	0.000	19.592	1.82
		B		0.000	0.000	0.000	0.000	0.37
		C		0.000	0.000	0.000	45.747	2.16

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	140.00-86.83	-0.3221	-0.0631	-0.5945	-0.2542
L2	86.83-38.00	-0.6922	0.1117	-1.2368	0.0832
L3	38.00-0.00	-0.5765	0.0957	-1.0823	0.0905

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
BXA-80063-4BF-EDIN-X w/ Mount Pipe	A	From Face	4.00 -6.00 0.00	30.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.09 5.52 5.95 6.86 8.82	3.47 4.04 4.64 5.96 8.89	0.03 0.07 0.12 0.23 0.55
BXA-80063-4BF-EDIN-X w/ Mount Pipe	B	From Face	4.00 -6.00 0.00	30.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.09 5.52 5.95 6.86 8.82	3.47 4.04 4.64 5.96 8.89	0.03 0.07 0.12 0.23 0.55
BXA-80063-4BF-EDIN-X w/ Mount Pipe	C	From Face	4.00 -6.00 0.00	25.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.09 5.52 5.95 6.86 8.82	3.47 4.04 4.64 5.96 8.89	0.03 0.07 0.12 0.23 0.55
X7C-FRO-660-V w/ Mount Pipe	A	From Face	4.00 -2.00 0.00	90.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.46 11.13 11.76 13.06 15.78	7.53 8.72 9.62 11.45 15.60	0.06 0.14 0.22 0.43 0.97
X7C-FRO-660-V w/ Mount Pipe	B	From Face	4.00 -2.00 0.00	90.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.46 11.13 11.76 13.06 15.78	7.53 8.72 9.62 11.45 15.60	0.06 0.14 0.22 0.43 0.97
X7C-FRO-660-V w/ Mount Pipe	C	From Face	4.00 -2.00 0.00	90.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.46 11.13 11.76 13.06 15.78	7.53 8.72 9.62 11.45 15.60	0.06 0.14 0.22 0.43 0.97
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	A	From Face	4.00 2.00 0.00	90.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.18 3.56 3.96 4.85 6.77	3.35 3.97 4.60 5.89 8.89	0.03 0.06 0.10 0.19 0.49
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	B	From Face	4.00 2.00 0.00	90.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.18 3.56 3.96 4.85 6.77	3.35 3.97 4.60 5.89 8.89	0.03 0.06 0.10 0.19 0.49
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	C	From Face	4.00 2.00 0.00	90.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.18 3.56 3.96 4.85 6.77	3.35 3.97 4.60 5.89 8.89	0.03 0.06 0.10 0.19 0.49
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	A	From Face	4.00 6.00 0.00	30.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.18 3.56 3.96 4.85 6.77	3.35 3.97 4.60 5.89 8.89	0.03 0.06 0.10 0.19 0.49
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	B	From Face	4.00 6.00	30.0000	142.00	No Ice 1/2"	3.18 3.56	3.35 3.97	0.03 0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			Ice	3.96	4.60	0.10
						1" Ice	4.85	5.89	0.19
						2" Ice	6.77	8.89	0.49
						4" Ice			
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	C	From Face	4.00	25.0000	142.00	No Ice	3.18	3.35	0.03
			6.00			1/2"	3.56	3.97	0.06
			0.00			Ice	3.96	4.60	0.10
						1" Ice	4.85	5.89	0.19
						2" Ice	6.77	8.89	0.49
						4" Ice			
(2) FD9R6004/2C-3L	A	From Face	4.00	0.0000	142.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
						4" Ice			
(2) FD9R6004/2C-3L	B	From Face	4.00	0.0000	142.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
						4" Ice			
(2) FD9R6004/2C-3L	C	From Face	4.00	0.0000	142.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
						4" Ice			
RRH2x40-AWS	A	From Face	4.00	0.0000	142.00	No Ice	2.52	1.59	0.04
			0.00			1/2"	2.75	1.80	0.06
			0.00			Ice	2.99	2.01	0.08
						1" Ice	3.50	2.46	0.13
						2" Ice	4.61	3.48	0.28
						4" Ice			
RRH2x40-AWS	B	From Face	4.00	0.0000	142.00	No Ice	2.52	1.59	0.04
			0.00			1/2"	2.75	1.80	0.06
			0.00			Ice	2.99	2.01	0.08
						1" Ice	3.50	2.46	0.13
						2" Ice	4.61	3.48	0.28
						4" Ice			
RRH2x40-AWS	C	From Face	4.00	0.0000	142.00	No Ice	2.52	1.59	0.04
			0.00			1/2"	2.75	1.80	0.06
			0.00			Ice	2.99	2.01	0.08
						1" Ice	3.50	2.46	0.13
						2" Ice	4.61	3.48	0.28
						4" Ice			
DB-T1-6Z-8AB-0Z	A	From Face	4.00	0.0000	142.00	No Ice	5.60	2.33	0.04
			0.00			1/2"	5.92	2.56	0.08
			0.00			Ice	6.24	2.79	0.12
						1" Ice	6.91	3.28	0.21
						2" Ice	8.37	4.37	0.45
						4" Ice			
12' Hor x 4" x 4" Angle Mount	A	From Face	4.00	0.0000	142.00	No Ice	5.60	0.16	0.21
			0.00			1/2"	6.56	0.21	0.25
			0.00			Ice	7.54	0.28	0.30
						1" Ice	9.51	0.43	0.44
						2" Ice	13.55	0.85	0.84
						4" Ice			
12' Hor x 4" x 4" Angle Mount	B	From Face	4.00	0.0000	142.00	No Ice	5.60	0.16	0.21
			0.00			1/2"	6.56	0.21	0.25
			0.00			Ice	7.54	0.28	0.30
						1" Ice	9.51	0.43	0.44
						2" Ice	13.55	0.85	0.84
						4" Ice			
12' Hor x 4" x 4" Angle Mount	C	From Face	4.00	0.0000	142.00	No Ice	5.60	0.16	0.21

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00 0.00			1/2" Ice 1" Ice 2" Ice 4" Ice	6.56 7.54 9.51 13.55	0.21 0.28 0.43 0.85	0.25 0.30 0.44 0.84
Platform Mount [LP 713-1]	C	None		0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	31.27 39.68 48.09 64.91 98.55	31.27 39.68 48.09 64.91 98.55	1.51 1.93 2.35 3.19 4.86
LNX-6515DS-VTM w/ Mount Pipe	A	From Face	4.00 -2.00 2.00	30.0000	126.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.68 12.40 13.14 14.60 17.87	9.84 11.37 12.91 15.27 20.14	0.08 0.17 0.27 0.51 1.15
LNX-6515DS-VTM w/ Mount Pipe	B	From Face	4.00 -2.00 2.00	10.0000	126.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.68 12.40 13.14 14.60 17.87	9.84 11.37 12.91 15.27 20.14	0.08 0.17 0.27 0.51 1.15
LNX-6515DS-VTM w/ Mount Pipe	C	From Face	4.00 -2.00 2.00	30.0000	126.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.68 12.40 13.14 14.60 17.87	9.84 11.37 12.91 15.27 20.14	0.08 0.17 0.27 0.51 1.15
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	4.00 2.00 2.00	30.0000	126.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	4.00 2.00 2.00	10.0000	126.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	4.00 2.00 2.00	30.0000	126.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
AIR -32 B2A/B66AA w/ Mount Pipe	A	From Face	4.00 -6.00 2.00	30.0000	126.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.34 7.87 8.39 9.47 11.76	6.15 7.01 7.80 9.43 12.91	0.15 0.21 0.28 0.44 0.89
AIR -32 B2A/B66AA w/ Mount Pipe	B	From Face	4.00 -6.00 2.00	10.0000	126.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.34 7.87 8.39 9.47 11.76	6.15 7.01 7.80 9.43 12.91	0.15 0.21 0.28 0.44 0.89
AIR -32 B2A/B66AA w/ Mount Pipe	C	From Face	4.00 -6.00 2.00	30.0000	126.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.34 7.87 8.39 9.47 11.76	6.15 7.01 7.80 9.43 12.91	0.15 0.21 0.28 0.44 0.89

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice			
ATMAA1412D-1A20	A	From Face	4.00	0.0000	126.00	No Ice	1.17	0.47	0.01
			0.00			1/2" Ice	1.31	0.57	0.02
			2.00			1" Ice	1.47	0.69	0.03
						2" Ice	1.81	0.95	0.06
						4" Ice	2.58	1.57	0.14
ATMAA1412D-1A20	B	From Face	4.00	0.0000	126.00	No Ice	1.17	0.47	0.01
			0.00			1/2" Ice	1.31	0.57	0.02
			2.00			1" Ice	1.47	0.69	0.03
						2" Ice	1.81	0.95	0.06
						4" Ice	2.58	1.57	0.14
ATMAA1412D-1A20	C	From Face	4.00	0.0000	126.00	No Ice	1.17	0.47	0.01
			0.00			1/2" Ice	1.31	0.57	0.02
			2.00			1" Ice	1.47	0.69	0.03
						2" Ice	1.81	0.95	0.06
						4" Ice	2.58	1.57	0.14
RRUS 11 B12	A	From Face	4.00	0.0000	126.00	No Ice	3.31	1.36	0.05
			0.00			1/2" Ice	3.55	1.54	0.07
			2.00			1" Ice	3.80	1.73	0.10
						2" Ice	4.33	2.13	0.15
						4" Ice	5.50	3.04	0.31
RRUS 11 B12	B	From Face	4.00	0.0000	126.00	No Ice	3.31	1.36	0.05
			0.00			1/2" Ice	3.55	1.54	0.07
			2.00			1" Ice	3.80	1.73	0.10
						2" Ice	4.33	2.13	0.15
						4" Ice	5.50	3.04	0.31
RRUS 11 B12	C	From Face	4.00	0.0000	126.00	No Ice	3.31	1.36	0.05
			0.00			1/2" Ice	3.55	1.54	0.07
			2.00			1" Ice	3.80	1.73	0.10
						2" Ice	4.33	2.13	0.15
						4" Ice	5.50	3.04	0.31
(2) 12' Hor x 4" x 4" Angle Mount	A	From Face	4.00	0.0000	126.00	No Ice	5.60	0.16	0.21
			0.00			1/2" Ice	6.56	0.21	0.25
			0.00			1" Ice	7.54	0.28	0.30
						2" Ice	9.51	0.43	0.44
						4" Ice	13.55	0.85	0.84
(2) 12' Hor x 4" x 4" Angle Mount	B	From Face	4.00	0.0000	126.00	No Ice	5.60	0.16	0.21
			0.00			1/2" Ice	6.56	0.21	0.25
			0.00			1" Ice	7.54	0.28	0.30
						2" Ice	9.51	0.43	0.44
						4" Ice	13.55	0.85	0.84
(2) 12' Hor x 4" x 4" Angle Mount	C	From Face	4.00	0.0000	126.00	No Ice	5.60	0.16	0.21
			0.00			1/2" Ice	6.56	0.21	0.25
			0.00			1" Ice	7.54	0.28	0.30
						2" Ice	9.51	0.43	0.44
						4" Ice	13.55	0.85	0.84
Platform Mount [LP 713-1]	C	None		0.0000	126.00	No Ice	31.27	31.27	1.51
						1/2" Ice	39.68	39.68	1.93
						1" Ice	48.09	48.09	2.35
						2" Ice	64.91	64.91	3.19
						4" Ice	98.55	98.55	4.86
6' x 2" Mount Pipe	A	From Face	4.00	0.0000	126.00	No Ice	1.43	1.43	0.02
			6.00			1/2" Ice	1.92	1.92	0.03
			0.00			1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	4.70	4.70	0.23
						4" Ice			
6' x 2" Mount Pipe	B	From Face	4.00 6.00 0.00	0.0000	126.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.02 0.03 0.05 0.09 0.23
6' x 2" Mount Pipe	C	From Face	4.00 6.00 0.00	0.0000	126.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.02 0.03 0.05 0.09 0.23
7770.00 w/ Mount Pipe	A	From Face	4.00 -6.00 2.00	30.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
7770.00 w/ Mount Pipe	B	From Face	4.00 -6.00 2.00	30.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
7770.00 w/ Mount Pipe	C	From Face	4.00 -6.00 2.00	30.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
P65-17-XLH-RR w/ Mount Pipe	A	From Face	4.00 2.00 2.00	30.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.70 12.42 13.15 14.64 17.91	8.94 10.45 11.99 14.31 19.14	0.09 0.18 0.27 0.50 1.13
P65-17-XLH-RR w/ Mount Pipe	C	From Face	4.00 2.00 2.00	30.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.70 12.42 13.15 14.64 17.91	8.94 10.45 11.99 14.31 19.14	0.09 0.18 0.27 0.50 1.13
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Face	4.00 2.00 2.00	30.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.07 0.14 0.21 0.38 0.87
TPA-65R-LCUUUU-H8 w/ Mount Pipe	A	From Face	4.00 6.00 2.00	30.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	13.68 14.50 15.33 16.94 20.27	10.96 12.49 14.04 16.39 21.28	0.11 0.22 0.33 0.59 1.30
QS66512-3 w/ Mount Pipe	B	From Face	4.00 6.00 2.00	30.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.64 9.29 9.91 11.18 13.83	8.46 9.66 10.62 12.61 16.81	0.13 0.21 0.29 0.49 1.02
QS66512-3 w/ Mount Pipe	C	From Face	4.00 6.00	30.0000	115.00	No Ice 1/2"	8.64 9.29	8.46 9.66	0.13 0.21

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			2.00			Ice	9.91	10.62	0.29
						1" Ice	11.18	12.61	0.49
						2" Ice	13.83	16.81	1.02
						4" Ice			
DC6-48-60-18-8F	A	From Face	1.00	0.0000	115.00	No Ice	1.47	1.47	0.02
			0.00			1/2"	1.67	1.67	0.04
			2.00			Ice	1.88	1.88	0.06
						1" Ice	2.33	2.33	0.11
						2" Ice	3.38	3.38	0.24
						4" Ice			
DC6-48-60-18-8F	A	From Face	1.00	0.0000	115.00	No Ice	1.47	1.47	0.02
			0.00			1/2"	1.67	1.67	0.04
			2.00			Ice	1.88	1.88	0.06
						1" Ice	2.33	2.33	0.11
						2" Ice	3.38	3.38	0.24
						4" Ice			
(2) LGP21401	A	From Face	4.00	0.0000	115.00	No Ice	1.29	0.36	0.01
			0.00			1/2"	1.45	0.48	0.02
			2.00			Ice	1.61	0.60	0.03
						1" Ice	1.97	0.87	0.05
						2" Ice	2.79	1.52	0.14
						4" Ice			
(2) LGP21401	B	From Face	4.00	0.0000	115.00	No Ice	1.29	0.36	0.01
			0.00			1/2"	1.45	0.48	0.02
			2.00			Ice	1.61	0.60	0.03
						1" Ice	1.97	0.87	0.05
						2" Ice	2.79	1.52	0.14
						4" Ice			
(2) LGP21401	C	From Face	4.00	0.0000	115.00	No Ice	1.29	0.36	0.01
			0.00			1/2"	1.45	0.48	0.02
			2.00			Ice	1.61	0.60	0.03
						1" Ice	1.97	0.87	0.05
						2" Ice	2.79	1.52	0.14
						4" Ice			
(2) 7020.00	A	From Face	4.00	0.0000	115.00	No Ice	0.12	0.20	0.00
			0.00			1/2"	0.17	0.28	0.01
			2.00			Ice	0.23	0.36	0.01
						1" Ice	0.38	0.56	0.02
						2" Ice	0.78	1.05	0.07
						4" Ice			
(2) 7020.00	B	From Face	4.00	0.0000	115.00	No Ice	0.12	0.20	0.00
			0.00			1/2"	0.17	0.28	0.01
			2.00			Ice	0.23	0.36	0.01
						1" Ice	0.38	0.56	0.02
						2" Ice	0.78	1.05	0.07
						4" Ice			
(2) 7020.00	C	From Face	4.00	0.0000	115.00	No Ice	0.12	0.20	0.00
			0.00			1/2"	0.17	0.28	0.01
			2.00			Ice	0.23	0.36	0.01
						1" Ice	0.38	0.56	0.02
						2" Ice	0.78	1.05	0.07
						4" Ice			
RRUS-11	A	From Face	4.00	0.0000	115.00	No Ice	3.25	1.37	0.05
			0.00			1/2"	3.49	1.55	0.07
			2.00			Ice	3.74	1.74	0.09
						1" Ice	4.27	2.14	0.15
						2" Ice	5.43	3.04	0.31
						4" Ice			
RRUS-11	B	From Face	4.00	0.0000	115.00	No Ice	3.25	1.37	0.05
			0.00			1/2"	3.49	1.55	0.07
			2.00			Ice	3.74	1.74	0.09
						1" Ice	4.27	2.14	0.15
						2" Ice	5.43	3.04	0.31
						4" Ice			
RRUS-11	C	From Face	4.00	0.0000	115.00	No Ice	3.25	1.37	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2"	3.49	1.55	0.07
			2.00			Ice	3.74	1.74	0.09
						1" Ice	4.27	2.14	0.15
						2" Ice	5.43	3.04	0.31
						4" Ice			
RRUS 12	A	From Face	4.00	0.0000	115.00	No Ice	3.67	1.49	0.06
			0.00			1/2"	3.93	1.67	0.08
			2.00			Ice	4.19	1.87	0.11
						1" Ice	4.75	2.28	0.17
						2" Ice	5.96	3.21	0.34
						4" Ice			
RRUS 12	B	From Face	4.00	0.0000	115.00	No Ice	3.67	1.49	0.06
			0.00			1/2"	3.93	1.67	0.08
			2.00			Ice	4.19	1.87	0.11
						1" Ice	4.75	2.28	0.17
						2" Ice	5.96	3.21	0.34
						4" Ice			
RRUS 12	C	From Face	4.00	0.0000	115.00	No Ice	3.67	1.49	0.06
			0.00			1/2"	3.93	1.67	0.08
			2.00			Ice	4.19	1.87	0.11
						1" Ice	4.75	2.28	0.17
						2" Ice	5.96	3.21	0.34
						4" Ice			
RRUS 32	A	From Face	4.00	0.0000	115.00	No Ice	3.33	1.98	0.06
			0.00			1/2"	3.60	2.21	0.08
			2.00			Ice	3.87	2.45	0.10
						1" Ice	4.44	2.96	0.16
						2" Ice	5.68	4.07	0.34
						4" Ice			
RRUS 32	B	From Face	4.00	0.0000	115.00	No Ice	3.33	1.98	0.06
			0.00			1/2"	3.60	2.21	0.08
			2.00			Ice	3.87	2.45	0.10
						1" Ice	4.44	2.96	0.16
						2" Ice	5.68	4.07	0.34
						4" Ice			
RRUS 32	C	From Face	4.00	0.0000	115.00	No Ice	3.33	1.98	0.06
			0.00			1/2"	3.60	2.21	0.08
			2.00			Ice	3.87	2.45	0.10
						1" Ice	4.44	2.96	0.16
						2" Ice	5.68	4.07	0.34
						4" Ice			
Platform Mount [LP 712-1]	C	None		0.0000	115.00	No Ice	24.53	24.53	1.34
						1/2"	29.94	29.94	1.65
						Ice	35.35	35.35	1.96
						1" Ice	46.17	46.17	2.58
						2" Ice	67.81	67.81	3.82
						4" Ice			
8'x2 1/2" Pipe Mount	A	From Leg	4.00	0.0000	115.00	No Ice	2.30	2.30	0.04
			0.00			1/2"	3.13	3.13	0.06
			2.00			Ice	3.62	3.62	0.08
						1" Ice	4.62	4.62	0.14
						2" Ice	6.73	6.73	0.33
						4" Ice			
8'x2 1/2" Pipe Mount	B	From Leg	4.00	0.0000	115.00	No Ice	2.30	2.30	0.04
			0.00			1/2"	3.13	3.13	0.06
			2.00			Ice	3.62	3.62	0.08
						1" Ice	4.62	4.62	0.14
						2" Ice	6.73	6.73	0.33
						4" Ice			
8'x2 1/2" Pipe Mount	C	From Leg	4.00	0.0000	115.00	No Ice	2.30	2.30	0.04
			0.00			1/2"	3.13	3.13	0.06
			2.00			Ice	3.62	3.62	0.08
						1" Ice	4.62	4.62	0.14
						2" Ice	6.73	6.73	0.33
						4" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
800MHz 2X50W RRH W/FILTER	A	From Face	0.50 0.00 -1.00	30.0000	103.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	B	From Face	0.50 0.00 -1.00	-10.0000	103.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	C	From Face	0.50 0.00 -1.00	-10.0000	103.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
PCS 1900MHz 4x45W-65MHz	A	From Face	0.50 0.00 0.00	30.0000	103.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.85 3.09 3.61 4.74	0.06 0.08 0.11 0.17 0.35
PCS 1900MHz 4x45W-65MHz	B	From Face	0.50 0.00 0.00	-10.0000	103.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.85 3.09 3.61 4.74	0.06 0.08 0.11 0.17 0.35
PCS 1900MHz 4x45W-65MHz	C	From Face	0.50 0.00 0.00	-10.0000	103.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.85 3.09 3.61 4.74	0.06 0.08 0.11 0.17 0.35
PCS 1900MHz 4x45W-65MHz	A	From Face	0.50 0.00 1.00	30.0000	103.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.85 3.09 3.61 4.74	0.06 0.08 0.11 0.17 0.35
PCS 1900MHz 4x45W-65MHz	B	From Face	0.50 0.00 1.00	-10.0000	103.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.85 3.09 3.61 4.74	0.06 0.08 0.11 0.17 0.35
PCS 1900MHz 4x45W-65MHz	C	From Face	0.50 0.00 1.00	-10.0000	103.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.85 3.09 3.61 4.74	0.06 0.08 0.11 0.17 0.35
Pipe Mount [PM 601-3]	C	None		0.0000	103.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.39 5.48 6.57 8.75 13.11	4.39 5.48 6.57 8.75 13.11	0.20 0.24 0.28 0.36 0.53
APXVTM14-C-120 w/ Mount Pipe	A	From Face	4.00 -6.00 2.00	10.0000	102.00	No Ice 1/2" Ice Ice	7.13 7.66 8.18	4.96 5.75 6.47	0.08 0.13 0.19

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	9.26	8.01	0.34
						2" Ice	11.53	11.41	0.75
						4" Ice			
APXVTM14-C-120 w/ Mount Pipe	B	From Face	4.00 -6.00 2.00	-10.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.08 0.13 0.19 0.34 0.75
APXVTM14-C-120 w/ Mount Pipe	C	From Face	4.00 -6.00 2.00	-10.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.08 0.13 0.19 0.34 0.75
LLPX310R-V1 w/ Mount Pipe	A	From Face	4.00 2.00 2.00	30.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.09 5.50 5.93 6.81 8.72	3.00 3.54 4.10 5.33 8.15	0.04 0.08 0.13 0.23 0.54
LLPX310R-V1 w/ Mount Pipe	B	From Face	4.00 2.00 2.00	30.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.09 5.50 5.93 6.81 8.72	3.00 3.54 4.10 5.33 8.15	0.04 0.08 0.13 0.23 0.54
LLPX310R-V1 w/ Mount Pipe	C	From Face	4.00 2.00 2.00	30.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.09 5.50 5.93 6.81 8.72	3.00 3.54 4.10 5.33 8.15	0.04 0.08 0.13 0.23 0.54
APXVSPP18-C-A20 w/ Mount Pipe	A	From Face	4.00 6.00 2.00	10.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.23 0.41 0.91
APXVSPP18-C-A20 w/ Mount Pipe	C	From Face	4.00 6.00 2.00	-10.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.23 0.41 0.91
P40-16-XLPP-RR-A w/ Mount Pipe	B	From Face	4.00 6.00 2.00	-10.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	9.37 9.91 10.45 11.56 13.89	4.83 5.57 6.27 7.80 11.11	0.07 0.14 0.21 0.37 0.82
TD-RRH8x20-25	A	From Face	4.00 0.00 2.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40
TD-RRH8x20-25	B	From Face	4.00 0.00 2.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40
TD-RRH8x20-25	C	From Face	4.00 0.00	0.0000	102.00	No Ice 1/2"	4.72 5.01	1.70 1.92	0.07 0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			2.00			Ice	5.32	2.15	0.13
						1" Ice	5.95	2.62	0.20
						2" Ice	7.31	3.68	0.40
						4" Ice			
WIMAX DAP HEAD	A	From Face	4.00 0.00 2.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.80 1.99 2.18 2.59 3.51	0.78 0.92 1.07 1.39 2.14	0.03 0.04 0.06 0.09 0.20
WIMAX DAP HEAD	B	From Face	4.00 0.00 2.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.80 1.99 2.18 2.59 3.51	0.78 0.92 1.07 1.39 2.14	0.03 0.04 0.06 0.09 0.20
WIMAX DAP HEAD	C	From Face	4.00 0.00 2.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.80 1.99 2.18 2.59 3.51	0.78 0.92 1.07 1.39 2.14	0.03 0.04 0.06 0.09 0.20
IBC1900BB-1	A	From Face	4.00 0.00 2.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.13 1.27 1.43 1.76 2.53	0.53 0.65 0.77 1.04 1.69	0.02 0.03 0.04 0.06 0.15
IBC1900BB-1	B	From Face	4.00 0.00 2.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.13 1.27 1.43 1.76 2.53	0.53 0.65 0.77 1.04 1.69	0.02 0.03 0.04 0.06 0.15
IBC1900BB-1	C	From Face	4.00 0.00 2.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.13 1.27 1.43 1.76 2.53	0.53 0.65 0.77 1.04 1.69	0.02 0.03 0.04 0.06 0.15
IBC1900HG-2A	A	From Face	4.00 0.00 2.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.13 1.27 1.43 1.76 2.53	0.53 0.65 0.77 1.04 1.69	0.02 0.03 0.04 0.06 0.15
IBC1900HG-2A	B	From Face	4.00 0.00 2.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.13 1.27 1.43 1.76 2.53	0.53 0.65 0.77 1.04 1.69	0.02 0.03 0.04 0.06 0.15
IBC1900HG-2A	C	From Face	4.00 0.00 2.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.13 1.27 1.43 1.76 2.53	0.53 0.65 0.77 1.04 1.69	0.02 0.03 0.04 0.06 0.15
HORIZON COMPACT	B	From Face	4.00 0.00 6.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.43 0.52 0.63 0.86 1.43	0.01 0.02 0.03 0.05 0.12
HORIZON COMPACT	C	From Face	4.00	0.0000	102.00	No Ice	0.00	0.43	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00 6.00			1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00	0.52 0.63 0.86 1.43	0.02 0.03 0.05 0.12
Platform Mount [LP 713-1]	C	None		0.0000	102.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	31.27 39.68 48.09 64.91 98.55	31.27 39.68 48.09 64.91 98.55	1.51 1.93 2.35 3.19 4.86
742 213 w/ Mount Pipe	A	From Leg	0.50 0.00 0.00	-30.0000	94.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.37 5.95 6.50 7.61 9.93	4.62 6.00 6.98 8.85 12.79	0.05 0.09 0.15 0.28 0.68
742 213 w/ Mount Pipe	B	From Leg	0.50 0.00 0.00	-30.0000	94.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.37 5.95 6.50 7.61 9.93	4.62 6.00 6.98 8.85 12.79	0.05 0.09 0.15 0.28 0.68
742 213 w/ Mount Pipe	C	From Leg	0.50 0.00 0.00	-30.0000	94.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.37 5.95 6.50 7.61 9.93	4.62 6.00 6.98 8.85 12.79	0.05 0.09 0.15 0.28 0.68
Pipe Mount [PM 602-3]	C	None		0.0000	94.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.68 9.50 11.32 14.96 22.24	7.68 9.50 11.32 14.96 22.24	0.28 0.35 0.43 0.58 0.87
BCD-87010	B	From Leg	3.00 0.00 6.00	0.0000	74.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.90 4.05 5.21 7.01 9.85	2.90 4.05 5.21 7.01 9.85	0.03 0.05 0.08 0.16 0.41
Side Arm Mount [SO 701-1]	B	From Leg	1.50 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.85 1.14 1.43 2.01 3.17	1.67 2.34 3.01 4.35 7.03	0.07 0.08 0.09 0.12 0.18

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 K
VHLP2-180	C	Paraboloid w/Shroud (HP)	From Face	4.00 -2.00 6.00	86.0000		102.00	2.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.14 3.41 3.68 4.21 5.28	0.03 0.04 0.06 0.09 0.16
VHLP2.5-11	B	Paraboloid	From	4.00	3.0000		102.00	2.92	No Ice	6.68	0.05

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
		w/Shroud (HP)	Face	-2.00 6.00					1/2" Ice 1" Ice 2" Ice 4" Ice	7.07 7.46 8.23 9.78	0.08 0.12 0.19 0.34

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	140 - 86.8333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-38.23	3.12	0.83
			Max. Mx	11	-18.70	773.15	0.35
			Max. My	8	-18.71	1.27	-771.19
			Max. Vy	11	-28.58	773.15	0.35
			Max. Vx	8	28.55	1.27	-771.19
			Max. Torque	3			1.75
L2	86.8333 - 38	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-58.31	8.34	1.07
			Max. Mx	11	-31.39	2303.79	-3.65
			Max. My	8	-31.39	9.43	-2300.10

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	11	-35.78	2303.79	-3.65
			Max. Vx	8	35.76	9.43	-2300.10
			Max. Torque	9			-1.60
L3	38 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-81.93	13.40	1.69
			Max. Mx	11	-48.63	4054.45	-7.46
			Max. My	8	-48.63	17.59	-4048.91
			Max. Vy	11	-41.91	4054.45	-7.46
			Max. Vx	8	41.89	17.59	-4048.91
			Max. Torque	8			-1.62

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	24	81.93	12.30	-0.02
	Max. H_x	11	48.65	41.88	-0.08
	Max. H_z	2	48.65	-0.08	41.85
	Max. M_x	2	4046.93	-0.08	41.85
	Max. M_z	5	4045.93	-41.85	0.07
	Max. Torsion	2	1.46	-0.08	41.85
	Min. Vert	1	48.65	0.00	0.00
	Min. H_x	5	48.65	-41.85	0.07
	Min. H_z	8	48.65	0.16	-41.86
	Min. M_x	8	-4048.91	0.16	-41.86
	Min. M_z	11	-4054.45	41.88	-0.08
	Min. Torsion	8	-1.62	0.16	-41.86

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	48.65	0.00	0.00	0.37	2.27	0.00
Dead+Wind 0 deg - No Ice	48.65	0.08	-41.85	-4046.93	-4.77	-1.46
Dead+Wind 30 deg - No Ice	48.65	21.03	-36.22	-3500.82	-2031.62	-1.08
Dead+Wind 60 deg - No Ice	48.65	36.27	-20.94	-2023.60	-3505.53	-0.49
Dead+Wind 90 deg - No Ice	48.65	41.85	-0.07	-4.81	-4045.93	0.16
Dead+Wind 120 deg - No Ice	48.65	36.27	20.83	2015.57	-3508.25	0.76
Dead+Wind 150 deg - No Ice	48.65	20.96	36.19	3500.64	-2027.39	1.17
Dead+Wind 180 deg - No Ice	48.65	-0.16	41.86	4048.91	17.59	1.62
Dead+Wind 210 deg - No Ice	48.65	-21.05	36.26	3506.57	2038.61	1.40
Dead+Wind 240 deg - No Ice	48.65	-36.29	20.97	2026.76	3513.10	0.87
Dead+Wind 270 deg - No Ice	48.65	-41.88	0.08	7.46	4054.45	0.17
Dead+Wind 300 deg - No Ice	48.65	-36.29	-20.79	-2009.97	3514.85	-0.64
Dead+Wind 330 deg - No Ice	48.65	-20.89	-36.22	-3503.05	2024.97	-1.19
Dead+Ice+Temp	81.93	-0.00	-0.00	-1.69	13.40	0.00
Dead+Wind 0 deg+Ice+Temp	81.93	0.02	-12.26	-1224.80	12.15	-0.58
Dead+Wind 30 deg+Ice+Temp	81.93	6.17	-10.61	-1059.73	-602.16	-0.51
Dead+Wind 60 deg+Ice+Temp	81.93	10.65	-6.13	-613.00	-1049.36	-0.33
Dead+Wind 90 deg+Ice+Temp	81.93	12.29	-0.02	-2.66	-1213.42	-0.07
Dead+Wind 120 deg+Ice+Temp	81.93	10.65	6.11	607.98	-1050.45	0.20
Dead+Wind 150 deg+Ice+Temp	81.93	6.15	10.60	1056.44	-601.73	0.43
Dead+Wind 180 deg+Ice+Temp	81.93	-0.04	12.26	1221.69	17.12	0.62
Dead+Wind 210 deg+Ice+Temp	81.93	-6.17	10.62	1057.59	629.87	0.60
Dead+Wind 240 deg+Ice+Temp	81.93	-10.65	6.14	610.18	1077.22	0.43
Dead+Wind 270 deg+Ice+Temp	81.93	-12.30	0.02	-0.29	1241.52	0.16
Dead+Wind 300 deg+Ice+Temp	81.93	-10.65	-6.10	-610.16	1078.05	-0.17
Dead+Wind 330 deg+Ice+Temp	81.93	-6.14	-10.61	-1060.69	627.04	-0.43
Dead+Wind 0 deg - Service	48.65	0.03	-16.35	-1581.33	-0.45	-0.57
Dead+Wind 30 deg - Service	48.65	8.21	-14.15	-1367.91	-792.55	-0.42
Dead+Wind 60 deg - Service	48.65	14.17	-8.18	-790.61	-1368.56	-0.19
Dead+Wind 90 deg - Service	48.65	16.35	-0.03	-1.65	-1579.75	0.06

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 120 deg - Service	48.65	14.17	8.14	787.92	-1369.63	0.30
Dead+Wind 150 deg - Service	48.65	8.19	14.14	1368.30	-790.90	0.46
Dead+Wind 180 deg - Service	48.65	-0.06	16.35	1582.56	8.29	0.64
Dead+Wind 210 deg - Service	48.65	-8.22	14.17	1370.62	798.12	0.55
Dead+Wind 240 deg - Service	48.65	-14.18	8.19	792.30	1374.35	0.34
Dead+Wind 270 deg - Service	48.65	-16.36	0.03	3.14	1585.92	0.06
Dead+Wind 300 deg - Service	48.65	-14.18	-8.12	-785.28	1375.04	-0.25
Dead+Wind 330 deg - Service	48.65	-8.16	-14.15	-1368.78	792.78	-0.46

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX	PY	PZ	PX	PY	PZ	
	K	K	K	K	K	K	
1	0.00	-48.65	0.00	0.00	48.65	0.00	0.000%
2	0.08	-48.65	-41.85	-0.08	48.65	41.85	0.000%
3	21.03	-48.65	-36.22	-21.03	48.65	36.22	0.000%
4	36.27	-48.65	-20.94	-36.27	48.65	20.94	0.000%
5	41.85	-48.65	-0.07	-41.85	48.65	0.07	0.000%
6	36.27	-48.65	20.83	-36.27	48.65	-20.83	0.000%
7	20.96	-48.65	36.19	-20.96	48.65	-36.19	0.000%
8	-0.16	-48.65	41.86	0.16	48.65	-41.86	0.000%
9	-21.05	-48.65	36.26	21.05	48.65	-36.26	0.000%
10	-36.29	-48.65	20.97	36.29	48.65	-20.97	0.000%
11	-41.88	-48.65	0.08	41.88	48.65	-0.08	0.000%
12	-36.29	-48.65	-20.79	36.29	48.65	20.79	0.000%
13	-20.89	-48.65	-36.22	20.89	48.65	36.22	0.000%
14	0.00	-81.93	0.00	0.00	81.93	0.00	0.000%
15	0.02	-81.93	-12.26	-0.02	81.93	12.26	0.000%
16	6.17	-81.93	-10.61	-6.17	81.93	10.61	0.000%
17	10.65	-81.93	-6.13	-10.65	81.93	6.13	0.000%
18	12.29	-81.93	-0.02	-12.29	81.93	0.02	0.000%
19	10.65	-81.93	6.11	-10.65	81.93	-6.11	0.000%
20	6.15	-81.93	10.60	-6.15	81.93	-10.60	0.000%
21	-0.04	-81.93	12.26	0.04	81.93	-12.26	0.000%
22	-6.17	-81.93	10.62	6.17	81.93	-10.62	0.000%
23	-10.65	-81.93	6.14	10.65	81.93	-6.14	0.000%
24	-12.30	-81.93	0.02	12.30	81.93	-0.02	0.000%
25	-10.65	-81.93	-6.10	10.65	81.93	6.10	0.000%
26	-6.14	-81.93	-10.61	6.14	81.93	10.61	0.000%
27	0.03	-48.65	-16.35	-0.03	48.65	16.35	0.000%
28	8.21	-48.65	-14.15	-8.21	48.65	14.15	0.000%
29	14.17	-48.65	-8.18	-14.17	48.65	8.18	0.000%
30	16.35	-48.65	-0.03	-16.35	48.65	0.03	0.000%
31	14.17	-48.65	8.14	-14.17	48.65	-8.14	0.000%
32	8.19	-48.65	14.14	-8.19	48.65	-14.14	0.000%
33	-0.06	-48.65	16.35	0.06	48.65	-16.35	0.000%
34	-8.22	-48.65	14.17	8.22	48.65	-14.17	0.000%
35	-14.18	-48.65	8.19	14.18	48.65	-8.19	0.000%
36	-16.36	-48.65	0.03	16.36	48.65	-0.03	0.000%
37	-14.18	-48.65	-8.12	14.18	48.65	8.12	0.000%
38	-8.16	-48.65	-14.15	8.16	48.65	14.15	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00008049
3	Yes	5	0.00000001	0.00004227
4	Yes	5	0.00000001	0.00004366
5	Yes	4	0.00000001	0.00003585
6	Yes	5	0.00000001	0.00004347
7	Yes	5	0.00000001	0.00004249
8	Yes	4	0.00000001	0.00010577
9	Yes	5	0.00000001	0.00004465

10	Yes	5	0.00000001	0.00004242
11	Yes	4	0.00000001	0.00004042
12	Yes	5	0.00000001	0.00004283
13	Yes	5	0.00000001	0.00004401
14	Yes	4	0.00000001	0.00001092
15	Yes	4	0.00000001	0.00079537
16	Yes	4	0.00000001	0.00087812
17	Yes	4	0.00000001	0.00088021
18	Yes	4	0.00000001	0.00078671
19	Yes	4	0.00000001	0.00087754
20	Yes	4	0.00000001	0.00087680
21	Yes	4	0.00000001	0.00079277
22	Yes	4	0.00000001	0.00089728
23	Yes	4	0.00000001	0.00089558
24	Yes	4	0.00000001	0.00080649
25	Yes	4	0.00000001	0.00089970
26	Yes	4	0.00000001	0.00089878
27	Yes	4	0.00000001	0.00002410
28	Yes	4	0.00000001	0.00014137
29	Yes	4	0.00000001	0.00015112
30	Yes	4	0.00000001	0.00001784
31	Yes	4	0.00000001	0.00014967
32	Yes	4	0.00000001	0.00014262
33	Yes	4	0.00000001	0.00002675
34	Yes	4	0.00000001	0.00015803
35	Yes	4	0.00000001	0.00014273
36	Yes	4	0.00000001	0.00001853
37	Yes	4	0.00000001	0.00014565
38	Yes	4	0.00000001	0.00015364

Maximum Tower Deflections - Service Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	140 - 86.8333	22.526	36	1.3436	0.0025
L2	92.5 - 38	10.147	35	1.0437	0.0010
L3	45 - 0	2.360	35	0.4742	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
142.00	BXA-80063-4BF-EDIN-X w/ Mount Pipe	36	22.526	1.3436	0.0025	49662
126.00	LNX-6515DS-VTM w/ Mount Pipe	36	18.645	1.2759	0.0020	17736
115.00	7770.00 w/ Mount Pipe	36	15.682	1.2150	0.0016	9932
108.00	VHLP2-180	36	13.869	1.1698	0.0014	7759
103.00	800MHz 2X50W RRH W/FILTER	36	12.619	1.1335	0.0012	6710
102.00	APXVTM14-C-120 w/ Mount Pipe	36	12.374	1.1258	0.0012	6533
94.00	742 213 w/ Mount Pipe	36	10.486	1.0578	0.0010	5420
74.00	BCD-87010	35	6.408	0.8389	0.0006	4652

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	140 - 86.8333	57.547	11	3.4323	0.0064
L2	92.5 - 38	25.931	11	2.6675	0.0024
L3	45 - 0	6.033	9	1.2123	0.0007

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
142.00	BXA-80063-4BF-EDIN-X w/ Mount Pipe	11	57.547	3.4323	0.0064	19573
126.00	LNX-6515DS-VTM w/ Mount Pipe	11	47.636	3.2598	0.0050	6989
115.00	7770.00 w/ Mount Pipe	11	40.069	3.1046	0.0041	3913
108.00	VHLP2-180	11	35.438	2.9894	0.0035	3056
103.00	800MHz 2X50W RRH W/FILTER	11	32.246	2.8968	0.0031	2642
102.00	APXVTM14-C-120 w/ Mount Pipe	11	31.620	2.8771	0.0031	2572
94.00	742 213 w/ Mount Pipe	11	26.797	2.7034	0.0025	2133
74.00	BCD-87010	9	16.379	2.1443	0.0015	1826

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	140 - 86.8333 (1)	TP39.223x26.216x0.3125	53.17	0.00	0.0	39.000	37.7587	-18.71	1472.59	0.013
L2	86.8333 - 38 (2)	TP50.56x37.2117x0.4063	54.50	0.00	0.0	39.000	63.3646	-31.39	2471.22	0.013
L3	38 - 0 (3)	TP59.05x48.033x0.5	45.00	0.00	0.0	39.000	94.2655	-48.63	3676.35	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	140 - 86.8333 (1)	TP39.223x26.216x0.3125	773.34	26.802	39.000	0.687	0.00	0.000	39.000	0.000
L2	86.8333 - 38 (2)	TP50.56x37.2117x0.4063	2303.78	36.859	39.000	0.945	0.00	0.000	39.000	0.000
L3	38 - 0 (3)	TP59.05x48.033x0.5	4056.11	36.095	39.000	0.926	0.00	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	140 - 86.8333 (1)	TP39.223x26.216x0.3125	28.53	0.756	26.000	0.059	0.18	0.003	26.000	0.000
L2	86.8333 - 38 (2)	TP50.56x37.2117x0.4063	35.82	0.565	26.000	0.044	0.75	0.006	26.000	0.000
L3	38 - 0 (3)	TP59.05x48.033x0.5	41.95	0.445	26.000	0.035	1.40	0.006	26.000	0.000

Pole Interaction Design Data

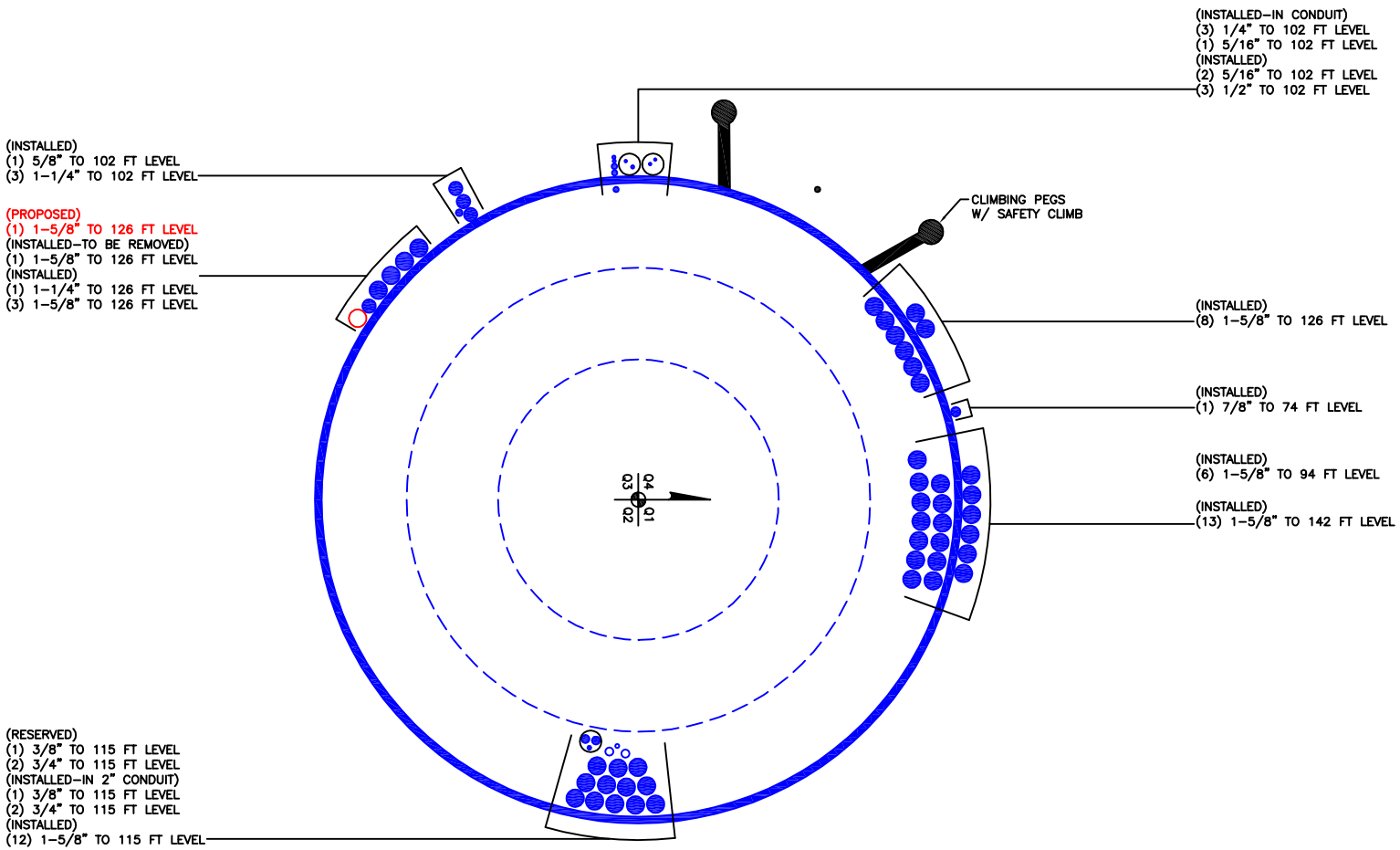
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	140 - 86.8333 (1)	0.013	0.687	0.000	0.059	0.000	0.701 ✔	1.333	H1-3+VT ✔
L2	86.8333 - 38 (2)	0.013	0.945	0.000	0.044	0.000	0.958 ✔	1.333	H1-3+VT ✔
L3	38 - 0 (3)	0.013	0.926	0.000	0.035	0.000	0.939 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	140 - 86.8333	Pole	TP39.223x26.216x0.3125	1	-18.71	1962.96	52.6	Pass
L2	86.8333 - 38	Pole	TP50.56x37.2117x0.4063	2	-31.39	3294.14	71.9	Pass
L3	38 - 0	Pole	TP59.05x48.033x0.5	3	-48.63	4900.57	70.4	Pass
							Summary	
						Pole (L2)	71.9	Pass
						RATING =	**71.9**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806369 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data

BU#: *806369*
Site Name: *HRT 094 943225*
App #: *342353 Rev. 6*

Pole Manufacturer:	*Other*

Reactions		
Moment:	4056	ft-kips
Axial:	49	kips
Shear:	42	kips

Anchor Rod Data		
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	65.05	in

Plate Data		
Diam:	71.05	in
Thick:	3	in
Grade:	60	ksi
Single-Rod B-eff:	9.49	in

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

Pole Data		
Diam:	59.05	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

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

Anchor Rod Results

Maximum Rod Tension:	147.2	Kips
Allowable Tension:	195.0	Kips
Anchor Rod Stress Ratio:	75.5%	**Pass**

Rigid
Service, ASD
Fty*ASIF

Base Plate Results Flexural Check

Base Plate Stress:	21.1	ksi
Allowable Plate Stress:	60.0	ksi
Base Plate Stress Ratio:	35.2%	**Pass**

Rigid
Service ASD
0.75*Fy*ASIF
Y.L. Length: 27.29

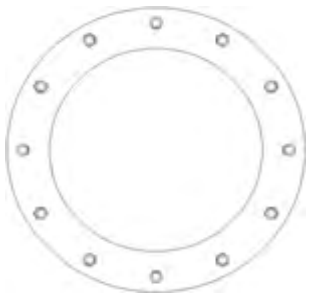
n/a

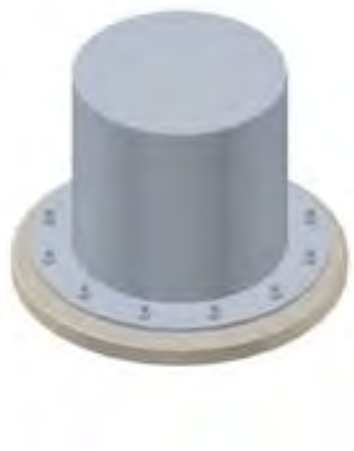
Stiffener Results

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

Pole Results

Pole Punching Shear Check:	n/a





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

LPile for Windows, Version 2016-09.007

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

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Files Used for Analysis

Path to file locations:
\Users\sed77779\Desktop\806369.1225690\Structural\FDN\

Name of input data file:
806369.1225690 Foundation Analysis.lp9d

Name of output report file:
806369.1225690 Foundation Analysis.lp9o

Name of plot output file:
806369.1225690 Foundation Analysis.lp9p

Name of runtime message file:
806369.1225690 Foundation Analysis.lp9r

Date and Time of Analysis

Date: May 31, 2016 Time: 11:01:39

Problem Title

Project Name: 182896

Job Number: 806369.122569 Foundation Analysis

Client: Crown Castle

Engineer: Chariya Wannaklut

Description: 806369.122569 Foundation Analysis

Program Options and Settings

Computational Options:
- Use unfactored loads in computations (conventional analysis)

Engineering Units Used for Data Input and Computations:
- US Customary System Units (pounds, feet, inches)

Analysis Control Options:

- Maximum number of iterations allowed	=	200
- Deflection tolerance for convergence	=	1.0000E-05 in
- Maximum allowable deflection	=	100.0000 in
- Number of pile increments	=	100

Loading Type and Number of Cycles of Loading:
- Static loading specified

- Use of p-y modification factors for p-y curves not selected
- No distributed lateral loads are entered

- Loading by lateral soil movements acting on pile not selected
- Analysis includes tip shear resistance for short pile or shaft
- Computation of pile-head foundation stiffness matrix not selected
- Push-over analysis of pile not selected
- Buckling analysis of pile not selected

Output Options:
- Output files use decimal points to denote decimal symbols.
- Report only summary tables of pile-head deflection, maximum bending moment, and maximum shear force in output report file.
- No p-y curves to be computed and reported for user-specified depths
- Print using wide report formats

Pile Structural Properties and Geometry

Number of pile sections defined = 1
Total length of pile = 47.000 ft
Depth of ground surface below top of pile = 0.0000 ft

Pile diameters used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile. A summary of values of pile diameter vs. depth follows.

Point No.	Depth Below Pile Head feet	Pile Diameter inches
1	0.000	90.0000
2	47.000	90.0000

Input Structural Properties for Pile Sections:

Pile Section No. 1:

Section 1 is a round drilled shaft, bored pile, or CIDH pile
Length of section = 47.000000 ft
Shaft Diameter = 90.000000 in
Shear capacity of section = 0.0000 lbs

Ground Slope and Pile Batter Angles

Ground Slope Angle	=	0.000	degrees
	=	0.000	radians
Pile Batter Angle	=	0.000	degrees
	=	0.000	radians

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	0.0000	ft
Distance from top of pile to bottom of layer	=	2.000000	ft
Effective unit weight at top of layer	=	105.000000	pcf
Effective unit weight at bottom of layer	=	105.000000	pcf
Friction angle at top of layer	=	32.000000	deg.
Friction angle at bottom of layer	=	32.000000	deg.
Subgrade k at top of layer	=	0.0000	pci
Subgrade k at bottom of layer	=	0.0000	pci

NOTE: Default values for subgrade k will be computed for this layer.

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	2.000000	ft
Distance from top of pile to bottom of layer	=	10.000000	ft
Effective unit weight at top of layer	=	100.000000	pcf
Effective unit weight at bottom of layer	=	100.000000	pcf
Undrained cohesion at top of layer	=	500.000000	psf
Undrained cohesion at bottom of layer	=	500.000000	psf
Epsilon-50 at top of layer	=	0.0000	
Epsilon-50 at bottom of layer	=	0.0000	

NOTE: Default values for Epsilon-50 will be computed for this layer.

Layer 3 is soft clay, p-y criteria by Matlock, 1970

Distance from top of pile to top of layer	=	10.000000	ft

Distance from top of pile to bottom of layer	=	35.000000 ft
Effective unit weight at top of layer	=	36.000000 pcf
Effective unit weight at bottom of layer	=	36.000000 pcf
Undrained cohesion at top of layer	=	100.000000 psf
Undrained cohesion at bottom of layer	=	100.000000 psf
Epsilon-50 at top of layer	=	0.0000
Epsilon-50 at bottom of layer	=	0.0000

NOTE: Default values for Epsilon-50 will be computed for this layer.

Layer 4 is soft clay, p-y criteria by Matlock, 1970

Distance from top of pile to top of layer	=	35.000000 ft
Distance from top of pile to bottom of layer	=	45.000000 ft
Effective unit weight at top of layer	=	41.000000 pcf
Effective unit weight at bottom of layer	=	41.000000 pcf
Undrained cohesion at top of layer	=	200.000000 psf
Undrained cohesion at bottom of layer	=	200.000000 psf
Epsilon-50 at top of layer	=	0.0000
Epsilon-50 at bottom of layer	=	0.0000

NOTE: Default values for Epsilon-50 will be computed for this layer.

Layer 5 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	45.000000 ft
Distance from top of pile to bottom of layer	=	47.000000 ft
Effective unit weight at top of layer	=	41.000000 pcf
Effective unit weight at bottom of layer	=	41.000000 pcf
Friction angle at top of layer	=	32.000000 deg.
Friction angle at bottom of layer	=	32.000000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

(Depth of the lowest soil layer extends 0.000 ft below the pile tip)

Summary of Input Soil Properties

Layer	Soil Type	Layer	Effective	Undrained	Angle of	E50	
Layer	Name	Depth	Unit Wt.	Cohesion	Friction	or	kpy

Num.	(p-y Curve Type)	ft	pcf	psf	deg.	krm	pci
1	Sand	0.00	105.0000	--	32.0000	--	default
	(Reese, et al.)	2.0000	105.0000	--	32.0000	--	default
2	Stiff Clay	2.0000	100.0000	500.0000	--	default	--
	w/o Free Water	10.0000	100.0000	500.0000	--	default	--
3	Soft	10.0000	36.0000	100.0000	--	default	--
	Clay	35.0000	36.0000	100.0000	--	default	--
4	Soft	35.0000	41.0000	200.0000	--	default	--
	Clay	45.0000	41.0000	200.0000	--	default	--
5	Sand	45.0000	41.0000	--	32.0000	--	default
	(Reese, et al.)	47.0000	41.0000	--	32.0000	--	default

Static Loading Type

Static loading criteria were used when computing p-y curves for all analyses.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 3

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	1	V = 42000. lbs	M =	48672000. in-lbs	49000.	No
2	1	V = 67200. lbs	M =	77875200. in-lbs	58800.	No
3	1	V = 67200. lbs	M =	77875200. in-lbs	44100.	No

V = shear force applied normal to pile axis
M = bending moment applied to pile head
y = lateral deflection normal to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applied to pile head
Values of top y vs. pile lengths can be computed only for load types with specified shear loading (Load Types 1, 2, and 3).
Thrust force is assumed to be acting axially for all pile batter angles.

Shear Resistance Curve at Pile Tip

Point No.	Displacement in	Tip Shear Force lbs
1	0.000	0.000
2	0.120	60582.200
3	10.000	60582.200

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	47.000000 ft
Shaft Diameter	=	90.000000 in
Concrete Cover Thickness	=	4.000000 in
Number of Reinforcing Bars	=	52 bars
Yield Stress of Reinforcing Bars	=	60000. psi
Modulus of Elasticity of Reinforcing Bars	=	29000000. psi
Gross Area of Shaft	=	6362. sq. in.
Total Area of Reinforcing Steel	=	66.040000 sq. in.
Area Ratio of Steel Reinforcement	=	1.04 percent
Edge-to-Edge Bar Spacing	=	3.604356 in
Maximum Concrete Aggregate Size	=	0.750000 in
Ratio of Bar Spacing to Aggregate Size	=	4.81
Offset of Center of Rebar Cage from Center of Pile	=	0.0000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	20016.397 kips
Tensile Load for Cracking of Concrete	=	-2501.255 kips
Nominal Axial Tensile Capacity	=	-3962.400 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.270000	1.270000	40.365000	0.00000
2	1.270000	1.270000	40.070694	4.865463
3	1.270000	1.270000	39.192066	9.659977
4	1.270000	1.270000	37.741931	14.313626
5	1.270000	1.270000	35.741432	18.758551
6	1.270000	1.270000	33.219744	22.929934
7	1.270000	1.270000	30.213636	26.766946
8	1.270000	1.270000	26.766946	30.213636
9	1.270000	1.270000	22.929934	33.219744
10	1.270000	1.270000	18.758551	35.741432
11	1.270000	1.270000	14.313626	37.741931
12	1.270000	1.270000	9.659977	39.192066
13	1.270000	1.270000	4.865463	40.070694
14	1.270000	1.270000	0.00000	40.365000
15	1.270000	1.270000	-4.865463	40.070694
16	1.270000	1.270000	-9.659977	39.192066
17	1.270000	1.270000	-14.313626	37.741931
18	1.270000	1.270000	-18.758551	35.741432
19	1.270000	1.270000	-22.929934	33.219744
20	1.270000	1.270000	-26.766946	30.213636
21	1.270000	1.270000	-30.213636	26.766946
22	1.270000	1.270000	-33.219744	22.929934
23	1.270000	1.270000	-35.741432	18.758551
24	1.270000	1.270000	-37.741931	14.313626
25	1.270000	1.270000	-39.192066	9.659977
26	1.270000	1.270000	-40.070694	4.865463
27	1.270000	1.270000	-40.365000	0.00000
28	1.270000	1.270000	-40.070694	-4.865463
29	1.270000	1.270000	-39.192066	-9.659977
30	1.270000	1.270000	-37.741931	-14.313626
31	1.270000	1.270000	-35.741432	-18.758551
32	1.270000	1.270000	-33.219744	-22.929934
33	1.270000	1.270000	-30.213636	-26.766946
34	1.270000	1.270000	-26.766946	-30.213636
35	1.270000	1.270000	-22.929934	-33.219744
36	1.270000	1.270000	-18.758551	-35.741432
37	1.270000	1.270000	-14.313626	-37.741931
38	1.270000	1.270000	-9.659977	-39.192066
39	1.270000	1.270000	-4.865463	-40.070694
40	1.270000	1.270000	0.00000	-40.365000
41	1.270000	1.270000	4.865463	-40.070694
42	1.270000	1.270000	9.659977	-39.192066
43	1.270000	1.270000	14.313626	-37.741931

44	1.270000	1.270000	18.758551	-35.741432
45	1.270000	1.270000	22.929934	-33.219744
46	1.270000	1.270000	26.766946	-30.213636
47	1.270000	1.270000	30.213636	-26.766946
48	1.270000	1.270000	33.219744	-22.929934
49	1.270000	1.270000	35.741432	-18.758551
50	1.270000	1.270000	37.741931	-14.313626
51	1.270000	1.270000	39.192066	-9.659977
52	1.270000	1.270000	40.070694	-4.865463

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 3.604 inches
between bars 44 and 45.

Ratio of bar spacing to maximum aggregate size = 4.81

Concrete Properties:

Compressive Strength of Concrete	=	3000. psi
Modulus of Elasticity of Concrete	=	3122019. psi
Modulus of Rupture of Concrete	=	-410.791918 psi
Compression Strain at Peak Stress	=	0.001634
Tensile Strain at Fracture of Concrete	=	-0.0001160
Maximum Coarse Aggregate Size	=	0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 3

Number	Axial Thrust Force kips
1	44.100
2	49.000
3	58.800

Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

Load	Axial Thrust	Nominal Mom. Cap.	Max. Comp.

No.	kips	in-kip	Strain
1	44.100	141852.559	0.00300000
2	49.000	141990.062	0.00300000
3	58.800	142265.120	0.00300000

Note that the values of moment capacity in the table above are not factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.70).

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318, Section 9.3.2.2 or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding bending stiffnesses computed for common resistance factor values used for reinforced concrete sections.

Axial Load No.	Resist. Factor for Moment	Nominal Moment Cap in-kips	Ult. (Fac) Ax. Thrust kips	Ult. (Fac) Moment Cap in-kips	Bend. Stiff. at Ult Mom kip-in^2
1	0.65	141853.	28.665000	92204.	3.0063E+09
2	0.65	141990.	31.850000	92294.	3.0095E+09
3	0.65	142265.	38.220000	92472.	3.0160E+09
1	0.70	141853.	30.870000	99297.	2.9955E+09
2	0.70	141990.	34.300000	99393.	2.9984E+09
3	0.70	142265.	41.160000	99586.	3.0044E+09
1	0.75	141853.	33.075000	106389.	2.9320E+09
2	0.75	141990.	36.750000	106493.	2.9352E+09
3	0.75	142265.	44.100000	106699.	2.9416E+09

Layering Correction Equivalent Depths of Soil & Rock Layers

Layer No.	Top of Layer Below Pile Head ft	Equivalent Top Depth Below Grnd Surf ft	Same Layer Type As Layer Above	Layer is Rock or is Below Rock Layer	F0 Integral for Layer lbs	F1 Integral for Layer lbs

1	0.00	0.00	N.A.	No	0.00	14310.
2	2.0000	1.2050	No	No	14310.	136866.
3	10.0000	10.0000	No	No	151176.	169788.
4	35.0000	35.0000	Yes	No	320963.	134888.
5	45.0000	14.7437	No	No	455851.	N.A.

Notes: The F0 integral of Layer n+1 equals the sum of the F0 and F1 integrals
for Layer n. Layering correction equivalent depths are computed only
for soil types with both shallow-depth and deep-depth expressions for
peak lateral load transfer. These soil types are soft and stiff clays,
non-liquefied sands, and cemented c-phi soil.

Summary of Pile-head Responses for Conventional Analyses

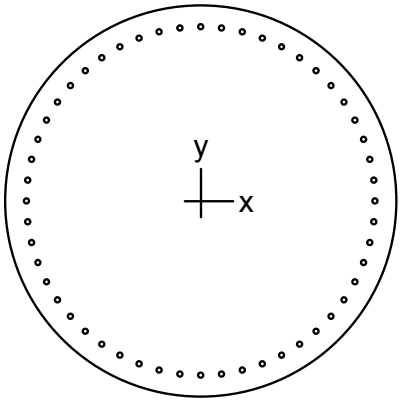
Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, V, lbs, and Load 2 = Moment, M, in-lbs
Load Type 2: Load 1 = Shear, V, lbs, and Load 2 = Slope, S, radians
Load Type 3: Load 1 = Shear, V, lbs, and Load 2 = Rot. Stiffness, R, in-lbs/rad.
Load Type 4: Load 1 = Top Deflection, y, inches, and Load 2 = Moment, M, in-lbs
Load Type 5: Load 1 = Top Deflection, y, inches, and Load 2 = Slope, S, radians

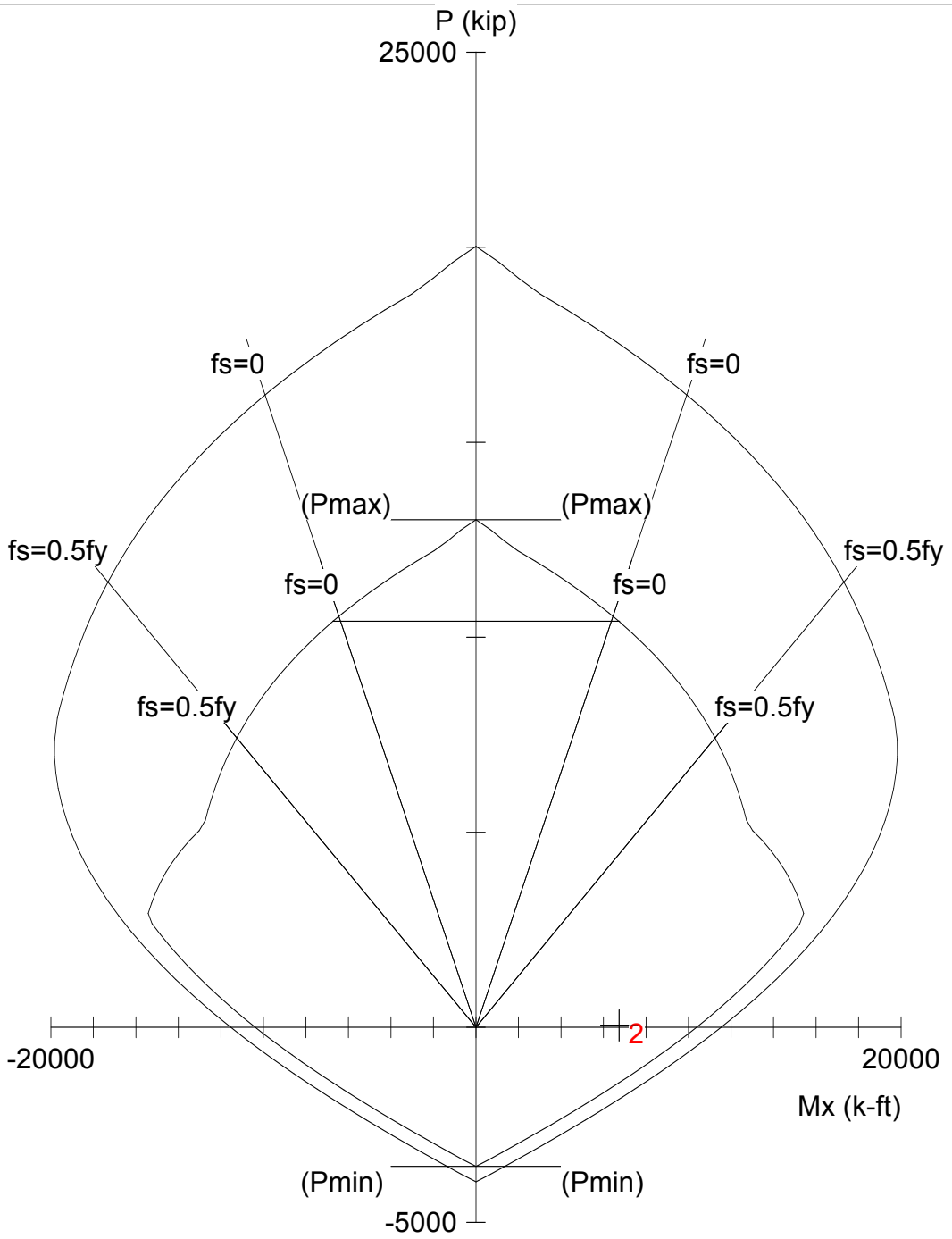
Load Case No.	Load Type	Pile-head Load 1	Load Type	Pile-head Load 2	Axial Loading lbs	Pile-head Deflection inches	Pile-head Rotation radians	Max Shear in Pile lbs	Max Moment in Pile in-lbs
1	V, lb	42000.	M, in-lb	4.87E+07	49000.	6.2915	-0.01508	-159416.	5.01E+07
2	V, lb	67200.	M, in-lb	7.79E+07	58800.	40.7568	-0.08150	-279480.	8.09E+07
3	V, lb	67200.	M, in-lb	7.79E+07	44100.	39.8985	-0.07993	-277316.	8.08E+07

Maximum pile-head deflection = 40.7567536408 inches
Maximum pile-head rotation = -0.0814997981 radians = -4.669594 deg.

The analysis ended normally.



90 in diam.



Code: ACI 318-11

Units: English

Run axis: About X-axis

Run option: Investigation

Slenderness: Not considered

Column type: Structural

Bars: ASTM A615

Date: 05/31/16

Time: 11:06:11

spColumn v5.00. Licensed to: Black & Veatch - USA. License ID: 64995-1050925-4-29254-XXXXX

File: c:\users\sed77779\desktop\806369.1225690\structural\fdn\806369.1225690 spcolumn.col

Project: 806369.1225690

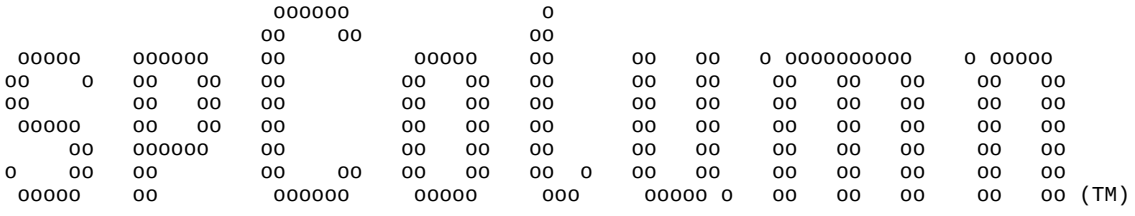
Column: 182896

Engineer: CWT

f'c = 3 ksi	fy = 60 ksi	Ag = 6361.73 in^2	52 #10 bars
Ec = 3122 ksi	Es = 29000 ksi	As = 66.04 in^2	rho = 1.04%
fc = 2.55 ksi	e_yt = 0.00206897 in/in	Xo = 0.00 in	Ix = 3.22062e+006 in^4
e_u = 0.003 in/in		Yo = 0.00 in	Iy = 3.22062e+006 in^4
Beta1 = 0.85		Min clear spacing = 3.56 in	Clear cover = 4.38 in

Confinement: Tied

phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65



General Information:
==========
File Name: c:\users\sed77779\desktop\806369.1225690\structural\fdn\806369.1225690 spcolumn.col
Project: 806369.1225690
Column: 182896 Engineer: CWT
Code: ACI 318-11 Units: English

Run Option: Investigation Slenderness: Not considered
Run Axis: X-axis Column Type: Structural

Material Properties:
==========
Concrete: Standard Steel: Standard
f'c = 3 ksi fy = 60 ksi
Ec = 3122.02 ksi Es = 29000 ksi
fc = 2.55 ksi Eps_yt = 0.00206897 in/in
Eps_u = 0.003 in/in
Beta1 = 0.85

Section:
========
Circular: Diameter = 90 in

Gross section area, Ag = 6361.73 in^2
Ix = 3.22062e+006 in^4 Iy = 3.22062e+006 in^4
rx = 22.5 in ry = 22.5 in
Xo = 0 in Yo = 0 in

Reinforcement:
==========
Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Confinement: Tied; #3 ties with #10 bars, #4 with larger bars.
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Layout: Circular
Pattern: All Sides Equal (Cover to transverse reinforcement)
Total steel area: As = 66.04 in^2 at rho = 1.04%
Minimum clear spacing = 3.56 in

52 #10 Cover = 4 in

Factored Loads and Moments with Corresponding Capacities:
==========

No.	Pu kip	Mux k-ft	PhiMnx k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi
1	58.80	6741.67	10517.96	1.560	19.01	84.99	0.01041	0.900
2	44.10	6733.33	10484.72	1.557	18.94	84.99	0.01046	0.900

*** End of output ***

Base Foundation SR = 1 / 1.557 = 64.2%

APPENDIX D

WINDSPEED REQUIREMENTS

(Add) **APPENDIX K**

Municipality	Ground Snow Load, P_g (psf)	Basic Wind Speed (3 sec. gust)	MCE Spectral Accelerations	
			S_s	S_1
Andover	30	100	0.234	0.063
Ansonia	30	105	0.255	0.063
Ashford	35	100	0.230	0.063
Avon	35	95	0.241	0.064
Barkhamsted	40	90	0.236	0.065
Beacon Falls	30	100	0.253	0.064
Berlin	30	100	0.242	0.063
Bethany	30	105	0.249	0.063
Bethel	30	95	0.283	0.066
Bethlehem	35	95	0.253	0.065
Bloomfield	35	95	0.239	0.064
Bolton	30	100	0.235	0.063
Bozrah	30	110	0.225	0.060
Branford	30	110	0.233	0.061
Bridgeport	30	110	0.270	0.064
Bridgewater	35	95	0.267	0.066
Bristol	35	95	0.245	0.064
Brookfield	35	95	0.275	0.066
Brooklyn	35	105	0.229	0.062
Burlington	35	95	0.243	0.064
Canaan	40	90	0.230	0.065
Canterbury	35	105	0.227	0.061
Canton	35	95	0.240	0.065
Chaplin	35	105	0.231	0.062
Cheshire	30	100	0.244	0.063
Chester	30	110	0.225	0.060
Clinton	30	115	0.219	0.059
Colchester	30	105	0.230	0.061
Colebrook	40	90	0.231	0.065
Columbia	30	105	0.232	0.062
Cornwall	40	90	0.242	0.065
Coventry	30	100	0.233	0.063
Cromwell	30	100	0.239	0.063
Danbury	30	95	0.286	0.066
Darien	30	105	0.313	0.067

Deep River	30	115	0.222	0.060
Derby	30	105	0.255	0.063
Durham	30	105	0.235	0.062
Eastford	40	100	0.229	0.063
East Granby	35	90	0.235	0.065
East Haddam	30	110	0.226	0.060
East Hampton	30	105	0.234	0.062
East Hartford	30	95	0.238	0.064
East Haven	30	110	0.238	0.061
East Lyme	30	115/120[2]	0.215	0.058
Easton	30	105	0.280	0.065
East Windsor	35	95	0.235	0.064
Ellington	35	95	0.233	0.064
Enfield	35	95	0.233	0.065
Essex	30	115	0.219	0.059
Fairfield	30	105/110[3]	0.279	0.064
Farmington	35	95	0.242	0.064
Franklin	30	105	0.228	0.061
Glastonbury	30	100	0.238	0.063
Goshen	40	90	0.242	0.065
Granby	35	90	0.234	0.065
Greenwich	30	100	0.336	0.069
Griswold	30	110	0.225	0.060
Groton	30	120	0.209	0.057
Guilford	30	110	0.229	0.060
Haddam	30	110	0.229	0.061
Hamden	30	105/110[3]	0.243	0.062
Hampton	35	105	0.229	0.062
Hartford	30	95	0.239	0.064
Hartland	40	90	0.232	0.065
Harwinton	35	95	0.244	0.065
Hebron	30	105	0.234	0.062
Kent	40	90/swr[1]	0.252	0.066
Killingly	40	105	0.229	0.062
Killingworth	30	110	0.226	0.060
Lebanon	30	105	0.230	0.061
Ledyard	30	115	0.215	0.058
Lisbon	30	110	0.225	0.060
Litchfield	40	95	0.246	0.065
Lyme	30	115	0.214	0.058
Madison	30	110/115[6]	0.224	0.060
Manchester	30	100	0.237	0.063

speeds determined by the local jurisdiction shall be in accordance with Section 6.5.4 of ASCE 7.

In nonhurricane-prone regions, when the basic wind speed is estimated from regional climatic data, the basic wind speed shall be not less than the wind speed associated with an annual probability of 0.02 (50-year mean recurrence interval), and the estimate shall be adjusted for equivalence to a 3-second gust wind speed at 33 feet (10 m) above ground in exposure Category C. The data analysis shall be performed in accordance with Section 6.5.4 of ASCE 7.

1609.3.1 Wind speed conversion. When required, the 3-second gust wind velocities of Figure 1609 shall be converted to fastest-mile wind velocities using Table 1609.3.1.

1609.4 Exposure category. For each wind direction considered, an exposure category that adequately reflects the characteristics of ground surface irregularities shall be determined for the site at which the building or structure is to be constructed. For a site located in the transition zone between categories, the category resulting in the largest wind forces shall apply. Account shall be taken of variations in ground surface roughness that arise from natural topography and vegetation as well as from constructed features. For any given wind direction, the exposure in which a specific building or other structure is sited shall be assessed as being one of the following categories. When applying the simplified wind load method of Section 1609.6, a single exposure category shall be used based upon the most restrictive for any given wind direction.

1. **Exposure A.** This exposure category is no longer used in ASCE 7.
2. **Exposure B.** Urban and suburban areas, wooded areas or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger. Exposure B shall be assumed unless the site meets the definition of another type of exposure.
3. **Exposure C.** Open terrain with scattered obstructions, including surface undulations or other irregularities, having heights generally less than 30 feet (9144 mm) extending more than 1,500 feet (457.2 m) from the building site in any quadrant. This exposure shall also apply to any building located within Exposure B-type terrain where the building is directly adjacent to open areas of Exposure C-type terrain in any quadrant for a distance of more than 600 feet (182.9 m). This category includes flat open country, grasslands and shorelines in hurricane-prone regions.
4. **Exposure D.** Flat, unobstructed areas exposed to wind flowing over open water (excluding shorelines in hurricane-prone regions) for a distance of at least 1 mile (1.61 km). Shorelines in Exposure D include inland waterways, the Great Lakes and coastal areas of California, Oregon, Washington and Alaska. This exposure shall apply only to those buildings and other structures exposed to the wind coming from over the water. Exposure D extends inland from the shoreline a distance of 1,500 feet (460 m) or 10 times the height of the building or structure, whichever is greater.

1609.5 Importance factor. Buildings and other structures shall be assigned a wind load importance factor, I_w, in accordance with Table 1604.5.

1609.6 Simplified wind load method.

1609.6.1 Scope. The procedures in Section 1609.6 shall be permitted to be used for determining and applying wind pressures in the design of enclosed buildings with flat, gabled and hipped roofs and having a mean roof height not exceeding the least horizontal dimension or 60 feet (18 288 mm), whichever is less, subject to the limitations of Sections 1609.6.1.1 and 1609.6.1.2. If a building qualifies only under Section 1609.6.1.2 for design of its components and cladding, then its main windforce-resisting system shall be designed in accordance with Section 1609.1.1.

Exception: The provisions of Section 1609.6 shall not apply to buildings sited on the upper half of an isolated hill or escarpment meeting all of the following conditions:

1. The hill or escarpment is 60 feet (18 288 mm) or higher if located in Exposure B or 30 feet (9144 mm) or higher if located in Exposure C.
2. The maximum average slope of the hill exceeds 10 percent.
3. The hill or escarpment is unobstructed upwind by other such topographic features for a distance from the high point of 50 times the height of the hill or 1 mile (1.61 km), whichever is less.

TABLE 1609.3.1
EQUIVALENT BASIC WIND SPEEDS[a,b,c]

V_{3S}	85	90	100	105	110	120	125	130	140	145	150	160	170
V_{fm}	70	75	80	85	90	100	105	110	120	125	130	140	150

For SI: 1 mile per hour = 0.44 m/s.

a. Linear interpolation is permitted.

b. V_{3S} is the 3-second gust wind speed (mph).

c. V_{fm} is the fastest mile wind speed (mph).

Exhibit E

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11161D

CT161/Jn of Albany_1
439 Homestead Avenue
Hartford, CT 06112

June 14, 2016

EBI Project Number: 6216002809

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	15.68 %

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

EBI Consulting
environmental | engineering | due diligence

June 14, 2016

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

Emissions Analysis for Site: **CT11161D – CT161/Jn of Albany_1**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **439 Homestead Avenue, Hartford, 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 approximately 467 $\mu W/cm^2$, and the general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (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 **439 Homestead Avenue, Hartford, 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 (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 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.

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

5) 2 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

6) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

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

8) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antennas used in this modeling are the **Ericsson AIR32 B2A/B66AA** & **Ericsson AIR21 B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR32 B2A/B66AA** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Ericsson AIR21 B2A/B4P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

10) The antenna mounting height centerline of the proposed antennas is **128 feet** above ground level (AGL).

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

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

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T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson AIR32 B2A/B66AA	Make / Model:	Ericsson AIR32 B2A/B66AA	Make / Model:	Ericsson AIR32 B2A/B66AA
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	128	Height (AGL):	128	Height (AGL):	128
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	2.26	Antenna B1 MPE%	2.26	Antenna C1 MPE%	2.26
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	128	Height (AGL):	128	Height (AGL):	128
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	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	7,002.81	ERP (W):	7,002.81	ERP (W):	7,002.81
Antenna A2 MPE%	1.69	Antenna B2 MPE%	1.69	Antenna C2 MPE%	1.69
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	128	Height (AGL):	128	Height (AGL):	128
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.45	Antenna B3 MPE%	0.45	Antenna C3 MPE%	0.45

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**4.39 %**
Sprint	1.06 %
Clearwire	0.19 %
Sensus (CL&P)	0.25 %
MetroPCS	1.57 %
Verizon Wireless	2.87 %
AT&T	5.35 %
Site Total MPE %:	**15.68 %**

T-Mobile Sector A Total:	4.39 %
T-Mobile Sector B Total:	4.39 %
T-Mobile Sector C Total:	4.39 %
Site Total:	15.68 %

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 1900 MHz (PCS) LTE	**2**	**2334.27**	**128**	**11.28**	**1900**	**1000**	**1.13 %**
T-Mobile 2100 MHz (AWS) LTE	**2**	**2334.27**	**128**	**11.28**	**2100**	**1000**	**1.13 %**
T-Mobile 1900 MHz (PCS) GSM	**2**	**1167.14**	**128**	**5.64**	**1900**	**1000**	**0.56 %**
T-Mobile 1900 MHz (PCS) UMTS	**2**	**1167.14**	**128**	**5.64**	**1900**	**1000**	**0.56 %**
T-Mobile 2100 MHz (AWS) UMTS	**2**	**1167.14**	**128**	**5.64**	**2100**	**1000**	**0.56 %**
T-Mobile 700 MHz LTE	**1**	**865.21**	**128**	**2.09**	**700**	**467**	**0.45 %**
						Total:	**4.39 %**

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 A:	4.39 %
Sector B:	4.39 %
Sector C:	4.39 %
T-Mobile Per Sector Maximum:	4.39 %
Site Total:	15.68 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **15.68%** 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.